# **CLOSURE REPORT**

# ANTELOPE RIDGE UNIT #5 NMOCD REF: 1RP#807 EPI REF: #160046

UL-L (NW¼ OF THE SW¼) OF SECTION 33, T23S, R34E ~20 Miles Northwest of Jal, Lea County, New Mexico Latitude: N 32° 15' 36.66" Longitude: W 103° 28' 49.19"

# **MAY 2007**

# **PREPARED BY:**

Environmental Plus, Inc. 2100 Avenue O Eunice, New Mexico 88231

**PREPARED FOR:** 





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**Distribution** List

Site Characterization

Antelope Ridge Unit #5 NMOCD Ref : 1RP #807

EPI Ref. #160046

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# **STANDARD OF CARE**

# **Closure Report**

# Antelope Ridge Unit #5 NMOCD Ref 1RP #807: EPI Ref. #160046

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.

Prepared by:

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5/10/07

Reviewed by:

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5 1 10/07

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# 1.0 PROJECT SYNOPSIS

# Site Specific:

- Company Name: Chesapeake Operating, Inc.
- Facility Name: Antelope Ridge Unit #5
- Project Reference: NMOCD Ref. 1RP#807; EPI Ref.#160046
- Company Contacts: Bradley Blevins
- Site Location: WGS84 N32° 15' 36.66"; W103° 28' 49.19"
- Legal Description: Unit Letter-L, (NW<sup>1</sup>/<sub>4</sub> of the SW<sup>1</sup>/<sub>4</sub>), Section 33, T 23S, R 34E
- General Location: Approximately 20-miles northwest of Jal, New Mexico
- *Elevation:* 3,524-ft amsl
- Depth to Ground Water: approximately 475-ft bgs
- Land Ownership: Jim Keller
   EPI Personnel: Project Consultant Iain Olness Site Foreman – Kirt Tyree

# **Release Specific:**

- Product Released: Petroleum and/or production fluids
- Volume Released: Historical Volume Recovered: Historical
- Time of Occurrence: Historical Time of Discovery: Historical
- *Release Source:* Various sources
- ♦ Initial Surface Area Affected: ~ 1,700 square feet

# **Remediation Specific:**

- Final Vertical extent of contamination: 61-feet bgs at maximum depth
- 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
- 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) Chloride impacted soil was excavated to a maximum depth of 6-ft bgs and transported to Sundance Services for disposal; b) laboratory analyses confirmed removal of highly impacted soil exceeding NMOCD remedial threshold goals in the excavation sidewalls; c) isolation of in-situ residual chlorides in excavation floor with a polyethylene barrier; d) backfilled excavation with caliche purchased from an off-site source; e) contoured disturbed area to provide natural drainage
- Treatment/Disposal Facility: Sundance Services Eunice, New Mexico, 88231
- Volume disposed: approximately 4,584-yd<sup>3</sup>
- Project Completion Date: June 12, 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 pastureland and utilized for livestock grazing.
- 2.2 Identify and describe the source or suspected source(s) of the release. Various sources associated with a tank battery facility
- 2.3 What is the volume of the release? (if known): Historical barrels of Petroleum and/or production fluids
- 2.4 What is the volume recovered? (if any): Historical
- 2.5 When did the release occur? (if known): Historical

# 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 Plain physiographic subdivision, described by Nicholson & Clebsch as an area "underlain by a hard caliche surface and is almost entirely covered by reddish-brown dune sand". The thickness of the sand cover ranges from 2 to 5 feet in most areas to as much as 20-30 feet in drift areas.

# 2.7 Ecological Description

Vegetation in the High Plains consists primarily of short prairie grasses interspersed with Honey Mesquite (*Prosopis glandulosa*), annual and perennial 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 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 475-ft bgs based on water depth data obtained from the New Mexico State Engineers Office and United States Geological Survey data base (reference *Table 1*).

# 2.9 Area Water Wells

No public water supply wells exist within a 1,000-foot radius of the release site (reference *Table 1* and *Figure 2*).

# 2.10 Area Surface Water Features

No surface water features exist within a 1,000 foot radius of the release site (reference *Figure 2*).

# 3.0 <u>NMOCD SITE RANKING</u>

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)
- <u>Pit and Below-Grade Tank Guidelines (November, 2004)</u>

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 (0) points with the soil remedial goals highlighted in the Site Ranking table presented below:

1. GROUN	DWATER	2. WELLHE	AD PROTECTION AREA	3. E	DISTANCE TO SURFACE WATER			
Depth to GW · points	<50 feet: 20	If <1,000' from <200' from pri	n water source, or vate domestic water	<200	horizontal feet: 20 points			
Depth to GW : 10 points	50 to 99 feet:	source: 20 poir	nts	200-1 <i>point</i> :	,000 horizontal feet: 10 s			
Depth to GW 2 points	>100 feet: 0	If >1,000' from >200' from pri source: <i>0 point</i>	water source, or vate domestic water s	>1,00	0 horizontal feet: <i>0 points</i>			
Site Rank (1+2	(+3) = 0 + 0 + 0	) = 0 points						
,	<b>Fotal Site Ran</b>	king Score and A	Acceptable Remedial	Goal Concentrations				
Site Ranking	20	or >	10		0			
Benzene <sup>1</sup>	10	ppm	10 ррт		10 ppm			
BTEX <sup>1</sup>	50	ppm	50 ррт		50 ppm			
ТРН	100	ppm	1,000 ppm		5,000 ppm			

<sup>1</sup> 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?

Date excavated: March 30, 2006 through May 31, 2006

Total volume removed: ~4,584cubic yards

4.2 Indicated soil treatment type:

$\boxtimes$	Disposal
	Land Treatement
	Composting/Biopiling
	Other ( )

Yes I No

Name and location of treatment/disposal facility: Sundance Services – Eunice, New Mexico, 88231



# 5.0 <u>SAMPLING INFORMATION</u>

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

Soil samples collected from soil borings and excavation sidewalls/bottom were analyzed in the field for organic vapor and chloride concentrations utilizing methods described below:

Organic Vapor Concentrations – A portion of each soil sample was inserted into a selfsealing polyethylene bag to allow volatilization of organic vapors. After the samples equilibrated to  $\sim 70^{\circ}$  F, they were analyzed for organic vapors utilizing a MiniRae® Photoionization Detector (PID) equipped with a 10.6 electron volt (eV) lamp and calibrated for benzene response.

Chloride Concentrations – A La Motte Chloride Test Kit was utilized for field chloride concentration analyses.

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

During advancement of soil borings, soil samples were collected at select intervals to total depth of each respective soil boring (reference *Table 2*). 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. Prior to the collection of each soil sample, the sampling instrument was decontaminated with Alconox solution.

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), sulfates and/or chloride concentrations.

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

On January 31 and February 1, 2006 a series of four (4) soil borings (SB-1, SB-2, SB-3 and SB-4) were advanced within the tank battery area. Soil samples were collected at 2- and 5-ft bgs initially, then at 5-ft intervals thereafter. Soil borings were advanced until two consecutive field chloride analyses indicated concentrations were below remedial threshold goals of 250 mg/Kg. Maximum depths of soil borings were 61-ft bgs (SB-1), 51-ft bgs (SB-2), 56-ft bgs (SB-3) and 91-ft bgs (SB-4). Soil boring locations were chosen to delineate the vertical extent of impacted soil while providing adequate distance between soil borings (reference *Table 2* and *Figure 4*).

On May 22, 2006 soil samples were collected from the excavation floor in five (5) locations (BH-1 through BH-5) and from the sidewalls in twelve (12) locations (SW-1 through SW-12). Soil samples were collected from the excavation floor at 6-ft bgs and excavation sidewalls at 3-ft bgs (reference *Table 3* and *Figure 4*). Soil sample locations were chosen to provide the best representative example of soil within the excavation floor and sidewalls.

On May 30, 2006 excavation activities continued on the southeastern portion of the excavation. Soil samples (SW-13 and SW-14) were collected in two (2) locations from the excavation sidewalls (reference *Table 3* and *Figure 4*). Soil sample locations were chosen to provide the best representative example of soil within the excavation floor and sidewalls.

# 6.0 ANALYTICAL RESULTS

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

Laboratory analyses of soil samples collected during the advancement of soil boring SB-1 indicated TPH and BTEX constituent concentrations were non-detectable (ND) at or above laboratory method detection limits (MDL). Reported chloride concentrations were above remedial threshold goals of 250 mg/Kg to a depth of 51-ft bgs. Reported sulfate concentrations ranged from 34 to 66.5 mg/Kg (reference *Table 2* and *Figure 4*).

Laboratory analyses of soil samples collected during the advancement of soil boring SB-2 indicated TPH and BTEX constituent concentrations were ND at or above laboratory MDL. Reported chloride concentrations were above remedial threshold goals of 250 mg/Kg to a depth of 36-ft bgs. Reported sulfate concentrations ranged from 138 to 206 mg/Kg (reference *Table 2* and *Figure 4*).

Laboratory analyses of soil samples collected during the advancement of soil boring SB-3 indicated TPH and BTEX constituent concentrations were ND at or above laboratory MDL. Reported chloride concentrations were above remedial threshold goals of 250 mg/Kg to a depth of 36-ft bgs. Reported sulfate concentrations ranged from 121 to 160 mg/Kg (reference *Table 2* and *Figure 4*).

Laboratory analyses of soil samples collected during the advancement of soil boring SB-4 indicated benzene and BTEX concentrations were ND at or above laboratory MDL. Reported TPH concentration at 2 to 3-ft bgs were 183 mg/Kg. TPH concentrations in the remaining sample were reported as ND at or above laboratory MDL. Reported chloride concentrations were above remedial threshold goals of 250 mg/Kg to 61-ft bgs. Reported sulfate concentrations ranged from 194 to 203 mg/Kg (reference *Table 2* and *Figure 4*).

Laboratory analyses of soil samples collected from the excavation floor on May 22, 2006 (i.e., BH-1 through BH-5) indicated chloride concentrations, with the exception of soil sample BH-1, were in excess of remedial threshold goals of 250 mg/Kg (reference *Table 3* and *Figure 4*).

Laboratory analyses of soil samples collected from the excavation sidewalls on May 22, 2006 (i.e., SW-1 through SW-12) indicated chloride concentrations ranged from 300 to 5,100 mg/Kg (reference *Table 3* and *Figure 4*).

After additional excavation activities in the southeast portion of the excavation, two soil samples (SW-13 and SW-14) were collected on May 30, 2006 from the excavation sidewalls. Laboratory analyses indicated chloride concentrations in both samples were 400 mg/Kg (reference *Table 3* and *Figure 4*).

# 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 have been excavated and transported to Sundance Services for disposal.

# 7.0 DISCUSSION

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

While soil impacted with chlorides above remedial threshold goals remain in-situ, the chance of impacting local groundwater above NMWQCC Groundwater Standards of 250 mg/L is remote. In reviewing Table 2, *Summary of Soil Boring Analytical Results*, it is noted chloride concentrations diminish with vertical depth. Vertical depth of soil impacted with chlorides above remedial threshold goals extends to approximately 61 feet bgs. With depth of groundwater projected at 475 feet bgs, the vertical separation between impacted soil and groundwater is 414 feet. However, as a precautionary measure, an impermeable 20-mil thick polyethylene liner sandwiched between two (2) one (1) foot layers of bedding sand was installed over the floor of the excavation to mitigate vertical migration of residual chlorides.

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

# 7.3 Discuss other concerns not mentioned above: Not applicable

# 8.0 CONCLUSIONS AND RECOMMENDATIONS

- 8.1 Recommendation for the site:
- Site Closure
   Additional Groundwater Monitoring
   Corrective Action
- 8.2 Base the recommendation above on <u>Guidelines for Remediation of Leaks, Spills</u> <u>and Releases (August 13, 1993)</u>. Describe below how you applied the policy to support your recommendation. If closure is recommended, please summarize significant site investigative events and describe how site specific risk issues have been adequately addressed or minimized to acceptable low risk levels.

From March 30 to May 31, 2006 approximately 4,584 cubic yards of impacted soil were excavated and transported for disposal to Sundance Services, Inc. Laboratory analysis confirmed removal of highly impacted soil exceeding NMOCD Remedial Threshold goals in sidewalls and bottom of the excavation.

From May 20 to 24, 2006 EPI transported approximately 1,160 cubic yards of sand and from June 5 to 10, 2006 approximately 2,724 cubic yards of caliche from local pits to the excavation. This material was stockpiled on the job site in preparation for backfill operations. After cleaning and leveling the excavation bottom, EPI installed an impermeable 20-mil thick polyethylene liner sandwiched between two (2) one (1) foot layers of bedding sand. The remainder of the excavation was backfilled with caliche. The entire area was contoured to allow natural drainage.

- 8.3 If additional groundwater and monitoring is recommended, indicate the proposed monitoring schedule and frequency. Conduct quarterly monitoring until the NMOCD responds to this report. Not Applicable
- 8.4 If corrective action is recommended, provide a conceptual approach. Not Applicable

# **FIGURES**











# Well Data

# Chesapeake Energy - Antelope Ridge Unit #5 (Ref. # 160046)

Well Number	Diversion <sup>A</sup>	Оwner	Use	Twsp 1	Rng	ec q q q	Latitude	Longitude	Date Measured	Surface Elevation <sup>B</sup>	Depth to Water
1											(ft bgs)
C 02386	3	RUBERT MADERA	DOM	24S	34E 04	214	N32° 15' 0.43"	W103° 28' 28.06"	31-Jan-60	3,555	475
C 02397	30	BERT MADERA	COM	24S	34E 04	214	N32° 15' 0.43"	W103° 28' 28.06"	31-Jan-60	3,555	475
C 02397	3	BERT MADERA	MUL	24S	34E 04	214	N32° 15' 0.43"	W103° 28' 28.06"	31-Jan-60	3,555	475

 $^{A}$  = In acre feet per anum  $^{B}$  = Elevation interpolated from USGS topographical map based on referenced location. COM = Commercial

MUL = 72-12-1 Multiple domestic households DOM = 72-12-1 Domestic quarters are 1=NW, 2=NE, 3=SW, 4=SE; quarters are biggest to smallest **Shaded area indicates wells not shown in Figure 2** 

# Summary of Soil Boring Analytical Results

# Chesapeake- Antelope Ridge Unit #5 (Ref. #160046)

Sulfate	(mg/Kg)	34	66.5	ł	1		1	1	1	1	-	1	1		138	206	1	1	1			1	;	1	1	160	121	1	1	1	1	1	1	1	1		
Chloride	(mg/Kg)	653	770	913	509	307	322	760	400	589	3,670	1,200	207	193	1,500	1,090	935	1,070	1,770	554	1,060	619	249	244	1	1,010	666	663	271	409	283	299	386	224	131	1	1
Total TPH	(mg/Kg)	<10.0	<10.0	I	1	1	1	1	ł	1	1	1	1	1	<10.0	<10.0	1	1	1	1	1	1	1	1	1	<10.0	<10.0	1	;	1	1	1	1	1	1	1	
TPH (as diesel)	(mg/Kg)	<10.0	<10.0	:	1	1	:	1	1	1	1	1	:	:	<10.0	<10.0	-	1	1	1	1	1	1	1	1	<10.0	<10.0	1	1	1	1	:	1		1	:	
TPH (as gasoline)	(mg/Kg)	<10.0	<10.0	ł	1	1	1	1	1	1		:	1	1	<10.0	<10.0	1	1	1	1	1	1	1	1	1	<10.0	<10.0	1	   	1	1	1	;	ł	1	1	:
Total BTEX	(mg/Kg)	<0.125	<0.125	ł	1	1	:	-	1	1	1		1	1	<0.125	<0.125	1	:	1	1	1	1	1	1	;	<0.125	<0.125	1	   	1	1	ł	:	ł	1	1	:
Total Xylenes	(mg/Kg)	<0.050	<0.050	1	1	1	1	1	-	:	1	1	1	1	<0.050	<0.050	1	-	1	1		1	1	ł	1	<0.050	<0.050	1	1	1	1	1	1	1	1		:
Ethylbenzene	(mg/Kg)	<0.0250	<0.0250	-	1	:	1	1	1	1	1	1	:	1	<0.0250	<0.0250	ł	-	ł	1	1	1	1	1	1	<0.0250	<0.0250	;	1	1	1	1	ł	1	1	-	
Toluene	(mg/Kg)	<0.0250	<0.0250	1	1		ł	:	1	1	1	1	1	1	<0.0250	<0.0250	1	1	1	1	1	1	1	ł	1	<0.0250	<0.0250	1	1	1	1	1	I	1	1	1	1
Benzene	(mg/Kg)	<0.0250	<0.0250	1	1	1	1		1	1	1	1	1	1	<0.0250	<0.0250	1	1	1	1	1	I	1	:	;	<0.0250	<0.0250	1	1	1	1	ł	1	;	1	1	1
Field Chloride Analvses	(mdd)	960	560	800	560	480	480	800	320	560	3,280	960	240	240	1,360	1,120	960	1,040	2,240	560	1,280	720	320	240	240	1,120	1,120	800	480	400	400	480	560	400	320	240	240
PID Reading	(mqq)	0.0	0.0	0.1	0.3	0.5	0.4	0.3	0.1	0.6	0.5	0.7	0.5	0.3	0.4	0.3	0.5	0.5	0.6	0.5	0.6	0.6	0.3	0.4	0.3	0.4	0.4	0.3	0.4	0.3	0.4	0.4	0.6	0.6	0.5	0.5	0.6
Soil Status		In Situ	In Situ	In Situ	In Situ	In Situ	In Situ	In Situ	In Situ	In Situ	In Situ	In Situ	In Situ	In Situ	In Situ	In Situ	In Situ	In Situ	In Situ	In Situ	In Situ	In Situ	In Situ	In Situ	In Situ	In Situ	In Situ	In Situ	In Situ	In Situ	In Situ	In Situ	In Situ	In Situ	In Situ	In Situ	In Situ
Sample Date		31-Jan-06	31-Jan-06	31-Jan-06	31-Jan-06	31-Jan-06	31-Jan-06	31-Jan-06	31-Jan-06	31-Jan-06	31-Jan-06	31-Jan-06	31-Jan-06	31-Jan-06	31-Jan-06	31-Jan-06	31-Jan-06	31-Jan-06	31-Jan-06	31-Jan-06	31-Jan-06	31-Jan-06	31-Jan-06	31-Jan-06	31-Jan-06	01-Feb-06	01-Feb-06	01-Feb-06	01-Feb-06	01-Feb-06	01-Feb-06	01-Feb-06	01-Feb-06	01-Feb-06	01-Feb-06	01-Feb-06	01-Feh-06
Depth (feet)	, ,	2-3	5-6	10-11	15-16	20-21	25-26	30-31	35-36	40-41	45-46	50-51	55-56	60-61	2-3	5-6	10-11	15-16	20-21	25-26	30-31	35-36	40-41	45-46	50-51	2-3	5-6	10-11	15-16	20-21	25-26	30-31	35-36	40-41	45-46	50-51	55-56
Soil Sample I.D.		SB-1 (2'-3')	SB-1 (5'-6')	SB-1 (10'-11')	SB-1 (15'-16')	SB-1 (20'-21')	SB-1 (25'-26')	SB-1 (30'-31')	SB-1 (35'-36')	SB-1 (40'-41')	SB-1 (45'-46')	SB-1 (50'-51')	SB-1 (55'-56')	SB-1 (60'-61')	SB-2 (2'-3')	SB-2 (5'-6')	SB-2 (10'-11')	SB-2 (15'-16')	SB-2 (20'-21')	SB-2 (25'-26')	SB-2 (30'-31')	SB-2 (35'-36')	SB-2 (40'-41')	SB-2 (45'-46')	SB-2 (50'-51')	SB-3 (2'-3')	SB-3 (5'-6')	SB-3 (10'-11')	SB-3 (15'-16')	SB-3 (20'-21')	SB-3 (25'-26')	SB-3 (30'-31')	SB-3 (35'-36')	SB-3 (40'-41')	SB-3 (45'-46')	SB-3 (50'-51')	SB-3 (55'-56')
Soil Boring								SB-1												SB-2											SR-3	) ) )					

# Summary of Soil Boring Analytical Results

# Chesapeake- Antelope Ridge Unit #5 (Ref. #160046)

5 E	0																				~
Sulfat	(mg/Kg)	203	194		;	1	I	1	1	1	:	1	1	1	1		1	1	:	:	600 <sup>B</sup>
Chloride	(mg/Kg)	514	1,140	1,190	2,180	1,660	1,040	1,710	3,590	14,700	389	313	205	304	185	230	:	:	:	1	250 <sup>B</sup>
Total TPH	(mg/Kg)	183	<10.0	<10.0	1	1	1	1	1	ł	ł	1	1	1	1	1	1	1	1	ł	5,000
TPH (as diesel)	(mg/Kg)	173	<10.0	<10.0	}	1	1	1	;	1	1	:	1	1	1	1	ł	ł	1		
TPH (as gasoline)	(mg/Kg)	10	<10.0	<10.0	1	1	1	1	. 1	1	-	1	1		1	1	1		1	1	
Total BTEX	(mg/Kg)	<0.125	<0.125	<0.125	1	1	1	1	;	1	1	1	1	1	1	1	1	1	1	:	50
Total Xylenes	(mg/Kg)	0.0246 <sup>A</sup>	<0.050	<0.050	;	-	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
Ethylbenzene	(mg/Kg)	<0.0250	<0.0250	<0.0250	1	:	:	1	:	1	I	1	1	1	1	:	-	1	1	1	
Toluene	(mg/Kg)	0.0161 <sup>A</sup>	<0.0250	<0.0250	1	ł	1	1	ł	:	1	ł	1	:	;	1	1	1	1	1	
Benzene	(mg/Kg)	<0.0250	<0.0250	<0.0250	1	ł	ł	1	ł	ł	1	ł	1	1	ł	ł	1	1	ł	1	10
Field Chloride Analyses	(mqq)	720	1,360	1,280	2,720	1,920	1,280	2,000	3,360	480	400	400	320	400	320	240	400	240	240	240	
PID Reading	(mqq)	5.4	0.7	0.2	0.3	0.3	0.2	0.1	0.1	0.1	0.2	0.1	0.2	0.2	0.2	0.8	0.3	0.3	0.4	0.4	100
Soil Status		In Situ	In Situ	In Situ	In Situ	In Situ	In Situ	In Situ	In Situ	In Situ	In Situ	In Situ	In Situ	In Situ	In Situ	In Situ	In Situ	In Situ	In Situ	In Situ	
Sample Date		01-Feb-06	01-Feb-06	01-Feb-06	01-Feb-06	01-Feb-06	01-Feb-06	01-Feb-06	01-Feb-06	01-Feb-06	01-Feb-06	01-Feb-06	01-Feb-06	01-Feb-06	01-Feb-06	01-Feb-06	01-Feb-06	01-Feb-06	01-Feb-06	01-Feb-06	esholds
Depth (feet)		2-3	5-6	10-11	15-16	20-21	25-26	30-31	35-36	40-41	45-46	50-51	55-56	60-61	65-66	70-71	75-76	80-81	85-86	90-91	edial Thre
Soil Sample I.D.		SB-4 (2'-3')	SB-4 (5'-6')	SB-4 (10'-11')	SB-4 (15'-16')	SB-4 (20'-21')	SB-4 (25'-26')	SB-4 (30'-31')	SB-4 (35'-36')	SB-4 (40'-41')	SB-4 (45'-46')	SB-4 (50'-51')	SB-4 (55'-56')	SB-4 (60'-61')	SB-4 (65'-66')	SB-4 (70'-71')	SB-4 (75'-76')	SB-4 (80'-81')	SB-4 (85'-86')	SB-4 (90'-91')	NMOCD Rem
Soil Boring						1					SB-4	1									

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

-- = Not Analyzed

<sup>A</sup> Detected below laboratory method detection limits, therefore an estimate.
<sup>B</sup> Chloride and sulfate residuals may not be capable of impacting groundwater above NMWQCC groundwater standards of 250 ppm and 600 ppm, respectively.

# **Summary of Excavation Soil Sample Analytical Results**

Chesapeake - Antelope Ridge Unit #5 (Ref. #160046)

]		ļ										4 4007 I			
600 <sup>B</sup>	250 <sup>B</sup>	5.000			50				10		100	olds	edial Thresh	CD Remo	OMN
:	2,400	1	-	-	1	ł	1	1	I	3,600	ł	In Situ	22-May-06	6	BH-5 (6')
-	1,500	1	1	1	I	1	ł	1	1	2,400	1	In Situ	22-May-06	9	BH-4 (6')
1	780	1	1	1	ł	1	1	ł	1	3,920	1	In Situ	22-May-06	9	BH-3 (6')
1	360	1	ł	1	1	1	1	I	ł	560	1	In Situ	22-May-06	9	BH-2 (6')
1	140	+	ł	1	I	1	ł	1	1	1,120	1	In Situ	22-May-06	6	BH-1 (6')
1	400	-	1	1	ł	1	1	1	1	400	1	In Situ	30-May-06	3	SW-14 (3')
1	400	ł	1	ł	ł	ł	ł	1	ł	400	1	In Situ	30-May-06	3	SW-13 (3')
ł	5,100	1	ł	1	1	ł	ł	-	1	1,520	I	In Situ	22-May-06	3	SW-12 (3')
1	3,800	1	I	ł	ł	ł	ł	1	-	1,280	ł	In Situ	22-May-06	3	SW-11 (3')
1	3,300	1	1	-	1	1	1		-	560	-	In Situ	22-May-06	3	SW-10 (3')
1	460	1	1	ł	I	ł	1	1	1	400		In Situ	22-May-06	3	SW-9 (3')
ł	1,000	1	-	-	1	ł	1	1	-	480	ł	In Situ	22-May-06	3	SW-8 (3')
ł	1,700	I	1	-	1	1			1	880	-	In Situ	22-May-06	3	SW-7 (3')
1	1,800	1	1	-	ł	ł	1	ł	1	640	ł	In Situ	22-May-06	3	SW-6 (3')
1	500		ł		1	-		1	ł	1,440	1	In Situ	22-May-06	Э	SW-5 (3')
1	300	1	ł	1	ł	1	ł	1	1	1,120	ł	In Situ	22-May-06	3	SW-4 (3')
1	390	1	1	ł	1	I	ł	1	1	800	8	Excavated	22-May-06	3	SW-3 (3')
	1,200	1	1	ł	1	ł	1	1	1	480	ł	Excavated	22-May-06	3	SW-2 (3')
1	940	1	1	1	1	1	1	1	1	320	1	In Situ	22-May-06	3	SW-1 (3')
(mg/Kg)	(mg/Kg)	(mg/Kg)	(mg/Kg)	(mg/Kg)	(mg/Kg)	(mg/Kg)	(mg/Kg)	(mg/Kg)	(mg/Kg)	(mqq)	(mqq)				
Contract		TPH	(as diesel)	as gasoline)	BTEX	Xylenes	THUR TO CHECK			Analyses	Reading	Status	Date	(feet)	I.D.
S. Ifata	Chlorida	Total	три	нат	Total	Total	Fthvlhanzona	Toluene	Ranzana	Field	PID	Coil	Samule	Denth	Soil Samule

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

-- = Not Analyzed

 $^{\mathsf{A}}$  Detected below laboratory method detection limits, therefore an estimate.

<sup>B</sup> Chloride and sulfate residuals may not be capable of impacting groundwater above NMWQCC groundwater standards of 250 ppm and 600 ppm, respectively.

# **APPENDICES**

# **APPENDIX I**

# LABORATORY ANALYTICAL REPORTS AND CHAIN-OF-CUSTODY FORM



# Analytical Report

# Prepared for:

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

Project: Chesapeake/ Antelope Ridge Unit #5 Project Number: 160046 Location: UL-L, Sect. 33, T 23 S, R 34 E

Lab Order Number: 6B02016

Report Date: 02/21/06

Environmental Plus, Incorporated P.O. Box 1558 Eunice NM, 88231 Project: Chesapeake/ Antelope Ridge Unit #5 Project Number: 160046 Project Manager: Iain Olness Fax: 505-394-2601

**Reported:** 02/21/06 13:10

# ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
SB-1 (2'-3')	6B02016-01	Soil	01/31/06 12:45	02/02/06 14:45
SB-1 (5'-6')	6B02016-02	Soil	01/31/06 12:50	02/02/06 14:45
SB-1 (10'-11')	6B02016-03	Soil	01/31/06 13:00	02/02/06 14:45
SB-1 (15'-16')	6B02016-04	Soil	01/31/06 13:10	02/02/06 14:45
SB-1 (20'-21')	6B02016-05	Soil	01/31/06 13:20	02/02/06 14:45
SB-1 (25'-26')	6B02016-06	Soil	01/31/06 13:30	02/02/06 14:45
SB-1 (30'-31')	6B02016-07	Soil	01/31/06 13:40	02/02/06 14:45
SB-1 (35'-36')	6B02016-08	Soil	01/31/06 13:50	02/02/06 14:45
SB-1 (40'-41')	6B02016-09	Soil	01/31/06 14:00	02/02/06 14:45
SB-1 (45'-46')	6B02016-10	Soil	01/31/06 14:05	02/02/06 14:45
SB-1 (50'-51')	6B02016-11	Soil	01/31/06 14:10	02/02/06 14:45
SB-1 (55'-56')	6B02016-12	Soil	01/31/06 14:23	02/02/06 14:45
SB-1 (60'-61')	6B02016-13	Soil	01/31/06 14:30	02/02/06 14:45
SB-2 (2'-3')	6B02016-14	Soil	01/31/06 15:00	02/02/06 14:45
SB-2 (5'-6')	6B02016-15	Soil	01/31/06 15:05	02/02/06 14:45
SB-2 (10'-11')	6B02016-16	Soil	01/31/06 15:15	02/02/06 14:45
SB-2 (15'-16')	6B02016-17	Soil	01/31/06 15:23	02/02/06 14:45
SB-2 (20'-21')	6B02016-18	Soil	01/31/06 15:30	02/02/06 14:45
SB-2 (25'-26')	6B02016-19	Soil	01/31/06 15:38	02/02/06 14:45
SB-2 (30'-31')	6B02016-20	Soil	01/31/06 15:45	02/02/06 14:45
SB-2 (35'-36')	6B02016-21	Soil	01/31/06 15:50	02/02/06 14:45
SB-2 (40'-41')	6B02016-22	Soil	01/31/06 15:55	02/02/06 14:45
SB-2 (45-46')	6B02016-23	Soil	01/31/06 16:00	02/02/06 14:45
SB-3 (2'-3')	6B02016-25	Soil	02/01/06 09:30	02/02/06 14:45
SB-3 (5'-6')	6B02016-26	Soil	02/01/06 09:35	02/02/06 14:45
SB-3 (10'-11')	6B02016-27	Soil	02/01/06 09:50	02/02/06 14:45
SB-3 (15'-16')	6B02016-28	Soil	02/01/06 10:10	02/02/06 14:45
SB-3 (20'-21')	6B02016-29	Soil	02/01/06 10:20	02/02/06 14:45
SB-3 (25'-26')	6B02016-30	Soil	02/01/06 10:30	02/02/06 14:45
SB-3 (30'-31')	6B02016-31	Soil	02/01/06 10:40	02/02/06 14:45
SB-3 (35'-36')	6B02016-32	Soil	02/01/06 10:50	02/02/06 14:45
SB-3 (40'-41')	6B02016-33	Soil	02/01/06 11:00	02/02/06 14:45
SB-3 (45'-46')	6B02016-34	Soil	02/01/06 11:10	02/02/06 14:45
SB-4 (2'-3')	6B02016-37	Soil	02/01/06 11:40	02/02/06 14:45

Environmental Plus, Incorporated P.O. Box 1558 Eunice NM, 88231 Project: Chesapeake/ Antelope Ridge Unit #5 Project Number: 160046 Project Manager: Iain Olness

02/21/06 13:10

## ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
SB-4 (5'-6')	6B02016-38	Soil	02/01/06 11:45	02/02/06 14:45
SB-4 (10'-11')	6B02016-39	Soil	02/01/06 11:53	02/02/06 14:45
SB-4 (15'-16')	6B02016-40	Soil	02/01/06 11:59	02/02/06 14:45
SB-4 (20'-21')	6B02016-41	Soil	02/01/06 12:05	02/02/06 14:45
SB-4 (25'-26')	6B02016-42	Soil	02/01/06 12:11	02/02/06 14:45
SB-4 (30'-31')	6B02016-43	Soil	02/01/06 12:17	02/02/06 14:45
SB-4 (35'-36')	6B02016-44	Soil	02/01/06 12:25	02/02/06 14:45
SB-4 (40'-41')	6B02016-45	Soil	02/01/06 12:30	02/02/06 14:45
SB-4 (45'-46')	6B02016-46	Soil	02/01/06 12:35	02/02/06 14:45
SB-4 (50'-51')	6B02016-47	Soil	02/01/06 12:40	02/02/06 14:45
SB-4 (55'-56')	6B02016-48	Soil	02/01/06 12:45	02/02/06 14:45
SB-4 (60'-61')	6B02016-49	Soil	02/01/06 12:50	02/02/06 14:45
SB-4 (65'-66')	6B02016-50	Soil	02/01/06 13:00	02/02/06 14:45
SB-4 (70'-71')	6B02016-51	Soil	02/01/06 13:10	02/02/06 14:45

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# Organics by GC

# Environmental Lab of Texas

		Reporting							
Analyte	Result	Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
SB-1 (2'-3') (6B02016-01) Soil									
Benzene	ND	0.0250	mg/kg dry	25	EB60701	02/07/06	02/07/06	EPA 8021B	
Toluene	ND	0.0250	"	"	"	**	н	и	
Ethylbenzene	ND	0.0250	**	"	н	"	"	11	
Xylene (p/m)	ND	0.0250	н	n	n	"	u	**	
Xylene (o)	ND	0.0250	"		"	"	"	"	
Surrogate: a,a,a-Trifluorotoluene		93.2 %	80-1	20	"	"	"	"	
Surrogate: 4-Bromofluorobenzene		88.2 %	80-1	20	"	"	"		
Gasoline Range Organics C6-C12	ND	10.0	mg/kg dry	1	EB60312	02/03/06	02/04/06	EPA 8015M	
Diesel Range Organics >C12-C35	ND	10.0	"	"	ų		••	"	
Total Hydrocarbon C6-C35	ND	10.0	**	n		"	"	"	
Surrogate: 1-Chlorooctane		104 %	70-1	30	"	"	"	"	
Surrogate: 1-Chlorooctadecane		104 %	70-1	30	"	"	"	n	
SB-1 (5'-6') (6B02016-02) Soil									
Benzene	ND	0.0250	mg/kg dry	25	EB60701	02/07/06	02/07/06	EPA 8021B	
Toluene	ND	0.0250	"	"		"	"	н	
Ethylbenzene	ND	0.0250	**	11	11	"	**	11	
Xylene (p/m)	ND	0.0250		"	"	"	u	и	
Xylene (o)	ND	0.0250	"	"	"	*1	"	"	
Surrogate: a,a,a-Trifluorotoluene	·	89.2 %	80-1	20	"	<i>"</i>	"	"	
Surrogate: 4-Bromofluorobenzene		86.0 %	80-1	20	"	"	"	"	
Gasoline Range Organics C6-C12	ND	10.0	mg/kg dry	1	EB60312	02/03/06	02/04/06	EPA 8015M	
Diesel Range Organics >C12-C35	ND	10.0	"	"	11	"	**	"	
Total Hydrocarbon C6-C35	ND	10.0	"	"	"	"	"		
Surrogate: 1-Chlorooctane		74.0 %	70-1	30		"	"	"	
Surrogate: 1-Chlorooctadecane		72.2 %	70-1	30	"	"	"	"	
SB-2 (2'-3') (6B02016-14) Soil									
Benzene	ND	0.0250	mg/kg dry	25	EB60701	02/07/06	02/07/06	EPA 8021B	
Toluene	ND	0.0250			11	"	н	"	
Ethylbenzene	ND	0.0250	"	*	"	"	n		
Xylene (p/m)	ND	0.0250	"	Ħ	"	"	"		
Xylene (o)	ND	0.0250	"		"	"	"	*	
Surrogate: a,a,a-Trifluorotoluene		90.0 %	80-1	20	"	"	"	"	
Surrogate: 4-Bromofluorobenzene		89.0 %	80-1	20	"	"	"	"	
Gasoline Range Organics C6-C12	ND	10.0	mg/kg dry	1	EB60312	02/03/06	02/04/06	EPA 8015M	
Diesel Range Organics >C12-C35	ND	10.0	11	"	"		**		

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Total Hydrocarbon C6-C35

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,

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Page 3 of 20

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ND

Environmental Plus, Incorporated P.O. Box 1558 Eunice NM, 88231 Project: Chesapeake/ Antelope Ridge Unit #5 Project Number: 160046 Project Manager: Iain Olness

# Organics by GC

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prenared	Analyzed	Method	Notes
SB-2 (2'-3') (6B02016-14) Soil				Function	Batch				motes
Current of Characteria			70 7	30	EBKODIO	02/02/07	01/04/07		
Surrogale: 1-Chlorooclane		93.0 %	70-1.	20	LB00312 	02/03/06	<i>U2/U4/U6</i> "	EFA OUIDM "	
surrogate: 1-Chlorooctadecane		92.4 %	/0-1.	30	"	"	"	"	
SB-2 (5'-6') (6B02016-15) Soil									
Benzene	ND	0.0250	mg/kg dry	25	EB60701	02/07/06	02/07/06	EPA 8021B	
Toluene	ND	0.0250		"	н	н	n		
Ethylbenzene	ND	0.0250	"	u	"	"	п	n	
Xylene (p/m)	ND	0.0250	"	"	n	"	"	11	
Xylene (o)	ND	0.0250			"	n 	н	"	
Surrogate: a,a,a-Trifluorotoluene		99.0 %	80-1.	20	"	"	"	"	
Surrogate: 4-Bromofluorobenzene		80.5 %	80-1.	20	"	"	"	"	
Gasoline Range Organics C6-C12	ND	10.0	mg/kg dry	1	EB60312	02/03/06	02/04/06	EPA 8015M	
Diesel Range Organics >C12-C35	ND	10.0	"	"	11	"	"	"	
Total Hydrocarbon C6-C35	ND	10.0	"	"	Ħ	"	"	"	
Surrogate: 1-Chlorooctane		85.4 %	70-1.	30	"	"	"	"	
Surrogate: 1-Chlorooctadecane		84.8 %	70-1.	30	"	n	n	n	
SB-3 (2'-3') (6B02016-25) Soil									
Benzene	ND	0.0250	mg/kg dry	25	EB60701	02/07/06	02/07/06	EPA 8021B	
Toluene	ND	0.0250	"	"	11	"	н	"	
Ethylbenzene	ND	0.0250	"	u	**	"	**	11	
Xylene (p/m)	ND	0.0250	"	м	"	n	"	u	
Xylene (o)	ND	0.0250	н	"	"			n	
Surrogate: a,a,a-Trifluorotoluene		87.0 %	80-12	20	"	"	"	"	
Surrogate: 4-Bromofluorobenzene		82.2 %	80-1.	20	"	"	17	"	
Gasoline Range Organics C6-C12	ND	10.0	mg/kg dry	1	EB60312	02/03/06	02/04/06	EPA 8015M	
Diesel Range Organics >C12-C35	ND	10.0	"	"	"	"	"	**	
Total Hydrocarbon C6-C35	ND	10.0	"	ч	"	**	"	*1	
Surrogate: 1-Chlorooctane		96.4 %	70-1	30		,,		"	

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Surrogate: 1-Chlorooctadecane

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.

70-130

93.0%

Project: Chesapeake/ Antelope Ridge Unit #5 Project Number: 160046 Project Manager: lain Olness

**Reported:** 02/21/06 13:10

# Organics by GC

## Environmental Lab of Texas

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
SB-3 (5'-6') (6B02016-26) Soil								·	
Benzene	ND	0.0250	mg/kg dry	25	EB60701	02/07/06	02/07/06	EPA 8021B	
Toluene	ND	0.0250	11	"	"	"	"	**	
Ethylbenzene	ND	0.0250	"	"	н	"	"	**	
Xylene (p/m)	ND	0.0250	н	"	"	"	н	"	
Xylene (o)	ND	0.0250	п	"	н	"	"	**	
Surrogate: a,a,a-Trifluorotoluene		87.2 %	80	120	"	"	"	"	
Surrogate: 4-Bromofluorobenzene		80.8 %	80-	120	"	"	"	"	
Gasoline Range Organics C6-C12	ND	10.0	mg/kg dry	1	EB60312	02/03/06	02/04/06	EPA 8015M	
Diesel Range Organics >C12-C35	ND	10.0	"	"	11	"	"	••	
Total Hydrocarbon C6-C35	ND	10.0	"	"	11	"	11	"	
Surrogate: 1-Chlorooctane		85.8 %	70-	130	"	"	<i>n</i>	"	
Surrogate: 1-Chlorooctadecane		84.4 %	70	130	"	"	"	"	
SB-4 (2'-3') (6B02016-37) Soil									
Benzene	ND	0.0250	mg/kg dry	25	EB60701	02/07/06	02/07/06	EPA 8021B	
Toluene	J [0.0161]	0.0250		"	"	n	"	"	J
Ethylbenzene	ND	0.0250	*	и	"	"	"	u	
Xylene (p/m)	J [0.0246]	0.0250	"	"	"	n	"	"	l
Xylene (o)	ND	0.0250	88	"	"	"	"	**	
Surrogate: a,a,a-Trifluorotoluene		90.5 %	80	120	"	"	"	"	
Surrogate: 4-Bromofluorobenzene		83.2 %	80	120	"	"	"	"	
Gasoline Range Organics C6-C12	10.2	10.0	mg/kg dry	1	EB60312	02/03/06	02/04/06	EPA 8015M	
Diesel Range Organics >C12-C35	173	10.0	**	W	"	н	n	"	
Total Hydrocarbon C6-C35	183	10.0	"	*1	"	"	"		
Surrogate: 1-Chlorooctane		92.4 %	70-	130	"	"	"	"	
Surrogate: 1-Chlorooctadecane		93.6 %	70	130	"	"	"	"	

### SB-4 (5'-6') (6B02016-38) Soil

Benzene	ND	0.0250	mg/kg dry	25	EB60701	02/07/06	02/07/06	EPA 8021B
Toluene	ND	0.0250	"	"	n	"	"	
Ethylbenzene	ND	0.0250	"	н	"	"	н	"
Xylene (p/m)	ND	0.0250	"	Ħ		"	11	11
Xylene (o)	ND	0.0250	"	"	n	"	"	
Surrogate: a,a,a-Trifluorotoluene		87.5 %	80-120	)	"	"	"	"
Surrogate: 4-Bromofluorobenzene		89.5 %	80-120	)	"	"	"	"
Gasoline Range Organics C6-C12	ND	10.0	mg/kg dry	1	EB60312	02/03/06	02/04/06	EPA 8015M
Diesel Range Organics >C12-C35	ND	10.0	11	"	"	"	"	**
Total Hydrocarbon C6-C35	ND	10.0	п	н	"	"	11	"

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Environmental Plus, Incorporated P.O. Box 1558 Eunice NM, 88231 Project: Chesapeake/ Antelope Ridge Unit #5 Project Number: 160046 Project Manager: Iain Olness

**Reported:** 02/21/06 13:10

# Organics by GC

# Environmental Lab of Texas

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
SB-4 (5'-6') (6B02016-38) Soil		· · ·							
Surrogate: 1-Chlorooctane		90.2 %	70-13	0	EB60312	02/03/06	02/04/06	EPA 8015M	
Surrogate: 1-Chlorooctadecane		91.6 %	70-13	0	"	"	"	"	
SB-4 (10'-11') (6B02016-39) Soil									
Benzene	ND	0.0250	mg/kg dry	25	EB60701	02/07/06	02/08/06	EPA 8021B	
Toluene	ND	0.0250	"	"	n	ų	"	"	
Ethylbenzene	ND	0.0250	"	"	"	н		**	
Xylene (p/m)	ND	0.0250	"	"	"	11	"		
Xylene (o)	ND	0.0250	"	н	"	"	"	"	
Surrogate: a,a,a-Trifluorotoluene		91.0 %	80-12	0	π	"	"	"	
Surrogate: 4-Bromofluorobenzene		85.8 %	80-12	0	n	"	"	"	
Gasoline Range Organics C6-C12	ND	10.0	mg/kg dry	1	EB60312	02/03/06	02/04/06	EPA 8015M	
Diesel Range Organics >C12-C35	ND	10.0	n	"	"	"	"	"	
Total Hydrocarbon C6-C35	ND	10.0	"	н		"	н	"	
Surrogate: 1-Chlorooctane		94.4 %	70-13	0	"	"	"	"	• • • • • • • • • • • • • • • • • • • •
Surrogate: 1-Chlorooctadecane		93.4 %	70-13	0	"	"	"	"	

Environmental Lab of Texas

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# General Chemistry Parameters by EPA / Standard Methods

### **Environmental Lab of Texas**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
SB-1 (2'-3') (6B02016-01) Soil									
Chloride	653	10.0	mg/kg	20	EB60705	02/04/06	02/08/06	EPA 300.0	
% Moisture	4.4	0.1	%	1	EB60607	02/03/06	02/06/06	% calculation	
Sulfate	34.0	10.0	mg/kg	20	EB60705	02/04/06	02/08/06	EPA 300.0	
SB-1 (5'-6') (6B02016-02) Soil				-					
Chloride	770	10.0	mg/kg	20	EB60705	02/04/06	02/08/06	EPA 300.0	
% Moisture	6.4	0.1	%	1	EB60607	02/03/06	02/06/06	% calculation	
Sulfate	66.5	10.0	mg/kg	20	EB60705	02/04/06	02/08/06	EPA 300.0	
SB-1 (10'-11') (6B02016-03) Soil									
Chloride	913	20.0	'mg/kg	40	EB61002	02/09/06	02/10/06	EPA 300.0	
SB-1 (15'-16') (6B02016-04) Soil									
Chloride	509	10.0	mg/kg	20	EB61002	02/09/06	02/10/06	EPA 300.0	
SB-1 (20'-21') (6B02016-05) Soil									
Chloride	307	10.0	mg/kg	20	EB61303	02/11/06	02/13/06	EPA 300.0	···
SB-1 (25'-26') (6B02016-06) Soil									
Chloride	322	10.0	mg/kg	20	EB61303	02/11/06	02/13/06	EPA 300.0	
SB-1 (30'-31') (6B02016-07) Soil									
Chloride	760	10.0	mg/kg	20	EB61303	02/11/06	02/13/06	EPA 300.0	
SB-1 (35'-36') (6B02016-08) Soil					_				
Chloride	400	10.0	mg/kg	20	EB61303	02/11/06	02/13/06	EPA 300.0	
SB-1 (40'-41') (6B02016-09) Soil									
Chloride	589	25.0	mg/kg	50	EB61607	02/14/06	02/14/06	EPA 300.0	

Environmental Lab of Texas

# General Chemistry Parameters by EPA / Standard Methods

### Environmental Lab of Texas

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
SB-1 (45'-46') (6B02016-10) Soil		·····							
Chloride	3670	50.0	mg/kg	100	EB61607	02/14/06	02/14/06	EPA 300.0	
SB-1 (50'-51') (6B02016-11) Soil									
Chloride	1200	20.0	mg/kg	40	EB61607	02/14/06	02/14/06	EPA 300.0	
SB-1 (55'-56') (6B02016-12) Soil									
Chloride	207	5.00	mg/kg	10	EB61618	02/17/06	02/20/06	EPA 300.0	
SB-1 (60'-61') (6B02016-13) Soil									
Chloride	193	5.00	mg/kg	10	EB61618	02/17/06	02/20/06	EPA 300.0	
SB-2 (2'-3') (6B02016-14) Soil									
Chloride	1500	25.0	mg/kg	50	EB60705	02/04/06	02/08/06	EPA 300.0	
% Moisture	4.9	0.1	%	1	EB60607	02/03/06	02/06/06	% calculation	
Sulfate	138	25.0	mg/kg	50	EB60705	02/04/06	02/08/06	EPA 300.0	
SB-2 (5'-6') (6B02016-15) Soil									
Chloride	1090	20.0	mg/kg	40	EB60705	02/04/06	02/08/06	EPA 300.0	
% Moisture	7.0	0.1	%	1	EB60607	02/03/06	02/06/06	% calculation	
Sulfate	206	20.0	mg/kg	40	EB60705	02/04/06	02/08/06	EPA 300.0	
SB-2 (10'-11') (6B02016-16) Soil									
Chloride	935	20.0	mg/kg	40	EB61002	02/09/06	02/10/06	EPA 300.0	_
SB-2 (15'-16') (6B02016-17) Soil									
Chloride	1070	20.0	mg/kg	40	EB61002	02/09/06	02/10/06	EPA 300.0	
SB-2 (20'-21') (6B02016-18) Soil									
Chloride	1770	25.0	mg/kg	50	EB61303	02/11/06	02/13/06	EPA 300.0	

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# General Chemistry Parameters by EPA / Standard Methods

# Environmental Lab of Texas

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
SB-2 (25'-26') (6B02016-19) Soil									
Chloride	554	10.0	mg/kg	20	EB61303	02/11/06	02/13/06	EPA 300.0	
SB-2 (30'-31') (6B02016-20) Soil									
Chloride	1060	20.0	mg/kg	40	EB61303	02/11/06	02/13/06	EPA 300.0	
SB-2 (35'-36') (6B02016-21) Soil					_				
Chloride	619	10.0	mg/kg	20	EB61303	02/11/06	02/13/06	EPA 300.0	
SB-2 (40'-41') (6B02016-22) Soil			_						
Chloride	249	10.0	mg/kg	20	EB61607	02/14/06	02/14/06	EPA 300.0	
SB-2 (45-46') (6B02016-23) Soil									
Chloride	244	10.0	mg/kg	20	EB61607	02/14/06	02/14/06	EPA 300.0	
SB-3 (2'-3') (6B02016-25) Soil									
Chloride	1010	20.0	mg/kg	40	EB60705	02/04/06	02/08/06	EPA 300.0	
% Moisture	4.7	0.1	%	1	EB60607	02/03/06	02/06/06	% calculation	
Sulfate	160	20.0	mg/kg	40	EB60705	02/04/06	02/08/06	EPA 300.0	
SB-3 (5'-6') (6B02016-26) Soil									
Chloride	999	10.0	mg/kg	20	EB60705	02/04/06	02/08/06	EPA 300.0	
% Moisture	7.5	0.1	%	1	EB60607	02/03/06	02/06/06	% calculation	
Sulfate	121	10.0	mg/kg	20	EB60705	02/04/06	02/08/06	EPA 300.0	
SB-3 (10'-11') (6B02016-27) Soil									
Chloride	663	10.0	mg/kg	20	EB61002	02/09/06	02/10/06	EPA 300.0	
SB-3 (15'-16') (6B02016-28) Soil									
Chloride	271	25.0	mg/kg	50	EB61002	02/09/06	02/10/06	EPA 300.0	

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# General Chemistry Parameters by EPA / Standard Methods

## **Environmental Lab of Texas**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prenared	Analyzed	Method	Notes
SB-3 (20'-21') (6B02016-29) Soil				<u> </u>	Dutti		- mary200		1.003
Chloride	409	10.0	mg/kg	20	EB61303	02/11/06	02/13/06	EPA 300.0	
SB-3 (25'-26') (6B02016-30) Soil									
Chloride	283	10.0	mg/kg	20	EB61303	02/11/06	02/13/06	EPA 300.0	
SB-3 (30'-31') (6B02016-31) Soil									
Chloride	299	10.0	mg/kg	20	EB61303	02/11/06	02/13/06	EPA 300.0	
SB-3 (35'-36') (6B02016-32) Soil									
Chloride	386	10.0	mg/kg	20	EB61303	02/11/06	02/13/06	EPA 300.0	
SB-3 (40'-41') (6B02016-33) Soil									
Chloride	224	10.0	mg/kg	20	EB61607	02/14/06	02/14/06	EPA 300.0	
SB-3 (45'-46') (6B02016-34) Soil									
Chloride	131	5.00	mg/kg	10	EB61607	02/14/06	02/14/06	EPA 300.0	
SB-4 (2'-3') (6B02016-37) Soil									
Chloride	514	10.0	mg/kg	20	EB60705	02/04/06	02/08/06	EPA 300.0	
% Moisture	5.6	0.1	%	1	EB60607	02/03/06	02/06/06	% calculation	
Sulfate	203	10.0	mg/kg	20	EB60705	02/04/06	02/08/06	EPA 300.0	
SB-4 (5'-6') (6B02016-38) Soil									
Chloride	1140	20.0	mg/kg	40	EB60705	02/04/06	02/08/06	EPA 300.0	
% Moisture	5.6	0.1	%	1	EB60607	02/03/06	02/06/06	% calculation	
Sulfate	194	20.0	mg/kg	40	EB60705	02/04/06	02/08/06	EPA 300.0	
SB-4 (10'-11') (6B02016-39) Soil									
Chloride	1190	20.0	mg/kg	40	EB61002	02/09/06	02/10/06	EPA 300.0	
% Moisture	3.2	0.1	%	1	EB60607	02/03/06	02/06/06	% calculation	

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#### General Chemistry Parameters by EPA / Standard Methods

#### Environmental Lab of Texas

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prenared	Analyzed	Method	Notes
SB-4 (15'-16') (6B02016-40) Soil				Diracioli		ricpared		memou	
Chloride	2180	50.0	mg/kg	100	EB61002	02/09/06	02/10/06	EPA 300.0	
SB-4 (20'-21') (6B02016-41) Soil									
Chloride	1660	25.0	mg/kg	50	EB61002	02/09/06	02/10/06	EPA 300.0	
SB-4 (25'-26') (6B02016-42) Soil									
Chloride	1040	20.0	mg/kg	40	EB61303	02/11/06	02/13/06	EPA 300.0	
SB-4 (30'-31') (6B02016-43) Soil									
Chloride	1710	25.0	mg/kg	50	EB61303	02/11/06	02/13/06	EPA 300.0	
SB-4 (35'-36') (6B02016-44) Soil									
Chloride	3590	50.0	mg/kg	100	EB61303	02/11/06	02/13/06	EPA 300.0	
SB-4 (40'-41') (6B02016-45) Soil									
Chloride	14700	200	mg/kg	400	EB61303	02/11/06	02/13/06	EPA 300.0	
SB-4 (45'-46') (6B02016-46) Soil									
Chloride	389	10.0	mg/kg	20	EB61608	02/15/06	02/15/06	EPA 300.0	
SB-4 (50'-51') (6B02016-47) Soil									
Chloride	313	10.0	mg/kg	20	EB61608	02/15/06	02/15/06	EPA 300.0	
SB-4 (55'-56') (6B02016-48) Soil									
Chloride	205	5.00	mg/kg	10	EB61608	02/15/06	02/15/06	EPA 300.0	
SB-4 (60'-61') (6B02016-49) Soil									
Chloride	304	10.0	mg/kg	20	EB61608	02/15/06	02/15/06	EPA 300.0	
SB-4 (65'-66') (6B02016-50) Soil									
Chloride	185	5.00	mg/kg	10	EB61608	02/15/06	02/15/06	EPA 300.0	

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#### General Chemistry Parameters by EPA / Standard Methods

**Environmental Lab of Texas** 

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
SB-4 (70'-71') (6B02016-51) Soil									
Chloride	230	5.00	mg/kg	10	EB61608	02/15/06	02/15/06	EPA 300.0	

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#### **Organics by GC - Quality Control**

#### **Environmental Lab of Texas**

		Reporting		Spike	Source		%REC		RPD	
Analyte	Result	Limit	Units	Level	Result	%REC	Limits	RPD	Limit	Notes
Batch EB60312 - Solvent Extraction (GC)			·	<u></u>						
Blank (EB60312-BLK1)				Prepared: (	02/03/06 A	nalyzed: 02	2/04/06			
Gasoline Range Organics C6-C12	ND	10.0	mg/kg wet							
Diesel Range Organics >C12-C35	ND	10.0	n							
Total Hydrocarbon C6-C35	ND	10.0	"							
Surrogate: 1-Chlorooctane	54.3		mg/kg	50.0		109	70-130			· ·
Surrogate: 1-Chlorooctadecane	55.4		"	50.0		111	70-130			
LCS (EB60312-BS1)				Prepared: (	02/03/06 A	nalyzed: 02	2/04/06			
Gasoline Range Organics C6-C12	503	10.0	mg/kg wet	500	•	101	75-125	• • •	·	
Diesel Range Organics >C12-C35	583	10.0	*	500		117	75-125			
Total Hydrocarbon C6-C35	1090	10.0	"	1000		109	75-125			
Surrogate: 1-Chlorooctane	55.1		mg/kg	50.0		110	70-130			
Surrogate: 1-Chlorooctadecane	56.0		"	50.0		112	70-130			
Calibration Check (EB60312-CCV1)				Prepared: (	02/03/06 A	nalyzed: 02	2/04/06			
Gasoline Range Organics C6-C12	498		mg/kg	500		99.6	80-120			
Diesel Range Organics >C12-C35	568		н	500		114	80-120			
Total Hydrocarbon C6-C35	1070		"	1000		107	80-120			
Surrogate: 1-Chlorooctane	54.2		"	50.0		108	70-130			
Surrogate: 1-Chlorooctadecane	52.4		"	50.0		105	70-130			
Matrix Spike (EB60312-MS1)	Sou	rce: 6B02015	5-01	Prepared: (	)2/03/06 A	nalyzed: 02	2/04/06			
Gasoline Range Organics C6-C12	524	10.0	mg/kg dry	544	ND	96.3	75-125			
Diesel Range Organics >C12-C35	610	10.0	11	544	ND	112	75-125			
Total Hydrocarbon C6-C35	1130	10.0	"	1090	ND	104	75-125			
Surrogate: 1-Chlorooctane	56.1		mg/kg	50.0		112	70-130			
Surrogate: 1-Chlorooctadecane	56.4		"	50.0		113	70-130			
Matrix Spike Dup (EB60312-MSD1)	Sou	rce: 6B02015	5-01	Prepared: (	02/03/06 A	nalyzed: 02	2/04/06			
Gasoline Range Organics C6-C12	544	10.0	mg/kg dry	544	ND	100	75-125	3.75	20	
Diesel Range Organics >C12-C35	634	10.0	"	544	ND	117	75-125	3.86	20	
Total Hydrocarbon C6-C35	1180	10.0	"	1090	ND	108	75-125	4.33	20	
Surrogate: 1-Chlorooctane	57.7		mg/kg	50.0		115	70-130			
Surrogate: 1-Chlorooctadecane	57.6		"	50.0		115	70-130			

Environmental Lab of Texas

#### **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
Batch EB60701 - EPA 5030C (GC)										
Blank (EB60701-BLK1)			· · · · · ·	Prepared &	Analyzed:	02/07/06				
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	38.0		ug/kg	40.0		95.0	80-120			
Surrogate: 4-Bromofluorobenzene	32.4		"	40.0		81.0	80-120			
LCS (EB60701-BS1)				Prepared &	Analyzed:	02/07/06				
Benzene	0.0482	0.00100	mg/kg wet	0.0500		96.4	80-120			
Toluene	0.0497	0.00100	"	0.0500		99.4	80-120			
Ethylbenzene	0.0501	0.00100	"	0.0500		100	80-120			
Xylene (p/m)	0.0949	0.00100	"	0.100		94.9	80-120			
Xylene (o)	0.0475	0.00100	"	0.0500		95.0	80-120			
Surrogate: a,a,a-Trifluorotoluene	43.4		ug/kg	40.0		108	80-120			
Surrogate: 4-Bromofluorobenzene	39.4		"	40.0		98.5	80-120			
Calibration Check (EB60701-CCV1)				Prepared: 0	02/07/06 A	nalyzed: 02	/08/06			
Benzene	43.8		ug/kg	50.0		87.6	80-120			
Toluene	49.1		"	50.0		98.2	80-120			
Ethylbenzene	50.4		"	50.0		101	80-120			
Xylene (p/m)	94.1		"	100		94.1	80-120			
Xylene (0)	47.2		"	50.0		94.4	80-120			
Surrogate: a,a,a-Trifluorotoluene	40.7		"	40.0		102	80-120			
Surrogate: 4-Bromofluorobenzene	33.5		"	40.0		83.8	80-120			
Matrix Spike (EB60701-MS1)	Sou	rce: 6B01013	-06	Prepared: 0	02/07/06 A	nalyzed: 02	/08/06			
Benzene	1.11	0.0250	mg/kg dry	1.30	ND	85.4	80-120			
Toluene	1.19	0.0250		1.30	ND	91.5	80-120			
Ethylbenzene	1.21	0.0250	"	1.30	ND	93.1	80-120			
Xylene (p/m)	2.30	0.0250	"	2.59	ND	88.8	80-120			
Xylene (0)	1.11	0.0250	"	1.30	ND	85.4	80-120			
Surrogate: a,a,a-Trifluorotoluene	43.4		ug/kg	40.0		108	80-120			
Surrogate: 4-Bromofluorobenzene	39.1		"	40.0		97.8	80-120			

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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
Batch EB60701 - EPA 5030C (GC)										
Matrix Spike Dup (EB60701-MSD1)	Sour	ce: 6B01013	-06	Prepared: (	02/07/06 A	nalyzed: 02	2/08/06			
Benzene	1.16	0.0250	mg/kg dry	1.30	ND	89.2	80-120	4.35	20	· · · · · · · · · · · · · · · · · · ·
Toluene	1.25	0.0250	"	1.30	ND	96.2	80-120	5.01	20	
Ethylbenzene	1.27	0.0250	11	1.30	ND	<b>9</b> 7.7	80-120	4.82	20	
Xylene (p/m)	2.39	0.0250	"	2.59	ND	92.3	80-120	3.87	20	
Xylene (0)	1.15	0.0250	n	1.30	ND	88.5	80-120	3.57	20	
Surrogate: a,a,a-Trifluorotoluene	36.6		ug/kg	40.0		91.5	80-120			
Surrogate: 4-Bromofluorobenzene	34.4		"	40.0		86.0	80-120			

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#### General Chemistry Parameters by EPA / Standard Methods - Quality Control

#### **Environmental Lab of Texas**

		Reporting		Spike	Source	2	%REC		RPD	
Analyte	Result	Limit	Units	Level	Result	%REC	Limits	RPD	Limit	Notes
Batch EB60607 - General Preparation (Prep)										
Blank (EB60607-BLK1)				Prepared: 0	2/03/06	Analyzed: 02	2/06/06			
% Solids	100		%							
Duplicate (EB60607-DUP1)	Sou	irce: 6B02016-	01	Prepared: 0	2/03/06	Analyzed: 02	2/06/06			
% Solids	96.3		%		95.6			0.730	20	
Duplicate (EB60607-DUP2)	Sou	rce: 6B03002-	02	Prepared: 0	2/03/06	Analyzed: 02	2/06/06			
% Solids	98.6		%		99.6			1.01	20	
Duplicate (EB60607-DUP3)	Sou	rce: 6B03005-	01	Prepared: 0	2/03/06	Analyzed: 02	2/06/06			
% Solids	97.5		%		97.4			0.103	20	
Batch EB60705 - Water Extraction										
Blank (EB60705-BLK1)				Prepared: 0	2/04/06	Analyzed: 02	2/08/06			
Sulfate	ND	0.500	mg/kg							
Chloride	ND	0.500	"							
LCS (EB60705-BS1)				Prepared: 0	2/04/06	Analyzed: 02	2/08/06			
Chloride	9.14		mg/L	10.0		91.4	80-120			
Sulfate	9.58		**	10.0		95.8	80-120			
Calibration Check (EB60705-CCV1)				Prepared: 0	2/04/06	Analyzed: 02	2/08/06			
Sulfate	9.98		mg/L	10.0		99.8	80-120			
Chloride	9.32		11	10.0		93.2	80-120			
Duplicate (EB60705-DUP1)	Sou	rce: 6B03003-	01	Prepared: 0	2/04/06	Analyzed: 02	2/08/06			
Chloride	188	5.00	mg/kg		186			1.07	20	
Sulfate	64.0	5.00			63.3			1.10	20	

Environmental Lab of Texas

#### General Chemistry Parameters by EPA / Standard Methods - Quality Control

#### **Environmental Lab of Texas**

	Dec 1	Reporting	T	Spike	Source	N/DEC	%REC	DDD	RPD	N-4
Analyte	Result	Limit	Units	Level	Result	%REC	Limits	KPD	Limit	Notes
Batch EB61002 - Water Extraction										
Blank (EB61002-BLK1)				Prepared: 0	02/09/06 A	nalyzed: 02	2/10/06	_		
Chloride	ND	0.500	mg/kg					·		
LCS (EB61002-BS1)				Prepared: 0	02/09/06 A	nalyzed: 02	2/10/06			
Chloride	8.93		mg/L	10.0		89.3	80-120			•
Calibration Check (EB61002-CCV1)				Prepared: 0	02/09/06 A	nalyzed: 02	2/10/06			
Chloride	9.37		mg/L	10.0		93.7	80-120			
Duplicate (EB61002-DUP1)	Sour	ce: 6B06018-	33	Prepared: 0	02/09/06 A	nalyzed: 02	2/10/06			
Chloride	12.2	5.00	mg/kg		12.2			0.00	20	
Batch EB61303 - Water Extraction										
Blank (EB61303-BLK1)				Prepared: 0	02/11/06 Ai	nalyzed: 02	2/13/06			
Chloride	ND	0.500	mg/kg							
LCS (EB61303-BS1)				Prepared: 0	02/11/06 Ai	nalyzed: 02	2/13/06			
Chloride	9.10		mg/L	10.0		91.0	80-120			
Calibration Check (EB61303-CCV1)				Prepared: 0	02/11/06 Ai	nalyzed: 02	2/13/06			
Chloride	9.34		mg/L	10.0		93.4	80-120			
Duplicate (EB61303-DUP1)	Sour	ce: 6B08020-	12	Prepared: 0	02/11/06 A	nalyzed: 02	2/13/06			
Chloride	747	20.0	mg/kg		629			17.2	20	
Batch EB61607 - Water Extraction										
Blank (EB61607-BLK1)				Prepared &	Analyzed:	02/14/06				
Chloride	ND	0.500	mg/kg							

Environmental Lab of Texas

#### Reported: 02/21/06 13:10

#### General Chemistry Parameters by EPA / Standard Methods - Quality Control

#### **Environmental Lab of Texas**

		Reporting		Spike	Source		%REC		RPD	
Analyte	Result	Limit	Units	Level	Result	%REC	Limits	RPD	Limit	Notes
Batch EB61607 - Water Extraction									_	
LCS (EB61607-BS1)				Prepared 8	2 Analyzed:	02/14/06				
Chloride	9.05		mg/L	10.0		90.5	80-120			
Calibration Check (EB61607-CCV1)				Prepared 8	k Analyzed:	: 02/14/06				
Chloride	9.22		mg/L	10.0		92.2	80-120			
Duplicate (EB61607-DUP1)	Sou	rce: 6B02016-	·09	Prepared 8	Analyzed:	02/14/06				
Chloride	585	25.0	mg/kg		589			0.681	20	
Batch EB61608 - Water Extraction										
Blank (EB61608-BLK1)				Prepared &	Analyzed:	02/15/06				
Chloride	ND	0.500	mg/kg							
LCS (EB61608-BS1)				Prepared 8	Analyzed:	02/15/06				
Chloride	9.06		mg/L	10.0		90.6	80-120			
Calibration Check (EB61608-CCV1)				Prepared 8	Analyzed:	02/15/06				
Chloride	9.16	··········	mg/L	10.0		91.6	80-120			
Duplicate (EB61608-DUP1)	Sou	rce: 6B02016-	-46	Prepared &	Analyzed:	02/15/06				
Chloride	407	10.0	mg/kg		389			4.52	20	
Batch EB61618 - Water Extraction										
Blank (EB61618-BLK1)				Prepared: (	02/16/06 A	nalyzed: 02	2/20/06			
Chloride	ND	0.500	mg/kg							

Environmental Lab of Texas

#### **Reported:** 02/21/06 13:10

#### General Chemistry Parameters by EPA / Standard Methods - Quality Control

#### **Environmental Lab of Texas**

Anabata	D coult	Reporting	Linita	Spike	Source	9/ DEC	%REC	מת	RPD Limit	Natas
Analyte	Kesun	Lun	Units	Level	Result	70KEC	Lumis	KFD		notes
Batch EB61618 - Water Extraction										
LCS (EB61618-BS1)				Prepared: (	02/16/06 A	nalyzed: 02	2/20/06			
Chloride	9.13	0.500	mg/kg	10.0		91.3	80-120			
Calibration Check (EB61618-CCV1)				Prepared: (	02/16/06 A	nalyzed: 02	2/20/06			
Chloride	9.96		mg/L	10.0		99.6	80-120			
Duplicate (EB61618-DUP1)	Sou	rce: 6B15003-	•05	Prepared: (	02/16/06 A	nalyzed: 02	2/20/06			
Chloride	1360	25.0	mg/kg		1370			0.733	20	

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.

12600 West I-20 East - Odessa, Texas 79705 - (432) 563-1800 - Fax (432) 563-1713

Environmental Plus, Incorporated	Project: Chesapeake/ Antelope Ridge Unit #5	Fax: 505-394-2601
P.O. Box 1558	Project Number: 160046	Reported:
Eunice NM, 88231	Project Manager: Iain Olness	02/21/06 13:10

#### **Notes and Definitions**

J Detected but below the Reporting Limit; therefore, result is an estimated concentration (CLP J-Flag).

- 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 Just

\_\_\_\_\_2/21/2006

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.

Date:

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Page 20 of 20

12600 West I-20 East - Odessa, Texas 79705 - (432) 563-1800 - Fax (432) 563-1713

ce, NM 88231 LAB: ELT	SLUDGE ANALYSS SLUDGE DTHER: ACID/BASE ACID/BASE DCE/COOL TEL CHLORIDES (CI) ANALYSS SULFATES (SO4 <sup>T</sup> ) ANALYSS ANALYS ANALYS	X     31-Jan-06     12:45     X     <
<b>al Plus, Inc.</b> NM 88231 P.O. Box 1. 05) 394-2601	Ervironmental Plus, Inc. lain Olness P.O. BOX 1558 Eunice New Mexico 88231 505-394-3481 / 505-394-2601 Chesapeake Energy Antelope Ridge Unit #5 UL-L, Sect. 33, T 23 S, R 34 E 160046 George Blackburn George Blackburn (G)RAB OR (C)OMP. SAMPLE I.D. SAMPLE I.D.	3)   6   1     6')   6   1 $(-11)$ 6   1 $(-11)$ 6   1 $(-21)$ 6   1 $(-21)$ 6   1 $(-21)$ 6   1 $(-21)$ 6   1 $(-21)$ 6   1 $(-31)$ 6   1 $(-31)$ 6   1 $(-41)$ w. sccu. a. $b_1 d_1 b_1 d_2 d_3 d_1 d_1 d_2 d_1 d_1 d_2 d_1 d_1 d_1 d_1 d_1 d_1 d_1 d_1 d_1 d_1$
Environment 2100 Avenue O, Eunice, (505) 394-3481 FAX: (5	Company Name EPI Project Manager Malling Address City, State, Zip EPI Phone#/Fax# Citent Company Facility Name Location Project Reference EPI Sampler Name LAB I.D.	- C1 SB-1 (2- - C2 SB-1 (5- - C2 SB-1 (15 - C4 SB-1 (15 - C4 SB-1 (15 - C5 SB-1 (20 - C6 SB-1 (21 - C7 SB-1 (20 - C8 SB-1 (20 - C9 SB-1 (20 -

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EPI Phone#/Fax#	505-394-3481 / !	05-394-20	<u>ق</u>					-11-	Ì	یسر ۵.												
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Facility Name	Antelope Ridge	Unit #5							-													
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<b>Project Reference</b>	160046									, XQ	558									-		_
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# **Environmental Plus, Inc.**

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2100 Avenua O E	(505) 394-3481 F.	Company Name	EP! Project Manac	Mailing Address	City, State, Zip	EPI Phone#/Fax#	<b>Client Company</b>	Facility Name	Location	<b>Project Reference</b>	EPI Sampler Name					60209n	21 1S	Z3 2S	24 35	S5 4S	26 5 <mark>3</mark>	27 6S	26 7 S	29 8 S	30 9 <b>S</b>	3/ 10/5	Samphyr Relinquished:	Relinquished by:	Delivered by:		

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# Chain of Custody Form

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Environm	2100 Avenue O, E	(505) 394-3481 Fi	Company Name	EPI Project Manag	Mailing Address	City, State, Zip	EPI Phone#/Fax#	<b>Client Company</b>	Facility Name	Location	Project Reference	EPI Sampler Name			LAB I.D.		e Bou	32 1/51	32 28	24 38	ઉ. 4 SI	34 5151	37 68	38 751	34 851	4-0 9SI	41 10 SI	Samerer Belinquished:	Relinquished by:	Delivered by:	

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Antelope Ridge Unit #5     Antelope Ridge Unit #5     Antelope Ridge Unit #5       10-L-L     Sectore Blackburn     Ento Olio 8333       10-L-L     Sectore Blackburn     Ento Noi 558       6-orge Blackburn     Antelope Ridge Unit #5     P. 0. Box 158       6-orge Blackburn     Antelope Ridge Cont average     Ento Noi 558       6-orge Blackburn     Antelope Ridge Cont average     Ento Noi 558       6-orge Blackburn     Antelope Ridge Cont average     Sample Cont average       6-orge Blackburn     Antelope Ridge Cont average     Sample Cont average       6-orge Blackburn     Antelope Ridge Cont average     Sample Cont average       6-orge Ridge Ridge Cont average     Sample Cont average     Sample Cont average       6-orge Ridge Ridge Cont average     Sample Cont average     Sample Ridge Cont average       6-orge Ridge Cont average     Sample Cont average     Sample Ridge Cont average       7-orge Ridge Cont average     Reference     Sample Ridge Cont average       7-orge Ridge Cont average     Reference     Sample Ridge Cont average       7-orge Ridge Ridge Cont average     Reference     Sample Ridge Cont average       7-orge Ridge Ridge Ridge Cont averante Ridge Ri	Chesapeake Energ	gy		-					F					-							
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150046     FO. Box 1538       George Blackburn     MATRIX     Processen     StanpLing       George Blackburn     MATRIX     Processen     StanpLing       Martix     MATRIX     Processen     StanpLing       SAMPLE I.D.     MATRIX     Processen     StanpLing       SAMPLE I.D.     MATRIX     Processen     StanpLing       Acrossen     G 1     X     O1-Feb-06     12:11     X     X       Acrossen     G 1     X     O1-Feb-06     12:11     X     X     X     X       Acrossen     G 1     X     O1-Feb-06     12:26     X <t< td=""><td>UL-L, Sect. 33, T</td><td>23 S, R 34</td><td>ш.</td><td>Г</td><td></td><td></td><td></td><td>Attr</td><td>n: lai</td><td>in Olness</td><td></td><td>_</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></t<>	UL-L, Sect. 33, T	23 S, R 34	ш.	Г				Attr	n: lai	in Olness		_									
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Environ	mental Plus, I	nc.															<u></u>	nain	ð	C	<u>sto</u>	AF F	LO LO	51
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<b>Company Name</b>	Environment	al Plus,	лс.								B	(ETo					NW	ALV	SIG	E		E		
EPI Project Man	ager lain Olness					┡		Ì								-				L		F		
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<b>Client</b> Company	Chesapeake E	nergy			Į	r						E					-							
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Page 6 of 6

#### Environmental Lab of Texas Variance / Corrective Action Report - Sample Log-In

Client:	EPI	
Date/Time:	2/2/06	2:45
Order #:	6B02016	
Initials:	Cle	

#### Sample Receipt Checklist

Temperature of container/cooler?	Yes	No	3,0 CI
Shipping contained cooler in good condition?	YE	No	
Custody Seals intact on shipping container/cooler?	Yes	No	CNCI present
Custody Seals intact on sample bottles?	X3S	No	Not present
Chain of custody present?	kes	No	
Sample Instructions complete on Chain of Custody?	Kas I	No	
Chain of Custody signed when relinquished and received?	tes	No	
Chain of custody agrees with sample label(s)	Xas	No	
Container labels legible and intact?	Yes	No	
Sample Matrix and properties same as on chain of custody?	Xes	No	
Samples in procer container/bottle?	Yes !	Na	
Samples properly preserved?	Xof	No	
Sample bottles intact?	Yes	No	
Preservations documented on Chain of Custody?	1 73	No	
Containers documented on Chain of Custody?	Yes	No	
Sufficient sample amount for indicated test?	1 Yes	Nc	
All samples received within sufficient hold time?	Y Co	No	
VOC samples have zero headspace?	YES	No	Nct Acclicable

Other observations: · · · ·

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 Variance Documentation:

 Contact Person: -\_\_\_\_\_ Date/Time: \_\_\_\_\_\_ Contacted by: \_\_\_\_\_\_
 Regarding:

\_\_\_\_\_

Corrective Action Taken:

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ENVIRONMENTAL PLUS, INC. 2100 AVENUE O EUNICE, NM 88231

ATTN: IAIN OLNESS CLIENT PROJ. ID: 160046 ANTELOPE RIDGE UNIT #5 REPORT DATE: 05/24/06 SAMPLE DATE: 05/22/06

AL JOB #: A05221

**Project Summary:** 

On May 23, 2006, this laboratory received 17 soil samples.

Samples were analyzed according to instructions in accompanying chain-of-custody. Results of analysis are summarized on the following pages. Please see quality control report for a summary of QC data pertaining to this project.

Samples will be stored for 30 days after completion of analysis, then disposed of in accordance with State and Federal regulations. Samples may be archived by prior arrangement.

If you have any questions, please contact Sample Control at (505) 397-0295

11.0 Hiram Cueto Lab Manager

Environme PO Box 15 Eunice, NN	ental Plus, Inc. 558 M 88231	Proj Pr Proje	ect Number oject Name ect Manager	:: 160046 :: Antelope Ridge Ur :: Iain Olness	nit #5	Work C A05	)rder #: 221
		Anions by Ion Chrom	atography	- EPA Method 30	0.0		
			Rep. Lim.	· · · · · · · · · · · · · · · · · · ·			
Analyte		Result	@ D.F.=1	Units	Analyzed	Method	Notes
BH-1 (6')	(A05221) Soil	Sampled: 05/22/06	Received	: 05/23/06			
Chloride		140	10	mg/Kg	05/24/06	EPA 300.0	
BH-2 (6')	(A05222) Soil	Sampled: 05/22/06	Received	: 05/23/06			
Chloride		360	10	mg/Kg	05/24/06	EPA 300.0	
BH-3 (6')	(A05223) Soil	Sampled: 05/22/06	Received	: 05/23/06			
Chloride		780	10	mg/Kg	05/24/06	EPA 300.0	
BH-4 (6')	(A05224) Soil	Sampled: 05/22/06	Received	: 05/23/06			
Chloride		1,500	10	mg/Kg	05/24/06	EPA 300.0	
BH-5 (6')	(A05225) Soil	Sampled: 05/22/06	Received	: 05/23/06			
Chloride		2,400	10	mg/Kg	05/24/06	EPA 300.0	
SW-1 (3')	(A05226) Soil	Sampled: 05/22/06	Received	: 05/23/06			
Chloride		940	10	mg/Kg	05/24/06	EPA 300.0	
SW-2 (3')	(A05227) Soil	Sampled: 05/22/06	Received	: 05/23/06			
Chloride		1,200	10	mg/Kg	05/24/06	EPA 300.0	
SW-3 (3')	(A05228) Soil	Sampled: Sample ID	Received	: BH-1 (6')	<b>.</b>		
Chloride		390	10	mg/Kg	05/24/06	EPA 300.0	

Why QC Officer

Approved By Argon Laboratories

> 2126 W. Marland Ave., Hobbs, NM 88240 • Phone (505) 397-0295 • Fax (505) 397-0296 email: info@argonlabs.com

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Environmer PO Box 155	ntal Plus, Inc. 58	Pro P	ject Number: roject Name:	: 160046 : Antelope Ridge U	Jnit #5	Work C	Order #:
Eunice, NM	88231		ect Manager:	lain Olness		A05	221
		Anions by Ion Chron	natography	- EPA Method 3	500 <b>.</b> 0		
			Rep. Lim.				
Analyte		Result	@D.F.=1	Units	Analyzed	Method	Notes
SW-4 (3')	(A05229) Soil	Sampled: 05/22/06	Received:	05/23/06			
Chloride		300	10	m <b>g</b> /Kg	05/24/06	EPA 300.0	
SW-5 (3')	(A05230) Soil	Sampled: 05/22/06	Received:	05/23/06			
Chloride		500	10	mg/Kg	05/24/06	EPA 300.0	
SW-6 (3')	(A05231) Soil	Sampled: 05/22/06	Received:	05/23/06			
Chloride		1,800	10	mg/Kg	05/24/06	EPA 300.0	
SW-7 (3')	(A05232) Soil	Sampled: 05/22/06	Received:	05/23/06			
Chloride		1,700	10	mg/Kg	05/24/06	EPA 300.0	
SW-8 (3')	(A05233) Soil	Sampled: 05/22/06	Received:	05/23/06			
Chloride		1,000	10	mg/Kg	05/24/06	EPA 300.0	
SW-9 (3')	(A05234) Soil	Sampled: 05/22/06	Received:	05/23/06			
Chloride		460	10	mg/Kg	05/24/06	EPA 300.0	
SW-10 (3')	(A05235) Soit	Sampled: 05/22/06	Received:	05/23/06			
Chloride		3,300	10	mg/Kg	05/24/06	EPA 300.0	
SW-11 (3')	(A05236) Soil	Sampled: 05/22/06	Received:	05/23/06			
Chloride		3,800	10	mg/Kg	05/24/06	EPA 300.0	

h QC Officer

Approved By

Argon Laboratories

Environmental Plus, Inc. PO Box 1558 Eunice, NM 88231 Project Number: 160046 Project Name: Antelope Ridge Unit #5 Project Manager: Iain Olness

Work Order #: A05221

#### Anions by Ion Chromatography - EPA Method 300.0

			Rep. Lim.				
Analyte		Result	@ D.F.=1	Units	Analyzed	Method	Notes
SW-12 (3')	(A05237) Soil	Sampled: 05/22/06	Received:	05/23/06			
Chloride		5,100	10	mg/Kg	05/24/06	EPA 300.0	

Approved By Argon Laboratories

QC Officer

2126 W. Marland Ave., Hobbs, NM 88240 • Phone (505) 397-0295 • Fax (505) 397-0296 email: info@argonlabs.com

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Environmental Plus, Inc. P.O. Box 1558 Eunice, NM 88231 Project Number: 160046 Project Name: Antelope Ridge Unit #5 Project Manager: Iain Olness

Work Order #: A05221

#### EPA 300.0 - Quality Control

				Reporting		<u>, , , , , , , , , , , , , , , , , , , </u>
Analyte	MS Rec	MSD Rec	RPD	Limit	Units	Notes
Matrix Spike / Matrix Spike Duplicate					Spi	ked Sample ID: A05201
Chloride	107%	101%	6%	10	mg/Kg	
	<u></u>			Reporting		
Analyte	LCS Rec	LCSD Rec	RPD	Limit	Units	Notes
Laboratory Control Spike / Laboratory	Control Sp	ike Duplicate				LCS ID: LCS0524A
Chloride	98%	104%	6%	10	mg/Kg	

Note: Daily method blank showed no contamination at or above the reporting limits.

Environ	nental Plus,	Inc.															0	haii	0	õ	<u>ust</u>	췽	Ц	E
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(505) 394-3481	FAX: (505) 394-2601																				0			
<b>Company Name</b>	Environme	ntal Plus,	lnc.			100					B	III	() () () () () () () () () () () () () (				A	IAL	SIS	E	<u>o</u>	SI		
EPI Project Man	ager lain Olness	(0)																-	-	<u> </u>	<u> </u>	L		
<b>Mailing Address</b>	P.O. BOX 1	558									-									<u> </u>				
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<b>Client Company</b>	Chesapeak	erergy				<b>[</b>																		<u>.</u>
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<b>Company Name</b>	Environmer	ntal Plus,	Inc									III	0				W	ALEY	SIS	BE	<u>SUF</u>	ls.		
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<b>Client Company</b>	Chesapeake	Energy				<u> </u>						È									*****			
<b>Facility Name</b>	Antelope Ri	dge Unit	#5														-	-			-			
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## **Argon Laboratories Sample Receipt Checklist**

Client Name:	Environmental	Plus,	Inc.	[	Date & Ti	ime Rece	ived:		05/23/06	j		15:08	_	
Project Name:	Antelope Ridge	Unit	#5	(	Client Pro	oject Nun	nber:	160046	;				_	
Received By:	Pat			Mat	rix:	Water		Soil	$\Box$					
Sample Carrier:	Client 🔽	Lab	oratory		Fed Ex	•	UPS		Other					
Argon Labs Project	Number:	A05	221			_								
Shipper Container in	good condition?					Samples	received	in prope	er containe	rs?	Yes	2	No	
	N/A	Yes	$\overline{\mathbf{v}}$	No		Samples	received	intact?			Yes	5	No	
Samples received un	der refrigeration?	Yes	$\Box$	No		Sufficien	t sample	volume	for request	ed tests?	? Yes	J	No	
Chain of custody pres	sent?	Yes	•	No		Samples	received	within h	olding time	e?	Yes	V	No	
Chain of Custody sign	ned by all parties?	Yes	V	No		Do samp	oles conta	in prope	r preserva N/A	tive?	Yes		No	С
Chain of Custody ma	tches all sample la	bels?				Do VOA v	vials contai	n zero he	adspace?					
		Yes	J	No				(None s	ubmitted	☑)	Yes		No	
	ANY "M	lo" Ri	esponsi	E MUST	BE DETA	AILED IN 1	THE COM	MENTS	SECTION	I BELON	V			
					•					<u> </u>				
Date Client Contac	ted:				Pe	rson Con	itacted:							
Contacted By:					Subject	:				. <u></u>	v=			
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ENVIRONMENTAL PLUS, INC. 2100 AVENUE O EUNICE, NM 88231

ATTN: IAIN OLNESS CLIENT PROJ. ID: 160046 ANTELOPE RIDGE UNIT #5 REPORT DATE: 06/01/06 SAMPLE DATE: 05/30/06

AL JOB #: A05261

Project Summary:

On May 30, 2006, this laboratory received 2 soil samples.

Samples were analyzed according to instructions in accompanying chain-of-custody. Results of analysis are summarized on the following pages. Please see quality control report for a summary of QC data pertaining to this project.

Samples will be stored for 30 days after completion of analysis, then disposed of in accordance with State and Federal regulations. Samples may be archived by prior arrangement.

If you have any questions, please contact Sample Control at (505) 397-0295

Lab Manager

Environmental Plus, Inc. PO Box 1558 Eunice, NM 88231 Project Number: 160046 Project Name: Antelope Ridge Unit #5 Project Manager: Iain Olness

Work Order #: A05261

#### Anions by Ion Chromatography - EPA Method 300.0

			Rep. Lim.				_
Analyte		Result	@ D.F.=1	Units	Analyzed	Method	Notes
SW-13 (3')	(A05261) Soil	Sampled: 05/30/06	Received:	05/31/06			
Chloride		110	10	mg/Kg	05/31/06	EPA 300.0	
SW-14 (3')	(A05262) Soil	Sampled: 05/30/06	Received: (	05/31/06			
Chloride		150	10	mg/Kg	05/31/06	EPA 300.0	

Approved By Argon Laboratories

QC Officer

Environmental Plus, Inc.	Project Number: 160046	
P.O. Box 1558	Project Name: Antelope Ridge Unit #5	Work Order #:
Eunice, NM 88231	Project Manager: Iain Olness	A05261

#### EPA Method 300.0 - Quality Control

	······································		······	Reporting		
Analyte	MS Rec	MSD Rec	RPD	Limit	Units	Notes
Matrix Spike / Matrix	Spike Duplicate				Spi	ked Sample ID: A05273
Chloride	95%	90%	5%	10	mg/Kg	
				Reporting		
Analyte	LCS Rec	LCSD Rec	RPD	Limit	Units	Notes
Laboratory Control S	bike / Laboratory Contro	ol Spike Dupli	icate			LCS ID: LCS0531A
Chloride	97%	95%	2%	10	mg/Kg	

Note: Daily method blank showed no contamination at or above the reporting limits.

Environ	mental Plus,	Inc.															ð	ain	of	C	sto	Ś	Ъ	E
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<b>Company Name</b>	Environme	ntal Plus,	Ē			0.00							0				AN	ALY	SIS	REC		ST		
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<b>Client Company</b>	Chesapeake	: Energy				Γ						È												
Facility Name	Antelope R	idge Unit	#2																					
Location	UL-L, Sect.	33, T 23 (	ц В	34	lu	Γ				Ąţ	ti:-	ain	Olness											
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LAB I.D.	SAMPLE I.D.		ମଠ ସAମ(ତ)	# CONTAIN	M UNUOAO	AWETEWA			OTHER:	ACID/BASE	CE/COOF	ЯЗНТО	DATE	TIME	31EX 8021E	Matos Hat		SULFATES			HVa			
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Page 1 of 2

# Argon Laboratories Sample Receipt Checklist

Client Name:	Environmental	Plus,	Inc.	1	Date & Ti	ime Rece	ived:	05/31/0	06/07:30					
Project Name:	Antelope Ridge	: Unit	#5		Client Pro	oject Nurr	iber:	160046	5					
Received By:	Hiram			Mat	trix:	Water		Soil	2					
Sample Carrier:	Client 🗸	Lab	oratory		Fed Ex	· 🗍	UPS		Other					
Argon Labs Projec	t Number:	A05	261			-								
Shipper Container in	good condition?					Samples	received	d in prope	er containe	ers?	Yes	7	No	
	N/A	Yes	$\checkmark$	No		Samples	received	d intact?			Yes	<b>I</b>	No	
Samples received un	nder refrigeration?	Yes	•	No		Sufficien	t sample	volume	for reques	ted tests	? Yes	<b>\</b>	No	
Chain of custody pre	sent?	Yes	•	No		Samples	received	d within h	olding tim	e?	Yes	7	No	
Chain of Custody sig	ned by all parties?	Yes	7	No		Do samp	les conta	ain prope	r preserva N/A	ntive?	Yes		No	
Chain of Custody ma	tches all sample la	ibels?				Do VOA v	ials conta	in zero he	adspace?					
		Yes	7	No				(None s	ubmitted	<b>!</b> )	Yes		No	
	ANY "I	10" RI	ESPONS	E MUST	BEDETA	AILED IN 1		MMENTS	SECTIO		V			
Date Client Contac	cted:				Pe	rson Con	tacted:	<del></del>						
Contacted By:					Subject:	:	<u> </u>							
Comments:												. <u></u>		_
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**APPENDIX II** 

**PROJECT PHOTOGRAPHS** 



Photograph #1 – Lease Sign.



Photograph #2 – Looking westerly at bermed tank battery.



Photograph #3 – Looking northerly at tank battery.



Photograph #4 – Looking at well head.



Photograph #5 – Looking westerly at tank battery.



Photograph #6 – Looking southerly at initial excavation area.



Photograph #7 – Looking northerly at initial excavation area.



Photograph #8 – Looking westerly at initial excavation area.



Photograph #9 – Looking westerly at initial excavation area.



Photograph #10 - Looking easterly at excavation area.


Photograph #11 – Looking west at excavation area.



Photograph #12 – Looking northerly at excavation area.



Photograph #13 – Looking westerly at liner placement.



Photograph #14 – Looking westerly at liner placement.



Photograph #15 – Looking southeasterly at liner placement.



Photograph #16 - Looking westerly at liner placement.



Photograph #17 - Looking southwesterly at liner placement.



Photograph #18 – Looking southerly at liner placement.



Photograph #19 – Backfilling excavation.



Photograph #20 – Backfilling excavation.



Photograph #21 – Remediated site.



Photograph #22 – Remediated site.

## **APPENDIX III**

## INFORMATION AND METRICS FORM INITIAL AND FINAL NMOCD FORM C-141

▲	Incident	Date:	NMOCD N	lotified:				
Chasanaaka	Historical							
Chesapeake								
Information and Metrics	<u> </u>							
Site: Antelope Ridge Unit #5		Assigned Sit	e Reference : #16	60046				
Company: Chesapeake Energy		•••	<u> </u>					
Street Address: 1616 West Bender								
Mailing Address: P.O. Box 190	000 10							
City, State, Zip: Hobbs, New Mexico	88240							
Representative: Bradley Blevins	1462 (00			- 1.172				
Representative Telephone: (505) 391	-1462  ext.  6224	4						
Telephone:				1				
Fluid volume released (bbls): Unknown	n	Reco	vered (bbls): Un	known				
>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 wi	thin 15 days (A	lso applies to u	nauthorized releas	es of 50-500 mcf Natural Gas)				
Leak, Spill, or Pit (LSP) Name: Antelo	pe Ridge Unit	#5		an a				
Source of contamination:				······································				
Land Owner, i.e., BLM, ST, Fee, Other	: Jim Keller	·····						
LSP Dimensions: 100 feet by 17 feet								
LSP Area: ~1.700 ft <sup>2</sup>				······································				
Location of Reference Point (RP):								
Location distance and direction from R	кР:							
Latitude: N 32º 15' 36.66"								
Longitude: W 103° 28' 49.19"								
Elevation above mean sea level: 3,524	feet							
Feet from North Section Line:								
Feet from West Section Line:								
Location- Unit or 1/4/4: NW1/4 of the SV	W <sup>1</sup> / <sub>4</sub>	Unit Let	ter: L	<u>,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,</u>				
Location- Section: 33								
Location- Township: T23S				<u>, 2000 - 1990 - 1990 - 1990 - 1990 - 1990 - 1990 - 1990 - 1990 - 1990 - 1990 - 1990 - 1990 - 1990 - 1990 - 199</u>				
Location- Range: R34E								
Surface water body within 1000 ' radiu	Surface water body within 1000 ' radius of site: none							
Domestic water wells within 1000' radius of site: none								
Agricultural water wells within 1000' r	adius of site:	none						
Public water supply wells within 1000' radius of site: none								
Depth from land surface to groundwater (DG): ~475 feet								
Depth of contamination (DC): unknow	n							
Depth to groundwater (DG - DC = DtGW): ~475 feet								
1. Groundwater	2. We	Ilhead Protect	tion Area	3. Distance to Surface Water Body				
If Depth to GW <50 feet: 20 points If <1000' from water source, or;<200' from <200 horizontal feet: 20 points								
If Depth to GW 50 to 99 feet: 10 points	private domes	stic water source	ce: 20 points	200-1000 horizontal feet: 10 points				
If Depth to GW >100 feet: $0 \text{ points}$ If >1000' from water source, or; >200' from private domestic water source: $0 \text{ points}$ >1000 horizontal feet: $0 \text{ points}$								
Site Rank $(1+2+3) = 0$								
Total Site Ranking Score and Acceptable Concentrations								
Parameter >19		10-19		0-9				
Benzene <sup>1</sup> 10 ppm		10 ppn	n	10 ppm				
		<u></u>		<u> </u>				
BTEX <sup>1</sup> 50 ppm	1	50 ppn	n	50 ppm				
BTEX1   50 ppm     TPH   100 ppm		50 ppn 1.000 pr	n om	50 ppm 5,000 ppm				

District I 1625 N. French Dr., Hobbs, NM 88240 District II 1301 W. Grand Auguno, Artonia, NM 88210				State Energy Mine	State of New Mexico nergy Minerals and Natural Resources				Form C-141 Revised October 10, 2003			
1301 W. Grand Avenue, Artesia, NM 88210 Oil Conse   District III 0100 Rio Brazos Road, Aztec, NM 87410 1220 Sou   District IV 1220 Sou				nservatio outh St. I	n Divis Francis	ion Dr.	Submit 2 Copies to appropriate District Office in accordance with Rule 116 on back					
1220 S. St. Franci	1220 S. St. Francis Dr., Santa Fe, NM 87505 Santa			ta Fe, N <u>N</u>	?e, NM 87505			side of form				
		F	Release	e Notificatio	on and	Correc	tive Action		_			
	OPFR /					ATOR						
Name of Co	Name of Company: Chesapeake Energy						Contact: Bradley Blevins					
Address: P.	.O. Box 1	90	0.		Telep	<b>Telephone No.:</b> (505) 391-1462 ext. 6224						
Facility Na	me: Ante	lope Ridge	Unit #5		Facil	Facility Type: Tank Battery						
Surface Ow	vner: Jim	Keller		Mineral O	wner:							
Burlace Of												
Unit Lattar	Section	Township	Dange	LUCATIC Feet from the	DN OF R	LLEAS	E Feet from the	Fast/Wast I in	County			
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		L	atitude:	N 32° 15' 36.6	<u>6"</u> Longit	ude: <u>W</u>	10 <u>3°</u> 28' 49.19"		50			
·				NATUR	E OF RE	LEASE		(28.0				
Type of Relea	se: Petrole	um and/or pro	duction fl	uids	Vol Det	Volume of Release: Unknown Volume Recovered: Unknown						
Source of Rea	ease: vallo	us sources			Hist	Historical Historical						
Was Immedia	te Notice C	Given?			If Y	If YES, To Whom?						
			Yes 🔟	No 🛛 Not Requ	lired							
By Whom? Bi	radley Blev	ins abod?			Dat	Date and Hour:						
was a water	course Rea		Yes 🛛 1	No	Not	Not Applicable						
Depth to grou	ndwater:	~475 ft bgs										
If a Watercou	rse was Im	pacted, Desc	ribe Fully	*.* Not Applicable								
Describe Cau	se of Probl	em and Remo	edial Acti	on Taken.* The re	lease is histe	orical from	various sources.					
Describe Area	Affected a	and Cleanup	Action Ta	ken.* Approximat	tely 1,700 so	juare-feet	of surface area was	s impacted by the	e release. Soil borings			
were advanced	to collect s	soil samples to	o delineate	extent of impacted	l soil. A ren	ediation p	proposal will be dev	veloped based or	soil sample analyses.			
and regulations all operators are required to report and/or file certain release notifications and perform corrective actions for releases which may												
endanger publi	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 lial	bility should human head	d their operations the environment	ons have f	ailed to adequately	investigate	and remed	liate contamination	that pose a thre	at to ground water,			
for compliance	with any o	other federal, s	state, or lo	cal laws and/or reg	ulations.		141 report does not	t teneve the oper	ator of responsionity			
	£			,		<u>C</u>	DIL CONSERV.	ATION DIVI	SION			
Signature:	ets.	Zod lo.	He	un			FALL OF TA	× 0 0				
		- n ang			Appro	ved by Di	strict Superviser:					
Printed Name	: Bradley E	Blevins				-		-3 pli	50			
Title: Field Su	pervisor				Appro	val Date:	5 23.07	Expiration D	ate:			
E-mail Addre	E-mail Address: bblevins@chkenergy.com					Conditions of Approval: Attached			Attached 🗍			
Date: 5.2	Date: 5.22.37 Phone: (505) 391-1462 ext. 6224											
* Attach Add	itional SI	heets If Ne	cessary									

<u>District I</u> 1625 N. French D <u>District II</u>	<u>ict I</u> State of M 5 N. French Dr., Hobbs, NM 88240 Energy Minerals a					New Mexico and Natural R	esources	Form C-141 Revised October 10, 2003	
1301 W. Grand A <u>District III</u> 1000 Rio Brazos I <u>District IV</u>	I W. Grand Avenue, Artesia, NM 88210 I W. Grand Avenue, Artesia, NM 88210 Coll Conserved Oil Conserved 1220 South 1220 South				vation Divisi St. Francis I	2 Copies to appropriate ict Office in accordance with Rule 116 on back			
1220 S. St. Franci	20 S. St. Francis Dr., Santa Fe, NM 87505 Santa Fe				, NM 87505	side of form			
		F	Release	e Notificatio	on a	nd Correc	tive Action		
				OPE	RAT	OR		itial Report/	Final Report
Name of Company: Chesapeake Energy   Contact: Bradley Blevins									
Address: P	<u>O. Box 1</u>	90			]	<b>Felephone</b> No	<b>b.:</b> (505) 391-1	462 ext. 622	4
Facility Na	me: Ante	lope Ridge	Unit #5			Facility Type	: Tank Battery		
Surface Ow	ner: Jim	Keller		Mineral C	wnei	r:		Lease N	No.:
				LOCATH		E DEI EASI		I	
Unit Letter L	Section 33	Township 23S	Range 34E	Feet from the 2,310	Nor	th/South Line S	Feet from the 990	East/West L W	ine County Lea
Latitude: <u>N 32° 15' 36.66"</u> Longitude: <u>W 103° 28' 49.19</u> "									
Type of Relea	se: Petrole	um and/or pro	duction fl	uids	2 01	Volume of Re	ecovered: Unknown		
Source of Rel	ease: Vario	ous sources				Date and Hour of Occurrence:   Date and Hour of Discovery     Historical   Historical			Hour of Discovery:
Was Immedia	te Notice (	Given?	Yes 🔲 🛛	No 🛛 Not Requ	iired	If YES, To W	hom?		
By Whom? B	adley Blev	rins				Date and Hou	r:		
Was a Watero	ourse Rea	ched?	Yes 🛛 N	lo		If YES, Volun Not Applicable	ne Impacting the	Watercourse:	
Depth to grou	ndwater:	~475 ft bgs							
If a Watercou	rse was Im	pacted, Desc	ribe Fully	*.* Not Applicable					
Describe Cau	se of Probl	em and Rem	edial Actio	on Taken.* The re	lease i	s historical from	various sources.		
Describe Area impacted soil v removal of mo isolated with a to provide path	Affected a vas excavat st soil impa polyethyle ral drainag	and Cleanup ted to a maxin acted above N ne barrier. The e	Action Ta num depth MOCD ren e excavation	ken.* Approxima of 6-ft bgs and tra nedial threshold g on was backfilled	tely 1, nsport oals in with ca	700 square-feet of ed to Sundance S the excavation s liche purchased	of surface area was Services for dispos sidewalls. Residua from an off-site so	s impacted by the sal. Laboratory all chlorides in e bource and the di	ne release. Chloride analyses confirmed xcavation floor were sturbed area contoured
I hereby certify and regulation endanger publi operator of lial surface water, for compliance	that the in all operator c health or bility should human heal	formation giv ors are require the environmed their operation the or the environment other federal, s	en above i d to report ent. The a ons have fa ronment. I tate, or loc	s true and complet and/or file certain cceptance of a C-1 ailed to adequately In addition, NMOG cal laws and/or reg	e to th releas 41 rep inves CD acc ulatior	e best of my kno e notifications a ort by the NMO tigate and remed ceptance of a C-1 is.	wledge and under nd perform correc CD marked as "Fi late contamination 41 report does no	stand that pursu tive actions for nal Report" doe n that pose a thr t relieve the ope	nant to NMOCD rules releases which may as not relieve the eat to ground water, erator of responsibility
						<u>0</u>	IL CONSERV	ATION DIV	ISION
Signature: Stanley Blavins					Approved by District Supervisor:				
Title: Field Su	pervisor				A	Approval Date:	5:23.07	Expiration	Date:
E-mail Addre	s: bblevins	@chkenergy.	com			Conditions of Approval:			Attached
Date: 5. 2	× · 07	Phone: (5	05) 391-14	162 ext. 6224					

vecessary