

# ***ENVIRONMENTAL PLUS, INC.***

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Fax: (575) 394-2601



## **Site Characterization and Work Plan**

**Vanguard  
ABO SWD #2  
Lea County, New Mexico  
Unit Letter "C", Section 2, Township 17 South, Range 36 East  
Latitude 32.868700 North, Longitude 103.326070 West**

Prepared For:

Vanguard Operating, LLC  
4001 Penbrook, Suite 201  
Odessa, Texas 79762

Prepared By:

Environmental Plus, Inc.  
2100 Ave 'O'  
Eunice, NM 88231

**August 2017**

A handwritten signature in black ink, appearing to read 'Daniel Dominguez', is written over a horizontal line.

Daniel Dominguez  
Project Manager



The following *Site Characterization and Work Plan* serves as a condensed update on field activities undertaken and proposed actions for the afore referenced Site.

**Background:**

The site is located in Unit Letter C (NE ¼ SW ¼), Section 2, Township 17 South, Range 36 East, approximately six miles east of South, in Lea County, New Mexico. The property is owned by the State of New Mexico.

The release site is located on an active tank battery; latitude 32.868700 North, longitude 103.326070 West. Area Map, Site Location Map, and Sample/Site Map are included as Figure 1, Figure 2, and Figure 3, respectively. No Initial NMOCD Form C-141 was filed for this location. The State Land Office (SLO) requested sampling at this site. There are visually stained areas across the location.

**NMOCD Site Classification:**

A search for water wells was completed utilizing the New Mexico Office of the State Engineer's (NMOSE) website. There are twenty-five wells located in the area surrounding the release site (reference *Table 1*). Also, no wells (domestic, agriculture or public) and no bodies of surface water exist within a 1,000-foot radius of the release site (reference *Figure 2*). The NMOSE database indicates average water depth is approximately 69 feet below ground surface (bgs) within a 1,760-meter radius (reference *Attachment II*).

Utilizing this information, the NMOCD guidelines indicate the ABO SWD #2 release site to have a ranking score of ten. Based on this score, the NMOCD Recommended Remedial Action Levels (RRALs) for delineation at this Site were determined as follows: Benzene – 10 mg/Kg, BTEX – 50 mg/Kg, TPH – 1,000 mg/Kg, and Chloride – 600 mg/Kg.

There are visually stained areas spread across the pad area. The pad area is caliche approximately one foot thick.

**Delineation Progress:**

From June 16-28, 2017 EPI personnel mobilized on site to collect soil samples to determine the vertical extent of contamination. A total of seventy soil samples were collected from thirteen sample locations; SP1 – SP13. Two soil samples from each sample location were sent to Cardinal Labs in Hobbs, New Mexico, for testing. Laboratory analytical results indicate Chlorides and TPH above NMOCD RRALs at surface level. Field testing indicates elevated TPH at two feet bgs at SP4 and elevated Chlorides to six feet bgs at SP1, eight feet bgs at SP7, two feet at SP8, four feet at SP9, and two feet at SP10 – SP13 (reference *Figure 3* and *Table 2*).

Portions of select soil samples were field tested for organic vapors and chloride concentrations. Soil samples collected for field testing of organic vapors were placed in self-sealing polyethylene bags and allowed to equilibrate to ~70° F. Field testing of organic vapors utilized a Mini-Rae™ Photoionization Detector (PID) equipped with a 10.6 electron-volt (eV) calibrated for benzene response. Chloride concentrations were determined via use of a LaMotte Chloride Kit (Titration Method).

Soil samples designated for laboratory analyses were collected into laboratory provided glass containers, labeled and inserted into self-sealing polyethylene bags, placed in a cooler, chilled and transported to an independent laboratory for quantification of contaminant concentrations under Chain-of-Custody protocol.

**Proposed Actions:**

Considering depth to water, field testing, and laboratory analytical data, EPI proposes to excavate the sampled areas as follows: the area around SP1, SP3, SP4, SP5, and SP6 to two feet bgs; the area around SP7 and SP8 to two feet bgs; the area around SP9 to four feet bgs; the area around SP10 – SP13 to two feet bgs (reference *Figure 3*). When excavation activities are complete a twenty-mil poly-ethylene liner will be installed over the excavation floor at SP1 and SP9. Then the excavations will be backfilled with clean caliche to finish grade. Contaminated soil will be hauled to a state approved disposal facility. Backfill will be free of deleterious material or rocks or large clumps and will continue until the excavation is closed. Upon completion of backfill activities, the area will be contoured to blend with existing pad area and protected against wind/water erosion.

**Revegetation Plan:**

As the area in question is a tank battery on an active lease pad, no seeding will be required.

**Noxious Weed Management Plan:**

In an effort to prevent the spread of noxious weeds such as African Rue, Siberian Elm, Jointed Goatgrass, Russian Olive, Camelthorn, Saltcedar, Starthistle varieties, Hoary Cress and Russian Knapweed, the area will be confirmed to be clear of any noxious weeds. If any are located they will be removed by hand and the area treated with an appropriate herbicide. After a period of three months the area will be examined for noxious weed growth and re-treated if any growth has occurred.

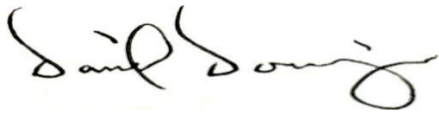
Following completion of NMOCD and NMSLO approved Proposed Actions, EPI will provide a detailed *Final Closure Report* to Vanguard, NMOCD, and NMSLO personnel. Vanguard and EPI personnel would welcome an opportunity to briefly discuss the *Work Plan* at your earliest convenience.

Should you have any questions or concerns please feel free to contact me at (575) 394-3481 or via e-mail at [ddominguezepi@gmail.com](mailto:ddominguezepi@gmail.com) or Mr. Chuck Johnston at (432) 202-4771 or via e-mail at [cjohnston@vnrlc.com](mailto:cjohnston@vnrlc.com). All official communication should be addressed to:

Mr. Chuck Johnston  
Vanguard  
4001 Penbrook, Suite 2001  
Odessa, Texas 79762

Sincerely,

ENVIRONMENTAL PLUS, INC.



Daniel Dominguez  
Environmental Consultant

cc: Amber Groves, Remediation Specialist – NMSLO, Hobbs, NM  
Chuck Johnston, EHS – Vanguard  
File

Encl.: Figure 1 – Area Map  
Figure 2 – Site Location Map  
Figure 3 – Sample/Site Map  
Table 1 – Well Data  
Table 2 – Summary of Soil Sample Field Testing and Laboratory Analytical Results  
Attachment I – Photographs  
Attachment II – NMOSE Average Depth to Groundwater  
Attachment III – Laboratory Analytical Results

## FIGURES



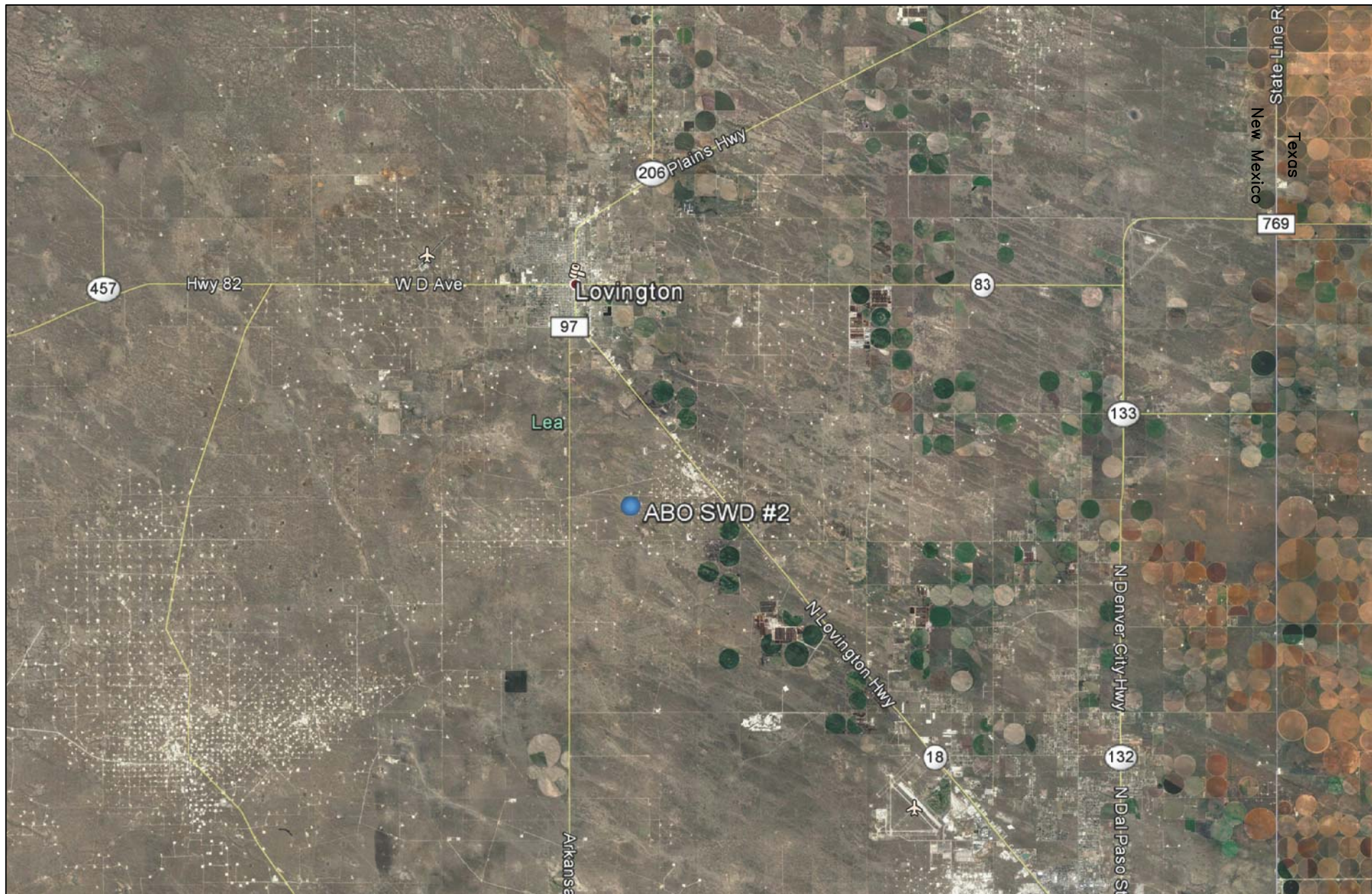
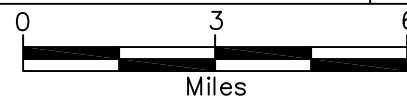


Figure 1  
Area Map  
Vanguard  
ABO SWD #2

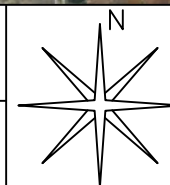
Lea County, New Mexico  
NE 1/4 of NW 1/4, Sec. 2, T17S, R36E  
N 32° 52' 07.32" W 103° 19' 33.85"  
Elevation: 3,852 feet amsl

DWG By: D Dominguez  
August 2017

REVISED:



SHEET  
1 of 1





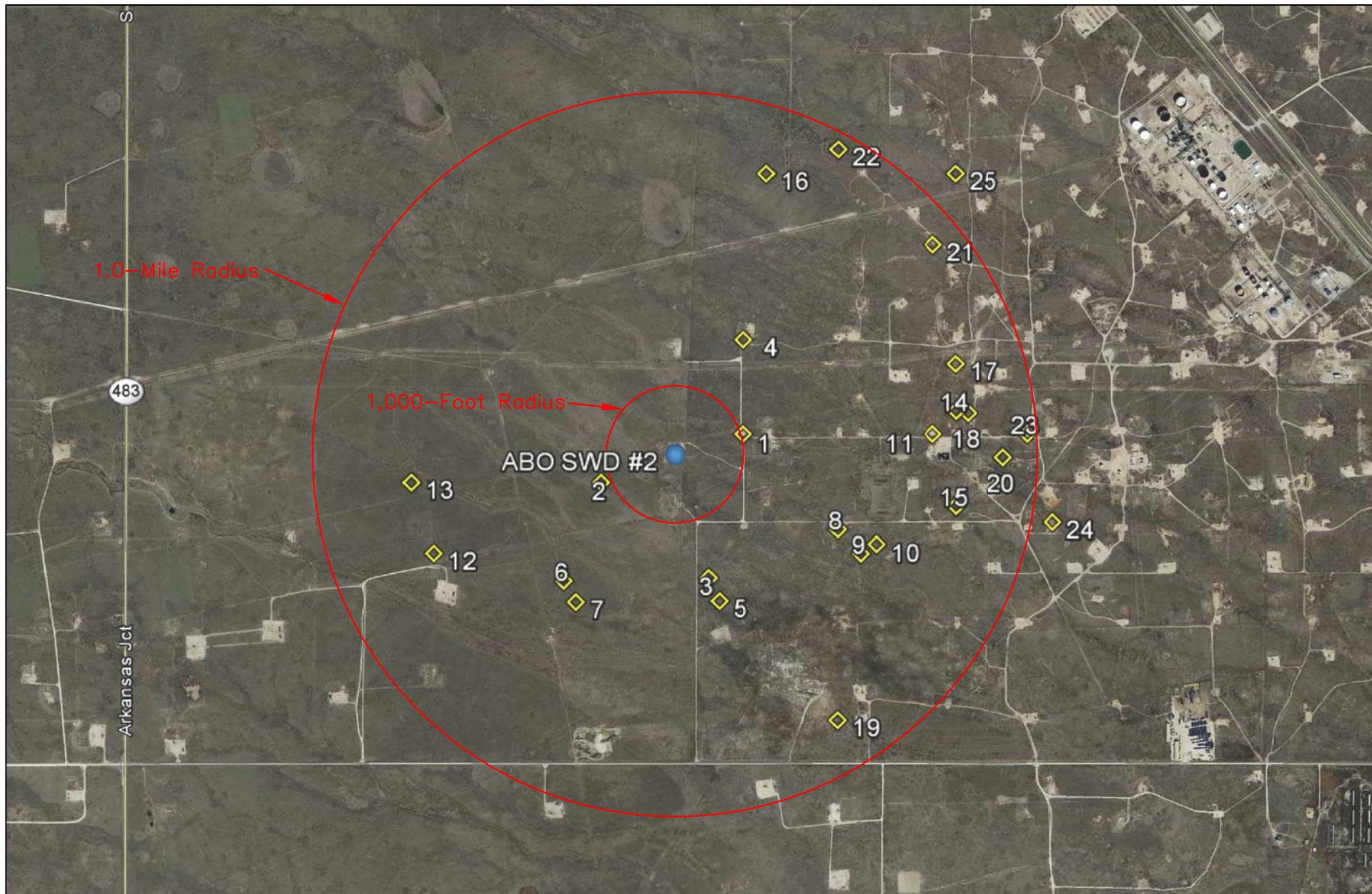
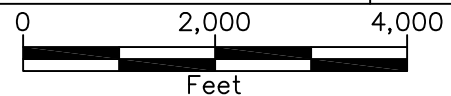


Figure 2  
Site Location Map  
Vanguard  
ABO SWD #2

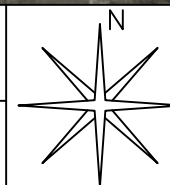
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NE 1/4 of NW 1/4, Sec. 2, T17S, R36E  
N 32° 52' 07.32" W 103° 19' 33.85"  
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1 of 1







LEGEND

X SP1 Sample Location

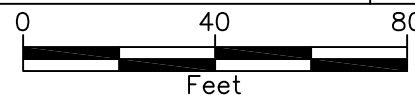
Proposed Excavation Areas

Figure 3  
Site/Sample Map  
Vanguard  
ABO SWD #2

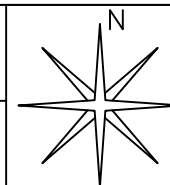
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N 32° 52' 07.32" W 103° 19' 33.85"  
Elevation: 3,852 feet amsl

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SHEET  
1 of 1





## **TABLES**

**TABLE 1**  
**Well Data**  
**Vanguard - ABO SWD #2**

Ref #	Well Number	Use	Diversion <sup>A</sup>	Owner	q64	q16	q4	Sec	Twsp	Rng	Easting	Northing	Distance <sup>B</sup>	Date Measured	Surface Elevation <sup>C</sup>	Depth to Water
																(ft bgs)
1	L 02480	IRR	0	JACK CAYTON		1	2	2	17S	36E	656897	3638063	298	24-Apr-62	3,849	58
2	L 01724	IRR	396.3	GRAHAM RANCH, LLC			1	2	17S	36E	656298	3637848	337	19-Dec-62	3,854	128
3	USGS 1				4	1	1	2	17S	36E	656762	3637454	517	08-Jan-16	3,832	72
4	L 02987	PRO	0	ARROW DRILLING COMPANY		3	4	35	16S	36E	656891	3638461	562	20-Sep-55	3,854	40
5	L 01716	IRR	351.3	THE CITY OF LOVINGTON	1	1	4	2	17S	36E	656808	3637357	646	02-Sep-55	3,842	50
6	USGS 2				3	1	2	2	17S	36E	656149	3637432	693	13-Jan-81	3,852	53
7	L 01724	IRR	396.3	GRAHAM RANCH, LLC	2	1	3	2	17S	36E	656201	3637343	752	16-Dec-62	3,853	125
8	L 03676	DOM	3	JACK CAYTON		4	2	2	17S	36E	657306	3637667	758	17-Sep-57	3,840	68
9	L 02481	IRR	424.6	CITY OF LOVINGTON	4	4	2	2	17S	36E	657405	3637566	891	09-Mar-56	3,838	76
10	USGS 3				2	4	4	2	17S	36E	657472	3637607	929	14-Jan-86	3,832	63
11	L 01713	IRR	0	JACK CAYTON		1	1	1	17S	36E	657703	3638076	1,095	09-Mar-56	3,842	72
12	L 07042	DOL	3	MASON GRAHAM	3	4	2	3	17S	36E	655593	3637539	1,107	15-Feb-73	3,873	60
13	L 01724	IRR	396.3	GRAHAM RANCH, LLC			2	3	17S	36E	655492	3637835	1,128	26-Nov-58	3,869	80
14	L 05486 POD2	MUN	258	CITY OF LOVINGTON	2	1	1	1	17S	36E	657802	3638175	1,207	01-May-92	3,844	83
15	L 05486	MUN		CITY OF LOVINGTON	2	3	1	1	17S	36E	657808	3637773	1,212	04-Jun-73	3,839	62
16	L 04058	MUN	4665.14	CITY OF LOVINGTON	4	3	2	35	16S	36E	656978	3639166	1,247	11-Oct-11	3,855	100
17	L 04058	MUN	4665.14	CITY OF LOVINGTON	4	3	3	36	16S	36E	657796	3638374	1,250	03-May-65	3,845	50
18	USGS 4				1	1	2	1	17S	36E	657857	3638168	1,264	01-May-92	3,836	83
19	L 02413	DOL	3	JACK CAYTON		4	4	2	17S	36E	657318	3636861	1,317	20-Nov-53	3,836	90
20	L 04988	SRO	483.2	CHEVRON MIDCONTINENT L.P.	3	2	1	1	17S	36E	658006	3637982	1,394	02-Feb-63	3,838	55
21	L 04058	MUN	4665.14	CITY OF LOVINGTON		1	3	36	16S	36E	657691	3638878	1,408	25-Feb-81	3,842	68
22	L 03173	PRO	0	MAKIN DRILLING COMPANY		4	2	35	16S	36E	657282	3639274	1,463	15-Mar-56	3,847	55
23	L 01584	PRO	0	LEE DRILLING COMPANY		2	1	1	17S	36E	658107	3638083	1,499	29-Sep-52	3,841	48
24	L 14207	MON	0	CHEVRON MIDCONTINENT, L.P.	2	4	1	1	17S	36E	658221	3637712	1,630	12-Oct-16	3,835	101
25	L 04058	MUN	4665.14	CITY OF LOVINGTON	4	3	1	36	16S	36E	657783	3639180	1,681	01-May-65	3,842	50

Data obtained from the New Mexico Office of the State Engineer and USGS Websites

<sup>A</sup> = In acre feet per annum

<sup>B</sup> = In meters

<sup>C</sup> = Elevation interpolated from Google Earth based on referenced location.

IRR = Irrigation

PRO = 72-12-1 Prospecting or development of Natural Resource

DOM = 72-12-1 Domestic one household

DOL = 72-12-1 Domestic and Livestock watering

MUN = Municipal-City or County supplied water

SRO = Secondary Recovery Of Oil

MON = Monitoring Well

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

**TABLE 2**  
**Summary of Soil Sample Field Testing and Laboratory Analytical Results**  
**Vanguard**  
**ABO SWD #2**

Lab Sample ID	Depth (feet)	Soil Status	Sample Date	PID Reading (ppm)	Field Chloride (mg/Kg)	Benzene (mg/Kg)	Toluene (mg/Kg)	Ethylbenzene (mg/Kg)	Total Xylenes (mg/Kg)	Total BTEX (mg/Kg)	GRO C6-C10 (mg/Kg)	DRO C10-C28 (mg/Kg)	EXT DRO C28-C36 (mg/Kg)	Total TPH (mg/Kg)	Chloride (mg/Kg)
SP1	Surface	In-Situ	16-Jun-17	0.0	>4,000	<0.050	<0.050	<0.050	<0.150	<0.300	<10.0	74.9	--	74.9	5,680
	2	In-Situ	16-Jun-17	0.4	640	--	--	--	--	--	--	--	--	--	--
	4	In-Situ	16-Jun-17	2.4	800	--	--	--	--	--	--	--	--	--	--
	6	In-Situ	16-Jun-17	1.2	1,200	--	--	--	--	--	--	--	--	--	--
	10	In-Situ	16-Jun-17	2.3	480	--	--	--	--	--	--	--	--	--	--
	14	In-Situ	16-Jun-17	3.4	560	--	--	--	--	--	--	--	--	--	--
	18	In-Situ	16-Jun-17	2.5	240	--	--	--	--	--	--	--	--	--	--
	22	In-Situ	16-Jun-17	1.3	160	--	--	--	--	--	--	--	--	--	--
	26	In-Situ	16-Jun-17	0.8	80	<0.050	<0.050	<0.050	<0.150	<0.300	<10.0	<10.0	--	<30.0	96
SP2	Surface	In-Situ	19-Jun-17	0.0	400	<0.050	<0.050	<0.050	<0.150	<0.300	<10.0	192	--	192	416
	2	In-Situ	19-Jun-17	0.0	160	--	--	--	--	--	--	--	--	--	--
	6	In-Situ	19-Jun-17	0.0	80	--	--	--	--	--	--	--	--	--	--
	10	In-Situ	19-Jun-17	0.6	80	<0.050	<0.050	0.060	<0.150	<0.300	<10.0	<10.0	--	<30.0	96



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**Vanguard**  
**ABO SWD #2**

Lab Sample ID	Depth (feet)	Soil Status	Sample Date	PID Reading (ppm)	Field Chloride (mg/Kg)	Benzene (mg/Kg)	Toluene (mg/Kg)	Ethylbenzene (mg/Kg)	Total Xylenes (mg/Kg)	Total BTEX (mg/Kg)	GRO C6-C10 (mg/Kg)	DRO C10-C28 (mg/Kg)	EXT DRO C28-C36 (mg/Kg)	Total TPH (mg/Kg)	Chloride (mg/Kg)
SP3	Surface	In-Situ	19-Jun-17	230.0	3,280	<0.050	<0.050	<0.050	<0.150	<0.300	<10.0	1,550	--	1,550	3,120
	4	In-Situ	19-Jun-17	0.5	400	--	--	--	--	--	--	--	--	--	--
	6	In-Situ	19-Jun-17	0.3	320	--	--	--	--	--	--	--	--	--	--
	10	In-Situ	19-Jun-17	0.8	240	--	--	--	--	--	--	--	--	--	--
	14	In-Situ	19-Jun-17	0.7	80	--	--	--	--	--	--	--	--	--	--
	18	In-Situ	19-Jun-17	0.5	80	<0.050	<0.050	<0.050	<0.150	<0.300	<10.0	<10.0	--	<30.0	112
SP4	Surface	In-Situ	19-Jun-17	1.3	480	<0.050	<0.050	<0.050	<0.150	<0.300	<10.0	13,700	--	13,700	464
	2	In-Situ	19-Jun-17	1.8	160	<0.050	<0.050	0.060	<0.150	<0.300	<10.0	647	--	647	144
SP5	Surface	In-Situ	20-Jun-17	0.0	320	<0.050	<0.050	<0.050	<0.150	<0.300	<10.0	207	--	207	256
	2	In-Situ	20-Jun-17	2.4	560	--	--	--	--	--	--	--	--	--	--
	5	In-Situ	20-Jun-17	2.8	240	--	--	--	--	--	--	--	--	--	--
	8	In-Situ	20-Jun-17	2.4	240	--	--	--	--	--	--	--	--	--	--
	10	In-Situ	20-Jun-17	1.5	80	<0.050	<0.050	0.060	<0.150	<0.300	<10.0	<10.0	--	<30.0	64

**TABLE 2**  
**Summary of Soil Sample Field Testing and Laboratory Analytical Results**  
**Vanguard**  
**ABO SWD #2**

Lab Sample ID	Depth (feet)	Soil Status	Sample Date	PID Reading (ppm)	Field Chloride (mg/Kg)	Benzene (mg/Kg)	Toluene (mg/Kg)	Ethylbenzene (mg/Kg)	Total Xylenes (mg/Kg)	Total BTEX (mg/Kg)	GRO C6-C10 (mg/Kg)	DRO C10-C28 (mg/Kg)	EXT DRO C28-C36 (mg/Kg)	Total TPH (mg/Kg)	Chloride (mg/Kg)
SP6	Surface	In-Situ	20-Jun-17	1.2	640	<0.050	<0.050	<0.050	<0.150	<0.300	<10.0	6,250	--	<b>6,250</b>	<b>640</b>
	3	In-Situ	20-Jun-17	0.2	240	--	--	--	--	--	--	--	--	--	--
	5	In-Situ	20-Jun-17	0.0	160	--	--	--	--	--	--	--	--	--	--
	10	In-Situ	20-Jun-17	0.0	80	<0.050	<0.050	0.060	<0.150	<0.300	<10.0	<10.0	--	<30.0	48
SP7	Surface	In-Situ	20-Jun-17	0.0	>4,000	<0.050	<0.050	<0.050	<0.150	<0.300	<10.0	1,870	--	<b>1,870</b>	<b>21,600</b>
	2	In-Situ	20-Jun-17	0.8	1,040	--	--	--	--	--	--	--	--	--	--
	5	In-Situ	20-Jun-17	0.3	560	--	--	--	--	--	--	--	--	--	--
	8	In-Situ	20-Jun-17	0.6	880	--	--	--	--	--	--	--	--	--	--
	13	In-Situ	20-Jun-17	0.2	480	--	--	--	--	--	--	--	--	--	--
	15	In-Situ	20-Jun-17	0.0	400	--	--	--	--	--	--	--	--	--	--
	18	In-Situ	20-Jun-17	0.0	320	--	--	--	--	--	--	--	--	--	--
	22	In-Situ	20-Jun-17	0.0	240	--	--	--	--	--	--	--	--	--	--
	28	In-Situ	20-Jun-17	0.0	80	<0.050	<0.050	<0.050	<0.150	<0.300	<10.0	<10.0	--	<30.0	16

**TABLE 2**  
**Summary of Soil Sample Field Testing and Laboratory Analytical Results**  
**Vanguard**  
**ABO SWD #2**

Lab Sample ID	Depth (feet)	Soil Status	Sample Date	PID Reading (ppm)	Field Chloride (mg/Kg)	Benzene (mg/Kg)	Toluene (mg/Kg)	Ethylbenzene (mg/Kg)	Total Xylenes (mg/Kg)	Total BTEX (mg/Kg)	GRO C6-C10 (mg/Kg)	DRO C10-C28 (mg/Kg)	EXT DRO C28-C36 (mg/Kg)	Total TPH (mg/Kg)	Chloride (mg/Kg)
SP8	Surface	In-Situ	20-Jun-17	1.2	800	<0.050	<0.050	<0.050	<0.150	<0.300	<10.0	25.6	--	25.6	640
	2	In-Situ	20-Jun-17	1.5	880	--	--	--	--	--	--	--	--	--	--
	4	In-Situ	20-Jun-17	0.5	480	--	--	--	--	--	--	--	--	--	--
	6	In-Situ	20-Jun-17	0.8	400	--	--	--	--	--	--	--	--	--	--
	8	In-Situ	20-Jun-17	0.6	240	--	--	--	--	--	--	--	--	--	--
	12	In-Situ	20-Jun-17	0.0	160	--	--	--	--	--	--	--	--	--	--
	16	In-Situ	20-Jun-17	0.0	80	<0.050	<0.050	<0.050	<0.150	<0.300	<10.0	<10.0	--	<30.0	32
SP9	Surface	In-Situ	23-Jun-17	14.2	2,720	<0.050	<0.050	<0.050	<0.150	<0.300	<10.0	1,180	--	1,180	2,800
	2	In-Situ	23-Jun-17	5.3	1,440	--	--	--	--	--	--	--	--	--	--
	4	In-Situ	23-Jun-17	2.1	1,040	<0.050	<0.050	0.060	<0.150	<0.300	<10.0	<10.0	--	<30.0	1,280
SP10	Surface	In-Situ	27-Jun-17	0.5	800	<0.050	<0.050	<0.050	<0.150	<0.300	<10.0	<10.0	--	<30.0	896
	2	In-Situ	27-Jun-17	0.8	880	--	--	--	--	--	--	--	--	--	--
	6	In-Situ	27-Jun-17	0.6	480	--	--	--	--	--	--	--	--	--	--
	10	In-Situ	27-Jun-17	0.5	400	--	--	--	--	--	--	--	--	--	--
	14	In-Situ	27-Jun-17	0.4	360	--	--	--	--	--	--	--	--	--	--
	18	In-Situ	27-Jun-17	0.3	480	--	--	--	--	--	--	--	--	--	--
	22	In-Situ	27-Jun-17	0.4	480	--	--	--	--	--	--	--	--	--	--
	26	In-Situ	27-Jun-17	0.2	480	<0.050	<0.050	0.060	<0.150	<0.300	<10.0	<10.0	--	<30.0	528



**TABLE 2**  
**Summary of Soil Sample Field Testing and Laboratory Analytical Results**  
**Vanguard**  
**ABO SWD #2**

Lab Sample ID	Depth (feet)	Soil Status	Sample Date	PID Reading (ppm)	Field Chloride (mg/Kg)	Benzene (mg/Kg)	Toluene (mg/Kg)	Ethylbenzene (mg/Kg)	Total Xylenes (mg/Kg)	Total BTEX (mg/Kg)	GRO C6-C10 (mg/Kg)	DRO C10-C28 (mg/Kg)	EXT DRO C28-C36 (mg/Kg)	Total TPH (mg/Kg)	Chloride (mg/Kg)
SP11	Surface	In-Situ	28-Jun-17	0.1	>4,000	<0.050	<0.050	<0.050	<0.150	<0.300	<10.0	49	--	49	<b>6,320</b>
	2	In-Situ	28-Jun-17	0.5	880	--	--	--	--	--	--	--	--	--	--
	6	In-Situ	28-Jun-17	0.3	480	--	--	--	--	--	--	--	--	--	--
	10	In-Situ	28-Jun-17	0.2	160	--	--	--	--	--	--	--	--	--	--
	18	In-Situ	28-Jun-17	0.2	160	<0.050	<0.050	0.060	<0.150	<0.300	<10.0	<10.0	--	<30.0	32
SP12	Surface	In-Situ	28-Jun-17	0.6	>4,000	<0.050	<0.050	<0.050	<0.150	<0.300	<10.0	50.3	--	50.3	<b>6,160</b>
	2	In-Situ	28-Jun-17	0.5	800	--	--	--	--	--	--	--	--	--	--
	6	In-Situ	28-Jun-17	0.4	160	--	--	--	--	--	--	--	--	--	--
	14	In-Situ	28-Jun-17	0.4	120	<0.050	<0.050	0.060	<0.150	<0.300	<10.0	<10.0	--	<30.0	48
SP13	Surface	In-Situ	28-Jun-17	0.7	>4,000	<0.050	<0.050	<0.050	<0.150	<0.300	<10.0	49.9	--	49.9	<b>5,040</b>
	2	In-Situ	28-Jun-17	0.6	560	--	--	--	--	--	--	--	--	--	--
	6	In-Situ	28-Jun-17	0.2	200	--	--	--	--	--	--	--	--	--	--
	14	In-Situ	28-Jun-17	0.3	120	<0.050	<0.050	<0.050	<0.150	<0.300	<10.0	<10.0	--	<30.0	160
NMOCD Recommended Remedial Action Levels				100		10				50				1,000	600

-- = Not Analyzed

**Bold** values are in excess of NMOCD Recommended Remedial Action Levels

## **ATTACHMENTS**

**ATTACHMENT I**  
**Photographs**





Photograph #1- Lease sign



Photograph #2- Looking across pad area



Photograph #3- Looking across pad area



Photograph #4- Looking across pad area





Photograph #5- Looking across pad area



Photograph #5- Looking across pad area

**ATTACHMENT II**  
**NMOSE Average Depth to Groundwater**



# New Mexico Office of the State Engineer

## Water Column/Average Depth to Water

(A CLW##### in the POD suffix indicates the POD has been replaced & no longer serves a water right file.)

(R=POD has been replaced, O=orphaned, C=the file is closed)

(quarters are 1=NW 2=NE 3=SW 4=SE)

(quarters are smallest to largest)

(NAD83 UTM in meters)

(In feet)

POD Number	POD Sub-Code	basin	County	Q 64	Q 16	Q 4	Sec	Tws	Rng	X	Y	Distance	Depth Well	Depth Water	Water Column
<a href="#">L 02480</a>	L	LE		1	2	02	17S	36E		656897	3638063*	297	130	58	72
<a href="#">L 01724 S2</a>	L	LE			1	02	17S	36E		656298	3637848*	339	140	128	12
<a href="#">L 01466</a>	L	LE		3	4	35	16S	36E		656891	3638461*	559	110	47	63
<a href="#">L 02987</a>	L	LE		3	4	35	16S	36E		656891	3638461*	559	105	40	65
<a href="#">L 01716</a>	L	LE		1	1	4	02	17S	36E	656808	3637357*	649	145	50	95
<a href="#">L 01724 S3</a>	L	LE		2	1	3	02	17S	36E	656201	3637343*	754	140	125	15
<a href="#">L 03676</a>	L	LE		4	2	02	17S	36E		657306	3637667*	759	75	68	7
<a href="#">L 14187 POD3</a>	L	LE		3	1	3	02	17S	36E	656141	3637232	880	80		
<a href="#">L 14187 POD1</a>	L	LE		3	1	3	02	17S	36E	656130	3637225	892	78		
<a href="#">L 02481</a>	L	LE		4	4	2	02	17S	36E	657405	3637566*	892	150	76	74
<a href="#">L 14187 POD4</a>	L	LE		3	1	3	02	17S	36E	656103	3637219	912	80		
<a href="#">L 14187 POD2</a>	L	LE		3	1	3	02	17S	36E	656095	3637201	931	77		
<a href="#">L 01713</a>	L	LE			1	1	01	17S	36E	657703	3638076*	1095	150	72	78
<a href="#">L 01724 S</a>	L	LE		3	4	2	03	17S	36E	655593	3637539*	1108	135	85	50
<a href="#">L 07042</a>	L	LE		3	4	2	03	17S	36E	655593	3637539*	1108	100	60	40
<a href="#">L 01724</a>	L	LE			2	03	17S	36E		655492	3637835*	1128	146	80	66
<a href="#">L 05486 POD2</a>	L	LE		2	1	1	01	17S	36E	657802	3638175*	1206	232	83	149
<a href="#">L 05486</a>	L	LE		2	3	1	01	17S	36E	657808	3637773*	1213	225	62	163
<a href="#">L 12821 POD4</a>	L									656899	3639157	1216	20		
<a href="#">L 04058 S31</a>	L	LE		4	3	2	35	16S	36E	656978	3639166*	1245	230	100	130
<a href="#">L 01557 POD1</a>	L	LE		4	3	3	36	16S	36E	657796	3638374*	1249	110	40	70
<a href="#">L 04058 S19</a>	L	LE		4	3	3	36	16S	36E	657796	3638374*	1249	245	50	195
<a href="#">L 02413</a>	L	LE			4	4	02	17S	36E	657318	3636861*	1319	90	90	0
<a href="#">L 02426</a>	L	LE			4	4	02	17S	36E	657318	3636861*	1319	115	48	67
<a href="#">L 04988 S</a>	L	LE		3	2	1	01	17S	36E	658006	3637982*	1394	182	55	127
<a href="#">L 04058 S22</a>	L	LE			1	3	36	16S	36E	657691	3638878*	1406	239	68	171

\*UTM location was derived from PLSS - see Help



(A CLW##### in the  
POD suffix indicates the  
POD has been replaced  
& no longer serves a  
water right file.)

(R=POD has  
been replaced,  
O=orphaned,  
C=the file is  
closed)

(quarters are 1=NW 2=NE 3=SW 4=SE)  
(quarters are smallest to largest)

(NAD83 UTM in meters)

(In feet)

POD Number	POD Sub-		Q Q Q			Sec	Tws	Rng	X	Y	Distance	Depth	Depth	Water
	Code	basin	64	16	4							Well	Water	Column
<a href="#">L 03173</a>	L	LE	4	2	35	16S	36E		657282	3639274*	1460	110	55	55
<a href="#">L 01584 POD1</a>	L	LE	2	1	01	17S	36E		658107	3638083*	1498	110	48	62
<a href="#">L 11198</a>	L	LE	3	3	3	01	17S	36E	657620	3636766*	1574	186		
<a href="#">L 14207 POD2</a>	L	LE	2	4	1	01	17S	36E	658222	3637712	1631	230	101	129
<a href="#">L 04058 S18</a>	L	LE	4	3	1	36	16S	36E	657783	3639180*	1679	265	50	215
<a href="#">L 02119</a>	L	LE	1	4	3	01	17S	36E	658024	3636973*	1731	130		

Average Depth to Water: 69 feet

Minimum Depth: 40 feet

Maximum Depth: 128 feet

Record Count: 32

UTMNAD83 Radius Search (in meters):

Easting (X): 656612

Northing (Y): 3637976

Radius: 1760

**ATTACHMENT III**  
**Laboratory Analytical Results**



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

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July 03, 2017

Daniel Dominguez

Environmental Plus, Inc.

P.O. Box 1558

Eunice, NM 88231

RE: ABO SWD #2

Enclosed are the results of analyses for samples received by the laboratory on 06/28/17 16:00.

Cardinal Laboratories is accredited through Texas NELAP under certificate number T104704398-16-8. Accreditation applies to drinking water, non-potable water and solid and chemical materials. All accredited analytes are denoted by an asterisk (\*). For a complete list of accredited analytes and matrices visit the TCEQ website at [www.tceq.texas.gov/field/qa/lab\\_accred\\_certif.html](http://www.tceq.texas.gov/field/qa/lab_accred_certif.html).

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

Method EPA 552.2	Haloacetic Acids (HAA-5)
Method EPA 524.2	Total Trihalomethanes (TTHM)
Method EPA 524.4	Regulated VOCs (V1, V2, V3)

Accreditation applies to public drinking water matrices.

This report meets NELAP requirements and is made up of a cover page, analytical results, and a copy of the original chain-of-custody. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

A handwritten signature in black ink that reads "Celey D. Keene". The signature is written in a cursive, flowing style.

Celey D. Keene

Lab Director/Quality Manager

**Analytical Results For:**

Environmental Plus, Inc.  
Daniel Dominguez  
P.O. Box 1558  
Eunice NM, 88231  
Fax To: (505) 394-2601

Received:	06/28/2017	Sampling Date:	06/19/2017
Reported:	07/03/2017	Sampling Type:	Soil
Project Name:	ABO SWD #2	Sampling Condition:	Cool & Intact
Project Number:	UL-C SEC.2, T17S, R36E	Sample Received By:	Jodi Henson
Project Location:	VANGUARD		

**Sample ID: SP 1 ( SURFACE ) (H701703-01)**

BTX 8021B		mg/kg		Analyzed By: MS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	06/29/2017	ND	2.16	108	2.00	1.42	
Toluene*	<0.050	0.050	06/29/2017	ND	1.96	98.2	2.00	1.95	
Ethylbenzene*	<0.050	0.050	06/29/2017	ND	2.04	102	2.00	1.92	
Total Xylenes*	<0.150	0.150	06/29/2017	ND	6.08	101	6.00	1.31	
Total BTX	<0.300	0.300	06/29/2017	ND					

Surrogate: 4-Bromofluorobenzene (PID) 97.9 % 72-148

Chloride, SM4500Cl-B		mg/kg		Analyzed By: AC					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	5680	16.0	06/30/2017	ND	432	108	400	0.00	

TPH 8015M		mg/kg		Analyzed By: MS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10	<10.0	10.0	06/29/2017	ND	184	91.9	200	1.76	
DRO >C10-C28	74.9	10.0	06/29/2017	ND	180	90.2	200	3.77	

Surrogate: 1-Chlorooctane 100 % 28.3-164

Surrogate: 1-Chlorooctadecane 106 % 34.7-157

Cardinal Laboratories

\*=Accredited Analyte

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Celey D. Keene, Lab Director/Quality Manager

**Analytical Results For:**

Environmental Plus, Inc.  
Daniel Dominguez  
P.O. Box 1558  
Eunice NM, 88231  
Fax To: (505) 394-2601

Received:	06/28/2017	Sampling Date:	06/19/2017
Reported:	07/03/2017	Sampling Type:	Soil
Project Name:	ABO SWD #2	Sampling Condition:	Cool & Intact
Project Number:	UL-C SEC.2, T17S, R36E	Sample Received By:	Jodi Henson
Project Location:	VANGUARD		

**Sample ID: SP 1 ( 26' ) (H701703-02)**

BTX 8021B			mg/kg		Analyzed By: MS				
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	06/30/2017	ND	2.04	102	2.00	0.0491	
Toluene*	<0.050	0.050	06/30/2017	ND	1.97	98.6	2.00	0.993	
Ethylbenzene*	<0.050	0.050	06/30/2017	ND	2.12	106	2.00	0.0321	
Total Xylenes*	<0.150	0.150	06/30/2017	ND	6.26	104	6.00	0.140	
Total BTX	<0.300	0.300	06/30/2017	ND					

Surrogate: 4-Bromofluorobenzene (PID) 101 % 72-148

Chloride, SM4500CI-B			mg/kg		Analyzed By: AC				
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	96.0	16.0	06/30/2017	ND	432	108	400	0.00	

TPH 8015M			mg/kg		Analyzed By: MS				
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10	<10.0	10.0	06/29/2017	ND	184	91.9	200	1.76	
DRO >C10-C28	<10.0	10.0	06/29/2017	ND	180	90.2	200	3.77	

Surrogate: 1-Chlorooctane 96.9 % 28.3-164

Surrogate: 1-Chlorooctadecane 92.7 % 34.7-157

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\*=Accredited Analyte

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Celey D. Keene, Lab Director/Quality Manager



**Analytical Results For:**

Environmental Plus, Inc.  
Daniel Dominguez  
P.O. Box 1558  
Eunice NM, 88231  
Fax To: (505) 394-2601

Received:	06/28/2017	Sampling Date:	06/19/2017
Reported:	07/03/2017	Sampling Type:	Soil
Project Name:	ABO SWD #2	Sampling Condition:	Cool & Intact
Project Number:	UL-C SEC.2, T17S, R36E	Sample Received By:	Jodi Henson
Project Location:	VANGUARD		

**Sample ID: SP 2 ( SURFACE ) (H701703-03)**

BTX 8021B			mg/kg		Analyzed By: MS				
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	06/30/2017	ND	2.04	102	2.00	0.0491	
Toluene*	<0.050	0.050	06/30/2017	ND	1.97	98.6	2.00	0.993	
Ethylbenzene*	<0.050	0.050	06/30/2017	ND	2.12	106	2.00	0.0321	
Total Xylenes*	<0.150	0.150	06/30/2017	ND	6.26	104	6.00	0.140	
Total BTX	<0.300	0.300	06/30/2017	ND					

Surrogate: 4-Bromofluorobenzene (PID) 99.5 % 72-148

Chloride, SM4500CI-B			mg/kg		Analyzed By: AC				
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	416	16.0	06/30/2017	ND	432	108	400	0.00	

TPH 8015M			mg/kg		Analyzed By: MS				
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10	<10.0	10.0	06/29/2017	ND	184	91.9	200	1.76	
DRO >C10-C28	192	10.0	06/29/2017	ND	180	90.2	200	3.77	

Surrogate: 1-Chlorooctane 84.5 % 28.3-164

Surrogate: 1-Chlorooctadecane 103 % 34.7-157

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Celey D. Keene, Lab Director/Quality Manager

**Analytical Results For:**

Environmental Plus, Inc.  
Daniel Dominguez  
P.O. Box 1558  
Eunice NM, 88231  
Fax To: (505) 394-2601

Received:	06/28/2017	Sampling Date:	06/19/2017
Reported:	07/03/2017	Sampling Type:	Soil
Project Name:	ABO SWD #2	Sampling Condition:	Cool & Intact
Project Number:	UL-C SEC.2, T17S, R36E	Sample Received By:	Jodi Henson
Project Location:	VANGUARD		

**Sample ID: SP 2 ( 10' ) (H701703-04)**

BTX 8021B			mg/kg		Analyzed By: MS				
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	06/30/2017	ND	2.04	102	2.00	0.0491	
Toluene*	<0.050	0.050	06/30/2017	ND	1.97	98.6	2.00	0.993	
Ethylbenzene*	<0.050	0.050	06/30/2017	ND	2.12	106	2.00	0.0321	
Total Xylenes*	<0.150	0.150	06/30/2017	ND	6.26	104	6.00	0.140	
Total BTX	<0.300	0.300	06/30/2017	ND					

Surrogate: 4-Bromofluorobenzene (PID) 100 % 72-148

Chloride, SM4500CI-B			mg/kg		Analyzed By: AC				
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	96.0	16.0	06/30/2017	ND	432	108	400	0.00	

TPH 8015M			mg/kg		Analyzed By: MS				
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10	<10.0	10.0	06/29/2017	ND	184	91.9	200	1.76	
DRO >C10-C28	<10.0	10.0	06/29/2017	ND	180	90.2	200	3.77	

Surrogate: 1-Chlorooctane 98.4 % 28.3-164

Surrogate: 1-Chlorooctadecane 104 % 34.7-157

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Celey D. Keene, Lab Director/Quality Manager

**Analytical Results For:**

Environmental Plus, Inc.  
Daniel Dominguez  
P.O. Box 1558  
Eunice NM, 88231  
Fax To: (505) 394-2601

Received:	06/28/2017	Sampling Date:	06/19/2017
Reported:	07/03/2017	Sampling Type:	Soil
Project Name:	ABO SWD #2	Sampling Condition:	Cool & Intact
Project Number:	UL-C SEC.2, T17S, R36E	Sample Received By:	Jodi Henson
Project Location:	VANGUARD		

**Sample ID: SP 3 ( SURFACE ) (H701703-05)**

BTX 8021B		mg/kg		Analyzed By: MS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	06/30/2017	ND	2.04	102	2.00	0.0491	
Toluene*	<0.050	0.050	06/30/2017	ND	1.97	98.6	2.00	0.993	
Ethylbenzene*	<0.050	0.050	06/30/2017	ND	2.12	106	2.00	0.0321	
Total Xylenes*	<0.150	0.150	06/30/2017	ND	6.26	104	6.00	0.140	
Total BTX	<0.300	0.300	06/30/2017	ND					

Surrogate: 4-Bromofluorobenzene (PID) 99.9 % 72-148

Chloride, SM4500CI-B		mg/kg		Analyzed By: AC					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	3120	16.0	06/30/2017	ND	432	108	400	0.00	

TPH 8015M		mg/kg		Analyzed By: MS						S-06
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
GRO C6-C10	<50.0	50.0	06/29/2017	ND	184	91.9	200	1.76		
DRO >C10-C28	1550	50.0	06/29/2017	ND	180	90.2	200	3.77		

Surrogate: 1-Chlorooctane 71.9 % 28.3-164

Surrogate: 1-Chlorooctadecane 164 % 34.7-157

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\*=Accredited Analyte

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Celey D. Keene, Lab Director/Quality Manager

**Analytical Results For:**

Environmental Plus, Inc.  
Daniel Dominguez  
P.O. Box 1558  
Eunice NM, 88231  
Fax To: (505) 394-2601

Received:	06/28/2017	Sampling Date:	06/19/2017
Reported:	07/03/2017	Sampling Type:	Soil
Project Name:	ABO SWD #2	Sampling Condition:	Cool & Intact
Project Number:	UL-C SEC.2, T17S, R36E	Sample Received By:	Jodi Henson
Project Location:	VANGUARD		

**Sample ID: SP 3 ( 18' ) (H701703-06)**

BTX 8021B			mg/kg		Analyzed By: MS				
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	06/30/2017	ND	2.04	102	2.00	0.0491	
Toluene*	<0.050	0.050	06/30/2017	ND	1.97	98.6	2.00	0.993	
Ethylbenzene*	<0.050	0.050	06/30/2017	ND	2.12	106	2.00	0.0321	
Total Xylenes*	<0.150	0.150	06/30/2017	ND	6.26	104	6.00	0.140	
Total BTX	<0.300	0.300	06/30/2017	ND					

Surrogate: 4-Bromofluorobenzene (PID) 103 % 72-148

Chloride, SM4500CI-B			mg/kg		Analyzed By: AC				
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	112	16.0	06/30/2017	ND	432	108	400	0.00	

TPH 8015M			mg/kg		Analyzed By: MS				
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10	<10.0	10.0	06/29/2017	ND	184	91.9	200	1.76	
DRO >C10-C28	<10.0	10.0	06/29/2017	ND	180	90.2	200	3.77	

Surrogate: 1-Chlorooctane 101 % 28.3-164

Surrogate: 1-Chlorooctadecane 95.6 % 34.7-157

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\*=Accredited Analyte

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Celey D. Keene, Lab Director/Quality Manager

**Analytical Results For:**

Environmental Plus, Inc.  
Daniel Dominguez  
P.O. Box 1558  
Eunice NM, 88231  
Fax To: (505) 394-2601

Received:	06/28/2017	Sampling Date:	06/19/2017
Reported:	07/03/2017	Sampling Type:	Soil
Project Name:	ABO SWD #2	Sampling Condition:	Cool & Intact
Project Number:	UL-C SEC.2, T17S, R36E	Sample Received By:	Jodi Henson
Project Location:	VANGUARD		

**Sample ID: SP 4 ( SURFACE ) (H701703-07)**

BTEx 8021B		mg/kg		Analyzed By: MS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	06/30/2017	ND	2.04	102	2.00	0.0491	
Toluene*	<0.050	0.050	06/30/2017	ND	1.97	98.6	2.00	0.993	
Ethylbenzene*	<0.050	0.050	06/30/2017	ND	2.12	106	2.00	0.0321	
Total Xylenes*	<0.150	0.150	06/30/2017	ND	6.26	104	6.00	0.140	
Total BTEX	<0.300	0.300	06/30/2017	ND					

Surrogate: 4-Bromofluorobenzene (PID) 99.5 % 72-148

Chloride, SM4500Cl-B		mg/kg		Analyzed By: AC					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	464	16.0	06/30/2017	ND	432	108	400	0.00	

TPH 8015M		mg/kg		Analyzed By: MS						S-06
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
GRO C6-C10	<50.0	50.0	06/29/2017	ND	184	91.9	200	1.76		
DRO >C10-C28	13700	50.0	06/29/2017	ND	180	90.2	200	3.77		

Surrogate: 1-Chlorooctane 104 % 28.3-164

Surrogate: 1-Chlorooctadecane 524 % 34.7-157

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Celey D. Keene, Lab Director/Quality Manager



**Analytical Results For:**

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 Eunice NM, 88231  
 Fax To: (505) 394-2601

Received:	06/28/2017	Sampling Date:	06/19/2017
Reported:	07/03/2017	Sampling Type:	Soil
Project Name:	ABO SWD #2	Sampling Condition:	Cool & Intact
Project Number:	UL-C SEC.2, T17S, R36E	Sample Received By:	Jodi Henson
Project Location:	VANGUARD		

**Sample ID: SP 4 ( 2' ) (H701703-08)**

BTEx 8021B			mg/kg		Analyzed By: MS				
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	06/30/2017	ND	2.04	102	2.00	0.0491	
Toluene*	<0.050	0.050	06/30/2017	ND	1.97	98.6	2.00	0.993	
Ethylbenzene*	<0.050	0.050	06/30/2017	ND	2.12	106	2.00	0.0321	
Total Xylenes*	<0.150	0.150	06/30/2017	ND	6.26	104	6.00	0.140	
Total BTEX	<0.300	0.300	06/30/2017	ND					

Surrogate: 4-Bromofluorobenzene (PID) 101 % 72-148

Chloride, SM4500Cl-B			mg/kg		Analyzed By: AC				
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	144	16.0	06/30/2017	ND	432	108	400	0.00	

TPH 8015M			mg/kg		Analyzed By: MS				
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10	<10.0	10.0	06/29/2017	ND	205	103	200	2.25	
DRO >C10-C28	647	10.0	06/29/2017	ND	222	111	200	2.84	

Surrogate: 1-Chlorooctane 82.9 % 28.3-164

Surrogate: 1-Chlorooctadecane 115 % 34.7-157

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Fax To: (505) 394-2601

Received:	06/28/2017	Sampling Date:	06/20/2017
Reported:	07/03/2017	Sampling Type:	Soil
Project Name:	ABO SWD #2	Sampling Condition:	Cool & Intact
Project Number:	UL-C SEC.2, T17S, R36E	Sample Received By:	Jodi Henson
Project Location:	VANGUARD		

**Sample ID: SP 5 ( SURFACE ) (H701703-09)**

BTX 8021B			mg/kg		Analyzed By: MS				
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	06/30/2017	ND	2.04	102	2.00	0.0491	
Toluene*	<0.050	0.050	06/30/2017	ND	1.97	98.6	2.00	0.993	
Ethylbenzene*	<0.050	0.050	06/30/2017	ND	2.12	106	2.00	0.0321	
Total Xylenes*	<0.150	0.150	06/30/2017	ND	6.26	104	6.00	0.140	
Total BTX	<0.300	0.300	06/30/2017	ND					

Surrogate: 4-Bromofluorobenzene (PID) 99.9 % 72-148

Chloride, SM4500CI-B			mg/kg		Analyzed By: AC				
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	256	16.0	06/30/2017	ND	432	108	400	0.00	

TPH 8015M			mg/kg		Analyzed By: MS				
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10	<10.0	10.0	06/29/2017	ND	205	103	200	2.25	
DRO >C10-C28	207	10.0	06/29/2017	ND	222	111	200	2.84	

Surrogate: 1-Chlorooctane 90.4 % 28.3-164

Surrogate: 1-Chlorooctadecane 122 % 34.7-157

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Received:	06/28/2017	Sampling Date:	06/20/2017
Reported:	07/03/2017	Sampling Type:	Soil
Project Name:	ABO SWD #2	Sampling Condition:	Cool & Intact
Project Number:	UL-C SEC.2, T17S, R36E	Sample Received By:	Jodi Henson
Project Location:	VANGUARD		

**Sample ID: SP 5 ( 10' ) (H701703-10)**

BTX 8021B			mg/kg		Analyzed By: MS				
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	06/30/2017	ND	2.04	102	2.00	0.0491	
Toluene*	<0.050	0.050	06/30/2017	ND	1.97	98.6	2.00	0.993	
Ethylbenzene*	<0.050	0.050	06/30/2017	ND	2.12	106	2.00	0.0321	
Total Xylenes*	<0.150	0.150	06/30/2017	ND	6.26	104	6.00	0.140	
Total BTX	<0.300	0.300	06/30/2017	ND					

Surrogate: 4-Bromofluorobenzene (PID) 101 % 72-148

Chloride, SM4500Cl-B			mg/kg		Analyzed By: AC				
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	64.0	16.0	06/30/2017	ND	432	108	400	0.00	

TPH 8015M			mg/kg		Analyzed By: MS				
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10	<10.0	10.0	06/29/2017	ND	205	103	200	2.25	
DRO >C10-C28	<10.0	10.0	06/29/2017	ND	222	111	200	2.84	

Surrogate: 1-Chlorooctane 111 % 28.3-164

Surrogate: 1-Chlorooctadecane 111 % 34.7-157

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P.O. Box 1558  
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Fax To: (505) 394-2601

Received:	06/28/2017	Sampling Date:	06/20/2017
Reported:	07/03/2017	Sampling Type:	Soil
Project Name:	ABO SWD #2	Sampling Condition:	Cool & Intact
Project Number:	UL-C SEC.2, T17S, R36E	Sample Received By:	Jodi Henson
Project Location:	VANGUARD		

**Sample ID: SP 6 ( SURFACE ) (H701703-11)**

BTX 8021B			mg/kg		Analyzed By: MS				
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	06/30/2017	ND	2.04	102	2.00	0.0491	
Toluene*	<0.050	0.050	06/30/2017	ND	1.97	98.6	2.00	0.993	
Ethylbenzene*	<0.050	0.050	06/30/2017	ND	2.12	106	2.00	0.0321	
Total Xylenes*	<0.150	0.150	06/30/2017	ND	6.26	104	6.00	0.140	
Total BTX	<0.300	0.300	06/30/2017	ND					

Surrogate: 4-Bromofluorobenzene (PID) 102 % 72-148

Chloride, SM4500CI-B			mg/kg		Analyzed By: AC				
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	640	16.0	06/30/2017	ND	432	108	400	0.00	

TPH 8015M		mg/kg		Analyzed By: MS				S-06	
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10	<50.0	50.0	06/29/2017	ND	205	103	200	2.25	
DRO >C10-C28	6250	50.0	06/29/2017	ND	222	111	200	2.84	

Surrogate: 1-Chlorooctane 68.6 % 28.3-164

Surrogate: 1-Chlorooctadecane 225 % 34.7-157

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Celey D. Keene, Lab Director/Quality Manager

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P.O. Box 1558  
Eunice NM, 88231  
Fax To: (505) 394-2601

Received:	06/28/2017	Sampling Date:	06/20/2017
Reported:	07/03/2017	Sampling Type:	Soil
Project Name:	ABO SWD #2	Sampling Condition:	Cool & Intact
Project Number:	UL-C SEC.2, T17S, R36E	Sample Received By:	Jodi Henson
Project Location:	VANGUARD		

**Sample ID: SP 6( 10' ) (H701703-12)**

BTX 8021B			mg/kg		Analyzed By: MS				
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	06/30/2017	ND	2.04	102	2.00	0.0491	
Toluene*	<0.050	0.050	06/30/2017	ND	1.97	98.6	2.00	0.993	
Ethylbenzene*	<0.050	0.050	06/30/2017	ND	2.12	106	2.00	0.0321	
Total Xylenes*	<0.150	0.150	06/30/2017	ND	6.26	104	6.00	0.140	
Total BTX	<0.300	0.300	06/30/2017	ND					

Surrogate: 4-Bromofluorobenzene (PID) 102 % 72-148

Chloride, SM4500CI-B			mg/kg		Analyzed By: AC				
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	48.0	16.0	06/30/2017	ND	432	108	400	0.00	

TPH 8015M			mg/kg		Analyzed By: MS				
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10	<10.0	10.0	06/30/2017	ND	205	103	200	2.25	
DRO >C10-C28	<10.0	10.0	06/30/2017	ND	222	111	200	2.84	

Surrogate: 1-Chlorooctane 99.0 % 28.3-164

Surrogate: 1-Chlorooctadecane 101 % 34.7-157

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Celey D. Keene, Lab Director/Quality Manager



**Analytical Results For:**

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Eunice NM, 88231  
Fax To: (505) 394-2601

Received:	06/28/2017	Sampling Date:	06/20/2017
Reported:	07/03/2017	Sampling Type:	Soil
Project Name:	ABO SWD #2	Sampling Condition:	Cool & Intact
Project Number:	UL-C SEC.2, T17S, R36E	Sample Received By:	Jodi Henson
Project Location:	VANGUARD		

**Sample ID: SP 7( SURFACE ) (H701703-13)**

BTX 8021B			mg/kg		Analyzed By: MS				
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	06/30/2017	ND	2.04	102	2.00	0.0491	
Toluene*	<0.050	0.050	06/30/2017	ND	1.97	98.6	2.00	0.993	
Ethylbenzene*	<0.050	0.050	06/30/2017	ND	2.12	106	2.00	0.0321	
Total Xylenes*	<0.150	0.150	06/30/2017	ND	6.26	104	6.00	0.140	
Total BTX	<0.300	0.300	06/30/2017	ND					

Surrogate: 4-Bromofluorobenzene (PID) 101 % 72-148

Chloride, SM4500CI-B			mg/kg		Analyzed By: AC				
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	21600	16.0	06/30/2017	ND	432	108	400	0.00	

TPH 8015M			mg/kg		Analyzed By: MS				
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10	<10.0	10.0	06/30/2017	ND	205	103	200	2.25	
DRO >C10-C28	1870	10.0	06/30/2017	ND	222	111	200	2.84	

Surrogate: 1-Chlorooctane 99.3 % 28.3-164

Surrogate: 1-Chlorooctadecane 139 % 34.7-157

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Celey D. Keene, Lab Director/Quality Manager

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Fax To: (505) 394-2601

Received:	06/28/2017	Sampling Date:	06/20/2017
Reported:	07/03/2017	Sampling Type:	Soil
Project Name:	ABO SWD #2	Sampling Condition:	Cool & Intact
Project Number:	UL-C SEC.2, T17S, R36E	Sample Received By:	Jodi Henson
Project Location:	VANGUARD		

**Sample ID: SP 7 ( 28' ) (H701703-14)**

BTX 8021B			mg/kg		Analyzed By: MS				
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	06/30/2017	ND	2.04	102	2.00	0.0491	
Toluene*	<0.050	0.050	06/30/2017	ND	1.97	98.6	2.00	0.993	
Ethylbenzene*	<0.050	0.050	06/30/2017	ND	2.12	106	2.00	0.0321	
Total Xylenes*	<0.150	0.150	06/30/2017	ND	6.26	104	6.00	0.140	
Total BTX	<0.300	0.300	06/30/2017	ND					

Surrogate: 4-Bromofluorobenzene (PID) 101 % 72-148

Chloride, SM4500CI-B			mg/kg		Analyzed By: AC				
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	16.0	16.0	06/30/2017	ND	432	108	400	0.00	

TPH 8015M			mg/kg		Analyzed By: MS				
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10	<10.0	10.0	06/30/2017	ND	205	103	200	2.25	
DRO >C10-C28	<10.0	10.0	06/30/2017	ND	222	111	200	2.84	

Surrogate: 1-Chlorooctane 96.7 % 28.3-164

Surrogate: 1-Chlorooctadecane 106 % 34.7-157

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Fax To: (505) 394-2601

Received:	06/28/2017	Sampling Date:	06/20/2017
Reported:	07/03/2017	Sampling Type:	Soil
Project Name:	ABO SWD #2	Sampling Condition:	Cool & Intact
Project Number:	UL-C SEC.2, T17S, R36E	Sample Received By:	Jodi Henson
Project Location:	VANGUARD		

**Sample ID: SP 8 ( SURFACE ) (H701703-15)**

BTX 8021B			mg/kg		Analyzed By: MS				
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	06/30/2017	ND	2.04	102	2.00	0.0491	
Toluene*	<0.050	0.050	06/30/2017	ND	1.97	98.6	2.00	0.993	
Ethylbenzene*	<0.050	0.050	06/30/2017	ND	2.12	106	2.00	0.0321	
Total Xylenes*	<0.150	0.150	06/30/2017	ND	6.26	104	6.00	0.140	
Total BTX	<0.300	0.300	06/30/2017	ND					

Surrogate: 4-Bromofluorobenzene (PID) 100 % 72-148

Chloride, SM4500CI-B			mg/kg		Analyzed By: AC				
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	640	16.0	06/30/2017	ND	432	108	400	0.00	

TPH 8015M			mg/kg		Analyzed By: MS				
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10	<10.0	10.0	06/30/2017	ND	205	103	200	2.25	
DRO >C10-C28	25.6	10.0	06/30/2017	ND	222	111	200	2.84	

Surrogate: 1-Chlorooctane 75.4 % 28.3-164

Surrogate: 1-Chlorooctadecane 83.0 % 34.7-157

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Celey D. Keene, Lab Director/Quality Manager

**Analytical Results For:**

Environmental Plus, Inc.  
Daniel Dominguez  
P.O. Box 1558  
Eunice NM, 88231  
Fax To: (505) 394-2601

Received:	06/28/2017	Sampling Date:	06/20/2017
Reported:	07/03/2017	Sampling Type:	Soil
Project Name:	ABO SWD #2	Sampling Condition:	Cool & Intact
Project Number:	UL-C SEC.2, T17S, R36E	Sample Received By:	Jodi Henson
Project Location:	VANGUARD		

**Sample ID: SP 8 ( 16' ) (H701703-16)**

BTEx 8021B			mg/kg		Analyzed By: MS				
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	06/30/2017	ND	2.04	102	2.00	0.0491	
Toluene*	<0.050	0.050	06/30/2017	ND	1.97	98.6	2.00	0.993	
Ethylbenzene*	<0.050	0.050	06/30/2017	ND	2.12	106	2.00	0.0321	
Total Xylenes*	<0.150	0.150	06/30/2017	ND	6.26	104	6.00	0.140	
Total BTEX	<0.300	0.300	06/30/2017	ND					

Surrogate: 4-Bromofluorobenzene (PID) 101 % 72-148

Chloride, SM4500Cl-B			mg/kg		Analyzed By: AC				
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	32.0	16.0	06/30/2017	ND	432	108	400	0.00	

TPH 8015M			mg/kg		Analyzed By: MS				
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10	<10.0	10.0	06/30/2017	ND	205	103	200	2.25	
DRO >C10-C28	<10.0	10.0	06/30/2017	ND	222	111	200	2.84	

Surrogate: 1-Chlorooctane 102 % 28.3-164

Surrogate: 1-Chlorooctadecane 108 % 34.7-157

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Fax To: (505) 394-2601

Received:	06/28/2017	Sampling Date:	06/23/2017
Reported:	07/03/2017	Sampling Type:	Soil
Project Name:	ABO SWD #2	Sampling Condition:	Cool & Intact
Project Number:	UL-C SEC.2, T17S, R36E	Sample Received By:	Jodi Henson
Project Location:	VANGUARD		

**Sample ID: SP 9 ( SURFACE ) (H701703-17)**

BTX 8021B			mg/kg		Analyzed By: MS				
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	06/30/2017	ND	2.04	102	2.00	0.0491	
Toluene*	<0.050	0.050	06/30/2017	ND	1.97	98.6	2.00	0.993	
Ethylbenzene*	<0.050	0.050	06/30/2017	ND	2.12	106	2.00	0.0321	
Total Xylenes*	<0.150	0.150	06/30/2017	ND	6.26	104	6.00	0.140	
Total BTX	<0.300	0.300	06/30/2017	ND					

Surrogate: 4-Bromofluorobenzene (PID) 100 % 72-148

Chloride, SM4500CI-B			mg/kg		Analyzed By: AC				
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	2800	16.0	06/30/2017	ND	432	108	400	0.00	

TPH 8015M			mg/kg		Analyzed By: MS				
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10	<50.0	50.0	06/30/2017	ND	205	103	200	2.25	
DRO >C10-C28	1180	50.0	06/30/2017	ND	222	111	200	2.84	

Surrogate: 1-Chlorooctane 68.0 % 28.3-164

Surrogate: 1-Chlorooctadecane 146 % 34.7-157

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Eunice NM, 88231  
Fax To: (505) 394-2601

Received:	06/28/2017	Sampling Date:	06/23/2017
Reported:	07/03/2017	Sampling Type:	Soil
Project Name:	ABO SWD #2	Sampling Condition:	Cool & Intact
Project Number:	UL-C SEC.2, T17S, R36E	Sample Received By:	Jodi Henson
Project Location:	VANGUARD		

**Sample ID: SP 9 ( 4' ) (H701703-18)**

BTX 8021B		mg/kg		Analyzed By: MS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	06/30/2017	ND	2.04	102	2.00	0.0491	
Toluene*	<0.050	0.050	06/30/2017	ND	1.97	98.6	2.00	0.993	
Ethylbenzene*	<0.050	0.050	06/30/2017	ND	2.12	106	2.00	0.0321	
Total Xylenes*	<0.150	0.150	06/30/2017	ND	6.26	104	6.00	0.140	
Total BTX	<0.300	0.300	06/30/2017	ND					

Surrogate: 4-Bromofluorobenzene (PID) 102 % 72-148

Chloride, SM4500Cl-B		mg/kg		Analyzed By: AC					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	1280	16.0	06/30/2017	ND	432	108	400	0.00	

TPH 8015M		mg/kg		Analyzed By: MS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10	<10.0	10.0	06/30/2017	ND	205	103	200	2.25	
DRO >C10-C28	<10.0	10.0	06/30/2017	ND	222	111	200	2.84	

Surrogate: 1-Chlorooctane 98.8 % 28.3-164

Surrogate: 1-Chlorooctadecane 104 % 34.7-157

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Received:	06/28/2017	Sampling Date:	06/27/2017
Reported:	07/03/2017	Sampling Type:	Soil
Project Name:	ABO SWD #2	Sampling Condition:	Cool & Intact
Project Number:	UL-C SEC.2, T17S, R36E	Sample Received By:	Jodi Henson
Project Location:	VANGUARD		

**Sample ID: SP 10 ( SURFACE ) (H701703-19)**

BTX 8021B			mg/kg		Analyzed By: MS				
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	06/30/2017	ND	2.04	102	2.00	0.0491	
Toluene*	<0.050	0.050	06/30/2017	ND	1.97	98.6	2.00	0.993	
Ethylbenzene*	<0.050	0.050	06/30/2017	ND	2.12	106	2.00	0.0321	
Total Xylenes*	<0.150	0.150	06/30/2017	ND	6.26	104	6.00	0.140	
Total BTX	<0.300	0.300	06/30/2017	ND					

Surrogate: 4-Bromofluorobenzene (PID) 101 % 72-148

Chloride, SM4500CI-B			mg/kg		Analyzed By: AC				
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	896	16.0	06/30/2017	ND	432	108	400	0.00	

TPH 8015M			mg/kg		Analyzed By: MS				
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10	<10.0	10.0	06/30/2017	ND	205	103	200	2.25	
DRO >C10-C28	<10.0	10.0	06/30/2017	ND	222	111	200	2.84	

Surrogate: 1-Chlorooctane 102 % 28.3-164

Surrogate: 1-Chlorooctadecane 109 % 34.7-157

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Received:	06/28/2017	Sampling Date:	06/27/2017
Reported:	07/03/2017	Sampling Type:	Soil
Project Name:	ABO SWD #2	Sampling Condition:	Cool & Intact
Project Number:	UL-C SEC.2, T17S, R36E	Sample Received By:	Jodi Henson
Project Location:	VANGUARD		

**Sample ID: SP 10 ( 26' ) (H701703-20)**

BTX 8021B		mg/kg		Analyzed By: MS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	06/30/2017	ND	2.04	102	2.00	0.0491	
Toluene*	<0.050	0.050	06/30/2017	ND	1.97	98.6	2.00	0.993	
Ethylbenzene*	<0.050	0.050	06/30/2017	ND	2.12	106	2.00	0.0321	
Total Xylenes*	<0.150	0.150	06/30/2017	ND	6.26	104	6.00	0.140	
Total BTX	<0.300	0.300	06/30/2017	ND					

Surrogate: 4-Bromofluorobenzene (PID) 102 % 72-148

Chloride, SM4500CI-B		mg/kg		Analyzed By: AC					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	528	16.0	06/30/2017	ND	464	116	400	7.14	

TPH 8015M		mg/kg		Analyzed By: MS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10	<10.0	10.0	06/30/2017	ND	205	103	200	2.25	
DRO >C10-C28	<10.0	10.0	06/30/2017	ND	222	111	200	2.84	

Surrogate: 1-Chlorooctane 103 % 28.3-164

Surrogate: 1-Chlorooctadecane 110 % 34.7-157

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Eunice NM, 88231  
Fax To: (505) 394-2601

Received:	06/28/2017	Sampling Date:	06/28/2017
Reported:	07/03/2017	Sampling Type:	Soil
Project Name:	ABO SWD #2	Sampling Condition:	Cool & Intact
Project Number:	UL-C SEC.2, T17S, R36E	Sample Received By:	Jodi Henson
Project Location:	VANGUARD		

**Sample ID: SP 11 ( SURFACE ) (H701703-21)**

BTX 8021B			mg/kg		Analyzed By: MS				
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	06/30/2017	ND	2.04	102	2.00	0.0491	
Toluene*	<0.050	0.050	06/30/2017	ND	1.97	98.6	2.00	0.993	
Ethylbenzene*	<0.050	0.050	06/30/2017	ND	2.12	106	2.00	0.0321	
Total Xylenes*	<0.150	0.150	06/30/2017	ND	6.26	104	6.00	0.140	
Total BTX	<0.300	0.300	06/30/2017	ND					

Surrogate: 4-Bromofluorobenzene (PID) 101 % 72-148

Chloride, SM4500Cl-B			mg/kg		Analyzed By: AC				
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	6320	16.0	06/30/2017	ND	464	116	400	7.14	

TPH 8015M			mg/kg		Analyzed By: MS				
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10	<10.0	10.0	06/30/2017	ND	205	103	200	2.25	
DRO >C10-C28	49.0	10.0	06/30/2017	ND	222	111	200	2.84	

Surrogate: 1-Chlorooctane 97.7 % 28.3-164

Surrogate: 1-Chlorooctadecane 109 % 34.7-157

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Eunice NM, 88231  
Fax To: (505) 394-2601

Received:	06/28/2017	Sampling Date:	06/28/2017
Reported:	07/03/2017	Sampling Type:	Soil
Project Name:	ABO SWD #2	Sampling Condition:	Cool & Intact
Project Number:	UL-C SEC.2, T17S, R36E	Sample Received By:	Jodi Henson
Project Location:	VANGUARD		

**Sample ID: SP 11 ( 18') (H701703-22)**

BTEx 8021B		mg/kg		Analyzed By: MS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	06/30/2017	ND	2.03	101	2.00	1.74	
Toluene*	<0.050	0.050	06/30/2017	ND	1.95	97.5	2.00	2.08	
Ethylbenzene*	<0.050	0.050	06/30/2017	ND	2.13	106	2.00	1.26	
Total Xylenes*	<0.150	0.150	06/30/2017	ND	6.28	105	6.00	0.866	
Total BTEX	<0.300	0.300	06/30/2017	ND					

Surrogate: 4-Bromofluorobenzene (PID) 102 % 72-148

Chloride, SM4500Cl-B		mg/kg		Analyzed By: AC					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	32.0	16.0	06/30/2017	ND	464	116	400	7.14	

TPH 8015M		mg/kg		Analyzed By: MS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10	<10.0	10.0	06/30/2017	ND	205	103	200	2.25	
DRO >C10-C28	<10.0	10.0	06/30/2017	ND	222	111	200	2.84	

Surrogate: 1-Chlorooctane 102 % 28.3-164

Surrogate: 1-Chlorooctadecane 106 % 34.7-157

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Eunice NM, 88231  
Fax To: (505) 394-2601

Received:	06/28/2017	Sampling Date:	06/28/2017
Reported:	07/03/2017	Sampling Type:	Soil
Project Name:	ABO SWD #2	Sampling Condition:	Cool & Intact
Project Number:	UL-C SEC.2, T17S, R36E	Sample Received By:	Jodi Henson
Project Location:	VANGUARD		

**Sample ID: SP 12 ( SURFACE ) (H701703-23)**

BTEx 8021B		mg/kg		Analyzed By: MS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	06/30/2017	ND	2.03	101	2.00	1.74	
Toluene*	<0.050	0.050	06/30/2017	ND	1.95	97.5	2.00	2.08	
Ethylbenzene*	<0.050	0.050	06/30/2017	ND	2.13	106	2.00	1.26	
Total Xylenes*	<0.150	0.150	06/30/2017	ND	6.28	105	6.00	0.866	
Total BTEx	<0.300	0.300	06/30/2017	ND					

Surrogate: 4-Bromofluorobenzene (PID) 99.9 % 72-148

Chloride, SM4500CI-B		mg/kg		Analyzed By: AC					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	6160	16.0	06/30/2017	ND	464	116	400	7.14	

TPH 8015M		mg/kg		Analyzed By: MS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10	<10.0	10.0	06/30/2017	ND	205	103	200	2.25	
DRO >C10-C28	50.3	10.0	06/30/2017	ND	222	111	200	2.84	

Surrogate: 1-Chlorooctane 99.1 % 28.3-164

Surrogate: 1-Chlorooctadecane 110 % 34.7-157

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Fax To: (505) 394-2601

Received:	06/28/2017	Sampling Date:	06/28/2017
Reported:	07/03/2017	Sampling Type:	Soil
Project Name:	ABO SWD #2	Sampling Condition:	Cool & Intact
Project Number:	UL-C SEC.2, T17S, R36E	Sample Received By:	Jodi Henson
Project Location:	VANGUARD		

**Sample ID: SP 12 ( 14' ) (H701703-24)**

BTEx 8021B		mg/kg		Analyzed By: MS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	06/30/2017	ND	2.03	101	2.00	1.74	
Toluene*	<0.050	0.050	06/30/2017	ND	1.95	97.5	2.00	2.08	
Ethylbenzene*	<0.050	0.050	06/30/2017	ND	2.13	106	2.00	1.26	
Total Xylenes*	<0.150	0.150	06/30/2017	ND	6.28	105	6.00	0.866	
Total BTEx	<0.300	0.300	06/30/2017	ND					

Surrogate: 4-Bromofluorobenzene (PID) 101 % 72-148

Chloride, SM4500Cl-B		mg/kg		Analyzed By: AC					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	48.0	16.0	06/30/2017	ND	464	116	400	7.14	

TPH 8015M		mg/kg		Analyzed By: MS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10	<10.0	10.0	06/30/2017	ND	205	103	200	2.25	
DRO >C10-C28	<10.0	10.0	06/30/2017	ND	222	111	200	2.84	

Surrogate: 1-Chlorooctane 91.3 % 28.3-164

Surrogate: 1-Chlorooctadecane 95.2 % 34.7-157

Cardinal Laboratories

\*=Accredited Analyte

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



Celey D. Keene, Lab Director/Quality Manager



**Analytical Results For:**

Environmental Plus, Inc.  
Daniel Dominguez  
P.O. Box 1558  
Eunice NM, 88231  
Fax To: (505) 394-2601

Received:	06/28/2017	Sampling Date:	06/28/2017
Reported:	07/03/2017	Sampling Type:	Soil
Project Name:	ABO SWD #2	Sampling Condition:	Cool & Intact
Project Number:	UL-C SEC.2, T17S, R36E	Sample Received By:	Jodi Henson
Project Location:	VANGUARD		

**Sample ID: SP 13 ( SURFACE ) (H701703-25)**

BTEx 8021B		mg/kg		Analyzed By: MS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	06/30/2017	ND	2.03	101	2.00	1.74	
Toluene*	<0.050	0.050	06/30/2017	ND	1.95	97.5	2.00	2.08	
Ethylbenzene*	<0.050	0.050	06/30/2017	ND	2.13	106	2.00	1.26	
Total Xylenes*	<0.150	0.150	06/30/2017	ND	6.28	105	6.00	0.866	
Total BTEx	<0.300	0.300	06/30/2017	ND					

Surrogate: 4-Bromofluorobenzene (PID) 100 % 72-148

Chloride, SM4500CI-B		mg/kg		Analyzed By: AC					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	5040	16.0	06/30/2017	ND	464	116	400	7.14	

TPH 8015M		mg/kg		Analyzed By: MS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10	<10.0	10.0	06/30/2017	ND	196	98.0	200	2.17	
DRO >C10-C28	49.9	10.0	06/30/2017	ND	208	104	200	2.05	

Surrogate: 1-Chlorooctane 68.5 % 28.3-164

Surrogate: 1-Chlorooctadecane 79.8 % 34.7-157

Cardinal Laboratories

\*=Accredited Analyte

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Celey D. Keene, Lab Director/Quality Manager

**Analytical Results For:**

Environmental Plus, Inc.  
Daniel Dominguez  
P.O. Box 1558  
Eunice NM, 88231  
Fax To: (505) 394-2601

Received:	06/28/2017	Sampling Date:	06/28/2017
Reported:	07/03/2017	Sampling Type:	Soil
Project Name:	ABO SWD #2	Sampling Condition:	Cool & Intact
Project Number:	UL-C SEC.2, T17S, R36E	Sample Received By:	Jodi Henson
Project Location:	VANGUARD		

**Sample ID: SP 13 ( 14' ) (H701703-26)**

BTX 8021B		mg/kg		Analyzed By: MS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	06/30/2017	ND	2.03	101	2.00	1.74	
Toluene*	<0.050	0.050	06/30/2017	ND	1.95	97.5	2.00	2.08	
Ethylbenzene*	<0.050	0.050	06/30/2017	ND	2.13	106	2.00	1.26	
Total Xylenes*	<0.150	0.150	06/30/2017	ND	6.28	105	6.00	0.866	
Total BTX	<0.300	0.300	06/30/2017	ND					

Surrogate: 4-Bromofluorobenzene (PID) 101 % 72-148

Chloride, SM4500CI-B		mg/kg		Analyzed By: AC					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	160	16.0	06/30/2017	ND	464	116	400	7.14	

TPH 8015M		mg/kg		Analyzed By: MS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10	<10.0	10.0	06/30/2017	ND	196	98.0	200	2.17	
DRO >C10-C28	<10.0	10.0	06/30/2017	ND	208	104	200	2.05	

Surrogate: 1-Chlorooctane 90.5 % 28.3-164

Surrogate: 1-Chlorooctadecane 91.3 % 34.7-157

Cardinal Laboratories

\*=Accredited Analyte

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



Celey D. Keene, Lab Director/Quality Manager

### Notes and Definitions

S-06	The recovery of this surrogate is outside control limits due to sample dilution required from high analyte concentration and/or matrix interference's.
QM-07	The spike recovery was outside acceptance limits for the MS and/or MSD. The batch was accepted based on acceptable LCS recovery.
ND	Analyte NOT DETECTED at or above the reporting limit
RPD	Relative Percent Difference
**	Samples not received at proper temperature of 6°C or below.
***	Insufficient time to reach temperature.
-	Chloride by SM4500Cl-B does not require samples be received at or below 6°C Samples reported on an as received basis (wet) unless otherwise noted on report



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Celey D. Keene, Lab Director/Quality Manager

# Environmental Plus, Inc.

2100 Avenue O, Eunice, NM 88231

(575) 394-3481 FAX: (575) 394-2601

P.O. Box 1558, Eunice, NM 88231

Chain of Custody Form

LAB Cardinal

ANALYSIS REQUEST

Bill To

Company Name Environmental Plus, Inc.

EPI Project Manager Daniel Dominguez

Mailing Address P.O. BOX 1558

City, State, Zip Eunice New Mexico 88231

EPI Phone#/Fax# 575-394-3481 / 575-394-2601

Client Company Vanguard

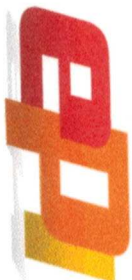
Facility Name ABO SWD #2

Location UL-C Sec. 2, T17S, R36E

Project Reference

Attn: Daniel Dominguez  
P.O. Box 1558  
Eunice, NM 88231

EPI Sampler Name Dustin Crockett



LAB I.D.

SAMPLE I.D.

H701703

SAMPLE I.D.		(G)RAB OR (C)OMP.	# CONTAINERS	GROUND WATER	WASTEWATER	SOIL	CRUDE OIL	SLUDGE	OTHER:	ACID/BASE	ICE/COOL	OTHER	DATE	TIME	BTEX 8021B	TPH 8015M	CHLORIDES (Cl <sup>-</sup> )	SULFATES (SO <sub>4</sub> <sup>2-</sup> )	pH	TCLP	OTHER >>>	PAH
1	SP1 (Surface)	G	1			X					X		19-Jun-17		X	X	X					
2	SP1 (26')	G	1			X					X		19-Jun-17		X	X	X					
3	SP2 (Surface)	G	1			X					X		19-Jun-17		X	X	X					
4	SP2 (10')	G	1			X					X		19-Jun-17		X	X	X					
5	SP3 (Surface)	G	1			X					X		19-Jun-17		X	X	X					
6	SP3 (18')	G	1			X					X		19-Jun-17		X	X	X					
7	SP4 (Surface)	G	1			X					X		19-Jun-17		X	X	X					
8	SP4 (2')	G	1			X					X		19-Jun-17		X	X	X					
9	SP5 (Surface)	G	1			X					X		20-Jun-17		X	X	X					
10	SP5 (10')	G	1			X					X		20-Jun-17		X	X	X					

Sampler Relinquished:

Date 6-26-17

Received By:

Relinquished By:

Date 6-26-17

Received By: (lab staff)

Delivered by:

Sample Cool & Intact

Checked By:

E-mail results to: ddominguezepi@gmail.com & cjohnston@vnrllc.com  
NOTES: & bboone.epi@gmail.com



# Environmental Plus, Inc.

2100 Avenue O, Eunice, NM 88231  
(575) 394-3481 FAX: (575) 394-2601

P.O. Box 1558, Eunice, NM 88231

Chain of Custody Form

LAB Cardinal

ANALYSIS REQUEST

Bill To



Attn: Daniel Dominguez  
P.O. Box 1558  
Eunice, NM 88231

Company Name Environmental Plus, Inc.

EPI Project Manager Daniel Dominguez

Mailing Address P.O. BOX 1558

City, State, Zip Eunice New Mexico 88231

EPI Phone#/Fax# 575-394-3481 / 575-394-2601

Client Company Vanguard

Facility Name ABO SWD #2

Location UL-C Sec. 2, T17S, R36E

Project Reference

EPI Sampler Name Dustin Crockett

LAB I.D.

SAMPLE I.D.

H101703

SAMPLE I.D.		(G)RAB OR (C)OMP.	# CONTAINERS	GROUND WATER	WASTEWATER	SOIL	CRUDE OIL	SLUDGE	OTHER:	ACID/BASE	ICE/COOL	OTHER	DATE	TIME	BTEX 8021B	TPH 8015M	CHLORIDES (Cl <sup>-</sup> )	SULFATES (SO <sub>4</sub> <sup>2-</sup> )	pH	TCLP	OTHER >>>	PAH
11	SP6 (Surface)	G	1			X					X		20-Jun-17		X	X	X					
12	SP6 (10')	G	1			X					X		20-Jun-17		X	X	X					
13	SP7 (Surface)	G	1			X					X		20-Jun-17		X	X	X					
14	SP7 (28')	G	1			X					X		20-Jun-17		X	X	X					
15	SP8 (Surface)	G	1			X					X		20-Jun-17		X	X	X					
16	SP8 (16')	G	1			X					X		20-Jun-17		X	X	X					
17	SP9 (Surface)	G	1			X					X		23-Jun-17		X	X	X					
18	SP9 (4')	G	1			X					X		23-Jun-17		X	X	X					
19																						
20																						

Sampler Relinquished: Date 6-26-17 Received By: [Signature] E-mail results to: ddominguezepi@gmail.com & cjohnston@vnrllc.com & bboone.epi@gmail.com

Relinquished by: [Signature] Date 6:00 am Received By: (lab staff) [Signature]

Delivered by: [Signature] Sample Cool & Intact Yes No Checked By: [Signature]

NOTES:



## Chain of Custody Form

# Cardinal

ANALYSIS REQUEST

ANALYSIS REQUEST

ANALYSIS REQUEST

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n &amp; cjohnston@vnrllc.com

& bboone.epi@uwm.edu

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District I  
1625 N. French Dr., Hobbs, NM 88240  
District II  
811 S. First St., 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 August 8, 2011

Submit 1 Copy to appropriate District Office in  
accordance with 19.15.29 NMAC.

Release Notification and Corrective Action

OPERATOR

☒ Initial Report ☐ Final Report

Name of Company: Vanguard	Contact: Chuck Johnston
Address: 4001 Penbrook, Suite 201, Odessa Texas 79762	Telephone No. 432-202-4771
Facility Name: ABO SWD #2	Facility Type: Tank Battery

Surface Owner: State	Mineral Owner:	API No.
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LOCATION OF RELEASE

Unit Letter C	Section 2	Township 17S	Range 36E	Feet from the	North/South Line	Feet from the	East/West Line	County Lea
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Latitude: N 32.868700° Longitude: W 103.326070°

NATURE OF RELEASE

Type of Release: Produced Water	Volume of Release: unknown	Volume Recovered: unknown
Source of Release: Tank Battery	Date and Hour of Occurrence: Historic	Date and Hour of Discovery: Historic
Was Immediate Notice Given? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Not Required	If YES, To Whom?	
By Whom?	Date and Hour:	
Was a Watercourse Reached? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	If YES, Volume Impacting the Watercourse: Not Applicable	

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

Describe Cause of Problem and Remedial Action Taken.\*  
Historic release of produced water from SWD tank battery.

Describe Area Affected and Cleanup Action Taken.\*

Discovered historic release areas from SWD tank battery. Samples will be collected and sent to the lab for testing.

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:

Printed Name: Chuck Johnston

Title: EHS

E-mail Address: cjohnston@vnrllc.com

Date: 9-19-2017

Phone: 432-202-4771

OIL CONSERVATION DIVISION

Approved by Environmental Specialist:

Approval Date: 9/21/2017

Expiration Date:

Conditions of Approval:

see attached directive

Attached ☒

\* Attach Additional Sheets If Necessary

1RP-4817

nOY1726455140

pOY1726455393

Operator/Responsible Party,

The OCD has received the form C-141 you provided on 9/20/2017 regarding an unauthorized release. The information contained on that form has been entered into our incident database and remediation case number 1RP-4817 has been assigned. **Please refer to this case number in all future correspondence.**

It is the Division's obligation under both the Oil & Gas Act and Water Quality Act to provide for the protection of public health and the environment. Our regulations (19.15.29.11 NMAC) state the following,

*The responsible person shall complete division-approved corrective action for releases that endanger public health or the environment. The responsible person shall address releases in accordance with a remediation plan submitted to and approved by the division or with an abatement plan submitted in accordance with 19.15.30 NMAC. [emphasis added]*

Release characterization is the first phase of corrective action unless the release is ongoing or is of limited volume and all impacts can be immediately addressed. Proper and cost-effective remediation typically cannot occur without adequate characterization of the impacts of any release. Furthermore, the Division has the ability to impose reasonable conditions upon the efforts it oversees. **As such, the Division is requiring a workplan for the characterization of impacts associated with this release be submitted to the OCD District 1 office in Hobbs on or before 10/21/2017. If and when the release characterization workplan is approved, there will be an associated deadline for submittal of the resultant investigation report. Modest extensions of time to these deadlines may be granted, but only with acceptable justification.**

The goals of a characterization effort are: 1) determination of the lateral and vertical extents along with the magnitude of soil contamination. 2) determine if groundwater or surface waters have been impacted. 3) If groundwater or surface waters have been impacted, what are the extents and magnitude of that impact. 4) The characterization of any other adverse impacts that may have occurred (examples: impacts on vegetation, impacts on wildlife, air quality, loss of use of property, etc.). To meet these goals as quickly as possible, the following items must, at a minimum, be addressed in the release characterization workplan and subsequent reporting:

- Horizontal delineation of soil impacts in each of the four cardinal compass directions. Adsorbed soil contamination must be characterized for the following constituents using the associated laboratory methods: benzene, toluene, ethylbenzene, and total xylenes by either Method 8260 or 8021, total petroleum hydrocarbons by Method 8015 extended range (GRO+DRO+MRO; C<sub>6</sub> thru C<sub>36</sub>), and for chloride by Method 300. This is not an exclusive list of potential contaminants. Analyzed parameters should be modified based on the nature of the released substance(s). Soil sampling must be both within the impacted area and beyond.
- Vertical delineation of soil impacts. Adsorbed soil contamination must be characterized for the following constituents using the associated laboratory methods: benzene, toluene, ethylbenzene, and total xylenes by either Method 8260 or 8021, total petroleum hydrocarbons by Method 8015 extended range (GRO+DRO+MRO; C<sub>6</sub> thru C<sub>36</sub>), and for chloride by Method 300. As above, this is not an exclusive list of potential contaminants and can be modified. Vertical characterization samples should be taken at depth intervals no greater than five feet apart. Lithologic description of encountered soils must also be provided. At least ten vertical feet of soils with contaminant concentrations at or below these values must be demonstrated as existing above the water table.
- Nominal detection limits for field and laboratory analyses must be provided.
- Composite sampling is not generally allowed.
- Field screening and assessment techniques are acceptable (headspace, titration, EC [include algorithm for validation purposes], EM, etc.), but the sampling and assay procedures must be clearly defined. Copies of field notes are highly desirable. A statistically significant set of split samples must be submitted for confirmatory laboratory analysis, including the laterally farthest and vertically deepest sets of soil samples. Make sure there are at least two soil samples submitted

for laboratory analysis from each borehole or test pit (highest observed contamination and deepest depth investigated). Copies of the actual laboratory results must be provided including chain of custody documentation.

- Probable depth to shallowest protectable groundwater and lateral distance to nearest surface water. If there is an estimate of groundwater depth, the information used to arrive at that estimate must be provided. If there is a reasonable assumption that the depth to protectable water is 50 feet or less, the responsible party should anticipate the need for at least one groundwater monitoring well to be installed in the area of likely maximum contamination.

- If groundwater contamination is encountered, an additional investigation workplan may be required to determine the extents of that contamination. Groundwater and/or surface water samples, if any, must be analyzed by a competent laboratory for volatile organic hydrocarbons (typically Method 8260 full list), total dissolved solids, pH, major anions and cations including chloride and sulfate, dissolved iron, and dissolved manganese. The investigation workplan must provide the groundwater sampling method(s) and sample handling protocols. To the fullest extent possible, aqueous analyses must be undertaken using nominal method detection limits. As with the soil analyses, copies of the actual laboratory results must be provided including chain of custody documentation.

- Accurately scaled and well-drafted site maps must be provided providing the location of borings, test pits, monitoring wells, potentially impacted areas, and significant surface features including roads and site infrastructure that might limit either the release characterization or remedial efforts. Field sketches may be included in subsequent reporting, but should not be considered stand-alone documentation of the site's layout. Digital photographic documentation of the location and fieldwork is recommended, especially if unusual circumstances are encountered.

**Nothing herein should be interpreted to preclude emergency response actions or to imply immediate remediation by removal cannot proceed as warranted. Nonetheless, characterization of impacts and confirmation of the effectiveness of remedial efforts must still be provided to the OCD before any release incident will be closed.**

**Jim Griswold**

OCD Environmental Bureau Chief  
1220 South St. Francis Drive  
Santa Fe, New Mexico 87505  
505-476-3465  
jim.griswold@state.nm.us