

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

2100 Ave 'O'  
P.O. Box 1558  
Eunice, NM 88231  
Bboone.epi@gmail.com  
Office: (575) 394-3481  
Fax: (575) 394-2601



## **Site Characterization and Work Plan**

**Vanguard  
Karlsbad Corral SWD 2  
Eddy County, New Mexico  
Unit Letter "M" Section 11, Township 25 South, Range 29 East  
Latitude 32.138306 North, Longitude 103.962509 West**

Prepared For:

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

Prepared By:

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

**October 2017**

Brandon Boone  
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 M, Section 11, Township 25 South, Range 29 East, approximately nine miles south-east of Malaga, in Eddy County, New Mexico. Vanguard Permian owns the property.

The release site is located on the caliche pad on an active disposal well; latitude 32.138306° North, longitude -103.962509° West. Area Map, Site Location Map, and Sample/Site Map are included as Figure 1, and Figure 2, respectively. The Initial NMOCD Form C-141 is included as Attachment IV.

**NMOCD Site Classification:**

A search for water wells was completed utilizing the New Mexico Office of the State Engineer's (NMOSE) website. There is one well 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 USGS database located no wells within the surrounding area. The NMOSE database indicates average water depth is approximately 60 feet below ground surface (bgs) within an 1,581-meter radius (reference *Attachment II*). However, as this is too great a distance to accurately determine depth to water for this location as the closest documented well is 1,500 meters away, the Eddy county groundwater flowline map was utilized to determine an approximate depth to water of over one hundred feet bgs.

Utilizing this information, the NMOCD guidelines indicate the Karlsbad Corral SWD 2 release site to have a ranking score of zero. 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 – 5,000 mg/Kg, and Chloride – 600 mg/Kg.

The visually stained area totals an area of approximately 3,295 square feet. The area is caliche approximately two feet thick on the pad.

**Delineation Progress:**

On August 25, 2017 to September 13, 2017 EPI personnel mobilized on site to collect soil samples to determine the vertical extent of contamination. A total of thirty-two soil samples were collected from six sample locations; SP1 – SP7. Two soil samples from each sample location were sent to Cardinal Labs in Hobbs, New Mexico, for testing. Laboratory analytical results indicate Chlorides above NMOCD RRALs (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:**

Based on field testing and laboratory analytical data, EPI proposes to excavate the release area to approximately three feet bgs, with all contaminated soil hauled to a state approved disposal facility. At the conclusion of excavation activities, a twenty-mil poly-ethylene liner will be installed. Bottom and sidewall confirmation samples will also be collected and analyzed. If laboratory analytical results are below NMOCD RRALs the excavation will be backfilled with select caliche to finish grade. If analytical results are above RRALs the process will be repeated until acceptable levels are achieved.

Backfill soil will be free of deleterious material or rocks or large clumps. Backfilling will continue until the excavation is closed.

**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) 390-7865 or via e-mail [bboone.emp@gmail.com](mailto:bboone.emp@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.

Brandon Boone  
Environmental Consultant

cc: Mike Bratcher, Environmental Specialist – NMOCD District 2, Hobbs, NM  
Amber Groves, Remediation Specialist – NMSLO, Hobbs, NM  
Chuck Johnston, EHS – Vanguard  
File

Encl.: Figure 1 – Area Map  
Figure 2 – 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, USGS Well Sites  
Attachment III – Laboratory Analytical Results  
Attachment IV – Copy of Initial NMOCD Form C-141

## **FIGURES**





Malaga

**Figure 1**

Karlsbad Corral SWD 2  
Vanguard Permian  
UL "M", Sec 11, 25S-29E  
N 32.138306 W -103.962509  
Elevation 3,100 Ft. AMSL

**Legend**

- Karlsbad Corral SWD 2
- Malaga

Karlsbad Corral SWD 2



**Figure 1**

Karlsbad Corral SWD 2  
Vanguard Permian  
UL "M", Sec 11, 25S-28E  
N 32.138308 W -103.962509  
Elevation 3,100 Ft. AMSL

Legend

7	SP 7
1	SP1
2	SP2
3	SP3
4	SP4
5	SP5
6	SP6





## **TABLES**



**TABLE 1**  
**Well Data**  
**Vanguard - Karlsbad Corral 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	C02371	STK	3	Tran King & Western Comm. Bank	2	3	15	15	25S	29E	596741	3555106	1,581	12-Oct-17	3,105	60
2	C02680	STK	3	Tran King & Western Comm. Bank	2	3	15	15	25S	29E	596741	3555106	1,581	12-Oct-17	3,105	60
3	C03617	STK	0	W P Ranches Family	3	4	3	14	25S	29E	598207	3554566	1,712	12-Oct-17	3,105	0

\* = Data obtained from the USGS and New Mexico Office of the State Engineer 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.

STK = 72-12-1 Livestock watering

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

-- = Data not provided on the NM iwaters website

**Shaded area indicates wells not shown in Figure 2**

MON = Monitoring Well

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

IND = Industrial

PDM = Non 72-12-1 Domestic

OIL = Oil Production

**TABLE 2**  
**Summary of Soil Sample Field Testing and Laboratory Analytical Results**  
**Vanguard**  
**Karlsbad Corral 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)	Total TPH (mg/Kg)	Chloride (mg/Kg)
SP1	Surface	In-Situ	25-Aug-17	0.0	400	--	--	--	--	--	--	--	--	1040
	2	In-Situ	25-Aug-17	0.0	640	--	--	--	--	--	--	--	--	--
	4	In-Situ	25-Aug-17	0.0	800	--	--	--	--	--	--	--	--	--
	6	In-Situ	25-Aug-17	0.0	1,040	--	--	--	--	--	--	--	--	--
	8	In-Situ	25-Aug-17	0.0	1,200	--	--	--	--	--	--	--	--	--
	12	In-Situ	13-Sep-17	0.0	480	--	--	--	--	--	--	--	--	--
	14	In-Situ	13-Sep-17	0.0	160	--	--	--	--	--	--	--	--	--
	18	In-Situ	13-Sep-17	0.0	80	--	--	--	--	--	--	--	--	32
SP2	Surface	In-Situ	13-Sep-17	0.0	2,240	--	--	--	--	--	--	--	--	3,080
	2	In-Situ	13-Sep-17	0.0	880	--	--	--	--	--	--	--	--	--
	4	In-Situ	13-Sep-17	0.0	720	--	--	--	--	--	--	--	--	--
	6	In-Situ	13-Sep-17	0.0	1,440	--	--	--	--	--	--	--	--	--
	10	In-Situ	13-Sep-17	0.0	880	--	--	--	--	--	--	--	--	--
	14	In-Situ	13-Sep-17	0.0	560	--	--	--	--	--	--	--	--	--
	18	In-Situ	13-Sep-17	0.0	160	--	--	--	--	--	--	--	--	--
	22	In-Situ	13-Sep-17	0.0	160	--	--	--	--	--	--	--	--	16



**TABLE 2**  
**Summary of Soil Sample Field Testing and Laboratory Analytical Results**  
**Vanguard**  
**Karlsbad Corral 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)	Total TPH (mg/Kg)	Chloride (mg/Kg)
SP3	Surface	In-Situ	13-Sep-17	0.0	80	--	--	--	--	--	--	--	--	80
	3	In-Situ	13-Sep-17	0.0	80	--	--	--	--	--	--	--	--	32
SP4	Surface	In-Situ	13-Sep-17	0.0	80	--	--	--	--	--	--	--	--	48
	3	In-Situ	13-Sep-17	0.0	80	--	--	--	--	--	--	--	--	<16.0

**TABLE 2**  
**Summary of Soil Sample Field Testing and Laboratory Analytical Results**  
**Vanguard**  
**Karlsbad Corral 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)	Total TPH (mg/Kg)	Chloride (mg/Kg)
SP5	Surface	In-Situ	13-Sep-17	0.0	80	--	--	--	--	--	--	--	--	32
	3	In-Situ	13-Sep-17	0.0	80	--	--	--	--	--	--	--	--	48
SP6	Surface	In-Situ	13-Sep-17	0.0	80	--	--	--	--	--	--	--	--	48
	3	In-Situ	13-Sep-17	0.0	80	--	--	--	--	--	--	--	--	32
SP7	Surface	In-Situ	13-Sep-17	0.0	4000	--	--	--	--	--	--	--	--	27,200
	2	In-Situ	13-Sep-17	0.0	560	--	--	--	--	--	--	--	--	--
	4	In-Situ	13-Sep-17	0.0	640	--	--	--	--	--	--	--	--	--
	6	In-Situ	13-Sep-17	0.0	1,280	--	--	--	--	--	--	--	--	--
	8	In-Situ	13-Sep-17	0.0	1,360	--	--	--	--	--	--	--	--	--
	10	In-Situ	13-Sep-17	0.0	800	--	--	--	--	--	--	--	--	--
	14	In-Situ	13-Sep-17	0.0	240	--	--	--	--	--	--	--	--	--
	18	In-Situ	13-Sep-17	0.0	80	--	--	--	--	--	--	--	--	32
NMOCD Recommended Remedial Action Levels				100		10				50			5,000	600

-- = Not Analyzed

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

*Shaded values indicates soil has been excavated*



## **ATTACHMENTS**

## **ATTACHMENT I**



## **Photographs**



Photograph #1- Lease sign



Photograph #2- Release area



Photograph #3- Release area and sample location



Photograph #4- Release area and sample location



Photograph #5- Release area and sample location



Photograph #6- Release area and sample location



## **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="#">C 02371</a>	C	ED		2	3	15	25S	29E		596741	3555106*	1581	200	60	140
<a href="#">C 02680</a>	C	ED		2	3	15	25S	29E		596741	3555106*	1581	200		

Average Depth to Water: **60 feet**

Minimum Depth: **60 feet**

Maximum Depth: **60 feet**

Record Count: 2

### UTMNAD83 Radius Search (in meters):

**Easting (X):** 597843.11

**Northing (Y):** 3556240

**Radius:** 1800

\*UTM location was derived from PLSS - see Help

The data is furnished by the NMOSE/ISC and is accepted by the recipient with the expressed understanding that the OSE/ISC make no warranties, expressed or implied, concerning the accuracy, completeness, reliability, usability, or suitability for any particular purpose of the data.

## **USGS Well Sites**








# New Mexico Office of the State Engineer

## Active & Inactive Points of Diversion

(with Well Drill Dates & Depths)

(R=POD has been replaced and no longer serves this file, (quarters are 1=NW 2=NE 3=SW 4=SE) C=the file is closed)										(quarters are smallest to largest)			(NAD83 UTM in meters)			(in feet)					
(acre ft per annum)																					
WR File Nbr	Sub basin	Use	Diversion	Cnty	POD Number	Code	Grant	Source	6416	4	Sec	Tws	Rng	X	Y	Distance	Start Date	Finish Date	Depth Well	Depth Water	
<a href="#">C 02371</a>	C	STK		3	ED <a href="#">C 02371</a>			Shallow	2	3	15	25S	29E	596741	3555106*	1581		01/12/1995	01/24/1995	200	60
<a href="#">C 02680</a>	C	STK		3	ED <a href="#">C 02680</a>					2	3	15	25S	29E	596741	3555106*	1581			04/30/1964	200
<a href="#">C 03617</a>	C	STK		0	ED <a href="#">C 03617</a> <a href="#">POD1</a>					3	4	3	14	25S	29E	598208	3554566	1712			

Record Count: 3

UTMNA83 Radius Search (in meters):

Easting (X): 597843.11

Northing (Y): 3556240

Radius: 1800

Sorted by: Distance

\*UTM location was derived from PLSS - see Help

The data is furnished by the NMOSE/ISC and is accepted by the recipient with the expressed understanding that the OSE/ISC make no warranties, expressed or implied, concerning the accuracy, completeness, reliability, usability, or suitability for any particular purpose of the data.

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

September 21, 2017

Daniel Dominguez

Environmental Plus, Inc.

P.O. Box 1558

Eunice, NM 88231

RE: KARLSBAD CORRAL SWD #2

Enclosed are the results of analyses for samples received by the laboratory on 09/14/17 15:30.

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,



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:	09/14/2017	Sampling Date:	09/13/2017
Reported:	09/21/2017	Sampling Type:	Soil
Project Name:	KARLSBAD CORRAL SWD #2	Sampling Condition:	Cool & Intact
Project Number:	VANGUARD	Sample Received By:	Jodi Henson
Project Location:	VANGUARD - UL - M SEC. 11, T25S, R29		

**Sample ID: SP 1 ( SURFACE ) (H702491-01)**

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	09/21/2017	ND	1.88	94.2	2.00	0.243	
Toluene*	<0.050	0.050	09/21/2017	ND	1.73	86.6	2.00	0.676	
Ethylbenzene*	<0.050	0.050	09/21/2017	ND	1.78	89.2	2.00	0.588	
Total Xylenes*	<0.150	0.150	09/21/2017	ND	5.45	90.9	6.00	0.259	
Total BTX	<0.300	0.300	09/21/2017	ND					

Surrogate: 4-Bromofluorobenzene (PID) 106 % 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	1040	16.0	09/18/2017	ND	432	108	400	3.64	

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	09/17/2017	ND	181	90.5	200	0.835	
DRO >C10-C28	<10.0	10.0	09/17/2017	ND	188	94.0	200	1.21	
EXT DRO >C28-C36	<10.0	10.0	09/17/2017	ND					

Surrogate: 1-Chlorooctane 88.7 % 28.3-164

Surrogate: 1-Chlorooctadecane 93.7 % 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:	09/14/2017	Sampling Date:	09/13/2017
Reported:	09/21/2017	Sampling Type:	Soil
Project Name:	KARLSBAD CORRAL SWD #2	Sampling Condition:	Cool & Intact
Project Number:	VANGUARD	Sample Received By:	Jodi Henson
Project Location:	VANGUARD - UL - M SEC. 11, T25S, R25E		

**Sample ID: SP 1 ( 18' ) (H702491-02)**

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	09/21/2017	ND	1.88	94.2	2.00	0.243	
Toluene*	<0.050	0.050	09/21/2017	ND	1.73	86.6	2.00	0.676	
Ethylbenzene*	<0.050	0.050	09/21/2017	ND	1.78	89.2	2.00	0.588	
Total Xylenes*	<0.150	0.150	09/21/2017	ND	5.45	90.9	6.00	0.259	
Total BTX	<0.300	0.300	09/21/2017	ND					

Surrogate: 4-Bromofluorobenzene (PID) 99.8 % 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	09/18/2017	ND	432	108	400	3.64	

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	09/17/2017	ND	181	90.5	200	0.835	
DRO >C10-C28	<10.0	10.0	09/17/2017	ND	188	94.0	200	1.21	
EXT DRO >C28-C36	<10.0	10.0	09/17/2017	ND					

Surrogate: 1-Chlorooctane 91.3 % 28.3-164

Surrogate: 1-Chlorooctadecane 94.0 % 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:	09/14/2017	Sampling Date:	09/13/2017
Reported:	09/21/2017	Sampling Type:	Soil
Project Name:	KARLSBAD CORRAL SWD #2	Sampling Condition:	Cool & Intact
Project Number:	VANGUARD	Sample Received By:	Jodi Henson
Project Location:	VANGUARD - UL - M SEC. 11, T25S, R25E		

**Sample ID: SP 2 ( SURFACE ) (H702491-03)**

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	09/21/2017	ND	1.88	94.2	2.00	0.243		
Toluene*	<0.050	0.050	09/21/2017	ND	1.73	86.6	2.00	0.676		
Ethylbenzene*	<0.050	0.050	09/21/2017	ND	1.78	89.2	2.00	0.588		
Total Xylenes*	<0.150	0.150	09/21/2017	ND	5.45	90.9	6.00	0.259		
Total BTEx	<0.300	0.300	09/21/2017	ND						

Surrogate: 4-Bromofluorobenzene (PID) 98.5 % 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	3080	16.0	09/18/2017	ND	432	108	400	3.64		

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	09/17/2017	ND	181	90.5	200	0.835	
DRO >C10-C28	<10.0	10.0	09/17/2017	ND	188	94.0	200	1.21	
EXT DRO >C28-C36	<10.0	10.0	09/17/2017	ND					

Surrogate: 1-Chlorooctane 84.1 % 28.3-164

Surrogate: 1-Chlorooctadecane 81.3 % 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:	09/14/2017	Sampling Date:	09/13/2017
Reported:	09/21/2017	Sampling Type:	Soil
Project Name:	KARLSBAD CORRAL SWD #2	Sampling Condition:	Cool & Intact
Project Number:	VANGUARD	Sample Received By:	Jodi Henson
Project Location:	VANGUARD - UL - M SEC. 11, T25S, R25		

**Sample ID: SP 2 ( 22' ) (H702491-04)**

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	09/21/2017	ND	1.88	94.2	2.00	0.243	
Toluene*	<0.050	0.050	09/21/2017	ND	1.73	86.6	2.00	0.676	
Ethylbenzene*	<0.050	0.050	09/21/2017	ND	1.78	89.2	2.00	0.588	
Total Xylenes*	<0.150	0.150	09/21/2017	ND	5.45	90.9	6.00	0.259	
Total BTEx	<0.300	0.300	09/21/2017	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	16.0	16.0	09/18/2017	ND	432	108	400	3.64	

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	09/17/2017	ND	181	90.5	200	0.835	
DRO >C10-C28	<10.0	10.0	09/17/2017	ND	188	94.0	200	1.21	
EXT DRO >C28-C36	<10.0	10.0	09/17/2017	ND					

Surrogate: 1-Chlorooctane 88.3 % 28.3-164

Surrogate: 1-Chlorooctadecane 91.7 % 34.7-157

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**Analytical Results For:**

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

Received:	09/14/2017	Sampling Date:	09/13/2017
Reported:	09/21/2017	Sampling Type:	Soil
Project Name:	KARLSBAD CORRAL SWD #2	Sampling Condition:	Cool & Intact
Project Number:	VANGUARD	Sample Received By:	Jodi Henson
Project Location:	VANGUARD - UL - M SEC. 11, T25S, R25E		

**Sample ID: SP 3 ( SURFACE ) (H702491-05)**

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	09/21/2017	ND	1.88	94.2	2.00	0.243		
Toluene*	<0.050	0.050	09/21/2017	ND	1.73	86.6	2.00	0.676		
Ethylbenzene*	<0.050	0.050	09/21/2017	ND	1.78	89.2	2.00	0.588		
Total Xylenes*	<0.150	0.150	09/21/2017	ND	5.45	90.9	6.00	0.259		
Total BTEX	<0.300	0.300	09/21/2017	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	80.0	16.0	09/18/2017	ND	432	108	400	3.64	

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	09/17/2017	ND	181	90.5	200	0.835	
DRO >C10-C28	<10.0	10.0	09/17/2017	ND	188	94.0	200	1.21	
EXT DRO >C28-C36	<10.0	10.0	09/17/2017	ND					

Surrogate: 1-Chlorooctane 67.5 % 28.3-164

Surrogate: 1-Chlorooctadecane 70.6 % 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:	09/14/2017	Sampling Date:	09/13/2017
Reported:	09/21/2017	Sampling Type:	Soil
Project Name:	KARLSBAD CORRAL SWD #2	Sampling Condition:	Cool & Intact
Project Number:	VANGUARD	Sample Received By:	Jodi Henson
Project Location:	VANGUARD - UL - M SEC. 11, T25S, R2S		

**Sample ID: SP 3 ( 3' ) (H702491-06)**

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	09/21/2017	ND	1.88	94.2	2.00	0.243	
Toluene*	<0.050	0.050	09/21/2017	ND	1.73	86.6	2.00	0.676	
Ethylbenzene*	<0.050	0.050	09/21/2017	ND	1.78	89.2	2.00	0.588	
Total Xylenes*	<0.150	0.150	09/21/2017	ND	5.45	90.9	6.00	0.259	
Total BTEx	<0.300	0.300	09/21/2017	ND					

Surrogate: 4-Bromofluorobenzene (PID) 99.1 % 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	09/18/2017	ND	432	108	400	3.64		

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	09/17/2017	ND	181	90.5	200	0.835	
DRO >C10-C28	<10.0	10.0	09/17/2017	ND	188	94.0	200	1.21	
EXT DRO >C28-C36	<10.0	10.0	09/17/2017	ND					

Surrogate: 1-Chlorooctane 90.5 % 28.3-164

Surrogate: 1-Chlorooctadecane 97.3 % 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:	09/14/2017	Sampling Date:	09/13/2017
Reported:	09/21/2017	Sampling Type:	Soil
Project Name:	KARLSBAD CORRAL SWD #2	Sampling Condition:	Cool & Intact
Project Number:	VANGUARD	Sample Received By:	Jodi Henson
Project Location:	VANGUARD - UL - M SEC. 11, T25S, R2S		

**Sample ID: SP 4 ( SURFACE ) (H702491-07)**

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	09/20/2017	ND	2.23	112	2.00	2.13		
Toluene*	<0.050	0.050	09/20/2017	ND	2.06	103	2.00	2.29		
Ethylbenzene*	<0.050	0.050	09/20/2017	ND	2.12	106	2.00	1.94		
Total Xylenes*	<0.150	0.150	09/20/2017	ND	6.28	105	6.00	1.07		
Total BTEX	<0.300	0.300	09/20/2017	ND						

Surrogate: 4-Bromofluorobenzene (PID) 100 % 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	09/18/2017	ND	432	108	400	3.64		

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	09/17/2017	ND	181	90.5	200	0.835	
DRO >C10-C28	<10.0	10.0	09/17/2017	ND	188	94.0	200	1.21	
EXT DRO >C28-C36	<10.0	10.0	09/17/2017	ND					

Surrogate: 1-Chlorooctane 80.7 % 28.3-164

Surrogate: 1-Chlorooctadecane 82.5 % 34.7-157

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**Analytical Results For:**

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

Received:	09/14/2017	Sampling Date:	09/13/2017
Reported:	09/21/2017	Sampling Type:	Soil
Project Name:	KARLSBAD CORRAL SWD #2	Sampling Condition:	Cool & Intact
Project Number:	VANGUARD	Sample Received By:	Jodi Henson
Project Location:	VANGUARD - UL - M SEC. 11, T25S, R2S		

**Sample ID: SP 4 ( 3' ) (H702491-08)**

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	09/20/2017	ND	2.23	112	2.00	2.13	
Toluene*	<0.050	0.050	09/20/2017	ND	2.06	103	2.00	2.29	
Ethylbenzene*	<0.050	0.050	09/20/2017	ND	2.12	106	2.00	1.94	
Total Xylenes*	<0.150	0.150	09/20/2017	ND	6.28	105	6.00	1.07	
Total BTX	<0.300	0.300	09/20/2017	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	09/18/2017	ND	432	108	400	3.64		

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	09/17/2017	ND	181	90.5	200	0.835	
DRO >C10-C28	<10.0	10.0	09/17/2017	ND	188	94.0	200	1.21	
EXT DRO >C28-C36	<10.0	10.0	09/17/2017	ND					

Surrogate: 1-Chlorooctane 91.5 % 28.3-164

Surrogate: 1-Chlorooctadecane 88.7 % 34.7-157

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**Analytical Results For:**

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

Received:	09/14/2017	Sampling Date:	09/13/2017
Reported:	09/21/2017	Sampling Type:	Soil
Project Name:	KARLSBAD CORRAL SWD #2	Sampling Condition:	Cool & Intact
Project Number:	VANGUARD	Sample Received By:	Jodi Henson
Project Location:	VANGUARD - UL - M SEC. 11, T25S, R25		

**Sample ID: SP 5 ( SURFACE ) (H702491-09)**

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	09/20/2017	ND	2.23	112	2.00	2.13	
Toluene*	<0.050	0.050	09/20/2017	ND	2.06	103	2.00	2.29	
Ethylbenzene*	<0.050	0.050	09/20/2017	ND	2.12	106	2.00	1.94	
Total Xylenes*	<0.150	0.150	09/20/2017	ND	6.28	105	6.00	1.07	
Total BTX	<0.300	0.300	09/20/2017	ND					

Surrogate: 4-Bromofluorobenzene (PID) 99.8 % 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	32.0	16.0	09/18/2017	ND	432	108	400	3.64	

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	09/17/2017	ND	181	90.5	200	0.835	
DRO >C10-C28	<10.0	10.0	09/17/2017	ND	188	94.0	200	1.21	
EXT DRO >C28-C36	<10.0	10.0	09/17/2017	ND					

Surrogate: 1-Chlorooctane 93.6 % 28.3-164

Surrogate: 1-Chlorooctadecane 87.0 % 34.7-157

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**Analytical Results For:**

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

Received:	09/14/2017	Sampling Date:	09/13/2017
Reported:	09/21/2017	Sampling Type:	Soil
Project Name:	KARLSBAD CORRAL SWD #2	Sampling Condition:	Cool & Intact
Project Number:	VANGUARD	Sample Received By:	Jodi Henson
Project Location:	VANGUARD - UL - M SEC. 11, T25S, R2S		

**Sample ID: SP 5 ( 3' ) (H702491-10)**

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	09/20/2017	ND	2.23	112	2.00	2.13	
Toluene*	<0.050	0.050	09/20/2017	ND	2.06	103	2.00	2.29	
Ethylbenzene*	<0.050	0.050	09/20/2017	ND	2.12	106	2.00	1.94	
Total Xylenes*	<0.150	0.150	09/20/2017	ND	6.28	105	6.00	1.07	
Total BTX	<0.300	0.300	09/20/2017	ND					

Surrogate: 4-Bromofluorobenzene (PID) 99.1 % 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	09/18/2017	ND	432	108	400	3.64		

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	09/17/2017	ND	181	90.5	200	0.835	
DRO >C10-C28	<10.0	10.0	09/17/2017	ND	188	94.0	200	1.21	
EXT DRO >C28-C36	<10.0	10.0	09/17/2017	ND					

Surrogate: 1-Chlorooctane 94.7 % 28.3-164

Surrogate: 1-Chlorooctadecane 99.0 % 34.7-157

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**Analytical Results For:**

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

Received:	09/14/2017	Sampling Date:	09/13/2017
Reported:	09/21/2017	Sampling Type:	Soil
Project Name:	KARLSBAD CORRAL SWD #2	Sampling Condition:	Cool & Intact
Project Number:	VANGUARD	Sample Received By:	Jodi Henson
Project Location:	VANGUARD - UL - M SEC. 11, T25S, R25E		

**Sample ID: SP 6 ( SURFACE ) (H702491-11)**

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	09/20/2017	ND	2.23	112	2.00	2.13	
Toluene*	<0.050	0.050	09/20/2017	ND	2.06	103	2.00	2.29	
Ethylbenzene*	<0.050	0.050	09/20/2017	ND	2.12	106	2.00	1.94	
Total Xylenes*	<0.150	0.150	09/20/2017	ND	6.28	105	6.00	1.07	
Total BTEX	<0.300	0.300	09/20/2017	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	09/18/2017	ND	432	108	400	3.64	

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	09/17/2017	ND	181	90.5	200	0.835	
DRO >C10-C28	<10.0	10.0	09/17/2017	ND	188	94.0	200	1.21	
EXT DRO >C28-C36	<10.0	10.0	09/17/2017	ND					

Surrogate: 1-Chlorooctane 85.5 % 28.3-164

Surrogate: 1-Chlorooctadecane 83.6 % 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:	09/14/2017	Sampling Date:	09/13/2017
Reported:	09/21/2017	Sampling Type:	Soil
Project Name:	KARLSBAD CORRAL SWD #2	Sampling Condition:	Cool & Intact
Project Number:	VANGUARD	Sample Received By:	Jodi Henson
Project Location:	VANGUARD - UL - M SEC. 11, T25S, R2S		

**Sample ID: SP 6 ( 3' ) (H702491-12)**

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	09/20/2017	ND	2.23	112	2.00	2.13		
Toluene*	<0.050	0.050	09/20/2017	ND	2.06	103	2.00	2.29		
Ethylbenzene*	<0.050	0.050	09/20/2017	ND	2.12	106	2.00	1.94		
Total Xylenes*	<0.150	0.150	09/20/2017	ND	6.28	105	6.00	1.07		
Total BTEX	<0.300	0.300	09/20/2017	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	32.0	16.0	09/18/2017	ND	432	108	400	3.64		

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	09/17/2017	ND	181	90.5	200	0.835	
DRO >C10-C28	<10.0	10.0	09/17/2017	ND	188	94.0	200	1.21	
EXT DRO >C28-C36	<10.0	10.0	09/17/2017	ND					

Surrogate: 1-Chlorooctane 92.9 % 28.3-164

Surrogate: 1-Chlorooctadecane 100 % 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:	09/14/2017	Sampling Date:	09/13/2017
Reported:	09/21/2017	Sampling Type:	Soil
Project Name:	KARLSBAD CORRAL SWD #2	Sampling Condition:	Cool & Intact
Project Number:	VANGUARD	Sample Received By:	Jodi Henson
Project Location:	VANGUARD - UL - M SEC. 11, T25S, R25E		

**Sample ID: SP 7 ( SURFACE ) (H702491-13)**

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	09/20/2017	ND	2.23	112	2.00	2.13	
Toluene*	<0.050	0.050	09/20/2017	ND	2.06	103	2.00	2.29	
Ethylbenzene*	<0.050	0.050	09/20/2017	ND	2.12	106	2.00	1.94	
Total Xylenes*	<0.150	0.150	09/20/2017	ND	6.28	105	6.00	1.07	
Total BTEx	<0.300	0.300	09/20/2017	ND					

Surrogate: 4-Bromofluorobenzene (PID) 99.9 % 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	27200	16.0	09/18/2017	ND	432	108	400	3.64	

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	09/17/2017	ND	181	90.5	200	0.835	
DRO >C10-C28	<10.0	10.0	09/17/2017	ND	188	94.0	200	1.21	
EXT DRO >C28-C36	<10.0	10.0	09/17/2017	ND					

Surrogate: 1-Chlorooctane 89.9 % 28.3-164

Surrogate: 1-Chlorooctadecane 93.8 % 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:	09/14/2017	Sampling Date:	09/13/2017
Reported:	09/21/2017	Sampling Type:	Soil
Project Name:	KARLSBAD CORRAL SWD #2	Sampling Condition:	Cool & Intact
Project Number:	VANGUARD	Sample Received By:	Jodi Henson
Project Location:	VANGUARD - UL - M SEC. 11, T25S, R25		

**Sample ID: SP 7 ( 18' ) (H702491-14)**

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	09/20/2017	ND	2.23	112	2.00	2.13		
Toluene*	<0.050	0.050	09/20/2017	ND	2.06	103	2.00	2.29		
Ethylbenzene*	<0.050	0.050	09/20/2017	ND	2.12	106	2.00	1.94		
Total Xylenes*	<0.150	0.150	09/20/2017	ND	6.28	105	6.00	1.07		
Total BTX	<0.300	0.300	09/20/2017	ND						

Surrogate: 4-Bromofluorobenzene (PID) 99.4 % 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	09/18/2017	ND	432	108	400	3.64	

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	09/17/2017	ND	181	90.5	200	0.835	
DRO >C10-C28	<10.0	10.0	09/17/2017	ND	188	94.0	200	1.21	
EXT DRO >C28-C36	<10.0	10.0	09/17/2017	ND					

Surrogate: 1-Chlorooctane 89.9 % 28.3-164

Surrogate: 1-Chlorooctadecane 97.9 % 34.7-157

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\*=Accredited Analyte

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Celey D. Keene, Lab Director/Quality Manager

**Notes and Definitions**

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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\*=Accredited Analyte

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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

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 Karlsbad Corral SWD #2

Location UL- M Sec. 11, T25S, R29E

Project Reference

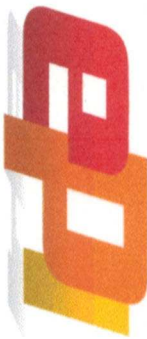
EPI Sampler Name Dustin Crockett



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

Bill To

ANALYSIS REQUEST

EPI Project Manager		Daniel Dominguez		<div></div> <div>Attn: Daniel Dominguez P.O. Box 1558 Eunice, NM 88231</div>	
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		Karlsbad Corral SWD #2			
Location		UL- M Sec. 11, T25S, R29E			
Project Reference					
EPI Sampler Name		Dustin Crockett		Eunice, NM 88231	

LAB I.D.	SAMPLE I.D.	(G)RAB OR (C)OMP.	# CONTAINERS	MATRIX							PRESERV.	SAMPLING		DATE	TIME																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																				
				GROUND WATER	WASTEWATER	SOIL	CRUDE OIL	SLUDGE	OTHER:	ACID/BASE		ICE/COOL	OTHER					BTEX 8021B	TPH 8015M Ext.	CHLORIDES (Cl <sup>-</sup> )	SULFATES (SO <sub>4</sub> <sup>2-</sup> )	pH	TCLP	OTHER >>>	PAH																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																										
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Sampler Relinquished:

Date 9-14-17 Received By:

E-mail results to: ddominguezepi@gmail.com & cjohnston@vnrenergy.com

NOTES: & bboonepi@gmail.com

Relinquished by:

Date 9/14/17 Time 6:00 am

Received By: (lab sig)

Checked By:

Delivered by:

-15.35°C

Time 5:50

Sample Cool & Intact

Yes No

corrected to 2.5°C



# Environmental Plus, Inc.

Chain of Custody Form

2100 Avenue O, Eunice, NM 88231

P.O. Box 1558, Eunice, NM 88231

LAB Cardinal

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

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 Karlsbad Corral SWD #2

Location UL- M Sec. 11, T25S, R29E

Project Reference

EPI Sampler Name Dustin Crockett

Attn: Daniel Dominguez

P.O. Box 1558

Eunice, NM 88231

Bill To

ANALYSIS REQUEST



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		Karlsbad Corral SWD #2	
Location		UL- M Sec. 11, T25S, R29E	
Project Reference			
EPI Sampler Name		Dustin Crockett	

LAB I.D.	SAMPLE I.D.	(G)RAB OR (C)OMP.	# CONTAINERS	MATRIX							PRESERV.	SAMPLING				
				GROUND WATER	WASTEWATER	SOIL	CRUDE OIL	SLUDGE	OTHER:	ACID/BASE		ICE/COOL	OTHER	DATE	TIME	
						X							X			
						X							X			
						X							X			
						X							X			
						X							X			
						X							X			
						X							X			
						X							X			
						X							X			

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

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Sampler Relinquished:

Date 9-14-17

Received By:

Relinquished By:

Date 9/14/17

Received By: (lab staff)

Time 6:00 am

Time 3:30

Sample Cool & Intact

Delivered by:

Yes

No

Checked By:

E-mail results to: ddominguezepi@gmail.com & cjohnston@vntenergy.com  
& bbooneepi@gmail.com

NOTES:

#75

5:35 PM

Corrected to 25°C

**ATTACHMENT IV**  
**Copy of Initial NMOCD Form C-141**



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: Karlsbad Corral SWD 2	Facility Type: Tank Battery
Surface Owner: State	Mineral Owner: API No. 3001536167

**LOCATION OF RELEASE**

Unit Letter	Section	Township	Range	Feet from the	North/South Line	Feet from the	East/West Line	County
M	11	25S	29E					Eddy

Latitude: N 32.138306° Longitude: W -103.962509°

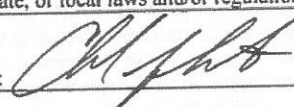
**NATURE OF RELEASE**

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: 	<b>OIL CONSERVATION DIVISION</b>	
Printed Name: Chuck Johnston	Approved by Environmental Specialist:	
Title: EHS Specialist	Approval Date:	Expiration Date:
E-mail Address: cjohnston@vnrenergy.com	Conditions of Approval:	Attached <input type="checkbox"/>
Date: 10-10-2017	Phone: 432-202-4771	

\* Attach Additional Sheets If Necessary