VANGUARD NATURAL RESOURCES

5847 San Felipe, Suite 3000
Houston, Texas 77057
(832) 327-2255

Candelario 24 #1 SWD Battery

2RP-2400

Corrective Action Plan

API No. 30-015-26536

Release Date: July 8th, 2014

Unit Letter E, Section 24, Township 23S, Range 28E

RECS RICE ENVIRONMENTAL CONSULTING & SAFETY

PO Box 2948 | Hobbs, NM 88241 | Phone 575.393.2967

October 13th, 2014

Mike Bratcher
New Mexico Energy, Minerals, & Natural Resources
Oil Conservation Division, Environmental Bureau – District 2
811 S. First St.
Artesia, NM 88210

RE: **Corrective Action Plan**
Vanguard Candelario 24 #1 SWD Battery (2RP-2400)
UL/E sec. 24 T23S R28E
API No. 30-015-26536

Mr. Bratcher:

Vanguard Permian (Vanguard) has retained Rice Environmental Consulting and Safety (RECS) to address potential environmental concerns at the above-referenced site.

Background and Previous Work

The site is located approximately 3 miles east of Loving, New Mexico at UL/E sec. 24 T23S R28E. USGS records indicate that groundwater will likely be encountered at a depth of approximately 40 +/- feet.

On July 8th, 2014, Vanguard discovered a release of produced water from a cut in a 4 inch poly line. The cut released greater than 50 barrels of produced water over 2,251 square feet of pasture land. None of this fluid was recovered. An initial C-141 was submitted to NMOCD on July 28th, 2014, and was approved on July 29th, 2014 (Appendix A).

RECS personnel were on site beginning on July 15th, 2014, to assess the release. Surface samples were taken from two points within the release area, and the samples were field tested for chlorides and organic vapors (Figure 1). The samples were then taken to a commercial laboratory for analysis. Both samples returned elevated laboratory chloride readings and Gasoline Range Organics (GRO) readings of non-detect. Diesel Range Organics (DRO) readings returned a value for Point 1 of 26.9 mg/kg and for Point 2 of 16.3 mg/kg (Appendix B).

To determine the depth of the chloride contamination, verticals were installed at each point. The vertical at Point 1 was installed to a depth of 3 ft bgs, and the vertical at Point 2 was installed to a depth of 4 ft bgs. Bottom samples were taken from the base of each vertical, and the samples were field tested for chlorides and organic vapors. The samples were then taken to a commercial laboratory for analysis. Both samples returned elevated laboratory chloride readings and GRO and DRO readings of non-detect. Based on the laboratory readings from the base of each vertical, Point 1 was then extended to a depth of 18 ft bgs, and Point 2 was extended to a depth of 15 ft bgs. While these verticals were advanced, samples were taken every foot and field tested

for chlorides and organic vapors. At the base of each vertical, field data indicated that chloride levels had not relented with depth.

On September 9th, 2014, two soil bores were installed at Point 1 and Point 2 to continue vertical delineation of chloride contamination. Both soil bores were installed to a depth of 36 ft bgs (Appendix C). In both soil bores, samples were taken at regular intervals and field tested for chlorides and organic vapors. Representative samples from each bore were taken to commercial laboratory for analysis. SB-1 returned a laboratory chloride reading of 13,800 mg/kg at 21 ft bgs and a reading of 14,600 mg/kg at 36 ft bgs. SB-2 returned a laboratory chloride reading of 6,720 mg/kg at 21 ft bgs and a reading of 2,480 mg/kg at 36 ft bgs. GRO and DRO readings in both bores at all depths returned values of non-detect.

Photo documentation of the field activities can be found in Appendix D.

Corrective Action Plan

Based on the laboratory analyses conducted at the site, the release area will be excavated to a depth of 4 ft bgs (Figure 2). At the base of the excavation, a 20-mil reinforced poly liner will be installed and properly seated. All excavated soil will be taken to a NMOCD approved facility for disposal. Clean top soil will be imported to the site to serve as backfill. A sample of this top soil will be taken to a commercial laboratory to confirm that its chloride value is below regulatory standards. The excavation will be backfilled with the imported soil and contoured to the surrounding location. The disturbed area will then be seeded with a blend on native vegetation.

It is evident from the soil bore data that the release may have affected groundwater beneath the site. Therefore, a near-source monitor well will be installed approximately 25 ft down-gradient of the site. The well will be installed to NMOCD and EPA standards. The monitor well will be sampled quarterly, and the samples will be taken to a commercial laboratory for analysis. Based on the sampling from the monitor well, additional monitor wells may be installed as needed to fully delineate groundwater quality. Once groundwater quality has been delineated, a report will be submitted to NMOCD either asking for 'remediation termination' and site closure or with a path forward for a groundwater remedy.

RECS appreciates the opportunity to work with you on this project. Please call Hack Conder at (575) 393-2967 or me if you have any questions or wish to discuss the site.

Sincerely,

Lara Weinheimer
Project Scientist
RECS
(575) 441-0431

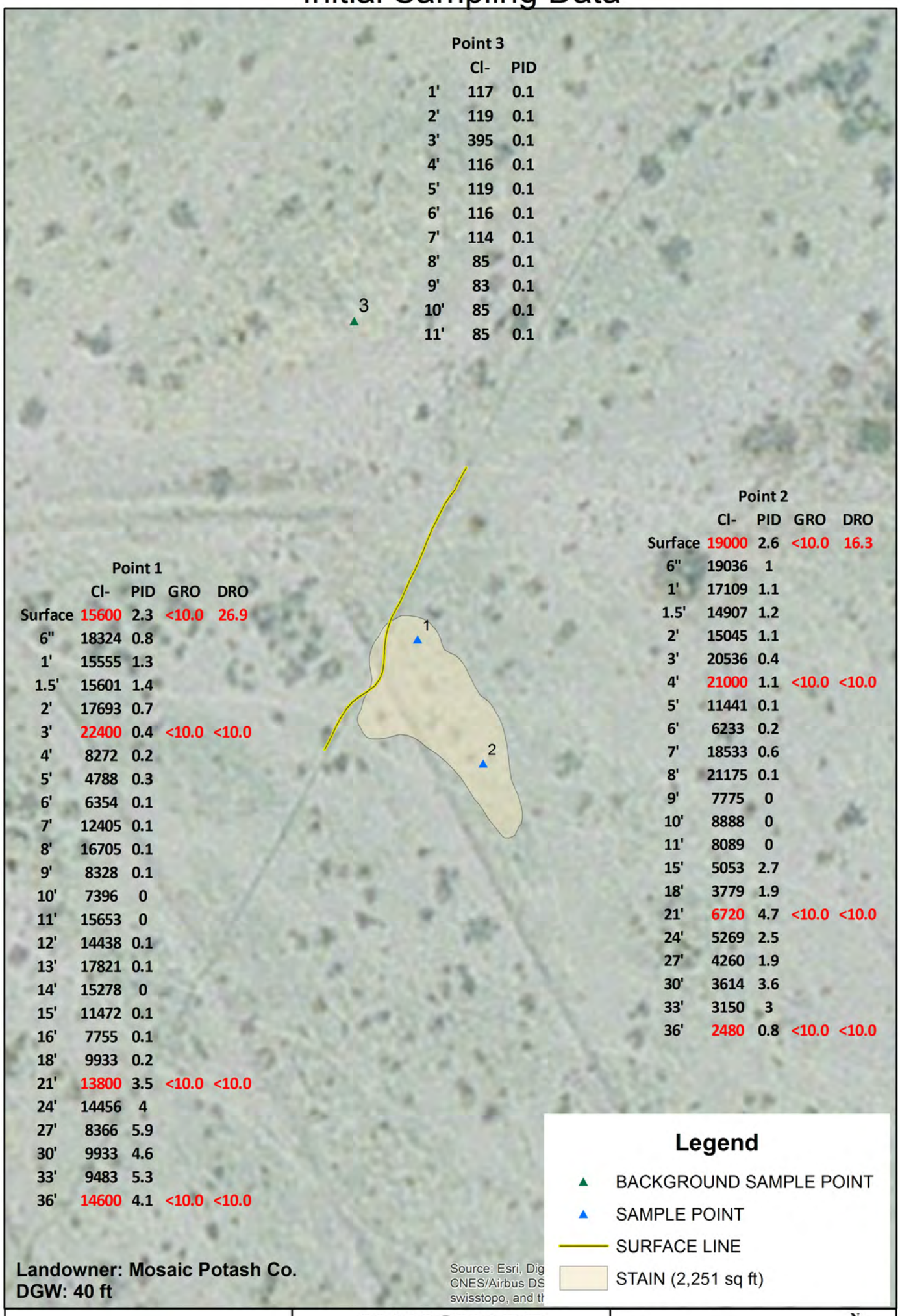
Attachments:

Figure 1 − Initial Sampling Data
Figure 2 – Proposed Corrective Actions
Appendix A – Initial C-141
Appendix B – Initial Sampling Lab
Appendix C – Soil Bore Installation Documentation
Appendix D – Photo Documentation

Figures

RICE Environmental Consulting and Safety (RECS)
P.O. Box 2948, Hobbs, NM 88241
Phone 575.393.2967

Initial Sampling Data



Point 3

	Cl-	PID
1'	117	0.1
2'	119	0.1
3'	395	0.1
4'	116	0.1
5'	119	0.1
6'	116	0.1
7'	114	0.1
8'	85	0.1
9'	83	0.1
10'	85	0.1
11'	85	0.1

Point 1

	Cl-	PID	GRO	DRO
Surface	15600	2.3	<10.0	26.9
6"	18324	0.8		
1'	15555	1.3		
1.5'	15601	1.4		
2'	17693	0.7		
3'	22400	0.4	<10.0	<10.0
4'	8272	0.2		
5'	4788	0.3		
6'	6354	0.1		
7'	12405	0.1		
8'	16705	0.1		
9'	8328	0.1		
10'	7396	0		
11'	15653	0		
12'	14438	0.1		
13'	17821	0.1		
14'	15278	0		
15'	11472	0.1		
16'	7755	0.1		
18'	9933	0.2		
21'	13800	3.5	<10.0	<10.0
24'	14456	4		
27'	8366	5.9		
30'	9933	4.6		
33'	9483	5.3		
36'	14600	4.1	<10.0	<10.0

Point 2

	Cl-	PID	GRO	DRO
Surface	19000	2.6	<10.0	16.3
6"	19036	1		
1'	17109	1.1		
1.5'	14907	1.2		
2'	15045	1.1		
3'	20536	0.4		
4'	21000	1.1	<10.0	<10.0
5'	11441	0.1		
6'	6233	0.2		
7'	18533	0.6		
8'	21175	0.1		
9'	7775	0		
10'	8888	0		
11'	8089	0		
15'	5053	2.7		
18'	3779	1.9		
21'	6720	4.7	<10.0	<10.0
24'	5269	2.5		
27'	4260	1.9		
30'	3614	3.6		
33'	3150	3		
36'	2480	0.8	<10.0	<10.0

Legend

- BACKGROUND SAMPLE POINT
- SAMPLE POINT
- SURFACE LINE
- STAIN (2,251 sq ft)

Landowner: Mosaic Potash Co.
DGW: 40 ft

Source: Esri, Dig
CNES/Airbus DS
swisstopo, and th

RECS
RICE ENVIRONMENTAL
CONSULTING & SAFETY

VANGUARD CANDELARIO 24 #1 SWD BATTERY

UL E SECTION 24
T-23-S R-28-E
EDDY COUNTY, NM

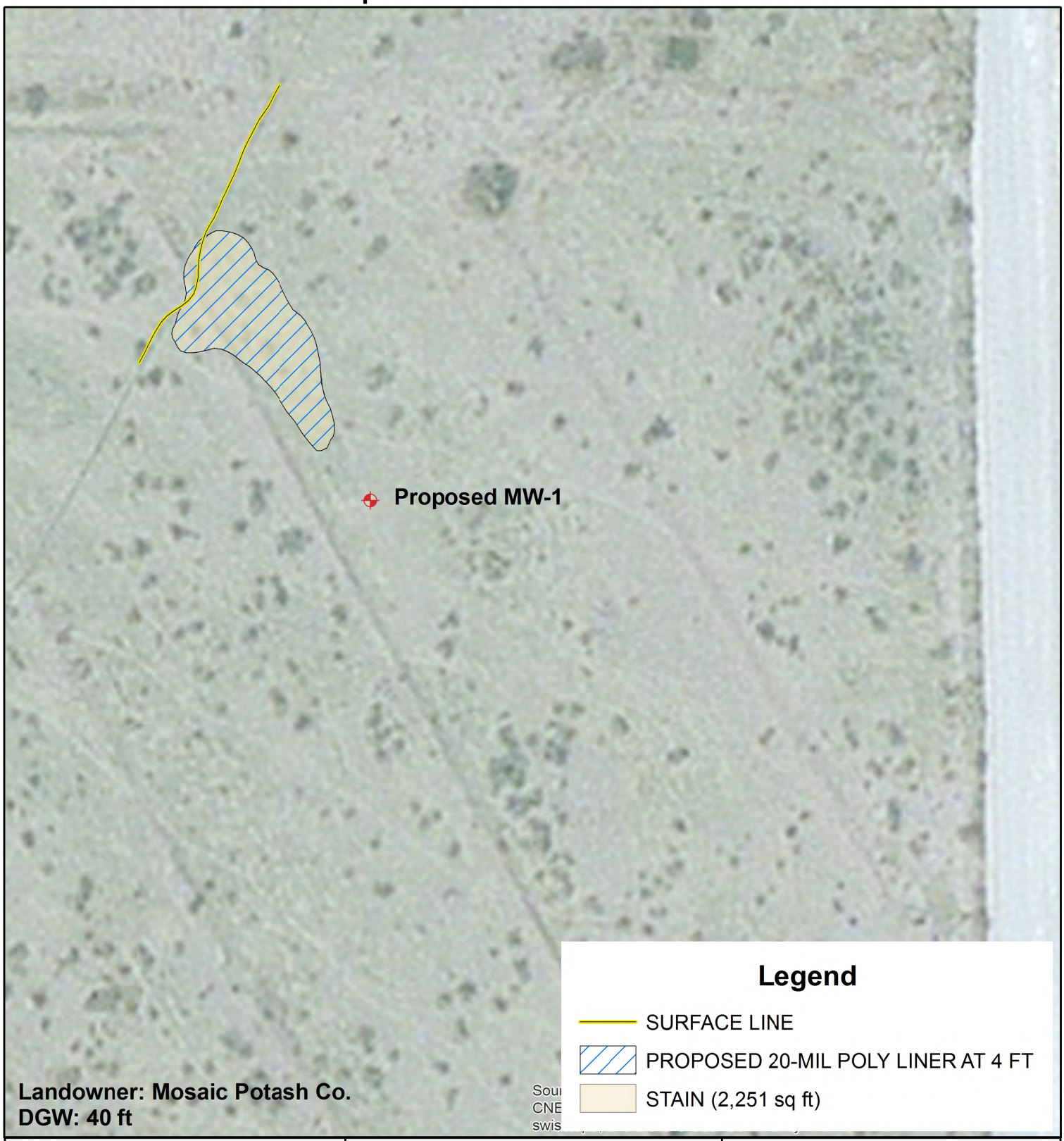
Figure 1

N
W E
S

0 30 60
Feet

GPS date: 7/15/14 CF, 8/4/14 KS
Drawing date: 9/16/14
Drafted by: T. Grieco/L. Weinheimer

Proposed Corrective Actions



RECS
RICE ENVIRONMENTAL
CONSULTING & SAFETY

VANGUARD CANDELARIO 24 #1 SWD BATTERY

UL E SECTION 24
T-23-S R-28-E
EDDY COUNTY, NM

Figure 2

N
W E
S

0 40 80
Feet

GPS date: 7/15/14 CF, 8/4/14 KS
Drawing date: 9/29/14
Drafted by: L. Weinheimer

Appendix A
Initial C-141

RICE Environmental Consulting and Safety (RECS)
P.O. Box 2948 Hobbs, NM 88241
Phone 575.393.2967

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

nAB1420957230

OPERATOR

☒ Initial Report ☐ Final Report

Name of Company Vanguard Permian 258350	Contact Mike Jones
Address 5847 San Felipe, Suite 3000, Houston TX 77057	Telephone No. (575)390-4611
Facility Name Candelario 24 #1 SWD Battery	Facility Type Line Release

Surface Owner Mosaic Potash Co.	Mineral Owner	API No. 30-015-26536

LOCATION OF RELEASE

Unit Letter	Section	Township	Range	Feet from the	North/South Line	Feet from the	East/West Line	County
E	24	23S	28E	1378	FNL	915	FWL	Eddy

Latitude 32.294403 **Longitude** -104.046428

NATURE OF RELEASE

Type of Release Produced Water	Volume of Release >50 bbls	Volume Recovered 0 bbls
Source of Release 4 inch poly line	Date and Hour of Occurrence July 8,2014	Date and Hour of Discovery July 8, 2014, 3:00pm
Was Immediate Notice Given? ☐ Yes ☒ No ☐ Not Required	If YES, To Whom?	
By Whom? Mike Jones	Date and Hour	
Was a Watercourse Reached? ☐ Yes ☒ No	If YES, Volume Impacting the Watercourse.	

NM OIL CONSERVATION
ARTESIA DISTRICT
JUL 28 2014
RECEIVED

If a Watercourse was Impacted, Describe Fully.*

Describe Cause of Problem and Remedial Action Taken.*
The cut was found in the 4 inch poly line, which released >50 barrels over 2,251 sq ft of pasture land. The line was repaired.

Describe Area Affected and Cleanup Action Taken.*
A total of 2,251 sq ft of pasture land was affected by the release. The site will be assessed and a Corrective Action Plan will be submitted to NMOCD.

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: Mike Jones

Printed Name: Mike Jones

Title: Production Foreman

E-mail Address: mjones@vnrllc.com

Date: Phone: (575)390-4611

OIL CONSERVATION DIVISION

Approved by Environmental Specialist:

Approval Date: 7/29/14 Expiration Date: NA

Conditions of Approval:
Remediation per OCD Rule & Guidelines. SUBMIT REMEDIATION PROPOSAL NO LATER THAN: 8/29/14

Attached ☐

RP2-2400

* Attach Additional Sheets If Necessary

Appendix B
Initial Sampling Lab

RICE Environmental Consulting and Safety (RECS)
P.O. Box 2948 Hobbs, NM 88241
Phone 575.393.2967

CARDINAL Laboratories

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

July 21, 2014

LAURA FLORES

RICE ENVIRONMENTAL CONSULTING & SAFETY LLC

419 W. CAIN

HOBBS, NM 88240

RE: 24 #1 SWD BATTERY

Enclosed are the results of analyses for samples received by the laboratory on 07/17/14 10:10.

Cardinal Laboratories is accredited through Texas NELAP under certificate number T104704398-13-5. 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.

Cardinal Laboratories is accreditated 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

Celey D. Keene

Lab Director/Quality Manager

CARDINAL Laboratories

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

Analytical Results For:

RICE ENVIRONMENTAL CONSULTING & SAFETY
LAURA FLORES
419 W. CAIN
HOBBS NM, 88240
Fax To: (575) 397-1471

Received:	07/17/2014	Sampling Date:	07/15/2014
Reported:	07/21/2014	Sampling Type:	Soil
Project Name:	24 #1 SWD BATTERY	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Jodi Henson
Project Location:	CANDELARIO		

Sample ID: PT. 1 @ SURFACE (H402172-01)

Chloride, SM4500Cl-B mg/kg **Analyzed By: AP**

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	**15600**	16.0	07/21/2014	ND	432	108	400	3.77	

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	07/18/2014	ND	174	86.9	200	5.90	
DRO >C10-C28	**26.9**	10.0	07/18/2014	ND	187	93.5	200	6.11	

Surrogate: 1-Chlorooctane	*106 %*	*65.2-140*
Surrogate: 1-Chlorooctadecane	*117 %*	*63.6-154*

Sample ID: PT. 1 @ 3' (H402172-02)

Chloride, SM4500Cl-B mg/kg **Analyzed By: AP**

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	**22400**	16.0	07/21/2014	ND	416	104	400	3.92	

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	07/18/2014	ND	174	86.9	200	5.90	
DRO >C10-C28	<10.0	10.0	07/18/2014	ND	187	93.5	200	6.11	

Surrogate: 1-Chlorooctane	*113 %*	*65.2-140*
Surrogate: 1-Chlorooctadecane	*120 %*	*63.6-154*

Cardinal Laboratories *=Accredited Analyte

Celey D. Keene, Lab Director/Quality Manager

CARDINAL Laboratories

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

Analytical Results For:

RICE ENVIRONMENTAL CONSULTING & SAFETY
LAURA FLORES
419 W. CAIN
HOBBS NM, 88240
Fax To: (575) 397-1471

Received:	07/17/2014	Sampling Date:	07/15/2014
Reported:	07/21/2014	Sampling Type:	Soil
Project Name:	24 #1 SWD BATTERY	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Jodi Henson
Project Location:	CANDELARIO		

Sample ID: PT. 2 @ SURFACE (H402172-03)

Chloride, SM4500Cl-B mg/kg **Analyzed By: AP**

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	**19000**	16.0	07/21/2014	ND	416	104	400	3.92	

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	07/18/2014	ND	174	86.9	200	5.90	
DRO >C10-C28	**16.3**	10.0	07/18/2014	ND	187	93.5	200	6.11	

Surrogate: 1-Chlorooctane	*114 %*	*65.2-140*
Surrogate: 1-Chlorooctadecane	*127 %*	*63.6-154*

Sample ID: PT. 2 @ 4' (H402172-04)

Chloride, SM4500Cl-B mg/kg **Analyzed By: AP**

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	**21000**	16.0	07/21/2014	ND	416	104	400	3.92	

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	07/18/2014	ND	174	86.9	200	5.90	
DRO >C10-C28	<10.0	10.0	07/18/2014	ND	187	93.5	200	6.11	

Surrogate: 1-Chlorooctane	*106 %*	*65.2-140*
Surrogate: 1-Chlorooctadecane	*111 %*	*63.6-154*

Cardinal Laboratories *=Accredited Analyte

Celey D. Keene, Lab Director/Quality Manager

CARDINAL Laboratories

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

Notes and Definitions

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

Cardinal Laboratories

*=Accredited Analyte

Celey D. Keene

Celey D. Keene, Lab Director/Quality Manager

CARDINAL LABORATORIES

CHAIN-OF-CUSTODY AND ANALYSIS REQUEST

101 East Marland, Hobbs, NM 88240 2111 Beechwood, Abilene, TX 79603
(505) 393-2326 FAX (505) 393-2476 (325) 673-7001 FAX (325)673-7020

Company Name: RECS
Project Manager: Laura Flores, Kyle Norman
Address:
City: Hobbs State: NM Zip: 88240
Phone #: Fax #:
Project #: Project Owner:
Project Name: Candelario
Project Location: 24 #1 SWD Battery
Sampler Name: Chris Flores

BILL TO
P.O. #:
Company:
Attn:
Address:
City:
State: Zip:
Phone #:
Fax #:

ANALYSIS REQUEST

FOR LAB USE ONLY Lab I.D.	Sample I.D.	(G)RAB OR (C)OMP.	# CONTAINERS	MATRIX: GROUNDWATER	WASTEWATER	SOIL	OIL	SLUDGE	OTHER :	PRESERV.: ACID/BASE:	ICE / COOL	OTHER :	SAMPLING: DATE	TIME	Chlorides	TPH 8015 M	BTEX	Texas TPH	Complete Cations/Anions	TDS
H402172-1	Point 1 @ surface	G	1			✓					X		7-15-2014	10:00 AM	X	X				
2	Point 1 @ 3'	G	1			✓					X			10:10 AM	X	X				
3	Point 2 @ surface	G	1			✓					X			10:20 AM	X	X				
4	Point 2 @ 4'	G	1			✓					X			10:30 AM	X	X				

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 the client for the 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 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 services hereunder by Cardinal, regardless of whether such claim is based upon any of the above stated reasons or otherwise.

Relinquished By: Date: 7-17-2014 Time: 10:10 Received By: Jodi Henson
Relinquished By: Date: Time: Received By:

Delivered By: (Circle One)
Sampler - UPS - Bus - Other:

Sample Condition: Cool ☑ Yes ☐ No; Intact ☑ Yes ☐ No
CHECKED BY: (Initials)

Phone Result: ☐ Yes ☑ No Add'l Phone #:
Fax Result: ☐ Yes ☑ No Add'l Fax #:
REMARKS:

email: hconder@riceswd.com; lflores@rice-ecs.com; lweinheimer@rice-ecs.com; knorman@rice-ecs.com; jkamplain@rice-ecs.com; sedwards@rice-ecs.com; cursanic@rice-ecs.com
Environmental Tech: cflores @rice-ecs.com

† Cardinal cannot accept verbal changes. Please fax written changes to 505-393-2476

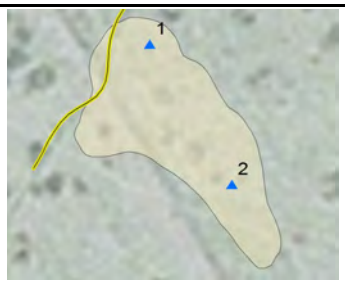
#54

Appendix C

Soil Bore Installation Documentation

RICE Environmental Consulting and Safety (RECS)
P.O. Box 2948 Hobbs, NM 88241
Phone 575.393.2967

Logger:	Amber Groves
Driller:	Harrison & Cooper, Inc.
Drilling Method:	Air Rotary
Start Date:	9/9/2014
End Date:	9/9/2014



Company: Vanguard
Project Name: Candelario 24 #1 SWD
Well ID: SB-1
Project Consultant: RECS
Location: UL/E sec. 24 T23S R28E
Lat: 32°17'39.899"N
Long: 104°2'46.995"W
County: Eddy
State: NM

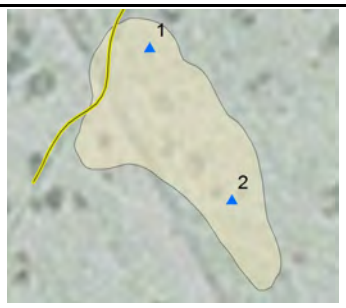
Comments:
All samples were taken from cuttings.

DRAFTED BY: L Weinheimer

TD = 36 ft GW = 40 ft

Depth (feet)	Chloride field tests	LAB	PID	Description	Lithology	Well Construction
18 ft	9933		0.2	Brown sand with river rock		Bentonite Seal
21 ft	12698	Cl- 13800	3.5			
		GRO <10				
		DRO <10				
24 ft	14456		4			
27 ft	8366		5.9			
30 ft	9933		4.6			
33 ft	9483		5.3			
36 ft	9119	Cl- 14600	4.1			
		GRO <10				
		DRO <10				

Logger:	Amber Groves
Driller:	Harrison & Cooper, Inc.
Drilling Method:	Air Rotary
Start Date:	9/9/2014
End Date:	9/9/2014



Company: Vanguard
Project Name: Candelario 24 #1 SWD
Well ID: SB-2
Project Consultant: RECS

Comments:
All samples were taken from cuttings.

Location: UL/E sec. 24 T23S R28E

DRAFTED BY: L Weinheimer

TD = 36 ft GW = 40 ft

Lat: 32°17'39.446"N **County**: Eddy
Long: 104°2'46.723"W **State**: NM

Depth (feet)	Chloride field tests	LAB	PID	Description
15 ft	5053		2.7	Brown sand with river rock
18 ft	3779		1.9	
21 ft	5590	Cl- 6720	4.7	
		GRO <10		
		DRO <10		
24 ft	5269		2.5	
27 ft	4260		1.9	
30 ft	3614		3.6	
33 ft	3150		3	
36 ft	2614	Cl- 2480	0.8	
		GRO <10		
		DRO <10		

Lithology: Bentonite Seal

CARDINAL Laboratories

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

September 15, 2014

KYLE NORMAN

RICE ENVIRONMENTAL CONSULTING & SAFETY LLC

419 W. CAIN

HOBBS, NM 88240

RE: CANDELARIO 24 #1 SWD BATTERY

Enclosed are the results of analyses for samples received by the laboratory on 09/09/14 15:54.

Cardinal Laboratories is accredited through Texas NELAP under certificate number T104704398-13-5. 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.

Cardinal Laboratories is accreditated 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

Celey D. Keene

Lab Director/Quality Manager

CARDINAL Laboratories

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

Analytical Results For:

RICE ENVIRONMENTAL CONSULTING & SAFETY
KYLE NORMAN
419 W. CAIN
HOBBS NM, 88240
Fax To: (575) 397-1471

Received:	09/09/2014	Sampling Date:	09/09/2014
Reported:	09/15/2014	Sampling Type:	Soil
Project Name:	CANDELARIO 24 #1 SWD BATTERY	Sampling Condition:	Cool & Intact
Project Number:	NOT GIVEN	Sample Received By:	Kathy Perez
Project Location:	NOT GIVEN		

Sample ID: SB1 @ 21FT (H402799-01)

Chloride, SM4500Cl-B **mg/kg** **Analyzed By: AP**

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	**13800**	16.0	09/11/2014	ND	400	100	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	09/11/2014	ND	181	90.5	200	3.80	
DRO >C10-C28	<10.0	10.0	09/11/2014	ND	212	106	200	10.2	

Surrogate: 1-Chlorooctane	*99.7 %*	*65.2-140*
Surrogate: 1-Chlorooctadecane	*105 %*	*63.6-154*

Sample ID: SB1 @ 36FT (H402799-02)

Chloride, SM4500Cl-B **mg/kg** **Analyzed By: AP**

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	**14600**	16.0	09/11/2014	ND	400	100	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	09/11/2014	ND	181	90.5	200	3.80	
DRO >C10-C28	<10.0	10.0	09/11/2014	ND	212	106	200	10.2	

Surrogate: 1-Chlorooctane	*102 %*	*65.2-140*
Surrogate: 1-Chlorooctadecane	*112 %*	*63.6-154*

Cardinal Laboratories *=Accredited Analyte

Celey D. Keene, Lab Director/Quality Manager

CARDINAL Laboratories

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Analytical Results For:

RICE ENVIRONMENTAL CONSULTING & SAFETY
KYLE NORMAN
419 W. CAIN
HOBBS NM, 88240
Fax To: (575) 397-1471

Received:	09/09/2014	Sampling Date:	09/09/2014
Reported:	09/15/2014	Sampling Type:	Soil
Project Name:	CANDELARIO 24 #1 SWD BATTERY	Sampling Condition:	Cool & Intact
Project Number:	NOT GIVEN	Sample Received By:	Kathy Perez
Project Location:	NOT GIVEN		

Sample ID: SB2 @ 21FT (H402799-03)

Chloride, SM4500Cl-B mg/kg **Analyzed By: AP**

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	**6720**	16.0	09/11/2014	ND	400	100	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	09/11/2014	ND	181	90.5	200	3.80	
DRO >C10-C28	<10.0	10.0	09/11/2014	ND	212	106	200	10.2	

Surrogate: 1-Chlorooctane	*103 %*	*65.2-140*
Surrogate: 1-Chlorooctadecane	*116 %*	*63.6-154*

Sample ID: SB2 @ 36FT (H402799-04)

Chloride, SM4500Cl-B mg/kg **Analyzed By: AP**

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	**2480**	16.0	09/11/2014	ND	400	100	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	09/11/2014	ND	181	90.5	200	3.80	
DRO >C10-C28	<10.0	10.0	09/11/2014	ND	212	106	200	10.2	

Surrogate: 1-Chlorooctane	*101 %*	*65.2-140*
Surrogate: 1-Chlorooctadecane	*109 %*	*63.6-154*

Cardinal Laboratories *=Accredited Analyte

Celey D. Keene, Lab Director/Quality Manager

CARDINAL Laboratories

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Notes and Definitions

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

Cardinal Laboratories

*=Accredited Analyte

Celey D. Keene, Lab Director/Quality Manager

CARDINAL LABORATORIES

CHAIN-OF-CUSTODY AND ANALYSIS REQUEST

101 East Marland, Hobbs, NM 88240 2111 Beechwood, Abilene, TX 79603
(505) 393-2326 FAX (505) 393-2476 (325) 673-7001 FAX (325)673-7020

Company Name: RECS		BILL TO	
Project Manager: Kyle Norman		P.O. #:	
Address:		Company:	
City: Hobbs	State: NM Zip: 88240	Attn:	
Phone #:	Fax #:	Address:	
Project #:	Project Owner:	City:	
Project Name: Candelario 24#1 SWD Battery		State: Zip:	
Project Location:		Phone #:	
Sampler Name: Amber Groves		Fax #:	

FOR LAB USE ONLY				MATRIX							PRESERV.			SAMPLING		ANALYSIS REQUEST										
Lab I.D.	Sample I.D.	(G)RAB OR (C)OMP.	# CONTAINERS	GROUNDWATER	WASTEWATER	SOIL	OIL	SLUDGE	OTHER :	ACID/BASE:	ICE / COOL	OTHER :	DATE	TIME	Chlorides	TPH 8015 M	BTEX	Texas TPH	Complete Cations/Anions	TDS						
H402799																										
1	SB1@ 21ft	G	1			✓					✓		9-9-14	9:00	✓	✓										
2	SB1@ 31eft	G	1			✓					✓		9-9-14	9:15	✓	✓										
3	SB2@ 21ft	G	1			✓					✓		9-9-14	10:45	✓	✓										
4	SB2@ 31eft	G	1			✓					✓		9-9-14	11:00	✓	✓										

Relinquished By: Amber Groves	Date: 9-9-14	Received By:	Phone Result: ☐ Yes ☑ No	Add'l Phone #:	
	Time:		Fax Result: ☐ Yes ☑ No	Add'l Fax #:	
Relinquished By:	Date: 9-9-14	Received By:	REMARKS:		
	Time: 3:54		email results		
Delivered By: (Circle One)		Sample Condition	CHECKED BY:	Knorman@rice-ecs.com	
Sampler - UPS - Bus - Other:	4.8°	Cool: ☐ Yes ☐ No Intact: ☐ Yes ☐ No	(Initials)	Kjones@riceswd.com; jkamplain@rice-ecs.com	
				hconder@rice-ecs.com; Lweinheimer@rice-ecs.com;	
				sedwards@rice-ecs.com; lflores@rice-ecs.com; agroves@rice-ecs.com	

† Cardinal cannot accept verbal changes. Please fax written changes to 505-393-2476

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Appendix D
Photo Documentation

RICE Environmental Consulting and Safety (RECS)
P.O. Box 2948 Hobbs, NM 88241
Phone 575.393.2967

Vanguard Candelario 24 #1 SWD Battery

Unit Letter E, Section 24, T23S, R28E

Initial release area, facing northwest 7/15/14

Initial release area, facing southwest 7/15/14

Collecting surface sample, facing west 7/15/14

Hand auguring for depth, facing north 7/15/14

Installing verticals, facing north 8/4/14

Installing soil bores, facing east 9/9/14

Plugging soil bores in total with bentonite, facing east 9/9/14

Completed soil bore 9/9/14