INFORMATION ONLY

1RP-4723 DELINEATION REPORT East Caprock SWD Well #5 Produced Water Spill

Lea County, New Mexico

Latitude: N33° 16' 59.80" Longitude: W103° 41' 13.20"

LAI Project No. 17-0158-01

July 20, 2017

Prepared for:

Paladin Energy Corporation 10290 Monroe Drive, Suite 301 Dallas, Texas 75229

Prepared by:

Larson & Associates, Inc. 507 North Marienfeld Street, Suite 205 Midland, Texas 79701

Mark J. Larson, P.G.

Certified Professional Geologist #10490

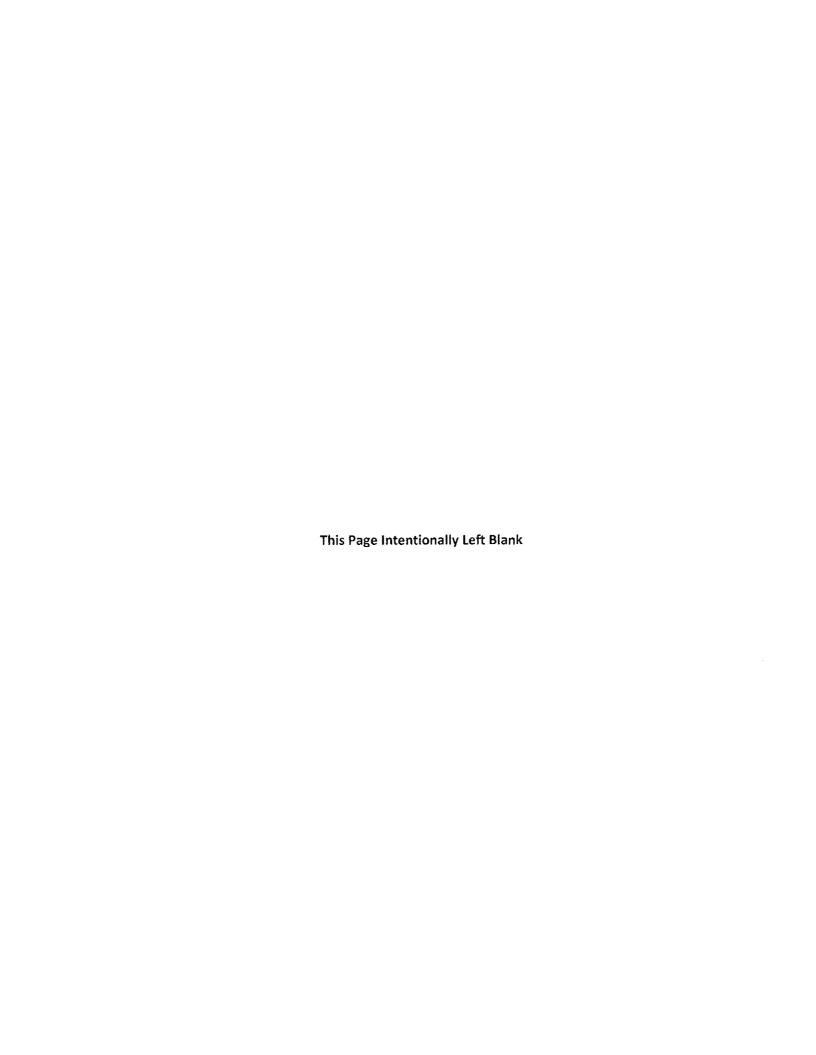


Table of Contents

1.0	INTRODUCTION	1
	Background	
	Physical Setting	
	Remediation Action Levels	
	SPILL DELINEATION	
	REMEDIATION PLAN	

Figures

Figure 1 Topographic Map

Figure 2 Aerial Map

Figure 3 Site Map Showing Soil Sample and Boring Locations
Figure 4 Site Map Showing Proposed Soil Excavation Area

Attachments

Attachment A OCD Email Correspondence

Attachment B Photographs

Attachment C Laboratory Reports

Attachment D Initial C-141

1.0 INTRODUCTION

This delineation report is submitted on behalf of Paladin Energy Corporation (Paladin) to the New Mexico Oil Conservation Division (OCD) District 1, in Hobbs, New Mexico, for a produced water spill at the East Caprock SWD Well #5 (Site). The legal description is Unit B (NW/4, NE/4), Section 14, Township 12 South, Range 32 East, in Lea County, New Mexico. The geodetic position is north 33° 16' 59.80" and west 103° 41' 13.20". Figure 1 presents a location and topographic map. Figure 2 presents an aerial map.

1.1 Background

The spill occurred on June 11, 2017, after the poly injection line parted at a valve near well causing a produced water release on location. The spill breeched the berm near the southwest corner of location, allowing produced water to flow east into the pasture approximately 950 feet. Approximately 1,700 bbl of produced water was released with approximately 1,020 bbl recovered. Paladin personnel discovered the release on June 12, 2017. Verbal notification was provided to the OCD District 1, on June 13, 2017. The initial C-141 was submitted to OCD District 1 and approved on June 15, 2017. The release was assigned remediation permit 1 RP-4723 with conditions.

The spill occurred in an unlined area near the well. The spill covered the well location measuring about 33,928 square feet and flowed east into the pasture covering an area approximately 90,000 square feet for a total of approximately 122,928 square feet or about 2.82 acres. The injection pump was shut in and water was recovered to allow repairs to the injection line. Soil was pushed up to repair the berm near the southwest corner to contain fluid to the location. Paladin contracted a vacuum truck to recover standing fluid on the well location and return it to tanks. Attachment B presents photographs.

On June 21, 2017, LAI, on behalf of Paladin, submitted a plan to the OCD for delineating the spill. Attachment A presents the OCD submittal correspondence. Attachment B presents photographs.

1.2 Physical Setting

The physical setting is as follows:

- Elevation is approximately 4,356 feet above mean sea level (MSL);
- Topography slopes gently toward the east;
- The nearest surface water feature is a playa located about 1,650 feet east of the Site;
- The soils are designated as "Kimbrough Gravelly Loam" and "Kimbrough-Lea complex", consisting of calcareous alluvium derived from reworking the Blackwater Draw (Pleistocene) and Ogallala (Pliocene) formations, in descending order;
- The soil developed over cemented material (caliche);
- The upper geological unit is the Tertiary-age Blackwater Draw and Ogallala formations, in descending order, comprised of very fine to medium-grained quartz sand and gravel, with minor amount of silt and clay with indistinct to massive crossbeds;

- The Ogallala formation is underlain by clay, silty clay, shale and sandstone of the Chinle formation (Triassic) and is about 300 feet thick;
- The nearest fresh water well is located in UnitE (SW/4, NW/4), Section 13, Township 12 South, Range 32 East, about 2,500 feet east southeast (down gradient) of the Site;
- The well is used for livestock watering and has a reported depth to groundwater of approximately 30 feet below ground surface (bgs).

1.3 Remediation Action Levels

Remediation action levels (RRAL) were calculated for benzene, BTEX and TPH based on the following criteria established by the OCD in "Guidelines for Remediation of Leaks, Spills and Releases, August 13, 1993":

Criteria	Result	Score
Depth-to-Groundwater	<50 feet	20
Wellhead Protection Area	No	0
Distance to Surface Water Body	>1000 Horizontal Feet	0

The following RRAL apply to the release for ranking score: 20

Benzene 10 mg/Kg
 BTEX 50 mg/Kg
 TPH 100 mg/Kg

2.0 SPILL DELINEATION

On June 28, 2017, LAI personnel used direct push technology (DPT) to collect soil samples at fourteen (14) locations (S-1 through S-14). Caliche was encountered between about 1 and 2 feet below ground surface (bgs) where refusal occurred. Soil samples were collected in 0.5 and 1 foot increments between 1 and 2 feet bgs. The borings were filled with soil. The samples were delivered under preservation and chain of custody to Permian Basin Environmental Laboratory (PBEL) in Midland, Texas. The laboratory analyzed the upper sample (0 to 0.5 foot or 0 to 1 foot) for total petroleum hydrocarbons (TPH) by EPA SW-846 Method 8015M, including gasoline range organics (C6 – C12), diesel range organics (>C12 – C28), oil range organics (>C28 – C35). All samples will be analyzed for chloride by EPA Method 300. Table 1 presents the laboratory analytical data summary.

TPH exceeded the Recommended Remediation Action Level (RRAL) of 100 milligrams per kilogram (mg/Kg) in the following samples:

Sample	Depth (Feet)	TPH (mg/Kg)	Sample	Depth (Feet)	TPH (mg/Kg)
S-1	0 - 1	192.72	S-3	0-1	159.692
S-5	0 - 1	115.936	S-8	0.5 - 1.0	6,399.38

Chloride was reported above 250 mg/Kg in the deepest samples from the following locations:

	Sample	Depth (Feet)	Chloride	Sample	Depth (Feet)	Chloride
--	--------	--------------	----------	--------	--------------	----------

		(mg/Kg)			(mg/Kg)
S-1	1.0 - 2.0	2,100	S-2	0-1.0	2,400
S-3	0-1.0	3,090	S-4	0-1.0	1,650
S-6	0.5 - 1.0	2,690	S-7	0.5 - 1.0	1,940
S-10	0.5 - 1.0	1,570	S-11	1.5 - 2.0	1,050
S-12	0.5 - 1.0	848	S-14	0.5 - 1.0	845

On July 7, 2017, Scarborough Drilling, Inc. (SDI) under supervision for LAI used a truck mounted air rotary rig adjacent to soil sample locations S-1 (SB-1), S-5 (SB-10), S-6 (SB-2), S-7 (SB-4), S-8 (SB-3), S-10 (SB-5), S-11 (SB-6), S-12 (SB-8), S-13 (SB-9) and S-14 (SB-7). Soil samples were with a jam tube sampler to approximately 10 feet (SB-10, SB-3, and SB-9), 15 feet (SB-2, SB-4, SB-5, SB-6, SB-8 and SB-7) and 25 feet (SB-1) feet bgs. Boring SB-10 was drilled about 50 feet west of location S-5. The borings were filled with bentonite chips. The samples were delivered under preservation and chain of custody to PBEL which analyzed the samples for TPH and chloride by EPA SW-846 Method 8015M, including gasoline range organics (C6 – C12), diesel range organics (>C12 – C28), oil range organics (>C28 – C35) and chloride by EPA Method 300. Table 1 presents the laboratory analytical data summary. Figure 3 presents the soil sample and boring locations. Attachment C presents the laboratory reports. Attachment D presents the initial C-141 and conditions.

TPH was delineated at location S-1, S5 and S-8. Chloride was delineated vertically and laterally to 250 mg/Kg except at location SB-1. Chloride was reported at 803 mg/Kg in sample SB-1, 25 feet.

3.0 REMEDIATION PLAN

Paladin proposes the following remediation:

- 1. Excavate soil from the spill area in the vicinity of soil sample S-1 (SB-1) to four (4) feet bgs, install 20 mil thickness liner in bottom of excavation and backfill with claiche;
- 2. Excavate soil to approximately 1 foot bgs from remainder of we location and backfill with caliche;
- 3. Excavate soil from spill area in the vicinity of soil sample S-6 (SB-2) to approximately 3 feet bgs and backfill with topsoil;
- 4. Excavate soil from spill area in the vicinity of soil samples S-3 (SB-8) and S-11 (SB-6) to approximately 2 feet bgs and backfill with topsoil;
- 5. Excavate soil from spill area in the vicinity of soil sample S-7 (SB-4), S-10 (SB-5), S-12 (SB-8) and S-14 (SB-7) to approximately 1 foot bgs and backfill with topsoil;
- 6. Seed areas in pasture according to landowner requirements; and
- 7. Submit final report to OCD District 1.

Figure 4 presents the proposed exaction areas and summary of excavation depths.

Table 1 Delineatio Soil Sample Analytical Data Summary Paladin Energy Corporation, East Caprock SWD Well #5 Lea County, New Mexico 1RP-4723

				,		,		Page 1 of 2
Sample	Depth	Collection	Status	C6 - C12	C12 - C28	C28 - C35	TPH	Chloride
	(Feet)	Date		(mg/Kg)	(mg/Kg)	(mg/Kg)	(mg/Kg)	(mg/Kg)
RRAL:		1 05/00/0045		1	1		100	*250
S-1	0-1	06/28/2017	In-Situ	<26.596	141.02	51.702	192.722	9,160
(SB-1)	1-2	06/28/2017	In-Situ	<28.409	69.670	<28.409	69.670	2,100
	3	07/06/2017	In-Situ	<31.6	<31.6	<31.6	<31.6	2,710
	5	07/06/2017	In-Situ		~-			1,090
	7	07/06/2017	In-Situ					1,040
	10	07/06/2017	In-Situ					42.1
	15	07/06/2017	In-Situ					155
	20	07/06/2017	In-Situ	~-				839
	25	07/06/2017	In-Situ					803
S-2	0 - 1	06/28/2017	In-Situ	<34.722	<34.722	<34.722	<34.722	2,400
S-3	0 - 1	06/28/2017	In-Situ	<27.473	117.78	41.912	159.692	3,090
S-4	0 - 1	06/28/2017	In-Situ	<27.174	46.337	29.576	7 5 .913	1,650
S-5	0-1	06/28/2017	In-Situ	<32.468	67.455	48.481	115.936	<1.30
(SB-10)	0-1	7/6/2017	In-Situ	<27.2	<27.2	<27.2	<27.2	<1.09
	3	07/06/2017	In-Situ	<25.5	<25.5	<25.5	<25.5	4.43
	5	07/06/2017	In-Situ					6.19
	7	07/06/2017	In-Situ	**				4.07
	10	07/06/2017	In-Situ	~~				2.34
Ş-6	0 - 0.5	06/28/2017	In-Situ	<28.090	<28.090	<28.090	<28.090	6,130
(SB-2)	0.5 - 1.0	06/28/2017	In-Situ					2,690
	3	07/06/2017	In-Situ		***			1,050
	5	07/06/2017	In-Situ				**	11.3
	7	07/06/2017	In-Sítu	70.0			~~	<1.11
	10	07/06/2017	In-Situ					<1.06
	15	07/06/2017	In-Situ					49
S-7	0 - 0.5	06/28/2017	In-Situ	<28.736	56.839	43.276	100.415	2,630
(SB-4)	0.5 - 1.0	06/28/2017	In-Situ		~~			1,940
	3	07/06/2017	In-Situ					61.4
	5	07/06/2017	In-Situ					<1.04
	7	07/06/2017	In-Situ					<1.03
	10	07/06/2017	In-Situ					<1.06
	15	07/06/2017	In-Situ					17.4
S-8	0 - 0.5	06/28/2017	In-Situ	<26.042	<26.042	<26.042	<26.042	2.26
(SB-3)	0.5 - 1.0	06/28/2017	In-Situ	1,445.3	4,413.3	540.78	6,399.38	1.29
(<i>i</i>	3	07/06/2017	In-Situ	<25.8	<25.8	<25.8	<25.8	1.11
	5	07/06/2017	In-Situ	<25.8	<25.8	<25.8	<25.8	<1.03
	7	07/06/2017	In-Situ	~23.8	\23.8		\23.8	<1.03
	10	07/06/2017	In-Situ	***				45.9
S-9	0 - 0.5	06/28/2017	In-Situ	<26.042	<26.042	<26.042	<26.042	<1.04
-	0.5 - 1.0	06/28/2017	in-Situ					<1.09
S-10	0 - 0.5	06/28/2017	In-Situ	<29.762	<29.762	<29.762	<29.762	3,930
(SB-5)	0.5 - 1.0	06/28/2017	In-Situ					1,570
	3	07/07/2017	In-Situ					22.4
	5	07/07/2017	In-Situ					<1.02
	7	07/07/2017	In-Situ		~~			<1.02
	10	07/07/2017	In-Situ	77.5			*-	<1.08
	15	07/07/2017	In-Situ				**	140
S-11	0 - 0.5	06/28/2017	In-Situ	<30.864	<30.864	<30.864	<30.864	3,510
(SB-6)	0.5 - 1.0	06/28/2017	In-Situ					3,200
/					1	1	1	,

Table 1 Delineatio Soil Sample Analytical Data Summary Paladin Energy Corporation, East Caprock SWD Well #5 Lea County, New Mexico 1RP-4723

Page 2 of 2

RRAL:	Sample	Depth (Feet)	Collection Date	Status	C6 - C12 (mg/Kg)	C12 - C28 (mg/Kg)	C28 - C35 (mg/Kg)	TPH (mg/Kg)	Chloride (mg/Kg)
1.0 - 1.5	RRAL:	(, 550)	1 2000	L	(116/116)	(118/18)	(116/116/		*250
1.5 - 2.0		1.0 - 1.5	06/28/2017	In-Situ	<30.120	<30.120	<30.120	<30.120	2,300
S-12		1.5 - 2.0	06/28/2017	In-Situ				No. 100	1,050
Toleran		3	07/07/2017	In-Situ					387
10		5	07/07/2017	In-Situ		~~			2.76
S-12		7	07/07/2017	In-Situ	~~				9.23
S-12		10	07/07/2017	In-Situ		**	^~		<1.05
(SB-8)		15	07/07/2017	In-Situ					<1.06
(SB-8)	S-12	0 - 0.5	06/28/2017	In-Situ	<26.316	<26.316	<26.316	<26.316	1,140
S-13	(SB-8)	0.5 - 1.0	06/28/2017	in-Situ					848
7		3	07/07/2017	In-Situ			**		75.0
10		5	07/07/2017	In-Situ					<1.03
S-13		7	07/07/2017	In-Situ					<1.05
S-13		10	07/07/2017	In-Situ		^-			2.82
(SB-9)		15	07/07/2017	In-Situ					98.5
3	S-13	0 - 0.5	06/28/2017	In-Situ	<26.596	<26.596	<26.596	<26.596	<1.06
S-14	(SB-9)	0.5 - 1.0	06/28/2017	In-Situ	**	H-100		•••	<1.11
7 07/07/2017 In-Situ		3	07/07/2017	In-Situ	m~				6.07
S-14		5	07/07/2017	In-Situ					2.03
S-14 0 - 0.5 06/28/2017 in-Situ <29.762 <29.762 <29.762 <29.762 2.0 (SB-7) 0 - 0.5 06/28/2017 in-Situ <29.762 <29.762 <29.762 <29.762 2.0 (SB-7) 0.5 - 1.0 06/28/2017 in-Situ 83 07/07/2017 in-Situ 83 07/07/2017 in-Situ <1 7 07/07/2017 in-Situ 20 07/07/2017 in-Situ 20 07/07/2017 in-Situ 80 07/07/2017 in-Situ		7	07/07/2017	In-Situ		***			<1.02
(SB-7) 0 - 0.5 06/28/2017 in-Situ <29.762 <29.762 <29.762 <29.762 <29.762 2.0 0.5 - 1.0 06/28/2017 in-Situ 80 3 07/07/2017 in-Situ 80 5 07/07/2017 in-Situ		10	07/07/2017	In-Situ					<1.04
0.5 - 1.0 06/28/2017 in-Situ 88 3 07/07/2017 in-Situ 83 5 07/07/2017 in-Situ 7 07/07/2017 in-Situ 26 10 07/07/2017 in-Situ 80	S-14	0 ~ 0.5	06/28/2017	In-Situ	<29.762	<29.762	<29.762	<29.762	2,040
3 07/07/2017 In-Situ 83 5 07/07/2017 In-Situ <1 7 07/07/2017 In-Situ 26 10 07/07/2017 In-Situ 80	(SB-7)	0 - 0.5	06/28/2017	∮n-Situ	<29.762	<29.762	<29.762	<29.762	2,040
5 07/07/2017 in-Situ <1 7 07/07/2017 in-Situ 26 10 07/07/2017 in-Situ 80		0.5 - 1.0	06/28/2017	in-Situ		**			845
7 07/07/2017 In-Situ 26 10 07/07/2017 In-Situ 80		3	07/07/2017	In-Situ				**	83.6
10 07/07/2017 In-Situ 80		5	07/07/2017	In-Situ					<1.04
			07/07/2017	In-Situ					26.1
15 07/07/2017 In-Situ <1		10	07/07/2017	In-Situ					80.6
		15	07/07/2017	In-Situ					<1.18

Notes: Laboratory analysis performed by Permian Basin Environmental Lab, Midland, Texas by EPA SW-846 Method 8015M (TPH) and 300 (chloride)

Depth in feet below ground surface (bgs)

mg/Kg: milligrams per kilogram equivalent to parts per million (ppm)

Exceeds OCD Recommended Remediation Action Level (RRAL)

^{*:} OCD delineation level

Figures

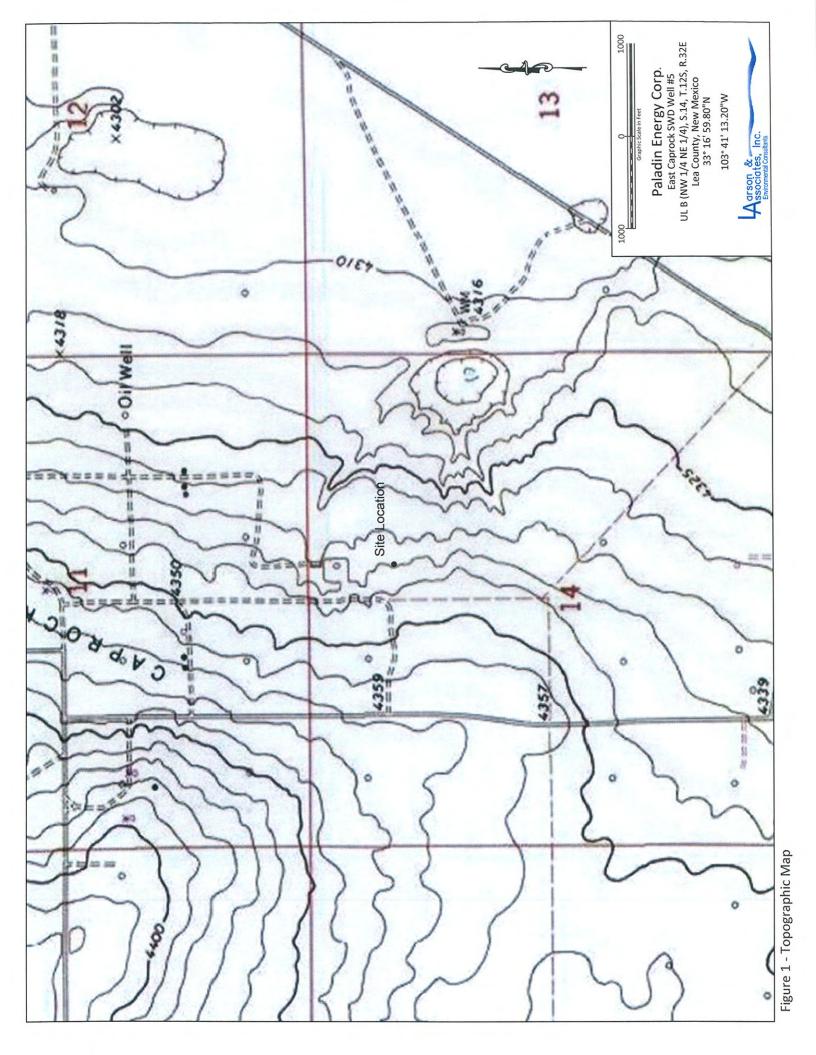




Figure 2 - Aerial Map

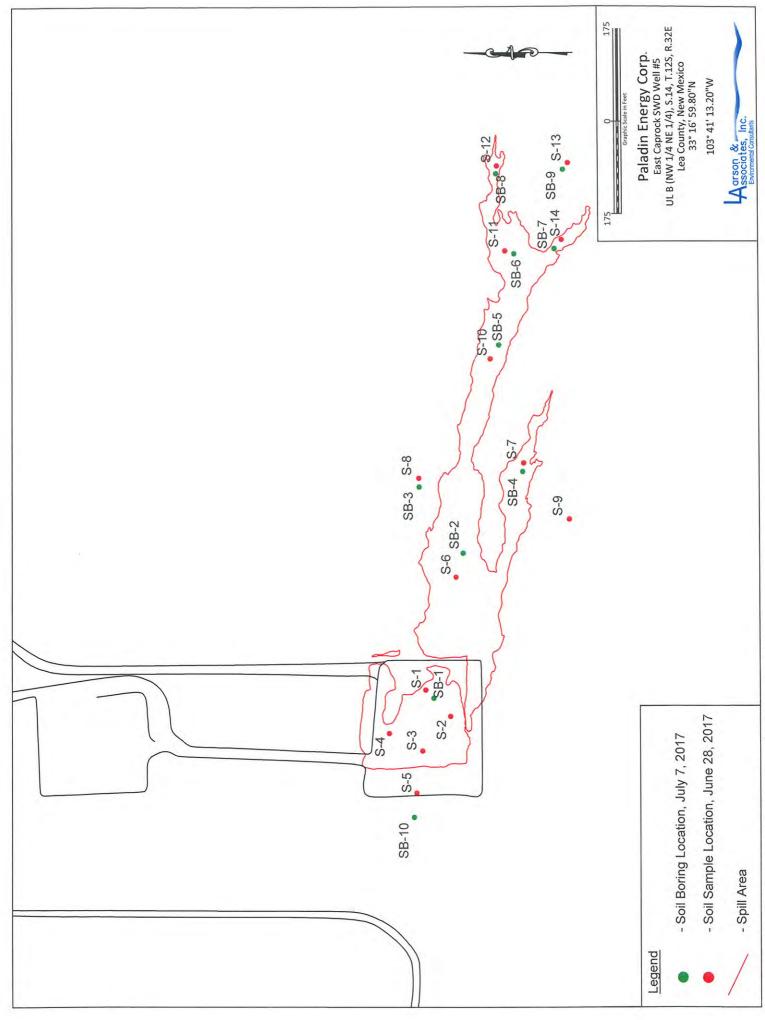


Figure 3 - Site Map Showing Soil Sample and Boring Locations

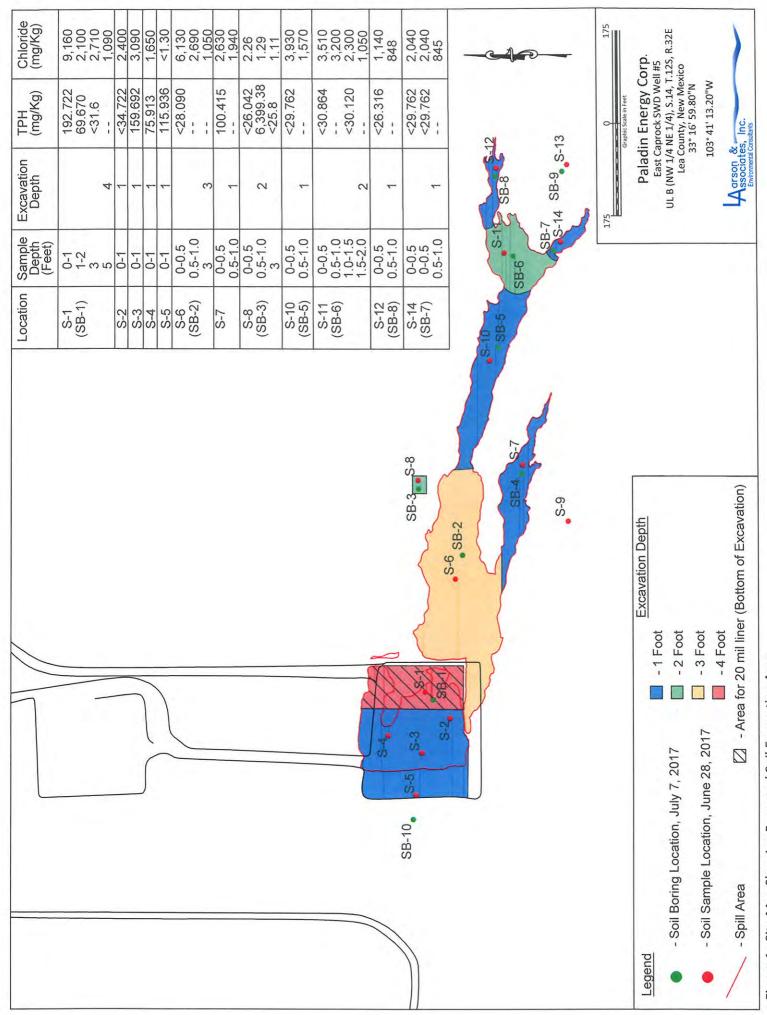


Figure 4 - Site Map Showing Proposed Soil Excavation Area

Attachment A

OCD Correspondence

Mark Larson

From:

Sent: To:

Mark Larson
Thursday, June 22, 2017 1:26 PM
'Yu, Olivia, EMNRD'
'ggfenton@aol.com'; 'David Plaisance'; 'paladinmid@suddenlink.net'
Re: 1RP-4723, Delineation Plan, East Caprock SWD Well #5 Produced Water Sill, June 21, 2017
1RP-4723, Delineation Plan, East Caprock SWD Well #5 Produced Water Spill, June 21, 2017.pdf Subject: Attachments:

Olivia,

On behalf of Paladin Energy Corporation (Paladin) please find the attached delineation plan for assessing the extent of impact from the produced water spill at the East Caprock SWD Well #5 in Lea County, New Mexico. Please contact Mickey Horn with Paladin at (432) 63406599 or paladinmidland@suddenlink.net or me if you have questions.

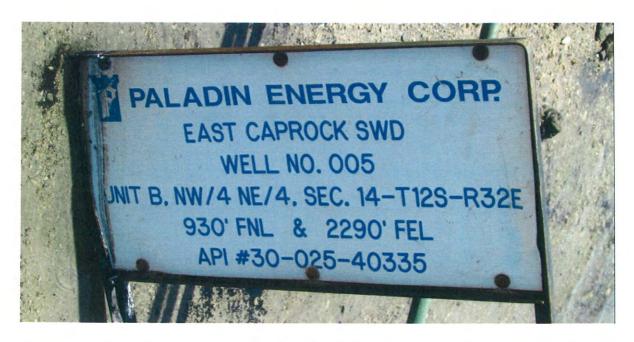
Mark J. Larson, P.G. President/Sr. Project Manager 507 N. Marienfeld St., Suite 205 Midland, Texas 79701 Office – 432-687-0901 Cell – 432- 556-8656 Fax - 432-687-0456 mark@laenvironmental.com



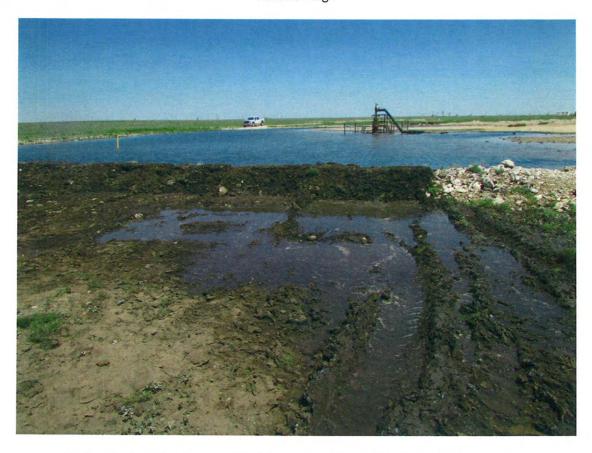
[&]quot;Serving the Permian Basin Since 2000"

Attachment B

Photographs



Location Sign



Spill Area near Southwest Corner of Well Pad Viewing North, June 12, 2017



Spill Area West of Well Viewing South, June 12, 2017



Spill Area South of Well Viewing East, June 12, 2017



Spill Area East of Location Viewing West, June 12, 2017



Spill Area East of Location Viewing East, June 12, 2017



Spill Area East of Location Viewing East, June 12, 2017



Spill Area East of Location Viewing West, June 12, 2017



Spill Area South of Location Viewing East, June 20, 2017



Spill Area East of Location Viewing East, June 20, 2017



Spill Area East of Location Viewing East, June 20, 2017

Attachment C

Laboratory Reports

PERMIAN BASIN ENVIRONMENTAL LAB, LP 1400 Rankin Hwy Midland, TX 79701



Analytical Report

Prepared for:

Mark Larson
Larson & Associates, Inc.
P.O. Box 50685
Midland, TX 79710

Project: Paladin Well #5
Project Number: 17-0158-01
Location: New Mexico

Lab Order Number: 7F30002



NELAP/TCEQ # T104704516-16-7

Report Date: 07/06/17

Larson & Associates, Inc. P.O. Box 50685 Midland TX, 79710 Project: Paladin Well #5 Project Number: 17-0158-01 Fax: (432) 687-0456

ANALYTICAL REPORT FOR SAMPLES

Project Manager: Mark Larson

S-1 (1-2) 7F30002-02 Soil 06/28/17 11:15 06-30-2017 0 S-2 (0-1) 7F30002-03 Soil 06/28/17 11:25 06-30-2017 0 S-3 (0-1) 7F30002-04 Soil 06/28/17 11:30 06-30-2017 0 S-4 (0-1) 7F30002-05 Soil 06/28/17 11:40 06-30-2017 0 S-5 (0-1) 7F30002-06 Soil 06/28/17 12:00 06-30-2017 0 S-6 (0-0.5) 7F30002-07 Soil 06/28/17 12:15 06-30-2017 0 S-7 (0-0.5) 7F30002-08 Soil 06/28/17 12:15 06-30-2017 0 S-7 (0-0.5) 7F30002-10 Soil 06/28/17 12:20 06-30-2017 0 S-8 (0.5-1) 7F30002-10 Soil 06/28/17 12:20 06-30-2017 0 S-8 (0.5-1) 7F30002-11 Soil 06/28/17 12:30 06-30-2017 0 S-8 (0.5-1) 7F30002-11 Soil 06/28/17 12:30 06-30-2017 0 S-8 (0.5-1) 7F30002-12 Soil 06/28/17 12:35 06-30-2017 0 S-9 (0.5-1) 7F30002-13 Soil 06/28/17 12:35 06	Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
\$2 (0-1)	S-1 (0-1)	7F30002-01	Soil	06/28/17 11:15	06-30-2017 09:23
\$\frac{\frac	S-1 (1-2)	7F30002-02	Soil	06/28/17 11:15	06-30-2017 09:23
\$4 (0-1)	S-2 (0-1)	7F30002-03	Soil	06/28/17 11:25	06-30-2017 09:23
\$-5 (0-1)	S-3 (0-1)	7F30002-04	Soil	06/28/17 11:30	06-30-2017 09:23
\$-6 (0-0.5)	S-4 (0-1)	7F30002-05	Soil	06/28/17 11:40	06-30-2017 09:23
\$-6 (0.5-1)	S-5 (0-1)	7F30002-06	Soil	06/28/17 12:00	06-30-2017 09:23
\$-7 (0-0.5)	S-6 (0-0.5)	7F30002-07	Soil	06/28/17 12:15	06-30-2017 09:23
\$-7 (0.5-1)	S-6 (0.5-1)	7F30002-08	Soil	06/28/17 12:15	06-30-2017 09:23
\$-8 (0-0.5)	S-7 (0-0.5)	7F30002-09	Soil	06/28/17 12:20	06-30-2017 09:23
\$-8 (0.5-1)	S-7 (0.5-1)	7F30002-10	Soil	06/28/17 12:20	06-30-2017 09:23
\$-9 (0-0.5)	S-8 (0-0.5)	7F30002-11	Soil	06/28/17 12:30	06-30-2017 09:23
S-9 (0.5-1) S-9 (0.5-1) TF30002-14 Soil 06/28/17 12:35 06-30-2017 0 S-10 (0-0.5) TF30002-15 Soil 06/28/17 12:45 06-30-2017 0 S-10 (0.5-1) TF30002-16 Soil 06/28/17 12:45 06-30-2017 0 S-11 (0-0.5) S-11 (0-0.5) TF30002-17 Soil 06/28/17 12:50 06-30-2017 0 S-11 (0.5-1) TF30002-18 Soil 06/28/17 12:50 06-30-2017 0 S-11 (1-1.5) TF30002-19 Soil 06/28/17 12:50 06-30-2017 0 S-11 (1.5-2) TF30002-20 Soil 06/28/17 12:50 06-30-2017 0 S-12 (0-0.5) TF30002-21 Soil 06/28/17 13:00 06-30-2017 0 S-12 (0-5-1) TF30002-22 Soil 06/28/17 13:00 06-30-2017 0 S-13 (0-0.5) TF30002-22 Soil 06/28/17 13:15 06-30-2017 0 S-13 (0.5-1) TF30002-24 Soil 06/28/17 13:15 06-30-2017 0 S-14 (0-0.5) TF30002-24 Soil 06/28/17 13:15 06-30-2017 0 S-14 (0-0.5)	S-8 (0.5-1)	7F30002-12	Soil	06/28/17 12:30	06-30-2017 09:23
S-10 (0-0.5) 7F30002-15 Soil 06/28/17 12:45 06-30-2017 0 S-10 (0.5-1) 7F30002-16 Soil 06/28/17 12:45 06-30-2017 0 S-11 (0-0.5) 7F30002-17 Soil 06/28/17 12:50 06-30-2017 0 S-11 (0.5-1) 7F30002-18 Soil 06/28/17 12:50 06-30-2017 0 S-11 (1-1.5) 7F30002-19 Soil 06/28/17 12:50 06-30-2017 0 S-11 (1.5-2) 7F30002-20 Soil 06/28/17 12:50 06-30-2017 0 S-12 (0-0.5) 7F30002-21 Soil 06/28/17 13:00 06-30-2017 0 S-12 (0.5-1) 7F30002-22 Soil 06/28/17 13:00 06-30-2017 0 S-13 (0-0.5) 7F30002-22 Soil 06/28/17 13:15 06-30-2017 0 S-13 (0-0.5) 7F30002-24 Soil 06/28/17 13:15 06-30-2017 0 S-14 (0-0.5) 7F30002-24 Soil 06/28/17 13:15 06-30-2017 0 S-14 (0-0.5) 7F30002-25 Soil 06/28/17 13:20 06-30-2017 0	S-9 (0-0.5)	7F30002-13	Soil	06/28/17 12:35	06-30-2017 09:23
S-10 (0.5-1) 7F30002-16 Soil 06/28/17 12:45 06-30-2017 0 S-11 (0-0.5) 7F30002-17 Soil 06/28/17 12:50 06-30-2017 0 S-11 (0.5-1) 7F30002-18 Soil 06/28/17 12:50 06-30-2017 0 S-11 (1-1.5) 7F30002-19 Soil 06/28/17 12:50 06-30-2017 0 S-11 (1.5-2) 7F30002-20 Soil 06/28/17 12:50 06-30-2017 0 S-12 (0-0.5) 7F30002-21 Soil 06/28/17 13:00 06-30-2017 0 S-12 (0.5-1) 7F30002-22 Soil 06/28/17 13:00 06-30-2017 0 S-13 (0-0.5) 7F30002-22 Soil 06/28/17 13:15 06-30-2017 0 S-13 (0-0.5) 7F30002-24 Soil 06/28/17 13:15 06-30-2017 0 S-14 (0-0.5) 7F30002-24 Soil 06/28/17 13:15 06-30-2017 0 S-14 (0-0.5) 7F30002-25 Soil 06/28/17 13:15 06-30-2017 0	S-9 (0.5-1)	7F30002-14	Soil	06/28/17 12:35	06-30-2017 09:23
S-11 (0-0.5) 7F30002-17 Soil 06/28/17 12:50 06-30-2017 0 S-11 (0.5-1) 7F30002-18 Soil 06/28/17 12:50 06-30-2017 0 S-11 (1-1.5) 7F30002-19 Soil 06/28/17 12:50 06-30-2017 0 S-11 (1.5-2) 7F30002-20 Soil 06/28/17 12:50 06-30-2017 0 S-12 (0-0.5) 7F30002-21 Soil 06/28/17 13:00 06-30-2017 0 S-12 (0.5-1) 7F30002-22 Soil 06/28/17 13:00 06-30-2017 0 S-13 (0-0.5) 7F30002-23 Soil 06/28/17 13:15 06-30-2017 0 S-13 (0.5-1) 7F30002-24 Soil 06/28/17 13:15 06-30-2017 0 S-14 (0-0.5) 7F30002-25 Soil 06/28/17 13:20 06-30-2017 0	S-10 (0-0.5)	7F30002-15	Soil	06/28/17 12:45	06-30-2017 09:23
S-11 (0.5-1) 7F30002-18 Soil 06/28/17 12:50 06-30-2017 0 S-11 (1-1.5) 7F30002-19 Soil 06/28/17 12:50 06-30-2017 0 S-11 (1.5-2) 7F30002-20 Soil 06/28/17 12:50 06-30-2017 0 S-12 (0-0.5) 7F30002-21 Soil 06/28/17 13:00 06-30-2017 0 S-12 (0.5-1) 7F30002-22 Soil 06/28/17 13:00 06-30-2017 0 S-13 (0-0.5) 7F30002-23 Soil 06/28/17 13:15 06-30-2017 0 S-13 (0.5-1) 7F30002-24 Soil 06/28/17 13:15 06-30-2017 0 S-14 (0-0.5) 7F30002-25 Soil 06/28/17 13:20 06-30-2017 0	S-10 (0.5-1)	7F30002-16	Soil	06/28/17 12:45	06-30-2017 09:23
S-11 (1-1.5)	S-11 (0-0.5)	7F30002-17	Soil	06/28/17 12:50	06-30-2017 09:23
S-11 (1.5-2)	S-11 (0.5-1)	7F30002-18	Soil	06/28/17 12:50	06-30-2017 09:23
S-12 (0-0.5) 7F30002-21 Soil 06/28/17 13:00 06-30-2017 0 S-12 (0.5-1) 7F30002-22 Soil 06/28/17 13:00 06-30-2017 0 S-13 (0-0.5) 7F30002-23 Soil 06/28/17 13:15 06-30-2017 0 S-13 (0.5-1) 7F30002-24 Soil 06/28/17 13:15 06-30-2017 0 S-14 (0-0.5) 7F30002-25 Soil 06/28/17 13:20 06-30-2017 0	S-11 (1-1.5)	7F30002-19	Soil	06/28/17 12:50	06-30-2017 09:23
S-12 (0.5-1) 7F30002-22 Soil 06/28/17 13:00 06-30-2017 0 S-13 (0-0.5) 7F30002-23 Soil 06/28/17 13:15 06-30-2017 0 S-13 (0.5-1) 7F30002-24 Soil 06/28/17 13:15 06-30-2017 0 S-14 (0-0.5) 7F30002-25 Soil 06/28/17 13:20 06-30-2017 0	S-11 (1.5-2)	7F30002-20	Soil	06/28/17 12:50	06-30-2017 09:23
S-13 (0-0.5) 7F30002-23 Soil 06/28/17 13:15 06-30-2017 0 S-13 (0.5-1) 7F30002-24 Soil 06/28/17 13:15 06-30-2017 0 S-14 (0-0.5) 7F30002-25 Soil 06/28/17 13:20 06-30-2017 0	S-12 (0-0.5)	7F30002-21	Soil	06/28/17 13:00	06-30-2017 09:23
S-13 (0.5-1) 7F30002-24 Soil 06/28/17 13:15 06-30-2017 0 S-14 (0-0.5) 7F30002-25 Soil 06/28/17 13:20 06-30-2017 0	S-12 (0.5-1)	7F30002-22	Soil	06/28/17 13:00	06-30-2017 09:23
S-14 (0-0.5) 7F30002-25 Soil 06/28/17 13:20 06-30-2017 0	S-13 (0-0.5)	7F30002-23	Soil	06/28/17 13:15	06-30-2017 09:23
	S-13 (0.5-1)	7F30002-24	Soil	06/28/17 13:15	06-30-2017 09:23
S-14 (0.5-1) 7F30002-26 Soil 06/28/17 13:20 06-30-2017 0	S-14 (0-0.5)	7F30002-25	Soil	06/28/17 13:20	06-30-2017 09:23
	\$-14 (0.5-1)	7F30002-26	Soil	06/28/17 13:20	06-30-2017 09:23

Larson & Associates, Inc. Project: Paladin Well #5 Fax: (432) 687-0456

P.O. Box 50685 Project Number: 17-0158-01 Midland TX, 79710 Project Manager: Mark Larson

S-1 (0-1) 7F30002-01 (Soil)

		Reporting							
Analyte	Result	Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
	Perm	iian Basin E	nvironmer	tal Lab. i	Г., .Р .				
Consideration Programme to the				tut Lub,					
General Chemistry Parameters by EP	***************************************								
Chloride	9160	53.2	mg∕kg dry	50	P7F3009	06/30/17	07/03/17	EPA 300.0	
% Moisture	6.0	0.1	%	1	P7G0301	06/30/17	07/03/17	ASTM D2216	
Total Petroleum Hydrocarbons C6-C3	35 by EPA Method 80	15M							
C6-C12	ND	26.596	mg/kg dry	i	P7F3007	06/30/17	06/30/17	TPH 8015M	
>C12-C28	141.02	26.596	mg/kg dry	1	P7F3007	06/30/17	06/30/17	TPH 8015M	
>C28-C35	51.702	26.596	mg/kg dry	ĵ	P7F3007	06/30/17	06/30/17	TPH 8015M	
Surrogate: 1-Chlorooctane		110%	70-1	30	P7F3007	06/30/17	06/30/17	TPH 8015M	
Surrogate: a-Terphenyl		125 %	70-1	30	P7F3007	06/30/17	06/30/17	TPH 8015M	
Total Petroleum Hydrocarbon C6-C35	192.72	26.596	mg/kg dry	ì	[CALC]	06/30/17	06/30/17	calc	

P.O. Box 50685 Midland TX, 79710 Project: Paladin Well #5

Project Number: 17-0158-01 Project Manager: Mark Larson Fax: (432) 687-0456

S-1 (1-2) 7F30002-02 (Soil)

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
	Pern	ian Basin E	Invironmer	ıtal Lab,	L.P.				
General Chemistry Parameters by EP	A / Standard Method	is							
Chloride	2100	11.4	mg/kg dry	10	P7F3009	06/30/17	07/03/17	EPA 300.0	
% Moisture	12.0	0.1	%	Ì	P7G0301	06/30/17	07/03/17	ASTM D2216	
Total Petroleum Hydrocarbons C6-C	35 by EPA Method 80)15M							
C6-C12	ND	28,409	mg/kg dry	1	P7F3007	06/30/17	06/30/17	TPH 8015M	
>C12-C28	69.670	28.409	mg/kg dry	1	P7F3007	06/30/17	06/30/17	TPH 8015M	
>C28-C35	ND	28.409	mg/kg dry	1	P7F3007	06/30/17	06/30/17	TPH 8015M	
Surrogate: 1-Chlorooctane		117%	70-1	30	P7F3007	06/30/17	06/30/17	TPH 8015M	
Surrogate: o-Terphenyl		132 %	70-1	30	P7F3007	06/30/17	06/30/17	TPH 8015M	S-GC
Total Petroleum Hydrocarbon C6-C35	69.67	28.409	mg/kg dry	1	[CALC]	06/30/17	06/30/17	calc	

Larson & Associates, Inc. Project: Paladin Well #5 Fax: (432) 687-0456

P.O. Box 50685 Project Number: 17-0158-01
Midland TX, 79710 Project Manager: Mark Larson

S-2 (0-1) 7F30002-03 (Soil)

,									
Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
	Perm	nian Basin E	Invironmen	ıtal Lab, l	L.P.				
General Chemistry Parameters by EPA	Standard Method	ls							
Chloride	2400	6.94	mg/kg dry	5	P7F3009	06/30/17	07/03/17	EPA 300.0	
% Moisture	28.0	0.1	%	1	P7G0301	06/30/17	07/03/17	ASTM D2216	
Total Petroleum Hydrocarbons C6-C35	by EPA Method 80)15M							
C6-C12	ND	34.722	mg/kg dry	ı	P7F3007	06/30/17	06/30/17	TPH 8015M	
>C1 2 -C28	ND	34.722	mg/kg dry	1	P7F3007	06/30/17	06/30/17	TPH 8015M	
>C28-C35	ND	34.722	mg/kg dry	1	P7F3007	06/30/17	06/30/17	TPH 8015M	
Surrogate: 1-Chlorooctane		113 %	70-1	30	P7F3007	06/30/17	06/30/17	TPH 8015M	
Surrogate: o-Terphenyl		127 %	70-1	30	P7F3007	06/30/17	06/30/17	TPH 8015M	
Total Petroleum Hydrocarbon C6-C35	ND	34.722	mg/kg dry	ı	[CALC]	06/30/17	06/30/17	cale	

Project: Paladin Well #5

P.O. Box 50685 Midland TX, 79710 Project Number: 17-0158-01

Project Manager: Mark Larson

S-3 (0-1) 7F30002-04 (Soil)

		Reporting							
Analyte	Result	Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
	Perm	ian Basin E	Invironmen	tal Lab, l	L.P.				
General Chemistry Parameters by EP	'A / Standard Method	ls							
Chloride	3090	11.0	mg/kg dry	10	P7F3009	06/30/17	07/03/17	EPA 300.0	
% Moisture	9.0	0.1	%	1	P7G0301	06/30/17	07/03/17	ASTM D2216	
Total Petroleum Hydrocarbons C6-C3	35 by EPA Method 80	15M							
C6-C12	ND	27.473	mg/kg dry	ı	P7F3007	06/30/17	07/02/17	TPH 8015M	
>C12-C28	117.78	27.473	mg/kg dry	1	P7F3007	06/30/17	07/02/17	TPH 8015M	
>C28-C35	41.912	27.473	mg∕kg dry	1	P7F3007	06/30/17	07/02/17	TPH 8015M	
Surrogate: 1-Chlorooctane		115 %	70-1.	30	P7F3007	06/30/17	07/02/17	TPH 8015M	
Surrogate: o-Terphenyl		117%	70-1.	30	P7F3007	06/30/17	07/02/17	TPH 8015M	
Total Petroleum Hydrocarbon C6-C35	159.69	27.473	mg/kg dry	l	[CALC]	06/30/17	07/02/17	calc	

Fax: (432) 687-0456

P.O. Box 50685 Midland TX, 79710 Project: Paladin Well #5

Project Number: 17-0158-01 Project Manager: Mark Larson

S-4 (0-1)

7F30002-05 (Soil)

		Reporting							
Analyte	Result	Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes

Permian Basin Environmental Lab, L.P.

Chloride	1650	5.43	mg/kg dry	5	P7F3009	06/30/17	07/03/17	EPA 300.0	
% Moisture	8.0	0.1	%	1	P7G0301	06/30/17	07/03/17	ASTM D2216	
Total Petroleum Hydrocarbons C6-C	35 by EPA Method 80)15M							
C6-C12	ND	27.174	mg/kg dry	1	P7F3007	06/30/17	07/02/17	TPH 8015M	
>C12-C28	46.337	27.174	mg/kg dry	1	P7F3007	06/30/17	07/02/17	TPH 8015M	
>C28-C35	29.576	27.174	mg/kg dry	1	P7F3007	06/30/17	07/02/17	TPH 8015M	
Surrogate: 1-Chlorooctane		117%	70-130		P7F3007	06/30/17	07/02/17	TPH 8015M	
Surrogate: o-Terphenyl		131 %	70-130		P7F3007	06/30/17	07/02/17	TPH 8015M	S-GC
Total Petroleum Hydrocarbon C6-C35	75.913	27.174	mg/kg dry	1	[CALC]	06/30/17	07/02/17	calc	

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P.O. Box 50685 Midland TX, 79710 Project: Paladin Well #5

Project Number: 17-0158-01 Project Manager: Mark Larson Fax: (432) 687-0456

S-5 (0-1) 7F30002-06 (Soil)

		Reporting							
Analyte	Result	Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Note
	Perm	ian Basin F	Cnvironmer	ital Lab, l	LP.				
General Chemistry Parameters by EP	A / Standard Method	ls							
Chloride	ND	1.30	mg/kg dry	1	P7F3009	06/30/17	07/03/17	EPA 300.0	
% Moisture	23.0	0.1	%	i	P7G0301	06/30/17	07/03/17	ASTM D2216	
Total Petroleum Hydrocarbons C6-C	35 by EPA Method 80	115M							
C6-C1 2	ND	3 2 .468	mg/kg dry	1	P7F3007	06/30/17	07/02/17	TPH 8015M	
>C12-C28	67.455	32.468	mg/kg dry	1	P7F3007	06/30/17	07/02/17	TPH 8015M	
>C28-C35	48.481	3 2 .468	mg/kg dry	1	P7F3007	06/30/17	07/02/17	TPH 8015M	
Surrogate: 1-Chlorooctane		115 %	70-1	30	P7F3007	06/30/17	07/02/17	TPH 8015M	
Surrogate: o-Terphenyl		124 %	70-1	30	P7F3007	06/30/17	07/02/17	TPH 8015M	
Total Petroleum Hydrocarbon C6-C35	115.94	32.468	mg/kg dry	1	[CALC]	06/30/17	07/02/17	calc	

Larson & Associates, Inc. Project: Paladin Well #5 Fax: (432) 687-0456

P.O. Box 50685 Midland TX, 79710 Project Number: 17-0158-01 Project Manager: Mark Larson

> S-6 (0-0.5) 7F30002-07 (Soil)

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Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Note
	Pern	ıian Başin E	Cnvironment	al Lab, l	L.P.				
General Chemistry Parameters by EPA	Standard Method	ls							
Chloride	6130	28.1	mg/kg dry	25	P7F3009	06/30/17	07/03/17	EPA 300.0	
% Moisture	11.0	0.1	%	1	P7G0301	06/30/17	07/03/17	ASTM D2216	
Total Petrolcum Hydrocarbons C6-C35	by EPA Method 80	15M							
C6-C12	ND	28.090	mg/kg dry	1	P7F3007	06/30/17	07/02/17	TPH 8015M	
>C12-C28	ND	28.090	mg/kg dry	1	P7F3007	06/30/17	07/02/17	TPH 8015M	
>C28-C35	ND	28.090	mg/kg dry	1	P7F3007	06/30/17	07/02/17	TPH 8015M	
Surrogate: 1-Chlorooctane		113%	70-13	0	P7F3007	06/30/17	07/02/17	TPH 8015M	
Surrogate: o-Terphenyl		121 %	70-13	0	P7F3007	06/30/17	07/02/17	TPH 8015M	
Total Petroleum Hydrocarbon C6-C35	ND	28.090	mg/kg dry	ı	[CALC]	06/30/17	07/02/17	calc	

Larson & Associates, Inc. Project: Paladin Well #5 Fax: (432) 687-0456

P.O. Box 50685 Project Number: 17-0158-01 Midland TX, 79710 Project Manager: Mark Larson

> S-6 (0.5-1) 7F30002-08 (Soil)

									1
		Reporting							
Analyte	Result	Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes

Permian Basin Environmental Lab, L.P.

General Chemistry Parameters by EPA / Standard Methods

Chloride	2690	11,6 mg/kg dry	10	P7F3009	06/30/17	07/03/17	EPA 300.0
% Moisture	14.0	0.1 %	1	P7G0301	06/30/17	07/03/17	ASTM D2216

Project: Paladin Well #5

P.O. Box 50685

Project Number: 17-0158-01

Fax: (432) 687-0456

Midland TX, 79710

Project Manager: Mark Larson

S-7 (0-0.5) 7F30002-09 (Soil)

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Note
	7 Coun	Dance	Othto	Direction	120/01	Trepared	Miniyzou	Method	14010
	Perm	iian Basin E	Cnvironmen	tal Lab, i	L .P.				
General Chemistry Parameters by EF	A / Standard Method	ls							
Chloride	2630	11.5	mg⁄kg dry	10	P7F3009	06/30/17	07/03/17	EPA 300.0	
% Moisture	13.0	0.1	%	1	P7G0301	06/30/17	07/03/17	ASTM D2216	
Total Petroleum Hydrocarbons C6-C	35 by EPA Method 80	15M							
C6-C12	ND	28.736	mg/kg dry	1	P7F3007	06/30/17	07/02/17	TPH 8015M	
>C12-C28	56.839	28.736	mg/kg dry	1	P7F3007	06/30/17	07/02/17	TPH 8015M	
>C28-C35	43.276	28.736	mg∕kg dry	1	P7F3007	06/30/17	07/02/17	TPH 8015M	
Surrogate: 1-Chlorooctane		117%	70-1.	30	P7F3007	06/30/17	07/02/17	TPH 8015M	
Surrogate: o-Terphenyl		124 %	70-1.	30	P7F3007	06/30/17	07/02/17	TPH 8015M	
Total Petroleum Hydrocarbon C6-C35	100.11	28.736	mg/kg dry	1	[CALC]	06/30/17	07/02/17	calc	

P.O. Box 50685 Midland TX, 79710 Project: Paladin Well #5

Project Number: 17-0158-01 Project Manager: Mark Larson Fax: (432) 687-0456

S-7 (0.5-1) 7F30002-10 (Soil)

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Note	
	Perm	iian Basin E	Invironmer	ıtal Lab, l	L.P.					
General Chemistry Parameters by EPA	Standard Method	ls								
Chloride	1940	5,81	mg/kg dry	5	P7F3009	06/30/17	07/03/17	EPA 300.0		
% Moisture	14.0	0.1	%	1	P7G0301	06/30/17	07/03/17	ASTM D2216		
Total Petroleum Hydrocarbons C6-C35 I	oy EPA Method 80	15M								
C6-C12	ND	29.070	mg/kg dry	1	P7F3007	06/30/17	07/02/17	TPH 8015M		
>C12-C28	ND	29.070	mg/kg dry	1	P7F3007	06/30/17	07/02/17	TPH 8015M		
>C 2 8-C35	ND	29.070	mg/kg dry	1	P7F3007	06/30/17	07/02/17	TPH 8015M		
Surrogate: 1-Chlorooctane		123 %	70-1	30	P7F3007	06/30/17	07/02/17	TPH 8015M		
Surrogate: o-Terphenyl		131 %	70-1	30	P7F3007	06/30/17	07/02/17	TPH 8015M	S-G	
Total Petroleum Hydrocarbon C6-C35	ND	29.070	me/ke dry	1	(CALC)	06/30/17	07/02/17	calc		

P.O. Box 50685

Midland TX, 79710

Project: Paladin Well #5

Project Number: 17-0158-01 Project Manager: Mark Larson Fax: (432) 687-0456

S-8 (0-0.5) 7F30002-11 (Soil)

			002-11 (50)	-)					
Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
	Pern	nian Basin E	Environmer	ital Lab, I	L.P.				
General Chemistry Parameters by EPA	Standard Method	ds							
Chloride	2,26	1.04	mg∕kg dry	1	P7F3009	06/30/17	07/03/17	EPA 300.0	
% Moisture	4.0	0.1	%	i	P7G0301	06/30/17	07/03/17	ASTM D2216	
Total Petroleum Hydrocarbons C6-C35 1	oy EPA Method 80	015M							
C6-C12	ND	26.042	mg∕kg dry	1	P7F3007	06/30/17	07/02/17	TPH 8015M	
>C12-C28	ND	26.042	mg∕kg dry	1	P7F3007	06/30/17	07/02/17	TPH 8015M	
>C28-C35	ND	26.042	mg/kg dry	1	P7F3007	06/30/17	07/02/17	TPH 8015M	
Surrogate: 1-Chlorooctane		106 %	70-1	30	P7F3007	06/30/17	07/02/17	TPH 8015M	
Surrogate: o-Terphenyl		110%	70-1	30	P7F3007	06/30/17	07/02/17	TPH 8015M	
Total Petroleum Hydrocarbon C6-C35	ND	26.042	mg∕kg dry	1	[CALC]	06/30/17	07/02/17	calc	

Larson & Associates, Inc. Project: Paladin Well #5 Fax: (432) 687-0456

P.O. Box 50685 Project Number: 17-0158-01
Midland TX, 79710 Project Manager: Mark Larson

S-8 (0.5-1) 7F30002-12 (Soil)

		Domontius.							1	
		Reporting							1	
Analyte	Result	Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes	

Permian Basin Environmental Lab, L.P.

Chloride	1.29	1.03	mg/kg dry	1	P7F3009	06/30/17	07/03/17	EPA 300.0
% Moisture	3.0	0.1	%	1	P7G0301	06/30/17	07/03/17	ASTM D2216

Project Number: Paladin Well #5
Project Number: 17-0158-01
Project Manager: Mark Larson

Fax: (432) 687-0456

P.O. Box 50685 Midland TX, 79710

S-9 (0-0.5)

		7F30	002-13 (So	il)					
Analyte	Rosult	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
	Pern	nian Basin F	Invironme	ıtal Lab, l	L.P.				
General Chemistry Parameters by EPA	Standard Method	ls							
Chloride	ND	1.04	mg/kg dry	1	P7F3009	06/30/17	07/03/17	EPA 300.0	
% Moisture	4.0	0.1	%	1	P7G0301	06/30/17	07/03/17	ASTM D2216	
Total Petroleum Hydrocarbons C6-C35 i	y EPA Method 80)15M							
C6-C12	ND	26.042	mg/kg dry	1	P7F3007	06/30/17	07/02/17	TPH 8015M	
>C12-C28	ND	26.042	mg/kg dry	1	P7F3007	06/30/17	07/02/17	TPH 8015M	
>C28-C35	ND	26.042	mg/kg dry	1	P7F3007	06/30/17	07/02/17	TPH 8015M	
Surrogate: 1-Chlorooctane		109 %	70-1	30	P7F3007	06/30/17	07/02/17	TPH 8015M	
Surrogate: o-Terphenyl		113 %	70-1	30	P7F3007	06/30/17	07/02/17	TPH 8015M	
Total Petroleum Hydrocarbon C6-C35	ND	26.042	mg/kg dry	l	[CALC]	06/30/17	07/02/17	cale	

P.O. Box 50685 Midland TX, 79710 Project: Paladin Well #5

Project Number: 17-0158-01 Project Manager: Mark Larson

> S-9 (0.5-1) 7F30002-14 (Soil)

									1
:	Analyte Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes

Permian Basin Environmental Lab, L.P.

General Chemistry Parameters by EPA / Standard Methods

General Chemistry Parameters by EP	\ / Standard Methods							
	ND	1.09	mg/kg dry	1	P7F3009	06/30/17	07/03/17	EPA 300.0
Chloride	ND	****			P7G0301	06/30/17	07/03/17	ASTM D2216
% Moisture	8.0	0.1	%	1	1 100001	00/30/17	01/03/17	

Project: Paladin Well #5

P.O. Box 50685 Midland TX, 79710 Project Number: 17-0158-01 Project Manager: Mark Larson Fax: (432) 687-0456

S-11 (0-0.5) 7F30002-17 (Soil)

		71.50	702-17 (50)	• 7					
Analyte	Result	Reporting Limít	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
	Perm	ian Basin E	nvironmer	ıtal Lab, l	L.P.				
General Chemistry Parameters by EPA	Standard Method	<u>s</u>						TD 1 200 D	
Chloride	3510	30.9	mg/kg dry	25	P7F3009	06/30/17	07/03/17	EPA 300.0	
% Moisture	19.0	0.1	%	1	P7G0301	06/30/17	07/03/17	ASTM D2216	
Total Petroleum Hydrocarbons C6-C35	by EPA Method 80	15M							
C6-C12	ND	30.864	mg/kg dry	ì	P7G0302	06/30/17	06/30/17	TPH 8015M	
>C12-C28	ND	30.864	mg/kg dry	l	P7G0302	06/30/17	06/30/17	TPH 8015M	
>C28-C35	ND	30.864	mg/kg dry	1	P7G0302	06/30/17	06/30/17	TPH 8015M	
Surrogate: 1-Chlorooctane		109 %	70-1	130	P7G0302	06/30/17	06/30/17	TPH 8015M	
Surrogate: o-Terphenyl		118%	70-1	130	P7G0302	06/30/17	06/30/17	TPH 8015M	
Total Petroleum Hydrocarbon C6-C35	ND	30.864	mg/kg dry	1	[CALC]	06/30/17	06/30/17	calc	

Larson & Associates, Inc. Project: Paladin Well #5

P.O. Box 50685 Project Number: 17-0158-01
Midland TX, 79710 Project Manager: Mark Larson

S-11 (1-1.5) 7F30002-19 (Soil)

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Allaryte	1100011								

Permian Basin Environmental Lab, L.P.

Chloride	2300	12.0	mg/kg dry	10	P7F3009	06/30/17	07/03/17	EPA 300.0
% Moisture	17.0	0.1	%	ì	P7G0301	06/30/17	07/03/17	ASTM D2216

Project: Paladin Well #5

P.O. Box 50685 Midland TX, 79710 Project Number: 17-0158-01

Fax: (432) 687-0456

Project Manager: Mark Larson

S-11 (1.5-2) 7F30002-20 (Soil)

Reporting Analyte Result Limit Units Dilution Batch Prepared Analyzed Method										
			Reporting							
That the barren	Anal	yte Result		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes

Permian Basin Environmental Lab, L.P.

Chloride	1050	5.81 mg/kg dry	5	P7F3009	06/30/17	07/03/17	EPA 300.0
% Moisture	14.0	0.1 %	1	P7G0301	06/30/17	07/03/17	ASTM D2216

Project: Paladin Well #5

P.O. Box 50685

Project Number: 17-0158-01

Fax: (432) 687-0456

Midland TX, 79710

Project Manager: Mark Larson

S-12 (0-0.5) 7F30002-21 (Soil)

Апајуте	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
	Pern	iian Basin E	nvironmer	ıtal Lab, l	L.P.				
General Chemistry Parameters by EPA /	Standard Method	ls							
Chloride	1140	6.10	mg/kg dry	5	P7G0306	07/03/17	07/03/17	EPA 300.0	
% Moisture	18.0	0.1	%	1	P7G0301	06/30/17	07/03/17	ASTM D2216	
Total Petroleum Hydrocarbons C6-C35 l	y EPA Method 80)15M							
C6-C12	ND	30.488	mg/kg dry	1	P7G0302	06/30/17	06/30/17	TPH 8015M	
>C12-C28	ND	30.488	mg/kg dry	i	P7G0302	06/30/17	06/30/17	TPH 8015M	
>C28-C35	ND	30.488	mg/kg dry	1	P7G0302	06/30/17	06/30/17	TPH 8015M	
Surrogate: 1-Chlorooctane		130 %	70-1	30	P7G0302	06/30/17	06/30/17	TPH 8015M	
Surrogate: o-Terphenyl		138 %	70-1	30	P7G0302	06/30/17	06/30/17	TPH 8015M	S-GC
Total Petroleum Hydrocarbon C6-C35	ND	30.488	mg/kg dry	1	[CALC]	06/30/17	06/30/17	cale	

Project: Paladin Well #5

P.O. Box 50685

Project Number: 17-0158-01

Midland TX, 79710

Project Manager: Mark Larson

S-12 (0.5-1) 7F30002-22 (Soil)

•									
		Reporting							
Analyte	Result	Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes

Permian Basin Environmental Lab, L.P.

General Chemistry Parameters by EPA / Standard Methods

Chloride	848	7,14 mg/kg dr	y 5	P7G0306	07/03/17	07/03/17	EPA 300.0
% Moisture	30.0	0.1 %	1	P7G0301	06/30/17	07/03/17	ASTM D2216

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Project: Paladin Well #5

P.O. Box 50685

Project Number: 17-0158-01

Midland TX, 79710

Project Manager: Mark Larson

S-13 (0-0.5) 7F30002-23 (Soil)

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
	Pern	ıian Basin E	Invironmen	ital Lab, l	L.P.				
General Chemistry Parameters by EPA	Standard Method	ls							
Chloride	ND	1,06	mg/kg dry	1	P7G0306	07/03/17	07/03/17	EPA 300.0	
% Moisture	6.0	0.1	%	1	P7G0301	06/30/17	07/03/17	ASTM D2216	
Total Petroleum Hydrocarbons C6-C35 I	by EPA Method 80)15M							
C6-C12	ND	26.596	mg/kg dry	1	P7G0302	06/30/17	06/30/17	TPH 8015M	
>C12-C28	ND	26.596	mg/kg dry	i	P7G0302	06/30/17	06/30/17	TPH 8015M	
>C28-C35	ND	26.596	mg/kg dry	1	P7G0302	06/30/17	06/30/17	TPH 8015M	
Surrogate: 1-Chlorooctane		125 %	70-1	30	P7G0302	06/30/17	06/30/17	TPH 8015M	
Surrogate: o-Terphenyl		143 %	70-1	30	P7G0302	06/30/17	06/30/17	TPH 8015M	S-GC
Total Petroleum Hydrocarbon C6-C35	ND	26.596	mg/kg dry	1	[CALC]	06/30/17	06/30/17	calc	

P.O. Box 50685 Midland TX, 79710 Project: Paladin Well #5

Project Number: 17-0158-01 Project Manager: Mark Larson Fax: (432) 687-0456

S-13 (0.5-1)

7F30002-24 (Soil)

	R	eporting							
Analyte Re	sult	Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes

Permian Basin Environmental Lab, L.P.

Chloride	ND	1.11 mg/kg dry	l	P7G0306	07/03/17	07/03/17	EPA 300.0
% Moisture	10.0	0.1 %	1	P7G0301	06/30/17	07/03/17	ASTM D2216

P.O. Box 50685

Midland TX, 79710

Project: Paladin Well #5

Project Number: 17-0158-01 Project Manager: Mark Larson Fax: (432) 687-0456

S-14 (0-0.5)

TERRORS 35	(0.3)
7F30002-25	130111

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
	Perm	ian Basin E	nvironmei	ıtal Lab, l	L.P.				
General Chemistry Parameters by EPA	Standard Method	s							
Chloride	2040	11.9	mg∕kg dry	10	P7G0306	07/03/17	07/03/17	EPA 300.0	
% Moisture	16.0	0.1	%	1	P7G0301	06/30/17	07/03/17	ASTM D2216	
Total Petroleum Hydrocarbons C6-C35	by EPA Method 80	15M							
C6-C12	ND	29.762	mg/kg dry	1	P7G0302	06/30/17	06/30/17	TPH 8015M	
>C12-C28	ND	29.762	mg/kg dry	ı	P7G0302	06/30/17	06/30/17	TPH 8015M	
>C28-C35	ND	29,762	mg/kg dry	1	P7G0302	06/30/17	06/30/17	TPH 8015M	
Surrogate: 1-Chlorooctane		126%	70-1	30	P7G0302	06/30/17	06/30/17	TPH 8015M	
Surrogate: o-Terphenyl		139 %	70-1	30	P7G0302	06/30/17	06/30/17	TPH 8015M	S-GC
Total Petroleum Hydrocarbon C6-C35	ND	29.762	mg/kg dry	1	[CALC]	06/30/17	06/30/17	calc	

Larson & Associates, Inc. Project: Paladin Well #5 Fax: (432) 687-0456

P.O. Box 50685 Project Number: 17-0158-01
Midland TX, 79710 Project Manager: Mark Larson

S-14 (0.5-1) 7F30002-26 (Soil)

								1	
	Reporting								
Analyte Resu	lt Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes	

Permian Basin Environmental Lab, L.P.

Chloride	845	1.20 mg/kg dry	1	P7G0306	07/03/17	07/03/17	EPA 300.0
% Moisture	17.0	0.1 %	1	P7G0301	06/30/17	07/03/17	ASTM D2216

Project: Paladin Well #5

Project Number: 17-0158-01

Fax: (432) 687-0456

P.O. Box 50685 Midland TX, 79710 Project Manager: Mark Larson

General Chemistry Parameters by EPA / Standard Methods - Quality Control Permian Basin Environmental Lab, L.P.

	Reporting			Spike	Source	%REC		R		RPD	
Analyte	Result	Limit	Units	Level	Result	%REC	Limits	RPD	Limit	Notes	
Batch P7F3009 - *** DEFAULT PREP ***	latest and the second										
Blank (P7F3009-BLK1)				Prepared: (06/30/17	Analyzed: 07	7/03/17				
Chloride	ND	1.00	mg/kg wet		**						
LCS (P7F3009-BS1)				Prepared: (06/30/17	Analyzed: 01	7/03/17				
Chloride	386	1.00	mg/kg wet	400		96.4	80-120				
LCS Dup (P7F3009-BSD1)				Prepared: (06/30/17	Analyzed: 0'	7/03/17				
Chloride	384		mg/kg wet	400		96.0	80-120	0.452	20		
Duplicate (P7F3009-DUP1)	Sour	rce: 7F30002	-01	Prepared: (06/30/17	Analyzed: 0	7/03/17				
Chloride	9570	53.2	mg/kg dry		9160			4.31	20		
Duplicate (P7F3009-DUP2)	Sour	rce: 7F30002	-11	Prepared: (06/30/17	Analyzed: 07	7/03/17				
Chloride	3.49	1.04	mg/kg dry		2.26			42.8	20		
Matrix Spike (P7F3009-MS1)	Sour	rce: 7F30002	-01	Prepared: (06/30/17	Analyzed: 0'	7/03/17				
Chloride	16800	53.2	mg/kg dry	5320	9160	144	80-120				
Batch P7G0301 - *** DEFAULT PREP ***											
Blank (P7G0301-BLK1)				Prepared: (06/30/17	Analyzed: 0'	7/03/17				
% Moisture	ND	0.1	%								
Duplicate (P7G0301-DUP1)	Sour	rce: 7F30002	-26	Prepared: (06/30/17	Analyzed: 0	7/03/17				
% Moisture	14.0	0.1	%		17.0			19.4	20		
Batch P7G0306 - *** DEFAULT PREP ***										***************************************	
Blank (P7G0306-BLK1)				Prepared &	k Analyze	ed: 07/03/17					
Chloride	ND	1.00	mg/kg wet								

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Project: Paladin Well #5

P.O. Box 50685

Project Number: 17-0158-01

Midland TX, 79710

Project Manager: Mark Larson

General Chemistry Parameters by EPA / Standard Methods - Quality Control Permian Basin Environmental Lab, L.P.

l .											
		Reporting		Spike	Source		%REC		RPD		
Analyte	Result	Limit	Units	Level	Result	%REC	Limits	RPD	Limit	Notes	
Batch P7G0306 - *** DEFAULT PREP ***							· · · · · · · · · · · · · · · · · · ·				
LCS (P7G0306-BS1)				Prepared &	Analyzed:	07/03/17					
Chloride	400	1.00	mg/kg wet	400		100	80-120				
LCS Dup (P7G0306-BSD1)				Prepared &	Analyzed:	07/03/17					
Chloride	393	1.00	mg/kg wet	400		98.2	80-120	1.95	20		
Duplicate (P7G0306-DUP1)		Source: 7F30002-21			Prepared & Analyzed; 07/03/17						
Chloride	1220	6.10	mg/kg dry		1140	,		6.67	20		

Project: Paladin Well #5

P.O. Box 50685 Midland TX, 79710 Project Number: 17-0158-01 Project Manager: Mark Larson Fax: (432) 687-0456

Total Petroleum Hydrocarbons C6-C35 by EPA Method 8015M - Quality Control Permian Basin Environmental Lab, L.P.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch P7F3007 - TX 1005			Onno	20101	1100211	701111				1.0.00
Blank (P7F3007-BLK1)				D	· A	06/20/17				
C6-C12	ND	25.000	mg/kg wet	Prepared &	k Analyzed:	06/30/17				
>C12-C28	ND	25.000	mg/kg wet							
>C28-C35	ND	25.000	11							
Surrogate: 1-Chlorooctane	119			100		119	70-130			
Surrogate: o-Terphenyl	68.2		,,	50.0		136	70-130			S-GC
LCS (P7F3007-BS1)				Prepared &	k Aπalyzed:	06/30/17				
C6-C12	988	25.000	mg/kg wet	1000		98.8	75-125		.,,	.,
>C12-C28	999	25.000	н	1000		99.9	75-125			
Surrogate: 1-Chlorooctane	116			100		116	70-130		• • • • • • • • • • • • • • • • • • • •	
Surrogate: o-Terphenyl	60.7		,,	50.0		121	70-130			
LCS Dup (P7F3007-BSD1)				Prepared &	k Analyzed:	06/30/17				
C6-C12	978	25.000	mg/kg wet	1000	,,	97.8	75-125	0.973	20	***************************************
>C12-C28	971	25.000	н	1000		97.1	75-125	2.84	20	
Surrogate: 1-Chlorooctane	119		и	100		119	70-130			
Surrogate: o-Terphenyl	61.2		"	50.0		122	70-130			
Matrix Spike (P7F3007-MS1)	Sou	rce: 7F30001	-01	Prepared: (06/30/17 A	nalyzed: 07	7/02/17			
C6-C12	1020	27.174	mg/kg dry	1090	ND	93.5	75-125			
>C12-C28	976	27.174	н	1090	208	70.7	75-125			QM-0:
Surrogate: 1-Chlorooctane	130		<i>n</i>	109	anna ann an ann ann ann ann	119	70-130			
Surrogate: o-Terphenyl	57.2		"	54.3		105	70-130			
Matrix Spike Dup (P7F3007-MSD1)	Sou	rce: 7F30001	-01	Prepared: (06/30/17 A	nalyzed: 07	7/03/17			
C6-C12	1060	27.174	mg/kg dry	1090	ND	97.1	75-125	3.77	20	
>C12-C28	1010	27.174	"	1090	208	74.1	75-125	4.71	20	QM-03
Surrogate: 1-Chlorooctane	134		и	109		123	70-130			
Surrogate: o-Terphenyl	59.6		n	54.3		110	70-130			

Project: Paladin Well #5

P.O. Box 50685

Project Number: 17-0158-01

Fax: (432) 687-0456

Midland TX, 79710

Project Manager: Mark Larson

Total Petroleum Hydrocarbons C6-C35 by EPA Method 8015M - Quality Control Permian Basin Environmental Lab, L.P.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Límit	Notes
Batch P7G0302 - TX 1005										
Blank (P7G0302-BLK1)				Prepared &	Analyzed	: 06/30/17				
C6-C12	ND	25.000	mg/kg wct					***************************************		
>C12-C28	ND	25.000	н							
>C28-C35	ND	25.000	н							
Surrogate: 1-Chlorooctane	115		0	100		115	70-130			
Surrogate: o-Terphenyl	61.4		"	50.0		123	70-130			
LCS (P7G0302-BS1)				Prepared &	: Analyzed:	: 06/30/17				
C6-C12	828	25.000	mg/kg wet	1000		82.8	75-125			
>C12-C28	809	25.000	н	1000		80.9	75-125			
Surrogate: 1-Chlorooctane	108		"	100		108	70-130		•••••••••••••••	
Surrogate: o-Terphenyl	52.0		и	50.0		104	70-130			
LCS Dup (P7G0302-BSD1)				Prepared &	. Analyzed:	: 06/30/17				
C6-C12	842	25,000	mg/kg wet	1000		84.2	75-125	1.64	20	
>C12-C28	824	25.000	41	1000		82.4	75-125	1.86	20	
Surrogate: 1-Chlorooctane	108		и	100		108	70-130			
Surrogate: o-Terphenyl	55.0		n	50.0		110	70-130			
Duplicate (P7G0302-DUP1)	Sou	rce: 7F30008	-06	Prepared: 0	6/30/17 A	nalyzed: 07	/01/17			
C6-C12	ND	25.773	mg/kg dry		9.85				20	,
>C12-C28	10.7	25.773	a		ND				20	
Surrogate: 1-Chlorooctane	144	**** **********************************	<i>H</i>	124		116	70-130			
Surrogate: o-Terphenyl	79.4		n	61.9		128	70-130			

Larson & Associates, Inc.
Project: Paladin Well #5

P.O. Box 50685
Project Number: 17-0158-01
Midland TX, 79710
Project Manager: Mark Larson

Fax: (432) 687-0456

Mark Larson

Notes and Definitions

S-GC	Surrogate recovery outside of control limits. The data was accepted based on valid recovery of the remaining surrogate.
QM-05	The spike recovery was outside acceptance limits for the MS and/or MSD due to matrix interference. The LCS and/or LCSD were within acceptance limits showing that the laboratory is in control and the data is acceptable.
DET	Analyte DETECTED
ND	Analyte NOT DETECTED at or above the reporting limit
NR	Not Reported
dry	Sample results reported on a dry weight basis
RPD	Relative Percent Difference
LCS	Laboratory Control Spike
MS	Matrix Spike
Dup	Duplicate

Report Approved By:		Date:	7/6/2017
Brent Barron, Laboratory D	irector/Technical Director		
This material is intended on	ly for the use of the individua	(s) or entity to whom it	is addressed, and may contain

If you have received this material in error, please notify us immediately at 432-686-7235.

The results in this report apply to the samples analyzed in accordance with the samples received in the laboratory. This analytical report must be reproduced in its entirety, with written approval of Permian Basin Environmental Lab.

information that is privileged and confidential.

RELINQUISHED BY:(Signature)	RELINQUISHED BY:(Signature) DATE/TIME DATE/TIME DATE/TIME DATE/TIME	5	5-9(0-0.5)-13 12:35	(0.5-1) -1	5-8 (0-0.5) -11 n:36	(08-1) -10	0.5)	6.5	(0-05) -07	(c-1)	5-4(0-1) -05 11:40	5-3 (c-1) -0-1 11:30	5-2 (0-1) -03 11125	(1-2) -02	S -1 (0-1) 50 (1-0) 1-8	Field Lab # Date Time Matrix	TIME ZONE: Time zone/State:	TRRP report? Ves No A=AiR OT=OTHER	Data Reported to:	SSOCIQIES, ITIC. Environmental Consultants	∆ arson &		
RECEIVED BY Stynature)	RECEIVED BY: (Signature) RECEIVED BY: (Signature)														Y	# of Conf HCI HNO ₃ H ₂ SO ₄ D ICE UNPRES	NaOH C	PRESERVATION		***************************************	507 N. Marienfeld, Ste. 200		
OTHER O	ROTIME								7								2	701 1006 12 14 14 14 14 14 14 14 14 14 14 14 14 14				DATE (~20-1)	
	LABORATORY USE ONLY: RECEIVING TEMP: H.S. THERM #: L. NOT LISED CHISTORY SEALS - DIBROKEN TINITACT TO NOT LISED															S / S / S / S / S / S / S / S / S / S /		Marie Co		H (Lam	ORDER # 7F36	PAGE 1 OF 7	CHAIN-OF-CUSTOI

RELINQUISHED BY:(Signature) 6/30/1783 RECEIVERS)	DATE/TIME RECEIVED			5-14 (5-0.5) -25 1720 1	(0.5-1) -24	5-13 (0-0.5) -23 135	122 - 22	(1)2(f-1)3 -2	(d) -20 +	+	(0.5-1) -18) -17	5-10 (05-1) -16 6-28-11245 5 1). Lab# Date Time Matrix	Time zone/State:	A=AIR	report? S=SOIL P=PAINT W=WATER SL=SLUDGE	OISON & Midland, TX 79701 SSOCIATES, Inc. Environmental Consultants Data Reported to:	
8Y: (Signature) OTHER CI	YY: (Signature) TURN AROUNTHME NORMAL NORMAL A DAY O			\ \ \		\ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \				\ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \		\$		H ₂ SO ₄ ICE UNPRE UNPRE BRITATION SOLUTION SOL	1 1897 1016 80 15 10 15	SO POR		PO#: PROJECT LOCATION OR N LAI PROJECT#: \[\bar{\gamma} -\bar{\gamma} \)	DATE: 6-30-17
☐ CARRIER BILL#	RECEIVING TEMP: THERM # LINU CUT CUSTODY SEALS - DBROKEN DINTACT DNOT USED						(0,5-1)	5-12(0-0,5	2 7.5-2	S-11(1-1.5,				S C S S S S S S S S S S S S S S S S S S		Senici Senici		AB WOR	PAGE 2 OF 25

PERMIAN BASIN ENVIRONMENTAL LAB, LP 1400 Rankin Hwy Midland, TX 79701



Analytical Report

Prepared for:

Mark Larson
Larson & Associates, Inc.
P.O. Box 50685
Midland, TX 79710

Project: Paladin East Caprock SWD #5
Project Number: 17-0158-01
Location: New Mexico

Lab Order Number: 7G10001



NELAP/TCEQ # T104704516-16-7

Report Date: 07/20/17

Project: Paladin East Caprock SWD #5

P.O. Box 50685 Midland TX, 79710 Project Number: 17-0158-01 Project Manager: Mark Larson Fax: (432) 687-0456

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
SB-1, 3'	7G10001-01	Soil	07/06/17 12:40	07-10-2017 10:00
\$B-1, 5'	7G10001-02	Soil	07/06/17 12:45	07-10-2017 10:00
SB-1, 7'	7G10001-03	Soil	07/06/17 12:47	07-10-2017 10:00
SB-1, 10'	7G10001-04	Soil	07/06/17 12:50	07-10-2017 10:00
SB-1, 15'	7G10001-05	Soil	07/06/17 12:55	07-10-2017 10:00
SB-1, 20'	7G10001-06	Soil	07/06/17 12:56	07-10-2017 10:00
SB-1, 25'	7G10001-07	Soil	07/06/17 13:00	07-10-2017 10:00
SB-2, 3 ^c	7G10001-08	Soil	07/06/17 13:45	07-10-2017 10:00
SB-2, 5'	7G10001-09	Soil	07/06/17 13:47	07-10-2017 10:00
SB-2, 7'	7G10001-10	Soil	07/06/17 13:51	07-10-2017 10:00
SB-2, 10'	7G10001-11	Soil	07/06/17 13:52	07-10-2017 10:00
SB-2, 15'	7G10001-12	Soil	07/06/17 13:55	07-10-2017 10:00
SB-3, 3'	7G10001-14	Soil	07/07/17 10:04	07-10-2017 10:00
\$B-3, 5'	7G10001-15	Soil	07/07/17 10:05	07-10-2017 10:00
\$B-3, 7'	7G10001-16	Soil	07/06/17 10:08	07-10-2017 10:00
SB-4, 3'	7G10001-19	Soil	07/06/17 14:05	07-10-2017 10:00
SB-4, 5'	7G10001-20	Soil	07/06/17 14:08	07-10-2017 10:00
SB-4, 7'	7G10001-21	Soil	07/06/17 14:11	07-10-2017 10:00
SB-4, 10'	7G10001-22	Soil	07/06/17 14:12	07-10-2017 10:00
SB-4, 15'	7G10001-23	Soil	07/06/17 14:15	07-10-2017 10:00
SB-5, 3'	7G10001-25	Soil	07/07/17 10:22	07-10-2017 10:00
SB-5, 5'	7G10001-26	Soil	07/07/17 10:24	07-10-2017 10:00
SB-5, 7 ⁴	7G10001-27	Soil	07/07/17 10:29	07-10-2017 10:00
SB-5, 10'	7G10001-28	Soil	07/07/17 10:31	07-10-2017 10:00
SB-5, 15'	7G10001-29	Soil	07/07/17 10:33	07-10-2017 10:00
SB-6, 3'	7G10001-31	Soil	07/07/17 10:58	07-10-2017 10:00
SB-6, 5'	7G10001-32	Soil	07/07/17 10:59	07-10-2017 10:00
SB-6, 7'	7G10001-33	Soil	07/07/17 11:01	07-10-2017 10:00
SB-6, 10'	7G10901-34	Soil	07/07/17 11:02	07-10-2017 10:00
SB-6, 15'	7G10001-35	Soil	07/07/17 11:04	07-10-2017 10:00
SB-7, 31	7G10001-37	Soil	07/07/17 12:47	07-10-2017 10:00
SB-7, 5'	7G10001-38	Soil	07/07/17 12:48	07-10-2017 10:00
SB-7, 7'	7G10001-39	Soil	07/07/17 12:49	07-10-2017 10:00
SB-7, 10'	7G10001-40	Soil	07/07/17 12:50	07-10-2017 10:00

Project: Paladin East Caprock SWD #5

P.O. Box 50685 Midland TX, 79710 Project Number: 17-0158-01 Project Manager: Mark Larson Fax: (432) 687-0456

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
SB-7, 15'	7G10001-41	Soil	07/07/17 12:53	07-10-2017 10:00
SB-8, 3'	7G10001-43	Soil	07/07/17 11:31	07-10-2017 10:00
SB-8, 5'	7G10001-44	Soil	07/07/17 11:32	07-10-2017 10:00
SB-8, 7'	7G10001-45	Soil	07/07/17 11:34	07-10-2017 10:00
SB-8, 10'	7G10001-46	Soil	07/07/17 11:35	07-10-2017 10:00
SB-8, 15'	7G10001-47	Soil	07/07/17 11:36	07-10-2017 10:00
SB-9, 3'	7G10001-49	Soil	07/07/17 12:20	07-10-2017 10:00
\$B-9, 5'	7G10001-50	Soil	07/07/17 12:23	07-10-2017 10:00
SB-9, 7'	7G10001-51	Soil	07/07/17 12:26	07-10-2017 10:00
SB-9, 15'	7G10001-53	Soil	07/07/17 12:34	07-10-2017 10:00
SB-10, 0'	7G10001-55	Soil	07/06/17 12:10	07-10-2017 10:00
\$B-10, 3'	7G10001-56	Soil	07/06/17 12:11	07-10-2017 10:00
SB-10, 5'	7G10001-57	Soil	07/06/17 12:13	07-10-2017 10:00
SB-10, 7'	7G10001-58	Soil	07/06/17 12:15	07-10-2017 10:00
SB-10, 10'	7G10001-59	Soil	07/06/17 12:17	07-10-2017 10:00

Project: Paladin East Caprock SWD #5

P.O. Box 50685 Midland TX, 79710 Project Number: 17-0158-01

Project Manager: Mark Larson

Fax: (432) 687-0456

SB-1, 3' 7G10001-01 (Soil)

		Reporting							
Analyte	Result	Limit	Units	Dílution	Batch	Prepared	Analyzed	Method	Notes
	Perm	iian Basin E	Invironment	al Lab, l	L.P.				
General Chemistry Parameters by EPA	Standard Method	ls							
Chloride	2710	31.6	mg/kg dry	25	P7G1005	07/10/17	07/11/17	EPA 300.0	
% Moisture	21.0	0.1	%	Ĭ	P7G1102	07/11/17	07/11/17	ASTM D2216	
Total Petroleum Hydrocarbons C6-C35 l	oy EPA Method 80	15M							
C6-C12	ND	31.6	mg/kg dry	1	P7G1105	07/10/17	07/10/17	TPH 8015M	
>C12-C28	ND	31.6	mg/kg dry	1	P7G1105	07/10/17	07/10/17	TPH 8015M	
>C28-C35	ND	31,6	mg/kg dry	1	P7G1105	07/10/17	07/10/17	TPH 8015M	
Surrogate: 1-Chlorooctane		96.7 %	70-13	0	P7G1105	07/10/17	07/10/17	TPH 8015M	
Surrogate: o-Terphenyl		103 %	70-13	0	P7G1105	07/10/17	07/10/17	TPH 8015M	
Total Petroleum Hydrocarbon C6-C35	ND	31.6	mg/kg dry	1	[CALC]	07/10/17	07/10/17	calc	

Project: Paladin East Caprock SWD #5

P.O. Box 50685

Fax: (432) 687-0456

Midland TX, 79710

Project Number: 17-0158-01 Project Manager: Mark Larson

> SB-1, 5' 7G10001-02 (Soil)

		Reporting							
Analyte	Result	Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes

Permian Basin Environmental Lab, L.P.

Chloride	1090	5.26 mg/kg dry	5	P7G1005	07/10/17	07/11/17	EPA 300.0
% Moisture	5.0	0.1 %	i	P7G1102	07/11/17	07/11/17	ASTM D2216

Project: Paladin East Caprock SWD #5

P.O. Box 50685

Midland TX, 79710

Project Number: 17-0158-01 Project Manager: Mark Larson Fax: (432) 687-0456

SB-1, 7' 7G10001-03 (Soil)

		Reporting							
	Result	Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes

Permian Basin Environmental Lab, L.P.

Chloride	1040	1.02	mg/kg dry	1	P7G1005	07/10/17	07/11/17	EPA 300.0
% Moisture	2.0	0.1	%	1	P7G1102	07/11/17	07/11/17	ASTM D2216

Project: Paladin East Caprock SWD #5

P.O. Box 50685

Project Number: 17-0158-01

Midland TX, 79710

Project Manager: Mark Larson

SB-1, 10^t 7G10001-04 (Soil)

		Reporting							
Aπalyte	Result	Límit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes

Permian Basin Environmental Lab, L.P.

General Chemistry Parameters by EPA / Standard Methods

Chloride	42.1	1.04	mg/kg dry	1	P7G1005	07/10/17	07/11/17	EPA 300.0
% Moisture	4.0	0.1	%	l	P7G1102	07/11/17	07/11/17	ASTM D2216

Project: Paladin East Caprock SWD #5

P.O. Box 50685

Project Number: 17-0158-01

Midland TX, 79710

Project Manager: Mark Larson

SB-1, 15' 7G10001-05 (Soil)

		Reporting							
Analyte	Result	Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes

Permian Basin Environmental Lab, L.P.

General Chemistry Parameters by EPA / Standard Methods

Chloride	155	1,05 mg/kg	dry 1	P7G1005	07/10/17	07/11/17	EPA 300.0
% Moisture	5.0	0.1 %	1	P7G1102	07/11/17	07/11/17	ASTM D2216

Project: Paladin East Caprock SWD #5

P.O. Box 50685

Project Nomber: 17-0158-01

Project Manager: Mark Larson

Midland TX, 79710

SB-1, 20' 7G10001-06 (Soil)

		Reporting							
Analyte	Result	Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
									L
	Dormi	on Docin P.		-4al I ab I	T)				

Permian Basin Environmental Lab, L.P.

General Chemistry Parameters by EPA / Standard Methods

Chloride	839	1.10	mg∕kg dry	1	P7G1703	07/17/17	07/18/17	EPA 300.0
% Moisture	9.0	0.1	%	1	P7G1102	07/11/17	07/11/17	ASTM D2216

Project: Paladin East Caprock SWD #5

P.O. Box 50685

Project Number: 17-0158-01

Fax: (432) 687-0456

Midland TX, 79710

Project Manager: Mark Larson

SB-1, 25' 7G10001-07 (Soil)

									ŀ
		Reporting							l
Analyte	Result	Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes

Permian Basin Environmental Lab, L.P.

Chloride	803	5.62 mg/kg dry	5	P7G1703	07/17/17	07/18/17	EPA 300.0
% Moisture	11.0	0.1 %	1	P7G1102	07/11/17	07/11/17	ASTM D2216

Project: Paladin East Caprock SWD #5

P.O. Box 50685 Midland TX, 79710

Project Number: 17-0158-01 Project Manager: Mark Larson Fax: (432) 687-0456

SB-2, 31

7G10001-08 (Soil)

		Reporting							
Analyte	Result	Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes

Permian Basin Environmental Lab, L.P.

Chloride	1050	1.04	mg∕kg dry	1	P7G1005	07/10/17	07/11/17	EPA 300.0
% Moisture	4.0	0.1	%	1	P7G1102	07/11/17	07/11/17	ASTM D2216

Project: Paladin East Caprock SWD #5

P.O. Box 50685

Project Number: 17-0158-01

Fax: (432) 687-0456

Midland TX, 79710

Project Manager: Mark Larson

SB-2, 5' 7G10001-09 (Soil)

Analyte	Result	Reporting Limit	Uníts	Dilution	Batch	Prepared	Analyzed	Method	Notes				
Permian Basin Environmental Lab, L.P.													
General Chemistry Parameter	s by EPA / Standard Method	ls											
Chloride	11.3	1.03	mg/kg dry	1	P7G1005	07/10/17	07/11/17	EPA 300.0					
% Moisture	3.0	0.1	%	1	P7G1102	07/11/17	07/11/17	ASTM D2216					

Project: Paladin East Caprock SWD #5

P.O. Box 50685 Midland TX, 79710 Fax: (432) 687-0456

Project Number: 17-0158-01 Project Manager: Mark Larson

> SB-2, 7' 7G10001-10 (Soil)

		Reporting							
Analyte	Result	Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes

Permian Basin Environmental Lab, L.P.

Chloride	ND	1.11	mg/kg dry	1	P7G1005	07/10/17	07/11/17	EPA 300.0
% Moisture	10.0	0.1	%	1	P7G1102	07/11/17	07/11/17	ASTM D2216

Project: Paladin East Caprock SWD #5

P.O. Box 50685

Midland TX, 79710

Project Number: 17-0158-01 Project Manager: Mark Larson Fax: (432) 687-0456

SB-2, 10' 7G10001-11 (Soil)

		Reporting							
Analyte	Result	Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes

Permian Basin Environmental Lab, L.P.

Chloride	ND	1.06 mg/kg dry	1	P7G1005	07/10/17	07/11/17	EPA 300.0
% Moisture	6.0	01 %		P7G1102	07/11/17	07/11/17	ASTM D2216

Project: Paladin East Caprock SWD #5

P.O. Box 50685 Midland TX, 79710 Project Number: 17-0158-01

Project Manager: Mark Larson

SB-2, 15' 7G10001-12 (Soil)

			Reporting							
Ana	alyte	Result	Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes

Permian Basin Environmental Lab, L.P.

General Chemistry Parameters by EPA / Standard Methods

Chloride	49.3	1.05	mg/kg dry	1	P7G1703	07/17/17	07/18/17	EPA 300.0
% Moisture	5.0	0.1	%	1	P7G1102	07/11/17	07/11/17	ASTM D2216

Project: Paladin East Caprock SWD #5

P.O. Box 50685

Project Number: 17-0158-01

Fax: (432) 687-0456

Midland TX, 79710

Project Manager: Mark Larson

SB-3, 3' 7G10001-14 (Soil)

		Reporting							
Analyte	Result	Limit	Units	Dílution	Batch	Prepared	Analyzed	Method	Notes
	Perm	nian Basin E	Invironme	ıtal Lab,	L.P.				
General Chemistry Parameters by EPA /	Standard Method	ls							
Chloride	1.11	1.03	mg/kg dry	1	P7G1005	07/10/17	07/11/17	EPA 300.0	
% Moisture	3.0	0.1	%	1	P7G1102	07/11/17	07/11/17	ASTM D2216	
Total Petroleum Hydrocarbons C6-C35 l	y EPA Method 80)15M							
C6-C12	ND	25.8	mg/kg dry	1	P7G1105	07/10/17	07/10/17	TPH 8015M	
>C12-C28	ND	25.8	mg/kg dry	1	P7G1105	07/10/17	07/10/17	TPH 8015M	
>C28-C35	ND	25.8	mg/kg dry	j	P7G1105	07/10/17	07/10/17	TPH 8015M	
Surrogate: 1-Chlorooctane		99.3 %	70-1	30	P7G1105	07/10/17	07/10/17	TPH 8015M	
Surrogate: o-Terphenyl		104 %	70-1	30	P7G1105	07/10/17	07/10/17	TPH 8015M	
Total Petroleum Hydrocarbon C6-C35	ND	25.8	mg/kg dry	1	[CALC]	07/10/17	07/10/17	calc	

Project: Paladin East Caprock SWD #5

P.O. Box 50685 Midland TX, 79710 Project Number: 17-0158-01 Project Manager: Mark Larson Fax: (432) 687-0456

SB-3, 5' 7G10001-15 (Soil)

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
	Perm	ian Basin F	Cnvironmer	ital Lab,	L.P.				
General Chemistry Parameters by EPA /	Standard Method	ls			_				
Chloride	ND	1.03	mg/kg dry	1	P7G1005	07/10/17	07/11/17	EPA 300.0	
% Moisture	3.0	0.1	%	1	P7G1102	07/11/17	07/11/17	ASTM D2216	
Total Petroleum Hydrocarbons C6-C35 b	y EPA Method 80	15M							
C6-C12	ND	25.8	mg/kg dry	1	P7G1105	07/10/17	07/10/17	TPH 8015M	
>C12-C28	ND	25.8	mg/kg dry	1	P7G1105	07/10/17	07/10/17	TPH 8015M	
>C28-C35	ND	25.8	mg/kg dry	j	P7G1105	07/10/17	07/10/17	TPH 8015M	
Surrogate: 1-Chlorooctane		97.0 %	70-1	30	P7G1105	07/10/17	07/10/17	TPH 8015M	
Surrogate: o-Terphenyl		103 %	70-1	30	P7G1105	07/10/17	07/10/17	TPH 8015M	
Total Petroleum Hydrocarbon C6-C35	ND	25.8	mg∕kg dry	1	[CALC]	07/10/17	07/10/17	calc	

Project: Paladin East Caprock SWD #5

P.O. Box 50685

Midland TX, 79710

Project Number: 17-0158-01

Fax: (432) 687-0456

Project Manager: Mark Larson

SB-3, 7' 7G10001-16 (Soil)

		Reporting							
Analyte	Result	Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
	Permia	n Basin Er	ıvironme	ntal Lah. I	P.				

Chloride	ND	1.04 mg/kg dry	1	P7G1005	07/10/17	07/11/17	EPA 300.0
% Moisture	4.0	0.1 %	1	P7G1102	07/11/17	07/11/17	ASTM D2216

Project: Paladin East Caproek SWD #5

P.O. Box 50685

Midland TX, 79710

Project Number: 17-0158-01

Project Manager: Mark Larson

SB-4, 31 7G10001-19 (Soil)

		Reporting							
Analyte	Result	Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes

Permian Basin Environmental Lab, L.P.

General Chemistry Parameters by EPA / Standard Methods

Chloride	61.4	1.03 mg/kg dry	1	P7G1005	07/10/17	07/11/17	EPA 300.0
% Moisture	3.0	0.1 %	1	P7G1102	07/11/17	07/11/17	ASTM D2216

Fax: (432) 687-0456

Project: Paladin East Caprock SWD #5

P7G1102

07/11/17

1

P.O. Box 50685 Midland TX, 79710

% Moisture

Project Number: 17-0158-01

0.1

4.0

Project Manager: Mark Larson

Fax: (432) 687-0456

ASTM D2216

07/11/17

SB-4, 5'

7G10001-20 (Soil)

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
	Permi	an Basin E	nvironme	ntal Lab, L	P.				
General Chemistry Paramete	ers by EPA / Standard Methods								
Chloride	ND	1.04	ma/ka dry	ı	P7G1005	02/10/17	07/11/17	EPA 300 0	

%

Project: Paladin East Caprock SWD #5

P.O. Box 50685

Fax: (432) 687-0456

Midland TX, 79710

Project Number: 17-0158-01 Project Manager: Mark Larson

SB-4, 7' 7G10001-21 (Soil)

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes				
	Permian Basin Environmental Lab, L.P.												
General Chemistry Parameters	by EPA / Standard Methods								***************************************				
Chloride	ND	1.03	mg/kg dry	1	P7G1005	07/10/17	07/11/17	EPA 300.0					
% Moisture	3,0	0.1	%	l	P7G1102	07/11/17	07/11/17	ASTM D2216					

Project: Paladin East Caprock SWD #5

P.O. Box 50685 Midland TX, 79710

Project Number: 17-0158-01 Project Manager: Mark Larson Fax: (432) 687-0456

SB-4, 10' 7G10001-22 (Soil)

								·····	
									l
		Reporting							1
Analyte	Result	Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes

Permian Basin Environmental Lab, L.P.

			····					
Chloride	ND	1.06	mg/kg dry	1	P7G1005	07/10/17	07/11/17	EPA 300.0
% Moisture	6.0	0.1	%	1	P7G1102	07/11/17	07/11/17	ASTM D2216

Project: Paladin East Caprock SWD #5

P.O. Box 50685 Midland TX, 79710 Project Number: 17-0158-01 Project Manager: Mark Larson Fax: (432) 687-0456

SB-4, 15' 7G10001-23 (Soil)

		Reporting							
Analyte	Result	Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes

Permian Basin Environmental Lab, L.P.

Chloride	17.4	1.04 mg/kg dry	l	P7G1703	07/17/17	07/18/17	EPA 300.0
% Moisture	4.0	0.1 %	1	P7G1102	07/11/17	07/11/17	ASTM D2216

Project: Paladin East Caprock SWD #5

P.O. Box 50685

Project Number: 17-0158-01

Fax: (432) 687-0456

Midland TX, 79710 Project Manager: Mark Larson

> SB-5, 3 7G10001-25 (Soil)

		Reporting							
Analyte	Result	Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes

Permian Basin Environmental Lab, L.P.

Chloride	22.4		mg/kg dry	1	P7G1005	07/10/17	07/11/17	EPA 300.0
% Moisture	3.0	0.1	%	1	P7G1102	07/11/17	07/11/17	ASTM D2216

P.O. Box 50685 Midland TX, 79710 Project: Paladin East Caprock SWD #5

Project Number: 17-0158-01 Project Manager: Mark Larson

SB-5, 5'

7G10001-26 (Soil)

		Reporting							
Analyte	Result	Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes

Permian Basin Environmental Lab, L.P.

General Chemistry Parameters by EPA / Standard Methods

Chloride ND P7G1005 EPA 300.0 1.02 mg/kg dry ì 07/10/17 07/11/17 P7G1102 **ASTM D2216** % Moisture 2.0 0.1 % 1 07/11/17 07/11/17

Fax: (432) 687-0456

Project: Paladin East Caprock SWD #5

Project Number: 17-0158-01

P.O. Box 50685 Midland TX, 79710

Project Manager: Mark Larson

SB-5, 7' 7G10001-27 (Soil)

		Reporting							
Analyte	Result	Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes

Permian Basin Environmental Lab, L.P.

General Chemistry Parameters by EPA / Standard Methods

Chloride	ND	1.02 mg/kg dry	1	P7G1005	07/10/17	07/11/17	EPA 300.0
% Moisture	2.0	0.1 %	1	P7G1102	07/11/17	07/11/17	ASTM D2216

Fax: (432) 687-0456

Project: Paladin East Caprock SWD #5

P.O. Box 50685

Midland TX, 79710

170,000, 170,000,000,000,000,000

Fax: (432) 687-0456

Project Number: 17-0158-01 Project Manager: Mark Larson

> SB-5, 10' 7G10001-28 (Soil)

		Reporting							
Analyte	Result	Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes

Permian Basin Environmental Lab, L.P.

Chloride	ND	1.08 mg	y∕kg dry	i	P7G1101	07/11/17	07/11/17	EPA 300.0
% Moisture	7.0	0.1	%	l	P7G1102	07/11/17	07/11/17	ASTM D2216

Project: Paladin East Caprock SWD #5

Fax: (432) 687-0456

P.O. Box 50685 Midland TX, 79710

Project Number: 17-0158-01 Project Manager: Mark Larson

> SB-5, 151 7G10001-29 (Soil)

		Reporting							
Analyte	Result	Límit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes

Permian Basin Environmental Lab, L.P.

Chloride	140	1.04 mg/kg dry	i	P7G1703	07/17/17	07/18/17	EPA 300.0
% Moisture	14.0	0.1 %	l	P7G1102	07/11/17	07/11/17	ASTM D2216

Project: Paladin East Caprock SWD #5

P.O. Box 50685

Project Number: 17-0158-01

Fax: (432) 687-0456

Midland TX, 79710

Project Manager: Mark Larson

SB-6, 31 7G10001-31 (Soil)

Reporting Analyte Result Limit Units Dilution Batch Prepared Analyzed Method Note								
			Reporting					
	•	Result		Dilution	Batch	Prepared	Analyzed	Notes

Permian Basin Environmental Lab, L.P.

Chloride	387	1.39 mg/kg dry	1	P7G1101	07/11/17	07/11/17	EPA 300.0
% Moisture	28.0	0.1 %	1	P7G1102	07/11/17	07/11/17	ASTM D2216

Project: Paladin East Caprock SWD #5

P.O. Box 50685

Project Number: 17-0158-01

Fax: (432) 687-0456

Midland TX, 79710

Project Manager: Mark Larson

SB-6, 5' 7G10001-32 (Soil)

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
	Permi	ian Basin E	nvironmer	ntal Lab, I	P.				
General Chemistry Parameter	rs by EPA / Standard Methods	S							
Chloride	2.76	1.02	mg∕kg dry	ļ	P7G1101	07/11/17	07/11/17	EPA 300.0	
% Moisture	2.0	0.1	%	1	P7G1102	07/11/17	07/11/17	ASTM D2216	

Project: Paladin East Caprock SWD #5

P.O. Box 50685

Project Number: 17-0158-01

Fax: (432) 687-0456

Midland TX, 79710

Project Manager: Mark Larson

SB-6, 7' 7G10001-33 (Soil)

		Reporting									
Analyte	Result	Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes		
		an Basin Fr		ntal Lab I	D						

Chloride	9.23	1.04	mg/kg dry	1	P7G1101	07/11/17	07/11/17	EPA 300.0	
% Moisture	4.0	0.1	%	1	P7G1102	07/11/17	07/11/17	ASTM D2216	

Project: Paladin East Caprock SWD #5

P7G1102

07/11/17

07/11/17

P.O. Box 50685

% Moisture

Project Number: 17-0158-01

5.0

Fax: (432) 687-0456

ASTM D2216

Midland TX, 79710

Project Manager: Mark Larson

SB-6, 10' 7G10001-34 (Soil)

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
	Permia	n Basin Eı	nvironme	ntal Lab, I	P.				
General Chemistry Paramete	ers by EPA / Standard Methods								
Chloride	ND	1.05	mg/kg dry	1	P7G1101	07/11/17	07/11/17	EPA 300.0	

Project: Paladin East Caprock SWD #5

P7G1102

07/11/17

P.O. Box 50685

% Moisture

Project Number: 17-0158-01

Fax: (432) 687-0456

ASTM D2216

07/11/17

Midland TX, 79710

Project Manager: Mark Larson

SB-6, 15' 7G10001-35 (Soil)

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
	Permia	n Basin Eı	nvironme	ntal Lab, I	P.				
General Chemistry Parameters	by EPA / Standard Methods								
Chloride	ND	1.06	mg/kg dry	l	P7G1101	07/11/17	07/11/17	EPA 300.0	

Project: Paladin East Caprock SWD #5

P.O. Box 50685

Midland TX, 79710

Project Number: 17-0158-01
Project Manager: Mark Larson

Fax: (432) 687-0456

SB-7, 3' 7G10001-37 (Soil)

				•					
									1
		Reporting							1
									1
Analyte	Result	Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
						•			

Permian Basin Environmental Lab, L.P.

Chloride	83.6	1.03 mg/kg dry	1	P7G1101	07/11/17	07/11/17	EPA 300.0
% Moisture	3.0	0.1 %	1	P7G1102	07/11/17	07/11/17	ASTM D2216

Project: Paladin East Caprock SWD #5

P.O. Box 50685 Midland TX, 79710

Project Number: 17-0158-01 Project Manager: Mark Larson Fax: (432) 687-0456

SB-7, 5'

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		ian Basin E	nvironme	ıtal Lab, I	P.				
General Chemistry Parameter	s by EPA / Standard Method	s							
Chloride	ND	1.04	mg/kg dry	1	P7G1101	07/11/17	07/11/17	EPA 300.0	
% Moisture	4.0	0.1	%	1	P7G1102	07/11/17	07/11/17	ASTM D2216	

Project: Paladin East Caprock SWD #5

P.O. Box 50685

% Moisture

Project Number: 17-0158-01

Fax: (432) 687-0456

Midland TX, 79710

Project Manager: Mark Larson

SB-7, 7' 7G10001-39 (Soil)

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
	Permiar	ı Basin Eı	nvironme	ntal Lab, I	L,P,				
General Chemistry Paramete	ers by EPA / Standard Methods								
Chloride	26.1	1.00	mg/kg dry	1	P7G1101	07/11/17	07/11/17	EPA 300.0	

%

1

P7G1102

0.1

ND

07/11/17

07/11/17

ASTM D2216

Project: Paladin East Caprock SWD #5

P7G1101

P7G1102

1

07/11/17

07/11/17

07/11/17

07/11/17

EPA 300.0

ASTM D2216

Fax: (432) 687-0456

P.O. Box 50685 Midland TX, 79710

Chloride

% Moisture

Project Number: 17-0158-01

80.6

3.0

Project Manager: Mark Larson

SB-7, 10' 7G10001-40 (Soil)

		Reporting									
Analyte	Result	Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes		
Permian Basin Environmental Lab, L.P.											
General Chemistry Parameters	s by EPA / Standard Methods	S									

1.03 mg/kg dry

0.1

%

Permian Basin Environmental Lab, L.P.

Larson & Associates, Inc. Project: Paladin East Caprock SWD #5 Fax: (432) 687-0456

P.O. Box 50685 Project Number: 17-0158-01
Midland TX, 79710 Project Manager: Mark Larson

SB-7, 15' 7G10001-41 (Soil)

		Reporting							
Analyte	Result	Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes

Permian Basin Environmental Lab, L.P.

Chloride	ND	1.18 mg/	/kg dry	1	P7G1703	07/17/17	07/18/17	EPA 300.0
% Moisture	15.0	0.1	%	1	P7G1102	07/11/17	07/11/17	ASTM D2216

Project: Paladin East Caprock SWD #5

P.O. Box 50685

Fax: (432) 687-0456

Midland TX, 79710

Project Number: 17-0158-01 Project Manager: Mark Larson

> SB-8, 31 7G10001-43 (Soil)

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Permian Basin Environmental Lab, L.P.									

Chloride	75.0	1.01	mg/kg dry	1	P7G1101	07/11/17	07/11/17	EPA 300.0
% Moisture	1.0	0.1	%	1	P7G1102	07/11/17	07/11/17	ASTM D2216

Project: Paladin East Caprock SWD #5

P.O. Box 50685

Project Number: 17-0158-01

Fax: (432) 687-0456

Midland TX, 79710

Project Manager: Mark Larson

SB-8, 5' 7G10001-44 (Soil)

		F	Reporting							
	Analyte Re	csult	Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
,					······································					
		Permian	Basin En	vironmei	ital Lab, L.	P.				

Chloride	ND	1.03	mg/kg dry	1	P7G1101	07/11/17	07/11/17	EPA 300.0
% Moisture	3.0	0.1	%	l	P7G1102	07/11/17	07/11/17	ASTM D2216

Project: Paladin East Caprock SWD #5

P.O. Box 50685

Project Number: 17-0158-01

Midland TX, 79710

Project Manager: Mark Larson

SB-8, 7' 7G10001-45 (Soil)

							 	, ,, , , . , . , . , . , . , . 	
Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
	Permi	an Basin E	Invironme	ıtal Lab, l	∟.P.				
General Chemistry Parameters	s by EPA / Standard Methods								
Chloride	ND	1.05	mg/kg dry	1	P7G1101	07/11/17	07/11/17	EPA 300.0	
% Moisture	5.0	0.1	%	1	P7G1102	07/11/17	07/11/17	ASTM D2216	

Fax: (432) 687-0456

Project: Paladin East Caprock SWD #5

P.O. Box 50685

Project Number: 17-0158-01

Midland TX, 79710

Project Manager: Mark Larson

SB-8, 10' 7G10001-46 (Soil)

		Reporting							ļ
Ana	yte Result	Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes

Permian Basin Environmental Lab, L.P.

General Chemistry Parameters by EPA / Standard Methods

Chloride	2.82	1.08 mg/kg dry	1	P7G1101	07/11/17	07/11/17	EPA 300.0
% Moisture	7.0	0.1 %	i	P7G1102	07/11/17	07/11/17	ASTM D2216

Fax: (432) 687-0456

Project: Paladin East Caprock SWD #5

P.O. Box 50685

Project Number: 17-0158-01

Fax: (432) 687-0456

Midland TX, 79710

Project Manager: Mark Larson

SB-8, 15' 7G10001-47 (Soil)

		Reporting							
Analyte	Result	Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes

Permian Basin Environmental Lab, L.P.

Chloride	98.5	1.06 mg/kg dry	1	P7G1703	07/17/17	07/18/17	EPA 300.0
% Moisture	6.0	0.1 %	1	P7G1102	07/11/17	07/11/17	ASTM D2216

Project: Paladin East Caprock SWD #5

P.O. Box 50685

Project Number: 17-0158-01

Fax: (432) 687-0456

Midland TX, 79710

Project Manager: Mark Larson

SB-9, 3' 7G10001-49 (Soil)

		Reporting							
Analyte	Result	Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes

Permian Basin Environmental Lab, L.P.

Chloride	6.07	1.04 mg/kg dry	1	P7G1101	07/11/17	07/11/17	EPA 300.0
% Moisture	4.0	0.1 %	1	P7G1102	07/11/17	07/11/17	ASTM D2216

Project: Paladin East Caprock SWD #5

P.O. Box 50685

Project Number: 17-0158-01

Fax: (432) 687-0456

Midland TX, 79710

Project Manager: Mark Larson

SB-9, 5'

7C.1	በበስነ	-5A	(Soil)
/ V 1	VVVI	-50	LOULL

									i
		Reporting							
Analyte	Result	Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes

Permian Basin Environmental Lab, L.P.

Chloride	2.03	1.02	mg/kg dry	1	P7G1101	07/11/17	07/11/17	EPA 300.0
% Moisture	2.0	0.1	%	1	P7G1102	07/11/17	07/11/17	ASTM D2216

Project: Paladin East Caprock SWD #5

P.O. Box 50685

Project Number: 17-0158-01

Fax: (432) 687-0456

Midland TX, 79710

Project Manager: Mark Larson

SB-9, 7' 7G10001-51 (Soil)

		Reporting							ŀ
Analyte	Result	Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes

Permian Basin Environmental Lab, L.P.

Chloride	ND	1.02	mg/kg dry	1	P7G1101	07/11/17	07/11/17	EPA 300.0
% Moisture	2.0	0.1	%	1	P7G1102	07/11/17	07/11/17	ASTM D2216

Project: Paladin East Caprock SWD #5

P7G1102

07/11/17

Fax: (432) 687-0456

07/11/17 ASTM D2216

P.O. Box 50685 Midland TX, 79710

% Moisture

Project Number: 17-0158-01

Project Manager: Mark Larson

SB-9, 15' 7G10001-53 (Soil)

				-							
Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes		
Permian Basin Environmental Lab, L.P.											
General Chemistry Parameters	by EPA / Standard Methods										
Chloride	ND	1.04	mg/kg dry	1	P7G1703	07/17/17	07/18/17	EPA 300.0			

0.1

4.0

Project: Paladin East Caprock SWD #5

P.O. Box 50685

Midland TX, 79710

Project Number: 17-0158-01 Project Manager: Mark Larson Fax: (432) 687-0456

SB-10, 0' 7G10001-55 (Soil)

		Reporting							
Analyte	Result	Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
	Pern	nian Basin F	Invironment	al Lab,	L.P.				
General Chemistry Parameters by EPA	Standard Method	ls							
Chloride	ND	1.09	mg/kg dry	1	P7G1101	07/11/17	07/11/17	EPA 300.0	
% Moisture	8.0	0.1	%	1	P7G1102	07/11/17	07/11/17	ASTM D2216	
Total Petroleum Hydrocarbons C6-C35 l	by EPA Method 80)15M							•••••
C6-C12	ND	27.2	mg/kg dry	1	P7G1105	07/10/17	07/10/17	TPH 8015M	
>C12-C28	ND	27.2	mg/kg dry	1	P7G1105	07/10/17	07/10/17	TPH 8015M	
>C28-C35	ND	27.2	mg/kg dry	1	P7G1105	07/10/17	07/10/17	TPH 8015M	
Surrogate: 1-Chlorooctane		94.8 %	70-13	0	P7G1105	07/10/17	07/10/17	TPH 8015M	
Surrogate: o-Terphenyl		103 %	70-13	o	P7G1105	07/10/17	07/10/17	TPH 8015M	
Total Petroleum Hydrocarbon C6-C35	ND	27.2	mg/kg dry	1	[CALC]	07/10/17	07/10/17	calc	

Midland TX, 79710

P.O. Box 50685

Project: Paladin East Caprock SWD #5

Fax: (432) 687-0456

Project Number: 17-0158-01

Project Manager: Mark Larson

SB-10, 31 7G10001-56 (Soil)

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
	Регп	nian Basin F	Invironment	tal Lab. l	L.P.				
General Chemistry Parameters by EPA				,					
Chloride	4.43	1.02	mg/kg dry	1	P7G1101	07/11/17	07/11/17	EPA 300.0	
% Moisture	2.0	0.1	%	1	P7G1102	07/11/17	07/11/17	ASTM D2216	
Total Petroleum Hydrocarbons C6-C35	by EPA Method 80)15M							
C6-C12	ND	25.5	mg/kg dry	1	P7G1105	07/10/17	07/10/17	TPH 8015M	
>C12-C28	ND	25.5	mg/kg dry	1	P7G1105	07/10/17	07/10/17	TPH 8015M	
>C28-C35	ND	25.5	mg/kg dry	1	P7G1105	07/10/17	07/10/17	TPH 8015M	
Surrogate: 1-Chlorooctane		88.6 %	70-13	0	P7G1105	07/10/17	07/10/17	TPH 8015M	
Surrogate: o-Terphenyl		93.7 %	70-13	10	P7G1105	07/10/17	07/10/17	TPH 8015M	
Total Petroleum Hydrocarbon C6-C35	ND	25.5	mg/kg dry	1	[CALC]	07/10/17	07/10/17	calc	

Project: Paladin East Caprock SWD #5

P.O. Box 50685

Project Number: 17-0158-01

Fax: (432) 687-0456

Midland TX, 79710

Project Manager: Mark Larson

SB-10, 5' 7G10001-57 (Soil)

		Reporting							
Analyte	Result	Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes

Permian Basin Environmental Lab, L.P.

Chloride	6.19	1.04	mg∕kg dry	1	P7G1101	07/11/17	07/11/17	EPA 300.0
% Moisture	4.0	0.1	%	1	P7G1102	07/11/17	07/11/17	ASTM D2216

Project: Paladin East Caprock SWD #5

Fax: (432) 687-0456

P.O. Box 50685 Midland TX, 79710 Project Number: 17-0158-01

Project Manager: Mark Larson

SB-10, 7' 7G10001-58 (Soil)

		Reporting							
Analyte	Result	Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes

Permian Basin Environmental Lab, L.P.

Chloride	4.07	1.04 mg/kg dry	l	P7G1110	07/11/17	07/11/17	EPA 300.0
% Moisture	4.0	0.1 %	1	P7G1102	07/11/17	07/11/17	ASTM D2216

Project: Paladin East Caprock SWD #5

P.O. Box 50685

Project Number: 17-0158-01 Midland TX, 79710 Project Manager: Mark Larson Fax: (432) 687-0456

SB-10, 10' 7G10001-59 (Soil)

		Reporting							
Analyte	Result	Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes

Permian Basin Environmental Lab, L.P.

Chloride	2.34	1,04	mg/kg dry	1	P7G1703		07/18/17	EPA 300.0
% Moisture	4.0	0.1	%	1	P7G1102	07/11/17	07/11/17	ASTM D2216

Project: Paladin East Caprock SWD #5

P.O. Box 50685 Midland TX, 79710 Fax: (432) 687-0456

Project Number: 17-0158-01 Project Manager: Mark Larson

General Chemistry Parameters by EPA / Standard Methods - Quality Control Permian Basin Environmental Lab, L.P.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result		%REC Limits	RPD	RPD Limit	Notes
Batch P7G1005 - *** DEFAULT PREP ***										
Blank (P7G1005-BLK1)				Prepared: ()7/10/17	Analyzed: 07	7/11/17			
Chloride	ND	1.00	mg/kg wet						.,,	
LCS (P7G1005-BS1)				Prepared: (07/10/17	Analyzed: 07	7/11/17			
Chloride	412	1.00	mg/kg wet	400	**** * * * * * * * * *	103	80-120			
LCS Dup (P7G1005-BSD1)				Prepared: (07/10/17	Analyzed: 07	7/11/17			
Chloride	415	1.00	mg/kg wet	400		104	80-120	0.902	20	
Duplicate (P7G1005-DUP1)	Son	rce: 7G10001	-01	Prenared: (37/10/17	Analyzed: 07	7/11/17			
Chloride	3770		mg/kg dry		2710	Tillary Zour O		32.5	20	
Duplicate (P7G1005-DUP2)	Sou	rce: 7G10001	-15	Prepared: (07/10/17	Analyzed: 07	7/11/17			
Chloride	ND	1.03	mg/kg dry		ND				20	
Matrix Spike (P7G1005-MS1)	Sou	rce: 7G10001	-01	Prepared: (07/10/17	Analyzed: 07	7/11/17			
Chloride	6130	*	mg/kg dry	2530	2710		80-120	,		QM-0:
Batch P7G1101 - *** DEFAULT PREP ***										
Blank (P7G1101-BLK1)				Prepared &	t Analyz	ed: 07/11/17				
Chloride	ND	1.00	mg/kg wet							
LCS (P7G1101-BS1)				Prepared &	k Analyz	ed: 07/11/17				
Chloride	427	1.00	mg/kg wet	400		107	80-120	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,		
LCS Dup (P7G1101-BSD1)				Prepared &	k Analyz	ed: 07/11/17				
Chloride	430	1.00	mg/kg wet	400		108	80-120	0.852	20	

Project: Paladin East Caprock SWD #5

P.O. Box 50685 Midland TX, 79710 Project Number: 17-0158-01 Project Manager: Mark Larson Fax: (432) 687-0456

General Chemistry Parameters by EPA / Standard Methods - Quality Control Permian Basin Environmental Lab, L.P.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch P7G1101 - *** DEFAULT PREP ***										
Duplicate (P7G1101-DUP1)	Sou	rce: 7G10001	1-28	Prepared &	: Analyzed:	07/11/17				
Chloride	ND	1.08	mg/kg dry	· · · · · · · · · · · · · · · · · · ·	ND				20	
Duplicate (P7G1101-DUP2)	Sou	rce: 7G10001	1-43	Prepared &	: Analyzed:	07/11/17				
Chloride	64.7	1.01	mg/kg dry		75.0			14.8	20	
Matrix Spike (P7G1101-MS1)	Sou	rce: 7G10001	1-28	Prepared &	: Analyzed:	07/11/17				
Chloride	1030	1.08	mg/kg dry	1080	ND	96.2	80-120			
Batch P7G1102 - *** DEFAULT PREP ***										
Blank (P7G1102-BLK1)				Prepared &	: Analyzed:	07/11/17				
% Moisture	ND	0.1	%							
Batch P7G1110 - *** DEFAULT PREP ***		***************************************								
Blank (P7G1110-BLK1)				Prepared &	: Analyzed:	07/11/17				
Chloride	ND	1.00	mg/kg wet							
LCS (P7G1110-BS1)				Prepared &	: Analyzed:	07/11/17				
Chloride	419	1.00	mg/kg wet	400		105	80-120	***************************************		
LCS Dup (P7G1110-BSD1)				Prepared &	: Analyzed:	07/11/17				
Chloride	410	1.00	mg/kg wet	400		102	80-120	2.29	20	
Duplicate (P7G1110-DUP1)	Sou	rce: 7G10001	1-58	Prepared &	Analyzed:	07/11/17				
Chloride	3.28	1.04	mg/kg dry		4.07			21.5	20	F

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General Chemistry Parameters by EPA / Standard Methods - Quality Control Permian Basin Environmental Lab, L.P.

		Reporting		Spike	Source		%REC		RPD	
Analyte	Result	Limit	Units	Level	Result	%REC	Limits	RPD	Limit	Notes
Batch P7G1110 - *** DEFAULT PREP ***			***************************************							
Duplicate (P7G1110-DUP2)	Sour	rce: 7G07005	6-03	Prepared: (07/11/17	Analyzed: 07	/12/17			
Chloride	715	1.23	mg/kg dry		705			1.45	20	
Matrix Spike (P7G1110-MS1)	Sour	ce: 7G10001	-58	Prepared &	Analyze	d: 07/11/17				
Chloride	1080	1.04	mg/kg dry	1040	4.07	103	80-120			
Batch P7G1703 - *** DEFAULT PREP ***		· · · · · · · · · · · · · · · · · · ·								
Blank (P7G1703-BLK1)				Prepared: 0)7/17/17	Analyzed: 07	7/18/17			
Chloride	ND	1.00	mg/kg wet							
LCS (P7G1703-BS1)				Prepared &	Analyze	d: 07/17/17				
Chloride	416	1.00	mg/kg wet	400		104	80-120			
LCS Dup (P7G1703-BSD1)				Prepared: 0)7/17/17	Analyzed: 07	7/18/17			
Chloride	400	1.00	mg/kg wet	400		99.9	80-120	4.04	20	
Duplicate (P7G1703-DUP1)	Soui	rce: 7G10001	-06	Prepared: ()7/17/17	Analyzed: 07	7/18/17			
Chloride	848	1.10	mg/kg dry		839			0.996	20	
Duplicate (P7G1703-DUP2)	Soui	rce: 7G11002	2-33	Prepared: (07/17/17	Analyzed: 07	7/18/17			
Chloride	1770	11.0	mg∕kg dry		1520			15.2	20	
Matrix Spike (P7G1703-MS1)	Soui	rce: 7G10001	-06	Prepared: (07/17/17	Analyzed: 07	7/18/17			
Chloride	1790	1.10	mg/kg dry	1100	839	86.1	80-120			

Project: Paladin East Caprock SWD #5

P.O. Box 50685 Midland TX, 79710 Project Number: 17-0158-01

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Project Manager: Mark Larson

Total Petroleum Hydrocarbons C6-C35 by EPA Method 8015M - Quality Control Permian Basin Environmental Lab, L.P.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch P7G1105 - TX 1005										
Blank (P7G1105-BLK1)				Prepared &	Analyzed:	07/10/17				
C6-C12	ND	25.0	mg/kg wet							
>C12-C28	ND	25.0	н							
C28-C35	ND	25.0	11							
Surrogate: 1-Chlorooctane	94.8			100		94.8	70-130			
Surrogate: o-Terphenyl	51.0		и	50.0		102	70-130			
.CS (P7G1105-BS1)				Prepared &	Analyzed:	07/10/17				
C6-C12	765	25.0	mg/kg wet	1000		76.5	75-125			
C12-C28	750	25.0	ti.	1000		75.0	75-125			
Surrogate: 1-Chlorooctane	91.1		rf	100		91.1	70-130			
Surrogate: o-Terphenyl	49.3		и	50.0		98.7	70-130			
LCS Dup (P7G1105-BSD1)				Prepared &	Analyzed:	07/10/17				
C6-C12	818	25.0	mg/kg wet	1000		81.8	75-125	6.67	20	***************************************
C12-C28	786	25.0	u	1000		78.6	75-125	4.70	20	
Surrogate: 1-Chlorooctane	93.2			100		93.2	70-130			
Surrogate: o-Terphenyl	50.6		"	50.0		101	70-130			
Matrix Spike (P7G1105-MS1)	Sou	rce: 7G1000	1-01	Prepared: 0	07/10/17 A	nalyzed: 07	/11/17			
C6-C12	1130	31.6	mg/kg dry	1270	ND	89.5	75-125			
C12-C28	1100	31.6	40	1270	15.0	85.5	75-125			
Surrogate: 1-Chlorooctane	129		n	127		102	70-130			
Surrogate: o-Terphenyl	61.9		n	63.3		97.7	70-130			
Matrix Spike Dup (P7G1105-MSD1)	Sou	rce: 7G1000	1-01	Prepared: ()7/10/17 A	nalyzed: 07	//11/17	,		
C6-C12	1190	31.6	mg/kg dry	1270	ND	94.0	75-125	4.89	20	
-C12-C28	1150	31.6	111	1270	15.0	89.8	75-125	4.90	20	
Surrogate: 1-Chlorooctane	135		<i>n</i>	127		106	70-130			
Surrogate: o-Terphenyl	71.2		n	63.3		112	70-130			

Larson & Associates, Inc.

Project: Paladin East Caprock SWD #5

P.O. Box 50685

Project Number: 17-0158-01

Midland TX, 79710

Project Manager: Mark Larson

Notes and Definitions

R3	The RPD exceeded the acceptance limit due to sample matrix effects.
R	The RPD exceeded the method control limit. The individual analyte QA/QC recoveries, however, were within acceptance limits.
QM-05	The spike recovery was outside acceptance limits for the MS and/or MSD due to matrix interference. The LCS and/or LCSD were within acceptance limits showing that the laboratory is in control and the data is acceptable.
BULK	Samples received in Bulk soil containers
DET	Analyte DETECTED
ND	Analyte NOT DETECTED at or above the reporting limit
NR	Not Reported
dry	Sample results reported on a dry weight basis
RPD	Relative Percent Difference
LCS	Laboratory Control Spike
MS	Matrix Spike
Dup	Duplicate

Report Approved By:	Date:	7/20/2017
Brent Barron, Laboratory Director/Technical Director		

This material is intended only for the use of the individual (s) or entity to whom it is addressed, and may contain information that is privileged and confidential.

If you have received this material in error, please notify us immediately at 432-686-7235.

Permian Basin Environmental Lab, L.P.

The results in this report apply to the samples analyzed in accordance with the samples received in the laboratory. This analytical report must be reproduced in its entirety, with written approval of Permian Basin Environmental Lab.

Larson & Associates, Inc. Project: Paladin East Caprock SWD #5 Fax: (432) 687-0456

P.O. Box 50685 Project Number: 17-0158-01 Midland TX, 79710 Project Manager: Mark Larson

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Attachment D

Initial C-141

District I 1625 N. French Dr., Hobbs, NM 88240 District II 1301 W. Grand Avenue, Artesia, NM 88210 District III 1000 Rio Brazos Road, Aztec, NM 87410 District IV 1220 S. St. Francis Dr., Santa Fe, NM 87505

State of New Mexico Energy Minerals and Natural Resources

Oil Conservation Division 1220 South St. Francis Dr. Santa Fe, NM 87505

Revised October 10, 2003

Form C-141

Submit 2 Copies to appropriate District Office in accordance with Rule 116 on back side of form

Release Notification and Corrective Action

										al Report		Final Rep
Address: 1	ompany: P	aladin Ener	gy Corpo	ration		Contact: M						
Address: 1	0290 Mon	roe Drive Si	lite 301, I	Dallas, TX 7		Telephone 1	No.: (214) 352-7	273				
racility Na	me: East (Caprock SW	D No. 00	5		Facility Typ	e: SWD Well					
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1RP-4723

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Operator/Responsible Party,

The OCD has received the form C-141 you provided on _6/13/2017_ regarding an unauthorized release. The information contained on that form has been entered into our incident database and remediation case number _1RP-4723__ 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 <u>division-approved corrective action</u> 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 _7/15/2017_. 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; C₆ thru C₃₆), 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; C₆ thru C₃₆), 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