

		SIT	E INFORI	MATION		
	Rep	ort Type:	Closure R	Report	1 RP 3	439
General Site Info	ormation:					
Site:		Dos Abuelos				
Company:		COG Operati				
Section, Townsl	hip and Range		Sec. 20	T 18S	R 34E	
Lease Number:		API No. 30-02	25-41346			
County: GPS:		Lea County	32.74061° N			103.58406° W
Surface Owner:		Federal	32.74061° N			103.58406° W
Mineral Owner:		I ederal				
Directions:						thwest on HWY 529 for approximately coutheast onto lease rd for 0.8 mi to the
Release Data:						
Date Released:		11/14/2014				
Type Release:		Oil				
Source of Contar	nination:	Failed dump v	/alve			
Fluid Released: Fluids Recovered	d.	100 bbls 70 bbls				
Official Commu		70 DDIS				
					I	
Name:	Robert McNeil				Ike Tavare	
Company:	COG Operating, LL				Tetra Tech	
Address:	One Concho Cente				4000 N. Bi	g Spring
	600 W. Illinois Ave				Ste 401	
City:	Midland Texas, 79	701			Midland, T	
Phone number:	(432) 686-3023				(432) 682-	4559
Fax:	(432) 684-7137				 	
Email:	rmcneil@concho	resources.com			<u>lke. I avar</u>	ez@tetratech.com

Depth to Groundwater:	Ranking Score	Site Data
<50 ft	20	
50-99 ft	10	
>100 ft.	0	0
WellHead Protection:	Ranking Score	Site Data
Water Source <1,000 ft., Private <200 ft.	20	
Water Source >1,000 ft., Private >200 ft.	0	0
Surface Body of Water:	Ranking Score	Site Data
<200 ft.	20	
200 ft - 1,000 ft.	10	
>1,000 ft.	0	0
Total Ranking Score:	0	
Acc	ceptable Soil RRAL (n	na/ka)
Benze		TPH
10		5,000



August 29, 2015

Mr. Jamie Keyes Environmental Engineer Specialist Oil Conservation Division, District 1 1625 North French Drive Hobbs, New Mexico 88240

Re: Closure Report for the COG Operating LLC., Dos Abuelos Fee #1H, Unit C, Section 20, Township 18 South, Range 34 East, Lea County, New Mexico. 1RP 3439

Mr. Keyes:

Tetra Tech, Inc. (Tetra Tech) was contacted by COG Operating LLC., (COG) to assess a spill from the Dos Abuelos Fee #1H, Unit C, Section 20, Township 18 South, Range 34 East, Lea County, New Mexico (Site). The spill site coordinates are N 32.74061°, W 103.584065°. The site location is shown on Figures 1 and 2.

Background

According to the State of New Mexico C-141 Initial Report, the leak was discovered on November 14, 2014, and released approximately one hundred (100) bbls of oil due to a failed dump valve. Approximately seventy (70) bbls of oil were recovered. The initial C-141 is included in Appendix A.

Groundwater

According to the New Mexico Office of the State Engineer, there are six (6) water wells listed in Section 20. The depth to water in these wells ranged from 80-130' below ground surface, with an average depth to groundwater of 109'. According to the NMOCD groundwater map, the average depth to groundwater in this area is between 100' to 125' below surface. The groundwater data is shown in Appendix B.

Regulatory

A risk-based evaluation was performed for the Site in accordance with the New Mexico Oil Conservation Division (NMOCD) Guidelines for Remediation of Leaks, Spills and Releases, dated August 13, 1993. The guidelines require a risk-based evaluation of the site to determine recommended remedial action levels



(RRAL) for benzene, toluene, ethylbenzene and xylene (collectively referred to as BTEX) and total petroleum hydrocarbons (TPH) in soil. The proposed RRAL for benzene was determined to be 10 parts per million (ppm) or milligrams per kilogram (mg/kg) and 50 ppm for total BTEX (sum of benzene, toluene, ethylbenzene, and xylene). Based upon the depth to groundwater, the proposed RRAL for TPH is 5,000 mg/kg.

Soil Assessment and Analytical Results

COG Sampling and Remediation

COG personnel supervised the initial sampling event. Five (5) sample points (S-1 through S-5) were installed in the middle of the spill path to evaluate the vertical extents of the impact. Additionally, five sample points (S-1 (2) through S-5(2)) were installed on the edges of the release to evaluate the horizontal extents of the release. According to type of release, the spill area was evaluated for TPH and BTEX and no loss of produce water. Selected samples were analyzed for TPH analysis by EPA method 8015 modified and BTEX by EPA Method 8021B. The laboratory results, provided by COG personnel, are summarized in Table 1. The sample locations are shown on Figure 3.

Referring to Table 1, the areas of S-1 and S-2 showed total TPH and BTEX concentrations above the RRAL's, with TPH concentrations of 16,410 mg/kg and 20,120 mg/kg at 4" and total BTEX concentrations of 181 mg/kg and 348 mg/kg at 4" below surface, respectively. Additionally, the area of S-3 showed a total TPH concentration of 7,785 mg/kg at 4" below surface. All of the remaining areas showed TPH and BTEX concentrations below the RRAL's. Based on the results, COG treated the surface soil with a Micro-Blaze product.

Tetra Tech Sampling and Results

Based on the laboratory data, Tetra Tech personnel were onsite on August 16, 2016, to supervise the trench sampling of S-1, S-2 and S-3 in order to vertically define the extents of the hydrocarbon impact. The areas were sampled at 0-4" and 4"-12" below surface. Selected samples were analyzed for TPH analysis by EPA method 8015 modified, BTEX by EPA Method 8021B and chloride by EPA method 300.0. Copies of laboratory analysis and chain-of-custody documentation are included in Appendix C. The sampling results are summarized in Table 2. The sample locations are shown on Figure 3.

Referring to Table 2, none of the samples collected showed TPH or BTEX concentrations above the RRAL's. Additionally, the chloride concentrations were below laboratory reporting limits and a chloride high of 96 mg/kg at S-3 at 4-12" below surface.



Conclusion

Based on the laboratory results, COG requests closure of this spill issue. The final C-141 is enclosed in Appendix A. If you have any questions or comments concerning the assessment or the remediation activities for this site, please call me at (432) 682-4559.

Respectfully submitted, TETRA TECH

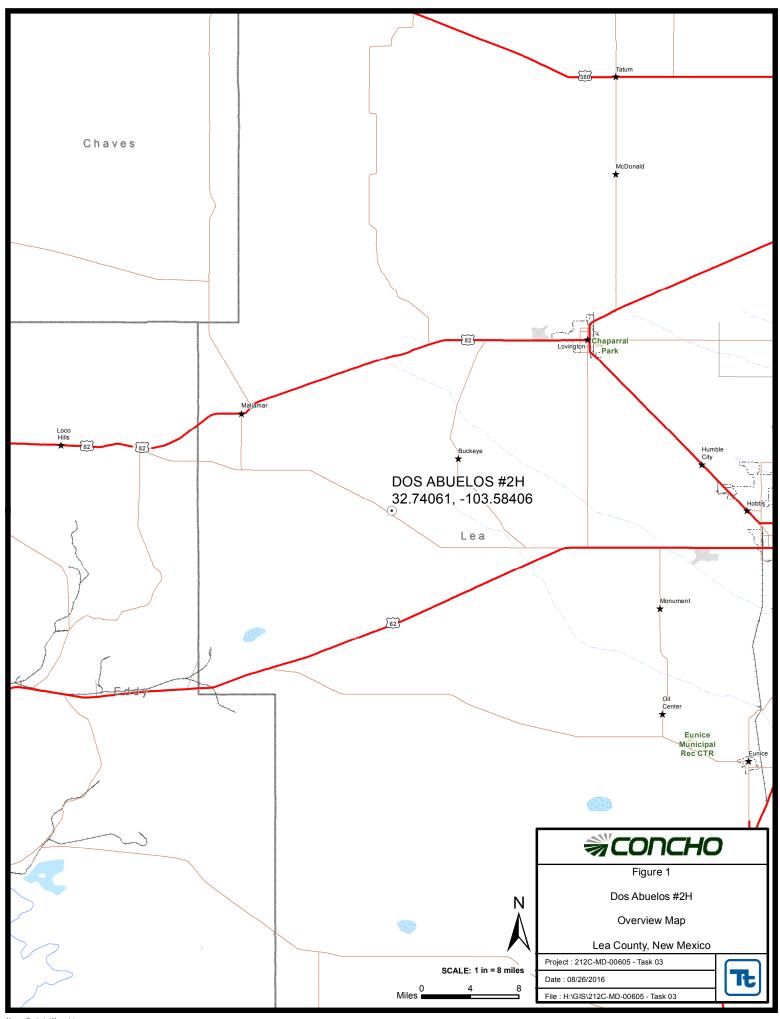
Ike Tavarez, PG Senior Geologist

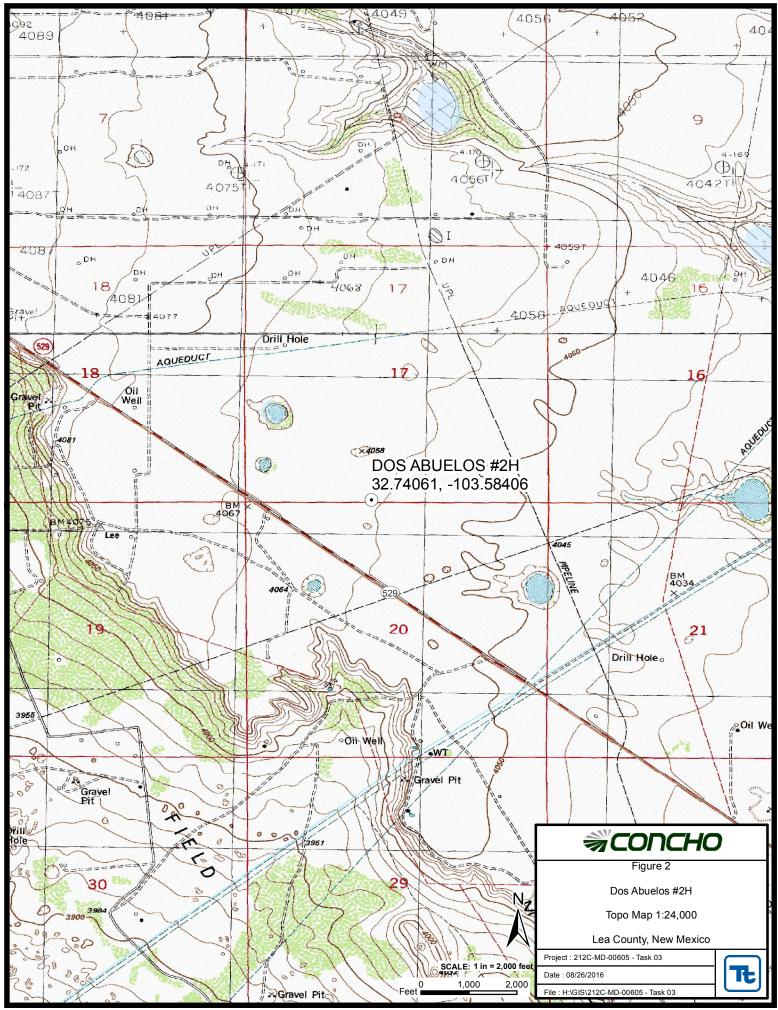
cc:

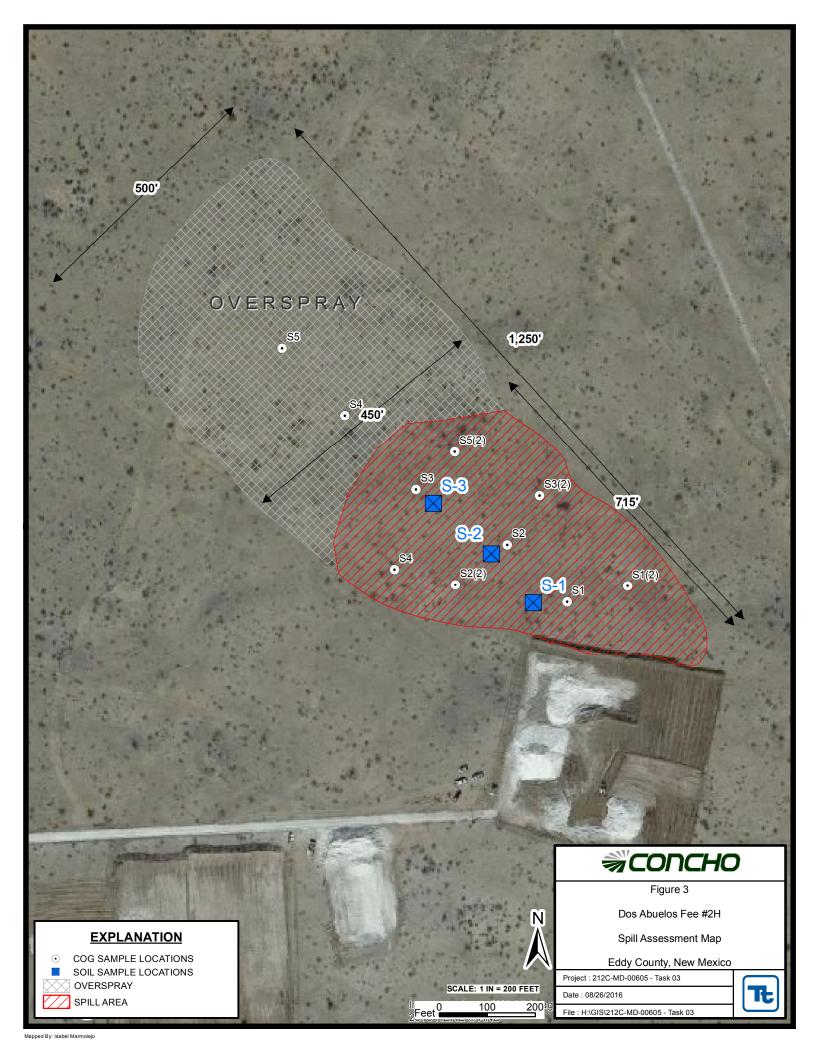
Clair Gonzales, Geologist

Robert McNeill – COG Dakota Neel – COG

Figures







Tables

Table 1
COG Operating LLC.
Dos Abuelos #2H
Lea County, New Mexico

Sample	Sample Depth	Soil S	Status	•	g)	Total BTEX		
ID	(in)	In-Situ	Removed	GRO	DRO	Total	(mg/kg)	
S-1	4	Χ		2,210	14,200	16,410	181	
S-2	4	Х		3,220	16,900	20,120	348	
S-3	4	Х		375	7,410	7,785	12.0	
S-4	4	Χ		<10.0	967	967	<0.300	
S-5	4	Х		<10.0	237	237	<0.300	
S-1 (2)	16	Х		13.6	140	154	<0.300	
	18	Χ		15.7	1,440	1,456	<0.300	
S-2 (2)	16	X		<50.0	1,830	1,830	<0.300	
()	20	Χ		<10.0	346	346	<0.300	
S-3 (2)	15	Х		<10.0	220	220	<0.300	
	26	Χ		<10.0	254	254	<0.300	
S-4 (2)	17	Х		<10.0	75.00	75.0	<0.300	
S-5 (2)	19	Х		<10.0	21.40	21.40	<0.300	
	20	Χ		<10.0	<10.0	<10.0	<0.300	

(-)

Samples collected by COG

Table 2
COG Operating LLC.
Dos Abuelos #2H
Lea County, New Mexico

-	Sample _	Soil Status		TPH (mg/kg)			Benzene		Ethlybenzene	Xylene	Total	Chloride
Date	Depth (in)	In-Situ	Removed	GRO	DRO	Total	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)
3/16/2016	0-4	Χ		<10.0	<10.0	<10.0	0.061	0.322	0.054	0.199	0.635	<16.0
"	4-12	Χ		-	-	-	-	-	-	-	-	<16.0
3/16/2016	0-4	X		<10.0	<10.0	<10.0	<0.050	<0.050	<0.050	<0.150	<0.300	<16.0
"	4-12	Х		-	-	-	-	-	-	-	-	16.0
								ı				
3/16/2016	0-4	X		<10.0	<10.0	<10.0	<0.050	<0.050	<0.050	<0.150	< 0.300	<16.0
"	4-12	Χ		-	-	-	-	-	-	-	-	96.0
3,	Date /16/2016 " /16/2016 " /16/2016	Date Depth (in) /16/2016 0-4 " 4-12 /16/2016 0-4 " 4-12 /16/2016 0-4	Date Depth (in) In-Situ	Date Depth (in) In-Situ Removed	Date Depth (in) In-Situ Removed GRO /16/2016 0-4 X <10.0 " 4-12 X - /16/2016 0-4 X <10.0 " 4-12 X - /16/2016 0-4 X <10.0	Date Depth (in) In-Situ Removed GRO DRO /16/2016 0-4 X <10.0 <10.0 " 4-12 X - - - /16/2016 0-4 X <10.0 <10.0 " 4-12 X - - /16/2016 0-4 X <10.0 <10.0	Date Depth (in) In-Situ Removed GRO DRO Total /16/2016 0-4 X <10.0 <10.0 <10.0 " 4-12 X - - - /16/2016 0-4 X <10.0 <10.0 <10.0 " 4-12 X - - - /16/2016 0-4 X <10.0 <10.0 <10.0	Date Depth (in) In-Situ Removed GRO DRO Total (mg/kg) /16/2016 0-4 X <10.0 <10.0 <10.0 0.061 " 4-12 X - - - - /16/2016 0-4 X <10.0 <10.0 <10.0 <0.050 " 4-12 X - - - - - /16/2016 0-4 X <10.0 <10.0 <10.0 <0.050	Date Depth (in) In-Situ Removed GRO DRO Total (mg/kg) (mg/kg) /16/2016 0-4 X <10.0 <10.0 <10.0 0.061 0.322 " 4-12 X - - - - - - /16/2016 0-4 X <10.0 <10.0 <10.0 <0.050 <0.050 " 4-12 X - - - - - - /16/2016 0-4 X <10.0 <10.0 <10.0 <0.050 <0.050	Date Depth (in) In-Situ Removed GRO DRO Total (mg/kg) (mg/kg) (mg/kg) /16/2016 0-4 X <10.0 <10.0 <10.0 0.061 0.322 0.054 " 4-12 X - - - - - - - /16/2016 0-4 X <10.0 <10.0 <10.0 <0.050 <0.050 <0.050 " 4-12 X - - - - - - - /16/2016 0-4 X <10.0 <10.0 <10.0 <0.050 <0.050 <0.050	Date Depth (in) In-Situ Removed GRO DRO Total Total Total Total Total (mg/kg) (mg/kg)	Date Depth (in) In-Situ Removed GRO DRO Total Total Total Total Total (mg/kg) (mg/kg)

(-) Not Analyzed



District 1 1625 N. French Dr., Hobbs, NM 88240 District II 811 S. First St., Artesia, NM 88210 District III 1000 Rio Brazos Road, Aztec, NM 87410 District IV 1220 S. St. Francis Dr., Santa Fe, NM 87505

State of New Mexico **Energy Minerals and Natural Resources**

Form C-141 Revised August 8, 2011

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

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

	Release Notification and Corrective Action												
						OPERA	ror		l Report	Fina	al Report		
Name of Co				J TV 70701		Contact: Robert McNeill							
Address: 60 Facility Nan				0 IX /9/UI	_	Telephone No. 432-230-0077 Facility Type: Battery							
	-			11610				I ADINI-	20.025.4	1246			
Surface Owi	er ree			Mineral C		er: Fee API No. 30-025-41346							
11.2.1.0		T 1:	2			OF REI					\		
Unit Letter C	Section 20	Township 18S	Range 34E	Feet from the 190'		South Line North	Feet from the 2310	East/West Line West	(County /	100		
			Latit	ude 32.7 3 9955	218009	9 Longitud	e -103.58365412	22109					
				NAT	URE	OF RELI	EASE						
Type of Relea	ise:					Volume of 100 bbls	Release:	Volume R 70 bbls	lecovered:				
Source of Rel Failed dump		d n salanca the	ough the f	lare		Date and H 11/14/2014	our of Occurrence		Hour of Dis				
Was Immedia		iiven?				If YES, To	Whom?		4 10.00 an	1			
			Yes 🗀	No 🔲 Not Re	equired	Tomas Obe	erding – NMOCD	Hobbs					
By Whom? Was a Watero							our:11/14/2014 2 lume Impacting the						
was a waterd	ourse Reac		Yes 🗵	No		H 1E3, VO	tume impacting ti	ne watercourse,					
If a Watercou	rse was Imp	pacted, Descri	be Fully.*										
	vas caused v high level f	when a snap a loat failed to a	ction dum	p on oil side of F				. The knockout files. Vacuum trucks					
Describe Area	Affected a	ınd Cleanup A	ction Tak	en.*									
The impacted from the relea	area can be se and we v	found to the will present a	north of the	ne battery in the p on work plan to th	asture. (ne NMO	Concho will h CD for appro	ave the spill site s val prior to any si	sampled to delineat gnificant remediati	e any possi on work.	ble contamin	ation		
I hereby certify that the information given above is true and complete to the best of my knowledge and understand that pursuant to NMOCD rules and regulations all operators are required to report and/or file certain release notifications and perform corrective actions for releases which may endanger public health or the environment. The acceptance of a C-141 report by the NMOCD marked as "Final Report" does not relieve the operator of liability should their operations have failed to adequately investigate and remediate contamination that pose a threat to ground water, surface water, human health or the environment. In addition, NMOCD acceptance of a C-141 report does not relieve the operator of responsibility for compliance with any other federal, state, or local laws and/or regulations.								er lity nealth					
Signature:	=4	-te	بكارن	le de la companya de			OIL CONS	SERVATION	DIVISIO	<u>DN</u>			
Printed Name	: Amanda	Trujillo				Approved by	Environmental Sp	pecialist:					
Title: Senior l	Environmen	ntal Coordinat	or			Approval Dat	c:	Expiration	Date:	,			
E-mail Addre	ss: atruiillo	a concho.con	1			Conditions of	Approval:		Attached				
Date: Dece Attach Addit	mber 1, 201			ne: 575-748-6940)								

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

						OPERAT	ΓOR		Initia	al Report	\boxtimes	Fina	al Report
Name of Co	mpany C	OG Operat	ing LLC	,			bert McNeil						
		inois Ave., I		TX 79701			Vo. (432) 683-7	443					
Facility Nar	ne Dos Al	ouelos Fee #	1H			Facility Typ	e Battery						
Surface Ow	ner: Feder	al		Mineral O	wner				API No	. 30-025-41	1346		
				LOCA	TIO	N OF DEI	EACE						<u> </u>
Unit Letter	Section	Township	Range	Feet from the		N OF REI	Feet from the	Foot/W	Vest Line	County			
C	20	18S	34E	reet from the	NOIL	II/Soutii Lille	reet from the	Last/ V	vest Line	County	Lea	a	
]	Latitude N 32.7	'4061	° Longitud	e W 103.58406	6°					
				NAT	URE	E OF RELI	EASE						
Type of Rele							Release 100 bbls			Recovered 7			
Source of Re	lease: Faile	d dump valve	caused a r	elease through the	flare	Date and H 11/14/14 1	our of Occurrence 2:00 am	e		Hour of Disc 10:00 am	covery	/	
Was Immedia	ate Notice C					If YES, To	Whom?	1	11/11/11	10100 4111			
		<u> </u>	Yes	No Not Re	quired		erding - NMOC						
By Whom? A Was a Water							our 11/14/14 2:0						
was a water	course Reac		Yes 🗵] No		N/A	nume impacting t	ne wate	icourse.				
If a Watercou	ırse was Im	pacted, Descri	be Fully.	k									
N/A													
1,111													
Describe Cau	se of Proble	em and Remed	dial Action	n Taken.*									
This release v	was caused	when a snap a	ction dum	p on oil side of a I	FWKO	O froze, not allo	owing the dump to	o open.	The knock	out filed wit	h flui	d and	
overflowed to	the flare.	The high leve	l float fail	ed to activate the i									
roustabout cr	ew were dis	patched to rei	nove all s	tanding fluids.									
Describe Are	a Affected a	and Cleanup A	Action Tak	cen.*									
Tetra Tech in	spected site	and collected	l samples	to define spills ext	ent. N	None of the sam	nples collected she	owed im	pact above	the RRAL'	s. Tet	ra Tec	h
prepared clos	ure report a	nd submitted	to NMOC	D for review.									
				is true and compl									
				nd/or file certain re									
				ce of a C-141 report investigate and re									
				tance of a C-141 r									
		vs and/or regu											
	12	->					OIL CONS	SER V	<u>ATION</u>	DIVISIO	<u>N</u>		
Signature:	14	115											
Printed Name	e: Ike Tavar	ez (Agent for	COG)			Approved by	District Superviso	or:					
Title: Project	Manager					Approval Dat	e:	F	Expiration 1	Date:			
E-mail Addre	ess: Ike.Tav	arez@TetraTe	ech.com			Conditions of	Approval:			Attached	П		
Date: 08/2	5/16	Pl	hone: (432	2) 682-4559							_		

^{*} Attach Additional Sheets If Necessary

Appendix B

Water Well Data Average Depth to Groundwater (ft) COG - Dos Abuelos Fee #1H, Lea County, New Mexico

	17 S	outh	3	33 East			17 S	outh	34	East			17 S	outh	3	5 East	
90	5	4	3 15	5 5 2 158	3 1 150	6 12	5	4	3	2 80	1	6	5	4	3	2	1
						157		65	95		77						50
167	8	9	10	11	12	7	8	9	10	11	12	7	8	9	10	11	12
	173	161				140	140		95	92	115						
8	17	16	15	14	13	18	17	16	15 114	14	13	18	17	16	15	14	13
88	180				165	160	113	60	60	79	84	40	55				
9	20	21	22	23	24	19	20	21	22	23	24	19	20	21	22	23	24
	190			115		78	140	153	109			85	60				
80 69	29 60	28	27	26	25	30	29	28	27	26	25	30	29	28	27	26	25
											82	83		70			
31	32	33	34	35	36	31	32	33	34	35	36	31	32	33	34	35	36
		120		155								106		63	56	40	50
		outh		33 East				outh		East			18 S			5 East	
6	5	4	3	2	1	6	5	4	3	2	1	6 89	5 69	4 58	3 6	2 55	1
			60			130	105		87	102	107					51	
•	8 100	9	10	11	12 143	7	8	9	10	11	12 115	7	8	9 72	10	11 59	12
			62	46	140	83	148		148	110	92	85			49	48	
18	17	16	15	14	13	18	17	16	15 114	14	13	18	17 90	16	15	14	13
	85			36	60	125		108	110	103	96	90	124	75		90	13
9	20	21	22	23	24	19	20	21	22	23	24	19 74	20 85	21	22	23	24
>140					195	105	125					70	50		70		
30	29	28	27	26	25	30	29	28	27	26	25	30	29	28	27	26	25
35									112		117		95		68	60	
31	32	33	34	35	36	31	32	33	34	35	36	31	32	33	34	35	36
		177								118			58	80		58	
						·						·					
		outh		33 East		-	19 S			East		-	19 S			5 East	
5	5	4	3	2	1	6	5	4	3	2 100	1	6 61	5	4	3	2	1
						244						58	63	70			63
,	8	9	10	11	12	7	8	9 29	10	11	12 60	7	8	9 20	10	11	12
	1	1	l		<u> </u>			28.6	1	123		51	18	1	53		
8	17	16	15	14	13	18	17	16	15	14	13	18	17 26	16	15	14	13
340	116								1				30	1	26	27	27
9	20	21	22	23	24	19	20	21	22	23	24	19	20	21	22	23	24
															27	1	20
30	29	28 130	27	26 92	25	30	29	28	27	26	25	30	29	28	27	26	25
		dry		85							28					1	
31	32	33	34	35	36	31	32	33	34	35	36	31	32	33	34	35	36

- 88 New Mexico State Engineers Well Reports
- 105 USGS Well Reports
- 90 Geology and Groundwater Conditions in Southern Lea, County, NM (Report 6) Geology and Groundwater Resources of Eddy County, NM (Report 3)
- 34 NMOCD Groundwater Data
- 121 Abandoned Waterwell (recently measured)



New Mexico Office of the State Engineer Water Column/Average Depth to Water

(A CLW##### in the POD suffix indicates the POD has been replaced

(R=POD has been replaced, O=orphaned,

closed)

& no longer serves a water right file.)

C=the file is (quarters are 1=NW 2=NE 3=SW 4=SE)

(quarters are smallest to largest) (NAD83 UTM in meters)

(In feet)

	POD Sub-		Q	Q C)					Depth	Depth	Water
POD Number	Code basin	County	64	16 4	Sec	Tws	Rng	2	X Y	•	•	Column
L 09752	L	LE	3	1 2	20	18S	34E	632968	3623188 🦣) 179	130	49
L 10345 POD2	L	LE	;	2 3	20	18S	34E	632620) 3622393* 🌗	130	120	10
<u>L 10346</u>	L	LE		3	20	18S	34E	632425	5 3622187* 🦣) 130		
<u>L 10436</u>	L	LE		3	20	18S	34E	632425	5 3622187* 🦣	120	80	40
L 13526 POD1	L	LE	2	2 1	20	18S	34E	632769	9 3623271 🌗	9 196	106	90
L 13563 POD1	L	LE	4	4 4	20	18S	34E	633506	3621920 🌗) 200		

Average Depth to Water: 109 feet

Minimum Depth: 80 feet

Maximum Depth: 130 feet

Record Count: 6

PLSS Search:

Section(s): 20 Township: 18S Range: 34E

Appendix C



August 23, 2016

DAKOTA NEEL

COG OPERATING

P. O. BOX 1630

ARTESIA, NM 88210

RE: DOS ABUELOS #2H

Enclosed are the results of analyses for samples received by the laboratory on 08/16/16 16:45.

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

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

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

Cardinal Laboratories is accredited through the State of New Mexico Environment Department for:

Method SM 9223-B Total Coliform and E. coli (Colilert MMO-MUG)
Method EPA 524.2 Regulated VOCs and Total Trihalomethanes (TTHM)

Wile Sugh

Method EPA 552.2 Total Haloacetic Acids (HAA-5)

Accreditation applies to public drinking water matrices for State of Colorado and New Mexico.

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

Sincerely,

Mike Snyder For Celey D. Keene

Lab Director/Quality Manager



COG OPERATING P. O. BOX 1630 ARTESIA NM, 88210 Project: DOS ABUELOS #2H
Project Number: NONE GIVEN

Project Manager: DAKOTA NEEL

Fax To: NONE

Reported: 23-Aug-16 11:58

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
S-1 (0-4")	H601835-01	Soil	16-Aug-16 00:00	16-Aug-16 16:45
S-1 (4"-1')	H601835-02	Soil	16-Aug-16 00:00	16-Aug-16 16:45
S-2 (0-4")	H601835-03	Soil	16-Aug-16 00:00	16-Aug-16 16:45
S-2 (4"-1')	H601835-04	Soil	16-Aug-16 00:00	16-Aug-16 16:45
S-3 (0-4")	H601835-05	Soil	16-Aug-16 00:00	16-Aug-16 16:45
S-3 (4"-1')	H601835-06	Soil	16-Aug-16 00:00	16-Aug-16 16:45

Cardinal Laboratories *=Accredited Analyte

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



COG OPERATING P. O. BOX 1630 ARTESIA NM, 88210 Project: DOS ABUELOS #2H

Project Number: NONE GIVEN

Reported: 23-Aug-16 11:58

FSTA NM. 88210 Project Manager: DAKOTA NEEL

Fax To: NONE

S-1 (0-4") H601835-01 (Soil)

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Analyst	Analyzed	Method	Notes
			Cardina	l Laborat	ories					
Inorganic Compounds										
Chloride	<16.0		16.0	mg/kg	4	6081707	AC	19-Aug-16	4500-Cl-B	
Volatile Organic Compounds by	EPA Method	8021								
Benzene*	0.061		0.050	mg/kg	50	6081802	MS	18-Aug-16	8021B	
Toluene*	0.322		0.050	mg/kg	50	6081802	MS	18-Aug-16	8021B	
Ethylbenzene*	0.054		0.050	mg/kg	50	6081802	MS	18-Aug-16	8021B	
Total Xylenes*	0.199		0.150	mg/kg	50	6081802	MS	18-Aug-16	8021B	
Total BTEX	0.635		0.300	mg/kg	50	6081802	MS	18-Aug-16	8021B	
Surrogate: 4-Bromofluorobenzene (PID)			106 %	73.6	-140	6081802	MS	18-Aug-16	8021B	
Petroleum Hydrocarbons by GC	FID									
GRO C6-C10	<10.0		10.0	mg/kg	1	6081702	MS	17-Aug-16	8015B	
DRO >C10-C28	<10.0		10.0	mg/kg	1	6081702	MS	17-Aug-16	8015B	
Surrogate: 1-Chlorooctane			87.2 %	35-	147	6081702	MS	17-Aug-16	8015B	
Surrogate: 1-Chlorooctadecane			99.3 %	28-	171	6081702	MS	17-Aug-16	8015B	

Cardinal Laboratories *=Accredited Analyte

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



COG OPERATING P. O. BOX 1630 ARTESIA NM, 88210 Project: DOS ABUELOS #2H

Project Number: NONE GIVEN

Project Manager: DAKOTA NEEL

Fax To: NONE

Reported: 23-Aug-16 11:58

S-1 (4"-1") H601835-02 (Soil)

	Aı	nalyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Analyst	Analyzed	Method	Notes
--	----	--------	--------	-----	--------------------	-------	----------	-------	---------	----------	--------	-------

Cardinal Laboratories

Inorganic Compounds								
Chloride	<16.0	16.0	mg/kg	4	6081707	AC	19-Aug-16	4500-Cl-B

Cardinal Laboratories *=Accredited Analyte

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



COG OPERATING P. O. BOX 1630 ARTESIA NM, 88210 Project: DOS ABUELOS #2H

Project Number: NONE GIVEN

Reported: 23-Aug-16 11:58

Project Manager: DAKOTA NEEL

Fax To: NONE

S-2 (0-4") H601835-03 (Soil)

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Analyst	Analyzed	Method	Notes
			Cardina	l Laborat	ories					
Inorganic Compounds										
Chloride	<16.0		16.0	mg/kg	4	6081707	AC	19-Aug-16	4500-Cl-B	
Volatile Organic Compounds by	EPA Method	8021								
Benzene*	< 0.050		0.050	mg/kg	50	6081802	MS	18-Aug-16	8021B	
Toluene*	< 0.050		0.050	mg/kg	50	6081802	MS	18-Aug-16	8021B	
Ethylbenzene*	< 0.050		0.050	mg/kg	50	6081802	MS	18-Aug-16	8021B	
Total Xylenes*	< 0.150		0.150	mg/kg	50	6081802	MS	18-Aug-16	8021B	
Total BTEX	< 0.300		0.300	mg/kg	50	6081802	MS	18-Aug-16	8021B	
Surrogate: 4-Bromofluorobenzene (PID)			109 %	73.6	-140	6081802	MS	18-Aug-16	8021B	
Petroleum Hydrocarbons by GC	FID									
GRO C6-C10	<10.0		10.0	mg/kg	1	6081702	MS	17-Aug-16	8015B	
DRO >C10-C28	<10.0		10.0	mg/kg	1	6081702	MS	17-Aug-16	8015B	
Surrogate: 1-Chlorooctane			69.5 %	35-	147	6081702	MS	17-Aug-16	8015B	
Surrogate: 1-Chlorooctadecane			79.7 %	28-	171	6081702	MS	17-Aug-16	8015B	

Cardinal Laboratories *=Accredited Analyte

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

wite Sough

Reported:

23-Aug-16 11:58



Analytical Results For:

COG OPERATING P. O. BOX 1630 ARTESIA NM, 88210 Project: DOS ABUELOS #2H

Project Number: NONE GIVEN

Project Manager: DAKOTA NEEL

Fax To: NONE

S-2 (4"-1") H601835-04 (Soil)

Analyte Result MDL Reporting Units Dilution Batch Analyst Analyzed Method Notes

Cardinal Laboratories

Inorganic Compounds

Chloride 16.0 16.0 mg/kg 4 6081707 AC 19-Aug-16 4500-Cl-B

Cardinal Laboratories *=Accredited Analyte

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

Mile Sough

Mike Snyder For Celey D. Keene, Lab Director/Quality Manager



COG OPERATING P. O. BOX 1630 ARTESIA NM, 88210 Project: DOS ABUELOS #2H

Project Number: NONE GIVEN

Reported: 23-Aug-16 11:58

Project Manager: DAKOTA NEEL

Fax To: NONE

S-3 (0-4") H601835-05 (Soil)

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Analyst	Analyzed	Method	Notes
			Cardina	l Laborat	ories					
Inorganic Compounds										
Chloride	<16.0		16.0	mg/kg	4	6081707	AC	19-Aug-16	4500-Cl-B	
Volatile Organic Compounds by	y EPA Method	8021								
Benzene*	< 0.050		0.050	mg/kg	50	6081802	MS	18-Aug-16	8021B	
Toluene*	< 0.050		0.050	mg/kg	50	6081802	MS	18-Aug-16	8021B	
Ethylbenzene*	< 0.050		0.050	mg/kg	50	6081802	MS	18-Aug-16	8021B	
Total Xylenes*	< 0.150		0.150	mg/kg	50	6081802	MS	18-Aug-16	8021B	
Total BTEX	< 0.300		0.300	mg/kg	50	6081802	MS	18-Aug-16	8021B	
Surrogate: 4-Bromofluorobenzene (PID)			106 %	73.6	-140	6081802	MS	18-Aug-16	8021B	
Petroleum Hydrocarbons by GO	C FID									
GRO C6-C10	<10.0		10.0	mg/kg	1	6081702	MS	17-Aug-16	8015B	
DRO >C10-C28	<10.0		10.0	mg/kg	1	6081702	MS	17-Aug-16	8015B	
Surrogate: 1-Chlorooctane			96.7 %	35-	147	6081702	MS	17-Aug-16	8015B	
Surrogate: 1-Chlorooctadecane			105 %	28-	171	6081702	MS	17-Aug-16	8015B	

Cardinal Laboratories *=Accredited Analyte

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

wite Sough

Reported:

23-Aug-16 11:58



Analytical Results For:

COG OPERATING P. O. BOX 1630 ARTESIA NM, 88210 Project: DOS ABUELOS #2H

Project Number: NONE GIVEN

Project Manager: DAKOTA NEEL

Fax To: NONE

S-3 (4''-1')

Α	Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Analyst	Analyzed	Method	Notes

H601835-06 (Soil)

Cardinal Laboratories

 Inorganic Compounds

 Chloride
 96.0
 16.0
 mg/kg
 4
 6081707
 AC
 19-Aug-16
 4500-Cl-B

Cardinal Laboratories *=Accredited Analyte

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

Mile Sough

Mike Snyder For Celey D. Keene, Lab Director/Quality Manager



COG OPERATING P. O. BOX 1630 ARTESIA NM, 88210 Project: DOS ABUELOS #2H

Project Number: NONE GIVEN

Reported: 23-Aug-16 11:58

Project Manager: DAKOTA NEEL

Fax To: NONE

Inorganic Compounds - Quality Control

Cardinal Laboratories

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Anaryte	Result	LIIIII	Ullits	Level	Result	70KEC	Lillits	KrD	LIIIII	Notes
Batch 6081707 - 1:4 DI Water										
Blank (6081707-BLK1)				Prepared: 1	7-Aug-16	Analyzed: 1	8-Aug-16			
Chloride	ND	16.0	mg/kg							
LCS (6081707-BS1)				Prepared: 1	7-Aug-16 A	Analyzed: 1	8-Aug-16			
Chloride	432	16.0	mg/kg	400		108	80-120			
LCS Dup (6081707-BSD1)				Prepared: 1	7-Aug-16 A	Analyzed: 1	8-Aug-16			
Chloride	448	16.0	mg/kg	400		112	80-120	3.64	20	

Cardinal Laboratories *=Accredited Analyte

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

%PEC



Analytical Results For:

COG OPERATING P. O. BOX 1630 ARTESIA NM, 88210 Project: DOS ABUELOS #2H

Project Number: NONE GIVEN
Project Manager: DAKOTA NEEL

Fax To: NONE

Reported: 23-Aug-16 11:58

DDD

Volatile Organic Compounds by EPA Method 8021 - Quality Control

Cardinal Laboratories

		Reporting		Spike	Source		%REC		RPD	
Analyte	Result	Limit	Units	Level	Result	%REC	Limits	RPD	Limit	Notes
Batch 6081802 - Volatiles										
Blank (6081802-BLK1)				Prepared &	Analyzed:	18-Aug-16	6			
Benzene	ND	0.050	mg/kg							
Toluene	ND	0.050	mg/kg							
Ethylbenzene	ND	0.050	mg/kg							
Total Xylenes	ND	0.150	mg/kg							
Total BTEX	ND	0.300	mg/kg							
Surrogate: 4-Bromofluorobenzene (PID)	0.0536		mg/kg	0.0500		107	73.6-140			
LCS (6081802-BS1)				Prepared &	Analyzed:	18-Aug-16	6			
Benzene	2.30	0.050	mg/kg	2.00		115	82.6-122			
Toluene	2.35	0.050	mg/kg	2.00		117	72.9-122			
Ethylbenzene	2.25	0.050	mg/kg	2.00		113	65.4-131			
Total Xylenes	6.81	0.150	mg/kg	6.00		113	73.8-125			
Surrogate: 4-Bromofluorobenzene (PID)	0.0535		mg/kg	0.0500		107	73.6-140			
LCS Dup (6081802-BSD1)				Prepared &	Analyzed:	18-Aug-16	6			
Benzene	2.34	0.050	mg/kg	2.00		117	82.6-122	1.39	8.23	
Toluene	2.38	0.050	mg/kg	2.00		119	72.9-122	1.25	8.71	
Ethylbenzene	2.29	0.050	mg/kg	2.00		115	65.4-131	1.81	9.46	
Total Xylenes	6.94	0.150	mg/kg	6.00		116	73.8-125	1.86	8.66	
Surrogate: 4-Bromofluorobenzene (PID)	0.0530		mg/kg	0.0500		106	73.6-140			

Cardinal Laboratories *=Accredited Analyte

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

wite Sough



COG OPERATING P. O. BOX 1630 ARTESIA NM, 88210 Project: DOS ABUELOS #2H

Project Number: NONE GIVEN

Reported: 23-Aug-16 11:58

Project Manager: DAKOTA NEEL

Fax To: NONE

Petroleum Hydrocarbons by GC FID - Quality Control

Cardinal Laboratories

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 6081702 - General Prep - Organics										

Blank (6081702-BLK1)				Prepared & Anal	lyzed: 17-Aug-1	6			
GRO C6-C10	ND	10.0	mg/kg						
DRO >C10-C28	ND	10.0	mg/kg						
EXT DRO >C28-C35	ND	10.0	mg/kg						
Total TPH C6-C28	ND	10.0	mg/kg						
Surrogate: 1-Chlorooctane	47.6		mg/kg	50.0	95.1	35-147			
Surrogate: I-Chlorooctadecane	52.0		mg/kg	50.0	104	28-171			
LCS (6081702-BS1)				Prepared & Anal	lyzed: 17-Aug-1	6			
GRO C6-C10	189	10.0	mg/kg	200	94.3	76.7-115			
DRO >C10-C28	198	10.0	mg/kg	200	98.9	78.3-122			
Total TPH C6-C28	386	10.0	mg/kg	400	96.6	79.8-117			
Surrogate: 1-Chlorooctane	49.3		mg/kg	50.0	98.6	35-147			
Surrogate: I-Chlorooctadecane	52.8		mg/kg	50.0	106	28-171			
LCS Dup (6081702-BSD1)				Prepared & Anal	lyzed: 17-Aug-1	6			
GRO C6-C10	204	10.0	mg/kg	200	102	76.7-115	7.74	9.42	
DRO >C10-C28	212	10.0	mg/kg	200	106	78.3-122	7.06	13.2	
Total TPH C6-C28	416	10.0	mg/kg	400	104	79.8-117	7.39	10.7	
Surrogate: 1-Chlorooctane	51.7		mg/kg	50.0	103	35-147			
Surrogate: 1-Chlorooctadecane	56.1		mg/kg	50.0	112	28-171			

Cardinal Laboratories *=Accredited Analyte

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



Notes and Definitions

ND Analyte NOT DETECTED at or above the reporting limit

RPD Relative Percent Difference

** Samples not received at proper temperature of 6°C or below.

*** Insufficient time to reach temperature.

- Chloride by SM4500Cl-B does not require samples be received at or below 6°C

Samples reported on an as received basis (wet) unless otherwise noted on report

Cardinal Laboratories *=Accredited Analyte

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

ns Yellow Copy - Return Orginal copy to Tetra Tech - Project Manag	NA WHEN RECEIVED: REMARKS: (0-4"); CTPH extends: NAME: TIME: TIM	Date: RECEIVED BY: (Signature)	RELINQUISHED BY: (Signature) Date: Stalls Regelven By Signature) Date: Relinquished BY: (Signature) Date: Reserved BY: (Signature) Date: Parte: Reserved BY: (Signature) Date: Date: Parte: Reserved BY: (Signature) Date: Dat	N N N N N N N N N N N N N N N N N N N		1/6 S X	, v	× (4	\ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \	TIME IX COMP. GRAB SAMPLE IDENTIFICA SAMPLE IDENTIFICA	PROJECT NAME,	1910 N. Big Midland, Tex (432) 682-4559	TETRA TECH
er retains Pink copy - Accounting receives Gold conv	Adra Clascu The Talasco Authorized: Yes	FEDEX FEDEX HEND DELIVERE UPS OTHER: TETRA TECH CONTACT PERSON: Results by:	SAMPLED BY: (Pript & Initial) SAMPLED BY: (Pript & Initial) Date: MR. Time:		×		XX			PAH 8270 RCRA Metals Ag TCLP Metals Ag TCLP Semi Volatiles TCLP Semi Volatil RCI GC.MS Vol. 8240/8 GC.MS Semi. Vol. PCB's 8080/608 Pest. 808/608 Chloride Gamma Spec. Alpha Beta (Air) PLM (Asbestos) Major Anions/Catio	As Ba Cd As Ba Cd es 2260/624 8270/625	Cr Pb Hg Se Vr Pd Hg Se	(Circle or Specify Method No.)