1RP-1645

Assessment and closure Report

DATE: Oct. 2009



October 12, 2009

Mr. Glenn von Gonten Senior Hydrologist/Acting Environmental Bureau Chief Environmental Bureau Oil Conservation Division Energy, Minerals and Natural Resources Department 1220 South St. Francis Drive Santa Fe, New Mexico 87505

RE: Assessment and Closure Report for the Pit Located at the Rock Queen Unit Tract 7 Tank Battery, Unit Letter I, Section 22, Township 13 South, Range 31 East, Chaves County, New Mexico, Operated by Celero Energy II, LP (NMOCD 1RP#1645)

Dear Mr. von Gonten:

Tetra Tech was contacted by Celero Energy (Celero) to assist in the closure of a pit at the Rock Queen Unit Tract 7 Tank Battery, located in Unit Letter I, Section 22, Township 13 South, Range 31 East, Chaves County, New Mexico (Site). The pit coordinates are N 33.17377° W 103.80454°. Both the State of New Mexico C-141 and C-144 (Initial and Final) are included in Appendix C. The Site is shown on Figures 1 and 2.

Background

On October 8, 2007, Highlander submitted an Investigation and Characterization work plan (ICP) for an open pit at this site. The ICP was approved by the New Mexico Oil Conservation Division (NMOCD).

The Tract 7 Tank Battery pit was dewatered and the residual sludge, tank bottom materials, and liner were removed in October 2007. Removed fluids were placed into an existing SWD system or taken to disposal, while the sludge, tank bottom materials, and liner were disposed of at Gandy-Marley, Inc. landfill site of Lovington, New Mexico. Upon completion of the removal of the fluids, sludge and liner, the underlying soils were visually inspected for obvious signs of impact. Approximately 440 cubic yards of soil were excavated and hauled to Gandy-Marley, Inc. for disposal. The pit was excavated to a point where the subsoil would support a soil boring rig.



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Groundwater and Regulatory

Neither the New Mexico State Engineer's Office database nor the USGS database show any wells in Section 22, Township 13 South, Range 31 East. Monitor wells installed near this site had depths to groundwater of greater than 100 feet below ground surface (bgs).

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.

Assessment and Results

On October 19, 2007, Highlander supervised the installation of soil borings at the pit. Prior to the installation of the borings, a visual inspection was performed around the perimeter of the pit. The area of the pit excavation measured approximately 61 feet by 49 feet. One soil boring (SB-1) was installed in the center of the pit. The remaining boreholes (SB-2 through SB-10) were installed outside the edges of the pit. In order to complete the delineation of the site, on March 24, 2008, an additional two borings were installed to the south of the pit (SB-11 and SB-12). The boring locations and the approximate edge of the pit are shown on Figure 3.

The borings were installed using an air-rotary type drilling rig. Soil samples from soil boring SB-1 were collected at 5 foot intervals to 20 feet and then 10 foot intervals thereafter during drilling operations. The samples were field screened for hydrocarbons with a PID, and field screened for chlorides. Soil samples from the remaining soil borings were collected at 10 foot intervals to depths of 50 feet bgs.

The soil samples were field screened for chlorides to determine if impacts showed a distinctive decline with depth. Select soil samples were analyzed for Total Petroleum Hydrocarbons (TPH) by method modified 8015 DRO/GRO, benzene, toluene, ethylbenzene, and xylene (BTEX) by method 8021B and chloride by method 4500 CI-B. All samples were collected and preserved in laboratory prepared sample containers with standard QA/QC procedures. All

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samples were shipped under proper chain-of-custody control and analyzed within the standard holding times. The results of the sampling are shown in Table 1. The laboratory reports and chain-of-custody are included in Appendix A.

All down hole equipment was washed between boreholes or sampling events using a potable water and laboratory grade detergent. All down hole equipment (i.e., drill rods, drill bits, etc.) were thoroughly decontaminated between each use with a high-pressure hot water wash and rinse. Soil cuttings from drilling were stockpiled adjacent to the borehole. Following the completion of the drilling activities, all boreholes were grouted to the surface.

Referring to Table 1, the samples selected for TPH and BTEX analysis were all below the reporting limits. Chloride impact was found throughout SB-1. The perimeter soil borings SB-2 through SB-6 showed elevated chloride concentrations with depth. Soil borings SB-7 through SB-12 showed minimal chloride impact.

Soil Capping

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During the week of January 17, 2008, Gandy-Marley Corporation of Lovington, New Mexico was onsite to install a one foot thick clay liner for the pit. The pit area was further extended out approximately 25 feet west, 75 feet east, and 50 feet south of the original dimensions based upon the results of borehole samples. See Figure 3 for pit liner dimensions. The soils were excavated to a depth of 4 feet bgs. The soils excavated were placed back into the center of the original excavation in order to bring the original excavation up to a depth of 4 feet bgs. Upon completion of the clay liner, overburden material stripped from the expansion of the pit was utilized as backfill for the site and brought up to grade. A copy of the sieve analysis/permeability data for the clay is included in Appendix B.

Proposed Monitor Well

One monitor well will be installed at the site to evaluate groundwater quality in the vicinity of the closed pit area. During the installation of the monitor well, the entire screened interval will be placed entirely below the water table. If the sampling data indicates the necessity for additional monitor wells, they will be installed accordingly, in order to complete delineation.

Conclusions

Between October 2007 and January 2008, the pit area was excavated to dimensions of approximately 160 feet by 100 feet. Approximately 420 cubic yards of soil were excavated and transported offsite for disposal at Gandy-Marley

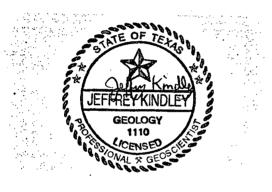


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of Lovington, New Mexico. A clay liner was placed at 4 feet bgs in the excavation in order to impede the remaining chlorides at the site from migrating to the underlying groundwater. Upon completion of the clay liner, the site was backfilled with overburden material and brought up to surface grade.

Based upon the results of the pit closure work performed at the site, Celero Energy requests consideration of this pit for closure. If you require any additional information or have any questions or comments concerning the assessment/closure report, please call at (432) 682-4559.



cc: Bruce Woodard – Celero Energy II LP Larry Johnson – NMOCD – Hobbs, NM Respectfully submitted, Tetra Tech

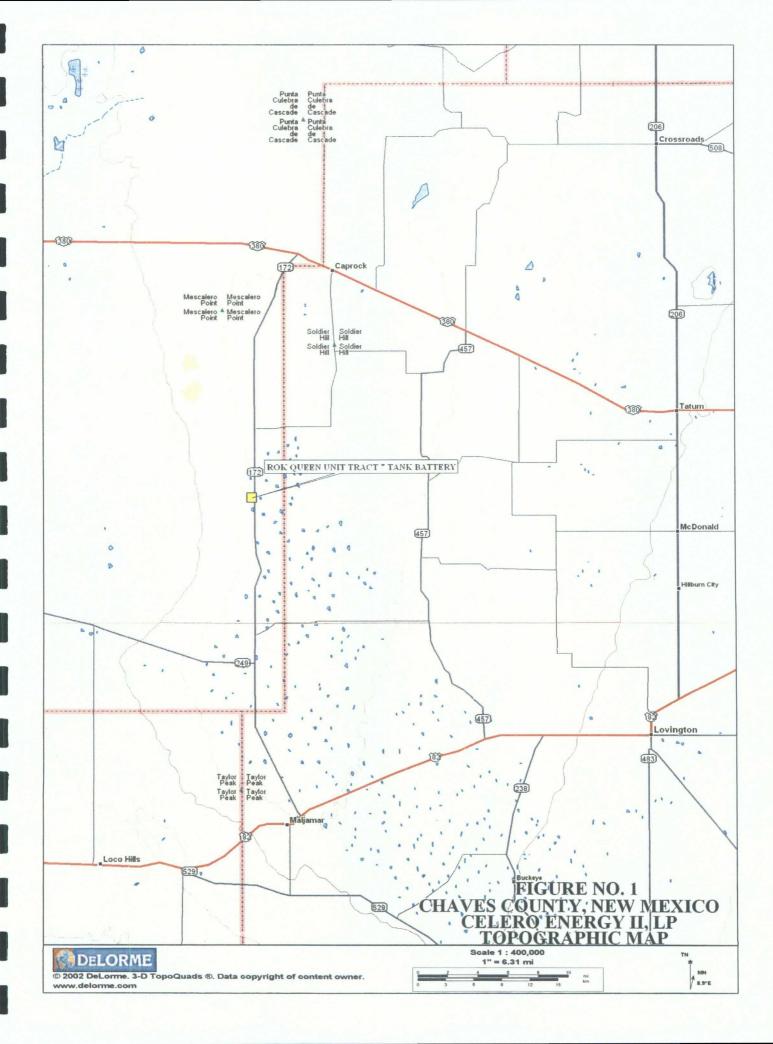
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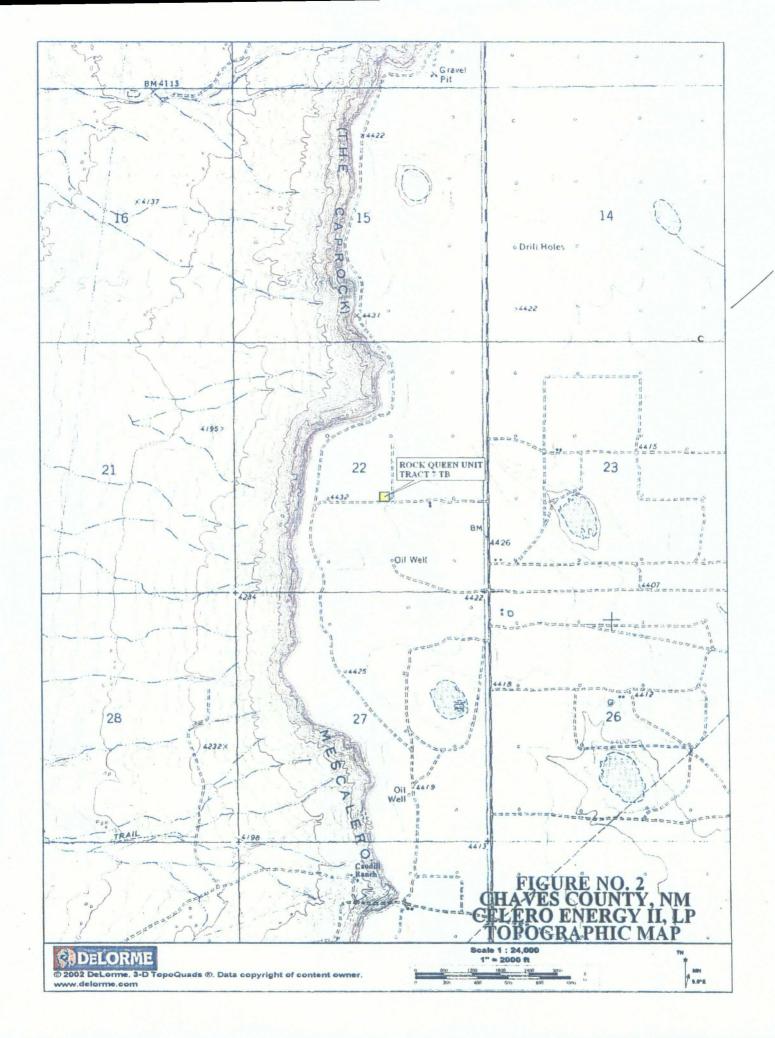
Senior Environmental Geologist

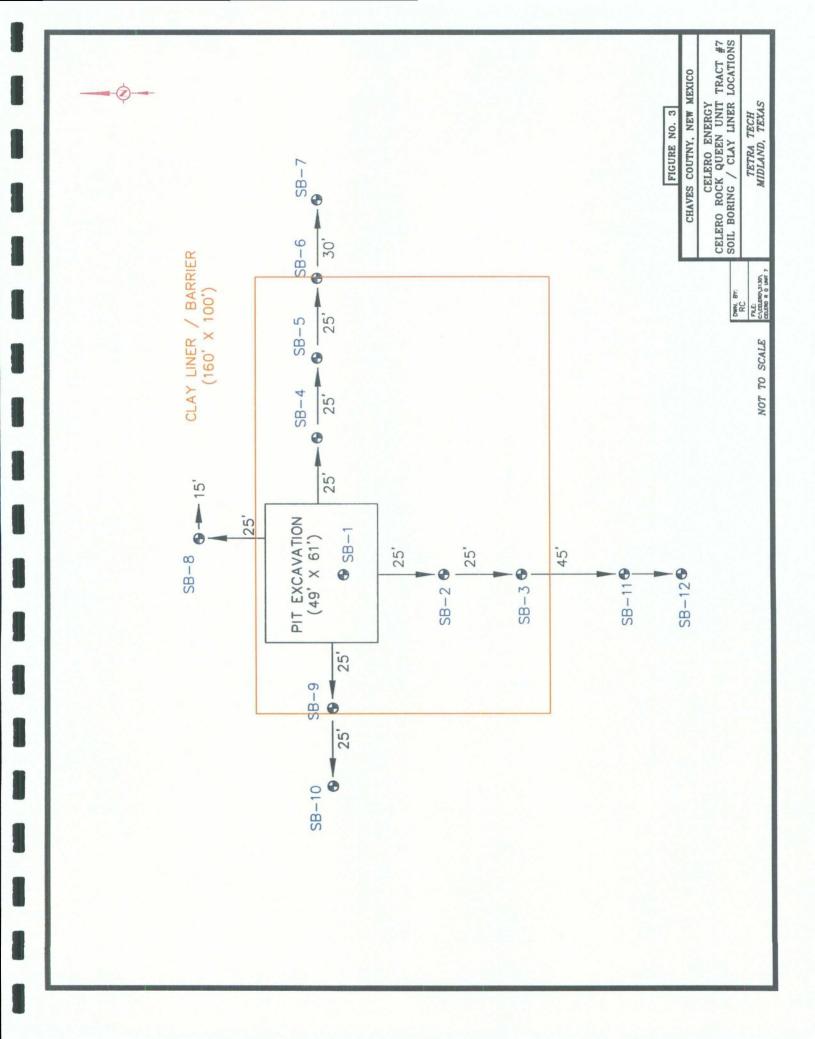
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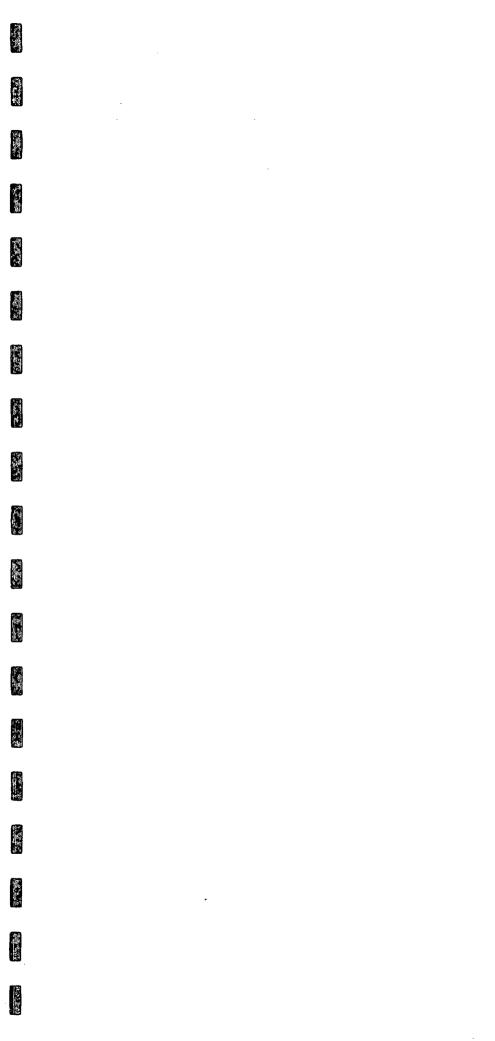
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	(mg/kg)		892	621	906	1,460	2,160	4,280	5,580	5,730	4,070	3,210	3,870	4,060	3,480	3,250	3,370	313	1,310	2,780	5,290	6,450	2,430	6,120	2,180	1,290	287	311	599	3,580	6,100	7,760	661	819	5,110	6,880
Xylene	(mg/kg)		1.07		1	1	•	1	1	1		-		1	I	•	•	1	-	-	•	1	•	1	-	,	1		1	,	1	-	•	•	•	•
Ethlybenzene	(mg/kg)		0.234	-	-	-	-	-	-	•	I		T	-	1	-	-	-	-	-	-	-	-	1	-	,	J	•	•	I	•	-	-	-	1	1
Toluene	(mg/kg)		0.0226	-	L	•	-	1	-	1	•	-	-	-	-	-		-	1	-	-	•	-	-	-	,	ı	-	-	-	-		-	•	,	-
Benzene	(mg/kg)		<0.0200		-	I	1	•	-				•	T	1	1		1	1	-	ŀ	1	•	•	•	ł	1		4	-	•		1	•	•	
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TPH (mg/kg)	GRO		71.1	-	-	•	1	-	-	1	1	1	-	-	-	1	1	•	,	1	1	ł	1	•	1	•	-	1	1	-	•	1	1	1	•	•
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Sample	Depth (ft)		(3-5')	(8-10')	(13-15')	(18-20')	(28-30')	(38-40')	(48-50')	(58-60')	(68-70')	(78-80')	(88-90')	(98-100')	(108-110'	(118-120')	(128-130')	(8-10')	(18-20')	(28-30')	(38-40')	(48-50')	(8-10')	(18-20')	(28-30')	(38-40')	(48-50')	(8-10')	(18-20')	(28-30')	(38-40')	(48-50')	(8-10')	(18-20')	(28-30')	(38-40')
Date 🦿	Sampled		10/19/2007	10/19/2007	10/19/2007	10/19/2007	10/19/2007	10/19/2007	10/19/2007	10/19/2007	10/19/2007	10/19/2007	10/19/2007	10/19/2007	10/19/2007	10/19/2007	10/19/2007	10/19/2007	10/19/2007	10/19/2007	10/19/2007	10/19/2007	10/19/2007	10/19/2007	10/19/2007	10/19/2007	10/19/2007	10/19/2007	10/19/2007	10/19/2007	10/19/2007	10/19/2007	10/19/2007	10/19/2007	10/19/2007	10/19/2007
Sample	ID		SB-1	SB-2	SB-2	SB-2	SB-2	SB-2	SB-3	SB-3	SB-3	SB-3	SB-3	SB-4	SB-4	SB-4	SB-4	SB-4	SB-5	SB-5	SB-5	SB-5														

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Table 1 Celero Energy Rock Queen Unit #7 Chaves County, New Mexico

(mg/kg) Chloride 1,940 3,110 1,270 1,170 6,020 5,460 5,450 4,330 6,960 8,200 4,320 5,480 5,190 1,380 1,180 <100 <100 <100 <100 98.4 <100 <100 126 439 151 463 799 440 234 159 173 228 286 379 157 Xylene (mg/kg) 4 . 1 . 1 ı ı 1 1 • Ethlybenzene (mg/kg) . ı ŧ ı ŧ ī . . ł. . . . 1 . ī ı 1 Toluene (mg/kg) ī , . ł ı 1 . ı , ı 1 • , Benzene (mg/kg) 1 ī ī , . ÷ Total , ı . 1 ı, ł ı ł ı ι 1 ŧ . ı. 1 ı ī , , , ı . ı. (mg/kg) GRO 1 1 ī 1 ı. 4 1 • DRO . ı ı. . . . ÷ ı. ı ı. ī ı . ı 1 . ī ī. ī . 1 ı. Depth (ft) Sample (38-40') (48-50') (18-20') (28-30') (48-50') (18-20') (18-20') (28-30') (38-40') (18-20') (28-30') (28-30) (38-40') (48-50') (18-20') (18-20') (48-50') (28-30') (38-40') 28-30') (48-50') (8-10') 38-40') (38-40') (48-50') (48-50') (28-30') (18-20') (8-10') (8-10') (8-10') (8-10') (38-40') (8-10') (8-10') Sampled 10/19/2007 3/24/2008 3/24/2008 3/24/2008 3/24/2008 3/24/2008 3/24/2008 3/24/2008 3/24/2008 3/24/2008 Date Sample Q SB-10 SB-10 SB-10 SB-10 SB-10 SB-5 SB-12 SB-12 SB-12 SB-12 SB-6 SB-6 SB-6 SB-6 SB-6 SB-8 SB-8 SB-8 SB-8 SB-8 SB-9 SB-9 SB-9 SB-9 SB-9 SB-11 SB-11 SB-11 SB-11 SB-11 SB-7 SB-7 SB-7 SB-7 SB-7

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				Chloride (mg/kg)	162
				Xylene (mg/kg)	
				<u>⊃ vorTPH (mg/kg) (2000)</u> Benzene Toluene Ethlybenzene (Xylene V) 3R0 (100 GRO 100 fortal) (mg/kg) (mg/kg) (mg/kg)	
				Toluene (mg/kg)	
	Z	iit #7	<i>w</i> Mexico	DRO [®] CRO [®] CARO [®] Coluene DRO [®] CRO [®] Crotal Cmg/kg)	
Table 1	Celero Energy	Rock Queen Unit #7	Chaves County, New Mexico	g) Total	1
		Ro	Chaves	TPH (mg/k	1
				DRO	
				Sample Depth (ft)	(48-50')
				Date Sampled	3/24/2008
				Sample	SB-12

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MULLUM TRACEANALYSIS, INC. MAULUM MULLUM

6701 Aberdeen Avenue, Suite 9 200 East Sunset Road, Suite E 5002 Basin Street, Suite A1 6015 Harris Parkway, Suite 110 F

Lubbock, Texas 79424 860 • 378 • 1296 El Paso, Texas 79922 888 • 588 • 3443 Midland, Texas 79703 Ft. Worth, Texas 76132 E-Mail: lab@traceanafysis.com

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 FAX 432 • 689 • 6313

Analytical and Quality Control Report

Ike Tavarez Highlander Environmental Services 1910 N. Big Spring Street Midland, TX, 79705

Project Location:Chavez County, NMProject Name:Celero/Rock Queen Unit 7Project Number:3130

Enclosed are the Analytical Report and Quality Control Report for the following sample(s) submitted to TraceAnalysis, Inc.

			Date	Time	Date
Sample	Description	Matrix	Taken	Taken	Received
154753	SB-11 8-10'	soil	2008-03-24	00:00	2008-03-26
154754	SB-11 18-20'	soil	2008-03-24	00:00	2008-03-26
154755	SB-11 28-30'	soil	2008-03-24	00:00	2008-03-26
154756	SB-11 38-40'	soil	2008-03-24	00:00	2008-03-26
154757	SB-11 48-50'	soil	2008-03-24	00:00	2008-03-26
154758	SB-12 8-10'	soil	2008-03-24	00:00	2008-03-26
154759	SB-12 18-20'	soil	2008-03-24	00:00	2008-03-26
154760	SB-12 28-30'	soil	2008-03-24	00:00	2008-03-26
154761	SB-12 38-40'	soil	2008-03-24	00:00	2008-03-26
154762	SB-12 48-50'	soil	2008-03-24	00:00	2008-03-26

These results represent only the samples received in the laboratory. The Quality Control Report is generated on a batch basis. All information contained in this report is for the analytical batch(es) in which your sample(s) were analyzed.

This report consists of a total of 7 pages and shall not be reproduced except in its entirety, without written approval of TraceAnalysis, Inc.

Report Date: March 31, 2008

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Work Order:

Dr. Blair Leftwich, Director

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Analytical Report

Sample: 154753 - SB-11 8-10'

Analysis: QC Batch:	Chloride (Titration) 46894	Analytical Method: Date Analyzed:	2008-03-27	Prep Method: Analyzed By:	AR
Prep Batch:	40336	Sample Preparation	n: 2008-03-27	Prepared By:	AR
		\mathbf{RL}			
Parameter	Flag	Result	Units	Dilution	\mathbf{RL}
Chloride		<100	mg/Kg	50	2.00

Sample: 154754 - SB-11 18-20'

Analysis: QC Batch: Prep Batch:	Chloride (Titration) 46894 40336	Analytical Method Date Analyzed: Sample Preparatio	2008-03-27	Prep Method: Analyzed By: Prepared By:	ÁR
		\mathbf{RL}			
Parameter	\mathbf{Flag}	Result	Units	Dilution	\mathbf{RL}
Chloride		1380	mg/Kg	50	2.00

Sample: 154755 - SB-11 28-30'

Analysis: QC Batch:	Chloride (Titration) 46894	Analytical Method Date Analyzed:	: SM 4500-Cl B 2008-03-27	Prep Method: Analyzed By:	'
Prep Batch:		Sample Preparation		Prepared By:	
		RL			
Parameter	Flag	\mathbf{Result}	Units	Dilution	\mathbf{RL}
Chloride		1170	mg/Kg	50	2.00

Sample: 154756 - SB-11 38-40'

Analysis: QC Batch: Prep Batch:	Chloride (Titration) 46894 40336	Analytical Metho Date Analyzed: Sample Preparati	2008-03-27	Prep Method: Analyzed By: Prepared By:	ÁŔ
		RL			
Parameter	\mathbf{Flag}	\mathbf{Result}	Units	Dilution	\mathbf{RL}
Chloride		228	mg/Kg	50	2.00

Sample: 154757 - SB-11 48-50'

Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
QC Batch:	46894	Date Analyzed:	2008-03-27	Analyzed By:	AR
Prep Batch:	40336	Sample Preparation:	2008-03-27	Prepared By:	\mathbf{AR}

Report Date:	March	31,	2008
3130			

Parameter	\mathbf{Flag}	$f RL \ Result$	Units	Dilution	RL
Chloride		157	mg/Kg	50	2.00

Sample: 154758 - SB-12 8-10'

Analysis: QC Batch: Prep Batch:	Chloride (Titration) 46894 40336	Analytical Method: Date Analyzed: Sample Preparation:	SM 4500-Cl B 2008-03-27 2008-03-27	Prep Method: Analyzed By: Prepared By:	AR
		RL			
Parameter	Flag	Result	Units	Dilution	\mathbf{RL}
Chloride		<100	mg/Kg	50	2.00

Sample: 154759 - SB-12 18-20'

Analysis: QC Batch: Prep Batch:	Chloride (Titration) 46929 40365	Analytical Methoc Date Analyzed: Sample Preparatic	2008-03-27	Prep Method: Analyzed By: Prepared By:	AR
Parameter	Flag	RL Result	Units	Dilution	\mathbf{RL}
Chloride	8	286	mg/Kg	50	2.00

Sample: 154760 - SB-12 28-30'

Analysis: QC Batch: Prep Batch:	Chloride (Titration) 46929 40365	Analytical Method: Date Analyzed: Sample Preparation	2008-03-27	Prep Method: Analyzed By: Prepared By:	AR
		RL			
Parameter	Flag	Result	Units	Dilution	RL
Chloride		1180	mg/Kg	50	2.00

Sample: 154761 - SB-12 38-40'

Analysis: QC Batch: Prep Batch:	Chloride (Titration) 46929 40365	Analytical Method: Date Analyzed: Sample Preparation	2008-03-27	Prep Method: Analyzed By: Prepared By:	ÁR
		RL			
Parameter	Flag	Result	Units	Dilution	\mathbf{RL}
Chloride		379	mg/Kg	50	2.00

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3130	: March 3	1, 2008		der: 8032654 k Queen Uni				e Number: avez Coun	
Sample: 15	4762 - SI	3-12 48-50'							
Analysis: QC Batch: Prep Batch:	46929	(Titration)	Analytical Me Date Analyzec Sample Prepa	1: 2008	4500-Cl B 8-03-27 8-03-27		Ana) Method: lyzed By: pared By:	N/A AR AR
D			RL	TT .		וית	L. 45.		ъſ
Parameter Chloride		Flag	Result 162	Unit mg/K			lution 50		RI 2.00
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				DL					
Parameter Chloride		Flag				Units mg/Kg			$\frac{\text{RI}}{2}$
Method Bl: QC Batch: Prep Batch:	46929 40365	·	Date Analyzed: QC Preparation:	2008-03-27 2008-03-27				alyzed By: pared By:	
			М	DL					
Parameter Chloride		Flag	Res <0.	sult		Units mg/Kg	r		$\frac{R}{2}$
Laboratory	Control 46894	Spike (LCS-1)		2008-03-27			An	alyzed By:	AR
•	40894 40336		Date Analyzed: QC Preparation:	2008-03-27			Pre	epared By:	
•		L				Matr		epared By:	
QC Batch: Prep Batch: Param		Res	QC Preparation: CS sult Units	2008-03-27 Dil.	Spike Amount	Resu	ix lt <u>R</u>	ec.	AR Rec. Limit
Prep Batch: Param Chloride	40336	Res	QC Preparation: CS sult Units 0.0 mg/Kg	2008-03-27 Dil. 1	Spike Amount 100	Resu <0.50	ix lt R 20 3	ec.	AR Rec. Limit
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Prep Batch: Param Chloride Percent recov Param	40336	Res 99 sed on the spike result. LCSD Result	QC Preparation: CS sult Units 0.0 mg/Kg . RPD is based on Units Dil.	2008-03-27 Dil. 1 the spike and Spike Amount	Spike Amount 100 d spike dup Matrix Result	Resu <0.50 olicate res Rec.	ix lt R DO S ult. Rec. Limit	ec. 99 8 	AR Rec. Limit 5 - 11 RPI Limi
Prep Batch: Param Chloride Percent recov Param Chloride	40336 very is bas	Res 99 eed on the spike result. LCSD Result 100	QC Preparation: CS sult Units 0.0 mg/Kg . RPD is based on Units Dil. mg/Kg 1	2008-03-27 Dil. 1 the spike and Spike Amount 100	Spike Amount 100 d spike dup Matrix Result <0.500	Resu <0.50 olicate res Rec. 100	ix lt R 20 S ult. Rec. Limit 85 - 115	ес. 99 8	AR Rec. Limit 5 - 11 RPI
Prep Batch: Param Chloride Percent recov Param Chloride Percent recov	40336 very is bas very is bas	Res 99 sed on the spike result. LCSD Result 100 sed on the spike result.	QC Preparation: CS sult Units 0.0 mg/Kg . RPD is based on Units Dil. mg/Kg 1	2008-03-27 Dil. 1 the spike and Spike Amount 100	Spike Amount 100 d spike dup Matrix Result <0.500	Resu <0.50 olicate res Rec. 100	ix lt R 20 S ult. Rec. Limit 85 - 115	ec. 99 8 	AR Rec. Limit 5 - 11 RPI Limi
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3130	: March 31, 2	2008	C		der: 803265 k Queen Ur				Page Ni Chavez		aty, NM
		LC	s			Spike	Ma	trix			Rec.
Param	_	Res		Units	Dil.	Amount	Res		Rec.		Limit
Chloride		10	0	mg/Kg	1	100	<0.	500	100	8	35 - 115
Percent recov	very is based	on the spike result.	RPD is	based on t	the spike ar	ıd spike duş	olicate r	esult.			
D		LCSD	ŦŦ •.	51	Spike	Matrix	D	Rec.		20	RPD
Param Chloride	<u></u>	Result 96.0	Units		Amount 100	Result <0.500	Rec. 96	Limi 85 - 1		$\frac{PD}{4}$	Limit 20
	· · · ·		mg/K						10	4	
Percent recov	very is based	on the spike result.	RPD 18	based on 1	the spike ar	id spike duj	olicate re	esult.			
Matrix Spil	ke (MS-1)	Spiked Sample: 15	54758								
QC Batch:	46894		Date A	nalyzed:	2008-03-2	7			Analyz	ed By	: AR
Prep Batch:	40336			eparation:	2008-03-2				Prepar	-	
D		M		T.L. **	D''	Spike		trix	D		Rec.
Param		Resi		Units	Dil.	Amount	Res		Rec.	~	Limit
Chloride		509		mg/Kg	50	5000		524	101		85 - 118
Percent recov	very is based	on the spike result.	RPD is	based on	the spike ar	nd spike du	plicate r	esult.			
_		MSD			Spike	Matrix		Rec.			RPD
						$\mathbf{D} = - \mathbf{U} \mathbf{U}$	Dee		+ D	DD	T :
		Result	Units		Amount	Result	Rec.	Limi		PD	
Chloride	very is based	on the spike result.	mg/K	g 50	5000	45.524	103	85 - 1		2	20
Chloride Percent recov Matrix Spil QC Batch:	ke (MS-1) 46929	5200	mg/Kg RPD is 54768 Date A	g 50	5000	45.524 nd spike dug 7	103	85 - 1 esult.		2 ed By	20 /: AR
Chloride Percent recov Matrix Spil QC Batch: Prep Batch:	ke (MS-1) 46929	5200 on the spike result. Spiked Sample: 15 MS	mg/Ka RPD is 54768 Date A QC Pre	g 50 based on nalyzed: eparation:	5000 the spike ar 2008-03-2 2008-03-2	45.524 nd spike dup 7 7 Spike	103 plicate re Ma	85 - 1 esult. trix	15 Analyz Prepar	2 ed By	20 7: AR 7: AR Rec.
Chloride Percent recov Matrix Spi l QC Batch: Prep Batch: Param	ke (MS-1) 46929	5200 on the spike result. Spiked Sample: 15 MS Resu	mg/Kg RPD is 54768 Date A QC Pre	g 50 based on nalyzed: eparation: Units	5000 the spike ar 2008-03-2 2008-03-2 Dil.	45.524 nd spike dup 7 7 Spike Amount	103 plicate ro Ma Res	85 - 1 esult. trix sult	15 Analyz Prepar Rec.	2 ed By ed By	20 7: AR 7: AR Rec. Limit
Chloride Percent recov Matrix Spil QC Batch: Prep Batch: Param Chloride	ke (MS-1) 46929 40365	5200 on the spike result. Spiked Sample: 15 Resu 860	mg/Kg RPD is 54768 Date A QC Pre 5 ult	g 50 based on nalyzed: eparation: Units mg/Kg	5000 the spike ar 2008-03-2 2008-03-2 Dil. 50	45.524 nd spike dup 7 7 Spike Amount 5000	103 plicate r Ma Res 389	85 - 1 esult. trix sult 1.63	15 Analyz Prepar	2 ed By ed By	20 7: AR 7: AR Rec. Limit
Chloride Percent recov Matrix Spil QC Batch: Prep Batch: Param Chloride	ke (MS-1) 46929 40365	5200 on the spike result. Spiked Sample: 15 Resu 860 on the spike result.	mg/Kg RPD is 54768 Date A QC Pre 5 ult	g 50 based on nalyzed: eparation: Units mg/Kg	5000 the spike ar 2008-03-2 2008-03-2 Dil. 50 the spike ar	45.524 nd spike dug 7 7 7 8 9 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7	103 plicate r Ma Res 389	85 - 1 esult. trix sult 1.63 esult.	15 Analyz Prepar Rec. 94	2 ed By ed By	20 7: AR 7: AR Rec. Limit 35 - 115
Chloride Percent recov Matrix Spil QC Batch: Prep Batch: Param Chloride Percent recov	ke (MS-1) 46929 40365	5200 on the spike result. Spiked Sample: 15 Resu 860 on the spike result. MSD	mg/Kg RPD is 54768 Date A QC Pre Gult 10 RPD is	g 50 based on nalyzed: eparation: Units mg/Kg based on	5000 the spike ar 2008-03-2 2008-03-2 Dil. 50 the spike ar Spike	45.524 ad spike dug 7 7 7 7 5000 ad spike dug Matrix	103 plicate r Ma Res 389 plicate r	85 - 1 esult. trix sult 1.63 esult. Rec.	15 Analyz Prepar Rec. 94	2 ed By ed By	20 7: AR 7: AR Rec. Limit 35 - 11: RPD
Chloride Percent recov Matrix Spil QC Batch: Prep Batch: Param Chloride Percent recov Param	ke (MS-1) 46929 40365	5200 on the spike result. Spiked Sample: 15 Resu 860 on the spike result. MSD Result	mg/Kg RPD is 54768 Date A QC Pre Gult RPD is Units	g 50 based on nalyzed: eparation: Units mg/Kg based on Dil.	5000 the spike ar 2008-03-2 2008-03-2 Dil. 50 the spike ar Spike Amount	45.524 ad spike dug 7 7 7 5000 ad spike dug Matrix Result	103 plicate r Ma Res 389 plicate r Rec.	85 - 1 esult. trix sult 1.63 esult. Rec. Limi	Analyz Prepar Rec. 94 t F	2 ed By ed By &	20 7: AR 7: AR Rec. Limit 35 - 11: RPD Limit
Chloride Percent recov Matrix Spil QC Batch: Prep Batch: Param Chloride Percent recov Param Chloride	ke (MS-1) 46929 40365 very is based	5200 on the spike result. Spiked Sample: 15 Resu 860 on the spike result. MSD	mg/Kg RPD is 54768 Date A QC Pre S ult 00 RPD is mg/Kg	g 50 based on nalyzed: eparation: Units mg/Kg based on Dil. g 50	5000 the spike ar 2008-03-2 2008-03-2 Dil. 50 the spike ar Spike Amount 5000	45.524 nd spike dup 7 7 7 8 8 8 9 00 10 9 10 9 10 9 10 9 10 9 10	103 plicate re Ma Res 389 plicate re Rec. 96	85 - 1 esult. trix sult 1.63 esult. Rec. Limi 85 - 1	Analyz Prepar Rec. 94 t F	2 ed By ed By	20 7: AR 7: AR Rec. Limit 35 - 11: RPD
Chloride Percent recov Matrix Spil QC Batch: Prep Batch: Param Chloride Percent recov Param Chloride Percent recov	ke (MS-1) 46929 40365 very is based	5200 on the spike result. Spiked Sample: 15 MS on the spike result. MSD Result 8710	mg/Kg RPD is 54768 Date A QC Pre S ult 00 RPD is mg/Kg	g 50 based on nalyzed: eparation: Units mg/Kg based on Dil. g 50	5000 the spike ar 2008-03-2 2008-03-2 Dil. 50 the spike ar Spike Amount 5000	45.524 nd spike dup 7 7 7 8 8 8 9 00 10 9 10 9 10 9 10 9 10 9 10	103 plicate re Ma Res 389 plicate re Rec. 96	85 - 1 esult. trix sult 1.63 esult. Rec. Limi 85 - 1	Analyz Prepar Rec. 94 t F	2 ed By ed By &	20 7: AR 7: AR Rec. Limit 35 - 115 RPD Limit
Chloride Percent recov Matrix Spil QC Batch: Prep Batch: Perp Batch: Percent recov Param Chloride Percent recov Standard (J	ke (MS-1) 46929 40365 //ery is based //ery is based	5200 on the spike result. Spiked Sample: 15 MS on the spike result. MSD Result 8710	mg/Kg RPD is 54768 Date A QC Pre Sult 00 RPD is mg/Kg RPD is	g 50 based on malyzed: eparation: Units mg/Kg based on male Dil. g 50 based on male	5000 the spike ar 2008-03-2 2008-03-2 Dil. 50 the spike ar Spike Amount 5000	45.524 nd spike dup 7 7 7 8 8 8 9 00 10 9 10 9 10 9 10 9 10 9 10	103 plicate re Ma Res 389 plicate re Rec. 96	85 - 1 esult. trix sult 1.63 esult. Rec. Limi 85 - 1 esult.	Analyz Prepar Rec. 94 t F 15	ed By ed By	20 7: AR 7: AR Rec. Limit 35 - 115 RPD Limit 20
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Work Order: 8032654 Page Number: 7 of 7 Report Date: March 31, 2008 3130 Celero/Rock Queen Unit 7 Chavez County, NM Standard (CCV-1) QC Batch: 46894 Date Analyzed: 2008-03-27 Analyzed By: AR CCVs CCVs CCVs Percent True Percent Found Recovery Units Param Flag Conc. Conc. Recovery Limits Analyzed 102 85 - 115 2008-03-27 Chloride 100 mg/Kg 102 Standard (ICV-1) OC Batch: 46929 Date Analyzed: 2008-03-27 Analyzed By: AB

QU Datch.	40929		Date Alla	iyzed. 2008-03	-21	Ana	lyzeu Dy. An
			ICVs	ICVs	ICVs	Percent	
			True	Found	Percent	Recovery	Date
Param	Flag	Units	Conc.	Conc.	Recovery	Limits	Analyzed
Chloride		mg/Kg	100	99.7	100	85 - 115	2008-03-27

Date

Standard (CCV-1)

QC Batch:	46929		Date Anal	yzed: 2008-03	-27	Anal	yzed By: AR
			CCVs True	CCVs Found	CCVs Percent	Percent Recovery	Date
Param	Flag	Units	Conc.	Conc.	Recovery	Limits	Analyzed
Chloride		mg/Kg	100	100	100	85 - 115	2008-03-27

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			191 Dio	0 N.	Big : Tex	1910 N. Big Spring St. Midland, Texas 79705	g St 3705)	- 	t 4		(980 of .1								
(432) 682-4559	59) ; ;		Fax (432)	2) 682	682-3946	<u>t</u> 6	×∃) g						\$U.		
CLIENT NAME: Celera Enw	Energy				Je HENNAGER:	Kindle	22				PRESERVATIVE METHOD	ATIVE	001XT								
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BOLIELEO 85L		2	5	58-12	18-10'	('ai						~						>			
J59 alycleo		<u>></u>		<u>58-12</u>	()	(18-20')						<u> </u>						5			
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 6701 Aberdeen Avenue, Suite 9
 Lubbock, Texas 79424

 200 East Sunset Road, Suite E
 El Paso, Texas 79922

 5002 Basin Street, Suite A1
 Midland, Texas 79703

 6015 Harris Parkway, Suite 110
 Ft. Worth, Texas 76132

Lubbock, Texas 79424 800 • 378 • 1296 El Paso, Texas 79922 888 • 588 • 3443 Midland, Texas 79703 Ft. Worth, Texas 76132 E-Mail: lab@traceanalysis.com

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Analytical and Quality Control Report

Ike Tavarez Highlander Environmental Services 1910 N. Big Spring Street Midland, TX, 79705

Report Date: November 1, 2007

Work Order: 7102212

Project Name:Rock Queen Unit #7Project Number:3130

Enclosed are the Analytical Report and Quality Control Report for the following sample(s) submitted to TraceAnalysis, Inc.

$\begin{array}{c ccccccccccccccccccccccccccccccccccc$				Date	Time	Date
$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	Sample	Description	Matrix	Taken	Taken	Received
$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	139916	SB-1 (3-5')	soil	2007-10-19	00:00	2007-10-22
$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	139917	SB-1 (8-10')	soil	2007-10-19	00:00	2007-10-22
$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	139918	SB-1 (13-15')	soil	2007-10-19	00:00	2007-10-22
$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	139919	SB-1 (18-20')	soil	2007-10-19	00:00	2007-10-22
139922SB-1 (48-50')soil2007-10-1900:002007-139923SB-1 (58-60')soil2007-10-1900:002007-139924SB-1 (68-70')soil2007-10-1900:002007-139925SB-1 (78-80')soil2007-10-1900:002007-139926SB-1 (88-90')soil2007-10-1900:002007-139927SB-1 (98-100')soil2007-10-1900:002007-139928SB-1 (108-110')soil2007-10-1900:002007-139929SB-1 (118-120')soil2007-10-1900:002007-	139920	SB-1 (28-30')	soil	2007-10-19	00:00	2007-10-22
139923SB-1 (58-60')soil2007-10-1900:002007-139924SB-1 (68-70')soil2007-10-1900:002007-139925SB-1 (78-80')soil2007-10-1900:002007-139926SB-1 (88-90')soil2007-10-1900:002007-139927SB-1 (98-100')soil2007-10-1900:002007-139928SB-1 (108-110')soil2007-10-1900:002007-139929SB-1 (118-120')soil2007-10-1900:002007-	139921	SB-1 (38-40')	soil	2007-10-19	00:00	2007-10-22
139924SB-1 (68-70')soil2007-10-1900:002007-139925SB-1 (78-80')soil2007-10-1900:002007-139926SB-1 (88-90')soil2007-10-1900:002007-139927SB-1 (98-100')soil2007-10-1900:002007-139928SB-1 (108-110')soil2007-10-1900:002007-139929SB-1 (118-120')soil2007-10-1900:002007-	139922	SB-1 (48-50')	soil	2007-10-19	00:00	2007-10-22
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139926SB-1 (88-90')soil2007-10-1900:002007-139927SB-1 (98-100')soil2007-10-1900:002007-139928SB-1 (108-110')soil2007-10-1900:002007-139929SB-1 (118-120')soil2007-10-1900:002007-	139924	SB-1 (68-70')	soil	2007-10-19	00:00	2007-10-22
139927SB-1 (98-100')soil2007-10-1900:002007-139928SB-1 (108-110')soil2007-10-1900:002007-139929SB-1 (118-120')soil2007-10-1900:002007-	139925	SB-1 (78-80')	soil	2007-10-19	00:00	2007-10-22
139928SB-1 (108-110')soil2007-10-1900:002007-139929SB-1 (118-120')soil2007-10-1900:002007-	139926	SB-1 (88-90')	soil	2007-10-19	00:00	2007-10-22
139929 SB-1 (118-120') soil 2007-10-19 00:00 2007-	139927	SB-1 (98-100')	soil	2007-10-19	00:00	2007-10-22
	139928	SB-1 (108-110')	soil	2007-10-19	00:00	2007-10-22
130030 SB 1 (198-130 ³) soil 2007 10 10 00:00 2007	139929	SB-1 (118-120')	soil	2007-10-19	00:00	2007-10-22
133330 3D-1 (125-130) Soli 2007-10-19 00.00 2007-	139930	SB-1 (128-130')	soil	2007-10-19	00:00	2007-10-22

These results represent only the samples received in the laboratory. The Quality Control Report is generated on a batch basis. All information contained in this report is for the analytical batch(es) in which your sample(s) were analyzed.

This report consists of a total of 15 pages and shall not be reproduced except in its entirety, without written approval of TraceAnalysis, Inc.

Michael april

Dr. Blair Leftwich, Director

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Analytical Report

Sample: 139916 - SB-1 (3-5')

Analysis: QC Batch:	BTEX 42329		Analytical M Date Analyz		S 8021B 2007-10-23		Prep M Analyze		S 5035 DC
Prep Batch:	36547		Sample Prep		2007-10-23		Prepare		DC
			RL	ı					
Parameter	\mathbf{F}	lag	Result	;	Units		Dilution		$\mathbf{R}\mathbf{L}$
Benzene	······		< 0.0200)	mg/Kg		2		0.010
Toluene			0.0226	1	mg/Kg		2		0.010
Ethylbenzene	е		0.234	L.	mg/Kg		2		0.0100
Xylene			1.07		mg/Kg		2		0.010
_						Spike	Percent		overy
Surrogate		Flag	Result	Units	Dilution	Amount	Recovery		nits
Trifluorotolu			1.25	mg/Kg	2	2.00	62		- 116
4-Bromofluor	robenzene (4-BFB	s)	1.69	mg/Kg	2	2.00	84	47.3 -	144.2
Sample: 13	9916 - SB-1 (3-	5')							
Analysis:	Chloride (Titrat	tion)		tical Metho				Method:	N/A
QC Batch:	42607			Analyzed:	2007-10	-31		zed By:	AR
Prep Batch:	36770		Sampl	le Preparat	ion:		Prepa	red By:	AR
			RL						
Parameter	Fla	g	Result		Units		Dilution	<u></u>	RI
Chloride			892		mg/Kg		50		2.00
Sample: 13 Analysis: QC Batch: Prep Batch:	9916 - SB-1 (3- TPH DRO 42274 36501	5')	Analytica Date Ana Sample Pi		Mod. 80151 2007-10-23 2007-10-23	3	Analy	Method: zed By: tred By:	N/A LD LD
			\mathbf{RL}						
Parameter	Fla	g	Result		Units		Dilution		RI
DRO			2690		mg/Kg		1		50.
						Spike	Percent	Reco	overy
							n		
Surrogate n-Triacontan	Flag	Result 988	Units mg/Kg	Dilu		mount 150	Recovery 659		nits - 169.0

Sample: 139916 - SB-1 (3-5')

Analysis:	TPH GRO	Analytical Method:	S 8015B	Prep Method:	S 5035
QC Batch:	42333	Date Analyzed:	2007-10-23	Analyzed By:	DC
Prep Batch:	36547	Sample Preparation:	2007-10-23	Prepared By:	DC

¹High surrogate recovery due to peak interference.

Parameter Flag	т >	RL Result		Units		Dilution	\mathbf{RL}
GRO		71.1		mg/Kg		2	1.00
					Spike	Percent	Recovery
Surrogate	Flag	Result	Units	Dilution	Amount	Recovery	Limits
Trifluorotoluene (TFT)		1.04	mg/Kg	2	2.00	52	50.2 - 89.3
4-Bromofluorobenzene (4-BFB)	1.44	mg/Kg	2	2.00	72	51.2 - 107.4

Sample: 139917 - SB-1 (8-10')

Analysis: QC Batch: Prep Batch:	Chloride (Titration) 42607 36770	Analytical Me Date Analyzed Sample Prepa	l: 2007-10-31	Prep Method: Analyzed By: Prepared By:	AR
		\mathbf{RL}			
Parameter	\mathbf{Flag}	Result	Units	Dilution	\mathbf{RL}
Chloride		621	mg/Kg	50	2.00

Sample: 139918 - SB-1 (13-15')

Analysis:	Chloride (Titration)	Analytical Metho	d: SM 4500-Cl B	Prep Metho	d: N/A
QC Batch:	42607	Date Analyzed:	2007-10-31	Analyzed By	7: AR
Prep Batch:	36770	Sample Preparati	on:	Prepared By	r: AR
		RL			
Parameter	\mathbf{Flag}	Result	Units	Dilution	\mathbf{RL}
Chloride		906	mg/Kg	50	2.00

Sample: 139919 - SB-1 (18-20')

Analysis: QC Batch: Prep Batch:	Chloride (Titration) 42608 36771	Analytical M Date Analyz Sample Prep	zed: 2007-10-31	Prep Method: Analyzed By: Prepared By:	AR
		\mathbf{RL}			
Parameter	\mathbf{Flag}	Result	Units	Dilution	\mathbf{RL}
Chloride		1460	mg/Kg	50	2.00

Sample: 139920 - SB-1 (28-30')

Analysis: QC Batch: Prep Batch:	Chloride (Titration) 42608 36771	Analytical M Date Analyze Sample Prepa	ed: 2007-10-31	Prep Method: Analyzed By: Prepared By:	ÁR
		\mathbf{RL}			
Parameter	\mathbf{Flag}	\mathbf{Result}	Units	Dilution	RL
Chloride		2160	mg/Kg	50	2.00

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Page Number: 5 of 15

Analysis: QC Batch:	Chloride (Titration) 42608	Analytical Method: Date Analyzed:	SM 4500-Cl B 2007-10-31	Prep Method: Analyzed By:	N/A AR
Prep Batch:	36771	Sample Preparation:		Prepared By:	AR
		RL			
Parameter	Flag	Result	Units	Dilution	RL
Chloride		4280	mg/Kg	50	2.00
Sample: 13	9922 - SB-1 (48-50')				
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
QC Batch:	42608	Date Analyzed:	2007-10-31	Analyzed By:	\mathbf{AR}
Prep Batch:	36771	Sample Preparation:	:	Prepared By:	AR
		RL			
Parameter	Flag	Result	Units	Dilution	RL
Chloride		5580	mg/Kg	50	2.00
	42608	Date Analyzed:	2007-10-31	Analyzed By:	AR
	42608 36771	Sample Preparation		Analyzed By: Prepared By:	AR AR
QC Batch: Prep Batch:	36771	Sample Preparation RL	:	Prepared By:	AR
Prep Batch: Parameter		Sample Preparation			AR RI
Prep Batch: Parameter Chloride	36771 Flag	Sample Preparation RL Result	Units	Prepared By: Dilution	AR RI
Prep Batch: Parameter Chloride Sample: 13	36771 Flag 9924 - SB-1 (68-70')	Sample Preparation RL Result 5730	Units	Prepared By: Dilution 50	AR <u>RI</u> 2.00
Prep Batch: Parameter Chloride Sample: 13 Analysis:	36771 Flag	Sample Preparation RL Result	Units mg/Kg	Prepared By: Dilution	AR <u>RI</u> 2.00
Prep Batch: Parameter Chloride Sample: 13 Analysis: QC Batch:	36771 Flag 9924 - SB-1 (68-70') Chloride (Titration)	Sample Preparation RL Result 5730 Analytical Method:	Units mg/Kg SM 4500-Cl B 2007-10-31	Prepared By: Dilution 50 Prep Method:	AR RI 2.00
Prep Batch: Parameter Chloride Sample: 13 Analysis: QC Batch: Prep Batch:	36771 Flag 9924 - SB-1 (68-70') Chloride (Titration) 42608 36771	Sample Preparation RL Result 5730 Analytical Method: Date Analyzed: Sample Preparation RL	Units mg/Kg SM 4500-Cl B 2007-10-31	Prepared By: Dilution 50 Prep Method: Analyzed By: Prepared By:	AR RI 2.00 N/A AR AR
Prep Batch: Parameter Chloride Sample: 13 Analysis: QC Batch: Prep Batch: Prep Batch: Parameter	36771 Flag 9924 - SB-1 (68-70') Chloride (Titration) 42608	Sample Preparation RL Result 5730 Analytical Method: Date Analyzed: Sample Preparation RL Result	Units mg/Kg SM 4500-Cl B 2007-10-31 : Units	Prepared By: Dilution 50 Prep Method: Analyzed By: Prepared By: Dilution	AR RI 2.00 N/A AR AR RI
Prep Batch: Parameter Chloride Sample: 13 Analysis: QC Batch: Prep Batch: Prep Batch: Parameter	36771 Flag 9924 - SB-1 (68-70') Chloride (Titration) 42608 36771	Sample Preparation RL Result 5730 Analytical Method: Date Analyzed: Sample Preparation RL	Units mg/Kg SM 4500-Cl B 2007-10-31	Prepared By: Dilution 50 Prep Method: Analyzed By: Prepared By:	AR RI 2.00 N/A AR AR RI
Prep Batch: Parameter Chloride Sample: 13 Analysis: QC Batch: Prep Batch: Prep Batch: Parameter Chloride	36771 Flag 9924 - SB-1 (68-70') Chloride (Titration) 42608 36771	Sample Preparation RL Result 5730 Analytical Method: Date Analyzed: Sample Preparation RL Result	Units mg/Kg SM 4500-Cl B 2007-10-31 : Units	Prepared By: Dilution 50 Prep Method: Analyzed By: Prepared By: Dilution	AR RI 2.00 N/A AR AR RI
Prep Batch: Parameter Chloride Sample: 13 Analysis: QC Batch: Prep Batch: Prep Batch: Parameter Chloride Sample: 13	36771 Flag 9924 - SB-1 (68-70') Chloride (Titration) 42608 36771 Flag 9925 - SB-1 (78-80')	Sample Preparation RL Result 5730 Analytical Method: Date Analyzed: Sample Preparation RL Result 4070	Units mg/Kg SM 4500-Cl B 2007-10-31 Units mg/Kg	Prepared By: Dilution 50 Prep Method: Analyzed By: Prepared By: Dilution 50	AR RL 2.00 N/A AR AR RL 2.00
Prep Batch: Parameter Chloride Sample: 13 Analysis: QC Batch: Prep Batch: Prep Batch: Parameter Chloride	36771 Flag 9924 - SB-1 (68-70') Chloride (Titration) 42608 36771 Flag	Sample Preparation RL Result 5730 Analytical Method: Date Analyzed: Sample Preparation RL Result	Units mg/Kg SM 4500-Cl B 2007-10-31 : Units	Prepared By: Dilution 50 Prep Method: Analyzed By: Prepared By: Dilution	AR RL 2.00 N/A AR AR RL

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sample 139925 continued ...

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		\mathbf{RL}			
Parameter	Flag	Result	Units	Dilution	RL
		RL			
Parameter	Flag	\mathbf{Result}	Units	Dilution	\mathbf{RL}
Chloride		3210	mg/Kg	50	2.00

Sample: 139926 - SB-1 (88-90')

Analysis: QC Batch: Prep Batch:	Chloride (Titration) 42608 36771	Analytical Met Date Analyzed Sample Prepar	: 2007-10-31	Prep Method: Analyzed By: Prepared By:	AR.
Parameter	Flag	RL Result	Units	Dilution	\mathbf{RL}
Chloride	1145	3870	mg/Kg	50	2.00

Sample: 139927 - SB-1 (98-100')

Chloride (Titration)	Analytical Method	: SM 4500-Cl B	Prep Method:	N/A
42608	Date Analyzed:	2007-10-31	Analyzed By:	\mathbf{AR}
36771	Sample Preparatio	n:	Prepared By:	AR.
	RL			
\mathbf{Flag}	Result	Units	Dilution	\mathbf{RL}
	4060	mg/Kg	50	2.00
	42608 36771	42608 Date Analyzed: 36771 Sample Preparatio RL Flag Result	42608 Date Analyzed: 2007-10-31 36771 Sample Preparation: RL Flag Result Units	42608 Date Analyzed: 2007-10-31 Analyzed By: 36771 Sample Preparation: Prepared By: RL Rl Flag Result Units

Sample: 139928 - SB-1 (108-110')

Analysis: QC Batch:	Chloride (Titration) 42608	Analytical Metho Date Analyzed:	d: SM 4500-Cl B 2007-10-31	Prep Method: Analyzed By:	•
Prep Batch:		Sample Preparati		Prepared By:	
		\mathbf{RL}			
Parameter	\mathbf{Flag}	Result	Units	Dilution	RL
Chloride		3480	mg/Kg	50	2.00

Sample: 139929 - SB-1 (118-120')

Analysis: QC Batch: Prep Batch:	Chloride (Titration) 42609 36772	Analytical Me Date Analyzed Sample Prepar	l: 2007-10-31	Prep Method: Analyzed By: Prepared By:	ÁR
		\mathbf{RL}			
Parameter	Flag	Result	Units	Dilution	\mathbf{RL}
Chloride		3250	mg/Kg	50	2.00

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Sample: 13	9930 -	SB-1 (128-	130')								
Analysis: QC Batch: Prep Batch:	Chlorie 42609 36772	de (Titration	1)	Date .	tical Met Analyzed le Prepara	: 2	SM 450 2007-10	00-Cl B 0-31	An	ep Method: alyzed By: epared By:	N/A AR AR
				RL							
Parameter Chloride		Flag		Result 3370			Jnits g/Kg		Dilution 50		$\frac{\text{RL}}{2.00}$
Chionde				0010			s/ng				
Method Bl	ank (1)	QC Ba	tch: 42274.								
QC Batch:	42274			Date An	alyzed:	2007-10)-23		A	nalyzed By:	LD
Prep Batch:	36501			QC Prep	aration:	2007-10)-23		Р	repared By:	LD
Deveration			Flore		ME			т			ЪĨ
Parameter DRO			Flag		Resu 23	<u>.6</u>			nits g/Kg		$\frac{\text{RL}}{50}$
Surrogate		Flag	Result	Units	D	lution		Spike Amount	Percent Recovery		overy nits
n-Triacontan	<u></u>	1105	109	mg/Kg		1		150	73		156.1
QC Batch: Prep Batch:	$42329 \\ 36547$			Date Ana QC Prep		2007-10 2007-10				nalyzed By: repared By:	DC DC
I				· ·		MDL					
Parameter			Flag			esult			Jnits		RL
Benzene Toluene						$0110 \\ 0150$			g/Kg g/Kg		$\begin{array}{c} 0.01\\ 0.01\end{array}$
Ethylbenzene	е					0160			g/Kg		0.01
Xylene				<u></u>	< 0.0	0410	<u></u>	m	g/Kg	<u>_</u>	0.01
Surrogate			Flag	Result	Units	Di	lution	Spike Amount	Percen Recover		overy nits
Trifluorotolu				0.747	mg/Kg		1	1.00	75		121.3
4-Bromofluor	robenzer	ne (4-BFB)		0.543	mg/Kg	5	1	1.00	54	53.1 -	111.6
Method Bl	ank (1)	QC Ba	itch: 42333								
	42333			Date An	alyzed:	2007-10)-23			nalyzed By:	Da
QC Batch:				• •							
QC Batch: Prep Batch:				QC Prep	aration:	2007-10)-23		Р	repared By:	DC DC
•				QC Prep	aration: Ml)-23		Р	repared By:	
•			Flag	QC Prep		DL ult)-23		P Jnits g/Kg	repared By:	

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Surrogate	Flag	Result	Units	i Dil	ution	Spike Amount	Percent Recovery		covery imits
Trifluorotoluene (TFT)		0.706	mg/K		1	1.00	71*		8 - 10
4-Bromofluorobenzene		0.576	mg/K		1	1.00	58		6 - 12
Method Blank (1)	QC Batch: 42607								
QC Batch: 42607 Prep Batch: 36770		Date Ana QC Prep		2007-10- 2007-10-				yzed By: ared By:	
			M			TT 1.			
Parameter Chloride	Flag		Res <0.5			Units			$\frac{RI}{2}$
	<u></u>		<0.2			mg/Kg			2
Method Blank (1)	QC Batch: 42608								
QC Batch: 42608		Date Ana	alyzed:	2007-10-	31	·		yzed By:	
Prep Batch: 36771		QC Prep	aration:	2007-10-	31		Prep	ared By:	AF
Parameter	Flag		MI Res			Units			R
Chloride	1 lag	·	<0.5			mg/Kg	r		
QC Batch: 42609 Prep Batch: 36772		Date Ana QC Prep	aration:	2007-10- 2007-10-				yzed By ared By:	
Parameter	Flag		Ml Res			Units			R
Chloride			<0.5			mg/Ka	5		2
Laboratory Control QC Batch: 42274 Prep Batch: 36501	Spike (LCS-1)	Date Ana QC Prep	5	2007-10- 2007-10-				yzed By ared By	
Thep Battan 00001								г	
-	LC		nite	Ðil	Spike	Matrix Bosult	Pag		lec.
Param	Res	ult U	nits g/Kg	Dil.	Amount	Result	Rec.	L	imit
Param DRO	Res 33	ult U 3 mg	g/Kg	1	Amount 250	Result <13.4	133	L	imit
Param DRO Percent recovery is base	Res 33 ed on the spike result	ult U 3 mg	g/Kg	1 he spike a	Amount 250 and spike	Result <13.4	133 ult.	L	imit - 142.
Param DRO	Res 33	ult U 3 mg	g/Kg ased on t	1	Amount 250	Result <13.4 duplicate res	133	L	imit

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

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	LCS Result	LCS Resu		Unit	c	Dil.		pike 10unt		CS ec.	LCSD Rec.		Rec. Jimit
n-Triacontane	$\frac{140}{140}$	129		mg/k		1		150		<u>13</u>	86		- 133.2
					-0								
Laboratory Control Spil	ce (LC	S-1)											
QC Batch: 42329			Date	e Analy	zed:	2007-1	0-23				Anal	yzed By	DC
Prep Batch: 36547			QC	Prepar	ation:	: 2007-1	.0-23				Prepa	ared By:	DC
		LC	CS				Spi	ke	Mat	rix		F	lec.
Param		Res		Unit		Dil.	Amo	unt	Res		Rec.		imit
Benzene		0.8	78	mg/K	g	1	1.0	0	<0.0	0110	88	71.2	- 119
Toluene		0.8		mg/K	g	1	1.0	0	< 0.0	0150	89	76.3	- 116.
Ethylbenzene		0.8	92	mg/K	g	1	1.0	0	< 0.0	0160	89	77.6	- 114
Xylene		2.7	71	mg/K	g	11	3.0	0	< 0.0	0410	90	78.8	- 113.9
Percent recovery is based or	n the sp	oike result	t. RPD	is bas	ed on	the spik	e and a	spike du	plicat	e result	j.		
D		LCSD	T T •,	n	•1	Spike		trix	Ð		lec.	DDD	RPD
Param Benzene		Result	Unit			Amount		sult	Rec.		imit	RPD	Limi
Toluene		0.933	mg/I		1	1.00		00110	93 08		2 - 119	6	20
		0.980	mg/I		1	1.00		00150	98 100		- 116.5	9	20
Ethylbenzene Xylene		$\begin{array}{c} 1.02\\ 3.10\end{array}$	mg/I mg/I		1 1	$\begin{array}{c} 1.00\\ 3.00\end{array}$		00160 00410	$\begin{array}{c} 102 \\ 103 \end{array}$		6 - 114 - 113.9	13 13	20 20
												10	
Percent recovery is based or	n the sp	oike result	t. RPD	is das	ed on	the spik	e and a	spike du	iplicat	e result			
		LC	CS	LCSD				Spik	æ	LCS	LCSD	F	lec.
Surrogate		Res	ult	Result	τ	Units	Dil.	Amoi		Rec.	Rec.		imit
Trifluorotoluene (TFT)		0.6	58	0.650	m	ng/Kg	1	1.00	<u> </u>	66	65	56.1	- 107.
4-Bromofluorobenzene (4-B	FB)	0.6	60	0.722	m	ig/Kg	1	1.00)	66	72	56.2	- 118.
Laboratory Control Spil QC Batch: 42333 Prep Batch: 36547	ce (LC	S-1)		e Analy Prepar		2007-1 : 2007-1						yzed By ared By	
		L	\mathbf{CS}				ç	Spike	М	atrix			Rec.
Param			sult	Un	its	Dil.		nount		esult	Rec.		Limit
GRO		7	.43	mg/	Kg	1		10.0		0.739	74		- 105.
Percent recovery is based or	the sp	oike result	t. RPD	is bas	ed on	the spik	e and s	spike du	plicat	e result	L V.		
		LCSD		• .	D	Spike		latrix	5		Rec.		RPI
Param		Result	Un		Dil.	Amour		lesult	Rec.		imit	RPD	Limi
		7.65	mg/	Кg	1.	10.0		0.739	76		- 105.2	3	20
				in La-	ad	41	I						
GRO Percent recovery is based or	n the sp	oike result	t. RPD		ed on	the spik	e and s	-	-			-	
Percent recovery is based or	n the sp	oike result LC	t. RPD CS	LCSD				Spik	æ	LCS	LCSD		Rec.
Percent recovery is based or Surrogate	n the sp	oike result L(Res	t. RPD CS sult	LCSD Result	τ	Jnits	Dil.	Spik Amou	te 1nt	LCS Rec.	LCSD Rec.	L	imit
Percent recovery is based or		oike result LC	t. RPD CS sult 65	LCSD	t m			Spik	ce int	LCS	LCSD	L 61.1	

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Laboratory Control Spike (LCS-1)

QC Batch:	42607	Date Analyzed:	2007-10-31	Analyzed By:	\mathbf{AR}
Prep Batch:	36770	QC Preparation:	2007-10-31	Prepared By:	\mathbf{AR}

	LCS			Spike	Matrix		Rec.
Param	Result	Units	Dil.	Amount	\mathbf{Result}	Rec.	\mathbf{Limit}
Chloride	98.1	mg/Kg	1	100	< 0.500	98	85 - 115

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

	LCSD			Spike	Matrix		Rec.		RPD
Param	Result	Units	Dil.	Amount	Result	Rec.	Limit	RPD	Limit
Chloride	99.1	mg/Kg	1	100	< 0.500	99	85 - 115	1	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Laboratory Control Spike (LCS-1)

QC Batch:	42608	Date Analyzed:	2007-10-31	Analyzed By:	\mathbf{AR}
Prep Batch:	36771	QC Preparation:	2007-10-31	Prepared By:	\mathbf{AR}

	LCS			Spike	Matrix		Rec.
Param	Result	Units	Dil.	Amount	\mathbf{Result}	Rec.	\mathbf{Limit}
Chloride	98.0	mg/Kg	1	100	< 0.500	98	85 - 115

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

	LCSD			Spike	Matrix		Rec.		RPD
Param	Result	Units	Dil.	Amount	Result	Rec.	Limit	RPD	Limit
Chloride	99.0	mg/Kg	1	100	< 0.500	99	85 - 115	1	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Laboratory Control Spike (LCS-1)

QC Batch: Prep Batch:	Date Analyzed: QC Preparation:	Analyzed By: Prepared By:	

	LCS			Spike	Matrix		Rec.
Param	Result	Units	Dil.	Amount	\mathbf{Result}	Rec.	Limit
Chloride	100	mg/Kg	1	100	< 0.500	100	85 - 115

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

	LCSD			Spike	Matrix		Rec.		RPD
Param	Result	Units	Dil.	\mathbf{Amount}	Result	Rec.	\mathbf{Limit}	RPD	Limit
Chloride	101	mg/Kg	1	100	< 0.500	101	85 - 115	1	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Matrix Spike (MS-1) Spiked Sample: 139812

QC Batch:	42274	Date Analyzed:	2007-10-23	Analyzed By:	LD
Prep Batch:	36501	QC Preparation:	2007-10-23	Prepared By:	LD

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D		М		T 7 •.	D.1	Spike		atrix	D		lec.
Param		Res		Units	Dil.	Amoun		esult	Rec.		mit
DRO		22		mg/Kg	1	250		(13.4	89	30.2	- 201.4
Percent recovery is based	on the sp	pike result	t. RPD	is based o	n the spike	e and spike	e duplica	te resul	t.		
		MSD			Spike	Matrix			lec.		RPD
Param		Result	Unit		Amount				imit	RPD	Limit
DRO		249	mg/K	.g 1	250	<13.4	100	30.2	- 201.4	11	20
Percent recovery is based	on the sp	pike result	t. RPD	is based o	n the spike	e and spike	e duplica	te resul	t.		
	MS	MS	SD			Spi	ke	MS	MSE)	Rec.
Surrogate	\mathbf{Result}	Res	ult	Units	Dil.	Amo	unt	Rec.	Rec.		Limit
n-Triacontane	127	12	20	mg/Kg	1	15	0	85	80	1	0 - 194
Matrix Spike (MS-1) QC Batch: 42329 Prep Batch: 36547	~ [Sample:	Date	Analyzed reparation						yzed By ared By:	
		M				Spike		atrix			lec.
Param		Res		Units	Dil.	Amount		esult	Rec.		imit
Benzene		0.8		mg/Kg	1	1.00		00110	85		- 119.
Toluene		0.9		mg/Kg	1	1.00		00150	90		- 153.8
Ethylbenzene		0.9		mg/Kg	1	1.00		00160	94		- 126.3
Xylene Percent recovery is based	on the s	2.8		mg/Kg	1 n the spile	3.00		00410	<u>96</u>	(3.0	- 125.9
recent recovery is based	on one s			is based o	-	-	-				000
Param		MSD Result	Units	Dil.	Spike Amount	Matrix Result			Rec. Jimit	RPD	RPD
Benzene		0.910	mg/K		1.00	<0.0011			- 119.1	7	Limit 20
Toluene		0.910 0.952	mg/K		1.00	< 0.0011			- 119.1 - 153.8	6	20 20
Ethylbenzene		0.952 0.966	mg/K		1.00	< 0.0013			- 133.8 - 126.3	3	20 20
Xylene		2.94	mg/K		3.00	< 0.0010			- 125.9	$\frac{3}{2}$	20 20
Percent recovery is based	on the s	oike result			n the spike	e and spike	e duplica	ate resul	t.		
		М	S	MSD			Spike	MS	MSD	F	lec.
Surrogate		Res	ult I	Result	Units		mount	Rec.	Rec.		imit
Trifluorotoluene (TFT)		0.6	51	0.662	mg/Kg	1	1	65	66	51 -	109.6
4-Bromofluorobenzene (4-	BFB)	0.7	07	0.636	mg/Kg	1	1	71	64	60.3	- 124.3

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

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_	MSD			Spike	Matı			Ree			RPD
Param	Result	Units	Dil.	Amount	Resu			Lim		RPD	Limit
GRO	5.56	mg/Kg	1	10.0	<0.7		6	10 - 1	02.2	7	20
Percent recovery is based on the	spike result.	RPD is b	ased on	the spike a	nd spil	ke duplio	eate re	esult.			
	MS	s MS	SD			Spike		MS	MSD		Rec.
Surrogate	Resu			Units I	Dil.	Amoun		Rec.	Rec.		Limit
Trifluorotoluene (TFT)	0.51	4 0.5	53 n	ng/Kg	1	1		51	55	47.	2 - 84.2
4-Bromofluorobenzene (4-BFB)	0.82	.3 0.8	25 in	ng/Kg	1	1		82	82	58	- 162.6
Matrix Spike (MS-1) Spike	ed Sample: 1	39918									
QC Batch: 42607		Date An	alvzed	2007-10-	31				Anal	yzed By	: AR
Prep Batch: 36770		QC Prep	-							ared By	
										0	
	М	q			Spi	ko	Mat	triv			Rec.
Param	Res		Units	Dil.	Ame		Res		Rec		Limit
Chloride	569		ng/Kg	50	50		906.		96		85 - 11
Percent recovery is based on the											
referre recovery is based on the	-			-	-	-	ater				
_	MSD			Spike	Ma		_	Re			RPI
Param	Result	Units	Dil.	Amount	Res	sult 1	Rec.	Lir	nit	RPD	Limi
		177	20	2000	000	10.1	0.5	0 4			
Percent recovery is based on the	5740 spike result. ed Sample: 1		50 based on	5000 .the spike a	906 and spil		97 cate re		115	1	20
Matrix Spike (MS-1) Spike QC Batch: 42608	spike result.	RPD is b	alyzed:	the spike a 2007-10-	and spil				Anal	1 yzed By ared By	/: AR
Percent recovery is based on the Matrix Spike (MS-1) Spike QC Batch: 42608	spike result. ed Sample: 1	RPD is b 39928 Date An QC Prep	alyzed:	the spike a 2007-10-	and spil 31 31	ke dupli	cate r	esult.	Anal	yzed By	y: AR 7: AR
Percent recovery is based on the Matrix Spike (MS-1) Spike QC Batch: 42608 Prep Batch: 36771	spike result. ed Sample: 1 M	RPD is b 39928 Date An QC Prep S	pased on alyzed: paration:	the spike a 2007-10- 2007-10-	and spil 31 31 Spi	ke duplik	cate ro Ma	esult. trix	Anal Prep	yzed By ared By	y: AR 7: AR Rec.
Percent recovery is based on the Matrix Spike (MS-1) Spike QC Batch: 42608 Prep Batch: 36771 Param	spike result. ed Sample: 1 M Res	RPD is b 39928 Date An QC Prep S ult	pased on alyzed: paration: Units	the spike a 2007-10- 2007-10- Dil.	and spil 31 31 Spi Amo	ke dupli ke ount	Cate re Ma Res	esult. trix sult	Anal Prep Rec	yzed By ared By	y: AR 7: AR Rec. Limit
Percent recovery is based on the Matrix Spike (MS-1) Spike QC Batch: 42608 Prep Batch: 36771 Param Chloride	spike result. ed Sample: 1 M <u>Res</u> 863	RPD is b 39928 Date An QC Prep S ult 30 n	alyzed: paration: Units ng/Kg	the spike a 2007-10- 2007-10- Dil. 50	and spil 31 31 Amc 500	ke dupli ke bunt 00	Ma Res 3484	esult. trix sult 4.25	Anal Prep	yzed By ared By	y: AR 7: AR Rec. Limit
Percent recovery is based on the Matrix Spike (MS-1) Spike QC Batch: 42608 Prep Batch: 36771 Param Chloride	spike result. ed Sample: 1 M Res 863 spike result.	RPD is b 39928 Date An QC Prep S ult 30 n	alyzed: paration: Units ng/Kg	the spike a 2007-10- 2007-10- Dil. 50 the spike a	and spil 31 31 Amc 500 and spil	ke dupli bunt 00 ke dupli	Ma Res 3484	trix sult 4.25 esult.	Anal Prep Rec 103	yzed By ared By	7: AR 7: AR Rec. Limit 85 - 11
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Percent recovery is based on the Matrix Spike (MS-1) Spike QC Batch: 42608	spike result. ed Sample: 1 M Res 863 spike result. MSD	RPD is b 39928 Date An QC Prep S ult 30 n RPD is b Units	alyzed: oaration: Units ng/Kg oased on	the spike a 2007-10- 2007-10- Dil. 50 the spike a Spike	and spil 31 31 Amc 500 and spil	ke bunt 00 ke dupli trix sult	Ma Res 3484	trix sult 4.25 esult. Re Lir	Anal Prep Rec 103	yzed By ared By	7: AR 7: AR Rec. Limit 85 - 11 RPI
Percent recovery is based on the Matrix Spike (MS-1) Spike QC Batch: 42608 Prep Batch: 36771 Param Chloride Percent recovery is based on the Param	spike result. ed Sample: 1 M Res 863 spike result. MSD Result 8680	RPD is b 39928 Date An QC Prep S ult 30 n RPD is b Units mg/Kg	alyzed: oaration: Units ng/Kg oased on Dil. 50	the spike a 2007-10- 2007-10- Dil. 50 the spike a Spike Amount 5000	and spil 31 31 Amo 500 and spil Ma Res 348	ke bunt 00 ke dupli trix sult 4.25	Ma Res 348 cate r Rec. 104	trix sult 4.25 esult. Re Lir 85 -	Anal Prep Rec 103 ec. nit	yzed By ared By 2. 3 RPD	7: AR Rec. Limit 85 - 11 RPI Limi
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Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

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Work Order: 7102212 Rock Queen Unit #7

Page Number: 13 of 15

		MSD		Spike	Matrix	Rec.		RPD
Param		Result	Units	Dil. Amoun		Rec. Limit	RPD	Limit
Chloride		5010	mg/Kg	50 5000	86.663	98 85 - 115	1	20
Percent recovery is	s based or	n the spike result		sed on the spike	and spike dup	licate result.		
Standard (ICV-	1)							
QC Batch: 42274	Ł		Date Anal	lyzed: 2007-10-	23	A	nalyzed B	y: LD
			ICVs	ICVs	ICVs	Percent		D.
Danama El		Units	True	Found	Percent	Recovery		Date
Param Fla DRO	<u>ıg</u>	mg/Kg	<u>Conc.</u> 250	<u>Conc.</u> 235	Recovery 94	Limits 85 - 115		nalyzed 07-10-23
Standard (CCV	-1)							
QC Batch: 42274			Analyzed By: LD					
			CCVs	CCVs	CCVs	Percent		
			True	Found	Percent	Recovery		Date
Param Fla	ıg	Units	Conc.	Conc.	Recovery	Limits		nalyzed
DRO		mg/Kg	250	230	92	85 - 115	20	07-10-2
			Date Anal	-			nalyzed B	~
			ICVs	ICVs	ICVs	Percent		D. (-
Param	Flag	Units	True Conc.	Found Conc.	Percent Recovery	Recovery Limits		Date nalyzed
Benzene	тив	mg/Kg	0.100	0.106	106	85 - 115		07-10-2
Toluene		mg/Kg	0.100	0.107	100	85 - 115		07-10-2
Ethylbenzene		mg/Kg	0.100	0.106	106	85 - 115		07-10-2
Xylene		mg/Kg	0.300	0.322	107	85 - 115	20	07-10-2
Standard (CCV	-1)							
QC Batch: 42329			Date Anal	lyzed: 2007-10-	Analyzed By: DC			
			CCVs	CCVs	CCVs	Percent		
			$\operatorname{True}_{\sim}$	Found	Percent	Recovery		Date
_	Flag	Units	Conc.	Conc.	Recovery			nalyzed
Param		mg/Kg	0.100	$\begin{array}{c} 0.0855\\ 0.0864\end{array}$	86	85 - 115		07-10-2 07-10-2
Benzene				11 11864	86	85 - 115	20	urz_10_2
Benzene Toluene		mg/Kg	0.100			05 115		
Benzene Toluene Ethylbenzene		mg/Kg mg/Kg	0.100	0.0862	86	85 - 115	20	07-10-2
Benzene Toluene		mg/Kg				85 - 115 85 - 115	20	
Benzene Toluene Ethylbenzene		mg/Kg mg/Kg	0.100	0.0862	86		20	07-10-2

Report Date: November 1, 2007 3130				Work Order: 71 Rock Queen Un	Page Number: 14 of 15			
Param	Flag	Units	ICVs True Conc.	ICVs Found Conc.	ICVs Percent Recovery	Percent Recovery Limits	Date Analyzed	
GRO		mg/Kg	1.00	0.926	93	85 - 115	2007-10-23	
Standard	(CCV-1)							
QC Batch: 42333			Date Ana	alyzed: 2007-10	Analyzed By: DC			
			CCVs	CCVs	CCVs	Percent		
			True	Found	Percent	Recovery	Date	
Param	Flag	Units	Conc.	Conc.	Recovery	Limits	Analyzed	
GRO		mg/Kg	1.00	0.957	96	85 - 115	2007-10-23	
Standard	(ICV-1)							
QC Batch: 42607			Date Ana	alyzed: 2007-10	Analyzed By: AR			
			ICVs	ICVs	ICVs	Percent		
			True	Found	Percent	Recovery	Date	
Param	Flag	Units	Conc.	Conc.	Recovery	Limits	Analyzed	
Chloride	•	mg/Kg	100	99.9	100	85 - 115	2007-10-31	
Standard	(CCV-1)							
QC Batch: 42607	42607		Date Ana	alyzed: 2007-1	0-31	Anal	yzed By: AR	
			CCVs	CCVs	CCVs	Percent		
			True	Found	Percent	Recovery	Date	
Param	Flag	Units	Conc.	Conc.	Recovery	Limits	Analyzed	
Chloride		mg/Kg	100	100	100	85 - 115	2007-10-31	
Standard	(ICV-1)							
QC Batch: 42608			Date Ana	alyzed: 2007-1	0-31	Anal	yzed By: AR	
			ICVs	ICVs	ICVs	Percent		
_			True	Found	Percent	Recovery	Date	
Param	Flag	Units	Conc.	Conc.	Recovery	Limits	Analyzed	
Chloride		mg/Kg	100	100	100	85 - 115	2007-10-31	
Standard ((CCV-1)							
QC Batch:	42608		Date Ana	alyzed: 2007-1	0-31	Anal	yzed By: AR	
			CCVs	CCVs	CCVs	Percent		
			True	Found	Percent	Recovery	Date	
	Ela -	Units	Conc.	Conc.	Recovery	Limits	Analyzed	
Param Chloride	Flag	mg/Kg	100	100	100	85 - 115	2007-10-3	

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Standard ((ICV-1)							
QC Batch:	42609		Date Ana	lyzed: 2007-10	-31	Anal	yzed By: AR	
			ICVs	ICVs	ICVs	Percent		
			True	Found	Percent	Recovery	Date	
Param	\mathbf{Flag}	Units	Conc.	Conc.	Recovery	Limits	Analyzed	
Chloride		mg/Kg	100	97.8	98	85 - 115	2007-10-31	
Standard ((CCV-1)							
QC Batch:	42609		Date Ana	lyzed: 2007-10	9-31	Ana	iyzed By: AR	
			CCVs	CCVs	CCVs	Percent		
			True	Found	Percent	Recovery	Date	
Param	Flag	Units	Conc.	Conc.	Recovery	Limits	Analyzed	
Chloride		mg/Kg	100	102	102	85 - 115	2007-10-3	

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APPENDIX B PERMEABILITY/SIEVE ANALYSIS

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Hines, Joleen

From: Hines, Jolean

Sent: Monday, September 28, 2005 3:48 PM

To: 'John P Pellicer'

Subject: Cover Bucket Density & Clay K-Sat

John,

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I have attached the results for the density of the cover material 'as-is' in the 5-gal bucket, and the saturated hydraulic conductivity for the clay (remolided at 90%) Please let me know how to proceed.

Thank you,

Joleen

Jolean Hines Danlel B. Stephens & Associates Laboratory 5840 Osuna Rd., NE Albuquerque, NM 87109

505.889.7752 505.889.0258(fax) jhines@dbstephens.com www.dbstephens.com



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Daniel B. Stephens & Associates, Inc.

Data for Initial Moisture Content, Bulk Density, Porosity, and Percent Saturation

Job Name: Gandy Marley Job Number: LB05.0208.00 Sample Number: Cover (Bucket) Ring Number: N/A Depth: N/A

Test Date: 23-Sep-05

Field weight' of sample (y): 21536.00 Tare weight, ring (g): 0.00 Tare weight, cep/plets/epoxy (g): 0.00

> Dry weight of semple (g): 20511.00 Sample volume (c:n³): 14884.53 Assumed particle density: 2.85

initial Volumetric Moisture Content (% vol): 6.9 Initial Grévimetric Moisture Content (% g/g): 5.0 Dry bulk density (g/cm³): 1.38 Wet bulk density (g/cm³): 1.45 Celculated Poroally (% vol): 48.0 Percent Saturation: 14,3

Comments:

* Weight Including tares NA = Not analyzed

> Laboratory analysis by: D. O'Dowd Data entered by: D. O'Dowd Checked by: J. Hines



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Daniel B. Stephens & Associates, Inc.

Summary of Saturated Hydraulic Conductivity Tests

, ,		Kaul	Method of	f Analysis
	Sample Number	(cm/sec)	Constant Head Flexible Wall	Falling Head Flexible Wall
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SAMPLE RECEIPT F	ÓRM
CLIENT: Gandy Marley, Inc.	DATE RECEIVED: 9/16/0
PROJECT #:	
DBS&A PROJECT #:	
1) Are the custody seals on the cooler intact?	NA
Are the custody seals on the sample containers intact'	? Yes
Are there Chain of Custody(COC), or other directive sl	nipping papers? Yes
4) Is the COC complete?	See No
5) Is the COC in agreement with the samples received?	See No
6) Did all the samples arrive intact?	Yes
7) Comments	
Three samples arrived, each in full 5-gallor clay sample is being prepared today and te further instuction on the Cover and Caliche clay core sample.	sting will begin soon. Will await
lf you have any questions or concerns plea 889-7752,	se contact Joleen Hines at (505)
NOTE: Samples will be held for a period of 30 days after	the completion of testing. After
30 days samples will be disposed of locally unless DBS&A	
Signature:	
	5840 OSUNA RD NE, ALBUQUERQUE, N

provided from said testing, constitute mere test results using standardized methods, and cannot be used to disqualify DBS&A from rendering any professional or expert opinion. Because of the nature of the results of our testing, and the limited scope of the Lab's undertaking, you hereby waive any claim of conflict of interest by DBS&A in the event professional or expert opinion is requested of qualified professionals or experts within DBS&A, for or against any party. Other than the express warranty that the testing utilized under this Contract uses standard methods, DBS&A disclaims any and all other warranties of any kind whatsoever.

APPENDIX C INITIAL/FINAL C-141 & C-144

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	<u>District I</u> 1625 N. French District II	Dr., Hobbs, I	NM 88240				f New Mexi s and Natural						Form C-141 June 10, 2003	
D.	1301 W. Grand . District III	Avenue, Arte	esia, NM 88210				ervation Div						to appropriate	
No.	1000 Rio Brazos District IV	s Road, Azteo	c, NM 87410				th St. France				District (Office	in accordance e 116 on back	
	1220 S. St. Fran	cis Dr., Santa	a Fe, NM 87505	i			Fe, NM 875					th ttur	side of form	
ALC: NAME	<u></u>	ويرادت الكوييد بالشاها	، «تال <mark>يور بالكاري بالاكار</mark>	Rele	ease Notific	atio	on and Co	orrective A	ction					
N.										(AME)	NDED)			
\$							OPERA	ГOR	_	<u>`</u>	al Report		Final Repor	
A. S. Sala	Name of Co							uce Woodard						
					and, TX 79701			No. 432-686-18						
S. W. W.	Facility Nar			1 ract # /				e: Pit at Tank B	attery					
	Surface Ow	ner Privat	te		Mineral C)wner				Lease N	10			
æ					LOCA	ATIC	N OF REI	LEASE						
	Unit Letter	Section\	Township	Range	Feet from the	Nort	h/South Line	Feet from the	East/W	est Line	County			
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ý.		L	T		22 172779	L	T	J. 102 804	5 4 9		L			
N. S. Walter			Lat	nude _	<u>33.17377°</u> NAT		E OF RELI	de <u>103.804</u> EASE	-54					
	Type of Rele	ase Produc	ed Water					Release Unknow	'n	Volume F	Recovered N	lone		
	Source of Re							lour of Occurrence	-		Hour of Dis	covery	·	
i i i	Was Immedia	ate Notice (Tiven?		Unknown If YES, To	Whom?		N/A						
6 7 6			\boxtimes	No 🔲 Not Re		son, NMOCD								
「「「	By Whom?						Date and H	Iour			_ <u></u>		- <u></u>	
69	Bruce Wooda Was a Water		ched?				If YES, Vo	olume Impacting (the Water	course			· · · · · · · · · · · · · · · · · · ·	
1				Yes 🛛	No									
	If a Watercou	urse was Im	pacted, Descr	ibe Fully.	*									
			×											
1.1.1.2.2.5	Describe Cau						,,							
283	This is an his	toric pit loc	ation. Celero	acquired	from Palisades ar	id is in	the process of	closing.						
1	Describe Are													
記録で	Pit has been of pit.	dewatered a	ind visually in	npacted so	oil removed as per	Invest	tigation and Ch	aracterization Pla	ın. Soil b	orings ha	ve been plac	ed in a	nd around	
_	I hereby certi				e is true and comp									
100 - 1 - 2					nd/or file certain 1 ce of a C-141 repo									
- Bie	should their c	operations h	nave failed to	adequately	y investigate and r	emedi	ate contaminati	ion that pose a thr	reat to gro	und wate	r, surface w	iter, hi	ıman health	
					ptance of a C-141	report	does not reliev	e the operator of	responsib	ollity for c	ompliance v	vith an	y other	
W. W. Law.			777	\mathcal{T}				OIL CON	SERV	ATION	DIVISIO	DN		
	Signature:		L/Λ	\checkmark										
Sec. Land	Printed Name	Bruce W	podard				Approved by	District Supervis	sor:					
. des			<u></u>											
No.	Title: Engine	er			• <u>• • • • • • • • • • • • • • • • • • </u>		Approval Dat	te:	E	xpiration	Date:			
	E-mail Addre	ess: bwooda	ard@celeroen	ergy.com			Conditions of	f Approval:			Attached			
_	Date:	Phor	ne: (432) 686-	1883							Anacheo	Attached		
1.1	Attach Addit						L		· <u> </u>					
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~ 100	District I 1625 N. French Dr., Hobbs, NM 88240 District II				of New Mexico Is and Natural Resources						Form C-141 June 10, 2003
	 1301 W. Grand Avenue, Artesia, NM 88210 <u>District III</u> 1000 Rio Brazos Road, Aztec, NM 87410 <u>District IV</u> 1220 S. St. Francis Dr., Santa Fe, NM 87505 		1220	South	vation Div 1 St. Franc e, NM 875	is Dr.		·	District C	Office i	o appropriate n accordance 116 on back side of form
		Rele				orrective A	ction				
					OPERAT			Initia	al Report	\boxtimes	Final Report
	Name of Company: Celero Energy Address: 400 W. Illinois, Suite 16		and TX 70701			uce Woodard No. 432-686-18	83				
	Facility Name: Rock Queen Unit				Facility Type: Pit at Tank Battery						
	Surface Owner Private		Mineral C	Owner	r Lease No.						
100 C				ATIO	N OF REI	LEASE					
	Unit Letter Section Township 1 22 13S	Range 31E	Feet from the	North	/South Line	Feet from the	East/W	est Line	County Chaves		
1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	Lat	itude _	<u>33.17377°</u> NAT	TURE	Longitude <u>103.80454°</u> E OF RELEASE						
	Type of Release Produced Water		Release Unknow		vered None r of Discovery						
m	Source of Release	Unknown	lour of Occurrenc	e	Date and N/A	Hour of Disc	covery				
an a	Was Immediate Notice Given?	No 🗌 Not Re	If YES, To Larry John	Whom? son, NMOCD							
2	By Whom? Bruce Woodard		Date and H	lour			<u> </u>				
	Was a Watercourse Reached?	If YES, Vo	olume Impacting t	the Wate	rcourse.						
A mark the second	If a Watercourse was Impacted, Descri										
terretaria en la constante de	Describe Cause of Problem and Remea This is an historic pit location. Celero	he process of	closing.		•						
	Describe Area Affected and Cleanup A Pit has been dewatered and visually im pit. Site was excavated and a one foot										
1	soils from surrounding the original exc I hereby certify that the information gi	he best of my	knowledge and u	Inderstan	d that pure	suant to NM	OCD ri	iles and			
	regulations all operators are required to	otifications a	nd perform correc	ctive action	ons for rel	eases which	may er	danger			
水の電	should their operations have failed to a	the NMOCD marked as "Final Report" does not relieve the operator of liability liate contamination that pose a threat to ground water, surface water, human health t does not relieve the operator of responsibility for compliance with any other						man health			
5	for the second s	OIL CONSERVATION DIVISION									
No.	Signature:		<u>OIL CON</u>	<u>SERV</u>	ATION	DIVISIC	<u>DIN</u>				
	Printed Name: Bruce Woodard	Approved by	District Supervis	or:							
_	Title: Engineer				Approval Da	te:	E	Expiration	Date:		
ia, Charley	E-mail Address: bwoodard@celeroene	rgy.com			Conditions o	f Approval:			Attached		
F	Date: Phone: (432) 686- Attach Additional Sheets If Necesa			Ì							·
		- 5									

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Listeicet.1 1625 M. Freinch Dr., Hobbs, 2004 85240 <u>District H</u> 1304 W. Grand Avenue, Artesia, NW 66210 <u>District W</u> TOWN RED BEIZOS ROOM, AREC. NEW \$7410 District IV

10.00 Mar 20

1999 - 1994 - 1994 - 1994 - 1994 - 1994 - 1994 - 1994 - 1994 - 1994 - 1994 - 1994 - 1994 - 1994 - 1994 - 1994 -1994 - 1994 - 1994 - 1994 - 1994 - 1994 - 1994 - 1994 - 1994 - 1994 - 1994 - 1994 - 1994 - 1994 - 1994 - 1994 -1994 - 1994 - 1994 - 1994 - 1994 - 1994 - 1994 - 1994 - 1994 - 1994 - 1994 - 1994 - 1994 - 1994 - 1994 - 1994 -

State of New Mexico Energy Minerals and Natural Resources

> **(fill Conservation Division** 1220 South St. Francis Dr.

For drilling and production facilities, submit to appropriate NMOCD District Office. For downstream facilities, submit to Santa Fe

Form C-144

June 1, 2004

	auta Fe, NM 87505	
Pit or Below-Gea	de Tank Registration or Cl	osure
lis put or below-grade tand	& covered by a "general plan"? Yes 🗌	No 🔀
Type of action: Registratice of a part of	w below-grade tank 🔯 Closure of a pit or below	v-grade taak
Departure Coloro Emergy H. 1.5° Velephene:	(432) 686-16 8 3 e-i	mail address: - bwoodard@celeroenergy.com
Auldress: Alle West Minnis, Suite 1664, Mirdland, Texas 79701		
acility or well more: Rock Queen Unit Trace 77ack Gattery - APLH:	U/L or Ott/Otr	1 Sec. 22 T-13-S R-11-1
	e 33.17377 N Longitade 103.80454 V	
Sofface Owner, Federal 🔲 State 🗍 Private 🔀 Indian 🛄		
	lichow-gunde tank	
Type: Drilling 🔲 Production 🗋 Disposed 🗍	Volume:	
Workover 🔲 Emergency 🕅	Construction material:	
Lined 🕅 Unlined 🗍	Bouble-walled, with leak detection? Yes	
Linertype: None Thickness Exclamenta mit City		
Pit Volume 2.000 . 64		
	1 Less than 50 feet	(20 points)
Depth to ground water (vertical distance from bottom of pit to sensorial	50 feet or more, but less than 100 feet	(10 points)
high water elevation of ground water.)	100 feet or more	(0 points) 0
	Yes	(20 points)
Welthead protection treat. (Less three 200 feet from a private domestic	NO NO	(0 points)
white source, or less than 1000 feet from all other water sources.)		
Distance to surface wher: (horizontal distance to all wedlands, playas,	Less than 200 feet	(20 points)
researce to survice trace. (new source to an economics, passa),	200 feet or more, but less than 1000 feet	(10 points)
and the second state of th	4000 feet or more	(0 points) 0
•	Ranking Score (Total Points)	
	's relationship to other equipment and tanks. (2)	
our are burying in place) onsite 💭 offisite 🚺 If offisite, name of facility_	's relationship to other equipment and tanks. (2)	neral description of remedial action taken includ
our are burying in place) toxite [] offsite [] If offsite, name of facility_ mediation start date and end date. (4) Groundwater oncountered: No []	's relationship to other equipment and tanks. (2) 	neral description of remedial action taken includ
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bur are burying in place) busite [] offisite [] If offisite, name of facility_ emediation start date and end date. (4) Growndwater oncountered: No [] 5) Attach soil sample results and a diagram of sample locations and excava Additional Comments: This registration is for information purposes only. This pit is but of service and a work plan for closure is being prepared. Thereby certify that the information above is true and complete to the bes base been/well be constanted or closed according to NMUCID guideling Date: 46-05-2007 Printed Name/Title flemere W/welland, Emgineer Your certification and NMOCD approval of this application/closure does otherwise endanger public health or the environment. Nor does it relieve regulations.	's relationship to other equipment and tanks. (2) (3) Attach a gen (3) Attach a gen (4) Attach a g	neral description of remedial action taken includi eft. and attach sample results. in ever inventoried or registered. that the above-described pit or below-grade (previative OCD-approved plan]. See above ontents of the pit or tank contaminate ground wa c with any other federal, state, or local taws and/o

District
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

For drilling and production facilities, submit to appropriate NMOCD District Office. For downstream facilities, submit to Santa Fe office

Form C-144

June 1 2004

Is pit or below-grade tan	ade Tank Registration or Closu ak covered by a "general plan"? Yes 🗌 No or below-grade tank 🛛 Closure of a pit or below-gra	\mathbf{X}	
Operator:Celero Energy II. LPTelephon Address:400 West Illinios, Suite 1601, Midland, Texas 79701	e:(432) 686-1883e-mail address:bwo	oodward@celeroen	
Facility or well name: _Rock Queen Unit Tract 7 Tank BatteryAPI #: _ County:ChavesLatitu Surface Owner: Federal [] State [] Private 🛛 Indian []			
Pit Type: Drilling Production Disposal Workover Emergency Lined Unlined Liner type: Unknown Thickness Unknown Clay Pit Volume 2,000 bbl Disposal	Below-grade tank Volume: bbl Construction material:	-	
Depth to ground water (vertical distance from bottom of pit to seasonal high water elevation of ground water.) approximately 110 feet	Less than 50 feet 50 feet or more, but less than 100 feet 100 feet or more	(20 points) (10 points) (0 points)	0
Wellhead protection area: (Less than 200 feet from a private domestic water source, or less than 1000 feet from all other water sources.)	Yes No	(20 points) (0 points)	0
Distance to surface water: (horizontal distance to all wetlands, playas, irrigation canals, ditches, and perennial and ephemeral watercourses.)	Less than 200 feet 200 feet or more, but less than 1000 feet 1000 feet or more	(20 points)(10 points)(0 points)	0
	Ranking Score (Total Points)		0

If this is a pit closure: (1) Attach a diagram of the facility showing the pit's relationship to other equipment and tanks. (2) Indicate disposal location: (check the onsite box if your are burying in place) onsite ☐ offsite If offsite, name of facility_Gandy-Marley Landfill, Lovington, NM____. (3) Attach a general description of remedial action taken including remediation start date and end date. (4) Groundwater encountered: No Yes ☐ If yes, show depth below ground surface______ft. and attach sample results. (5) Attach soil sample results and a diagram of sample locations and excavations.

Additional Comments: Pit was constructed in the 1960s and was never inventoried or registered. This pit is out of service and a work plan has been completed and

approved for closure. In October 2007 fluids were removed from site and placed into an existing SWD system. The site was excavated and the sludge, tank bottoms and liner

were disposed of at Gandy-Marley, Inc. landfill in Lovington, New Mexico. Upon completion of the removal of the fluids the underlying soils were visually inspected for

obvious signs of impact. Approximately 440 cubic yards of soil were transported to Gandy-Marley for disposal. On October 19, 2007 and March 24, 2008, one soil boring was

placed within the pit and eleven along the perimeter to delineate the chlorides. See attached map/table showing depths and concentrations of chlorides remaining within the

pit. A one foot clay liner measuring approximately 160 feet by 100 feet was placed in the pit to a depth of 4.0 feet below the ground level to prevent further vertical migration of the chlorides. The site was then backfilled with excavation and clean soils and brought up to surface grade.

I hereby certify that the information above is true and complete to the best of my knowledge	e and belief. I further certify that the above-described pit or below-grade tank
has been/will be constructed or closed according to NMOCD guidelines 🛛, a general	permit 🔲, or an (attached) alternative OCD-approved plan 🗌.
Date:	
Printed Name/Title Bruce Woodward, Engineer Signature	
Printed Name/TitleBruce Woodward, Engineer Signature	IM MIXX
Your certification and NMOCD approval of this application/closure does not relieve the or	erator of liability should the contents of the pit or tank contaminate ground water or
otherwise endanger public health or the environment. Nor does it relieve the operator of it	

Approval:

regulations.

Printed Name/Title _____

____ Signature ____