

May 04, 2017

CHRIS GADDY

CAMBRIAN MANAGEMENT, LTD

P.O. BOX 272

MIDLAND, TEXAS 79702

RE: OJO CHISO SWD #1**HOBBS OCD**

MAY 08 2017

RECEIVED

GRAMMA RIDGE DISPOSAL, LLC.

30-025-24459

Enclosed are the results of analyses for samples received by the laboratory on 04/25/17 16:50.

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

Cardinal Laboratories is accredited 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)
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,



Celey D. Keene

Lab Director/Quality Manager

Analytical Results For:

CAMBRIAN MANAGEMENT, LTD
P.O. BOX 272
MIDLAND TEXAS, 79702

Project: OJO CHISO SWD #1
Project Number: OJO CHISOS SWD #1
Project Manager: CHRIS GADDY
Fax To: (432) 570-0102

Reported:
04-May-17 16:19

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
DEVONIAN PRODUCED WATER	H701100-01	Wastewater	22-Apr-17 10:00	25-Apr-17 16:50

Cardinal Laboratories

*=Accredited Analyte

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 Project Manager: CHRIS GADDY
 Fax To: (432) 570-0102

 Reported:
 04-May-17 16:19

DEVONIAN PRODUCED WATER
H701100-01 (Wastewater)

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Analyst	Analyzed	Method	Notes
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Cardinal Laboratories
Inorganic Compounds

Alkalinity, Bicarbonate	376		5.00	mg/L	1	7041918	HM	28-Apr-17	310.1	
Alkalinity, Carbonate	<1.00		1.00	mg/L	1	7041918	HM	28-Apr-17	310.1	
Chloride*	82000		4.00	mg/L	1	7042506	AC	01-May-17	4500-Cl-B	
Conductivity*	235000		1.00	uS/cm	1	7042707	AC	27-Apr-17	120.1	
pH*	6.20		0.100	pH Units	1	7042622	AC	26-Apr-17	150.1	
Sulfate*	1830		250	mg/L	25	7042613	AC	26-Apr-17	375.4	
TDS*	126000		5.00	mg/L	1	7042711	AC	01-May-17	160.1	
Alkalinity, Total*	308		4.00	mg/L	1	7041918	HM	28-Apr-17	310.1	

Petroleum Hydrocarbons by GC FID

GRO C6-C10	1.19		1.00	mg/L	0.1	7042601	MS	26-Apr-17	8015B	
DRO >C10-C28	6.78		1.00	mg/L	0.1	7042601	MS	26-Apr-17	8015B	
EXT DRO >C28-C36	<1.00		1.00	mg/L	0.1	7042601	MS	26-Apr-17	8015B	
Surrogate: 1-Chlorooctane			95.0 %	37.1-138		7042601	MS	26-Apr-17	8015B	
Surrogate: 1-Chlorooctadecane			97.3 %	44.6-151		7042601	MS	26-Apr-17	8015B	

Green Analytical Laboratories
Total Recoverable Metals by ICP (E200.7)

Calcium*	7870		10.0	mg/L	100	B704200	JDA	01-May-17	EPA200.7	
Magnesium*	4190		10.0	mg/L	100	B704200	JDA	01-May-17	EPA200.7	
Potassium*	1210		100	mg/L	100	B704200	JDA	01-May-17	EPA200.7	
Sodium*	33100		100	mg/L	100	B704200	JDA	01-May-17	EPA200.7	

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MIDLAND TEXAS, 79702

Project: OJO CHISO SWD #1
Project Number: OJO CHISOS SWD #1
Project Manager: CHRIS GADDY
Fax To: (432) 570-0102

Reported:
04-May-17 16:19

Inorganic Compounds - Quality Control
Cardinal Laboratories

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch 7041918 - General Prep - Wet Chem
Blank (7041918-BLK1)

Prepared & Analyzed: 19-Apr-17

Alkalinity, Carbonate	ND	1.00	mg/L							
Alkalinity, Bicarbonate	10.0	5.00	mg/L							
Alkalinity, Total	8.00	4.00	mg/L							

LCS (7041918-BS1)

Prepared & Analyzed: 19-Apr-17

Alkalinity, Carbonate	ND	1.00	mg/L				80-120			
Alkalinity, Bicarbonate	132	5.00	mg/L				80-120			
Alkalinity, Total	108	4.00	mg/L	100		108	80-120			

LCS Dup (7041918-BSD1)

Prepared & Analyzed: 19-Apr-17

Alkalinity, Carbonate	ND	1.00	mg/L				80-120		20	
Alkalinity, Bicarbonate	127	5.00	mg/L				80-120	3.86	20	
Alkalinity, Total	104	4.00	mg/L	100		104	80-120	3.77	20	

Batch 7042506 - General Prep - Wet Chem
Blank (7042506-BLK1)

Prepared & Analyzed: 27-Apr-17

Chloride	ND	4.00	mg/L							
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LCS (7042506-BS1)

Prepared & Analyzed: 27-Apr-17

Chloride	108	4.00	mg/L	100		108	80-120			
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LCS Dup (7042506-BSD1)

Prepared & Analyzed: 27-Apr-17

Chloride	104	4.00	mg/L	100		104	80-120	3.77	20	
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Batch 7042613 - General Prep - Wet Chem
Blank (7042613-BLK1)

Prepared & Analyzed: 26-Apr-17

Sulfate	ND	10.0	mg/L							
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 MIDLAND TEXAS, 79702

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 Project Number: OJO CHISOS SWD #1
 Project Manager: CHRIS GADDY
 Fax To: (432) 570-0102

 Reported:
 04-May-17 16:19

Inorganic Compounds - Quality Control
Cardinal Laboratories

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 7042613 - General Prep - Wet Chem										
LCS (7042613-BS1)				Prepared & Analyzed: 26-Apr-17						
Sulfate	20.1	10.0	mg/L	20.0		101	80-120			
LCS Dup (7042613-BSD1)				Prepared & Analyzed: 26-Apr-17						
Sulfate	19.8	10.0	mg/L	20.0		99.0	80-120	1.55	20	
Batch 7042622 - General Prep - Wet Chem										
LCS (7042622-BS1)				Prepared & Analyzed: 26-Apr-17						
pH	7.12		pH Units	7.00		102	90-110			
Duplicate (7042622-DUP1)				Source: H700900-01		Prepared & Analyzed: 26-Apr-17				
pH	7.64	0.100	pH Units		7.51			1.72	20	
Batch 7042707 - General Prep - Wet Chem										
LCS (7042707-BS1)				Prepared & Analyzed: 27-Apr-17						
Conductivity	488		uS/cm	500		97.6	80-120			
Duplicate (7042707-DUP1)				Source: H701103-01		Prepared & Analyzed: 27-Apr-17				
Conductivity	93200	1.00	uS/cm		95400			2.33	20	
Batch 7042711 - Filtration										
Blank (7042711-BLK1)				Prepared: 28-Apr-17 Analyzed: 01-May-17						
TDS	ND	5.00	mg/L							

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 Reported:
 04-May-17 16:19

Inorganic Compounds - Quality Control
Cardinal Laboratories

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC Limits	RPD Limit	Notes
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Batch 7042711 - Filtration
LCS (7042711-BS1)

Prepared: 28-Apr-17 Analyzed: 01-May-17

TDS	238	5.00	mg/L	213	112	80-120
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Duplicate (7042711-DUP1)

Source: H701100-01

Prepared: 28-Apr-17 Analyzed: 01-May-17

TDS	131000	5.00	mg/L	126000	3.99	20
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Reported:
04-May-17 16:19

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
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Batch 7042601 - General Prep - Organics
Blank (7042601-BLK1)

Prepared & Analyzed: 26-Apr-17

GRO C6-C10	ND	1.00	mg/L							
DRO >C10-C28	ND	1.00	mg/L							
EXT DRO >C28-C35	ND	1.00	mg/L							
EXT DRO >C28-C36	ND	1.00	mg/L							
Surrogate: 1-Chlorooctane	4.39		mg/L	5.00		87.9	37.1-138			
Surrogate: 1-Chlorooctadecane	4.72		mg/L	5.00		94.3	44.6-151			

LCS (7042601-BS1)

Prepared & Analyzed: 26-Apr-17

GRO C6-C10	47.1	1.00	mg/L	50.0		94.3	72.8-108			
DRO >C10-C28	49.1	1.00	mg/L	50.0		98.3	77.5-117			
EXT DRO >C28-C35	ND	1.00	mg/L	0.00			0-0			
Surrogate: 1-Chlorooctane	4.70		mg/L	5.00		94.0	37.1-138			
Surrogate: 1-Chlorooctadecane	5.12		mg/L	5.00		102	44.6-151			

LCS Dup (7042601-BSD1)

Prepared & Analyzed: 26-Apr-17

GRO C6-C10	49.1	1.00	mg/L	50.0		98.1	72.8-108	3.99	12	
DRO >C10-C28	51.4	1.00	mg/L	50.0		103	77.5-117	4.57	12.1	
EXT DRO >C28-C35	0.621	1.00	mg/L	0.00			0-0		20	
Surrogate: 1-Chlorooctane	4.92		mg/L	5.00		98.3	37.1-138			
Surrogate: 1-Chlorooctadecane	5.22		mg/L	5.00		104	44.6-151			

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 Project Number: OJO CHISOS SWD #1
 Project Manager: CHRIS GADDY
 Fax To: (432) 570-0102

 Reported:
 04-May-17 16:19

Total Recoverable Metals by ICP (E200.7) - Quality Control
Green Analytical Laboratories

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch B704200 - Total Rec. 200.7/200.8/200.2
Blank (B704200-BLK1)

Prepared: 28-Apr-17 Analyzed: 01-May-17

Potassium	ND	1.00	mg/L							
Magnesium	ND	0.100	mg/L							
Calcium	ND	0.100	mg/L							
Sodium	ND	1.00	mg/L							

LCS (B704200-BS1)

Prepared: 28-Apr-17 Analyzed: 01-May-17

Potassium	8.36	1.00	mg/L	8.00		104	85-115			
Calcium	4.07	0.100	mg/L	4.00		102	85-115			
Sodium	6.81	1.00	mg/L	6.48		105	85-115			
Magnesium	20.7	0.100	mg/L	20.0		104	85-115			

LCS Dup (B704200-BSD1)

Prepared: 28-Apr-17 Analyzed: 01-May-17

Potassium	8.32	1.00	mg/L	8.00		104	85-115	0.396	20	
Magnesium	20.8	0.100	mg/L	20.0		104	85-115	0.274	20	
Sodium	6.83	1.00	mg/L	6.48		105	85-115	0.275	20	
Calcium	4.07	0.100	mg/L	4.00		102	85-115	0.0739	20	

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Celey D. Keene, Lab Director/Quality Manager

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

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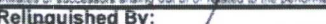



Celey D. Keene, Lab Director/Quality Manager



Page 10 of 10

Company Name: CAMBRIAN MGMT				BILL TO				ANALYSIS REQUEST																			
Project Manager: CHRIS GADDY				P.O. #:				<div style="display: flex; align-items: center;"> <div style="writing-mode: vertical-rl; transform: rotate(180deg); padding: 5px;">TPH 2015</div> <div style="writing-mode: vertical-rl; transform: rotate(180deg); padding: 5px;">Cation / Anion</div> </div>																			
Address: 415 WEST WALL ST SUITE 900				Company:																							
City: MIDLAND State: TX Zip: 79701				Attn:																							
Phone #: 432-620-0746 Fax #:				Address:																							
Project #: Project Owner:				City:																							
Project Name: OSO CHISO SUD #1				State: Zip:																							
Project Location: DELAWARE BASIN				Phone #:																							
Sampler Name: DAVID HINES				Fax #:																							
FOR LAB USE ONLY																											
Lab I.D.		Sample I.D.		(G)RAB OR (C)OMP.		# CONTAINERS		MATRIX				PRESERV.		SAMPLING													
								GROUNDWATER WASTEWATER SOIL OIL SLUDGE OTHER				ACID/BASE: HCL ICE / COOL OTHER		DATE TIME													
H701180		1 DEVONIAN Produced WATER		7		7		✓						4/22/17 10:00AM ✓													

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Relinquished By: 		Received By: 		Phone Result: <input type="checkbox"/> Yes <input type="checkbox"/> No Add'l Phone #: _____	
Date: 4/24/17		Date: 4/25/17		Fax Result: <input type="checkbox"/> Yes <input type="checkbox"/> No Add'l Fax #: _____	
Time: 4:00		Time: 4:50		REMARKS:	
Relinquished By: 		Received By: 		CGaddy@CAMBRIANMgmt.COM	
Delivered By: (Circle One)		Sample Condition		CHECKED BY:	
Sampler - UPS - Bus - Other:		Cool Intact		(Initials)	
- 0.30		<input type="checkbox"/> Yes <input type="checkbox"/> No		T.O. #75	
		<input type="checkbox"/> Yes <input type="checkbox"/> No		ARICKARD@CAMBRIANMgmt.COM	

† Cardinal cannot accept verbal changes. Please fax written changes to (575) 393-2326