

Ms. Olivia Yu Environmental Specialist New Mexico Oil Conservation Division – District I 1625 N. French Drive Hobbs, New Mexico 88240

Subject:

2018 Remediation Activities – Scope of Work 2018 HES Transfer Site – Vacuum Glorieta West Unit Satellite 3 NMOCD Case No. 1RP-3648 Lea County, New Mexico

Dear Ms. Yu:

Arcadis U.S., Inc. (Arcadis) has prepared this scope of work (SOW) for Chevron Environmental Management Company (CEMC) to perform environmental services for Vacuum Glorieta West Unit (VGWU) Satellite 3 (VGWU Sat 3; the Site), located in Lea County, New Mexico (Figure 1).

The specific tasks for the proposed scope of work are detailed below.

PROJECT SUMMARY

Pursuant to New Mexico Oil Conservation Division (NMOCD) requirements (NMOCD 1993), a Notification of Release and Correction (Form C-141) detailing the location, volume of release, and initial and planned cleanup efforts taken was submitted for the Site by Chevron Midcontinent Business Unit (MCBU). According to the Form C-141, a release of 11.31 bbls (bbls [42 gallons per bbl]) of produced water occurred at the site on May 16, 2015 due to significant rainfall causing the sump pump to overrun. The Form C-141 is presented in Attachment 1.

RESPONSE ACTIVITIES

Chevron MCBU personnel stopped the release and conducted the initial response activities. On March 29, 2016, Chevron personnel excavated visually affected soil in the area to a depth of approximately 1 foot and collected five discrete confirmation soil samples from the base of the excavation. Soil samples

Use or disclosure of information contained on this sheet is subject to the restriction and disclaimer located on the signature page of this document.

Arcadis U.S., Inc. 101 Creekside Ridge Court Suite 200 Roseville California 95678 Tel 916 786 0320 Fax 916 786 0366 www.arcadis.com

ENVIRONMENT

Date: August 24, 2018

Contact: Brett Krehbiel

Phone: 916.786.5382

Email: Brett.Krehbiel@arcadis.com

Our ref: B0048616

ARCADIS U.S., Inc. TX Engineering License # F-533 were submitted for the analysis of benzene, toluene, ethylbenzene, and total xylenes (collectively referred to as BTEX) in accordance with USEPA Method 8021B, Total Petroleum Hydrocarbon (TPH) Gasoline Range Organics (GRO) and Diesel Range Organics (DRO) in accordance with USEPA 8015M, and chloride in accordance with USPEA Method SM45000CI-B. Information regarding the disposal of the excavated soil was not available to Arcadis. After collecting the soil samples, the excavated area was reportedly backfilled with imported soil.

Arcadis conducted soil investigations in June 2016, September 2016 and August 2017. In 2016, five borings (VGWUSat3-01 through VGWUSat3-05) were advanced to depths ranging from 10 to 60 feet below ground surface (bgs). Two soil borings (VGWUSat3-06 and VGWUSat3-07) were advanced to 30 and 60 feet bgs, respectively, during the August 2017 investigation. Soil samples were submitted for the analysis of chloride in accordance with USEPA Method 300.0. The samples collected from 4 feet bgs at VGWUSat3-06 and VGWUSat3-07 were prioritized over all other samples collected to evaluate whether analysis of the deeper soil samples was necessary.

On December 6 and 7, 2017, Arcadis performed an electromagnetic conductivity survey over accessible areas of the Site covering approximately 3.2 acres to determine background electrical conductivity (EC) response and identify EC anomalies within the surveyed area to assess the lateral extent of possible produced water-related soil and impacts. The particularly high electrical conductivity of oil field production water makes the electromagnetic detection of produced water-related impacts in soil and groundwater a reliable approach.

INVESTIGATION RESULTS

During the initial response activities conducted by Chevron MCBU personnel, TPH DRO was detected in the samples collected from soil samples 3 and 5 at concentrations of 280 and 4,250 milligrams per kilogram (mg/kg), respectively, exceeding NMOCD soil remediation action level (SRAL) of 100 mg/kg. Chloride detections exceeded NMOCD SRAL of 600 mg/kg in the samples collected from soil samples 4 and 5 at concentrations of 60 and 928 mg/kg, respectively.

During the June and September 2016 investigation, chloride was detected at concentrations greater than the NMOCD soil remediation action level (SRAL) of 600 mg/kg for delineation in soil samples collected from all samples collected at 4 feet bgs with the exception of the sample collected from VGWUSat3-03 and VGWUSat3-04.

During the August 2017 investigation, chloride was detected at a concentration greater than the 600 mg/kg NMOCD SRAL in the sample collected at 50 feet bgs from VGWUSat3-07. All other samples were below the respective NMOCD SRAL.

The electromagnetic conductivity survey indicated elevated EC responses within the vicinity of the red outline spill extent and extends to the west (Figure 1). A perched high conductivity zone located throughout the central portion of the spill area extending from approximately 1 to 28 feet bgs, providing some vertical delineation of the elevated EC response suggesting that produced water impacts may not extend to deeper soils. Two confined "perched" high conductivity zones that extend to a maximum depth of 15 feet bgs, suggesting that produced water impacts are shallower in depth at the eastern extent of the spill.

Laboratory analytical reports are presented in Attachment 2.

SCOPE OF WORK

As discussed with yourself and Bradford Billings at the NMOCD on February 13, 2018, a mass removal approach will be exercised, due to the presence of surface and subsurface features/facilities, to remove majority of chloride impacts in soil to 4 feet bgs. Following execution of remedial activities, a letter report will be submitted to the NMOCD summarizing the assessment, electromagnetic conductivity survey and excavation activities.

Utility Determination Survey and Soil Excavation

Arcadis will conduct the following activities associated with utilities identification and excavation activities:

- Coordinating utility clearance activities (e.g. New Mexico State One Call, private locating service, Dig Plan process and wet vac).
- Potholing to expose the buried lines within or in proximity to the proposed area of excavation.
- Sidewall soil samples will be field tested for chloride content and will be used to provide guidance on if additional excavation may be necessary.
- If the field-testing results of sidewall samples are below NMOCD SRAL of 600 mg/kg or where surface or subsurface infrastructure inhibit continued excavation, field personnel will submit confirmation soil samples in laboratory-supplied sample containers, labeled, placed on ice, and provided to a New Mexico certified laboratory under chain of custody protocol. Expedited turnaround time (2 business days) laboratory analysis will be requested for all soil samples. Each sample will be analyzed for chloride by USEPA Method 300.0 or equivalent. Only the excavation sidewall samples will be collected.
- Once chloride impacted soils have been excavated, either to below the regulatory limit or to the extent possible due to the location of subsurface or surface infrastructure, a liner will be placed within the limits of the excavation footprint and clean fill will be used to backfill the excavated areas.
- The excavation will not extend within 10 feet of subsurface lines or 30 feet of surface structures.
- Excavated soil will be characterized and disposed of at regulatory approved/permitted disposal facility.

If you have any questions or comments, please contact Brett Krehbiel at 916.786.5382 or by email at brett.krehbiel@arcadis.co or Greg Cutshall at 859.287.0242 or by e-mail at greg.cutshall@arcadis.com.

Ms. Olivia Yu August 24, 2018

Sincerely,

Arcadis U.S., Inc.

of him

Brett Krehbiel Certified Project Manager

Greg Cutshall, P.G. Program Manager

Copies:

File

Enclosures:

Attachments

- 1 Notification of Release and Correction Form (Form C-141)
- 2 Laboratory Analytical Reports
- Figure
 - 1 VGWU Sat 3 Soil Analytical Results

FIGURE





FOR VERTICAL DELINEATION.

SMALL, BRIAN

CITY: MANCHESTER DIV/GROUP: ENVCAD DB: B.SMALL PM: TM C:\Users\BSSmall\OneDrive - ARCADIS\BIM 360 Docs\CHEVRON CORPORATION\VGWU Sat 3\2018\B0048626.1701\01-DWG\P-MW-Data-Fig1.dwg LAYOUT: 1 SAVED: 5/1/2018 3:05 PM ACADVER: 20.1S (LMS TECH) PAGESETUP: ---- PLOTSTYLETABLE: PLTFULL.CTB PLOTTED: 5/1/2018 3:06 PM BY:

ATTACHMENT 1

Notification of Release and Correction Form (Form C-141)



District I

1625 N. French Dr., Hobbs, NM 88240 District II 811 S. First St., Artesia, NM 88210 District III 1000 Rio Brazos Road, Aztec, NM 87410 District IV 1220 S. St. Francis Dr., Santa Fe, NM 8750 State of New Mexico Energy Minerals and Natural Resources

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

Form C-141 Revised August 8, 2011 Copy to appropriate District Office in

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

220 S. St. Fran	icis Dr., Sant	a Fe, NM 8750	5	Sa	anta Fe	, NM 875	05		
			Rel	ease Notifie	cation	and Co	orrective A	etion	
						OPERA'	FOR	🛛 Initia	al Report 🛛 Final Repo
Name of Co	ompany: C	hevron USA	Inc.		(Contact: Ed	em Sededji		
Address: 1:	5 Smith Ro	I., Midland,	TX, 7970)5	17	Telephone N	No. 432-234-44	37	
Facility Na	me: VGW	U Satellite 3			1	Facility Typ	e: Satellite		
Surface Ow	mer: New	Mexico		Mineral (Owner: N	New Mexico)	API No	. 3002531132
				100	ATION	OF REI	FASE		
Unit Letter	Section	Township	Range	Feet from the		South Line	Feet from the	East/West Line	County
3	1	18S	34E	280	North	South Barry	2080	East	Lea
			Closest	well: VGWU I				-103.5123	
and of Dala	one Dalana	orter found	_	NAT	TURE	OF REL	EASE Release: 11 bbls	of Volume I	Recovered: 0
ype of Rele	case: Refeas	se to fand				Produced V		volume r	recovered. 0
Source of Release: Sump pump Was Immediate Notice Given?							lour of Occurren 5 09:30 PM		Hour of Discovery 15 09:30 PM
Vas Immed	iate Notice] Yes [] No 🖾 Not R	equired	If YES, To	Whom?		
By Whom?						Date and I			
Vas a Water	rcourse Rea] Yes [No No		If YES, Vo	olume Impacting	the Watercourse.	
		lem and Remo due to substa		on Taken.* 1 fall causing 11	.31 bbls	of produce	d water spilled	to ground.	
The area aff	ected was a		n Glorietta	a West Unit Batte					l. The next step is for backhoe to e and Chlorides contaminants
evels. In ca emediation	se any of th	e contaminan	ts levels a	re still high, the sp	oill locati	on will be tu	med over to Che	vron management C	ompany (EMC) for further
regulations of public healt should their or the enviro	all operator h or the env operations onment. In	s are required ironment. Th have failed to	to report a e acceptar adequatel OCD acce	and/or file certain nee of a C-141 rep ly investigate and	release nort by the remediat	otifications a e NMOCD n e contaminat	nd perform corre- narked as "Final 1 ion that pose a the set the operator of	ective actions for rel Report" does not rel rreat to ground wate	suant to NMOCD rules and eases which may endanger ieve the operator of liability r, surface water, human health compliance with any other <u>DIVISION</u>
Printed Nan	ne: Edem S	ededji			5	Approved by	Environmental	Specialist:	
Fitle: HE Sj	pecialist					Approval Da	ite:	Expiration	Date:
3-mail Add	ress: etpo/a	chevron.com				Conditions c	f Approval:		Attached
Date: 05/26	5/2015		Phone: 4	32-234-4437					

Date: 05/26/2015 Phone * Attach Additional Sheets If Necessary

ATTACHMENT 2

Laboratory Analytical Reports





April 04, 2016

NICK HAMPTON Chevron - Lovington HCR 60 Box 423 Lovington, NM 88260

RE: SOIL SAMPLES

Enclosed are the results of analyses for samples received by the laboratory on 03/29/16 12:30.

Cardinal Laboratories is accredited through Texas NELAP under certificate number T104704398-15-7. 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	Haloacetic Acids (HAA-5)
Method EPA 524.2	Total Trihalomethanes (TTHM)
Method EPA 524.4	Regulated VOCs (V1, V2, V3)

Accreditation applies to public drinking water matrices.

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

Sincerely,

Celey D. Keine

Celey D. Keene Lab Director/Quality Manager



		Chevron - L NICK HAMF HCR 60 Box Lovington N	PTON x 423		
		Fax To:	None		
Received:	03/29/2016			Sampling Date:	03/29/2016
Reported:	04/04/2016			Sampling Type:	Soil
Project Name:	SOIL SAMPLES			Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN			Sample Received By:	Jodi Henson
Project Location:	NOT GIVEN				

Sample ID: VGWU SAT 3 #1 (H600656-01)

BTEX 8021B	mg/	kg	Analyze	d By: MS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	03/30/2016	ND	2.11	106	2.00	4.65	
Toluene*	<0.050	0.050	03/30/2016	ND	2.00	99.8	2.00	6.38	
Ethylbenzene*	<0.050	0.050	03/30/2016	ND	1.75	87.7	2.00	6.84	
Total Xylenes*	<0.150	0.150	03/30/2016	ND	5.39	89.8	6.00	6.36	
Total BTEX	<0.300	0.300	03/30/2016	ND					
Surrogate: 4-Bromofluorobenzene (PID	100 %	6 73.6-14	0						
Chloride, SM4500Cl-B	mg/kg		Analyzed By: AP						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	304	16.0	03/30/2016	ND	400	100	400	7.69	
TPH 8015M	mg/	kg	Analyze	d By: MS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10	<10.0	10.0	03/30/2016	ND	173	86.7	200	2.18	
DRO >C10-C28	<10.0	10.0	03/30/2016	ND	157	78.7	200	2.90	
Surrogate: 1-Chlorooctane	52.4 %	% 35-147	,						

Cardinal Laboratories

*=Accredited Analyte

Celey D. Keine

Celey D. Keene, Lab Director/Quality Manager



		Chevron - NICK HAM HCR 60 Bo Lovington	PTON		
		Fax To:	None		
Received:	03/29/2016			Sampling Date:	03/29/2016
Reported:	04/04/2016			Sampling Type:	Soil
Project Name:	SOIL SAMPLES			Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN			Sample Received By:	Jodi Henson
Project Location:	NOT GIVEN				

Sample ID: VGWU SAT 3 #2 (H600656-02)

BTEX 8021B	mg/kg		Analyze	d By: MS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	03/30/2016	ND	2.11	106	2.00	4.65	
Toluene*	<0.050	0.050	03/30/2016	ND	2.00	99.8	2.00	6.38	
Ethylbenzene*	<0.050	0.050	03/30/2016	ND	1.75	87.7	2.00	6.84	
Total Xylenes*	<0.150	0.150	03/30/2016	ND	5.39	89.8	6.00	6.36	
Total BTEX	<0.300	0.300	03/30/2016	ND					
Surrogate: 4-Bromofluorobenzene (PID	99.8 9	73.6-14	0						
Chloride, SM4500Cl-B	mg/	kg	Analyzed By: AP						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	544	16.0	03/30/2016	ND	400	100	400	7.69	
TPH 8015M	mg/	kg	Analyze	Analyzed By: MS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10	<10.0	10.0	03/30/2016	ND	173	86.7	200	2.18	
DRO >C10-C28	<10.0	10.0	03/30/2016	ND	157	78.7	200	2.90	
Surrogate: 1-Chlorooctane	79.6 9	% 35-147	,						
Surrogate: 1-Chlorooctadecane	89.2 9	28-171							

Cardinal Laboratories

*=Accredited Analyte

Celey D. Keine

Celey D. Keene, Lab Director/Quality Manager



		Chevron - NICK HAM HCR 60 Bo Lovington	PTON		
		Fax To:	None		
Received:	03/29/2016			Sampling Date:	03/29/2016
Reported:	04/04/2016			Sampling Type:	Soil
Project Name:	SOIL SAMPLES			Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN			Sample Received By:	Jodi Henson
Project Location:	NOT GIVEN				

Sample ID: VGWU SAT 3 #3 (H600656-03)

BTEX 8021B	mg/kg		Analyze	d By: MS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	03/30/2016	ND	2.11	106	2.00	4.65	
Toluene*	<0.050	0.050	03/30/2016	ND	2.00	99.8	2.00	6.38	
Ethylbenzene*	<0.050	0.050	03/30/2016	ND	1.75	87.7	2.00	6.84	
Total Xylenes*	<0.150	0.150	03/30/2016	ND	5.39	89.8	6.00	6.36	
Total BTEX	<0.300	0.300	03/30/2016	ND					
Surrogate: 4-Bromofluorobenzene (PID	100 9	73.6-14	0						
Chloride, SM4500Cl-B	mg/	kg	Analyze	d By: AP					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	464	16.0	03/30/2016	ND	400	100	400	7.69	
TPH 8015M	mg/	kg	Analyze	d By: MS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10	<10.0	10.0	03/30/2016	ND	173	86.7	200	2.18	
DRO >C10-C28	280	10.0	03/30/2016	ND	157	78.7	200	2.90	
Surrogate: 1-Chlorooctane	75.9	% 35-147	7						
Surrogate: 1-Chlorooctadecane	100 9	6 28-171							

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*=Accredited Analyte

Celeg D. Keine

Celey D. Keene, Lab Director/Quality Manager



		Chevron - NICK HAM HCR 60 Bo Lovington	PTON		
		Fax To:	None		
Received:	03/29/2016			Sampling Date:	03/29/2016
Reported:	04/04/2016			Sampling Type:	Soil
Project Name:	SOIL SAMPLES			Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN			Sample Received By:	Jodi Henson
Project Location:	NOT GIVEN				

Sample ID: VGWU SAT 3 #4 (H600656-04)

BTEX 8021B	mg/	kg	Analyze	d By: MS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	03/30/2016	ND	2.11	106	2.00	4.65	
Toluene*	<0.050	0.050	03/30/2016	ND	2.00	99.8	2.00	6.38	
Ethylbenzene*	<0.050	0.050	03/30/2016	ND	1.75	87.7	2.00	6.84	
Total Xylenes*	<0.150	0.150	03/30/2016	ND	5.39	89.8	6.00	6.36	
Total BTEX	<0.300	0.300	03/30/2016	ND					
Surrogate: 4-Bromofluorobenzene (PID	100 %	73.6-14	0						
Chloride, SM4500Cl-B	mg/kg		Analyzed By: AP						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	640	16.0	03/30/2016	ND	400	100	400	7.69	
TPH 8015M	mg/	kg	Analyze	d By: MS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10	<10.0	10.0	03/30/2016	ND	173	86.7	200	2.18	
DRO >C10-C28	<10.0	10.0	03/30/2016	ND	157	78.7	200	2.90	
Surrogate: 1-Chlorooctane	71.4 9	% 35-147							
Surrogate: 1-Chlorooctadecane	76.3 9	% 28-171							

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*=Accredited Analyte

Celeg D. Keine

Celey D. Keene, Lab Director/Quality Manager



		Chevron - NICK HAM HCR 60 Bo Lovington	PTON		
		Fax To:	None		
Received:	03/29/2016			Sampling Date:	03/29/2016
Reported:	04/04/2016			Sampling Type:	Soil
Project Name:	SOIL SAMPLES			Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN			Sample Received By:	Jodi Henson
Project Location:	NOT GIVEN				

Sample ID: VGWU SAT 3 #5 (H600656-05)

BTEX 8021B	mg/kg		Analyzed By: MS						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	03/30/2016	ND	2.11	106	2.00	4.65	
Toluene*	<0.050	0.050	03/30/2016	ND	2.00	99.8	2.00	6.38	
Ethylbenzene*	0.050	0.050	03/30/2016	ND	1.75	87.7	2.00	6.84	
Total Xylenes*	<0.150	0.150	03/30/2016	ND	5.39	89.8	6.00	6.36	
Total BTEX	<0.300	0.300	03/30/2016	ND					
Surrogate: 4-Bromofluorobenzene (PID	107 9	73.6-14	0						
Chloride, SM4500Cl-B	mg/	kg	Analyzed By: AP						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	928	16.0	03/30/2016	ND	400	100	400	7.69	
TPH 8015M	mg/	kg	Analyze	d By: MS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10	<50.0	50.0	03/30/2016	ND	173	86.7	200	2.18	
DRO >C10-C28	4250	50.0	03/30/2016	ND	157	78.7	200	2.90	
Surrogate: 1-Chlorooctane	74.8	% 35-147							
Surrogate: 1-Chlorooctadecane	170 9	28-171							

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Celeg D. Keine

Celey D. Keene, Lab Director/Quality Manager



Notes and Definitions

QR-03	The RPD value for the sample duplicate or MS/MSD was outside if QC acceptance limits due to matrix interference. QC batch accepted based on LCS and/or LCSD recovery and/or RPD values.
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 SM4500CI-B does not require samples be received at or below 6°C
	Samples reported on an as received basis (wet) unless otherwise noted on report

Cardinal Laboratories

*=Accredited Analyte

Celey D. Keine

Celey D. Keene, Lab Director/Quality Manager

Laboratories

CHAIN-OF-CUSTODY AND ANALYSIS REQUEST

101 East Marland, Hobbs, NM 88240

Company Name:	2: (hevron	525-2410	BILL TO			ANALYSIS BEOLIEST	
Project Manager:			P.O. #:		-		-
Address: 56	4		Company:				
City: Lovin	-	State: NM Zip: 88240	Attn:				
Phone #:	C Fax #:		Address:		_		
Project #:	Proje	Project Owner:	City:				
Project Name:			State: Zip:				
Project Location:	2		Phone #:		_		_
Sampler Name:	Nick Hampton		Fax #:				
FOR LAB USE ONLY		MATRIX	PRESERV SAMPLING				
Lab I.D.	Sample I.D.	(G)RAB OR (C)OMI # CONTAINERS GROUNDWATER WASTEWATER SOIL OIL	SLUDGE OTHER : ACID/BASE: ICE / COOL OTHER :	TPH TPH	Benzene Chlorides		
1	VGWU Sat 3 #1		1 3 29 /	1:30 1	<		
N	VGWU Sat 3#2	G	3 29		< <		
S	VGWU Sat 3 # 3	6	b2(E	<	<		
+		G	329	<	<		
G		6 1 1	62/e	<	<		
analyzes. All claims includir service. In no event shall Ci affiliates or successors ansi	ses. All claims including those for negligence and any other cause whate as. In no event shall Caudinal be liable for incidental or consequental dan es or successors ansing out of or related to the performance of services		and received by Cardinal within 30 days after co- s, loss of use, or loss of profits incurred by client m is based upon any of the above stated reason	impletion of the applicable It. its subsidiaries. Its or otherwise.			
Relinquished By: Nucle 79 Relinquished By:	and	Date: 3/29/16 Received By:	Denson R	Phone Result: [Fax Result: [REMARKS:	□ Yes □ No	Add'l Phone #: Add'l Fax #:	
Delivered Ry.	Delivered By: (Circle One)	Cample Can					
Sampler - LIPS - Rus - Other	- Rue - Other	1 10 Cool Intact	Initials)				
10.000		-	to HV				

Page 8 of 8

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

Analytical Report 532368

for ARCADIS

Project Manager: Arti Patel

Chevron Sites

713.953.4841

21-JUL-16

Collected By: Client





1211 W. Florida Ave, Midland TX 79701

Xenco-Houston (EPA Lab code: TX00122): Texas (T104704215), Arizona (AZ0765), Florida (E871002), Louisiana (03054) Oklahoma (9218)

Xenco-Dallas (EPA Lab code: TX01468): Texas (T104704295) Xenco-Odessa (EPA Lab code: TX00158): Texas (T104704400) Xenco-San Antonio: Texas (T104704534) Xenco Phoenix (EPA Lab Code: AZ00901): Arizona(AZ0757) Xenco-Phoenix Mobile (EPA Lab code: AZ00901): Arizona (AZM757)



21-JUL-16

FRORMORI D

Project Manager: **Arti Patel ARCADIS** 1004 N. Big Spring St. Midland, TX 79701

Reference: XENCO Report No(s): **532368** Chevron Sites Project Address: Hobbs, NM

Arti Patel:

We are reporting to you the results of the analyses performed on the samples received under the project name referenced above and identified with the XENCO Report Number(s) 532368. All results being reported under this Report Number apply to the samples analyzed and properly identified with a Laboratory ID number. Subcontracted analyses are identified in this report with either the NELAC certification number of the subcontract lab in the analyst ID field, or the complete subcontracted report attached to this report.

Unless otherwise noted in a Case Narrative, all data reported in this Analytical Report are in compliance with NELAC standards. The uncertainty of measurement associated with the results of analysis reported is available upon request. Should insufficient sample be provided to the laboratory to meet the method and NELAC Matrix Duplicate and Matrix Spike requirements, then the data will be analyzed, evaluated and reported using all other available quality control measures.

The validity and integrity of this report will remain intact as long as it is accompanied by this letter and reproduced in full, unless written approval is granted by XENCO Laboratories. This report will be filed for at least 5 years in our archives after which time it will be destroyed without further notice, unless otherwise arranged with you. The samples received, and described as recorded in Report No. 532368 will be filed for 60 days, and after that time they will be properly disposed without further notice, unless otherwise arranged with you. We reserve the right to return to you any unused samples, extracts or solutions related to them if we consider so necessary (e.g., samples identified as hazardous waste, sample sizes exceeding analytical standard practices, controlled substances under regulated protocols, etc).

We thank you for selecting XENCO Laboratories to serve your analytical needs. If you have any questions concerning this report, please feel free to contact us at any time.

Respectfully,

Huns Hoah

Kelsey Brooks Project Manager

Recipient of the Prestigious Small Business Administration Award of Excellence in 1994. Certified and approved by numerous States and Agencies. A Small Business and Minority Status Company that delivers SERVICE and QUALITY

Houston - Dallas - Odessa - San Antonio - Tampa - Lakeland - Atlanta - Phoenix - Oklahoma - Latin America



Sample Cross Reference 532368



ARCADIS, Midland, TX

Sample Id	Matrix	Date Collected	Sample Depth	Lab Sample Id
STATEA-10-04 4'	S	06-24-16 00:00	- 4 ft	532368-001
STATEA-10-04 10'	S	06-24-16 00:00	- 10 ft	532368-002
STATEA-10-04 20'	S	06-24-16 00:00	- 20 ft	532368-003
STATEA-10-04 30'	S	06-24-16 00:00	- 30 ft	532368-004
STATEA-10-03 4'	S	06-24-16 00:00	- 4 ft	532368-005
STATEA-10-03 10'	S	06-24-16 00:00	- 10 ft	532368-006
STATEA-10-03 20'	S	06-24-16 00:00	- 20 ft	532368-007
STATEA-10-03 30'	S	06-24-16 00:00	- 30 ft	532368-008
STATEA-10-01 4'	S	06-24-16 00:00	- 4 ft	532368-009
STATEA-10-01 10'	S	06-24-16 00:00	- 10 ft	532368-010
STATEA-10-01 20'	S	06-24-16 00:00	- 20 ft	532368-011
STATEA-10-01 30'	S	06-24-16 00:00	- 30 ft	532368-012
STATEA-10-02 4'	S	06-24-16 00:00	- 4 ft	532368-013
STATEA-10-02 10'	S	06-24-16 00:00	- 10 ft	532368-014
STATEA-10-02 20'	S	06-24-16 00:00	- 20 ft	532368-015
STATEA-10-02 30'	S	06-24-16 00:00	- 30 ft	532368-016
STATEA-10-02 50'	S	06-24-16 00:00	- 50 ft	532368-018
STATEA-10-02 70'	S	06-24-16 00:00	- 70 ft	532368-020
STATEA-10-05 4'	S	06-24-16 00:00	- 4 ft	532368-021
STATEA-10-05 10'	S	06-24-16 00:00	- 10 ft	532368-022
STATEA-10-05 20'	S	06-24-16 00:00	- 20 ft	532368-023
STATEA-10-05 30'	S	06-24-16 00:00	- 30 ft	532368-024
VGWUSAT3-02 4'	S	06-24-16 00:00	- 4 ft	532368-025
VGWUSAT3-02 10'	S	06-24-16 00:00	- 10 ft	532368-026
VGWUSAT3-02 20'	S	06-24-16 00:00	- 20 ft	532368-027
VGWUSAT3-02 30'	S	06-24-16 00:00	- 30 ft	532368-028
VGWUSAT3-02 60'	S	06-24-16 00:00	- 60 ft	532368-031
VGWUSAT3-04 4'	S	06-24-16 00:00	- 4 ft	532368-032
VGWUSAT3-04 30'	S	06-24-16 00:00	- 30 ft	532368-035
VGWUSAT3-01 4'	S	06-24-16 00:00	- 4 ft	532368-036
VGWUSAT3-01 10'	S	06-24-16 00:00	- 10 ft	532368-037
STATEA-10-02 40'	S	06-24-16 00:00	- 40 ft	Not Analyzed
STATEA-10-02 60'	S	06-24-16 00:00	- 60 ft	Not Analyzed
VGWUSAT3-02 40'	S	06-24-16 00:00	- 40 ft	Not Analyzed
VGWUSAT3-02 50'	S	06-24-16 00:00	- 50 ft	Not Analyzed
VGWUSAT3-04 10'	S	06-24-16 00:00	- 10 ft	Not Analyzed
VGWUSAT3-04 20'	S	06-24-16 00:00	- 20 ft	Not Analyzed
VGWUSAT3-01 20'	S	06-24-16 00:00	- 20 ft	Not Analyzed
VGWUSAT3-01 30'	S	06-24-16 00:00	- 30 ft	Not Analyzed



CASE NARRATIVE

Client Name: ARCADIS Project Name: Chevron Sites

 Project ID:
 713.953.4841

 Work Order Number(s):
 532368

Report Date: 21-JUL-16 Date Received: 06/25/2016

Sample receipt non conformances and comments:

Sample receipt non conformances and comments per sample:

None

Analytical non conformances and comments:

Batch: LBA-997612 Inorganic Anions by EPA 300/300.1

Lab Sample ID 532437-015 was randomly selected for Matrix Spike/Matrix Spike Duplicate (MS/MSD). Chloride recovered below QC limits in the Matrix Spike. Outlier/s are due to possible matrix interference. Samples in the analytical batch are: 532368-001, -002, -003, -004, -005, -006, -007, -008, -009, -010, -011, -012, -013, -014, -015, -016, -021.

The Laboratory Control Sample for Chloride is within laboratory Control Limits, therefore the data was accepted.







Lab Sample Id : 532368-001 Sample Depth : 4 ftDate Collected : 06,24,16 00,00 Date Received : 06,25,16 10,30Basis :Dry WeightAnalytical Method : Inorganic Anions by EPA 300/300.1 Seq Number ParameterPrep Method: E300P Date Prep:07,06,16 12. Prep Method: E300P Date Prep:ParameterCas Number 16887-00-6ResultUnitsAnalysis DateFlagSample Id :STATEA-10-04 4' Sample Id : 532368-001 Sample Depth : 4 ftMatrix :Soil Date Collected : 06,24,16 00,00 Date Collected : 06,25,16 10,30Basis :Wet WeightAnalytical Method : Soil pH by EPA 9045C Seq Number997530ParameterCas Number ResultNalysis DateFlagPH12408-02-58,12SU07.05.16 11.48State Prep:07.05.16 11.48Sample Id : STATEA-10-04 10' pHMatrix :Soil Date Received : 06,25.16 10.30Moisture :16.89Sample Id : STATEA-10-04 10' pHMatrix :Soil Date Received : 06,25.16 10.30% Moisture :16.89Lab Sample Id : Siz368-002 Sample Depth : 10 ftDate Received : 06,25.16 10.30Prep Method: E300P Date Prep:07.06.16 12.ParameterCas Number ResultResultUnitsAnalysis DateFlagChloride16887-00-673.7mg/kg07.06.16 12.0Sample Id :STATEA-10-04 10' Seq NumberMatrix :Soil Soil% Moisture :Sample Id :STATEA-10-04 10' Seq NumberMatrix :Soil Soil% Moisture :Sample Id :STATEA-10-04 10' <b< th=""><th>Sample Id : STATEA-10-04 4'</th><th>Matrix</th><th>: Soil</th><th></th><th>% Moisture</th><th>: 5.73</th><th></th></b<>	Sample Id : STATEA-10-04 4'	Matrix	: Soil		% Moisture	: 5.73	
Analytical Method : Inorganic Anions by EPA 300/300.1 Prep Method: E300P Seq Number 997612 Parameter Cas Number Result Units Analysis Date Flag Chloride 16887-00-6 131 mg/kg 07.06.16 19.22 Sample Id : STATEA-10-04 4' Matrix : Soil % Moisture : Lab Sample Id : STATEA-10-04 4' Date Collected : 06.24,16 00.00 Basis : Wet Weight Sample Depth : 4 ft Date Received : 06.25.16 10.30 Analysis Date Flag Parameter Cas Number Result Units Analysis Date Flag pH 12408-02-5 8.12 SU 07.05.16 11.48 Flag Sample Id : STATEA-10-04 10' Matrix : Soil % Moisture : 16.89 Lab Sample Id : STATEA-10-04 10' Matrix : Soil % Moisture : 16.89 Lab Sample Id : STATEA-10-04 10' Matrix : Soil % Moisture : 16.89 Lab Sample Id : STATEA-10-04 10' Matrix : Soil % Moisture : 16.89 Lab Sample Method : <th>-</th> <th>Date Co</th> <th>ollected : 06.24.1</th> <th>6 00.00</th> <th>Basis :</th> <th>Dry Weigh</th> <th>nt</th>	-	Date Co	ollected : 06.24.1	6 00.00	Basis :	Dry Weigh	nt
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Analytical Method : Soil pH by EPA 9045C Seq Number 997530	Lab Sample Id : 532368-002	Date Co	ollected : 06.24.1	6 00.00	Basis :	Wet Weigl	ht
Seq Number 997530	Sample Depth : 10 ft	Date Re	eceived : 06.25.1	6 10.30			
Parameter Cas Number Result Units Analysis Date Flag	• • • •	A 9045C					
	Parameter	Cas Number	Result	Units	Analysis Date	Flag	Dil
pH 12408-02-5 8.46 SU 07.05.16 11.48						0	1





Sample Id : STATEA-10-04 20' Lab Sample Id : 532368-003 Sample Depth : 20 ft		Soil 5000000000000000000000000000000000000		% Moisture Basis :	: .84 Dry Weigh	nt
Analytical Method : TPH By SW8015			0 10.50	Prep Method	l: TX1005P	,
Seq Number 997171				Date Prep:	06.28.16	
Parameter	Cas Number	Result	Units	Analysis Date	Flag	Dil
C6-C10 Gasoline Range Hydrocarbons Total TPH	C6C10GRO PHC635	16.0 16.0	mg/kg mg/kg	06.28.16 22.35 06.28.16 22.35		1 1
Sample Id : STATEA-10-04 20'	Matrix	: Soil		% Moisture	:	
Lab Sample Id : 532368-003	Date Co	ollected : 06.24.1	6 00.00	Basis :	Wet Weig	ht
Sample Depth : 20 ft	Date Re	eceived : 06.25.1	5 10.30			
Analytical Method : Soil pH by EPA 9 Seq Number 997530	045C					
Parameter	Cas Number	Result	Units	Analysis Date	Flag	Dil
pH	12408-02-5	8.99	SU	07.05.16 11.48		1
Sample Id : STATEA-10-04 30'	Matrix	: Soil		% Moisture	:	
Lab Sample Id : 532368-004	Date Co	ollected : 06.24.1	6 00.00	Basis :	Wet Weig	ht
Sample Depth : 30 ft	Date Re	eceived : 06.25.1	6 10.30			
Analytical Method : Soil pH by EPA 9 Seq Number 997530	045C					
Parameter	Cas Number	Result	Units	Analysis Date	Flag	Dil
рН	12408-02-5	8.83	SU	07.05.16 11.48		1
Sample Id : STATEA-10-03 4 '	Matrix	: Soil		% Moisture	: 3.94	
Lab Sample Id : 532368-005	Date Co	ollected : 06.24.1	6 00.00	Basis :	Dry Weigh	nt
Sample Depth : 4 ft	Date Re	eceived : 06.25.1	5 10.30			
Analytical Method : Inorganic Anions	by EPA 300/300.1			Prep Method		
Seq Number 997612				Date Prep:	07.06.16	12.00
Parameter	Cas Number	Result	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	94.3	mg/kg	07.06.16 20.09		1





Sample Id : STATEA-10-03 4'	Matrix	Don		% Moisture		1.
Lab Sample Id : 532368-005		ollected : 06.24.1		Basis :	Wet Weig	ht
Sample Depth : 4 ft	Date Re	eceived : 06.25.1	6 10.30			
Analytical Method : Soil pH by EPA 9 Seq Number 997530	045C					
Parameter	Cas Number	Result	Units	Analysis Date	Flag	Dil
pH	12408-02-5	8.63	SU	07.05.16 11.48		1
Sample Id : STATEA-10-03 10'	Matrix	Soil		% Moisture	: 6.18	
Lab Sample Id : 532368-006	Date Co	ollected : 06.24.1	6 00.00	Basis :	Dry Weig	ht
Sample Depth : 10 ft	Date Re	eceived : 06.25.1	6 10.30			
Analytical Method : Inorganic Anions	by EPA 300/300.1			Prep Method	1: E300P	
Seq Number 997612	5			Date Prep:	07.06.16	12.00
Parameter	Cas Number	Result	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	45.9	mg/kg	07.06.16 20.17		1
Sample Id : STATEA-10-03 10' Lab Sample Id : 532368-006 Sample Depth : 10 ft	Date Re	Soil Soilected : 06.24.1 eceived : 06.25.1		% Moisture Basis :	: Wet Weig	ht
Analytical Method : Soil pH by EPA 9 Seq Number 997530	U45C					
Parameter	Cas Number	Result	Units	Analysis Date	Flag	Dil
pH	12408-02-5	8.97	SU	07.05.16 11.48		1
Sample Id : STATEA-10-03 20'	Matrix	Soil		% Moisture	: 9.16	
Lab Sample Id : 532368-007		ollected : 06.24.1	6 00.00	Basis :	Dry Weig	ht
Sample Depth : 20 ft		eceived : 06.25.1			- 0	
Analytical Method : Inorganic Anions	by EPA 300/300.1			Prep Method	1: E300P	
Seq Number 997612	-			Date Prep:	07.06.16	12.00
Parameter	Cas Number	Result	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	29.5		07.06.16 20.25		





Sample Id : STATEA-10-03 20' Lab Sample Id : 532368-007 Sample Death + 20.64		ollected : 06.24.1		% Moisture Basis :	: Wet Weig	ht
Sample Depth : 20 ft		eceived : 06.25.1	5 10.30			
Analytical Method : Soil pH by EPA 9 Seq Number 997530	045C					
Parameter	Cas Number	Result	Units	Analysis Date	Flag	Dil
рН	12408-02-5	8.97	SU	07.05.16 11.48		1
Sample Id : STATEA-10-03 30'	Matrix	: Soil		% Moisture	:	
Lab Sample Id : 532368-008	Date Co	ollected : 06.24.1	5 00.00	Basis :	Wet Weig	ht
Sample Depth : 30 ft	Date Re	eceived : 06.25.1	5 10.30			
Analytical Method : Soil pH by EPA 9 Seq Number 997530	045C					
Parameter	Cas Number	Result	Units	Analysis Date	Flag	Dil
pH	12408-02-5	9.04	SU	07.05.16 11.48		1
Sample Id : STATEA-10-01 4'	Matrix :	Doll	< 00 00	% Moisture		.4
Lab Sample Id : 532368-009 Sample Depth : 4 ft		ollected : 06.24.10 eceived : 06.25.10		Basis :	Dry Weigh	IL
			10.50			
Analytical Method : Inorganic Anions	by EPA 300/300.1			Prep Method		
Seq Number 997612				Date Prep:	07.06.16	12.00
Parameter	Cas Number	Result	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	441	mg/kg	07.07.16 07.29		1
Sample Id : STATEA-10-01 4'	Matrix	: Soil		% Moisture	:	
Lab Sample Id : 532368-009		ollected : 06.24.1	5 00.00	Basis :	Wet Weig	ht
Sample Depth : 4 ft	Date Re	eceived : 06.25.1	5 10.30			
Analytical Method : Soil pH by EPA 9 Seq Number 997530	045C					
Parameter	Cas Number	Result	Units	Analysis Date	Flag	Dil





Sample Id : STATEA-10-01 10'	Matrix :	Soil		% Moisture	:	
Lab Sample Id : 532368-010		ollected : 06.24.16		Basis :	Wet Weigh	ıt
Sample Depth : 10 ft	Date Re	ceived : 06.25.16	5 10.30			
Analytical Method : Soil pH by EPA 9 Seq Number 997530	045C					
Parameter	Cas Number	Result	Units	Analysis Date	Flag	Dil
рН	12408-02-5	9.08	SU	07.05.16 11.48		1
Sample Id : STATEA-10-01 20'	Matrix :	Soil		% Moisture	:	
Lab Sample Id : 532368-011	Date Co	ollected : 06.24.16	5 00.00	Basis :	Wet Weigh	ıt
Sample Depth : 20 ft	Date Re	ceived : 06.25.16	5 10.30			
Analytical Method : Soil pH by EPA 9 Seq Number 997530	045C					
Parameter	Cas Number	Result	Units	Analysis Date	Flag	Dil
рН	12408-02-5	9.11	SU	07.05.16 11.48		1
Sample Id : STATEA-10-01 30'	Matrix :	Soil		% Moisture	:	
Lab Sample Id : 532368-012	Date Co	ollected : 06.24.16	5 00.00	Basis :	Wet Weigh	ıt
Sample Depth : 30 ft	Date Re	ceived : 06.25.16	5 10.30			
Analytical Method : Soil pH by EPA 9 Seq Number 997530	045C					
Parameter	Cas Number	Result	Units	Analysis Date	Flag	Dil
	Cas Number 12408-02-5	Result 8.82	Units SU	Analysis Date 07.05.16 11.48	Flag	Dil 1
рН		8.82				
pH Sample Id : STATEA-10-02 4'	12408-02-5 Matrix :	8.82	SU	07.05.16 11.48		1
pH Sample Id : STATEA-10-02 4' Lab Sample Id : 532368-013	12408-02-5 Matrix : Date Co	8.82 Soil	SU 5 00.00	07.05.16 11.48 % Moisture	: 9.44	1
pH Sample Id : STATEA-10-02 4' Lab Sample Id : 532368-013 Sample Depth : 4 ft Analytical Method : Inorganic Anions	12408-02-5 Matrix : Date Co Date Re	8.82 Soil ollected : 06.24.16	SU 5 00.00	07.05.16 11.48 % Moisture Basis : Prep Method	: 9.44 Dry Weigh 1: E300P	1 t
Parameter pH Sample Id : STATEA-10-02 4' Lab Sample Id : 532368-013 Sample Depth : 4 ft Analytical Method : Inorganic Anions Seq Number 997612 Parameter	12408-02-5 Matrix : Date Co Date Re	8.82 Soil ollected : 06.24.16	SU 5 00.00	07.05.16 11.48 % Moisture Basis :	: 9.44 Dry Weigh	1 t





Sample Id : STATEA-10-02 4'	Matrix :	Soil		% Moisture	:	
Lab Sample Id : 532368-013	Date Co	ollected : 06.24.1	6 00.00	Basis :	Wet Weig	ht
Sample Depth : 4 ft	Date Re	eceived : 06.25.10	6 10.30			
Analytical Method : Soil pH by EPA 9 Seq Number 997530	045C					
Parameter	Cas Number	Result	Units	Analysis Date	Flag	Dil
рН	12408-02-5	9.41	SU	07.05.16 11.48		1
Sample Id : STATEA-10-02 10'	Matrix :	Soil		% Moisture	: 9.6	
Lab Sample Id : 532368-014	Date Co	ollected : 06.24.10	6 00.00	Basis :	Dry Weigl	nt
Sample Depth : 10 ft	Date Re	ceived : 06.25.1	5 10.30			
Analytical Method : Inorganic Anions	by EPA 300/300.1			Prep Method	1: E300P	
Seq Number 997612				Date Prep:	07.06.16	12.00
Parameter	Cas Number	Result	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	131	mg/kg	07.07.16 08.39		5
Sample Id : STATEA-10-02 10'	Matrix :	Soil		% Moisture	:	
Lab Sample Id : 532368-014	Date Co	ollected : 06.24.10	6 00.00	Basis :	Wet Weig	ht
Sample Depth: 10 ft	Date Re	ceived : 06.25.1	6 10.30			
Analytical Method : Soil pH by EPA 9 Seq Number 997530	045C					
Parameter	Cas Number	Result	Units	Analysis Date	Flag	Dil
pH	12408-02-5	9.69	SU	07.05.16 11.48		1
Sample Id : STATEA-10-02 20'	Matrix :	Soil		% Moisture	: 12.62	
Lab Sample Id : 532368-015	Date Co	ollected : 06.24.1	6 00.00	Basis :	Dry Weigl	nt
Sample Depth : 20 ft	Date Re	eceived : 06.25.1	5 10.30			
Analytical Method : Inorganic Anions	by EPA 300/300.1			Prep Method	1: E300P	
Seq Number 997612	-			Date Prep:	07.06.16	12.00
Parameter	Cas Number	Result	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	316	mg/kg	07.07.16 08.47	-	5





Sample Id : STATEA-10-02 20'	Matrix :	Soil		% Moisture	:	
Lab Sample Id : 532368-015	Date Co	llected : 06.24.16	5 00.00	Basis :	Wet Weig	ht
Sample Depth : 20 ft	Date Re	ceived : 06.25.16	5 10.30			
Analytical Method : Soil pH by EPA 9 Seq Number 997530	045C					
Parameter	Cas Number	Result	Units	Analysis Date	Flag	Dil
pН	12408-02-5	9.60	SU	07.05.16 11.48		1
Sample Id : STATEA-10-02 30'	Matrix :	Soil		% Moisture	: 5.72	
Lab Sample Id : 532368-016	Date Co	llected : 06.24.16	5 00.00	Basis :	Dry Weigl	nt
Sample Depth : 30 ft	Date Re	ceived : 06.25.16	5 10.30			
Analytical Method : Inorganic Anions	by EPA 300/300.1			Prep Method	l: E300P	
Seq Number 997612				Date Prep:	07.06.16	12.00
Parameter	Cas Number	Result	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	418	mg/kg	07.07.16 08.55		5
	Madel	~		0/ Maistana		
Sample Id : STATEA-10-02 30' Lab Sample Id : 532368-016	Matrix :	Soil llected : 06.24.16	< 00.00	% Moisture Basis :	Wet Weig	ht
Sample Depth : 30 ft		ceived : 06.24.10		Dasis .	wet weig	int
Analytical Method : Soil pH by EPA 9 Seq Number 997530						
Parameter	Cas Number	Result	Units	Analysis Date	Flag	Dil
рН	12408-02-5	9.68	SU	07.05.16 11.48		1
Sample Id : STATEA-10-02 50'	Matrix :	Soil		% Moisture	:	
Lab Sample Id : 532368-018		llected : 06.24.16	5 00.00	Basis :	Wet Weig	ht
Sample Depth : 50 ft		ceived : 06.25.16			0	
~						
Analytical Method : Inorganic Anions				Prep Method	1: E300P	
				Prep Methoo Date Prep:	l: E300P 07.18.16	14.00
Analytical Method : Inorganic Anions		Result	Units	1		14.00 Dil





Sample Id : STATEA-10-02 70' Lab Sample Id : 532368-020 Sample Depth : 70 ft		Soil llected : 06.24.16 ceived : 06.25.16		% Moisture Basis :	: 6.09 Dry Weight	
Analytical Method : Inorganic Anions Seq Number 998464	by EPA 300/300.1			Prep Methoo Date Prep:	1: E300P 07.20.16 1	2.00
Parameter	Cas Number	Result	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	865	mg/kg	07.20.16 16.46		5
Sample Id : STATEA-10-05 4' Lab Sample Id : 532368-021	Matrix : Date Co	Soil llected : 06.24.16	5 00.00	% Moisture Basis :	: 3.84 Dry Weight	
Sample Depth : 4 ft		ceived : 06.25.16				
Analytical Method : Inorganic Anions Seq Number 997612	by EPA 300/300.1			Prep Methoo Date Prep:	1: E300P 07.06.16 1	2.00
Parameter	Cas Number	Result	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	47.5	mg/kg	07.07.16 09.02		1
Sample Id : STATEA-10-05 4'	Matrix :	Soil		% Moisture	:	
Lab Sample Id : 532368-021	Date Co	llected : 06.24.16	5 00.00	Basis :	Wet Weight	t
Sample Depth : 4 ft	Date Re-	ceived : 06.25.16	5 10.30			
Analytical Method : Soil pH by EPA 9 Seq Number 997531	045C					
Parameter	Cas Number	Result	Units	Analysis Date	Flag	Dil
рН	12408-02-5	8.92	SU	07.05.16 15.52		1
Sample Id : STATEA-10-05 10'	Matrix :	Soil		% Moisture	:	
Lab Sample Id : 532368-022	Date Co	llected : 06.24.16	5 00.00	Basis :	Wet Weight	t
Sample Depth : 10 ft	Date Re-	ceived : 06.25.16	5 10.30			
Analytical Method : Soil pH by EPA 9 Seq Number 997531	045C					
Parameter	Cas Number	Result	Units	Analysis Date	Flag	Dil
рН	12408-02-5	9.04	SU	07.05.16 15.52		1





Sample Id : STATEA-10-05 20' Lab Sample Id : 532368-023 Sample Depth : 20 ft		Soil bllected : 06.24.16 cceived : 06.25.16		% Moisture Basis :	: 1.61 Dry Weigh	nt
Analytical Method : Inorganic Anions Seq Number 997641	by EPA 300/300.1			Prep Methoo Date Prep:	1: E300P 07.06.16	14.00
Parameter	Cas Number	Result	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	14.2	mg/kg	07.07.16 10.21		1
Sample Id : STATEA-10-05 20'	Matrix :	Soil		% Moisture	:	
Lab Sample Id : 532368-023 Sample Depth : 20 ft		ollected : 06.24.16 ceived : 06.25.16		Basis :	Wet Weig	ht
Analytical Method : Soil pH by EPA 9 Seq Number 997531	045C					
Parameter	Cas Number	Result	Units	Analysis Date	Flag	Dil
рН	12408-02-5	9.27	SU	07.05.16 15.52		1
Sample Id : STATEA-10-05 30'	Matrix :	Soil		% Moisture	: 8.11	
Lab Sample Id : 532368-024	Date Co	ollected : 06.24.16	5 00.00	Basis :	Dry Weigh	nt
Sample Depth : 30 ft	Date Re	ceived : 06.25.16	5 10.30			
Analytical Method : Inorganic Anions	by EPA 300/300.1			Prep Method	1· E300P	
Seq Number 997641				Date Prep:	07.06.16	14.00
Parameter	Cas Number	Result	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	23.4	mg/kg	07.07.16 10.28		1
Sample Id : STATEA-10-05 30'	Matrix :	Soil		% Moisture	:	
Lab Sample Id : 532368-024		ollected : 06.24.16	5 00.00	Basis :	Wet Weig	ht
Sample Depth : 30 ft		ceived : 06.25.16			C	
Analytical Mathed Soil all her EDA O	045C					
Analytical Method : Soil pH by EPA 9 Seq Number 997531						
	Cas Number	Result	Units	Analysis Date	Flag	Dil





Sample Id : VGWUSAT3-02 4'	Matrix :	Soil		% Moisture	: 0				
Lab Sample Id : 532368-025	Date Coll	lected : 06.24.16	5 00.00	Basis :	Dry Weigh	ıt			
Sample Depth : 4 ft	Date Rec	eived : 06.25.16	5 10.30						
Analytical Method : Inorganic Anions I	by EPA 300/300.1			Prep Method	: E300P				
Seq Number 998464				Date Prep: 07.20.16 12.0					
Parameter	Cas Number	Result	Units	Analysis Date	Flag	Dil			
Chloride	16887-00-6	3340	mg/kg	07.20.16 17.09		20			
Sample Id : VGWUSAT3-02 10'	Matrix :	Soil		% Moisture	: 0				
Lab Sample Id : 532368-026	Date Coll	lected : 06.24.16	5 00.00	Basis :	Dry Weigh	ıt			
Sample Depth : 10 ft	Date Rec	eived : 06.25.16	5 10.30						
Analytical Method : Inorganic Anions I	by EPA 300/300.1			Prep Method	: E300P				
Seq Number 998464				Date Prep:	07.20.16	12.00			
Parameter	Cas Number	Result	Units	Analysis Date	Flag	Dil			
Chloride	16887-00-6	3590	mg/kg	07.20.16 17.17		20			
Lab Sample Id : 532368-027 Sample Depth : 20 ft		Date Collected : 06.24.16 00.00 Basis : Wet Date Received : 06.25.16 10.30 Figure 10.000 Figure 10.000 Figure 10.000							
Analytical Method : Inorganic Anions b	by EPA 300/300.1			Prep Method	: E300P				
Seq Number 998310									
				Date Prep:	07.18.16	14.00			
Parameter	Cas Number	Result	Units	Date Prep: Analysis Date	07.18.16 Flag	14.00 Dil			
	Cas Number 16887-00-6	Result 546	Units mg/kg	-					
Chloride				Analysis Date	Flag	Dil			
Chloride Sample Id : VGWUSAT3-02 30'	16887-00-6 Matrix :	546	mg/kg	Analysis Date 07.18.16 20.18	Flag	Dil 5			
Chloride Sample Id : VGWUSAT3-02 30' Lab Sample Id : 532368-028	16887-00-6 Matrix : Date Coll	546 Soil	mg/kg 5 00.00	Analysis Date 07.18.16 20.18 % Moisture :	Flag	Dil 5			
Chloride Sample Id : VGWUSAT3-02 30' Lab Sample Id : 532368-028 Sample Depth : 30 ft	16887-00-6 Matrix : Date Coll Date Rece	546 Soil lected : 06.24.16	mg/kg 5 00.00	Analysis Date 07.18.16 20.18 % Moisture :	Flag Wet Weig	Dil 5			
Chloride Sample Id : VGWUSAT3-02 30' Lab Sample Id : 532368-028 Sample Depth : 30 ft Analytical Method : Inorganic Anions I	16887-00-6 Matrix : Date Coll Date Rece	546 Soil lected : 06.24.16	mg/kg 5 00.00	Analysis Date 07.18.16 20.18 % Moisture : Basis :	Flag Wet Weig	Dil 5			
Lab Sample Id : 532368-028 Sample Depth : 30 ft Analytical Method : Inorganic Anions I	16887-00-6 Matrix : Date Coll Date Rece	546 Soil lected : 06.24.16	mg/kg 5 00.00	Analysis Date 07.18.16 20.18 % Moisture : Basis : Prep Method	Flag Wet Weig	Dil 5			





Sample Id :VGWUSAT3-02 60'Lab Sample Id :532368-031Sample Depth :60 ft		Soil llected : 06.24.10 ceived : 06.25.10		% Moisture Basis :	7.45 Dry Weigl	nt		
Analytical Method : Inorganic Anions Seq Number 997641	by EPA 300/300.1			Prep Method Date Prep:	: E300P 07.06.16	14.00		
Parameter	Cas Number	Result	Units	Analysis Date	Flag	Dil		
Chloride	16887-00-6	22.9	mg/kg	07.07.16 10.36		1		
Sample Id : VGWUSAT3-04 4'	Matrix :	Soil		% Moisture	:			
Lab Sample Id : 532368-032	Date Col	llected : 06.24.10	5 00.00	Basis :	Wet Weig	ht		
Sample Depth : 4 ft	Date Rec	ceived : 06.25.10	5 10.30					
Analytical Method : Inorganic Anions	by EPA 300/300.1			Prep Method				
Seq Number 998310				Date Prep:	07.18.16	14.00		
Parameter	Cas Number	Result	Units	Analysis Date	Flag	Dil		
Chloride	16887-00-6	58.4	mg/kg	07.18.16 20.34		1		
Sample Id : VGWUSAT3-04 30' Lab Sample Id : 532368-035 Sample Depth : 30 ft		Soil llected : 06.24.10 ceived : 06.25.10		% Moisture : 7.45 Basis : Dry Weight				
Analytical Method : Inorganic Anions	by EPA 300/300.1			Prep Method	: E300P			
Seq Number 997641	· · · · · · · · · · · · · · · · · · ·			Date Prep:	07.06.16	14.00		
Parameter	Cas Number	Result	Units	Analysis Date	Flag	Dil		
Chloride	16887-00-6	72.2	mg/kg	07.07.16 10.44		1		
		~		% Moisture				
Sample Id : VGWUSAT3-01 4' Lab Sample Id : 532368-036	Matrix :	Soil llected : 06.24.10	< 00 00	Basis :	Wet Weig	ht		
Sample Depth : 4 ft		ceived : $06.24.10$	Du315 .	wei weig	110			
Sample Deptil . + It	Date Rec		5 10.50					
Analytical Method : Inorganic Anions	by EPA 300/300.1			Prep Method	: E300P			
Seq Number 998310				Date Prep:	07.18.16	14.00		
Parameter	Cas Number	Result	Units	Analysis Date	Flag	Dil		
	Cubittumber	itebuit	emus	·	8			





Sample Id : VGWUSAT3-01 10	Matrix	Soil		% Moisture	: 7.45			
Lab Sample Id : 532368-037	Date Co	ollected : 06.24.16	5 00.00	Basis :	sis : Dry Weight			
Sample Depth : 10 ft	Date Re	eceived : 06.25.16	5 10.30					
Analytical Method : Inorganic Anions Seq Number 997641	Prep Method Date Prep:	1: E300P 07.06.16	14.00					
Parameter	Cas Number	Result	Units	Analysis Date	Flag	Dil		
Chloride	16887-00-6	54.4	mg/kg	07.07.16 11.07		1		



Project Id:713.953.4841Contact:Arti PatelProject Location:Hobbs, NM

Certificate of Analysis Summary 532368

ARCADIS, Midland, TX Project Name: Chevron Sites



Date Received in Lab:Sat Jun-25-16 10:30 amReport Date:21-JUL-16Project Manager:Kelsey Brooks

	Lab Id:	532368-0	532368-001		02	532368-003		532368-004		532368-005		532368-006	
Analysis Requested	Field Id:	STATEA-10	STATEA-10-04 4'		STATEA-10-04 10'		STATEA-10-04 20'		STATEA-10-04 30'		STATEA-10-03 4'		03 10'
	Depth:	4 ft	4 ft		10 ft		20 ft		30 ft		4 ft		
	Matrix:	SOIL	SOIL			SOIL		SOIL		SOIL		SOIL	
	Sampled:	Jun-24-16 0	Jun-24-16 00:00		0:00	Jun-24-16 00:00		Jun-24-16 00:00		Jun-24-16 00:00		Jun-24-16 00:00	
Percent Moisture	Extracted:												
	Analyzed:	Jul-01-16 1	Jul-01-16 17:05		Jul-01-16 17:05		Jul-01-16 17:05		Jul-01-16 17:05		7:05	Jul-01-16 17:05	
	Units/RL:	%	RL	%	RL	%	RL	%	RL	%	RL	%	RL
Percent Moisture		5.73	1.00	16.9	1.00	<1.00	1.00	5.06	1.00	3.94	1.00	6.18	1.00

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Huns Boah

Kelsey Brooks Project Manager



Project Id:713.953.4841Contact:Arti PatelProject Location:Hobbs, NM

Certificate of Analysis Summary 532368

ARCADIS, Midland, TX Project Name: Chevron Sites



Date Received in Lab:Sat Jun-25-16 10:30 amReport Date:21-JUL-16Project Manager:Kelsey Brooks

							1		1		1		
	Lab Id:	532368-0	001	532368-002		532368-003		532368-004		532368-005		532368-006	
Analysis Requested	Field Id:	STATEA-10	STATEA-10-04 4'		STATEA-10-04 10'		STATEA-10-04 20'		STATEA-10-04 30'		STATEA-10-03 4'		3 10'
Anutysis Requested	Depth:	4 ft		10 ft		20 ft		30 ft		4 ft		10 ft	
	Matrix:	ix: SOIL		SOIL		SOIL		SOIL		SOIL		SOIL	
	Sampled:	Jun-24-16 (00:00	Jun-24-16 00:00		Jun-24-16 00:00		Jun-24-16 00:00		Jun-24-16 0	00:00	Jun-24-16 00:00	
Inorganic Anions by EPA 300/300.1	Extracted:	Jul-06-16 1	Jul-06-16 12:00		Jul-06-16 12:00 Jul-06-16		2:00	Jul-06-16 1	2:00	Jul-06-16 1	2:00	Jul-06-16 12:00	
	Analyzed:	Jul-06-16 1	Jul-06-16 19:22		9:30	Jul-06-16 1	9:38	Jul-06-16 20:01		Jul-06-16 2	0:09	Jul-06-16 20:17	
	Units/RL:	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL
Chloride		131	10.6	73.7	12.0	<10.1	10.1	<10.5	10.5	94.3	10.4	45.9	10.7
Soil pH by EPA 9045C	Extracted:												
	Analyzed:	Jul-05-16 1	1:48	Jul-05-16 11:48		Jul-05-16 11:48		Jul-05-16 11:48		Jul-05-16 11:48		Jul-05-16 11:48	
	Units/RL:	SU	RL	SU	RL	SU	RL	SU	RL	SU	RL	SU	RL
pH		8.12		8.46		8.99		8.83		8.63		8.97	
TPH By SW8015B Mod	Extracted:	Jun-28-16	15:00	Jun-28-16 1	5:00	Jun-28-16 15:00		Jun-28-16 15:00		Jun-28-16 15:00		Jun-28-16 15:00	
	Analyzed:	Jun-28-16 2	20:53	Jun-28-16 2	2:10	Jun-28-16 22:35		Jun-28-16 23:01		Jun-28-16 23:27		Jun-28-16 23:55	
	Units/RL:	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL
C6-C10 Gasoline Range Hydrocarbons		<15.9	15.9	<18.0	18.0	16.0	15.1	<15.8	15.8	<15.6	15.6	<16.0	16.0
C10-C28 Diesel Range Hydrocarbons		<15.9	15.9	<18.0	18.0	<15.1	15.1	<15.8	15.8	<15.6	15.6	<16.0	16.0
Total TPH		<15.9	15.9	<18.0	18.0	16.0	15.1	<15.8	15.8	<15.6	15.6	<16.0	16.0

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Huns Boah

Kelsey Brooks Project Manager



Project Id:713.953.4841Contact:Arti PatelProject Location:Hobbs, NM

Certificate of Analysis Summary 532368

ARCADIS, Midland, TX Project Name: Chevron Sites



Date Received in Lab:Sat Jun-25-16 10:30 amReport Date:21-JUL-16Project Manager:Kelsey Brooks

	Lab Id:	532368-00	07	532368-0	08	532368-0	09	532368-0	10	532368-0	11	532368-0	12
Analysis Requested	Field Id:	STATEA-10-0	03 20'	STATEA-10-0	03 30'	STATEA-10	-01 4'	STATEA-10-0	01 10'	STATEA-10-	01 20'	STATEA-10-0	01 30'
	Depth:	20 ft		30 ft		4 ft		10 ft		20 ft		30 ft	
	Matrix:	SOIL	SOIL			SOIL		SOIL		SOIL		SOIL	
	Sampled:	Jun-24-16 0	Jun-24-16 00:00		0:00	Jun-24-16 00:00		Jun-24-16 00:00		Jun-24-16 00:00		Jun-24-16 00:00	
Percent Moisture	Extracted:												
	Analyzed:	Jul-01-16 17	Jul-01-16 17:05		Jul-01-16 17:05		Jul-01-16 17:05		Jul-01-16 17:05		7:05	Jul-01-16 17:05	
	Units/RL:	%	RL	%	RL	%	RL	%	RL	%	RL	%	RL
Percent Moisture		9.16	1.00	6.29	1.00	4.23	1.00	2.90	1.00	3.89	1.00	6.76	1.00

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Kelsey Brooks Project Manager


Certificate of Analysis Summary 532368

ARCADIS, Midland, TX Project Name: Chevron Sites



Date Received in Lab:Sat Jun-25-16 10:30 amReport Date:21-JUL-16Project Manager:Kelsey Brooks

	Lab Id:	532368-0	07	532368-0	08	532368-0	09	532368-0	10	532368-0	11	532368-0	12
		STATEA-10-		STATEA-10-0		STATEA-10-		STATEA-10-0		STATEA-10-0		STATEA-10-0	
Analysis Requested	Field Id:	STATEA-10-	03 20	STATEA-10-0	J3 30 [°]	STATEA-10-	01 4	STATEA-10-0	01 10	SIAIEA-10-0	01 20	STATEA-10-0	01 30
	Depth:	20 ft		30 ft		4 ft		10 ft		20 ft		30 ft	
	Matrix:	SOIL		SOIL		SOIL		SOIL		SOIL		SOIL	
	Sampled:	Jun-24-16 (00:00	Jun-24-16 0	0:00	Jun-24-16 0	00:00	Jun-24-16 0	0:00	Jun-24-16 0	0:00	Jun-24-16 0	0:00
Inorganic Anions by EPA 300/300.1	Extracted:	Jul-06-16 1	2:00	Jul-06-16 12	2:00	Jul-06-16 1	2:00	Jul-06-16 12	2:00	Jul-06-16 1	2:00	Jul-06-16 12	2:00
	Analyzed:	Jul-06-16 2	0:25	Jul-06-16 2	0:32	Jul-07-16 0	7:29	Jul-07-16 0'	7:52	Jul-07-16 0	8:00	Jul-07-16 08	3:23
	Units/RL:	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL
Chloride		29.5	11.0	<10.7	10.7	441	10.4	<10.3	10.3	<10.4	10.4	<10.7	10.7
Soil pH by EPA 9045C	Extracted:												
	Analyzed:	Jul-05-16 1	1:48	Jul-05-16 1	1:48	Jul-05-16 1	1:48	Jul-05-16 1	1:48	Jul-05-16 1	1:48	Jul-05-16 11	1:48
	Units/RL:	SU	RL	SU	RL	SU	RL	SU	RL	SU	RL	SU	RL
pH		8.97		9.04		8.22		9.08		9.11		8.82	
TPH By SW8015B Mod	Extracted:	Jun-28-16 1	5:00	Jun-28-16 1	5:00	Jun-28-16 1	5:00	Jun-28-16 1	5:00	Jun-28-16 1	5:00	Jun-28-16 1	5:00
	Analyzed:	Jun-29-16 (0:21	Jun-29-16 0	0:48	Jun-29-16 0	1:16	Jun-29-16 0	1:42	Jun-29-16 0	2:35	Jun-29-16 02	2:59
	Units/RL:	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL
C6-C10 Gasoline Range Hydrocarbons		<16.5	16.5	<16.0	16.0	<15.6	15.6	<15.4	15.4	<15.6	15.6	<16.1	16.1
C10-C28 Diesel Range Hydrocarbons		<16.5	16.5	<16.0	16.0	<15.6	15.6	<15.4	15.4	<15.6	15.6	<16.1	16.1
Total TPH		<16.5	16.5	<16.0	16.0	<15.6	15.6	<15.4	15.4	<15.6	15.6	<16.1	16.1

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Kelsey Brooks Project Manager



Certificate of Analysis Summary 532368

ARCADIS, Midland, TX Project Name: Chevron Sites



Date Received in Lab:Sat Jun-25-16 10:30 amReport Date:21-JUL-16Project Manager:Kelsey Brooks

	Lab Id:	532368-0	13	532368-0	14	532368-0	15	532368-0	16	532368-0	18	532368-0	20
Analysis Requested	Field Id:	STATEA-10	-02 4'	STATEA-10-	02 10'	STATEA-10-	02 20'	STATEA-10-0	02 30'	STATEA-10-	02 50'	STATEA-10-	02 70'
Analysis Kequestea	Depth:	4 ft		10 ft		20 ft		30 ft		50 ft		70 ft	
	Matrix:	SOIL		SOIL		SOIL		SOIL		SOIL		SOIL	
	Sampled:	Jun-24-16 0	0:00	Jun-24-16 0	0:00	Jun-24-16 0	0:00	Jun-24-16 0	0:00	Jun-24-16 (00:00	Jun-24-16 0	00:00
Percent Moisture	Extracted:												
	Analyzed:	Jul-01-16 1	7:05	Jul-01-16 1	7:05	Jul-01-16 1	7:05	Jul-01-16 1'	7:05	Jul-01-16 1	7:05	Jul-01-16 1	7:05
	Units/RL:	%	RL	%	RL	%	RL	%	RL	%	RL	%	RL
Percent Moisture		9.44	1.00	9.60	1.00	12.6	1.00	5.72	1.00	9.15	1.00	6.09	1.00

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Kelsey Brooks Project Manager



Certificate of Analysis Summary 532368

ARCADIS, Midland, TX Project Name: Chevron Sites



Date Received in Lab:Sat Jun-25-16 10:30 amReport Date:21-JUL-16Project Manager:Kelsey Brooks

	T I. I.I.	522269.0	12	522269.0	1.4	522269.0	1.5	522269.0	16	522268.0	10	522269.0	20
	Lab Id:	532368-0		532368-0	14	532368-0	15	532368-0	-	532368-0		532368-0	
Analysis Requested	Field Id:	STATEA-10-	-02 4'	STATEA-10-0	02 10'	STATEA-10-0	02 20'	STATEA-10-0	02 30'	STATEA-10-0	02 50'	STATEA-10-	02 70'
Analysis Requested	Depth:	4 ft		10 ft		20 ft		30 ft		50 ft		70 ft	
	Matrix:	SOIL		SOIL		SOIL		SOIL		SOIL		SOIL	
	Sampled:	Jun-24-16 (00:00	Jun-24-16 0	0:00	Jun-24-16 0	00:00	Jun-24-16 0	00:00	Jun-24-16 0	0:00	Jun-24-16 0	0:00
Inorganic Anions by EPA 300/300.1	Extracted:	Jul-06-16 1	2:00	Jul-18-16 14	4:00	Jul-20-16 1	2:00						
	Analyzed:	Jul-07-16 0	8:31	Jul-07-16 0	8:39	Jul-07-16 0	8:47	Jul-07-16 0	8:55	Jul-18-16 20):11	Jul-20-16 1	6:46
	Units/RL:	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL
Chloride		86.4	11.0	131	55.3	316	57.2	418	53.0	1630	100	865	53.2
Soil pH by EPA 9045C	Extracted:												
	Analyzed:	Jul-05-16 1	1:48										
	Units/RL:	SU	RL	SU	RL	SU	RL	SU	RL				
pH		9.41		9.69		9.60		9.68					
TPH By SW8015B Mod	Extracted:	Jun-28-16 1	5:00										
	Analyzed:	Jun-29-16 (03:25	Jun-29-16 0	3:51	Jun-29-16 0	4:17	Jun-29-16 0	4:44				
	Units/RL:	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL				
C6-C10 Gasoline Range Hydrocarbons		<16.5	16.5	<16.5	16.5	<17.2	17.2	<15.9	15.9				
C10-C28 Diesel Range Hydrocarbons		<16.5	16.5	<16.5	16.5	<17.2	17.2	<15.9	15.9				
Total TPH		<16.5	16.5	<16.5	16.5	<17.2	17.2	<15.9	15.9				

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Kelsey Brooks Project Manager



Certificate of Analysis Summary 532368

ARCADIS, Midland, TX Project Name: Chevron Sites



Date Received in Lab:Sat Jun-25-16 10:30 amReport Date:21-JUL-16Project Manager:Kelsey Brooks

	Lab Id:	532368-0	21	532368-0	22	532368-0	23	532368-0	24	532368-025	532368-026
Analysis Requested	Field Id:	STATEA-10	-05 4'	STATEA-10-	05 10'	STATEA-10-	05 20'	STATEA-10-)5 30'	VGWUSAT3-02 4'	VGWUSAT3-02 10'
Analysis Kequestea	Depth:	4 ft		10 ft		20 ft		30 ft		4 ft	10 ft
	Matrix:	SOIL		SOIL		SOIL		SOIL		SOIL	SOIL
	Sampled:	Jun-24-16 0	0:00	Jun-24-16 0	0:00	Jun-24-16 0	00:00	Jun-24-16 0	0:00	Jun-24-16 00:00	Jun-24-16 00:00
Percent Moisture	Extracted:										1
	Analyzed:	Jul-01-16 1	7:05								
	Units/RL:	%	RL	%	RL	%	RL	%	RL		
Percent Moisture		3.84	1.00	7.45	1.00	1.61	1.00	8.11	1.00		

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Kelsey Brooks Project Manager



Certificate of Analysis Summary 532368

ARCADIS, Midland, TX Project Name: Chevron Sites



Date Received in Lab:Sat Jun-25-16 10:30 amReport Date:21-JUL-16Project Manager:Kelsey Brooks

Analysis Requested Lab Id: 532368-021 532368-022 532368-023 532368-024 532368-025 532368-024 532368-025 532368-024 532368-025 532368-024 532368-025 532368-024 532368-025 532368-024 532368-025 532368-024 532368-025 532368-024 532368-025 532368-024 532368-025 532368-024 532368-024 532368-024 532368-025 532368-024 532368-024 532368-024 532368-025 532368-024 53268-024 53268-024 53268-024 53268-024 53268-024 53268-024 53268-024 53268-024 53268-024	equested Field Id: Depth: Matrix:	
Analysis Requested Depth: 4 ft 10 ft 20 ft 30 ft 4 ft 10 ft 10 ft Matrix: SOIL	equested Depth: Matrix:	
Depth: 4 ft 10 ft 20 ft 30 ft 4 ft 10 ft 10 ft Matrix: SOIL Jun-24-16 00:00 <	Depth: Matrix:	Analysis Doguested
Sampled: Jun-24-16 00:00 Jun-20-16 10:20 Jun-20-16 10:20 Jun-20-		Analysis Kequestea
Inorganic Anions by EPA 300/300.1 Extracted: Jul-06-16 12:00 Jul-06-16 14:00 Jul-06-16 14:00 Jul-06-16 14:00 Jul-06-16 14:00 Jul-06-16 14:00 Jul-06-16 14:00 Jul-07-16 10:21 Jul-07-16 10:28 Jul-20-16 12:00 Jul-20-16 17:09 <	Sampled:	
Analyzed: Jul-07-16 09:02 Jul-07-16 09:57 Jul-07-16 10:21 Jul-07-16 10:28 Jul-20-16 17:09 Jul-20	-	
Units/RL: mg/kg RL mg/kg	by EPA 300/300.1 Extracted:	Inorganic Anions by EPA 300/300.1
Chloride 47.5 10.4 <10.8	Analyzed:	
Soil pH by EPA 9045C Extracted: Jul-05-16 15:52 Jul-05-16	Units/RL:	
Analyzed: Jul-05-16 15:52 Jul-05-16 15:52 Jul-05-16 15:52 Jul-05-16 15:52 Units/RL: SU RL SU RL SU RL		Chloride
Units/RL: SU RL SU RL SU RL SU RL	EPA 9045CExtracted:	Soil pH by EPA 9045C
	Analyzed:	
pH 8.92 9.04 9.27 8.84	Units/RL:	
		ЪН
TPH By SW8015B Mod Extracted: Jun-29-16 14:00 Jun-29-16 14:00 Jun-29-16 14:00	V8015B Mod Extracted:	TPH By SW8015B Mod
Analyzed: Jun-29-16 15:39 Jun-29-16 16:59 Jun-29-16 17:26 Jun-29-16 17:53	Analyzed:	
Units/RL: mg/kg RL mg/kg RL mg/kg RL mg/kg RL	Units/RL:	
C6-C10 Gasoline Range Hydrocarbons <15.6	Iydrocarbons	C6-C10 Gasoline Range Hydrocarbons
C10-C28 Diesel Range Hydrocarbons <15.6	ydrocarbons	C10-C28 Diesel Range Hydrocarbons
Total TPH <15.6		Fotal TPH

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Kelsey Brooks Project Manager



Certificate of Analysis Summary 532368

ARCADIS, Midland, TX Project Name: Chevron Sites



Date Received in Lab:Sat Jun-25-16 10:30 amReport Date:21-JUL-16Project Manager:Kelsey Brooks

	Lab Id:	532368-0	27	532368-0	28	532368-0	31	532368-0	32	532368-0	035	532368-0	36
Analysis Requested	Field Id:	VGWUSAT3	-02 20'	VGWUSAT3	-02 30'	VGWUSAT3-	02 60'	VGWUSAT3	8-04 4'	VGWUSAT3	-04 30'	VGWUSAT3	3-01 4'
Analysis Kequestea	Depth:	20 ft		30 ft		60 ft		4 ft		30 ft		4 ft	
	Matrix:	SOIL		SOIL		SOIL		SOIL		SOIL		SOIL	
	Sampled:	Jun-24-16 0	0:00	Jun-24-16 (00:00	Jun-24-16 0	00:00	Jun-24-16 0	0:00	Jun-24-16	00:00	Jun-24-16 0	00:00
Inorganic Anions by EPA 300/300.1	Extracted:	Jul-18-16 1	4:00	Jul-18-16 1	4:00	Jul-06-16 1	4:00	Jul-18-16 1	4:00	Jul-06-16	14:00	Jul-18-16 1	4:00
	Analyzed:	Jul-18-16 2	0:18	Jul-18-16 2	0:26	Jul-07-16 1	0:36	Jul-18-16 2	0:34	Jul-07-16	10:44	Jul-18-16 2	0:42
	Units/RL:	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL
Chloride		546	50.0	635	50.0	22.9	10.8	58.4	10.0	72.2	10.8	681	50.0

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Huns Boah

Kelsey Brooks Project Manager



Certificate of Analysis Summary 532368

ARCADIS, Midland, TX Project Name: Chevron Sites



Date Received in Lab:Sat Jun-25-16 10:30 amReport Date:21-JUL-16Project Manager:Kelsey Brooks

	Lab Id:	532368-037			
Analysis Requested	Field Id:	VGWUSAT3-01 10'			
Analysis Kequestea	Depth:	10 ft			
	Matrix:	SOIL			
	Sampled:	Jun-24-16 00:00			
Inorganic Anions by EPA 300/300.1	Extracted:	Jul-06-16 14:00			
	Analyzed:	Jul-07-16 11:07			
	Units/RL:	mg/kg RL			
Chloride		54.4 10.8			

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Huns Roah

Kelsey Brooks Project Manager



Flagging Criteria



- X In our quality control review of the data a QC deficiency was observed and flagged as noted. MS/MSD recoveries were found to be outside of the laboratory control limits due to possible matrix /chemical interference, or a concentration of target analyte high enough to affect the recovery of the spike concentration. This condition could also affect the relative percent difference in the MS/MSD.
- **B** A target analyte or common laboratory contaminant was identified in the method blank. Its presence indicates possible field or laboratory contamination.
- **D** The sample(s) were diluted due to targets detected over the highest point of the calibration curve, or due to matrix interference. Dilution factors are included in the final results. The result is from a diluted sample.
- E The data exceeds the upper calibration limit; therefore, the concentration is reported as estimated.
- **F** RPD exceeded lab control limits.
- J The target analyte was positively identified below the quantitation limit and above the detection limit.
- U Analyte was not detected.
- L The LCS data for this analytical batch was reported below the laboratory control limits for this analyte. The department supervisor and QA Director reviewed data. The samples were either reanalyzed or flagged as estimated concentrations.
- **H** The LCS data for this analytical batch was reported above the laboratory control limits. Supporting QC Data were reviewed by the Department Supervisor and QA Director. Data were determined to be valid for reporting.
- K Sample analyzed outside of recommended hold time.
- JN A combination of the "N" and the "J" qualifier. The analysis indicates that the analyte is "tentatively identified" and the associated numerical value may not be consistent with the amount actually present in the environmental sample.
- ** Surrogate recovered outside laboratory control limit.
- **BRL** Below Reporting Limit.
- RL Reporting Limit

MDL Method Detection Limit	SDL Sample Detection Limit	LOD Limit of Detection
PQL Practical Quantitation Limit	MQL Method Quantitation Limit	LOQ Limit of Quantitation

- **DL** Method Detection Limit
- NC Non-Calculable
- + NELAC certification not offered for this compound.
- * (Next to analyte name or method description) = Outside XENCO's scope of NELAC accreditation

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9701 Harry Hines Blvd, Dallas, TX 75220	(214) 902 0300	(214) 351-9139
5332 Blackberry Drive, San Antonio TX 78238	(210) 509-3334	(210) 509-3335
1211 W Florida Ave, Midland, TX 79701	(432) 563-1800	(432) 563-1713
2525 W. Huntington Dr Suite 102, Tempe AZ 85282	(602) 437-0330	



Project Name: Chevron Sites

Lab Daten	# : 997171	Sample: 532368-001 / SMP	Batc	h: 1 Matrix	: 5011					
U nits:	mg/kg	Date Analyzed: 06/28/16 20:53	SU	RROGATE R	ECOVERY S	STUDY				
	ТРН В	y SW8015B Mod	Amount Found [A]	True Amount [B]	Recovery %R	Control Limits %R	Flags			
		Analytes			[D]					
1-Chloroocta	ane		101	99.9	101	70-135				
o-Terphenyl			52.5	50.0	105	70-135				
Lab Batch	# : 997171	Sample: 532368-002 / SMP	Batc	h: 1 Matrix	: Soil					
Units:	mg/kg	Date Analyzed: 06/28/16 22:10	SU	RROGATE R	ECOVERY	STUDY				
	ТРН В	y SW8015B Mod Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags			
1-Chloroocta	ane		96.5	99.9	97	70-135				
o-Terphenyl			46.9	50.0	94	70-135				
Lab Batch	#: 997171	Sample: 532368-003 / SMP	Batc	h: 1 Matrix	: Soil					
Units:	mg/kg	Date Analyzed: 06/28/16 22:35	st	RROGATE R	ECOVERY	Control Limits %R 70-135 70-135 70-135 STUDY Control Limits %R 70-135 70-135 STUDY Control Limits %R 70-135 STUDY Control Limits %R 70-135 STUDY Control Limits %R 70-135 STUDY Control Limits %R 70-135 70-135 70-135 70-135 70-135				
	TPH B	sy SW8015B Mod	Amount Found [A]	True Amount [B]	Recovery %R	Limits	Flags			
		Analytes			[D]					
1-Chloroocta	ane		94.0	99.7	94	70-135				
o-Terphenyl			44.2	49.9	89	70-135				
Lab Batch	# : 997171	Sample: 532368-004 / SMP	Batc	h: 1 Matrix	: Soil					
Units:	mg/kg	Date Analyzed: 06/28/16 23:01	SURROGATE RECOVERY STUDY							
	ТРН В	Sy SW8015B Mod Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Limits	Flags			
1-Chloroocta	ane	-	84.2	100	84	70-135				
o-Terphenyl			41.0	50.0	82	70-135				
Lab Batch	#: 997171	Sample: 532368-005 / SMP	Batc	h: 1 Matrix	: Soil	1				
U nits:	mg/kg	Date Analyzed: 06/28/16 23:27	su	RROGATE R	ECOVERY	STUDY				
	ТРН В	y SW8015B Mod Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Limits	Flags			
1-Chloroocta	ane		87.9	99.8	88	70-135				
			01.7	1 77.0	1 00	10-133				

* Surrogate outside of Laboratory QC limits

** Surrogates outside limits; data and surrogates confirmed by reanalysis

*** Poor recoveries due to dilution

Surrogate Recovery [D] = 100 * A / B



Project Name: Chevron Sites

Lab Batch	ders : 5 3236 #: 997171	Sample: 532368-006 / SMP	Batc		: 713.953.484 : Soil		
Units:	mg/kg	Date Analyzed: 06/28/16 23:55	SU	RROGATE R	ECOVERY S	STUDY Control Limits %R 70-135 70-135 STUDY Control Limits %R 70-135 70-135 70-135	
	TPH B	By SW8015B Mod	Amount Found [A]	True Amount [B]	Recovery %R	Limits	Flags
		Analytes			[D]		
1-Chloroocta	ane		92.0	99.8	92	70-135	
o-Terphenyl			44.9	49.9	90	70-135	
Lab Batch	# : 997171	Sample: 532368-007 / SMP	Batc	h: 1 Matrix	: Soil		
U nits:	mg/kg	Date Analyzed: 06/29/16 00:21	st	RROGATE R	ECOVERY S	STUDY	
	TPH B	By SW8015B Mod Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Limits	Flags
1-Chloroocta	ane		86.0	99.7	86	70-135	
o-Terphenyl			42.2	49.9	85	70-135	
Lab Batch	#: 997171	Sample: 532368-008 / SMP	Batc	h: 1 Matrix	: Soil		
Units:	mg/kg	Date Analyzed: 06/29/16 00:48	su	RROGATE R	ECOVERY S	STUDY	
	ТРН В	By SW8015B Mod	Amount Found [A]	True Amount [B]	Recovery %R	Limits	Flags
		Analytes			[D]		
1-Chloroocta	ane		89.9	99.7	90	70-135	
o-Terphenyl			43.7	49.9	88	70-135	
Lab Batch	# : 997171	Sample: 532368-009 / SMP	Batc	h: 1 Matrix	: Soil		
Units:	mg/kg	Date Analyzed: 06/29/16 01:16	st	RROGATE R	ECOVERY S	STUDY	
	ТРН В	By SW8015B Mod Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Limits	Flags
1-Chloroocta	ane		92.3	99.7	93	70-135	
o-Terphenyl			45.0	49.9	90		
Lab Batch		Sample: 532368-010 / SMP	Batc	h: 1 Matrix	: Soil		
Units:	mg/kg	Date Analyzed: 06/29/16 01:42	SU	RROGATE R	ECOVERY S	STUDY	
	TPH B	By SW8015B Mod Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Limits	Flags
1-Chloroocta	ane		85.9	99.9	86	70-135	
			05.7	77.7	00	10-155	

* Surrogate outside of Laboratory QC limits

** Surrogates outside limits; data and surrogates confirmed by reanalysis

*** Poor recoveries due to dilution

Surrogate Recovery [D] = 100 * A / B



Project Name: Chevron Sites

Lab Batch	#: 997171	Sample: 532368-011 / SMP	Batc	ch: 1 Matrix	: Soil	Control Limits %R 70-135 70-135 70-135 STUDY Control Limits %R 70-135 70-135 70-135 70-135 70-135 70-135 70-135 70-135 70-135 70-135 70-135 70-135 70-135 70-135 70-135 70-135 70-135 70-135 70-135	
U nits:	mg/kg	Date Analyzed: 06/29/16 02:35	SU	URROGATE R	ECOVERY	STUDY	
	TPH B	Sy SW8015B Mod	Amount Found [A]	True Amount [B]	Recovery %R	Limits	Flags
		Analytes			[D]		
1-Chloroocta	ane		92.8	99.8	93	70-135	
o-Terphenyl			45.9	49.9	92	70-135	
Lab Batch	#: 997171	Sample: 532368-012 / SMP	Batc	ch: 1 Matrix	: Soil		
Units:	mg/kg	Date Analyzed: 06/29/16 02:59	SU	URROGATE R	ECOVERY	STUDY	
	ТРН В	Sy SW8015B Mod Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Limits	Flags
1-Chloroocta	ane		99.9	99.9	100	70-135	
o-Terphenyl			50.1	50.0	100	70-135	
Lab Batch	#: 997171	Sample: 532368-013 / SMP	Batc	ch: 1 Matrix	: Soil	1	
Units:	mg/kg	Date Analyzed: 06/29/16 03:25	SU	URROGATE R	ECOVERY	STUDYControl Limits %R70-13570-13570-135STUDYControl Limits %R70-135	
	ТРН В	Sy SW8015B Mod Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Limits	Flags
1-Chloroocta	ane	Anarytes	96.4	99.9	96	70.125	
o-Terphenyl			48.3	50.0	90		
Lab Batch		Sample: 532368-014 / SMP	Batc			70-155	
Units:	mg/kg	Date Analyzed: 06/29/16 03:51		JRROGATE R		STUDY	
	ТРН В	Sy SW8015B Mod	Amount Found [A]	True Amount [B]	Recovery %R [D]	Limits	Flags
1-Chloroocta	ane	Analytes	94.5	99.7	95	70.135	
o-Terphenyl			46.7	49.9	93		
Lab Batch		Sample: 532368-015 / SMP	Batc		-	/0 155	
	mg/kg	Date Analyzed: 06/29/16 04:17		URROGATE R		STUDY	
Units:							
Units:	ТРН В	By SW8015B Mod	Amount Found [A]	True Amount [B]	Recovery %R	70-135 STUDY Control Limits %R 70-135 70-135 STUDY Control Limits %R Fla 70-135	
Units:		Sy SW8015B Mod Analytes	Found	Amount		Limits %R	Flags

* Surrogate outside of Laboratory QC limits

** Surrogates outside limits; data and surrogates confirmed by reanalysis

*** Poor recoveries due to dilution

Surrogate Recovery [D] = 100 * A / B



Project Name: Chevron Sites

Work Orders Lab Batch #: 99		Sample: 532368-016 / SMP	Batch	Project ID h: 1 Matrix			
Units: m	g/kg	Date Analyzed: 06/29/16 04:44	SU	RROGATE R	ECOVERY	STUDY	
	ТРН В	y SW8015B Mod	Amount Found [A]	True Amount [B]	Recovery %R	Control Limits %R	Flags
		Analytes			[D]		
1-Chlorooctane			97.7	99.8	98	70-135	
o-Terphenyl			48.7	49.9	98	70-135	
Lab Batch #: 99	97250	Sample: 532368-021 / SMP	Batcl	h: 1 Matrix	: Soil		
Units: m	g/kg	Date Analyzed: 06/29/16 15:39	SU	RROGATE R	ECOVERY S	STUDY	
	TPH B	y SW8015B Mod	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1-Chlorooctane		Analytes	92.0	99.7	92	70-135	
o-Terphenyl			46.1	49.9	92	70-135	
Lab Batch #: 99	7250	Sample: 532368-022 / SMP	Batcl			70-155	
	g/kg	Date Analyzed: 06/29/16 16:59		RROGATE R	-	STUDY	
	TPH B	y SW8015B Mod	Amount Found [A]	True Amount [B]	Recovery %R	Control Limits %R	Flags
		Analytes	[]		[D]	,	
1-Chlorooctane			91.6	99.8	92	70-135	
o-Terphenyl			45.7	49.9	92	70-135	
Lab Batch #: 99	97250	Sample: 532368-023 / SMP	Batch	h: 1 Matrix	: Soil		
Units: m	g/kg	Date Analyzed: 06/29/16 17:26	SU	RROGATE R	ECOVERY S	STUDY	
	ТРН В	y SW8015B Mod Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1-Chlorooctane		Timity cos	92.4	99.7	93	70-135	
o-Terphenyl			44.7	49.9	90	70-135	
Lab Batch #: 99	97250	Sample: 532368-024 / SMP	Batcl				
Units: m	g/kg	Date Analyzed: 06/29/16 17:53	SU	RROGATE R	ECOVERY S	STUDY	
	ТРН В	y SW8015B Mod	Amount Found [A]	True Amount [B]	Recovery %R	Control Limits %R	Flags
[Analytes			[D]		
1-Chlorooctane			94.9	99.9	95	70-135	
o-Terphenyl			47.1	50.0	94	70-135	

* Surrogate outside of Laboratory QC limits

** Surrogates outside limits; data and surrogates confirmed by reanalysis

*** Poor recoveries due to dilution

Surrogate Recovery [D] = 100 * A / B



Project Name: Chevron Sites

Units:	mg/kg	Date Analyzed: 06/28/16 19:37	SI	JRROGATE R	ECOVERY	STUDY	
		By SW8015B Mod	Amount Found [A]	True Amount [B]	Recovery %R	Control Limits %R	Flags
		Analytes			[D]		
1-Chlorooctar	ne		103	100	103	70-135	
o-Terphenyl			51.6	50.0	103	70-135	
Lab Batch #	: 997250	Sample: 710500-1-BLK / B	ELK Bate	h: 1 Matrix	: Solid		
Units:	mg/kg	Date Analyzed: 06/29/16 14:19	SU	JRROGATE R	ECOVERY	STUDY	
	ТРН В	By SW8015B Mod Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1-Chlorooctar	ne	Analytes	103	100	103	70-135	
o-Terphenyl			52.2	50.0	103	70-135	
Lab Batch #	: 997171	Sample: 710455-1-BKS / B			-	10 155	
Units:	mg/kg	Date Analyzed: 06/28/16 20:02		JRROGATE R	-	STUDY	
	TPH B	By SW8015B Mod	Amount Found [A]	True Amount [B]	Recovery %R	Control Limits %R	Flags
		Analytes	[13]		[D]	/ U K	
1-Chlorooctar	ne		124	100	124	70-135	
o-Terphenyl			56.5	50.0	113	70-135	
Lab Batch #	: 997250	Sample: 710500-1-BKS / B	KS Bate	h: 1 Matrix	: Solid		
Units:	mg/kg	Date Analyzed: 06/29/16 14:45	SU	JRROGATE R	ECOVERY	STUDY	
	TPH B	By SW8015B Mod	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1-Chlorooctar	ne	Analytes	124	100	124	70-135	
o-Terphenyl			58.7	50.0	124	70-135	
Lab Batch #	: 997171	Sample: 710455-1-BSD / B				10-155	
Units:	mg/kg	Date Analyzed: 06/28/16 20:27		JRROGATE R		STUDY	
	TPH B	Sy SW8015B Mod	Amount Found [A]	True Amount [B]	Recovery %R	Control Limits %R	Flage
		Analytes			[D]		
1-Chloroocta	ne		121	100	121	70-135	
1-Chiorooctai			121	100	121	10 155	

* Surrogate outside of Laboratory QC limits

** Surrogates outside limits; data and surrogates confirmed by reanalysis

*** Poor recoveries due to dilution

Surrogate Recovery [D] = 100 * A / B



Project Name: Chevron Sites

Units:	mg/kg	Date Analyzed: 06/29/16 15:12	SU	JRROGATE R	ECOVERY S	STUDY	
	TPH E	By SW8015B Mod	Amount Found [A]	True Amount [B]	Recovery %R	Control Limits %R	Flage
		Analytes			[D]		
1-Chlorooctar	ne		130	100	130	70-135	
o-Terphenyl			59.2	50.0	118	70-135	
Lab Batch #	997171	Sample: 532368-001 S / MS	B Batc	h: 1 Matrix	: Soil		
Units:	mg/kg	Date Analyzed: 06/28/16 21:19	SU	JRROGATE R	ECOVERY	STUDY	
	ТРН Р	By SW8015B Mod Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1-Chlorooctar	ne	1 mary tes	115	99.9	115	70-135	
o-Terphenyl			51.1	50.0	102	70-135	
Lab Batch #	997250	Sample: 532368-021 S / MS	S Batc	h: 1 Matrix	: Soil		
Units:	mg/kg	Date Analyzed: 06/29/16 16:05	su	JRROGATE R	ECOVERY	STUDY	
	TPH B	3y SW8015B Mod	Amount Found [A]	True Amount [B]	Recovery %R	Control Limits %R	Flags
		Analytes			[D]		
1-Chlorooctar	ne		110	99.9	110	70-135	
o-Terphenyl			45.1	50.0	90	70-135	
Lab Batch #	: 997171	Sample: 532368-001 SD / M	ASD Bate	h: 1 Matrix	: Soil		
Units:	mg/kg	Date Analyzed: 06/28/16 21:45	SU	JRROGATE R	ECOVERY S	STUDY	
	TPH E	By SW8015B Mod Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1-Chlorooctar	ie		123	99.8	123	70-135	
o-Terphenyl			54.4	49.9	109	70-135	
Lab Batch #	997250	Sample: 532368-021 SD / N	ASD Bate	h: 1 Matrix	: Soil	1	
Units:	mg/kg	Date Analyzed: 06/29/16 16:32	SU	JRROGATE R	ECOVERY	STUDY	
	TPH E	By SW8015B Mod	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flage
		Analytes					
1 011						1 70 125	
1-Chlorooctar	ie		109	99.7	109	70-135	

* Surrogate outside of Laboratory QC limits

** Surrogates outside limits; data and surrogates confirmed by reanalysis

*** Poor recoveries due to dilution

Surrogate Recovery [D] = 100 * A / B



BS / BSD Recoveries



Project Name: Chevron Sites

Work Order #: 532368, 532368							Proj	ject ID: ´	713.953.48	41	
Analyst: MNR	D	ate Prepar	ed: 07/06/201	16			Date A	nalyzed: (07/06/2016		
Lab Batch ID: 997612 Sample: 710654-1-H	BKS	Batcl	n #: 1					Matrix: S	Solid		
Units: mg/kg		BLAN	K/BLANK	SPIKE / 2	BLANK S	SPIKE DUP	LICATE	RECOV	ERY STUI	DY	
Inorganic Anions by EPA 300/300.1 Analytes	Blank Sample Result [A]	Spike Added [B]	Blank Spike Result [C]	Blank Spike %R [D]	Spike Added [E]	Blank Spike Duplicate Result [F]	Blk. Spk Dup. %R [G]	RPD %	Control Limits %R	Control Limits %RPD	Flag
Chloride	<10.0	250	236	94	250	228	91	3	90-110	20	
Analyst: MNR	D	ate Prepar	ed: 07/06/201	16			Date A	nalyzed: (07/07/2016		
Lab Batch ID: 997641 Sample: 710669-1-H	BKS	Batcl	n#: 1					Matrix: S	Solid		
Units: mg/kg		BLAN	K/BLANK	SPIKE / 2	BLANK S	SPIKE DUP	LICATE	RECOV	ERY STUI	DY	
Inorganic Anions by EPA 300/300.1 Analytes	Blank Sample Result [A]	Spike Added [B]	Blank Spike Result [C]	Blank Spike %R [D]	Spike Added [E]	Blank Spike Duplicate Result [F]	Blk. Spk Dup. %R [G]	RPD %	Control Limits %R	Control Limits %RPD	Flag
Chloride	<10.0	250	231	92	250	233	93	1	90-110	20	
Analyst: MNR	D	ate Prepar	ed: 07/18/201	16	4		Date A	nalyzed: ()7/18/2016		·'
Lab Batch ID: 998310 Sample: 711075-1-H	BKS	Batcl	n #: 1					Matrix: S	Solid		
Units: mg/kg		BLAN	K/BLANK	SPIKE / 2	BLANK S	SPIKE DUP	LICATE	RECOV	ERY STUI	DY	
Inorganic Anions by EPA 300/300.1 Analytes	Blank Sample Result [A]	Spike Added [B]	Blank Spike Result [C]	Blank Spike %R [D]	Spike Added [E]	Blank Spike Duplicate Result [F]	Blk. Spk Dup. %R [G]	RPD %	Control Limits %R	Control Limits %RPD	Flag
Chloride	-					1					

Relative Percent Difference RPD = $200^{*}|(C-F)/(C+F)|$ Blank Spike Recovery [D] = $100^{*}(C)/[B]$ Blank Spike Duplicate Recovery [G] = $100^{*}(F)/[E]$ All results are based on MDL and Validated for QC Purposes



BS / BSD Recoveries



Project Name: Chevron Sites

Work Order #: 532368, 532368							Pro	ject ID:	713.953.48	41	
Analyst: MNR	D	ate Prepar	ed: 07/20/20	016			Date A	nalyzed:	07/20/2016		
Lab Batch ID: 998464 Sample: 711178	-1-BKS	Batch	n #: 1					Matrix:	Solid		
Units: mg/kg		BLAN	K /BLANK	SPIKE /	BLANK S	SPIKE DUP	LICATE	RECOV	ERY STU	DY	
Inorganic Anions by EPA 300/300.1 Analytes	Blank Sample Result [A]	Spike Added [B]	Blank Spike Result [C]	Blank Spike %R [D]	Spike Added [E]	Blank Spike Duplicate Result [F]	Blk. Spk Dup. %R [G]	RPD %	Control Limits %R	Control Limits %RPD	Flag
Chloride	<10.0	250	257	103	250	268	107	4	90-110	20	
Analyst: ARM	D	ate Prepar	ed: 06/28/20)16	•		Date A	nalyzed:	06/28/2016	-	4
Lab Batch ID: 997171 Sample: 710455	-1-BKS	Batch	n #: 1					Matrix:	Solid		
Units: mg/kg		BLAN	K /BLANK	SPIKE /	BLANK S	SPIKE DUP	LICATE	RECOV	ERY STU	DY	
TPH By SW8015B Mod	Blank Sample Result [A]	Spike Added [B]	Blank Spike Result [C]	Blank Spike %R [D]	Spike Added [E]	Blank Spike Duplicate Result [F]	Blk. Spk Dup. %R [G]	RPD %	Control Limits %R	Control Limits %RPD	Flag
Analytes C6-C10 Gasoline Range Hydrocarbons	.15.0							2	70.125	- 25	
C10-C28 Diesel Range Hydrocarbons	<15.0	1000	918 965	92	1000	899 963	90 96	2	70-135	35	<u> </u>
					1000	903		-			
Analyst: ARM Lab Batch ID: 997250 Sample: 710500		ate Prepar Batch	ed: 06/29/20 n#: 1	116			Date A	nalyzed: Matrix:	06/29/2016 Solid		
Units: mg/kg		BLAN	K /BLANK	SPIKE /	BLANK	SPIKE DUP	LICATE	RECOV	ERY STU	DY	
TPH By SW8015B Mod Analytes	Blank Sample Result [A]	Spike Added [B]	Blank Spike Result [C]	Blank Spike %R [D]	Spike Added [E]	Blank Spike Duplicate Result [F]	Blk. Spk Dup. %R [G]	RPD %	Control Limits %R	Control Limits %RPD	Flag
C6-C10 Gasoline Range Hydrocarbons	<15.0	1000	991	99	1000	1040	104	5	70-135	35	+
C10-C28 Diesel Range Hydrocarbons	<15.0	1000	1100	110	1000	1080	108	2	70-135	35	+

Relative Percent Difference RPD = $200^{*}|(C-F)/(C+F)|$ Blank Spike Recovery [D] = $100^{*}(C)/[B]$ Blank Spike Duplicate Recovery [G] = $100^{*}(F)/[E]$ All results are based on MDL and Validated for QC Purposes



Form 3 - MS Recoveries

Project Name: Chevron Sites



Work Order #: 532368						
Lab Batch #: 997612			Proje	ect ID: 7	13.953.4841	
Date Analyzed: 07/07/2016	Date Prepared: 07/06	6/2016	А	nalyst: N	4NR	
QC- Sample ID: 532368-009 S	Batch #: 1		Γ	Matrix: S	oil	
Reporting Units: mg/kg	MATR	IX / MA	TRIX SPIKE	RECO	VERY STU	DY
Inorganic Anions by EPA 300 Analytes	Parent Sample Result [A]	Spike Added [B]	Spiked Sample Result [C]	%R [D]	Control Limits %R	Flag
Chloride	441	261	635	74	80-120	X
Lab Batch #: 997612				-		
Date Analyzed: 07/06/2016	Date Prepared: 07/06	5/2016	А	nalyst: N	/INR	
QC- Sample ID: 532437-015 S	Batch #: 1			Matrix: S		
Reporting Units: mg/kg	MATR	IX / MA	TRIX SPIKE	RECO	VERY STU	DY
Inorganic Anions by EPA 300	Parent Sample Result	Spike Added	Spiked Sample Result [C]	%R [D]	Control Limits %R	Flag
Analytes	[A]	[B]				
Chloride	529	1250	1620	87	80-120	
Lab Batch #: 997641						
Date Analyzed: 07/07/2016	Date Prepared: 07/06	5/2016	Α	nalyst: N	/INR	
QC- Sample ID: 532368-022 S	Batch #: 1		r	Matrix: S	oil	
Reporting Units: mg/kg	MATR	IX / MA	TRIX SPIKE	RECO	VERY STU	DY
Inorganic Anions by EPA 300 Analytes	Parent Sample Result [A]	Spike Added [B]	Spiked Sample Result [C]	%R [D]	Control Limits %R	Flag
Chloride	<10.8	270	231	86	80-120	1
emonde	10.0	270	231	00	00 120	
	<10.0	270	231	00	00 120	1
Lab Batch #: 997641	Date Prepared: 07/06		<u> </u>	analyst: N		1
Lab Batch #: 997641 Date Analyzed: 07/07/2016			A		/INR	1
Lab Batch #: 997641 Date Analyzed: 07/07/2016 QC- Sample ID: 532413-005 S	Date Prepared: 07/06 Batch #: 1	5/2016	A	.nalyst: M Matrix: S	/INR oil	DY
Lab Batch #: 997641	Date Prepared: 07/06 Batch #: 1	5/2016	A	.nalyst: M Matrix: S	/INR oil	JDY Flag



Form 3 - MS Recoveries

Project Name: Chevron Sites



Work Order #: 532368 Project ID: 713.953.4841 Lab Batch #: 998310 Date Analyzed: 07/18/2016 Date Prepared: 07/18/2016 Analyst: MNR QC- Sample ID: 532328-017 S Batch #: Matrix: Soil 1 Reporting Units: mg/kg MATRIX / MATRIX SPIKE RECOVERY STUDY Parent Spiked Sample Control **Inorganic Anions by EPA 300** Sample Spike Result %R Limits Flag Result Added [C] [D] %R [A] [B] Analytes Chloride 28.7 250 258 92 80-120 Lab Batch #: 998310 **Date Analyzed:** 07/18/2016 Date Prepared: 07/18/2016 Analyst: MNR QC- Sample ID: 533521-001 S Batch #: Matrix: Soil 1 Reporting Units: mg/kg MATRIX / MATRIX SPIKE RECOVERY STUDY Parent Spiked Sample Control **Inorganic Anions by EPA 300** Sample Flag Spike Result %R Limits Result Added %R [C] [D] [A] [B] Analytes Chloride <10.0 250 274 110 80-120

Matrix Spike Percent Recovery [D] = 100*(C-A)/BRelative Percent Difference [E] = 200*(C-A)/(C+B)All Results are based on MDL and Validated for QC Purposes

BRL - Below Reporting Limit



Form 3 - MS / MSD Recoveries

Project Name: Chevron Sites



Work Order # :	532368						Project II	. 713.05	3 18/1			
					-		Ū		5.4041			
Lab Batch ID:	998464	QC- Sample ID:	533505	-007 S	Ba	tch #:	1 Matrix	:: Soil				
Date Analyzed:	07/20/2016	Date Prepared:	07/20/2	2016	An	alyst: 1	MNR					
Reporting Units:	mg/kg		Ν	IATRIX SPIK	E / MAT	RIX SPI	KE DUPLICA	TE REC	OVERY	STUDY		
Inorg	anic Anions by EPA 300/300.1	Parent Sample Result	Spike Added	Spiked Sample Result [C]	Spiked Sample %R	Spike Added	Duplicate Spiked Sample Result [F]	Spiked Dup. %R	RPD %	Control Limits %R	Control Limits %RPD	Flag
	Analytes	[A]	[B]	[0]	[D]	[E]	Kesun [F]	[G]	/0		/0KI D	
Chloride		717	1250	2040	106	1250	2010	103	1	80-120	20	
Lab Batch ID:	997171	QC- Sample ID:	532368	-001 S	Ba	tch #:	1 Matrix	: Soil				
Date Analyzed:	06/28/2016	Date Prepared:	06/28/2	2016	An	alyst: A	ARM					
Reporting Units:	mg/kg		Ν	IATRIX SPIK	E / MAT	RIX SPI	KE DUPLICA	TE REC	OVERY	STUDY		
	TPH By SW8015B Mod	Parent Sample Result	Spike Added	Spiked Sample Result [C]	Spiked Sample %R	Spike Added	Duplicate Spiked Sample Result [F]	Spiked Dup. %R	RPD %	Control Limits %R	Control Limits %RPD	Flag
	Analytes	[A]	[B]	[C]	[D]	[E]	Kesun [F]	/6K [G]	/0	70K	70KI D	
C6-C10 Gaso	line Range Hydrocarbons	<15.9	1060	904	85	1060	1090	103	19	70-135	35	
C10-C28 Die	sel Range Hydrocarbons	<15.9	1060	977	92	1060	1080	102	10	70-135	35	
Lab Batch ID:	997250	QC- Sample ID:	532368	-021 S	Ba	tch #:	1 Matrix	: Soil				
Date Analyzed:	06/29/2016	Date Prepared:	06/29/2	2016	An	alyst: A	ARM					
Reporting Units:	mg/kg		N	IATRIX SPIK	E / MAT	RIX SPI	KE DUPLICA	TE REC	OVERY	STUDY		
	TPH By SW8015B Mod	Parent Sample	Spike	Spiked Sample Result	Spiked Sample	Spike	Duplicate Spiked Sample	Spiked Dup.	RPD	Control Limits	Control Limits	Flag
		-							0/	0/ D	0/ DDD	
	Analytes	Result [A]	Added [B]	[C]	%R [D]	Added [E]	Result [F]	%R [G]	%	%R	%RPD	5
		Result	Added		%R	Added		%R	% 1	% R 70-135	% RPD 35	

Matrix Spike Percent Recovery $[D] = 100^{\circ}(C-A)/B$ Relative Percent Difference RPD = $200^{\circ}|(C-F)/(C+F)|$ Matrix Spike Duplicate Percent Recovery [G] = 100*(F-A)/E

ND = Not Detected, J = Present Below Reporting Limit, B = Present in Blank, NR = Not Requested, I = Interference, NA = Not Applicable N = See Narrative, EQL = Estimated Quantitation Limit, NC = Non Calculable - Sample amount is > 4 times the amount spiked.



Sample Duplicate Recovery



Project Name: Chevron Sites

Work Order #: 532368					
Lab Batch #: 997612			Project I	D: 713.953.	4841
Date Analyzed: 07/07/2016 07:37 Date Prepa	ared: 07/06/2016		lyst:MNR		
QC- Sample ID: 532368-009 D Bat	ch #: 1		trix: Soil		
Reporting Units: mg/kg	SAMPLE	/ SAMPLE	DUPLIC	ATE REC	OVERY
Inorganic Anions by EPA 300/300.1 Analyte	Parent Sample Result [A]	Sample Duplicate Result [B]	RPD	Control Limits %RPD	Flag
Chloride	441	440	0	20	
Lab Batch #: 997612					
	ared: 07/06/2016	6 Ana	lyst:MNR		
·	ch #: 1	Ma	trix: Soil		
Reporting Units: mg/kg	SAMPLE	/ SAMPLE	DUPLIC	ATE REC	OVERY
Inorganic Anions by EPA 300/300.1	Parent Sample Result [A]	Sample Duplicate Result [B]	RPD	Control Limits %RPD	Flag
Analyte				_	
Chloride	529	502	5	20	
Lab Batch #: 997641					
-	ared: 07/06/2016		lyst:MNR		
Qo Sumple ID: 002000 022 D	ch #: 1		trix: Soil		
Reporting Units: mg/kg	SAMPLE	/ SAMPLE	DUPLIC	ATE REC	OVERY
Inorganic Anions by EPA 300/300.1 Analyte	Parent Sample Result [A]	Sample Duplicate Result [B]	RPD	Control Limits %RPD	Flag
Chloride	<10.8	<10.8	0	20	U
Lab Batch #: 997641	<u></u> .	1	1	1	
	ared: 07/06/2016	5 Ana	lyst:MNR		
QC- Sample ID: 532413-005 D Bat	ch #: 1	Ma	trix: Soil		
Reporting Units: mg/kg	SAMPLE	/ SAMPLE	DUPLIC	ATE REC	OVERY
Inorganic Anions by EPA 300/300.1 Analyte	Parent Sample Result [A]	Sample Duplicate Result [B]	RPD	Control Limits %RPD	Flag
Chloride	2150	2280	6	20	

Spike Relative Difference RPD 200 * $|\,(B\text{-}A)/(B\text{+}A)\,|$ All Results are based on MDL and validated for QC purposes.

BRL - Below Reporting Limit



Sample Duplicate Recovery



Project Name: Chevron Sites

Work Order #: 532368						
Lab Batch #: 998310				Project I	D: 713.953.	4841
Date Analyzed: 07/18/2016 20:57	Date Prepar	ed: 07/18/2016	5 Ana	lyst:MNR		
QC- Sample ID: 532328-017 D	Batch	n#: 1	Ma	trix: Soil		
Reporting Units: mg/kg		SAMPLE /	SAMPLE	DUPLIC	ATE REC	OVERY
Inorganic Anions by EPA 30 Analyte	0/300.1	Parent Sample Result [A]	Sample Duplicate Result [B]	RPD	Control Limits %RPD	Flag
Chloride		28.7	25.5	12	20	
Lab Batch #: 998310						
Date Analyzed: 07/18/2016 19:08	Date Prepar	ed: 07/18/2016	5 Ana	lyst:MNR		
QC- Sample ID: 533521-001 D	Batch	n#: 1	Ma	trix: Soil		
Reporting Units: mg/kg		SAMPLE /	SAMPLE	DUPLIC	ATE REC	OVERY
Inorganic Anions by EPA 30	0/300.1	Parent Sample Result [A]	Sample Duplicate Result [B]	RPD	Control Limits %RPD	Flag
Analyte		10.0			20	
Chloride		<10.0	<10.0	0	20	U
Lab Batch #: 997489			<i>.</i> .			
Date Analyzed: 07/01/2016 17:05		ed: 07/01/2016		lyst: WRU		
QC- Sample ID: 532368-001 D	Batch			trix: Soil		<u>ALERI</u>
Reporting Units: %		SAMPLE	SAMPLE	DUPLIC	ATE REC	OVERY
Percent Moisture Analyte		Parent Sample Result [A]	Sample Duplicate Result [B]	RPD	Control Limits %RPD	Flag
Percent Moisture		5.73	5.48	4	20	
Lab Batch #: 997489						
Date Analyzed: 07/01/2016 17:05	Date Prepar	ed: 07/01/2016	5 Ana	lyst: WRU		
QC- Sample ID: 532368-011 D	Batch	n#: 1	Ma	t rix: Soil		
Reporting Units: %		SAMPLE /	SAMPLE	DUPLIC	ATE REC	OVERY
Percent Moisture Analyte		Parent Sample Result [A]	Sample Duplicate Result [B]	RPD	Control Limits %RPD	Flag
Percent Moisture		3.89	3.66	6	20	

Spike Relative Difference RPD 200 * | (B-A)/(B+A) |

All Results are based on MDL and validated for QC purposes.

BRL - Below Reporting Limit



Sample Duplicate Recovery



Project Name: Chevron Sites

Work Order #: 532368

Lab Batch #: 997493				Project I	D: 713.953.4	4841
Date Analyzed: 07/01/2016 17:05 Date	Prepared: 0	7/01/2016	5 Anal	yst:WRU		
QC- Sample ID: 532368-021 D	Batch #:	1	Mat	rix: Soil		
Reporting Units: %	SA	MPLE	SAMPLE	DUPLIC	ATE RECO	OVERY
Percent Moisture		nt Sample Result [A]	Duplicate Result	RPD	Control Limits %RPD	Flag
Analyte			[B]			
Percent Moisture		3.84	3.95	3	20	
Lab Batch #: 997530						
Date Analyzed: 07/05/2016 11:48 Date	Prepared: 0	7/05/2016	5 Anal	yst: WRU		
QC- Sample ID: 532585-001 D	Batch #:	1	Mat	rix: Soil		
Reporting Units: SU	SA	MPLE	SAMPLE	DUPLIC	ATE REC	OVERY
Soil pH by EPA 9045C Analyte		nt Sample Result [A]	Sample Duplicate Result [B]	RPD	Control Limits %RPD	Flag
pH		7.78	7.77	0	20	

Spike Relative Difference RPD 200 * | (B-A)/(B+A) | All Results are based on MDL and validated for QC purposes. BRL - Below Reporting Limit



Client: ARCADIS

XENCO Laboratories Prelogin/Nonconformance Report- Sample Log-In



Acceptable Temperature Range: 0 - 6 degC

Air and Metal samples Acceptable Range: Ambient Date/ Time Received: 06/25/2016 10:30:00 AM Temperature Measuring device used : R8 Work Order #: 532368 Comments Sample Receipt Checklist 4.5 #1 *Temperature of cooler(s)? #2 *Shipping container in good condition? N/A #3 *Samples received on ice? Yes #4 *Custody Seal present on shipping container/ cooler? N/A #5 *Custody Seals intact on shipping container/ cooler? N/A #6 Custody Seals intact on sample bottles? N/A #7 *Custody Seals Signed and dated? N/A #8 *Chain of Custody present? Yes #9 Sample instructions complete on Chain of Custody? Yes #10 Any missing/extra samples? No #11 Chain of Custody signed when relinguished/ received? Yes #12 Chain of Custody agrees with sample label(s)? Yes #13 Container label(s) legible and intact? Yes Yes #14 Sample matrix/ properties agree with Chain of Custody? #15 Samples in proper container/ bottle? Yes #16 Samples properly preserved? Yes #17 Sample container(s) intact? Yes #18 Sufficient sample amount for indicated test(s)? Yes #19 All samples received within hold time? Yes #20 Subcontract of sample(s)? No #21 VOC samples have zero headspace (less than 1/4 inch bubble)? N/A #22 <2 for all samples preserved with HNO3,HCL, H2SO4? Except for N/A samples for the analysis of HEM or HEM-SGT which are verified by the analysts. #23 >10 for all samples preserved with NaAsO2+NaOH, ZnAc+NaOH? N/A

* Must be completed for after-hours delivery of samples prior to placing in the refrigerator

Analyst:

PH Device/Lot#:

Checklist completed by: Mary Alexis Negron Mary Negron Checklist reviewed by: Mary Moad Kelsey Brooks

Date: 06/27/2016

Date: 06/28/2016

Contact & Company Name:	9	ANALYSIS REQUEST FORM Page
Address:	TIZ P 53 4841 Preservative	(Y)
2	Fax: # of Container Container Information	iners
Ser vity State	AITS PARIO a Katis	PARAMETER ANALYSIS & METHOD
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12 611		
L 101-45		
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513-2 4		
10	*	
Special Instructions/Comments:	-	□ Special QA/QC Instructions(√);
Laboratory Information and Receipt	dy Seal (V) Printed Name:	Printer/Mame
	1222	WCUS Printed Name
Cooler packed with ice (✓) Specify Turnaround Requirements:	Not Intact Signature:	
Shinning Tranking #	110	15 Firm/Courier
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Condition/Cooler Temp: 450	Sample Receipt:	Frintact C Not Intact s	dy Seal (✓)	ation and Receipt			÷.														Collection Type (*) Date Time Comp Grab	Sampler's Signature	C-Cir	FJ, Partilion		Fax.	1184534811	
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Special Instructions/Comments: Cooler packed with ice (*) Sierch Tunaround Requirements Sierch Tunaround Requirements	Project NameLiceation (City, State) Sampler's Printed Name Sample ID XX X X XX 4 10 20 30	Send Results to: Contact & Company Name Advress
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Laboratory Received By	5. Encre 5. Encre 7. 4 cz. Glass 8. 8 z. Glass 8. Other: SE-Sediment NL-NAPUOIL SL-Sluige SW-Sample Mipe A-Air Other: - Studye Other:	rder # XXX Keys Container Information Key: 1. 40 nt Vial 2. 1LAmber 3. 250 nt Plastic

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Page 55 of 57

PINK - Retained by Arcadis
Distribution: WHITE - Laborate	Shipping Tacking # Condition/Cooler Temp: DawTime:	Requirements: Sample Receipt: Fim.	5	Laboratory Information and Receipt Cooler Custody Seal (1) Pinited Name Receipt	Special Instructions/Comments:			30		C-24 Comp Grab Matrix	Sample ID Collection Type (7)	Sampler's Printed Name Sampler's Signature	Project NameLocation (City, State) Project #	E-mai Addreas	(Wtc. Fakl Wallar). 5
ith results WARLOW -	17/11 Datefine: 1/11 Datefine	8	wichs Printed Name.	Received By	Special QA/QC Instructions(\vee):		V 130 1	(201)	(14) C Man			1111	PARAMETER ANALYSIS & METHOD	Gontaliner Information	
PINK – Retained by Arcadis	Firm	Signature:	ed By Laboratory Received By Printed Name.	ms f. Fet O 24/4/2			Lot hold	and test	4010	W-Water SL-Sludge SW-Sample Wipe T-Tissue A-Air Other:	2	G. Other. 7. 4 oz. Glass H. Other. 9. Other 9. Other.	00 01 1	C. HNO, 3. 250 ml Plastic O. NaOH 4. 500 ml Plastic	1. 40 mi Viai

Page 56 of 57



XENCO Laboratories



Prelogin/Nonconformance Report- Sample Log-In

Client: ARCADIS	Acceptable Temperature Range: 0 - 6 degC						
Date/ Time Received: 06/25/2016 10:30:00 AM	Air and Metal samples Acceptable Range: Ambient						
Work Order #: 532368	Temperature Measuring device used : R8						
Sample Rece	ipt Checklist Comments						
#1 *Temperature of cooler(s)?	4.5						
#2 *Shipping container in good condition?	N/A						
#3 *Samples received on ice?	Yes						
#4 *Custody Seal present on shipping container/ cooler?	N/A						
#5 *Custody Seals intact on shipping container/ cooler?	N/A						
#6 Custody Seals intact on sample bottles?	N/A						
#7 *Custody Seals Signed and dated?	N/A						
#8 *Chain of Custody present?	Yes						
#9 Sample instructions complete on Chain of Custody?	Yes						
#10 Any missing/extra samples?	Νο						
#11 Chain of Custody signed when relinquished/ received?	Yes						
#12 Chain of Custody agrees with sample label(s)?	Yes						
#13 Container label(s) legible and intact?	Yes						
#14 Sample matrix/ properties agree with Chain of Custody?	Yes						
#15 Samples in proper container/ bottle?	Yes						
#16 Samples properly preserved?	Yes						
#17 Sample container(s) intact?	Yes						
#18 Sufficient sample amount for indicated test(s)?	Yes						
#19 All samples received within hold time?	Yes						
#20 Subcontract of sample(s)?	Νο						
#21 VOC samples have zero headspace (less than 1/4 inch	bubble)? N/A						
#22 <2 for all samples preserved with HNO3,HCL, H2SO4? samples for the analysis of HEM or HEM-SGT which are veri analysts.							
#23 >10 for all samples preserved with NaAsO2+NaOH, Zn/	Ac+NaOH? N/A						

* Must be completed for after-hours delivery of samples prior to placing in the refrigerator

Analyst:

PH Device/Lot#:

 Checklist completed by:
 Mary Aleps Negron
 Date: 06/27/2016

 Mary Negron
 Date: 06/28/2016

 Checklist reviewed by:
 Mary MoaM
 Date: 06/28/2016

 Kelsey Brooks
 Date: 06/28/2016

Analytical Report 536864

for Arcadis - Houston

Project Manager: Jonathan Olsen

HES Transfer

11-OCT-16

Collected By: Client





1211 W. Florida Ave, Midland TX 79701

Xenco-Houston (EPA Lab code: TX00122): Texas (T104704215), Arizona (AZ0765), Florida (E871002), Louisiana (03054) Oklahoma (9218)

Xenco-Dallas (EPA Lab code: TX01468): Texas (T104704295) Xenco-Odessa (EPA Lab code: TX00158): Texas (T104704400) Xenco-San Antonio: Texas (T104704534) Xenco Phoenix (EPA Lab Code: AZ00901): Arizona(AZ0757) Xenco-Phoenix Mobile (EPA Lab code: AZ00901): Arizona (AZM757)



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11-OCT-16



Project Manager: **Jonathan Olsen Arcadis - Houston** 2929 Briarpark Dr., Ste 300 Houston, TX 77042

Reference: XENCO Report No(s): **536864 HES Transfer** Project Address: Lovington NM

Jonathan Olsen:

We are reporting to you the results of the analyses performed on the samples received under the project name referenced above and identified with the XENCO Report Number(s) 536864. All results being reported under this Report Number apply to the samples analyzed and properly identified with a Laboratory ID number. Subcontracted analyses are identified in this report with either the NELAC certification number of the subcontract lab in the analyst ID field, or the complete subcontracted report attached to this report.

Unless otherwise noted in a Case Narrative, all data reported in this Analytical Report are in compliance with NELAC standards. The uncertainty of measurement associated with the results of analysis reported is available upon request. Should insufficient sample be provided to the laboratory to meet the method and NELAC Matrix Duplicate and Matrix Spike requirements, then the data will be analyzed, evaluated and reported using all other available quality control measures.

The validity and integrity of this report will remain intact as long as it is accompanied by this letter and reproduced in full, unless written approval is granted by XENCO Laboratories. This report will be filed for at least 5 years in our archives after which time it will be destroyed without further notice, unless otherwise arranged with you. The samples received, and described as recorded in Report No. 536864 will be filed for 60 days, and after that time they will be properly disposed without further notice, unless otherwise arranged with you. We reserve the right to return to you any unused samples, extracts or solutions related to them if we consider so necessary (e.g., samples identified as hazardous waste, sample sizes exceeding analytical standard practices, controlled substances under regulated protocols, etc).

We thank you for selecting XENCO Laboratories to serve your analytical needs. If you have any questions concerning this report, please feel free to contact us at any time.

Respectfully,

Huns Hoah

Kelsey Brooks Project Manager

Recipient of the Prestigious Small Business Administration Award of Excellence in 1994. Certified and approved by numerous States and Agencies. A Small Business and Minority Status Company that delivers SERVICE and QUALITY

Houston - Dallas - Odessa - San Antonio - Tampa - Lakeland - Atlanta - Phoenix - Oklahoma - Latin America



Sample Id

•
VGWUO40-12 (2')
VGWUO40-12 (4')
VGWUO40-17 (2')
VGWUO40-17 (4')
VGWUO40-16 (2')
VGWUO40-16 (4')
VGWUO40-16 (50')
VGWUO40-19 (2')
VGWUO40-19 (4')
VGWUO40-18 (2')
VGWUO40-18 (4')
VGWUO40-18 (70')
VGWU85-06 (2')
VGWU85-06 (4')
VGWU85-06 (10')
VGWU85-06 (50')
VGWU85-11 (2')
VGWU85-11 (4')
VGWUSAT3-03 (4')
VGWUSAT3-03 (40')
VGWUSAT3-05 (4')
VGWUSAT3-05 (40')
VGWU118-15 (2')
VGWU118-15 (4')
VGWU118-18 (2')
VGWU118-18 (4')
VGWU118-18 (7')
VGWU118-18 (10')
VGWU85-06 (7')
VGWU85-11 (7')
VGWU85-11 (10')
VGWU85-11 (11')
VGWU118-15 (7')
VGWU118-15 (10')

Sample Cross Reference 536864



Arcadis - Houston, Houston, TX

HES Transfer

Matrix	Date Collected	Sample Depth	Lab Sample Id
S	09-13-16 08:50		536864-001
S	09-13-16 08:55		536864-002
S	09-13-16 10:30		536864-003
S	09-13-16 10:34		536864-004
S	09-13-16 09:58		536864-005
S	09-13-16 10:00		536864-006
S	09-13-16 10:48		536864-007
S	09-13-16 11:46		536864-008
S	09-13-16 11:50		536864-009
S	09-13-16 12:14		536864-010
S	09-13-16 12:16		536864-011
S	09-13-16 13:23		536864-012
S	09-13-16 14:41		536864-013
S	09-13-16 14:42		536864-014
S	09-13-16 14:44		536864-016
S	09-13-16 15:27		536864-017
S	09-13-16 16:00		536864-018
S	09-13-16 16:01		536864-019
S	09-14-16 09:49		536864-023
S	09-14-16 10:40		536864-024
S	09-14-16 11:11		536864-025
S	09-14-16 11:55		536864-026
S	09-14-16 14:00		536864-027
S	09-14-16 14:01		536864-028
S	09-14-16 14:30		536864-031
S	09-14-16 14:31		536864-032
S	09-14-16 14:32		536864-033
S	09-14-16 14:33		536864-034
S	09-13-16 14:43		Not Analyzed
S	09-13-16 16:02		Not Analyzed
S	09-13-16 16:05		Not Analyzed
S	09-13-16 16:21		Not Analyzed
S	09-14-16 14:02		Not Analyzed
S	09-14-16 14:03		Not Analyzed



CASE NARRATIVE

EN DRATORI

Client Name: Arcadis - Houston Project Name: HES Transfer

Project ID: Work Order Number(s): 536864 Report Date:11-OCT-16Date Received:09/15/2016

Sample receipt non conformances and comments:

Sample receipt non conformances and comments per sample:

None



Certificate of Analysis Summary 536864

Arcadis - Houston, Houston, TX Project Name: HES Transfer



Date Received in Lab:Thu Sep-15-16 11:30 amReport Date:11-OCT-16Project Manager:Kelsey Brooks

	Lab Id:	536864-0	01	536864-0	02	536864-0	03	536864-0	04	536864-0	005	536864-0	06
Analysis Requested	Field Id:	VGWUO40-	VGWUO40-12 (2')		VGWUO40-12 (4')		VGWUO40-17 (2')		17 (4')	VGWUO40-16 (2')		VGWUO40-16 (4')	
Analysis Kequesieu	Depth:												
	Matrix:	SOIL		SOIL		SOIL		SOIL		SOIL		SOIL	
	Sampled:	Sep-13-16 0	8:50	Sep-13-16 ()8:55	Sep-13-16 1	0:30	Sep-13-16 1	0:34	Sep-13-16	09:58	Sep-13-16 1	0:00
Inorganic Anions by EPA 300/300.1	Extracted:	Sep-20-16 (08:00	Sep-20-16 (08:00	Sep-20-16 0	8:00	Sep-20-16 0	8:00	Sep-20-16	08:00	Sep-20-16 0	8:00
	Analyzed:	Sep-20-16 1	4:44	Sep-20-16 1	4:51	Sep-20-16 1	4:59	Sep-20-16 1	5:07	Sep-20-16	15:15	Sep-20-16 1	5:23
	Units/RL:	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL
Chloride		86.6	10.0	54.0	10.0	52.8	10.0	34.8	10.0	329	10.0	881	10.0

This analytical report, and the entire data package it represents, has been made for your exclusive and confidential use. The interpretations and results expressed throughout this analytical report represent the best judgment of XENCO Laboratories. XENCO Laboratories assumes no responsibility and makes no warranty to the end use of the data hereby presented. Our liability is limited to the amount invoiced for this work order unless otherwise agreed to in writing.

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Huns Boah

Kelsey Brooks Project Manager



Certificate of Analysis Summary 536864

Arcadis - Houston, Houston, TX Project Name: HES Transfer



Date Received in Lab:Thu Sep-15-16 11:30 amReport Date:11-OCT-16Project Manager:Kelsey Brooks

	Lab Id:	536864-0	07	536864-0	08	536864-0	09	536864-0	10	536864-0	11	536864-0	12
Analysis Requested	Field Id:	VGWUO40-1	VGWUO40-16 (50')		VGWUO40-19 (2')		VGWUO40-19 (4')		18 (2')	VGWUO40-18 (4')		VGWUO40-18 (70')	
Analysis Kequestea	Depth:												
	Matrix:	SOIL		SOIL		SOIL		SOIL		SOIL		SOIL	
	Sampled:	Sep-13-16	0:48	Sep-13-16 1	1:46	Sep-13-16 1	1:50	Sep-13-16 1	2:14	Sep-13-16	2:16	Sep-13-16 1	3:23
Inorganic Anions by EPA 300/300.1	Extracted:	Sep-30-16 (09:00	Sep-21-16 1	0:00	Sep-21-16 1	0:00	Sep-21-16 1	0:00	Sep-21-16	0:00	Sep-30-16 0	9:00
	Analyzed:	Sep-30-16	3:18	Sep-21-16 1	2:10	Sep-21-16 1	2:33	Sep-21-16 1	2:41	Sep-21-16	2:49	Sep-30-16 1	3:26
	Units/RL:	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL
Chloride		16.4	5.00	54.2	10.0	59.6	10.0	65.3	10.0	318	10.0	142	5.00

This analytical report, and the entire data package it represents, has been made for your exclusive and confidential use. The interpretations and results expressed throughout this analytical report represent the best judgment of XENCO Laboratories. XENCO Laboratories assumes no responsibility and makes no warranty to the end use of the data hereby presented. Our liability is limited to the amount invoiced for this work order unless otherwise agreed to in writing.

Houston - Dallas - San Antonio - Atlanta - Tampa - Boca Raton - Latin America - Odessa - Corpus Christi

Huns Boah

Kelsey Brooks Project Manager



Certificate of Analysis Summary 536864

Arcadis - Houston, Houston, TX Project Name: HES Transfer



Date Received in Lab:Thu Sep-15-16 11:30 amReport Date:11-OCT-16Project Manager:Kelsey Brooks

	Lab Id:	536864-0	13	536864-0	14	536864-0	16	536864-0	17	536864-0	018	536864-0	19
Analysis Requested	Field Id:	VGWU85-0	6 (2')	VGWU85-06 (4')		VGWU85-06 (10')		VGWU85-06 (50')		VGWU85-11 (2')		VGWU85-11 (4')	
Analysis Kequestea	Depth:												
	Matrix:	SOIL		SOIL		SOIL		SOIL		SOIL		SOIL	
	Sampled:	Sep-13-16 1	4:41	Sep-13-16	4:42	Sep-13-16 1	4:44	Sep-13-16 1	5:27	Sep-13-16	16:00	Sep-13-16 1	6:01
Inorganic Anions by EPA 300/300.1	Extracted:	Sep-21-16 1	0:00	Sep-21-16 1	0:00	Sep-30-16 0	9:00	Oct-10-160	9:35	Sep-21-16	10:00	Sep-21-16 1	0:00
	Analyzed:	Sep-21-16 1	2:57	Sep-21-16 1	7:46	Sep-30-16 1	3:47	Oct-10-16 1	9:19	Sep-21-16	13:28	Sep-21-16 1	3:36
	Units/RL:	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL
Chloride		6120	100	2540	50.0	3760	50.0	37.8	5.00	14.0	10.0	31.1	10.0

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Kelsey Brooks Project Manager



Certificate of Analysis Summary 536864

Arcadis - Houston, Houston, TX Project Name: HES Transfer



Date Received in Lab:Thu Sep-15-16 11:30 amReport Date:11-OCT-16Project Manager:Kelsey Brooks

	Lab Id:	536864-0	23	536864-0	24	536864-0	25	536864-0	26	536864-0	27	536864-0	28
Analysis Requested	Field Id:	VGWUSAT3-	03 (4')	VGWUSAT3-03 (40')		VGWUSAT3-05 (4')		VGWUSAT3-05 (40')		VGWU118-15 (2')		VGWU118-15 (4')	
Analysis Kequestea	Depth:												
	Matrix:	SOIL		SOIL		SOIL		SOIL		SOIL		SOIL	
	Sampled:	Sep-14-16 0	9:49	Sep-14-16 1	0:40	Sep-14-16 1	1:11	Sep-14-16 1	1:55	Sep-14-16	14:00	Sep-14-16 1	4:01
Inorganic Anions by EPA 300/300.1	Extracted:	Sep-21-16 1	0:00	Sep-30-16 0	9:00	Sep-30-16 0	9:00	Oct-10-16 0	9:35	Sep-21-16	10:00	Sep-21-16 1	0:00
	Analyzed:	Sep-21-16 1	3:44	Sep-30-16 1	3:54	Sep-30-16 1	4:01	Oct-10-16 1	9:26	Sep-21-16	3:51	Sep-21-16 1	3:59
	Units/RL:	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL
Chloride		454	10.0	12.0	5.00	943	5.00	ND	5.00	18.5	10.0	ND	10.0

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Kelsey Brooks Project Manager



Certificate of Analysis Summary 536864

Arcadis - Houston, Houston, TX Project Name: HES Transfer



Date Received in Lab:Thu Sep-15-16 11:30 amReport Date:11-OCT-16Project Manager:Kelsey Brooks

	Lab Id:	536864-0	31	536864-0	32	536864-0	33	536864-0	34		
Analysis Requested	Field Id:	VGWU118-1	8 (2')	VGWU118-1	18 (4')	VGWU118-1	18 (7')	VGWU118-1	8 (10')		
Analysis Kequestea	Depth:										
	Matrix:	SOIL		SOIL		SOIL		SOIL			
	Sampled:	Sep-14-16 1	4:30	Sep-14-16 1	4:31	Sep-14-16 1	4:32	Sep-14-16 1	4:33		
Inorganic Anions by EPA 300/300.1	Extracted:	Sep-21-16 1	0:00	Sep-21-16 1	0:00	Sep-30-16 0	9:00	Oct-10-160	9:35		
	Analyzed:	Sep-21-16 1	4:23	Sep-21-16 1	4:46	Sep-30-16 1	4:08	Oct-10-16 1	9:33		
	Units/RL:	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL		
Chloride		91.4	10.0	355	10.0	307	5.00	41.3	5.00		

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Kelsey Brooks Project Manager



Flagging Criteria



- X In our quality control review of the data a QC deficiency was observed and flagged as noted. MS/MSD recoveries were found to be outside of the laboratory control limits due to possible matrix /chemical interference, or a concentration of target analyte high enough to affect the recovery of the spike concentration. This condition could also affect the relative percent difference in the MS/MSD.
- **B** A target analyte or common laboratory contaminant was identified in the method blank. Its presence indicates possible field or laboratory contamination.
- **D** The sample(s) were diluted due to targets detected over the highest point of the calibration curve, or due to matrix interference. Dilution factors are included in the final results. The result is from a diluted sample.
- E The data exceeds the upper calibration limit; therefore, the concentration is reported as estimated.
- **F** RPD exceeded lab control limits.
- J The target analyte was positively identified below the quantitation limit and above the detection limit.
- U Analyte was not detected.
- L The LCS data for this analytical batch was reported below the laboratory control limits for this analyte. The department supervisor and QA Director reviewed data. The samples were either reanalyzed or flagged as estimated concentrations.
- **H** The LCS data for this analytical batch was reported above the laboratory control limits. Supporting QC Data were reviewed by the Department Supervisor and QA Director. Data were determined to be valid for reporting.
- K Sample analyzed outside of recommended hold time.
- JN A combination of the "N" and the "J" qualifier. The analysis indicates that the analyte is "tentatively identified" and the associated numerical value may not be consistent with the amount actually present in the environmental sample.
- ** Surrogate recovered outside laboratory control limit.
- **BRL** Below Reporting Limit.
- RL Reporting Limit

MDL Method Detection Limit	SDL Sample Detection Limit	LOD Limit of Detection
PQL Practical Quantitation Limit	MQL Method Quantitation Limit	LOQ Limit of Quantitation

- **DL** Method Detection Limit
- NC Non-Calculable
- + NELAC certification not offered for this compound.
- * (Next to analyte name or method description) = Outside XENCO's scope of NELAC accreditation

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1211 W Florida Ave, Midland, TX 79701	(432) 563-1800	(432) 563-1713
2525 W. Huntington Dr Suite 102, Tempe AZ 85282	(602) 437-0330	



BS / BSD Recoveries



Project Name: HES Transfer

Work Order #: 536864							Proj	ect ID:			
Analyst: MNR	D	ate Prepar	ed: 09/20/201	16			Date A	nalyzed: (09/20/2016		
Lab Batch ID: 3000344 Sample: 713949-1-	BKS	Batch	n#: 1					Matrix: S	Solid		
Units: mg/kg		BLAN	K/BLANK	SPIKE / 1	BLANK	SPIKE DUP	LICATE	RECOV	ERY STUI	DY	
Inorganic Anions by EPA 300/300.1 Analytes	Blank Sample Result [A]	Spike Added [B]	Blank Spike Result [C]	Blank Spike %R [D]	Spike Added [E]	Blank Spike Duplicate Result [F]	Blk. Spk Dup. %R [G]	RPD %	Control Limits %R	Control Limits %RPD	Flag
Chloride	<10.0	250	250	100	250	257	103	3	90-110	20	
Analyst: MNR	D	ate Prepar	ed: 09/21/201	16			Date A	nalyzed: (09/21/2016		
Lab Batch ID: 3000445 Sample: 713999-1-	BKS	Batch	n#: 1					Matrix: S	Solid		
Units: mg/kg		BLAN	K/BLANK	SPIKE /]	BLANK	SPIKE DUP	LICATE	RECOV	ERY STUI	DY	
Inorganic Anions by EPA 300/300.1	Blank Sample Result [A]	Spike Added [B]	Blank Spike Result [C]	Blank Spike %R [D]	Spike Added [E]	Blank Spike Duplicate Result [F]	Blk. Spk Dup. %R [G]	RPD %	Control Limits %R	Control Limits %RPD	Flag
Inorganic Anions by EPA 300/300.1 Analytes Chloride	Sample Result	Added	Spike Result	Spike %R	Added	Spike Duplicate	Dup. %R		Limits	Limits	Flag
Analytes Chloride	Sample Result [A] <10.0	Added [B] 250	Spike Result [C] 246	Spike %R [D] 98	Added [E]	Spike Duplicate Result [F]	Dup. %R [G] 100	%	Limits %R	Limits %RPD	Flag
Analytes Chloride	Sample Result [A] <10.0 D	Added [B] 250	Spike Result [C] 246 ed: 09/30/201	Spike %R [D] 98	Added [E]	Spike Duplicate Result [F]	Dup. %R [G] 100 Date A	%	Limits %R 90-110 09/30/2016	Limits %RPD	Flag
Analytes Chloride Analyst: MNR	Sample Result [A] <10.0 D	Added [B] 250 ate Prepar Batch	Spike Result [C] 246 ed: 09/30/201	Spike % R [D] 98	Added [E] 250	Spike Duplicate Result [F] 250	Dup. %R [G] 100 Date A	% 2 nalyzed: (Matrix: \$	Limits %R 90-110 09/30/2016 Solid	Limits %RPD 20	Flag
Analytes Chloride Analyst: MNR Lab Batch ID: 3001120 Sample: 714399-1-1	Sample Result [A] <10.0 D	Added [B] 250 ate Prepar Batch	Spike Result [C] 246 ed: 09/30/201 n#: 1	Spike % R [D] 98	Added [E] 250	Spike Duplicate Result [F] 250	Dup. %R [G] 100 Date A	% 2 nalyzed: (Matrix: \$	Limits %R 90-110 09/30/2016 Solid	Limits %RPD 20	Flag

Relative Percent Difference RPD = $200^{*}|(C-F)/(C+F)|$ Blank Spike Recovery [D] = $100^{*}(C)/[B]$ Blank Spike Duplicate Recovery [G] = $100^{*}(F)/[E]$ All results are based on MDL and Validated for QC Purposes



BS / BSD Recoveries



Project Name: HES Transfer

Work Order #: 536864							Proj	ect ID:			
Analyst: MNR	D	ate Prepar	ed: 10/10/201	6			Date A	nalyzed:	10/10/2016		
Lab Batch ID: 3001741 Sample: 714723-1-E	BKS	Batcl	h #: 1					Matrix: S	Solid		
Units: mg/kg		BLAN	K /BLANK S	SPIKE / I	BLANK S	SPIKE DUP	LICATE	RECOVI	ERY STUI	DY	
Inorganic Anions by EPA 300/300.1	Blank Sample Result [A]		Blank Spike Result	Blank Spike %R	Spike Added	Blank Spike Duplicate	Blk. Spk Dup. %R	RPD %	Control Limits %R	Control Limits %RPD	Flag
Analytes		[B]	[C]	[D]	[E]	Result [F]	[G]				
Chloride	<5.00	250	250	100	250	262	105	5	90-110	20	

Relative Percent Difference RPD = $200^{*}|(C-F)/(C+F)|$ Blank Spike Recovery [D] = $100^{*}(C)/[B]$ Blank Spike Duplicate Recovery [G] = $100^{*}(F)/[E]$ All results are based on MDL and Validated for QC Purposes



Project Name: HES Transfer



Work Order # :	536864						Project II):				
Lab Batch ID:	3000344	QC- Sample ID:	536602	-002 S	Ba	tch #:	1 Matrix	x: Soil				
Date Analyzed:	09/20/2016	Date Prepared:	09/20/2	016	Ar	alyst: N	MNR					
Reporting Units:	mg/kg		Ν	IATRIX SPIK	E / MAT	RIX SPI	KE DUPLICA	TE REC	OVERY	STUDY		
Inorgar	nic Anions by EPA 300/300.1	Parent Sample Result	Spike Added	Spiked Sample Result [C]	Spiked Sample %R	Spike Added	Duplicate Spiked Sample Result [F]	Spiked Dup. %R	RPD %	Control Limits %R	Control Limits %RPD	Flag
	Analytes	[A]	[B]		[D]	[E]		[G]				
Chloride		2780	1250	4000	98	1250	4030	100	1	90-110	20	
Lab Batch ID:	3000344	QC- Sample ID:	536660	-002 S	Ba	tch #:	1 Matrix	x: Soil				
Date Analyzed:	09/20/2016	Date Prepared:	09/20/2	016	Ar	alyst: N	MNR					
Reporting Units:	mg/kg		Ν	IATRIX SPIK	E / MAT	RIX SPI	KE DUPLICA	TE REC	OVERY	STUDY		
Inorgar	nic Anions by EPA 300/300.1	Parent Sample Result	Spike Added	Spiked Sample Result [C]	Spiked Sample %R	Spike Added	Duplicate Spiked Sample Result [F]	Spiked Dup. %R	RPD %	Control Limits %R	Control Limits %RPD	Flag
	Analytes	[A]	[B]	[0]	[D]	[E]	itesuit [i]	[G]				
Chloride		1970	1250	3230	101	1250	3210	99	1	90-110	20	
Lab Batch ID:	3000445	QC- Sample ID:	536864	-008 S	Ba	tch #:	1 Matrix	x: Soil	•			
Date Analyzed:	09/21/2016	Date Prepared:	09/21/2	016	Ar	alyst: N	MNR					
Reporting Units:	mg/kg		Ν	IATRIX SPIK	E / MAT	RIX SPI	KE DUPLICA	TE REC	OVERY	STUDY		
Inorgan	nic Anions by EPA 300/300.1	Parent Sample Result	Spike Added	Spiked Sample Result [C]	Spiked Sample %R	Spike Added	Duplicate Spiked Sample Result [F]	Spiked Dup. %R	RPD %	Control Limits %R	Control Limits %RPD	Flag
	Analytes	[A]	[B]	L-3	[D]	[E]		[G]				
Chloride		54.2	250	298	98	250	294	96	1	90-110	20	

Matrix Spike Percent Recovery $[D] = 100^{\circ}(C-A)/B$ Relative Percent Difference RPD = $200^{\circ}|(C-F)/(C+F)|$ Matrix Spike Duplicate Percent Recovery [G] = 100*(F-A)/E



Project Name: HES Transfer



Work Order # :	536864						Project II):				
Lab Batch ID:	3000445	QC- Sample ID:	536864	-028 S	Ba	tch #:	1 Matrix	: Soil				
Date Analyzed:	09/21/2016	Date Prepared:	09/21/2	016	Ar	alyst: N	MNR					
Reporting Units:	mg/kg		N	IATRIX SPIK	E / MAT	RIX SPI	KE DUPLICA	FE REC	OVERY	STUDY		
Inorgai	nic Anions by EPA 300/300.1	Parent Sample Result	Spike Added	Spiked Sample Result [C]	Spiked Sample %R	Spike Added	Duplicate Spiked Sample Result [F]	Spiked Dup. %R	RPD %	Control Limits %R	Control Limits %RPD	Flag
	Analytes	[A]	[B]		[D]	[E]	Kesutt [F]	[G]	/0	701	70KI D	
Chloride		<10.0	250	250	100	250	244	98	2	90-110	20	
Lab Batch ID:	3001120	QC- Sample ID:	536657	-006 S	Ba	tch #:	1 Matrix	: Soil				
Date Analyzed:	09/30/2016	Date Prepared:	09/30/2	016	Ar	alyst: N	MNR					
Reporting Units:	mg/kg		N	IATRIX SPIK	E / MAT	RIX SPI	KE DUPLICA'	FE REC	OVERY	STUDY		
Inorgai	nic Anions by EPA 300/300.1	Parent Sample Result	Spike Added	Spiked Sample Result [C]	Spiked Sample %R	Spike Added	Duplicate Spiked Sample Result [F]	Spiked Dup. %R	RPD %	Control Limits %R	Control Limits %RPD	Flag
	Analytes	[A]	[B]	[0]	[D]	[E]	incount [1]	[G]				
Chloride		920	250	1160	96	250	1150	92	1	90-110	20	
Lab Batch ID:	3001120	QC- Sample ID:	537439	-001 S	Ba	tch #:	1 Matrix	: Soil				
Date Analyzed:	09/30/2016	Date Prepared:	09/30/2	016	Ar	alyst: N	MNR					
Reporting Units:	mg/kg		N	IATRIX SPIK	E / MAT	RIX SPI	KE DUPLICA'	FE REC	OVERY	STUDY		
Inorgai	nic Anions by EPA 300/300.1 Analytes	Parent Sample Result [A]	Spike Added [B]	Spiked Sample Result [C]	Spiked Sample %R [D]	Spike Added [E]	Duplicate Spiked Sample Result [F]	Spiked Dup. %R [G]	RPD %	Control Limits %R	Control Limits %RPD	Flag
Chloride		4120	2500	6760	106	2500	6650	101	2	90-110	20	

Matrix Spike Percent Recovery $[D] = 100^{\circ}(C-A)/B$ Relative Percent Difference RPD = $200^{\circ}|(C-F)/(C+F)|$ Matrix Spike Duplicate Percent Recovery [G] = 100*(F-A)/E



Project Name: HES Transfer



Work Order # :	536864						Project II):				
Lab Batch ID:	3001741	QC- Sample ID:	538189	-001 S	Ba	tch #:	1 Matrix	x: Soil				
Date Analyzed:	10/10/2016	Date Prepared:	10/10/2	016	An	alyst: 1	MNR					
Reporting Units:	mg/kg		N	IATRIX SPIK	E / MAT	RIX SPI	IKE DUPLICA	TE REC	OVERY	STUDY		
Inorgan	nic Anions by EPA 300/300.1	Parent Sample Result	Spike Added	Spiked Sample Result [C]	Spiked Sample %R	Spike Added	Duplicate Spiked Sample Result [F]	Spiked Dup. %R	RPD %	Control Limits %R	Control Limits %RPD	Flag
	Analytes	[A]	[B]	[0]	[D]	[E]	Kesut [1]	[G]				
Chloride		1720	250	1980	104	250	1970	100	1	90-110	20	
Lab Batch ID:	3001741	QC- Sample ID:	538316	-006 S	Ba	tch #:	1 Matrix	x: Soil				
Date Analyzed:	10/10/2016	Date Prepared:	10/10/2	016	An	alyst: 1	MNR					
Reporting Units:	mg/kg		Ν	IATRIX SPIK	E / MAT	RIX SPI	IKE DUPLICA	TE REC	OVERY	STUDY		
Inorgan	nic Anions by EPA 300/300.1	Parent Sample Result	Spike Added	Spiked Sample Result [C]	Spiked Sample %R	Spike Added	Duplicate Spiked Sample Result [F]	Spiked Dup. %R	RPD %	Control Limits %R	Control Limits %RPD	Flag
	Analytes	[A]	[B]	[0]	[D]	[E]	Kesult [F]	[G]	/0	/0K	/okrd	
Chloride		258	250	501	97	250	493	94	2	90-110	20	

Matrix Spike Duplicate Percent Recovery $[G] = 100^{*}(F-A)/E$

2 Lab Work Order #		Preservation Kays Container Information Key:	C 1 40 m Via C 1 NO C 1 NO D 1 ACH A 500 m Pasto	N 00 N 10 N 10 N			W - Water SL - Sludge SW - Semple Wpe T - Titsue A - Air REMARKS							5					10				ed By Laboratory Received By	NO WOOT AND	Signature:	N N N	1210-91-13P	PINK – Retained by Arcadis
IORY				PARAMETER ANALYSIS & METHOD										1401	· · · · · · · · · · · · · · · · · · ·				AUD		Special OA/OC Instructioned///·		State State State By	Printed Name:	BARANCE OD Squature.	FirmCounter	Determine://H/16 4:00 Determine:	
TLS Spel r CHAIN OF CUSTODY & LABORATORY	ANALYSIS REQUEST FORM	87 Preservative E		is,	<u>د</u>	 	Ch Matrix	× SO ×	X OX X	X SO X	× SO ×	X SO X		Ŝ	X So X	XBX	X 80 X	X So X	X So X		X I SO I X I I		Relinquished By	Mehtsa Phan	Signature:	C Firm	A Date Tity (1/6 1/600)	WHITE – Laboatory returns with results $U = \int_{a}^{b} e^{i\theta} d\theta$
Chevron PM Rob Spear ADIS 104: CHAIN OI		Arcadis Telephone. 713.953.487A		2 Jonathan Olsen aread	1	Sampler's Signature:	Collection Type (1)	—		0601 11/11/6		9/13/16958	9/13/14/00					9/12/141/eu/b	- 6261 allella		11131121121121121		Laboratory information and Receipt	ody Seal (D Intact	Sample Receipt:	Condition/Cooler Temp: 10	REPERTINGON:
GARCADIS		JUNATHAN O ISCH	2 POLOTAN SWITT 300	Send on the same the same the same same same same same same same sam		Septers Prind Name: MENTSA Phan	Sample ID	NGWUD40-12(2')	VGWW040-12(4')	VGWU048-17/2)	VGWU040-17(4)	NGWUCH0-16(2')	VGWM040-16(4')	NGWUD40-16(58')	NGWN040-19(2')	NGWN048-19(4')	NGWU040-18(2')	VGWM040-18(4')	(@L)Q1-@fonmon	VENNOAD SET S	Special Instructions/Comments:	Standard Thy		Lab Name:	Cooler packed with ice (')	Specify Turnaround Requirements:	Shipping Tracking #:	20130626 CofC AR Form 06.27.2015

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Final 1.002

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	of 2 [ab Work Order # 536BGH	tion Kay: C	B HCL 2 IL Amona C HNO 3 200 ml Plaste D. NaOH 4 500 ml Plaste	••••• 	H. Other 9. Other 0.		S S		Har	Childh	Hous .	HOUDA		Holo	(Jour)	HOLD		HOLD	toro	toLD			Relinquished By Laboratory Received By	Printed Augh	Signatures	XINCO	1381/2/1/2/	PINK Retained by Arcadis
				PARAMETER ANALYSIS & METHOD																+		C Special QA/QC instructions/1/;	A State of the second By several which a Relinqui	(CAP	Sprature: Sprature:		Permine 4:00 pression	- -
Chevron PM - Rub Speer	CHAIN OF CUSIOUT & LABORALORT ANALYSIS REQUEST FORM	1874 Presenter EVED	6 of Container	S.C.M /	T		Type (*) Matrix	X So X	X So X	X SO X	X & X	X X X	X SO X	× 8 ×	X X X X	X So X	X SO X		× So ×	× So ×	X SO X		Relinguished By	PHOLO NATION PARA		1) C Frim Arcadis	~ 1	5
	<u>*</u>	Arcadis Trippione: 21, 71,3,953,4874		Base 20 Emel Address: TY. 77 MAR. U. C. S. d. av. C. S. d. av. C. add	ES)	A Sampler's Signature	Collection Date Time C) 91131161142	7) 4/13/16/143	10') Maish Inuu	50') 9/13/14/527	1) alishik (600		(7) PIV3/16/1602	(18') Mileilel ('81)	ar) Alialiu Mc21	3(4') 9/14/14949	~ *	(4')	(40')	911/h1/b (TAT 1400	Laboratory Information and Receipt	Cooler Custody Seal (</td <td></td> <td>Sample Receipt:</td> <td>Condition/Cooler Temp:</td> <td>Distribution</td>		Sample Receipt:	Condition/Cooler Temp:	Distribution
	G ARCADIS	Contact a Company Name: A	RAGENS SWITE 300 FM	HOU SAM	Project Name/Location (City, State):	Sample's Printed Nome: Pha M	Sample ID	VGWURS-the (4'	VGWN85-B10(7)	VGWU85-06 (10)	VEININSE - OG (50')	VGWU 85-11 (2')	VGWW85-111	VGWU85-11 (VGWM 85-11 (VGWUR5 - 11 (40)	VGWUSAT3-03(4)	VGWUSAT3-03	NGWUNSAT3-US	NGWH SAT 3-051	NGMULLS-15(2'	Special Instructions/comments:		Leb Name:	Cooler packed with ice (*)	Specify Turmaround Requirements:	Shipping Tracking #:	20730828 CofC AR Form 08-27-2016

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Final 1.002

or 2 Lab Work Order #	Revention Key: Keys Preservation Key: Container Information Key: 0 H.C. 1.4 mber 0 Noold 3.250 ml Visito 0 Noold 3.200 ml Visito 1 A.M.So. 3.200 ml Visito 0 Noold 3.250 ml Visito 1 A.M.So. 3.200 ml Visito 1 A.M.So. 3.200 ml Visito 1 A.M.So. 3.250 ml Visito 1 A.M.So. 3.00 ml Visito 1 A.M.So. 3.00 ml Visito 1 Matrix Key: SE.Sectiment 1 Matrix Key: AAir 1 AAir Other	Haud Haud Haud Haud Haud Haud Haud Haud	ruished By Mathorstory Received By	Parameter Control Cont
OF CUSTODY & LABORATORY	Parameter Analysis & Method			Reprint Control Control Segmentine: Reprint Film Country Segmentine: Film Country S. Film Country: Reprint Segmentine: Reprint Segm
PM ROB SPELT PM ROB SPELT CHAIN OF CUSTOD ANALYSIS REC	Preservative Filment (-) Anomalone Commission Formalone	e 1401 e 1402 b 1402 b 1430 b 1430 b 1432 b 1432 b 1432 b 1432 b 1433 b 1433	Relin	Mittact Interct Interct Interct Interct Sample Receipt Remains MCAA1S Condition/Cooler Temp: Interct Remains Distribution WHITE - Laboratory returns with results
GARCADIS Int CHAIN 2005 SPELT	Contact & Contract & C	hule $(a1)81 - 8110$ Meg hule $(a2)81 - 8100$ Meg hule $(a2)8100$ Meg hule	Special Instructions/Comments: Special Instructions/Comments: SFAMAAVA TAT Laboratory Information and Receipt Lab Name: Cooler Custody Seal (*)	A Cooler packed with ice (*) A P A P A P A P A P A P A P A P A P A





Client: Arcadis - Houston

XENCO Laboratories Prelogin/Nonconformance Report- Sample Log-In

Acceptable Temperature Range: 0 - 6 degC



Air and Metal samples Acceptable Range: Ambient Date/ Time Received: 09/15/2016 11:30:00 AM Temperature Measuring device used : R8 Work Order #: 536864 Comments Sample Receipt Checklist 6.3 #1 *Temperature of cooler(s)? #2 *Shipping container in good condition? Yes #3 *Samples received on ice? Yes #4 *Custody Seal present on shipping container/ cooler? Yes #5 *Custody Seals intact on shipping container/ cooler? Yes #6 Custody Seals intact on sample bottles? Yes #7 *Custody Seals Signed and dated? Yes #8 *Chain of Custody present? Yes #9 Sample instructions complete on Chain of Custody? Yes #10 Any missing/extra samples? No #11 Chain of Custody signed when relinguished/ received? Yes #12 Chain of Custody agrees with sample label(s)? Yes #13 Container label(s) legible and intact? Yes Yes #14 Sample matrix/ properties agree with Chain of Custody? #15 Samples in proper container/ bottle? Yes #16 Samples properly preserved? Yes #17 Sample container(s) intact? Yes #18 Sufficient sample amount for indicated test(s)? Yes #19 All samples received within hold time? Yes #20 Subcontract of sample(s)? N/A #21 VOC samples have zero headspace (less than 1/4 inch bubble)? N/A #22 <2 for all samples preserved with HNO3,HCL, H2SO4? Except for N/A samples for the analysis of HEM or HEM-SGT which are verified by the analysts. #23 >10 for all samples preserved with NaAsO2+NaOH, ZnAc+NaOH? N/A

* Must be completed for after-hours delivery of samples prior to placing in the refrigerator

Analyst:

PH Device/Lot#:

Checklist completed by: Jessica Vramer Jessica Kramer Checklist reviewed by: May Moah Kelsey Brooks

Date: 09/15/2016

Date: 09/16/2016

Analytical Report 560294

for Arcadis - Houston

Project Manager: Jonathan Olsen

HES Transfer Sites

14-SEP-17

Collected By: Client





1211 W. Florida Ave, Midland TX 79701

Xenco-Houston (EPA Lab code: TX00122): Texas (T104704215), Arizona (AZ0765), Florida (E871002), Louisiana (03054) Oklahoma (9218)

Xenco-Dallas (EPA Lab code: TX01468): Texas (T104704295) Xenco-Odessa (EPA Lab code: TX00158): Texas (T104704400) Xenco-San Antonio: Texas (T104704534) Xenco Phoenix (EPA Lab Code: AZ00901): Arizona(AZ0757) Xenco-Phoenix Mobile (EPA Lab code: AZ00901): Arizona (AZM757)



14-SEP-17



Project Manager: **Jonathan Olsen Arcadis - Houston** 10205 Westheimer Rd., Suite 800 Houston, TX 77042

Reference: XENCO Report No(s): 560294 HES Transfer Sites Project Address: Buckeye NM

Jonathan Olsen:

We are reporting to you the results of the analyses performed on the samples received under the project name referenced above and identified with the XENCO Report Number(s) 560294. All results being reported under this Report Number apply to the samples analyzed and properly identified with a Laboratory ID number. Subcontracted analyses are identified in this report with either the NELAC certification number of the subcontract lab in the analyst ID field, or the complete subcontracted report attached to this report.

Unless otherwise noted in a Case Narrative, all data reported in this Analytical Report are in compliance with NELAC standards. The uncertainty of measurement associated with the results of analysis reported is available upon request. Should insufficient sample be provided to the laboratory to meet the method and NELAC Matrix Duplicate and Matrix Spike requirements, then the data will be analyzed, evaluated and reported using all other available quality control measures.

The validity and integrity of this report will remain intact as long as it is accompanied by this letter and reproduced in full, unless written approval is granted by XENCO Laboratories. This report will be filed for at least 5 years in our archives after which time it will be destroyed without further notice, unless otherwise arranged with you. The samples received, and described as recorded in Report No. 560294 will be filed for 45 days, and after that time they will be properly disposed without further notice, unless otherwise arranged with you. We reserve the right to return to you any unused samples, extracts or solutions related to them if we consider so necessary (e.g., samples identified as hazardous waste, sample sizes exceeding analytical standard practices, controlled substances under regulated protocols, etc).

We thank you for selecting XENCO Laboratories to serve your analytical needs. If you have any questions concerning this report, please feel free to contact us at any time.

Respectfully,

Huns hoah

Kelsey Brooks Project Manager

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Sample Id

VGWUSAT3-07(4')
VGWUSAT3-07(10')
VGWUSAT3-07(20')
VGWUSAT3-07(30')
VGWUSAT3-07(60')
VGWUSAT3-06(4')
VGWUSAT3-06(10')
VGWUSAT3-07(40')
VGWUSAT3-07(50')
VGWUSAT3-06(20')
VGWUSAT3-06(30')

Sample Cross Reference 560294



HES Transfer Sites

Date Collected	Sample Depth	Lab Sample Id
08-14-17 13:56		560294-001
08-14-17 14:00		560294-002
08-14-17 14:13		560294-003
08-14-17 14:20		560294-004
08-14-17 15:55		560294-005
08-15-17 08:25		560294-006
08-15-17 08:30		560294-007
08-15-17 15:04		560294-010
08-15-17 15:30		560294-011
08-15-17 08:36		Not Analyzed
08-15-17 08:44		Not Analyzed
	08-14-17 13:56 08-14-17 14:00 08-14-17 14:13 08-14-17 14:20 08-14-17 15:55 08-15-17 08:25 08-15-17 08:30 08-15-17 15:04 08-15-17 15:30 08-15-17 08:36	08-14-17 13:56 08-14-17 14:00 08-14-17 14:13 08-14-17 14:20 08-14-17 15:55 08-15-17 08:25 08-15-17 08:30 08-15-17 15:04 08-15-17 15:30 08-15-17 08:36





CASE NARRATIVE

Client Name: Arcadis - Houston Project Name: HES Transfer Sites

Project ID: Work Order Number(s): 560294 Report Date: 14-SEP-17 Date Received: 08/16/2017

Sample receipt non conformances and comments:

Samples 560294-007 and 560294-010 released from hold per Melisa Darrow e-mail 08/24/17-- KB

VGWUSAT3-07 (50') released from hold 09/05/17 per Melisa Darrow E-mail-- KB VGWUSAT3-07 (60') released from hold 09/12/17 per Melisa Darrow E-mail-- KB

Sample receipt non conformances and comments per sample:

None



Project Id:Contact:Jonathan OlsenProject Location:Buckeye NM

Certificate of Analysis Summary 560294

Arcadis - Houston, Houston, TX Project Name: HES Transfer Sites



Date Received in Lab:Wed Aug-16-17 10:00 amReport Date:14-SEP-17Project Manager:Kelsey Brooks

	Lab Id:	560294-0	01	560294-0	02	560294-0	03	560294-0	04	560294-0)05	560294-0	06
Analysis Requested	Field Id:	VGWUSAT3	-07(4')	VGWUSAT3-	07(10')	VGWUSAT3-	07(20')	VGWUSAT3-	07(30')	VGWUSAT3-	-07(60')	VGWUSAT3	-06(4')
Analysis Kequeslea	Depth:												
	Matrix:	SOIL		SOIL									
	Sampled:	Aug-14-17	13:56	Aug-14-17	14:00	Aug-14-17	14:13	Aug-14-17	14:20	Aug-14-17	15:55	Aug-15-17 (08:25
Inorganic Anions by EPA 300/300.1	Extracted:	Aug-22-17	10:30	Aug-22-17	10:30	Aug-22-17	10:30	Aug-22-17	10:30	Sep-12-17	17:15	Aug-22-17 1	10:30
	Analyzed:	Aug-22-17	18:55	Aug-22-17	19:03	Aug-22-17	19:10	Aug-22-17	19:18	Sep-13-17	00:45	Aug-22-17 1	19:33
	Units/RL:	mg/kg	RL	mg/kg	RL								
Chloride		68.7	4.99	36.8	5.00	64.9	4.87	427	4.98	140	4.91	279	4.94

This analytical report, and the entire data package it represents, has been made for your exclusive and confidential use. The interpretations and results expressed throughout this analytical report represent the best judgment of XENCO Laboratories. XENCO Laboratories assumes no responsibility and makes no warranty to the end use of the data hereby presented. Our liability is limited to the amount invoiced for this work order unless otherwise agreed to in writing.

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Huns Roah

Kelsey Brooks Project Manager



Project Id:Contact:Jonathan OlsenProject Location:Buckeye NM

Certificate of Analysis Summary 560294

Arcadis - Houston, Houston, TX Project Name: HES Transfer Sites



Date Received in Lab:Wed Aug-16-17 10:00 amReport Date:14-SEP-17Project Manager:Kelsey Brooks

	Lab Id:	560294-0	07	560294-0	10	560294-0	11		
Analysis Requested	Field Id:	VGWUSAT3-0	06(10')	VGWUSAT3-	07(40')	VGWUSAT3-0)7(50')		
Analysis Kequestea	Depth:								
	Matrix:	SOIL		SOIL		SOIL			
	Sampled:	Aug-15-17 (08:30	Aug-15-17	15:04	Aug-15-17 1	5:30		
Inorganic Anions by EPA 300/300.1	Extracted:	Aug-30-17	14:25	Aug-30-17	14:25	Sep-11-17 1	4:15		
	Analyzed:	Aug-30-17	18:22	Aug-30-17	18:53	Sep-11-17 2	1:45		
	Units/RL:	mg/kg	RL	mg/kg	RL	mg/kg	RL		
Chloride		27.8	5.00	489	5.00	607	4.99		

This analytical report, and the entire data package it represents, has been made for your exclusive and confidential use. The interpretations and results expressed throughout this analytical report represent the best judgment of XENCO Laboratories. XENCO Laboratories assumes no responsibility and makes no warranty to the end use of the data hereby presented. Our liability is limited to the amount invoiced for this work order unless otherwise agreed to in writing.

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Huns Roah

Kelsey Brooks Project Manager



Flagging Criteria



- X In our quality control review of the data a QC deficiency was observed and flagged as noted. MS/MSD recoveries were found to be outside of the laboratory control limits due to possible matrix /chemical interference, or a concentration of target analyte high enough to affect the recovery of the spike concentration. This condition could also affect the relative percent difference in the MS/MSD.
- **B** A target analyte or common laboratory contaminant was identified in the method blank. Its presence indicates possible field or laboratory contamination.
- **D** The sample(s) were diluted due to targets detected over the highest point of the calibration curve, or due to matrix interference. Dilution factors are included in the final results. The result is from a diluted sample.
- E The data exceeds the upper calibration limit; therefore, the concentration is reported as estimated.
- **F** RPD exceeded lab control limits.
- J The target analyte was positively identified below the quantitation limit and above the detection limit.
- U Analyte was not detected.
- L The LCS data for this analytical batch was reported below the laboratory control limits for this analyte. The department supervisor and QA Director reviewed data. The samples were either reanalyzed or flagged as estimated concentrations.
- **H** The LCS data for this analytical batch was reported above the laboratory control limits. Supporting QC Data were reviewed by the Department Supervisor and QA Director. Data were determined to be valid for reporting.
- K Sample analyzed outside of recommended hold time.
- JN A combination of the "N" and the "J" qualifier. The analysis indicates that the analyte is "tentatively identified" and the associated numerical value may not be consistent with the amount actually present in the environmental sample.
- ** Surrogate recovered outside laboratory control limit.
- **BRL** Below Reporting Limit.
- RL Reporting Limit

MDL Method Detection Limit	SDL Sample Detection Limit	LOD Limit of Detection
PQL Practical Quantitation Limit	MQL Method Quantitation Limit	LOQ Limit of Quantitation

- **DL** Method Detection Limit
- NC Non-Calculable
- + NELAC certification not offered for this compound.
- * (Next to analyte name or method description) = Outside XENCO's scope of NELAC accreditation

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9701 Harry Hines Blvd , Dallas, TX 75220	(214) 902 0300	(214) 351-9139
5332 Blackberry Drive, San Antonio TX 78238	(210) 509-3334	(210) 509-3335
1211 W Florida Ave, Midland, TX 79701	(432) 563-1800	(432) 563-1713
2525 W. Huntington Dr Suite 102, Tempe AZ 85282	(602) 437-0330	



BS / BSD Recoveries



Project Name: HES Transfer Sites

Work Order #: 560294							Proj	ect ID:			
Analyst: MGO	D	ate Prepar	ed: 08/22/20	17			Date A	nalyzed:	08/22/2017		
Lab Batch ID: 3025725 Sample: 729750-1-E	BKS	Batch	n #: 1					Matrix:	Solid		
Units: mg/kg		BLAN	K /BLANK	SPIKE /]	BLANK	SPIKE DUP	LICATE	RECOV	ERY STUI	DY	
Inorganic Anions by EPA 300/300.1 Analytes	Blank Sample Result [A]	Spike Added [B]	Blank Spike Result [C]	Blank Spike %R [D]	Spike Added [E]	Blank Spike Duplicate Result [F]	Blk. Spk Dup. %R [G]	RPD %	Control Limits %R	Control Limits %RPD	Flag
Chloride	<4.90	245	228	93	248	236	95	3	90-110	20	
Analyst: MNV	D	ate Prepar	ed: 08/30/20	17	1		Date A	nalyzed:	08/30/2017	1	,,
Lab Batch ID: 3026341 Sample: 730135-1-E	BKS	Batch	n#: 1					Matrix:	Solid		
Units: mg/kg		BLAN	K /BLANK	SPIKE / 1	BLANK S	SPIKE DUP	LICATE	RECOV	ERY STUI	DY	
Inorganic Anions by EPA 300/300.1 Analytes	Blank Sample Result [A]	Spike Added [B]	Blank Spike Result [C]	Blank Spike %R [D]	Spike Added [E]	Blank Spike Duplicate Result [F]	Blk. Spk Dup. %R [G]	RPD %	Control Limits %R	Control Limits %RPD	Flag
Chloride	<5.00	250	241	96	250	241	96	0	90-110	20	
Analyst: MNV	D	ate Prepar	ed: 09/11/20	17	1	1	Date A	nalyzed:		1	
Lab Batch ID: 3027337 Sample: 730721-1-E	BKS	Batch	n#: 1					Matrix:	Solid		
Units: mg/kg		BLAN	K /BLANK	SPIKE /]	BLANKS	SPIKE DUP	LICATE	RECOV	ERY STUI	OY	
Inorganic Anions by EPA 300/300.1 Analytes	Blank Sample Result [A]	Spike Added [B]	Blank Spike Result [C]	Blank Spike %R [D]	Spike Added [E]	Blank Spike Duplicate Result [F]	Blk. Spk Dup. %R [G]	RPD %	Control Limits %R	Control Limits %RPD	Flag
Chloride	<5.00	250	246	98	250	246	98	0	90-110	20	

Relative Percent Difference RPD = $200^{*}|(C-F)/(C+F)|$ Blank Spike Recovery [D] = $100^{*}(C)/[B]$ Blank Spike Duplicate Recovery [G] = $100^{*}(F)/[E]$ All results are based on MDL and Validated for QC Purposes



BS / BSD Recoveries



Project Name: HES Transfer Sites

Work Order #: 560294							Proj	ject ID:			
Analyst: MNV	D	ate Prepar	ed: 09/12/201	7			Date A	nalyzed: (09/12/2017		
Lab Batch ID: 3027464 Sample: 730807-1-B	SKS	Batcl	h #: 1					Matrix: S	Solid		
Units: mg/kg		BLAN	K /BLANK S	SPIKE / H	BLANK	SPIKE DUPI	LICATE	RECOV	ERY STUD	ΟY	
	Blank Sample Result [A]		Blank Spike Result	Blank Spike %R	Spike Added	Blank Spike Duplicate	Blk. Spk Dup. %R	RPD %	Control Limits %R	Control Limits %RPD	Flag
Analytes		[B]	[C]	[D]	[E]	Result [F]	[G]				
Chloride	<5.00	250	254	102	250	253	101	0	90-110	20	

Relative Percent Difference RPD = $200^{*}|(C-F)/(C+F)|$ Blank Spike Recovery [D] = $100^{*}(C)/[B]$ Blank Spike Duplicate Recovery [G] = $100^{*}(F)/[E]$ All results are based on MDL and Validated for QC Purposes



Project Name: HES Transfer Sites



Work Order # :	560294						Project II):				
Lab Batch ID:	3025725	QC- Sample ID:	560112	-001 S	Ba	tch #:	1 Matrix	: Soil				
Date Analyzed:	08/22/2017	Date Prepared:	08/22/2	017	Ar	alyst: N	MGO					
Reporting Units:	mg/kg		N	IATRIX SPIK	E / MAT	RIX SPI	KE DUPLICA	FE REC	OVERY	STUDY		
Inorgai	nic Anions by EPA 300/300.1	Parent Sample Result	Spike Added	Spiked Sample Result [C]	Spiked Sample %R	Spike Added	Duplicate Spiked Sample Result [F]	Spiked Dup. %R	RPD %	Control Limits %R	Control Limits %RPD	Flag
	Analytes	[A]	[B]	[0]	[D]	[E]	itesuit [1]	[G]			/one D	
Chloride		697	246	924	92	246	917	89	1	90-110	20	Х
Lab Batch ID:	3025725	QC- Sample ID:	560113	-004 S	Ba	tch #:	1 Matrix	: Soil				
Date Analyzed:	08/22/2017	Date Prepared:	08/22/2	017	Ar	alyst: 1	MGO					
Reporting Units:	mg/kg		Ν	IATRIX SPIK	E / MAT	RIX SPI	KE DUPLICA'	FE REC	OVERY	STUDY		
Inorgan	nic Anions by EPA 300/300.1	Parent Sample Result	Spike Added	Spiked Sample Result [C]	Spiked Sample %R	Spike Added	Duplicate Spiked Sample Result [F]	Spiked Dup. %R	RPD %	Control Limits %R	Control Limits %RPD	Flag
	Analytes	[A]	[B]	[0]	[D]	[E]		[G]			/ 112	
Chloride		14.2	246	279	108	246	277	107	1	90-110	20	
Lab Batch ID:	3026341	QC- Sample ID:	561557	-003 S	Ba	tch #:	1 Matrix	: Soil		·	-	
Date Analyzed:	08/30/2017	Date Prepared:	08/30/2	017	Ar	alyst: N	MNV					
Reporting Units:	mg/kg		N	IATRIX SPIK	E / MAT	RIX SPI	KE DUPLICA'	FE REC	OVERY	STUDY		
Inorgai	nic Anions by EPA 300/300.1	Parent Sample Result	Spike Added	Spiked Sample Result [C]	Sample %R	Spike Added	Duplicate Spiked Sample Result [F]	Spiked Dup. %R	RPD %	Control Limits %R	Control Limits %RPD	Flag
	Analytes	[A]	[B]		[D]	[E]		[G]				
Chloride		265	250	529	106	250	529	106	0	90-110	20	

Matrix Spike Percent Recovery $[D] = 100^{\circ}(C-A)/B$ Relative Percent Difference RPD = $200^{\circ}|(C-F)/(C+F)|$ Matrix Spike Duplicate Percent Recovery [G] = 100*(F-A)/E



Project Name: HES Transfer Sites



Work Order # :	560294						Project II):				
Lab Batch ID:	3027337	QC- Sample ID:	562386	-013 S	Ba	tch #:	1 Matrix	x: Soil				
Date Analyzed:	09/11/2017	Date Prepared:	09/11/2	017	Ar	alyst: N	MNV					
Reporting Units:	mg/kg		Μ	ATRIX SPIK	E / MAT	RIX SPI	KE DUPLICA	TE REC	OVERY	STUDY		
Inorgan	nic Anions by EPA 300/300.1	Parent Sample Result	Spike Added	Spiked Sample Result [C]	Spiked Sample %R	Spike Added	Duplicate Spiked Sample Result [F]	Spiked Dup. %R	RPD %	Control Limits %R	Control Limits %RPD	Flag
	Analytes	[A]	[B]	[0]	[D]	[E]	Kesut [1]	[G]				
Chloride		24.4	250	258	93	250	258	93	0	90-110	20	
Lab Batch ID:	3027337	QC- Sample ID:	562386	-023 S	Ba	tch #:	1 Matrix	k: Soil				
Date Analyzed:	09/11/2017	Date Prepared:	09/11/2	017	Ar	alyst: N	MNV					
Reporting Units:	mg/kg		Μ	ATRIX SPIK	E / MAT	RIX SPI	KE DUPLICA	TE REC	OVERY	STUDY		
Inorgan	nic Anions by EPA 300/300.1	Parent Sample Result	Spike Added	Spiked Sample Result [C]	Spiked Sample %R	Spike Added	Duplicate Spiked Sample Result [F]	Spiked Dup. %R	RPD %	Control Limits %R	Control Limits %RPD	Flag
	Analytes	[A]	[B]	[0]	[D]	[E]	Kesut [1]	[G]				
Chloride		12000	249	11800	0	250	11900	0	1	90-110	20	Х
Lab Batch ID:	3027464	QC- Sample ID:	562543	-001 S	Ba	tch #:	1 Matrix	x: Soil			-	
Date Analyzed:	09/13/2017	Date Prepared:	09/12/2	017	Ar	alyst: N	MNV					
Reporting Units:	mg/kg		Μ	ATRIX SPIK	E / MAT	RIX SPI	KE DUPLICA	TE REC	OVERY	STUDY		
Inorgan	nic Anions by EPA 300/300.1	Parent Sample Result	Spike Added	Spiked Sample Result [C]	Spiked Sample %R	Spike Added	Duplicate Spiked Sample Result [F]	Spiked Dup. %R	RPD %	Control Limits %R	Control Limits %RPD	Flag
	Analytes	[A]	[B]	1-1	[D]	[E]		[G]				
Chloride		4270	250	4380	44	250	4370	40	0	90-110	20	Х

Matrix Spike Percent Recovery $[D] = 100^{\circ}(C-A)/B$ Relative Percent Difference RPD = $200^{\circ}|(C-F)/(C+F)|$ Matrix Spike Duplicate Percent Recovery [G] = 100*(F-A)/E



Project Name: HES Transfer Sites



Work Order # :	560294						Project II):				
Lab Batch ID:	3027464	QC- Sample ID:	562543	-011 S	Ba	tch #:	1 Matrix	x: Soil				
Date Analyzed:	09/13/2017	Date Prepared:	09/12/2	017	Ar	alyst: N	/INV					
Reporting Units:	mg/kg		Μ	ATRIX SPIK	E / MAT	RIX SPI	KE DUPLICA	TE REC	OVERY	STUDY		
Inorgai	nic Anions by EPA 300/300.1	Parent Sample	Spike	Spiked Sample Result	Sample	Spike	Duplicate Spiked Sample		RPD	Control Limits	Control Limits	Flag
	Analytes	Result [A]	Added [B]	[C]	%R [D]	Added [E]	Result [F]	%R [G]	%	%R	%RPD	
Chloride		7440	249	7550	44	249	7530	36	0	90-110	20	X

Matrix Spike Percent Recovery $[D] = 100^{\circ}(C-A)/B$ Relative Percent Difference RPD = $200^{\circ}|(C-F)/(C+F)|$ Matrix Spike Duplicate Percent Recovery $[G] = 100^{*}(F-A)/E$

ARCADIS		CHAIN	CHAIN OF CUSTODY & LAB ANALYSIS REQUEST F	Y & LABORATORY QUEST FORM	Page of Lab	Lab Work Order # S(l)(0294
Contact & Company Name:	Telephone:		Preservative E			×
Scrathan Olsen Aice	713-953-4874	74	Filtered (<)		A. H ₂ SO ₄	
Resultation of Kond Suite 800	NA		# of Containers		B. HCL	2. 1 LAmber 3. 250 ml Plastic
	E-mail Address:		PAR	PARAMETER ANALYSIS & METHOD	, I I I I I I I I I I I I I I I I I I I	
Project NameLocation (City, State): 1	Vialethan + Dister Dag	accediencen		/ / /	/ /	
5 Transfer Sites Bustage NM	26.	1701	1 1	/ / / /	H. Other:	1
Sampag's Frinted Name:	Sampler's Signature:	U)	/ide /	/ / / /	Matrix Key:	SE - Sediment
Sample ID	Collection	Type (✓) Matrix	1410,		W - Water T - Tissue	SL - Sludge SW - Sample Wipe A - Air Other:
and and a second	Date Time Cc	Comp Grab			/ / REMARKS	IKS
VGwuSAT3-07(4)	8-14-17 1356	V 50	-			
VOWLISAT 3-07 (10)	8-14-17 1400	V 50	1			
V6WUSAT3-07(20)	8-14-17 1413	1 50	-			
VGWUSAT3-07(30')	8-14-17 1420	V 50	1			
VGWUSAT3-07(60)	8-14-17 15:55	V SO	-		Hold Sample	
VGWUSAT3-06(4')	8-15-17 0825	V 50	-			
VGWUSAT3-06 (10)	8-15-17 0830	V 50	-		Hold Sample	× 13
VGWU SAT3-06 (20)	8-15-170836	V 50	-		Sano	
VGWUSAT 3-06(30)	8-15-17 0844	V 50	-			4
VGWUSAT3-07(40)	8-14-17 1504	N 50				1 las
V6~usAT3-07(50')	8-14-17 1530	V 50			Samp	
					Temp: U CF:(0-6: -0.2°C) IR ID:R-8
Special Instructions/Comments:	-	-	-	☐ Special QA/QC Instructions(√);	(6-23: +0.2°C) Corrected Temp:	9. C)
Laboratory Information and Receipt	on and Receipt		Relinquished By	Received By	Relinquished By	Laboratory Received By
Xenco	tody Seal (Ryan Nanny	Printed Name:	Printed Name:	Shawoner Smith
Cooler packed with ice (V)	Intact	Not Intact Signat	C Star	Signature: U C	Signature:	Signature:
Specify Turnaround Requirements: Star adde (II TAT	Sample Receipt:	H VUC	scard's	Firm/Courier:	Firm/Courier:	
Shipping Tracking #	Condition/Cooler Temp:	CO O Date/Time 8-15-	8-15-17 / 1600	Date/Time	Date/Time:	Baterine -16-17 10.00
20730826 CofC AR Form 08.27.2015	Distribution:		WHITE – Laboratory returns with results		YELLOW – Lab copy	PINK – Retained by Arcadis

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XENCO Laboratories Prelogin/Nonconformance Report- Sample Log-In



Client: Arcadis - Houston Acceptable Temperature Range: 0 - 6 degC Air and Metal samples Acceptable Range: Ambient Date/ Time Received: 08/16/2017 10:00:00 AM Temperature Measuring device used : R8 Work Order #: 560294 Comments Sample Receipt Checklist 1.2 #1 *Temperature of cooler(s)? #2 *Shipping container in good condition? Yes #3 *Samples received on ice? Yes #4 *Custody Seal present on shipping container/ cooler? N/A #5 *Custody Seals intact on shipping container/ cooler? N/A #6 Custody Seals intact on sample bottles? N/A #7 *Custody Seals Signed and dated? N/A #8 *Chain of Custody present? Yes #9 Sample instructions complete on Chain of Custody? Yes #10 Any missing/extra samples? No #11 Chain of Custody signed when relinguished/ received? Yes #12 Chain of Custody agrees with sample label(s)? Yes #13 Container label(s) legible and intact? Yes #14 Sample matrix/ properties agree with Chain of Custody? Yes #15 Samples in proper container/ bottle? Yes #16 Samples properly preserved? Yes #17 Sample container(s) intact? Yes #18 Sufficient sample amount for indicated test(s)? Yes #19 All samples received within hold time? Yes #20 Subcontract of sample(s)? No #21 VOC samples have zero headspace? N/A

* Must be completed for after-hours delivery of samples prior to placing in the refrigerator

Analyst:

PH Device/Lot#:

Date: 08/16/2017

Checklist completed by: Shawnee Smith Checklist reviewed by: Mark Moah Kelsey Brooks

Date: 08/16/2017