



February 11, 2016

**REVIEWED**

*By Kellie Jones at 9:01 am, Feb 17, 2016*

Ms. Kellie Jones  
Environmental Specialist, District 1  
Oil Conservation Division, EMNRD  
1625 French Drive  
Hobbs, NM 88240

**APPROVED**

*By Kellie Jones at 9:01 am, Feb 17, 2016*

**Re: Sundance Services, Inc. NM-01-0003  
Release Remediation Plan**

1. All samples should be discrete.

Dear Ms. Jones:

Gordon Environmental, Inc (GEI), on behalf of Sundance Services, Inc. (SSI), has developed the attached Release Remediation Plan as outlined in 19.15.29.11 NMAC. This plan was developed to address the efforts currently undertaken by SSI in response to the release that occurred on December 30, 2015, as well as the additional efforts proposed to return the impacted areas to their pre-release condition. This Plan is designed to supplement and support the initial filing of Form C-141 which SSI provided to the Division on January 5, 2016.

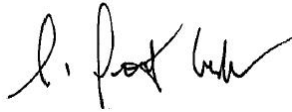
During our recent site visit on January 29, 2016 we reviewed the following efforts SSI has undertaken to date:

1. Containment of the release within the smallest area possible;
2. Ground delineation of the contained extent of the release depicted on a drawing reviewed with you onsite (included as Attachment 1 to the Remediation Plan);
3. Containment of Pond 2/3;
4. Initiation of contaminated water removal (to date approximately 63,000 BBLS have been removed for treatment and disposal offsite);
5. Containment of Pond 1;
6. Initiation of contaminated soil removal (to date approximately 10,000 CY have been removed for disposal in the onsite landfill);
7. GEI collected background samples for analysis near the perimeter of the release (sample locations depicted on Attachment 1 to the Remediation Plan);
8. Analysis of the background samples was completed (included as Attachment 2 in the Remediation Plan).

The Release Remediation Plan was developed to provide ongoing guidance and direction to SSI in their efforts to manage this remediation. It is also designed to provide the Oil Conservation Division (OCD) with an outline of the activities that will be undertaken by SSI and the estimated schedule for completion of the efforts to return this facility to full operation as promptly as possible. The ultimate goal of SSI is to receive approval for the pending Closure Plan that will guide this Facility as it ceases accepting oil field waste for processing and disposal once the new Sundance West Facility is permitted and fully operational.

We look forward to working with you and the OCD on the remediation of this release and the ultimate approval of the SSI Closure Plan. Please contact GEI at 505.867.6990 or cfiedler@gordonenvironmental.com with your comments and questions.

Very truly yours,  
Gordon Environmental, Inc.

A handwritten signature in black ink, appearing to read 'I. Keith Gordon'.

I. Keith Gordon, P.E.  
Principal

A handwritten signature in black ink, appearing to read 'Charles W. Fiedler P.E.'.

Charles W. Fiedler  
Sr. Project Director

cc: Mr. Arif Musani, Sundance West, LLC  
Mr. Andrew L. Wambsganss, Brown-Pruitt

Attachment: Release Remediation Plan

# **RELEASE REMEDIATION PLAN**

## **SUNDANCE SERVICES, INC.**

**FEBRUARY 2016**

**Prepared For:**

Sundance Services, Inc.  
1001 6th Street  
Eunice, NM 88231

**Submitted To:**

New Mexico Energy, Minerals, and Natural Resources Department  
Oil Conservation Division  
1625 French Drive  
Hobbs, NM 88240  
575.393.6161

**Prepared By:**

Gordon Environmental, Inc.  
213 S. Camino del Pueblo  
Bernalillo, NM 87004  
505.867.6990



**SUNDANCE SERVICES, INC.**  
**RELEASE REMEDIATION PLAN**  
**FEBRUARY 2016**

**OVERVIEW**

On January 30, 2015 Sundance Services, Inc. (SSI) experienced extreme weather conditions (freezing temperatures and significant snowfall) that resulted in a release within a portion of the facility. Ponds 2/3 reached capacity from the severe snowstorm and frozen soil conditions expanded the soil levee on these ponds diminishing their structural capacity to withhold the material behind the levee. This resulted in a breach of the levee system, which released drilling muds and liquids from Ponds 2/3 into Pond 1 and the areas surrounding the facility entrance. Liquids entering Pond 1 subsequently breached the eastern levee of this pond along the access road, resulting in the release of additional produced water from Pond 1 to the areas surrounding the facility entrance. **Attachment 1** provides a rough delineation of the area inundated by the release.

SSI personnel worked around the clock utilizing clean soil to contain the release to operational areas of the SSI facility, precluding any release outside the facility boundary. Temporary levees were established at the Pond 2/3 breach and the Pond 1 breach to minimize the release of additional materials as the released liquid materials are being pumped up for treatment and processing onsite and offsite and the sludge materials are dried for landfilling onsite.

**MILESTONES**

The following schedule provides the Milestones accomplished to date and still remaining to be accomplished with anticipated completion dates:

1. Release Event started	12/30/2015@6:00 pm	
2. Reported verbally to OCD by phone	12/30/2015@6:30 pm to Maxey Brown	
3. Spill Containment	12/30/2015	
4. Initiated Water Removal	12/30/2015	
5. Ground Delineation of Spill	12/31/2015	
6. Initiated Sludge Removal	12/31/2015	
7. Pond 2/3 temporary Levee	01/12/2016	
8. Pond 1 temporary Levee	01/17/2016	
9. Background Soil Samples	01/19/2016	
10. Background Sample Results	01/26/2016	<b>Attachment 2</b>
11. Levee Construction Material Analysis	02/20/2016	
12. Sundance Jet-Out Rehabilitation	03/01/2016	
13. Pond 2/3 Permanent Levee	06/01/2016	
14. Remediation South of Entrance Road	07/01/2016	
15. Pond 1 Levee Replacement	09/01/2016	
16. Remediation North of Entrance Road	09/01/2016	
17. Confirmation Soil Samples	12/01/2016	
18. Monitor Well Installations	01/01/2017	

## **REMEDATION METHODOLOGY**

SSI has undertaken the following efforts to manage the liquids and sludges released on the facility.

### **Liquids Removal**

Produced water discharged with this release is being pumped and transported with tanker trucks to offsite Oil Conservation Division (OCD) permitted facilities for treatment and disposal. When onsite Pond capacities are restored, these liquids will be deposited in permitted Ponds onsite.

### **Sludge Solidification**

Sludges remaining after liquids have been removed from the release area are being solidified in-place with clean soils available from onsite and minimally contaminated soils received for disposal at the facility. Once the sludges are solidified to a level that they will pass the paint filter test these materials are transported to the onsite SSI landfill for disposal. Over excavated materials, removed to expose clean soil, are being used as absorbents to solidify remaining sludges prior to landfilling.

### **Site Sampling**

Once materials have been removed from the release area, sampling will be conducted in accordance with industry standards (i.e., United States Environmental Protection Agency (EPA) publication SW-846: *Test Methods for Evaluating Solid Waste, Physical/Chemical Methods, Chapter 9.*) This sampling will be compared to the reference background samples that were collected from points outside the release area.

A sampling grid of at least 5 tests per acre (as outlined in the proposed Closure Plan) will be utilized to demonstrate and document proper remediation in the release areas identified in **Attachment 1**. Soil samples will be taken at select locations on the sampling grid in the remediation area and at the remediated clean surface. Samples will be evaluated for the following constituents:

- Total petroleum hydrocarbons (TPH) by EPA Method 8015M/D: DRO/MRO/GRO
- Benzene, Toluene, Ethylbenzene, and Xylenes (BTEX) by EPA Method 8021B: Volatiles
- Chlorides

Sample results will be submitted to OCD's Region 1 Field Office (Hobbs). Provided the sample results indicate no contamination persists within the release area on the Facility in excess of allowable levels, SSI will resume permitted activities within this area. If contamination is observed at the surface, excavation and sampling will continue in six-inch increments to a depth where testes confirm applicable regulatory remediation standards have been met.

### **Levee Reconstruction**

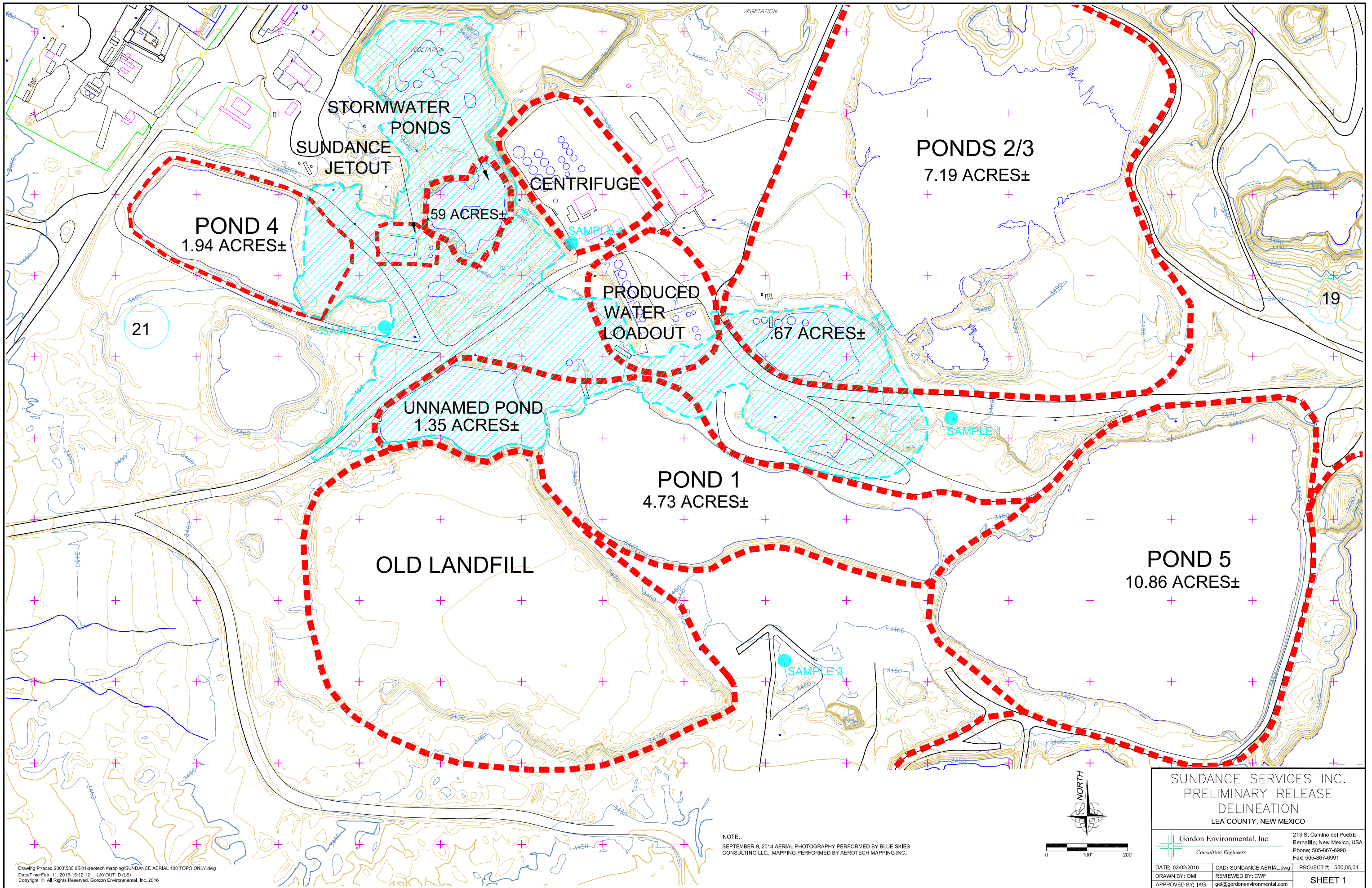
SSI will proceed with levee reconstruction as needed concurrently with the other remediation efforts. In the interim, prior to any required levee reconstruction, SSI use of the affected Ponds (2/3 and 1) will be constrained by a material management plan that will require the removal of remediated volume of material equal to the volume of material deposited into the Ponds for treatment (e.g. for every barrel or cubic yard of material deposited for treatment in the respective Ponds an equal quantity will be removed after processing) to maintain the reduced liquid levels in the affected Ponds.

Levee reconstruction will include documentation of the materials (i.e., quality and quantity) used for the levee repair. This effort will require repair or redevelopment of the applicable Pond levees utilizing Chinle Formation (Red Bed Clays) as the levee reconstruction material. Samples of the proposed reconstruction materials were collected for analysis during the recent site visit and the laboratory results will be provided to OCD upon the completion of testing. The levees will be reconstructed based on guidance documents provided by the New Mexico Office of State Engineer and will extend a sufficient distance beyond each breach and tie into the existing levee at these locations.

**SUNDANCE SERVICES, INC.  
RELEASE REMEDIATION PLAN  
FEBRUARY 2016**

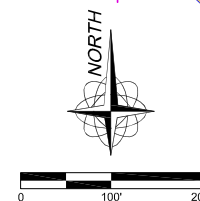
**ATTACHMENT 1  
PRELIMINARY RELEASE DELINEATION**





Drawing: P:\acad 2003\530.05.01\aeotech mapping\SUNDANCE AERIAL 100 TOPO ONLY.dwg  
Date/Time: Feb. 11, 2016 15:12:12 - LAYOUT: D (L.S.)  
Copyright: © All Rights Reserved, Gordon Environmental, Inc. 2016

NOTE:  
SEPTEMBER 9, 2014 AERIAL PHOTOGRAPHY PERFORMED BY BLUE SKIES  
CONSULTING LLC. MAPPING PERFORMED BY AEROTECH MAPPING INC.



SUNDANCE SERVICES INC.  
PRELIMINARY RELEASE  
DELINEATION  
LEA COUNTY, NEW MEXICO

 Gordon Environmental, Inc.  
Consulting Engineers

213 S. Camino del Pueblo  
Bernalillo, New Mexico, USA  
Phone: 505-867-6990  
Fax: 505-867-6991

DATE: 02/02/2016	CAD: SUNDANCE AERIAL.dwg	PROJECT #: 530.05.01
DRAWN BY: DMI	REVIEWED BY: CWF	SHEET 1
APPROVED BY: IKG	gek@gordonenvironmental.com	



**SUNDANCE SERVICES, INC.  
RELEASE REMEDIATION PLAN  
FEBRUARY 2016**

**ATTACHMENT 2  
BACKGROUND SAMPLE RESULTS**



Hall Environmental Analysis Laboratory  
4901 Hawkins NE  
Albuquerque, NM 87109  
TEL: 505-345-3975 FAX: 505-345-4107  
Website: [www.hallenvironmental.com](http://www.hallenvironmental.com)

January 26, 2016

Charles Fiedler

Gordon Environmental, Inc.  
213 S. Camino del Pueblo  
Bernalillo, NM 87004  
TEL: (505) 867-6990  
FAX (505) 867-6991

RE: Sundance Services Inc

OrderNo.: 1601677

Dear Charles Fiedler:

Hall Environmental Analysis Laboratory received 5 sample(s) on 1/20/2016 for the analyses presented in the following report.

These were analyzed according to EPA procedures or equivalent. To access our accredited tests please go to [www.hallenvironmental.com](http://www.hallenvironmental.com) or the state specific web sites. In order to properly interpret your results it is imperative that you review this report in its entirety. See the sample checklist and/or the Chain of Custody for information regarding the sample receipt temperature and preservation. Data qualifiers or a narrative will be provided if the sample analysis or analytical quality control parameters require a flag. When necessary, data qualifiers are provided on both the sample analysis report and the QC summary report, both sections should be reviewed. All samples are reported, as received, unless otherwise indicated. Lab measurement of analytes considered field parameters that require analysis within 15 minutes of sampling such as pH and residual chlorine are qualified as being analyzed outside of the recommended holding time.

Please don't hesitate to contact HEAL for any additional information or clarifications.

ADHS Cert #AZ0682 -- NMED-DWB Cert #NM9425 -- NMED-Micro Cert #NM0190

Sincerely,

A handwritten signature in black ink, appearing to read 'Andy Freeman', is written over a horizontal line.

Andy Freeman  
Laboratory Manager  
4901 Hawkins NE  
Albuquerque, NM 87109

# Hall Environmental Analysis Laboratory, Inc.

## Analytical Report

Lab Order **1601677**

Date Reported: **1/26/2016**

**CLIENT:** Gordon Environmental, Inc.

**Client Sample ID:** Sample 1

**Project:** Sundance Services Inc

**Collection Date:** 1/19/2016 9:25:00 AM

**Lab ID:** 1601677-001

**Matrix:** MEOH (SOIL)

**Received Date:** 1/20/2016 7:37:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
<b>EPA METHOD 8015M/D: DIESEL RANGE ORGANICS</b>							Analyst: <b>TOM</b>
Diesel Range Organics (DRO)	ND	9.9		mg/Kg	1	1/21/2016 4:19:52 PM	23311
Motor Oil Range Organics (MRO)	ND	50		mg/Kg	1	1/21/2016 4:19:52 PM	23311
Surr: DNOP	103	70-130		%REC	1	1/21/2016 4:19:52 PM	23311
<b>EPA METHOD 8015D: GASOLINE RANGE</b>							Analyst: <b>NSB</b>
Gasoline Range Organics (GRO)	ND	6.8		mg/Kg	1	1/20/2016 8:16:48 PM	A31571
Surr: BFB	89.2	66.2-112		%REC	1	1/20/2016 8:16:48 PM	A31571
<b>EPA METHOD 8021B: VOLATILES</b>							Analyst: <b>NSB</b>
Methyl tert-butyl ether (MTBE)	ND	0.14		mg/Kg	1	1/20/2016 8:16:48 PM	C31571
Benzene	ND	0.068		mg/Kg	1	1/20/2016 8:16:48 PM	C31571
Toluene	ND	0.068		mg/Kg	1	1/20/2016 8:16:48 PM	C31571
Ethylbenzene	ND	0.068		mg/Kg	1	1/20/2016 8:16:48 PM	C31571
Xylenes, Total	ND	0.14		mg/Kg	1	1/20/2016 8:16:48 PM	C31571
Surr: 4-Bromofluorobenzene	105	80-120		%REC	1	1/20/2016 8:16:48 PM	C31571

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

<b>Qualifiers:</b>	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank	Page 1 of 9
	D	Sample Diluted Due to Matrix	E	Value above quantitation range	
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits	
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range	
	R	RPD outside accepted recovery limits	RL	Reporting Detection Limit	
	S	% Recovery outside of range due to dilution or matrix			

# Hall Environmental Analysis Laboratory, Inc.

## Analytical Report

Lab Order **1601677**

Date Reported: **1/26/2016**

**CLIENT:** Gordon Environmental, Inc.

**Client Sample ID:** Sample 2

**Project:** Sundance Services Inc

**Collection Date:** 1/19/2016 9:36:00 AM

**Lab ID:** 1601677-002

**Matrix:** MEOH (SOIL)

**Received Date:** 1/20/2016 7:37:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
<b>EPA METHOD 8015M/D: DIESEL RANGE ORGANICS</b>							Analyst: <b>TOM</b>
Diesel Range Organics (DRO)	ND	10		mg/Kg	1	1/21/2016 5:42:04 PM	23311
Motor Oil Range Organics (MRO)	ND	50		mg/Kg	1	1/21/2016 5:42:04 PM	23311
Surr: DNOP	108	70-130		%REC	1	1/21/2016 5:42:04 PM	23311
<b>EPA METHOD 8015D: GASOLINE RANGE</b>							Analyst: <b>NSB</b>
Gasoline Range Organics (GRO)	ND	6.5		mg/Kg	1	1/20/2016 9:30:45 PM	A31571
Surr: BFB	87.6	66.2-112		%REC	1	1/20/2016 9:30:45 PM	A31571
<b>EPA METHOD 8021B: VOLATILES</b>							Analyst: <b>NSB</b>
Methyl tert-butyl ether (MTBE)	ND	0.13		mg/Kg	1	1/20/2016 9:30:45 PM	C31571
Benzene	ND	0.065		mg/Kg	1	1/20/2016 9:30:45 PM	C31571
Toluene	ND	0.065		mg/Kg	1	1/20/2016 9:30:45 PM	C31571
Ethylbenzene	ND	0.065		mg/Kg	1	1/20/2016 9:30:45 PM	C31571
Xylenes, Total	ND	0.13		mg/Kg	1	1/20/2016 9:30:45 PM	C31571
Surr: 4-Bromofluorobenzene	101	80-120		%REC	1	1/20/2016 9:30:45 PM	C31571

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

<b>Qualifiers:</b>	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Value above quantitation range
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
	S	% Recovery outside of range due to dilution or matrix		

# Hall Environmental Analysis Laboratory, Inc.

## Analytical Report

Lab Order **1601677**

Date Reported: **1/26/2016**

**CLIENT:** Gordon Environmental, Inc.

**Client Sample ID:** Sample 3

**Project:** Sundance Services Inc

**Collection Date:** 1/19/2016 9:50:00 AM

**Lab ID:** 1601677-003

**Matrix:** MEOH (SOIL)

**Received Date:** 1/20/2016 7:37:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
<b>EPA METHOD 8015M/D: DIESEL RANGE ORGANICS</b>							Analyst: <b>TOM</b>
Diesel Range Organics (DRO)	ND	10		mg/Kg	1	1/21/2016 6:09:24 PM	23311
Motor Oil Range Organics (MRO)	ND	51		mg/Kg	1	1/21/2016 6:09:24 PM	23311
Surr: DNOP	107	70-130		%REC	1	1/21/2016 6:09:24 PM	23311
<b>EPA METHOD 8015D: GASOLINE RANGE</b>							Analyst: <b>NSB</b>
Gasoline Range Organics (GRO)	ND	5.2		mg/Kg	1	1/20/2016 10:44:19 PM	A31571
Surr: BFB	88.4	66.2-112		%REC	1	1/20/2016 10:44:19 PM	A31571
<b>EPA METHOD 8021B: VOLATILES</b>							Analyst: <b>NSB</b>
Methyl tert-butyl ether (MTBE)	ND	0.10		mg/Kg	1	1/20/2016 10:44:19 PM	C31571
Benzene	ND	0.052		mg/Kg	1	1/20/2016 10:44:19 PM	C31571
Toluene	ND	0.052		mg/Kg	1	1/20/2016 10:44:19 PM	C31571
Ethylbenzene	ND	0.052		mg/Kg	1	1/20/2016 10:44:19 PM	C31571
Xylenes, Total	ND	0.10		mg/Kg	1	1/20/2016 10:44:19 PM	C31571
Surr: 4-Bromofluorobenzene	104	80-120		%REC	1	1/20/2016 10:44:19 PM	C31571

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

<b>Qualifiers:</b>	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank	Page 3 of 9
	D	Sample Diluted Due to Matrix	E	Value above quantitation range	
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits	
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range	
	R	RPD outside accepted recovery limits	RL	Reporting Detection Limit	
	S	% Recovery outside of range due to dilution or matrix			

# Hall Environmental Analysis Laboratory, Inc.

## Analytical Report

Lab Order **1601677**

Date Reported: **1/26/2016**

**CLIENT:** Gordon Environmental, Inc.

**Client Sample ID:** Sample 4

**Project:** Sundance Services Inc

**Collection Date:** 1/19/2016 10:07:00 AM

**Lab ID:** 1601677-004

**Matrix:** MEOH (SOIL)

**Received Date:** 1/20/2016 7:37:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
<b>EPA METHOD 8015M/D: DIESEL RANGE ORGANICS</b>							Analyst: <b>KJH</b>
Diesel Range Organics (DRO)	150	9.7		mg/Kg	1	1/22/2016 11:26:08 AM	23311
Motor Oil Range Organics (MRO)	180	48		mg/Kg	1	1/22/2016 11:26:08 AM	23311
Surr: DNOP	82.3	70-130		%REC	1	1/22/2016 11:26:08 AM	23311
<b>EPA METHOD 8015D: GASOLINE RANGE</b>							Analyst: <b>NSB</b>
Gasoline Range Organics (GRO)	ND	6.0		mg/Kg	1	1/20/2016 11:08:52 PM	A31571
Surr: BFB	87.9	66.2-112		%REC	1	1/20/2016 11:08:52 PM	A31571
<b>EPA METHOD 8021B: VOLATILES</b>							Analyst: <b>NSB</b>
Methyl tert-butyl ether (MTBE)	ND	0.12		mg/Kg	1	1/20/2016 11:08:52 PM	C31571
Benzene	ND	0.060		mg/Kg	1	1/20/2016 11:08:52 PM	C31571
Toluene	ND	0.060		mg/Kg	1	1/20/2016 11:08:52 PM	C31571
Ethylbenzene	ND	0.060		mg/Kg	1	1/20/2016 11:08:52 PM	C31571
Xylenes, Total	ND	0.12		mg/Kg	1	1/20/2016 11:08:52 PM	C31571
Surr: 4-Bromofluorobenzene	103	80-120		%REC	1	1/20/2016 11:08:52 PM	C31571

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

<b>Qualifiers:</b>	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Value above quantitation range
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
	S	% Recovery outside of range due to dilution or matrix		



# Hall Environmental Analysis Laboratory, Inc.

## Analytical Report

Lab Order **1601677**

Date Reported: **1/26/2016**

**CLIENT:** Gordon Environmental, Inc.

**Client Sample ID:** MeOH Blank

**Project:** Sundance Services Inc

**Collection Date:**

**Lab ID:** 1601677-005

**Matrix:** MEOH BLAN

**Received Date:** 1/20/2016 7:37:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
<b>EPA METHOD 8015D: GASOLINE RANGE</b>							Analyst: <b>NSB</b>
Gasoline Range Organics (GRO)	ND	5.0		mg/Kg	1	1/20/2016 11:33:23 PM	A31571
Surr: BFB	86.1	66.2-112		%REC	1	1/20/2016 11:33:23 PM	A31571
<b>EPA METHOD 8021B: VOLATILES</b>							Analyst: <b>NSB</b>
Methyl tert-butyl ether (MTBE)	ND	0.10		mg/Kg	1	1/20/2016 11:33:23 PM	C31571
Benzene	ND	0.050		mg/Kg	1	1/20/2016 11:33:23 PM	C31571
Toluene	ND	0.050		mg/Kg	1	1/20/2016 11:33:23 PM	C31571
Ethylbenzene	ND	0.050		mg/Kg	1	1/20/2016 11:33:23 PM	C31571
Xylenes, Total	ND	0.10		mg/Kg	1	1/20/2016 11:33:23 PM	C31571
Surr: 4-Bromofluorobenzene	101	80-120		%REC	1	1/20/2016 11:33:23 PM	C31571

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

<b>Qualifiers:</b>	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank	Page 5 of 9
	D	Sample Diluted Due to Matrix	E	Value above quantitation range	
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits	
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range	
	R	RPD outside accepted recovery limits	RL	Reporting Detection Limit	
	S	% Recovery outside of range due to dilution or matrix			

# QC SUMMARY REPORT

## Hall Environmental Analysis Laboratory, Inc.

WO#: 1601677

26-Jan-16

Client: Gordon Environmental, Inc.

Project: Sundance Services Inc

Sample ID	MB-23311		SampType: MBLK		TestCode: EPA Method 8015M/D: Diesel Range Organics					
Client ID:	PBS		Batch ID: 23311		RunNo: 31582					
Prep Date:	1/20/2016		Analysis Date: 1/21/2016		SeqNo: 966735		Units: mg/Kg			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	ND	10								
Motor Oil Range Organics (MRO)	ND	50								
Surr: DNOP	11		10.00		112	70	130			

Sample ID	LCS-23311		SampType: LCS		TestCode: EPA Method 8015M/D: Diesel Range Organics					
Client ID:	LCSS		Batch ID: 23311		RunNo: 31582					
Prep Date:	1/20/2016		Analysis Date: 1/21/2016		SeqNo: 966736		Units: mg/Kg			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	45	10	50.00	0	89.1	65.8	136			
Surr: DNOP	4.6		5.000		92.4	70	130			

Sample ID	1601677-001AMS		SampType: MS		TestCode: EPA Method 8015M/D: Diesel Range Organics					
Client ID:	Sample 1		Batch ID: 23311		RunNo: 31582					
Prep Date:	1/20/2016		Analysis Date: 1/21/2016		SeqNo: 967333		Units: mg/Kg			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	37	9.9	49.65	5.813	63.1	31.2	162			
Surr: DNOP	4.2		4.965		84.0	70	130			

Sample ID	1601677-001AMSD		SampType:	MSD		TestCode:	EPA Method 8015M/D: Diesel Range Organics				
Client ID:	Sample 1		Batch ID:	23311		RunNo:	31582				
Prep Date:	1/20/2016		Analysis Date:	1/21/2016		SeqNo:	967334		Units: mg/Kg		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual	
Diesel Range Organics (DRO)	38	10	50.05	5.813	63.7	31.2	162	1.47	31.7		
Surr: DNOP	4.2		5.005		84.1	70	130	0	0		

### Qualifiers:

\* Value exceeds Maximum Contaminant Level.  
D Sample Diluted Due to Matrix  
H Holding times for preparation or analysis exceeded  
ND Not Detected at the Reporting Limit  
R RPD outside accepted recovery limits  
S % Recovery outside of range due to dilution or matrix

B Analyte detected in the associated Method Blank  
E Value above quantitation range  
J Analyte detected below quantitation limits  
P Sample pH Not In Range  
RL Reporting Detection Limit

# QC SUMMARY REPORT

## Hall Environmental Analysis Laboratory, Inc.

WO#: 1601677

26-Jan-16

Client: Gordon Environmental, Inc.

Project: Sundance Services Inc

Sample ID	5ML RB		SampType: MBLK		TestCode: EPA Method 8015D: Gasoline Range					
Client ID:	PBS		Batch ID: A31571		RunNo: 31571					
Prep Date:			Analysis Date: 1/20/2016		SeqNo: 966433		Units: mg/Kg			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	ND	5.0								
Surr: BFB	900		1000		90.3	66.2	112			

Sample ID	2.5UG GRO LCS		SampType: LCS		TestCode: EPA Method 8015D: Gasoline Range					
Client ID:	LCSS		Batch ID: A31571		RunNo: 31571					
Prep Date:			Analysis Date: 1/20/2016		SeqNo: 966434		Units: mg/Kg			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	23	5.0	25.00	0	93.1	79.6	122			
Surr: BFB	1000		1000		103	66.2	112			

Sample ID	1601677-001AMS		SampType: MS		TestCode: EPA Method 8015D: Gasoline Range					
Client ID:	Sample 1		Batch ID: A31571		RunNo: 31571					
Prep Date:			Analysis Date: 1/20/2016		SeqNo: 966436		Units: mg/Kg			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	28	6.8	34.06	0	81.9	59.3	143			
Surr: BFB	1400		1362		102	66.2	112			

Sample ID	1601677-001AMSD		SampType:	MSD		TestCode:	EPA Method 8015D: Gasoline Range				
Client ID:	Sample 1		Batch ID:	A31571		RunNo:	31571				
Prep Date:			Analysis Date:	1/20/2016		SeqNo:	966437		Units:	mg/Kg	
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual	
Gasoline Range Organics (GRO)	30	6.8	34.06	0	89.2	59.3	143	8.51	20		
Surr: BFB	1400		1362		102	66.2	112	0	0		

### Qualifiers:

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ND Not Detected at the Reporting Limit  
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S % Recovery outside of range due to dilution or matrix

B Analyte detected in the associated Method Blank  
E Value above quantitation range  
J Analyte detected below quantitation limits  
P Sample pH Not In Range  
RL Reporting Detection Limit

# QC SUMMARY REPORT

## Hall Environmental Analysis Laboratory, Inc.

WO#: 1601677

26-Jan-16

Client: Gordon Environmental, Inc.

Project: Sundance Services Inc

Sample ID	5ML RB		SampType: MBLK		TestCode: EPA Method 8021B: Volatiles					
Client ID:	PBS		Batch ID: C31571		RunNo: 31571					
Prep Date:			Analysis Date: 1/20/2016		SeqNo: 966465		Units: mg/Kg			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Methyl tert-butyl ether (MTBE)	ND	0.10								
Benzene	ND	0.050								
Toluene	ND	0.050								
Ethylbenzene	ND	0.050								
Xylenes, Total	ND	0.10								
Surr: 4-Bromofluorobenzene	1.1		1.000		105	80	120			

Sample ID	100NG BTEX LCS		SampType: LCS		TestCode: EPA Method 8021B: Volatiles					
Client ID:	LCSS		Batch ID: C31571		RunNo: 31571					
Prep Date:			Analysis Date: 1/20/2016		SeqNo: 966466		Units: mg/Kg			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Methyl tert-butyl ether (MTBE)	1.0	0.10	1.000	0	105	67.2	121			
Benzene	1.0	0.050	1.000	0	99.7	80	120			
Toluene	0.99	0.050	1.000	0	99.4	80	120			
Ethylbenzene	0.89	0.050	1.000	0	89.1	80	120			
Xylenes, Total	2.7	0.10	3.000	0	90.3	80	120			
Surr: 4-Bromofluorobenzene	1.1		1.000		111	80	120			

Sample ID	1601677-002AMS		SampType: MS		TestCode: EPA Method 8021B: Volatiles					
Client ID:	Sample 2		Batch ID: C31571		RunNo: 31571					
Prep Date:			Analysis Date: 1/20/2016		SeqNo: 966469		Units: mg/Kg			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Methyl tert-butyl ether (MTBE)	1.2	0.13	1.304	0	93.5	69.2	128			
Benzene	1.2	0.065	1.304	0	95.4	71.5	122			
Toluene	1.3	0.065	1.304	0	97.7	71.2	123			
Ethylbenzene	1.2	0.065	1.304	0	92.0	75.2	130			
Xylenes, Total	3.6	0.13	3.911	0	92.5	72.4	131			
Surr: 4-Bromofluorobenzene	1.4		1.304		107	80	120			

Sample ID	1601677-002AMSD		SampType: MSD		TestCode: EPA Method 8021B: Volatiles					
Client ID:	Sample 2		Batch ID: C31571		RunNo: 31571					
Prep Date:			Analysis Date: 1/20/2016		SeqNo: 966470		Units: mg/Kg			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Methyl tert-butyl ether (MTBE)	1.2	0.13	1.304	0	93.8	69.2	128	0.278	20	
Benzene	1.2	0.065	1.304	0	93.5	71.5	122	2.02	20	
Toluene	1.3	0.065	1.304	0	96.8	71.2	123	0.935	20	
Ethylbenzene	1.2	0.065	1.304	0	92.2	75.2	130	0.228	20	

### Qualifiers:

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H Holding times for preparation or analysis exceeded  
ND Not Detected at the Reporting Limit  
R RPD outside accepted recovery limits  
S % Recovery outside of range due to dilution or matrix

B Analyte detected in the associated Method Blank  
E Value above quantitation range  
J Analyte detected below quantitation limits  
P Sample pH Not In Range  
RL Reporting Detection Limit

# QC SUMMARY REPORT

## Hall Environmental Analysis Laboratory, Inc.

WO#: 1601677

26-Jan-16

Client: Gordon Environmental, Inc.

Project: Sundance Services Inc

Sample ID 1601677-002AMSD		SampType: MSD			TestCode: EPA Method 8021B: Volatiles					
Client ID: Sample 2		Batch ID: C31571			RunNo: 31571					
Prep Date:		Analysis Date: 1/20/2016			SeqNo: 966470		Units: mg/Kg			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Xylenes, Total	3.6	0.13	3.911	0	93.0	72.4	131	0.453	20	
Surr: 4-Bromofluorobenzene	1.4		1.304		107	80	120	0	0	

### Qualifiers:

\* Value exceeds Maximum Contaminant Level.  
D Sample Diluted Due to Matrix  
H Holding times for preparation or analysis exceeded  
ND Not Detected at the Reporting Limit  
R RPD outside accepted recovery limits  
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RL Reporting Detection Limit



Hall Environmental Analysis Laboratory  
4901 Hawkins NE  
Albuquerque, NM 87109  
TEL: 505-345-3975 FAX: 505-345-4107  
Website: www.hallenvironmental.com

## Sample Log-In Check List

Client Name: GEI

Work Order Number: 1601677

RcptNo: 1

Received by/date:	<i>[Signature]</i>	01/20/16
Logged By:	Lindsay Mangin	1/20/2016 7:37:00 AM
Completed By:	Lindsay Mangin	1/20/2016 7:52:25 AM
Reviewed By:	TO	01/20/16

### Chain of Custody

1. Custody seals intact on sample bottles? Yes ☐ No ☐ Not Present ☒
2. Is Chain of Custody complete? Yes ☒ No ☐ Not Present ☐
3. How was the sample delivered? Client

### Log In

4. Was an attempt made to cool the samples? Yes ☒ No ☐ NA ☐
5. Were all samples received at a temperature of >0° C to 6.0°C Yes ☒ No ☐ NA ☐
6. Sample(s) in proper container(s)? Yes ☒ No ☐
7. Sufficient sample volume for indicated test(s)? Yes ☒ No ☐
8. Are samples (except VOA and ONG) properly preserved? Yes ☒ No ☐
9. Was preservative added to bottles? Yes ☐ No ☒ NA ☐
10. VOA vials have zero headspace? Yes ☐ No ☐ No VOA Vials ☒
11. Were any sample containers received broken? Yes ☐ No ☒
12. Does paperwork match bottle labels?  
(Note discrepancies on chain of custody) Yes ☒ No ☐
13. Are matrices correctly identified on Chain of Custody? Yes ☒ No ☐
14. Is it clear what analyses were requested? Yes ☒ No ☐
15. Were all holding times able to be met?  
(If no, notify customer for authorization.) Yes ☒ No ☐

# of preserved  
bottles checked  
for pH: \_\_\_\_\_  
(<2 or >12 unless noted)  
Adjusted? \_\_\_\_\_  
Checked by: \_\_\_\_\_

### Special Handling (if applicable)

16. Was client notified of all discrepancies with this order? Yes ☐ No ☐ NA ☒

Person Notified:	_____	Date:	_____
By Whom:	_____	Via:	<input type="checkbox"/> eMail <input type="checkbox"/> Phone <input type="checkbox"/> Fax <input type="checkbox"/> In Person
Regarding:	_____		
Client Instructions:	_____		

17. Additional remarks:

### 18. Cooler Information

Cooler No	Temp °C	Condition	Seal Intact	Seal No	Seal Date	Signed By
1	2.2	Good	Not Present			



