



2RP-3646

Investigation Summary and Work Plan

Zach McCormick Federal Com #1

May 10, 2016

Introduction

This summary and work plan by Matador Resources details knowledge and plans for remediation of the Zach McCormick Federal Com #1 incident that occurred the evening of April 9, 2016. The Zach McCormick Federal Com #1 is located in Section 18, Township 24S, Range 29E of Eddy County, NM. This is a fee lease with Federal mineral. The geodetic position is 32°13'22.5336 N, 104°1'49.9506W. Approximately 20 barrels of fluid carried over on the gas buster during drilling operations. A berm was created around the spill area. A vacuum truck came to flush and remove the spilled water based mud. The release was reported to the New Mexico Oil Conservation Division Artesia office on April 10, 2016. OCD issued remediation project (RP) number 2RP-3646. Attachments include surveys, pictures, and map.

Setting

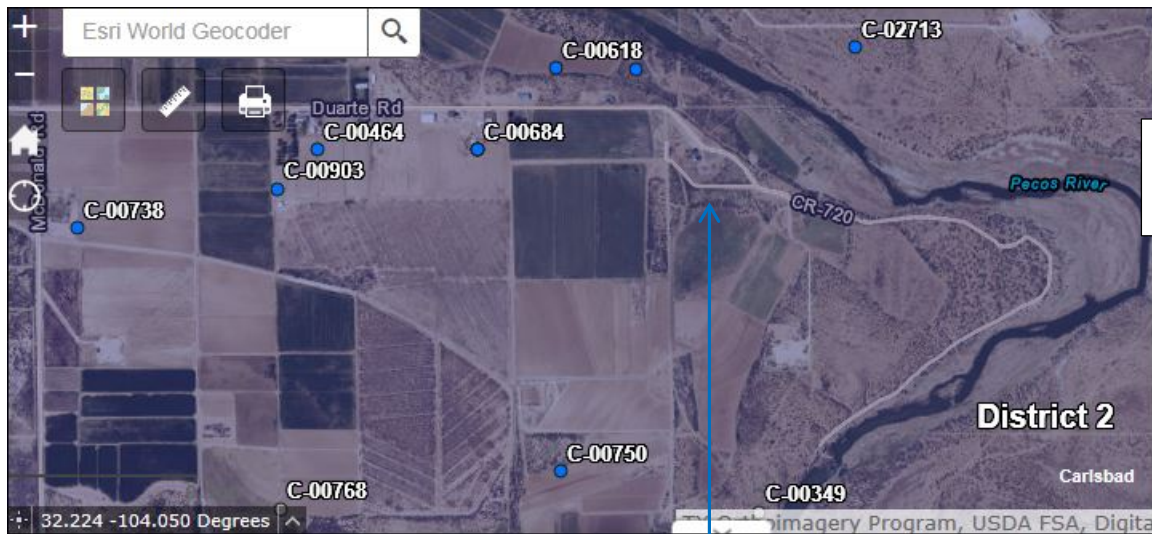
The setting is as follows:

- The surface elevation is approximately 2,953 feet above sea level.
- The topography is flood plains with alluvial fans derived from sedimentary rock with harkey, very fine sandy loam.¹
- Groundwater depth is shallow according to records from the New Mexico Office of the State Engineer (OSE) used for irrigation. (See attached OSE well locations)
- No drinking water wells in the area. (See attached OSE water well reports)

Remediation Action

Collect soil samples at surface where asked by the surface owner to be analyzed by Cardinal Labs in Hobbs, NM. Upon return of results, determine whether or not further action needs to occur.

¹ <http://websoilsurvey.sc.egov.usda.gov/App/WebSoilSurvey.aspx>



Irrigation wells in the area.

Well location

<u>Landowner water well</u>	<u>Use of well</u>	<u>Start Date</u>	<u>Finish Date</u>	<u>Depth of well</u>	<u>Depth to water</u>	<u>Casing size</u>
C-00738	irrigation	14 Jan 1957	17 Jan 1957	125	12	16 ²

Remediation Actions

Soil samples were collected as shown on the attached plat at the surface and delivered to Cardinal Labs in Hobbs, NM. Data and results are attached.

Conclusion

Based on the lab results, Matador Resources would like to see 2RP-3646 closed.

² <http://www.ose.state.nm.us/index.php>

Plat

District I
1625 N French Dr., Hobbs, NM 88240
Phone: (575) 393-6161 Fax: (575) 393-0720
District II
811 S First St., Artesia, NM 88210
Phone: (575) 748-1283 Fax: (575) 748-9720
District III
1000 Rio Brazos Road, Aztec, NM 87410
Phone: (505) 334-6178 Fax: (505) 334-6170
District IV
1220 S St Francis Dr., Santa Fe, NM 87505
Phone: (505) 476-3460 Fax: (505) 476-3462

State of New Mexico
Energy, Minerals & Natural Resources
Department
OIL CONSERVATION DIVISION
1220 South St. Francis Dr.
Santa Fe, NM 87505

FORM C-102
Revised August 1, 2011
Submit one copy to appropriate
District Office

☐ AMENDED REPORT

WELL LOCATION AND ACREAGE DEDICATION PLAT

¹ API Number	² Pool Code 96712	³ Pool Name PIERCE CROSSING;WOLFCAMP, NW (GAS)
⁴ Property Code	⁵ Property Name ZACH McCORMICK FED COM 18-24S-29E	⁶ Well Number #1
⁷ GRID No. 228937	⁸ Operator Name MATADOR PRODUCTION COMPANY	⁹ Elevation 2953'

¹⁰Surface Location

UL or lot no.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
1	18	24-S	29-E	-	716'	NORTH	380'	WEST	EDDY

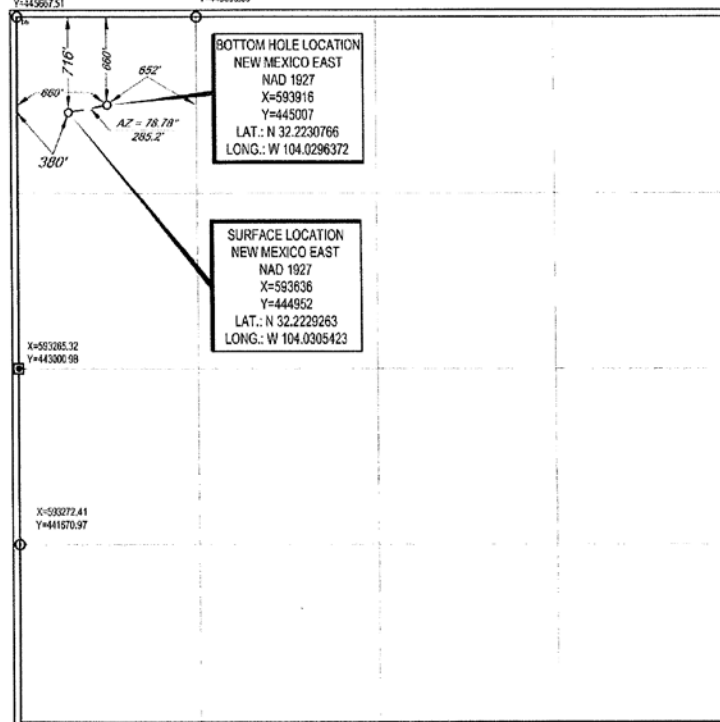
UL or lot no.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
1	18	24-S	29-E	-	660'	NORTH	660'	WEST	EDDY

¹¹ Dedicated Acres	¹² Joint or Infill	¹³ Consolidation Code	¹⁴ Order No.
160			

No allowable will be assigned to this completion until all interests have been consolidated or a non-standard unit has been approved by the division.

X=593252.57
Y=443667.51

X=594583.35
Y=445683.55



¹⁷OPERATOR CERTIFICATION

I hereby certify that the information contained herein is true and complete to the best of my knowledge and belief, and that this organization either owns a working interest or undivided mineral interest in the land including the proposed bottom hole location or has a right to drill this well at this location pursuant to a contract with an owner of such a mineral or working interest, or to a voluntary pooling agreement or a compulsory pooling order heretofore entered by the division.

[Signature] Date: 2/11/16

Chris Carleton
Printed Name

ccarleton@matadormc.com
E-mail Address

¹⁸SURVEYOR CERTIFICATION

I hereby certify that the well location shown on this plat was plotted from field notes of actual surveys made by me or under my supervision, and that the same is true to the best of my belief.

02/11/2016

Date of Survey
Signature and Seal of Professional Surveyor

[Signature]
MICHAEL BROWN
NEW MEXICO
18829
PROFESSIONAL SURVEYOR
Certificate Number

3 SURVEY\MATADOR_RESOURCES\ZACH_MCCORMICK_IFINAL_PRODUCT\SILO_ZACH_MCCORMICK_1_REV1.DWG 2/16/2016 3:53:37 PM pjb



April 29, 2016

Mr. Casey Snow
Matador Production Company
5400 LBJ Freeway, Suite 1500
Dallas, TX 75240

Re: McCormick Federal Com No. 18 Limited Soil Investigation
Eddy County, New Mexico
Sphere 3 Project Number: 047783.00

Dear Mr. Snow:

Sphere 3 Environmental, Inc. (Sphere 3) has prepared this letter report on the soil sampling activities performed at the above referenced location, which was adjacent to the McCormick Federal Com No. 18 well site. Figure 1 denotes the general sample locations at the site. The sampling was performed in response to a request by Matador Production Company. Soil samples were collected from an area of potential impact by a release of drilling mud.

The potentially impacted area was located within a drainage ditch along the northern edge of the well site. No visual evidence of the release was observed by Sphere 3 personnel. According to Matador, the landowner was concerned about the potential of metal flakes within the drainage. Photos of the potentially impacted area are attached to this letter report.

The limited soil investigation was performed by Sphere 3 personnel on April 19, 2016. This investigation consisted of advancing two hand augered borings (SB 2 and SB 3) in the potential area of impact. One soil sample was collected from each boring at 4 to 6 inches below ground surface. Two surface samples, SS 1 and SS 2, were also collected in the potential area of impact. The sample locations are depicted on the Site Map, which is attached to this letter report. Soil boring 'SB 1-Background' was advanced in the pasture to the south of the well site; an area determined to be out of the potential impact area, and would therefore be considered background. Each sample was placed in laboratory supplied sample jars and placed in a cooler on ice for transport to Cardinal Laboratories in Hobbs, New Mexico. Each sample was analyzed for total petroleum hydrocarbons (TPH), chlorides, aluminum, magnesium and RCRA Metals (arsenic, barium, cadmium, chromium, lead, mercury, selenium, and silver). A summary of the results is outlined in Table 1. A copy of the laboratory report and the chain of custody are attached to this letter report.

Table 1 – Soil Sample Summary

Soil Boring ID	TPH (mg/kg)		Chlorides (mg/kg)	Metals (mg/kg)									
	GRO	DRO		Aluminum	Arsenic	Barium	Cadmium	Chromium	Lead	Magnesium	Mercury	Selenium	Silver
SB1 - Background	<10.0	<10.0	160	10,400	10.6	104	<5.00	11.0	10.1	8,010	<0.106	<20.0	<5.00
SS 1	<10.0	<10.0	624	6,760	<10.0	127	<5.00	8.73	16.2	5,560	<0.102	<20.0	<5.00
SB 2	<10.0	<10.0	208	3,780	<10.0	105	<5.00	<5.00	<10.0	9,950	<0.115	<20.0	<5.00
SB 3	<10.0	<10.0	272	5,040	<10.0	118	<5.00	6.03	<10.0	7,010	<0.113	<20.0	<5.00
SS 2	<10.0	<10.0	624	6,810	<10.0	129	<5.00	7.58	<10.0	4,560	<0.102	<20.0	<5.00
NMOCD Guidelines for Remediation of Leaks, Spills, and Releases Limits													
	100		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

mg/kg – milligrams per kilograms

The results were compared to the NMOCD Guidelines for Remediation of Leaks, Spills, and Releases (August 13, 1993). Since, the NMOCD guideline does not have target concentrations for metals or chlorides, the analytical results of the metals and chlorides were compared to the background sample collected south of the site. Slightly elevated concentrations of barium and chlorides were found in SS 1, SS 2, SB 2 and SB 3. Soil boring SB 2 yielded a slightly elevated concentration of magnesium and soil borings SB-2 and SB-3 yielded a slightly elevated concentration of mercury. Based on these analytical results, although slightly elevated, the metals and chlorides concentrations are consistent with that of the background sample.

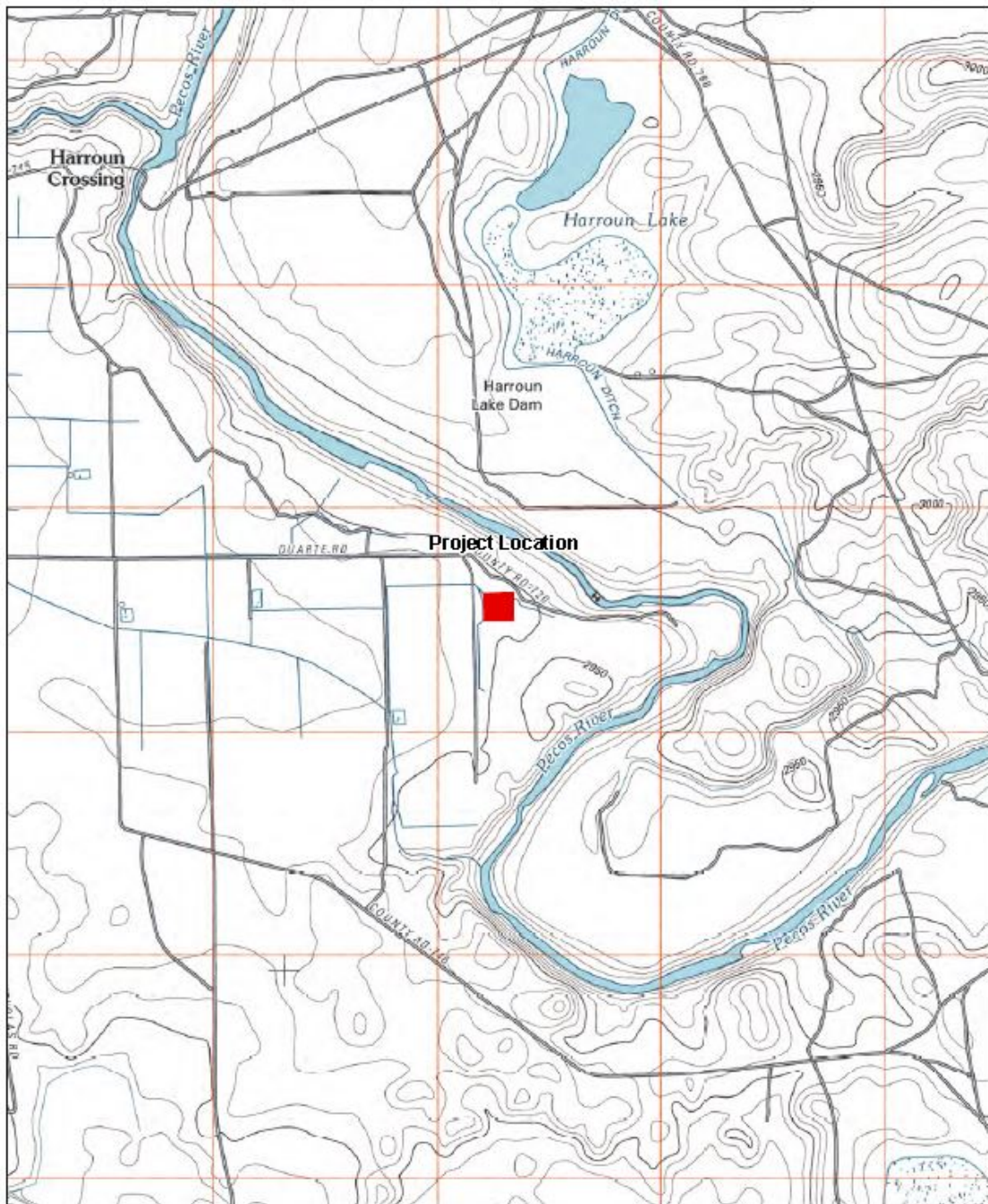
Thank you for choosing Sphere 3 as your consultant for this project. If you have any questions, or if we can be of additional service, please call us at 903-297-4673.



Sincerely,
Sphere 3 Environmental, Inc.

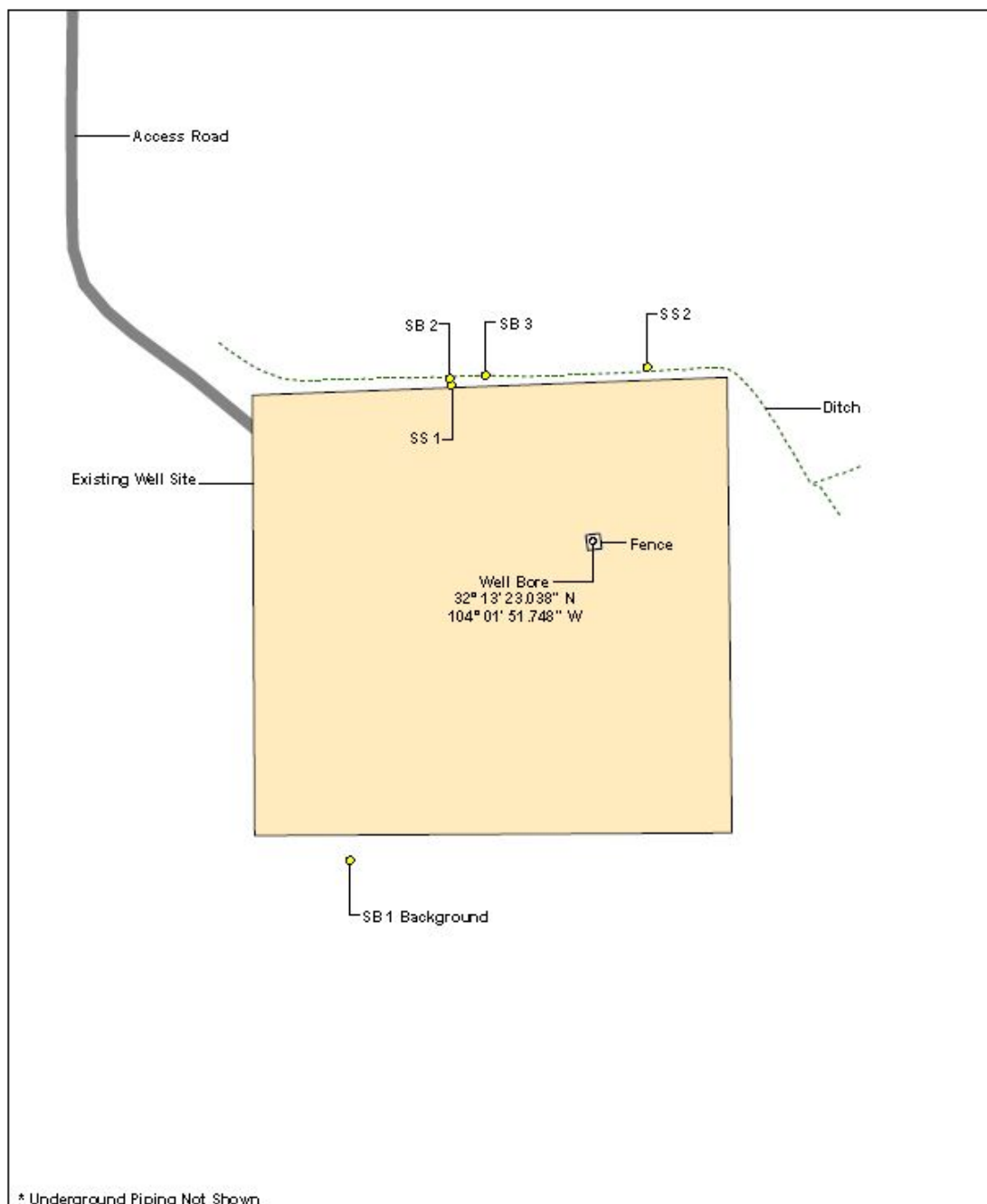


Crissy Forrest
 Sr. Associate




Attachments



<p align="center">TOPOGRAPHIC MAP McCornick Federal Com 18 Eddy County, NM</p>			 1501 Bill Owens Parkway Longview, TX 75604 Phone: (903) 257-4673 Fax: (903) 257-4675
	<p align="center">0 1,000 2,000 4,000 6,000 8,000 Feet</p>		
Matador Production Company Project Number: 047783.00	Date: 04/18/2016	Base Map: USGS 7.5 Minute Topographic Quadrangle: Malaga, NM (Published, 2013)	



* Underground Piping Not Shown

	<p>SITE PLAN McCormick Federal Com 18 Eddy County, NM</p>			
				
Matador Production Company Project Number: 047783.00	Date : 04/18/2016	Coordinate System: NAD 1983 UTM Zone 13 North		1501 Bill Owens Parkway Longview, TX 75604 Phone : (903) 297-4673 Fax : (903) 297-4675

**Matador Production Company
McCormick Federal Com 18
Eddy County, New Mexico**

Photograph: 1

Project I.D. No.:
047783.00

Date:
April 19, 2016

Subject Property:
McCormick Federal
Com 18

Photo Direction:
East

Description:
View of well spud.



Photograph: 2

Project I.D. No.:
047783.00

Date:
April 19, 2016

Subject Property:
McCormick Federal
Com 18

Photo Direction:
East

Description:
View of pasture
where background
sample was collected
from.



**Matador Production Company
McCormick Federal Com 18
Eddy County, New Mexico**

Photograph: 3

Project I.D. No.:
047783.00

Date:
April 19, 2016

Subject Property:
McCormick Federal
Com 18

Photo Direction:
East

Description:
View of drainage
ditch along northern
edge of well pad and
SB 3 location.



Photograph: 4

Project I.D. No.:
047783.00

Date:
April 19, 2016

Subject Property:
McCormick Federal
Com 18

Photo Direction:
North

Description:
View of farm tanks
and equipment north
of drainage ditch.





PHONE (575) 393-2326 • 101 E. MARLAND • HOBBS, NM 88240

April 25, 2016

CRISSEY FORREST

SPHERE 3 ENVIRONMENTAL

1501 BILL OWENS PARKWAY

LONGVIEW, TX 75604

RE: MCCORMICK FED COM #18

Enclosed are the results of analyses for samples received by the laboratory on 04/19/16 14:30.

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/qalab/accred_certif.html.

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

Method EPA 552.2	Total Haloacetic Acids (HAA5)
Method EPA 524.2	Total Trihalomethanes (TTHM)
Method EPA 524.4	Regulated VOCs (V1, V2, V3)

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

Method SM 9223-B	Total Coliform and E. coli (Colilert MMO-MUG)
Method EPA 524.2	Regulated VOCs and Total Trihalomethanes (TTHM)
Method EPA 552.2	Total Haloacetic Acids (HAA5)

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

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

Sincerely,

Caley D. Keene

Lab Director/Quality Manager



PHONE (575) 393-2326 • 101 E. MARLAND • HOBBS, NM 88240

Analytical Results For:

SPHERE 3 ENVIRONMENTAL
1501 BILL OWENS PARKWAY
LONGVIEW TX, 75604

Project: MCCORMICK FED COM #18
Project Number: 047783
Project Manager: CRISSY FORREST
Fax To: (903) 297-4675

Reported:
25-Apr-16 17:27

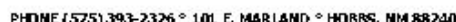
Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
SB1 - BACKGROUND	H600843-01	Soil	19-Apr-16 11:00	19-Apr-16 14:30
SS 1	H600843-02	Soil	19-Apr-16 11:20	19-Apr-16 14:30
SB 2	H600843-03	Soil	19-Apr-16 11:25	19-Apr-16 14:30
SB 3	H600843-04	Soil	19-Apr-16 11:35	19-Apr-16 14:30
SS 2	H600843-05	Soil	19-Apr-16 11:41	19-Apr-16 14:30

Cardinal Laboratories

*=Accredited Analyte

PLEASE NOTE: Liability and Damages. Cardinal Laboratories and its clients assume no responsibility for any data reliability, whether based in contract or tort, shall be limited to the amount paid by client for analysis. All data, including those for negligence or any other cause whatsoever shall be deemed null and void unless made in writing and received by Cardinal within 100 days after completion of the applicable service. In no event shall Cardinal be liable for incidental or consequential damages including, without limitation, business interruptions, loss of any or loss of profits incurred by client, its subsidiaries, affiliates or successors arising out of or related to the performance of the services hereunder by Cardinal, regardless of whether the damages are a direct or indirect result of the services. This report shall be of no legal effect without the approval of Cardinal Laboratories.

Celey D. Keene, Lab Director/Quality Manager



SPHERE 3 ENVIRONMENTAL
1501 BILL OWENS PARKWAY
LONGVIEW TX. 75604

Project: MCCORMICK FED COM #18
Project Number: 047783
Project Manager: CRISSY FORREST
Fax To: (903) 297-4675

Reported:
25-Apr-16 17:27

H6 00843-01 (Soil)

Analysis	Result	MDL	Reporting Limit	Unit	Dilution	Batch	Analyst	Analysed	Method	Notes
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Inorganic Compounds

Chloride	160	16.0	mg/L	+	6041807	AP	20-Apr-16	4300-CLB
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Petroleum Hydrocarbons by GC FID

GRO C6-C10	<10.0	10.0	m.g/kg	1	6041902	MS	19-Apr-16	8013B
DRO >C10-C28	<10.0	10.0	m.g/kg	1	6041902	MS	19-Apr-16	8013B
Surrogate 1-Chloroocetane		145 %		35-147	6041902	MS	19-Apr-16	8013B
Surrogate 1-Chlorooctadecane		162 %		28-171	6041902	MS	19-Apr-16	8013B

Green Analytical Laboratories

General Chemistry

% Dry Solids	91.6	%	1	E604197	JDA	20-Apr-16	ASAP#98: SSA#5
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Total Metals by ICP

Aluminum	10400	5.00	mg/l g dry	100	B404229	JLM	25-Appe16	EPA-010 B
Arsenic	10.6	10.0	mg/l g dry	100	B404229	JLM	25-Appe16	EPA-010 B
Barium	104	1.00	mg/l g dry	100	B404229	JLM	25-Appe16	EPA-010 B
Cadmium	<5.00	5.00	mg/l g dry	100	B404229	JLM	25-Appe16	EPA-010 B
Chromium	11.0	5.00	mg/l g dry	100	B404229	JLM	25-Appe16	EPA-010 B
Lead	10.1	10.0	mg/l g dry	100	B404229	JLM	25-Appe16	EPA-010 B
Magnesium	8010	100	mg/l g dry	100	B404229	JLM	25-Appe16	EPA-010 B
Selenium	<20.0	20.0	mg/l g dry	100	B404229	JLM	25-Appe16	EPA-010 B
Silver	<5.00	5.00	mg/l g dry	100	B404229	JLM	25-Appe16	EPA-010 B

Total Mercury by C VAA

Mercury	<0.106	0.106	mg/g dry	483	B604177	LLG	20-Apr-16	HPA.7471
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Cardinal Laboratories

*=Accredited Analyte

[illegible]

Calvin D. Keene

Celest D. Keene, Lab Director/Quality Manager



PHONE (575) 393-2326 • 101 E. MARLAND • HOBBS, NM 88240

Analytical Results For:SPHERE 3 ENVIRONMENTAL
1501 BILL OWENS PARKWAY
LONGVIEW TX, 75604Project: MCCORMICK FED COM #18
Project Number: 047783
Project Manager: CRISSY FORREST
Fax To: (903) 297-4675Reported:
25-Apr-16 17:27**SS 1****H600843-02 (Soil)**

Analyte	Result	MDL	Reporting Limit	Unit	Dilution	Batch	Analyte #	Analysed	Method	Notes
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Cardinal Laboratories**Inorganic Compounds**

Chloride	624		16.0	mg/g	4	6041807	AP	20-Apr-16	4300-C1-B	
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Petroleum Hydrocarbons by GC FID

GRO C6-C10	<10.0		10.0	mg/g	1	6041902	MS	19-Apr-16	8015B	
DRO >C10-C28	<10.0		10.0	mg/g	1	6041902	MS	19-Apr-16	8015B	
Surrogate 1-Chloroacetaldehyde			135 %	35-147		6041902	MS	19-Apr-16	8015B	
Surrogate 1-Chloroacetaldehyde			151 %	28-171		6041902	MS	19-Apr-16	8015B	

Green Analytical Laboratories**General Chemistry**

% Dry Solids	99.3			%	1	B040197	JDA	20-Apr-16	ASFA#9 & SSFA#5	
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Total Metals by ICP

Aluminum	6760		5.00	mg/g dry	100	B040229	JLM	25-Apr-16	EPA4010-B	
Arsenic	<10.0		10.0	mg/g dry	100	B040229	JLM	25-Apr-16	EPA4010-B	
Barium	127		1.00	mg/g dry	100	B040229	JLM	25-Apr-16	EPA4010-B	
Cadmium	<5.00		5.00	mg/g dry	100	B040229	JLM	25-Apr-16	EPA4010-B	
Chromium	8.73		5.00	mg/g dry	100	B040229	JLM	25-Apr-16	EPA4010-B	
Lead	16.2		10.0	mg/g dry	100	B040229	JLM	25-Apr-16	EPA4010-B	
Magnesium	5560		100	mg/g dry	100	B040229	JLM	25-Apr-16	EPA4010-B	
Selenium	<20.0		20.0	mg/g dry	100	B040229	JLM	25-Apr-16	EPA4010-B	
Silver	<5.00		5.00	mg/g dry	100	B040229	JLM	25-Apr-16	EPA4010-B	

Total Mercury by CVA

Mercury	<0.102		0.102	mg/g dry	303	B040177	LLG	20-Apr-16	EPA7471	
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Cardinal Laboratories

* = Accredited Analyte

PLEASE NOTE: Results are reported. Cardinal Laboratories and clients assume no responsibility for any data entry, whether based on contract or not, and be further to the extent possible to detect or prevent. All data, including those for regulatory or any other case, whether or not the same, shall be subject to review by Cardinal Laboratories, LLC and the completion of the applicable service. It is agreed that Cardinal Laboratories shall be liable for industrial or commercial sample handling, without limitation, business interruption, loss of use, or loss of profit income to client, its subsidiaries, affiliates or successors arising out of or related to the performance of the services hereunder by Cardinal Laboratories, regardless of whether the data is otherwise used for any of the purposes stated herein or otherwise. Sample results are to be reported as follows: This report shall be of no consequence except to the extent of the approval of Cardinal Laboratories.

Coley D. Keene, Lab Director/Quality Manager



PHONE (575) 393-2326 • 101 E. MARLAND • HOBBS, NM 88240

Analytical Results For:SPHERE 3 ENVIRONMENTAL
1501 BILL OWENS PARKWAY
LONGVIEW TX, 75604Project: MCCORMICK FED COM #18
Project Number: 047783
Project Manager: CRISSY FORREST
Fax To: (903) 297-4675Reported:
25-Apr-16 17:27**SB 2****H600843-03 (Soil)**

Analyte	Result	MDL	Reporting Limit	Unit	Dilution	Batch	Analyst	Analysed	Method	Notes
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Cardinal Laboratories**Inorganic Compounds**

Chloride	208		16.0	mg/kg	4	6041807	AP	20-Apr-16	4500-CL-B	
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Petroleum Hydrocarbons by GC FID

GRO C6-C10	<10.0		10.0	mg/kg	1	6041902	MS	19-Apr-16	8015B	
DRO >C10-C28	<10.0		10.0	mg/kg	1	6041902	MS	19-Apr-16	8015B	
Surrogate 1-Chloroocetane			122 %	35-147	6041902	MS	19-Apr-16	8015B		
Surrogate 1-Chlorooctadecane			135 %	28-171	6041902	MS	19-Apr-16	8015B		

Green Analytical Laboratories**General Chemistry**

% Dry Solids	89.0			%	1	B404197	JDA	20-Apr-16	ASAP8 & SS8AS	
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Total Metals by ICP

Aluminum	3780		5.00	mg/kg dry	100	B404229	JLM	25-Apr-16	EPA6010 B	
Arsenic	<10.0		10.0	mg/kg dry	100	B404229	JLM	25-Apr-16	EPA6010 B	
Barium	105		1.00	mg/kg dry	100	B404229	JLM	25-Apr-16	EPA6010 B	
Cadmium	<5.00		5.00	mg/kg dry	100	B404229	JLM	25-Apr-16	EPA6010 B	
Chromium	<5.00		5.00	mg/kg dry	100	B404229	JLM	25-Apr-16	EPA6010 B	
Lead	<10.0		10.0	mg/kg dry	100	B404229	JLM	25-Apr-16	EPA6010 B	
Magnesium	9950		100	mg/kg dry	100	B404229	JLM	25-Apr-16	EPA6010 B	
Selenium	<20.0		20.0	mg/kg dry	100	B404229	JLM	25-Apr-16	EPA6010 B	
Silver	<5.00		5.00	mg/kg dry	100	B404229	JLM	25-Apr-16	EPA6010 B	

Total Mercury by CVA

Mercury	<0.115		0.115	mg/kg dry	510	B404177	LLG	20-Apr-16	EPA7471	
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Cardinal Laboratories

* = Accredited Analyte

PLEASE NOTE: IAGN and Oregon. Cardinal Health are clients and/or vendors for any data entry, whether based in contract or not, shall be limited to the amount paid by client for analysis. All data, including those for negligence or any other cause whatsoever shall be correct unless shown to be incorrect by Cardinal Health. (10) does not accept any liability for the use of the applicable service. It is not an intent of Cardinal Health to be liable for industrial or commercial damage, including, without limitation, business interruptions, loss of use, or loss of profit, income, or data, its subsidiaries, affiliates or licensors arising out of or related to the performance of the services hereunder by Cardinal, regardless of whether such damages are foreseeable or otherwise. Results relate only to the sample as it was received. This report shall not be considered acceptable for use without approval of Cardinal Laboratories.

Caley D. Keene, Lab Director/Quality Manager



SPHERE 3 ENVIRONMENTAL 1501 BILL OWENS PARKWAY LONGVIEW TX, 75604	Project: MCCORMICK FED COM #18 Project Number: 047783 Project Manager: CRISSY FORREST Fax To: (903) 297-4675	Reported: 25-Apr-16 17:27
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Analyte	Result	MDL	Reporting Limit	Unit	Dilution	Batch	Analyst	Analysed	Method	Notes
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Chloride	272	16.0	mg/lg	4	6041807	AP	20-Apr-16	4500-Cl-B
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GRO C6-C10	<10.0	10.0	m/z 97	1	6041902	MS	19-Apr-16	801JB
DRO >C10-C28	<10.0	10.0	m/z 97	1	6041902	MS	19-Apr-16	801JB

%% Dry Solids	88.6	%	1	B404197	JDA	20-Apr-16	ASAP#58 888A#3
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Aluminum	5040	5.00	mg/g dry	100	B04229	JLM	25-Apr16	EPA-6010 B
Arsenic	<10.0	10.0	mg/g dry	100	B04229	JLM	25-Apr16	EPA-6010 B
Barium	118	1.00	mg/g dry	100	B04229	JLM	25-Apr16	EPA-6010 B
Cadmium	<5.00	5.00	mg/g dry	100	B04229	JLM	25-Apr16	EPA-6010 B
Chromium	6.03	5.00	mg/g dry	100	B04229	JLM	25-Apr16	EPA-6010 B
Lead	<10.0	10.0	mg/g dry	100	B04229	JLM	25-Apr16	EPA-6010 B
Magnesium	7010	100	mg/g dry	100	B04229	JLM	25-Apr16	EPA-6010 B
Selenium	<20.0	20.0	mg/g dry	100	B04229	JLM	25-Apr16	EPA-6010 B
Silver	<5.00	5.00	mg/g dry	100	B04229	JLM	25-Apr16	EPA-6010 B

Mercury	<0.113	0.113	mg/kg dry	500	B604177	LLG	20-Apr-16	HPA.7471
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[illegible]

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Analytical Results For:

 SPHERE 3 ENVIRONMENTAL
 1501 BILL OWENS PARKWAY
 LONGVIEW TX, 75604

 Project: MCCORMICK FED COM #18
 Project Number: 047783
 Project Manager: CRISSY FORREST
 Fax To: (903) 297-4675

 Reported:
 25-Apr-16 17:27

SS 2
H600843-05 (Soil)

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Analyte #	Analysed	Method	Notes
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Cardinal Laboratories
Inorganic Compounds

Chloride	624		16.0	mg/kg	+	041807	AP	20-Apr-16	4500-CLB	
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Petroleum Hydrocarbons by GC FID

GRO C6-C10	<10.0		10.0	mg/kg	1	041902	MS	19-Apr-16	8015B	
DRO >C10-C28	<10.0		10.0	mg/kg	1	041902	MS	19-Apr-16	8015B	
Surrogate 1-Chloro-o-xylene			132 %	35-147		6041902	MS	19-Apr-16	8015B	
Surrogate 1-Chloro-p-xylene			149 %	28-171		6041902	MS	19-Apr-16	8015B	

Green Analytical Laboratories
General Chemistry

% Dry Solids	95.7			%	1	B404197	JDA	20-Apr-16	ASAM9 & SSAM5	
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Total Metals by ICP

Aluminum	6810		5.00	mg/kg dry	100	B404229	JLM	23-Apr-16	EPA4010 B	
Arsenic	<10.0		10.0	mg/kg dry	100	B404229	JLM	23-Apr-16	EPA4010 B	
Barium	129		1.00	mg/kg dry	100	B404229	JLM	23-Apr-16	EPA4010 B	
Cadmium	<5.00		5.00	mg/kg dry	100	B404229	JLM	23-Apr-16	EPA4010 B	
Chromium	758		5.00	mg/kg dry	100	B404229	JLM	23-Apr-16	EPA4010 B	
Lead	<10.0		10.0	mg/kg dry	100	B404229	JLM	23-Apr-16	EPA4010 B	
Magnesium	4560		100	mg/kg dry	100	B404229	JLM	23-Apr-16	EPA4010 B	
Selenium	<20.0		20.0	mg/kg dry	100	B404229	JLM	23-Apr-16	EPA4010 B	
Silver	<5.00		5.00	mg/kg dry	100	B404229	JLM	23-Apr-16	EPA4010 B	

Total Mercury by CVA

Mercury	<0.102		0.102	mg/kg dry	490	B404177	LLS	20-Apr-16	EPA7471	
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Celest D. Keene, Lab Director/Quality Manager



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Analytical Results For:

SPHERE 3 ENVIRONMENTAL
1501 BILL OWENS PARKWAY
LONGVIEW TX, 75604

Project: MCCORMICK FED COM #18
Project Number: 047783
Project Manager: CRISSY FORREST
Fax To: (903) 297-4675

Reported:
25-Apr-16 17:27

Inorganic Compounds - Quality Control

Cardinal Laboratories

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
Batch 6041807 - 1:4 DI Water										
Blank (6041807-BLK1)					Prepared & Analyzed: 18-Apr-16					
Chloride	ND	100	mg/g							
LCS (6041807-BL1)					Prepared & Analyzed: 18-Apr-16					
Chloride	110	100	mg/g	400		104	80-120			
LCS Dup (6041807-BSD1)					Prepared & Analyzed: 18-Apr-16					
Chloride	384	100	mg/g	400		900	80-120	800	20	

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Celestine D. Keene

Celestine D. Keene, Lab Director/Quality Manager

Analytical Results For:

 SPHERE 3 ENVIRONMENTAL
 1501 BILL OWENS PARKWAY
 LONGVIEW TX, 75604

 Project: MCCORMICK FED COM #18
 Project Number: 047783
 Project Manager: CRISSY FORREST
 Fax To: (903) 297-4675

 Reported:
 25-Apr-16 17:27

Petroleum Hydrocarbons by GC FID - Quality Control
Cardinal Laboratories

Analyte	Result	Reporting Limit	Unit	Spike Level	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
Batch 6041902 - General Prep - Organics										
Blank (6041902-BLK1)										
Prepared & Analyzed: 19-Apr-16										
GC C4-C10	ND	10.0	mg/g							
DEO >C10-C28	ND	10.0	mg/g							
EXT DEO >C28-C33	ND	10.0	mg/g							
Total IPH C4-C28	ND	10.0	mg/g							
Surrogate 1-Chloroocetane	46.8		mg/g	50.0		93.7	13-147			
Surrogate 1-Chlorooctadecane	50.6		mg/g	50.0		101	28-171			
LCS (6041902-BS1)										
Prepared & Analyzed: 19-Apr-16										
GC C4-C10	203	10.0	mg/g	200		102	74.7-115			
DEO >C10-C28	231	10.0	mg/g	200		116	78.3-122			
Total IPH C4-C28	434	10.0	mg/g	400		109	79.8-117			
Surrogate 1-Chloroocetane	47.6		mg/g	50.0		95.2	13-147			
Surrogate 1-Chlorooctadecane	51.6		mg/g	50.0		103	28-171			
LCS Dup (6041902-BSD1)										
Prepared & Analyzed: 19-Apr-16										
GC C4-C10	192	10.0	mg/g	200		96.0	74.7-115	5.81	942	
DEO >C10-C28	217	10.0	mg/g	200		109	78.3-122	6.11	13.2	
Total IPH C4-C28	409	10.0	mg/g	400		102	79.8-117	5.97	10.7	
Surrogate 1-Chloroocetane	47.1		mg/g	50.0		94.2	13-147			
Surrogate 1-Chlorooctadecane	49.9		mg/g	50.0		99.9	28-171			

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Celey D. Keene, Lab Director/Quality Manager



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Analytical Results For:

SPHERE 3 ENVIRONMENTAL
1501 BILL OWENS PARKWAY
LONGVIEW TX, 75604

Project: MCCORMICK FED COM #18
Project Number: 047783
Project Manager: CRISSY FORREST
Fax To: (903) 297-4675

Reported:
25-Apr-16 17:27

**General Chemistry - Quality Control
Green Analytical Laboratories**

Analyte	Result	Reporting Limit	Units	Spills Level	Source Result	%REC	%REC Limits	RPD	RPD Limits	Notes
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Batch B604197 - General Prep - Wet Chem

Duplicate (B604197-DUP1)

Source: 1604155-01

Prepared & Analyzed: 20-Apr-16

% Dry Solids	95.4	%		95.4	0.00	20
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Analytical Results For:SPHERE 3 ENVIRONMENTAL
1501 BILL OWENS PARKWAY
LONGVIEW TX, 75604Project: MCCORMICK FED COM #18
Project Number: 047783
Project Manager: CRISSY FORREST
Fax To: (903) 297-4675Reported:
25-Apr-16 17:27**Total Metals by ICP - Quality Control
Green Analytical Laboratories**

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limit	KPD	KPD Limit	Notes
Batch B604229 - EPA 3050										
Blank (B604229-BLK1)										
Prepared & Analyzed: 25-Apr-16										
Aluminum	ND	0.050	mg/l g dry							
Chromium	ND	0.050	mg/l g dry							
Barium	ND	0.010	mg/l g dry							
Magnesium	ND	1.00	mg/l g dry							
Arsenic	ND	0.100	mg/l g dry							
Silver	ND	0.050	mg/l g dry							
Lead	ND	0.100	mg/l g dry							
Selenium	ND	0.200	mg/l g dry							
Cadmium	ND	0.050	mg/l g dry							
LCS (B604229-BSL1)										
Prepared & Analyzed: 25-Apr-16										
Magnesium	18.4	1.00	mg/l g dry	20.0		92.8	85-115			
Selenium	7.71	0.200	mg/l g dry	8.00		96.4	85-115			
Arsenic	3.73	0.100	mg/l g dry	4.00		93.8	85-115			
Barium	1.92	0.010	mg/l g dry	2.00		95.8	85-115			
Lead	1.84	0.100	mg/l g dry	2.00		92.8	85-115			
Cadmium	1.79	0.050	mg/l g dry	2.00		89.5	85-115			
Silver	0.093	0.050	mg/l g dry	0.100		94.9	85-115			
Chromium	1.89	0.050	mg/l g dry	2.00		94.7	85-115			
Aluminum	3.83	0.050	mg/l g dry	4.00		96.2	85-115			
LCS Dup (B604229-BSD1)										
Prepared & Analyzed: 25-Apr-16										
Selenium	7.80	0.200	mg/l g dry	8.00		97.5	85-115	1.07	20	
Silver	0.094	0.050	mg/l g dry	0.100		93.9	85-115	1.03	20	
Aluminum	3.82	0.050	mg/l g dry	4.00		95.4	85-115	0.792	20	
Lead	1.88	0.100	mg/l g dry	2.00		94.0	85-115	1.31	20	
Chromium	1.92	0.050	mg/l g dry	2.00		96.0	85-115	1.31	20	
Cadmium	1.82	0.050	mg/l g dry	2.00		91.0	85-115	1.43	20	
Barium	1.95	0.010	mg/l g dry	2.00		97.3	85-115	1.51	20	
Arsenic	3.84	0.100	mg/l g dry	4.00		96.5	85-115	2.83	20	
Magnesium	18.7	1.00	mg/l g dry	20.0		93.5	85-115	0.720	20	

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Analytical Results For:

SPHERE 3 ENVIRONMENTAL
1501 BILL OWENS PARKWAY
LONGVIEW TX, 75604

Project: MCCORMICK FED COM #18
Project Number: 047783
Project Manager: CRISSY FORREST
Fax To: (903) 297-4675

Reported:
25-Apr-16 17:27

**Total Mercury by CVAA - Quality Control
Green Analytical Laboratories**

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC Limit	%REC Limit	RPD	RPD Limit	Notes
Batch B604177 - EPA 245.1/7470										
Blank (B604177-BLK1)										
					Prepare d: 19-Apr-16 Analyzed: 20-Apr-16					
Mercury	ND	0.0002	mg/g wet							
LCS (B604177-BL1)										
					Prepare d: 19-Apr-16 Analyzed: 20-Apr-16					
Mercury	0.0020	0.0002	mg/g wet	0.00200	100	83-115				
LCS Dup (B604177-BSD1)										
					Prepare d: 19-Apr-16 Analyzed: 20-Apr-16					
Mercury	0.0019	0.0002	mg/g wet	0.00200	94.4	83-115	4.17	20		

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Notes and Definitions

ND	Analyte NOT DETECTED at or above the reporting limit.
RPD	Relative Percent Difference
xxx	Samples not received at proper temperature of 6°C or below.
xxx	Insufficient time to reach temperature.
-	Chloride by SMA500CHB does not require samples be received at or below 6°C
	Samples reported on an as received basis (wet) unless otherwise noted on report.

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Company Name: Sphere 3 Environmental

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