

**COVER PAGE
FORM 1216
GROUNDWATER MONITORING REPORT**

Please include the following information:

1. **Site name:** Former Sullivan Stables

2. **Responsible party:** State Lead

3. **Responsible party mailing address** (list contact person if different):

Ms. Susan von Gonten, NMED District 1

2905 Rodeo Park Drive East, Building 1, Santa Fe, New Mexico

87505

4. **Facility number:** 26828

5. **Address/legal description:** 9521 Rio Grande Blvd., NW

Albuquerque, New Mexico

6. **Author/consulting company:** Daniel B. Stephens & Associates, Inc.

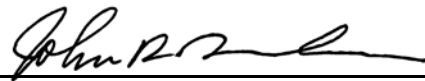
7. **Date of report:** April 10, 2018

8. **Date of confirmation of release or date USTB was notified of the**

release: 1990

STATEMENT OF FAMILIARITY

I, the undersigned, am personally familiar with the information submitted in this report and the attached documents and attest that it is true and complete.

Signature: 

Name: John R. Bunch

Affiliation: Daniel B. Stephens & Associates, Inc.

Title: Senior Geologist

Date: April 10, 2017

I. INTRODUCTION

Daniel B. Stephens & Associates, Inc. (DBS&A) has prepared this groundwater monitoring report in accordance with the New Mexico Environment Department (NMED) Petroleum Storage Tank Regulations (PSTR) and work plan identification (WPID) #3933 (DBS&A, 2017), approved by the NMED Petroleum Storage Tank Bureau (PSTB) on November 22, 2017 (NMED, 2017).

The Former Sullivan Stables site is located at 9521 Rio Grande Boulevard, northwest in Albuquerque, New Mexico (Figure 1). Three underground storage tanks (USTs) were removed from the site in 1990. During the removal there was evidence that one of the USTs had leaked and nonaqueous-phase liquid (NAPL) was detected in the shallow groundwater.

A preliminary investigation was completed in 1990 by John W. Shoemaker & Associates, which consisted of the installation of 16 soil borings and 4 groundwater monitor wells. Soil contamination was confirmed at the site, and NAPL was present in 1 of the monitor wells. Dissolved-phase contamination above the New Mexico Water Quality Commission Standards (NMWQCC) was observed in other site monitor wells.

In 1990, Sauder Miller and Associates, Inc. (SMA) took over the site and installed 3 additional monitor wells and began operation of a bioremediation system in 1991. The system operated for 19 months; during the system operation SMA installed an additional 9 monitor wells in 1991 and 1992. Dissolved-phase contamination exceeding the standards was observed in multiple site monitor wells.

In 1994 SMA installed and operated an air-sparge soil vapor extraction (SVE) system for eight quarters, removing an estimated 5,000 pounds of hydrocarbons from the soil and groundwater at the site.

In December 1999 Western Technologies, Inc. (WTI) began quarterly monitoring at the site and decommissioned the SVE system in December 2002. Between 2001 and 2003 WTI sampled 5 site monitor wells, during which time benzene, toluene, ethylbenzene, and total xylenes (BTEX) and naphthalene concentrations were all below the NMWQCC standards. Although dissolved-phase contamination was not observed during this time, contaminated soil was still present in the original tank pit area.

In April 2004, NSYNC Environmental (NSYNC)/Tetra Tech EM Inc. (Tetra Tech) excavated and disposed of 900 cubic yards of petroleum contaminated soil and 5,500 gallons of petroleum contaminated groundwater from the site. Hydrogen peroxide was added to the excavation prior to backfilling and compacting with clean soil. Since 2004 groundwater monitoring has been ongoing in various site monitor wells. Most of the wells have been plugged and abandoned with the exception of MW-1R and MW-2R, which are the only two wells that remain on site.

DBS&A performed the last work at the site in April 2017, which consisted of groundwater monitoring. During the monitoring event, groundwater samples were collected from the 2 existing monitor wells (MW-1R and MW-2R) for laboratory analysis (Figure 2). The total naphthalene concentration [12 micrograms per liter ($\mu\text{g/L}$)] in monitor well MW-1R continued to decline and was below the NMWQCC standard of 30 $\mu\text{g/L}$. Volatile organic compound (VOC) concentrations were below laboratory reporting limits in monitor well MW-2R.

II. INTRODUCTION (Continued)

A. Scope of Work

The scope of work for the groundwater monitoring event included gauging and sampling monitor wells MW-1R and MW-2R. Groundwater samples were analyzed for VOCs including BTEX, methyl tertiary-butyl ether (MTBE), 1,2-dibromoethane (EDB), and total naphthalenes using U.S. Environmental Protection Agency (EPA) method 8260B (full list), and for dissolved iron and manganese using EPA method 6010.

B. Quarter Highlights

The following activities were completed:

- Measured fluid levels in monitor wells MW-1R and MW-2R. February 16, 2018
- Collected groundwater samples from monitor wells MW-1R and MW-2R for laboratory analysis. February 16, 2018
- Prepared the Form 1216 monitoring report. April 2018

All sampling and monitoring activities were completed in accordance with the approved work plan.

II. ACTIVITIES PERFORMED DURING THIS QUARTER

A. Remediation System

No engineered corrective action system is installed at this site.

B. System Operation

No engineered corrective action system is installed at this site.

C. Monitoring Activities

On February 16, 2018 DBS&A personnel measured the depth to water in the 2 existing monitor wells (MW-1R and MW-2R). Table 1 summarizes the fluid level measurements and groundwater elevations from this and previous monitoring events. A potentiometric surface map was not prepared because only two wells were gauged; however, the groundwater flow appears to be to the east.

On February 16, 2018 DBS&A personnel collected groundwater samples from the 2 site wells (MW-1R and MW-2R) after purging, in accordance with the approved work plan. DBS&A personnel followed standard operating procedures and the NMED PSTB *Guidelines for Corrective Action* (NMED, 2000) during collection of all groundwater samples. The sampling protocol is outlined in Appendix 1. Dissolved oxygen (DO), oxidation-reduction potential (ORP), pH, conductivity, and temperature were measured in the field during purging using a YSI 556 MPS meter and recorded in the field notes (Appendix 2). Samples were analyzed for the constituents detailed in the scope of work. All laboratory analyses were performed by Hall Environmental Analysis Laboratory (HEAL) in Albuquerque, New Mexico.

The organic chemistry analytical data from this and previous monitoring events are summarized in Table 2. The inorganic chemistry analytical data from this monitoring event are summarized in Table 3. The complete laboratory report, including chain of custody documentation, is provided in Appendix 3. Figure 3 shows the distribution of dissolved-phase hydrocarbon concentrations in groundwater for the February 16, 2018 sampling event.

D. System Performance and Effectiveness

No engineered corrective action system is installed at this site.

E. Containment of Release

Both monitor wells were sampled during this monitoring event, and NAPL was not present in either well. Monitor well MW-1R was observed to have a total naphthalene concentration of 12 micrograms per liter ($\mu\text{g/L}$), which is below the NMWQCC standard of 30 $\mu\text{g/L}$, for the third consecutive time since March 2005. All VOC concentrations were below laboratory reporting limits in monitor well MW-2R.

III. SUMMARY AND CONCLUSIONS

A. Trends or Changes in Site Conditions

Based on the results of the February 16, 2018 monitoring event, the following trends are evident:

- The groundwater elevation decreased in MW-1R and MW-2R by 0.64 foot since the previous monitoring event in April 2017 (Table 1). Although a potentiometric surface elevation map could not be completed, the groundwater flow under the site appears to be to the east, which is consistent with the groundwater flow direction observed during the previous sampling event.
- Since the last monitoring event in November 2016, the total naphthalenes concentration in MW-1R decreased from 19 to 12 µg/L and remains below the NMWQCC standard. All other VOC concentrations were below the laboratory reporting limits during this event. Dissolved-phase manganese was detected at a concentration of 0.78 milligrams per liter (mg/L), which is above the standard.
- All tested VOC concentrations in MW-2R continued to be below the laboratory reporting limits. Dissolved-phase manganese was detected at a concentration of 1.2 mg/L, which is above the standard.

B. Assessment of Remediation System

No engineered corrective action system is installed at this site.

C. Recommendations

DBS&A recommends that groundwater sampling continue at the site under a new work plan to monitor contaminant concentrations in site monitor wells. If contamination remains below the NMWQCC standard, the site should be considered for a No Further Action (NFA) status.

REFERENCES

Daniel B. Stephens & Associates, Inc. (DBS&A). 2017. *Work plan for groundwater monitoring and reporting, Former Sullivan Stables, Albuquerque, New Mexico, Facility No. 26828, RID No. 400*. Prepared for New Mexico Environment Department Petroleum Storage Tank Bureau. July 11, 2017.

New Mexico Environment Department (NMED). 2000. *Guidelines for corrective action*. Underground Storage Tank Bureau, Santa Fe, New Mexico. March 13, 2000.

NMED. 2017. Letter from Dana Bahar to John Bunch, DBS&A, regarding Continued Phase 5 fixed-priced workplan approval for Sullivan Stable, 9521 Rio Grande Boulevard NW, Albuquerque, New Mexico. November 22, 2017.

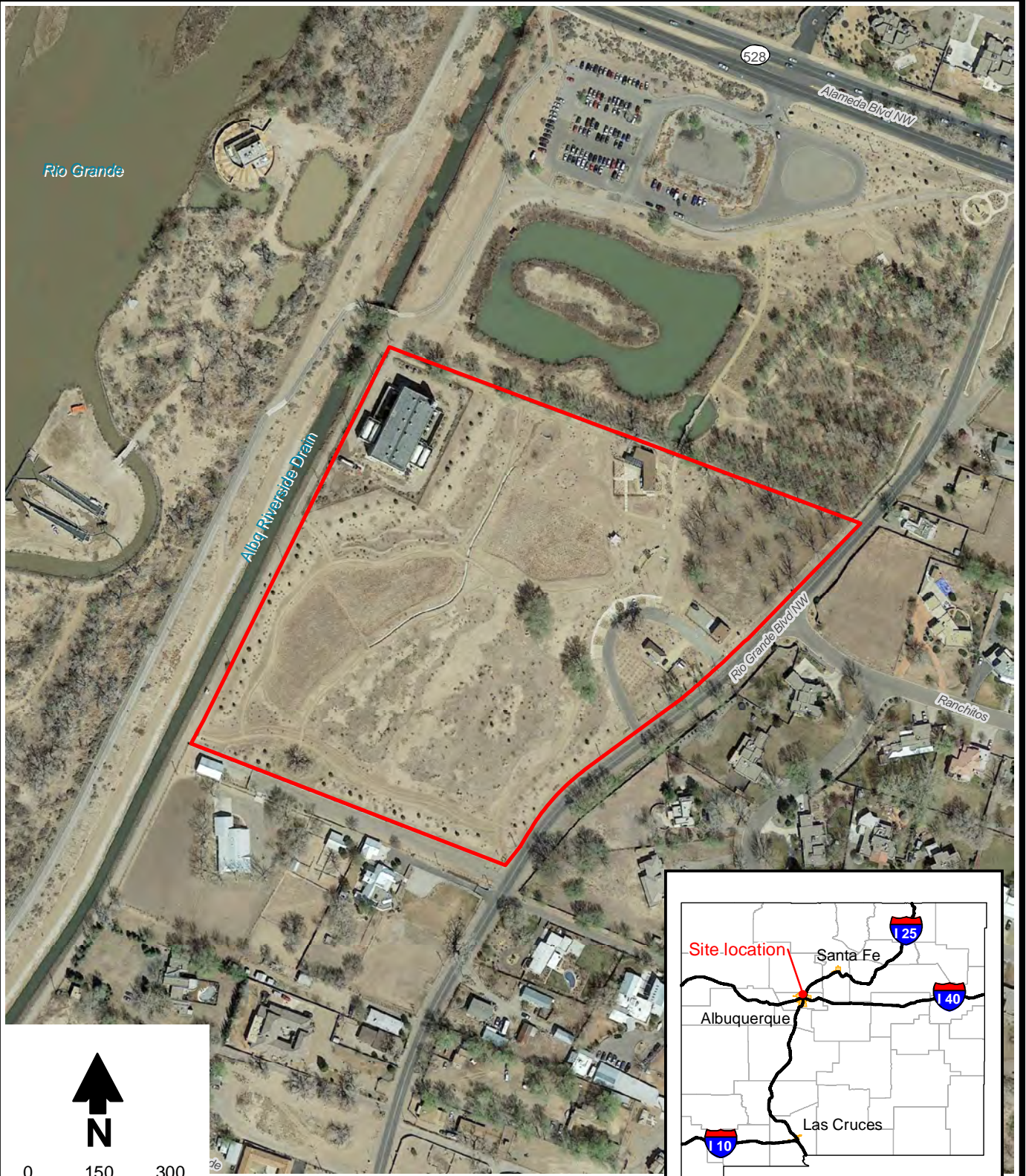
Figures

LIST OF FIGURES

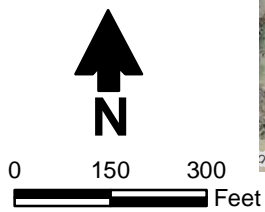
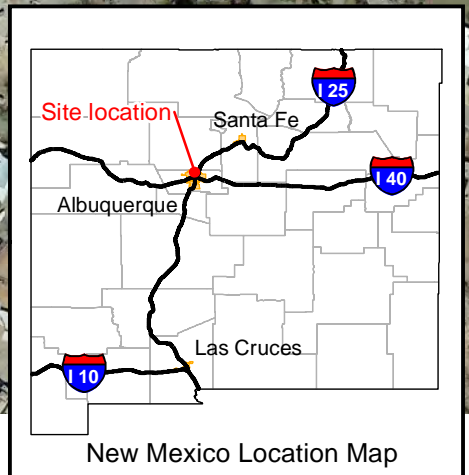
Figure

- 1 Area Map
- 2 Site Map
- 3 Distribution of Dissolved-Phase Contaminants
February 16, 2018

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Source: Imagery from Google Earth Pro., 2014.



Explanation
[Red outline] Site Location

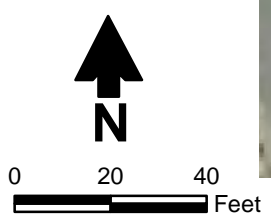
FORMER SULLIVAN STABLES Area Map



Daniel B. Stephens & Associates, Inc.
11/4/2014 JN ES14.0052.02

Figure 1

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Source: Imagery from Google Earth Pro., 2014.

Explanation

- ◆ Monitor well



Daniel B. Stephens & Associates, Inc.
11/8/2016 JN ES14.0052.02

**FORMER SULLIVAN STABLES
Site Map**

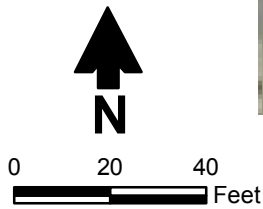
Figure 2

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MW-1R			
<1.0	<1.0	<1.0	<1.5
<1.0 ^a	12	<1.0	

MW-2R			
<1.0	<1.0	<1.0	<1.5
<1.0 ^a	<1.5	<1.0	



Explanation

Monitor well

Well designation			
Benzene	Toluene	Ethylbenzene	Total Xylenes
EDB	Total Naphthalenes	MTBE	

All groundwater concentrations reported in µg/L

Source: Imagery from Google Earth Pro., 2014.

Notes: 1. **Bold** indicates concentrations that exceed the applicable standard.
 2. ^a Laboratory reporting limit is equal to or greater than applicable standard.

FORMER SULLIVAN STABLES
Distribution of Dissolved-Phase Contaminants
February 16, 2018



Daniel B. Stephens & Associates, Inc.
 3/12/2018 JN ES14.0052.02

Figure 3

Tables

LIST OF TABLES

Table

- 1 Summary of Fluid Level Measurements
- 2 Summary of Analytical Organic Chemistry Data
- 3 Summary of Analytical Inorganic Chemistry Data



**Table 1. Summary of Fluid Level Measurements
Sullivan Stable UST Site, Albuquerque, New Mexico**

Well	Top of Casing Elevation (ft msl)	Measurement Date	Depth to Water (ft btoc)	NAPL Thickness (feet)	Water Level Elevation (ft msl)
MW-1R	4995.23	03/18/05	11.92	0.00	4983.31
		09/20/05	11.61	0.00	4983.62
		06/13/06	11.76	0.00	4983.47
		12/11/06	Dry	NA	NA
		09/19/11	11.28	0.00	4983.95
		12/18/13	11.73	0.00	4983.50
		04/09/14	11.71	0.00	4983.52
		10/24/14	11.27	0.00	4983.96
		04/16/15	11.60	0.00	4983.63
		11/08/16	10.98	0.00	4984.25
		04/06/17	10.98	0.00	4984.25
MW-2R	4994.99	03/18/05	11.68	0.00	4983.31
		09/20/05	11.37	0.00	4983.62
		06/13/06	11.55	0.00	4983.44
		12/11/06	16.50	0.00	4978.49
		09/19/11	11.09	0.00	4983.90
		12/18/13	11.54	0.00	4983.45
		04/09/14	11.54	0.00	4983.45
		10/24/14	11.10	0.00	4983.89
		04/16/15	11.41	0.00	4983.58
		11/08/16	10.79	0.00	4984.20
		04/06/17	10.80	0.00	4984.19
02/16/18	11.44	0.00	4983.55		

Note: Data prior to October 2014, reported by CDM Smith.

ft msl = Feet above mean sea level
 ft bgs = Feet below ground surface
 ft btoc = Feet below top of casing

NAPL = Nonaqueous-phase liquid
 NA = Not applicable



**Table 2. Summary of Analytical Organic Chemistry Data
Sullivan Stable UST Site, Albuquerque, New Mexico
Page 1 of 2**

Well	Sampling Date	Concentration ^a (µg/L)						
		Benzene	Toluene	Ethylbenzene	Total Xylenes	MTBE ^c	EDB	Total Naphthalenes
<i>NMWQCC Standard ^b</i>		10	750	750	620	100	0.1	30
MW-1R	03/18/05	ND	ND	360	1,100	ND	NT	353
	09/20/05	ND	ND	190	384	ND	NT	206
	06/13/06	<1.0	3.1	170	404	<1.0	NT	190
	12/11/06	Dry						
	09/19/11	<10	<10	110	49	<10	NT	120
	12/18/13	<5.0	<5.0	8.7	<7.5	<5.0	NT	79
	04/09/14	<5.0	<5.0	8.1	<7.5	<5.0	<0.010 ^d	64
	10/24/14	<1.0	<1.0	1.3	<1.5	<1.0	<1.0 ^e	33
	04/16/15	<1.0	<1.0	<1.0	<1.5	<1.0	<1.0 ^e	32
	11/08/16	<1.0	<1.0	<1.0	<1.5	<1.0	<1.0 ^e	16.9
	04/06/17	<1.0	<1.0	<1.0	<1.5	<1.0	<1.0 ^e	19
02/16/18	<1.0	<1.0	<1.0	<1.5	<1.0	<1.0 ^e	12	
MW-2R	03/18/05	ND	ND	3.6	ND	ND	NT	ND
	09/20/05	ND	ND	ND	ND	ND	NT	ND
	06/13/06	<1.0	<1.0	1.1	<2.0	<1.0	NT	<3.0
	12/11/06	<1.0	<1.0	<1.0	<2.0	<1.0	NT	<3.0
	09/19/11	<1.0	<1.0	<1.0	<1.5	<1.0	NT	<4.0

Bold Indicates concentrations above applicable standard.

Note: Data prior to October 2014, reported by CDM Smith.

^a All samples analyzed in accordance with U.S. Environmental Protection Agency (EPA) method 8260B, unless otherwise noted.

^b New Mexico Water Quality Control Commission groundwater standards, unless otherwise noted.

^c New Mexico Environmental Improvement Board, Petroleum Storage Tank Bureau groundwater standard.

^d Analyzed in accordance with EPA method 504.1

^e Laboratory reporting limit is equal to or greater than applicable standard.

µg/L = Micrograms per liter EDB = 1,2-Dibromoethane ND = Not detected

MTBE = Methyl tertiary-butyl ether NA = Not analyzed NT = Not tested



**Table 2. Summary of Analytical Organic Chemistry Data
Sullivan Stable UST Site, Albuquerque, New Mexico
Page 2 of 2**

Well	Concentration ^a (µg/L)							
	Sampling Date	Benzene	Toluene	Ethylbenzene	Total Xylenes	MTBE ^c	EDB	Total Naphthalenes
<i>NMQCC Standard ^b</i>		10	750	750	620	100	0.1	30
MW-2R (cont.)	12/18/13	<1.0	<1.0	<1.0	<1.5	<1.0	NT	<4.0
	04/09/14	<1.0	<1.0	<1.0	<1.5	<1.0	<0.010 ^d	<4.0
	10/24/14	<1.0	<1.0	<1.0	<1.5	<1.0	<1.0 ^e	<10
	04/16/15	<1.0	<1.0	<1.0	<1.5	<1.0	<1.0 ^e	<10
	11/08/16	<1.0	<1.0	<1.0	<1.5	<1.0	<1.0 ^e	<1.5
	04/06/17	<1.0	<1.0	<1.0	<1.5	<1.0	<1.0 ^e	<1.5
	02/16/18	<1.0	<1.0	<1.0	<1.5	<1.0	<1.0 ^e	<1.5

Bold Indicates concentrations above applicable standard.

Note: Data prior to October 2014, reported by CDM Smith.

^a All samples analyzed in accordance with U.S. Environmental Protection Agency (EPA) method 8260B, unless otherwise noted.

^b New Mexico Water Quality Control Commission groundwater standards, unless otherwise noted.

^c New Mexico Environmental Improvement Board, Petroleum Storage Tank Bureau groundwater standard.

^d Analyzed in accordance with EPA method 504.1

^e Laboratory reporting limit is equal to or greater than applicable standard.

µg/L = Micrograms per liter

EDB = 1,2-Dibromoethane

ND = Not detected

MTBE = Methyl tertiary-butyl ether

NA = Not analyzed

NT = Not tested



**Table 3: Summary of Analytical Inorganic Chemistry Data
Sullivan Stable UST Site, Albuquerque, New Mexico**

Well Name	Date Sampled	Concentration ^a (mg/L)		
		Lead	Iron	Manganese
<i>NMWQCC Standard ^b</i>		<i>0.05</i>	<i>1.0</i>	<i>0.2</i>
Water Well	12/18/02	<0.005	0.29	0.073
	06/19/03	<0.005	0.24	0.086
SS-1	12/18/02	<0.005	0.096	3.0
	06/19/03	<0.005	0.11	5.1
SS-4	12/18/02	<0.005	<0.02	0.57
	06/19/03	<0.005	0.038	0.16
SS-6	12/18/02	<0.005	<0.02	0.62
	06/19/03	<0.005	<0.02	0.86
SS-8	12/18/02	<0.005	0.10	1.4
	06/19/03	<0.005	0.072	1.5
SS-13	12/18/02	<0.005	0.10	1.4
	06/19/03	DRY		
MW-1R	02/16/18	NS	0.046	0.78
MW-2R	02/16/18	NS	0.17	1.2

Data prior to 2018 provided by Western Technologies, Inc. (Western, 2003).

Bold indicates concentrations that exceed applicable standards.

^a Samples analyzed in accordance with EPA method 6010.

^b New Mexico Water Quality Control Commission (NMWQCC) standard

mg/L = Milligrams per kilograms

NS = Not sampled

Appendices

Site Name: Former: Sullivan Stables

PSTB Facility #: 26828

Date: April 10, 2018

LIST OF APPENDICES

Appendix

- 1 Sampling Protocol
- 2 Field Notes
- 3 Laboratory Report

Appendix 1
Sampling Protocol



Appendix 1. Sampling Protocol

1.1 Fluid Level and Parameter Measurements

Prior to collection of groundwater samples, a Solinst interface probe will be used to determine depths to water and nonaqueous-phase liquid (NAPL), if present. Water level data will be used to construct a site potentiometric surface map. A YSI 556 MPS meter will be used to measure specific conductivity, pH, dissolved oxygen (DO), oxidation-reduction potential (ORP) and temperature. Field parameters will be measured at the start and end of purging of a well for sampling.

1.2 Groundwater Monitor Well Sampling

To ensure a fresh flow of groundwater into the well bore, a minimum of three casing volumes will be removed from each well prior to sampling. If a well is purged dry, it will be sampled when the well has recharged. Wells will be purged and sampled using dedicated, disposable, polyethylene bailers. To minimize volatilization and ensure sample integrity, dedicated, disposable, polyethylene bottom-emptying devices will be used to transfer groundwater samples from the bailers to the appropriate sample containers.

Samples analyzed for volatile organic analytes (VOAs) will be collected in 40-milliliter (mL) glass vials containing mercuric chloride preservative and capped with Teflon septa caps. VOA containers will be filled in a manner that prevents headspace in the vials. Samples analyzed for dissolved iron, lead, and manganese will be field-filtered with 0.45-micron disposable filters, collected in 250-mL plastic containers, and preserved with nitric acid to a pH of less than 2. Samples analyzed for nitrate and sulfate will be collected in 500-mL plastic containers containing no preservative.

Immediately after collection, the sample containers will be placed on ice in an insulated cooler for delivery to the laboratory for analyses. Groundwater samples will be accompanied by full chain of custody documentation at all times.

Appendix 2
Field Notes

4/6/17

PNB

1040 PNB onsite

Purpose: 2nd G GWM

1045 Calibrate 481

1050 Gaug wells

well ID	DTW	TD
MW-1R	10.98	21.95
-MW-2R	10.80	22.41

1110 Sample MW-1R collected

1140 Sample MW-2R collected

1145 PNB offsite; samples preserved onsite.

~~PNB~~
4/6/17

2/16/18

PNB

0920 PNB onsite

Purpose: Annual GWM

Weather: 43°F; overcast

0925 Calibrate 481

pH	7.00	6.98
	4.00	4.01
	10.00	10.09

SpCond 1413 1413

ORP 220 220.0

DO 640.4 mmHg
84.4% 8.99 mg/L

0935 Begin gauging wells

well ID	DTP	DTW	TD
MW-1R	-	11.62	21.95
MW-2R	-	11.47	22.41

1030 PNB offsite; All samples preserved onsite

~~PNB~~
2/16/18



Daniel B. Stephens & Associates, Inc.

GROUNDWATER MONITORING DATA SHEET

Project Name: Sullivan Stables Sampler: P. Feltman
Project #: ES14.0052.02 Sample Date: 2/16/18
Project Manager: J. Bunch Sample Time: 1000

Well #: mw-12
Well Diameter: 2 (inches) Height of Water Column: 10.33 (feet)
Depth to NAPL: — (feet btoc) Casing Volume: 1.65 (gal)
Depth to Water: 11.62 (feet btoc) Purge Volume: 4.96 (gal)
Total Depth of Well: 21.95 (feet) Purge Method: bailer

Note:

One casing volume (SCH 40 PVC): 2.0" ID casing = 0.16 gal/ft; 4.0" = 0.65 gal/ft; 6.0" = 1.47 gal/ft

Groundwater Parameters:

Casing Volume	pH	Temp (°C)	Conductivity (µS/cm)	ORP (mv)	D.O. (mg/L)	Turbidity (NTU)
Initial	6.62	14.90	1141	-100.0	2.29	---
1	6.83	15.49	1118	-174.2	2.22	---
2	6.91	15.88	994	-189.6	2.65	---
3	6.96	15.85	914	-187.0	2.72	---

Notes: 82603

8270 (SIMS)

6010 dissolved Fe, Mn

HC odor, light sheen



Daniel B. Stephens & Associates, Inc.

GROUNDWATER MONITORING DATA SHEET

Project Name: Sullivan Stables Sampler: P. Feltman
 Project #: ES14.0052.02 Sample Date: 2/16/18
 Project Manager: J. Bunch Sample Time: 1020

Well #: mw-22
 Well Diameter: 2 (inches) Height of Water Column: 10.97 (feet)
 Depth to NAPL: — (feet btoc) Casing Volume: 1.75 (gal)
 Depth to Water: 11.44 (feet btoc) Purge Volume: 5.25 (gal)
 Total Depth of Well: 22.41 (feet) Purge Method: bauler

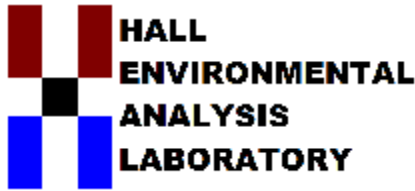
Note:
 One casing volume (SCH 40 PVC): 2.0" ID casing = 0.16 gal/ft; 4.0" = 0.65 gal/ft; 6.0" = 1.47 gal/ft

Groundwater Parameters:

Casing Volume	pH	Temp (°C)	Conductivity (µS/cm)	ORP (mv)	D.O. (mg/L)	Turbidity (NTU)
Initial	7.19	15.75	551	-169.3	2.79	---
1	7.07	15.88	544	-122.4	2.74	---
2	7.10	16.16	537	-86.1	2.23	---
3	7.13	15.94	540	-70.8	2.21	---

Notes: 8260B
8270 (Sims)
6010 dissolved Fe, Mn
odorless, no sheen

Appendix 3
Laboratory Report



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

March 09, 2018

John Bunch

Daniel B. Stephens & Assoc.
6020 Academy NE Suite 100
Albuquerque, NM 87109
TEL: (505) 822-9400
FAX (505) 822-8877

RE: Sullivan Stables

OrderNo.: 1802969

Dear John Bunch:

Hall Environmental Analysis Laboratory received 3 sample(s) on 2/16/2018 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 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 white background.

Andy Freeman
Laboratory Manager
4901 Hawkins NE
Albuquerque, NM 87109

Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order 1802969

Date Reported: 3/9/2018

CLIENT: Daniel B. Stephens & Assoc.

Client Sample ID: MW-1R

Project: Sullivan Stables

Collection Date: 2/16/2018 10:00:00 AM

Lab ID: 1802969-001

Matrix: AQUEOUS

Received Date: 2/16/2018 4:10:00 PM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 6010B: DISSOLVED METALS							Analyst: MED
Iron	0.046	0.020		mg/L	1	2/27/2018 12:16:40 PM	B49424
Manganese	0.78	0.010		mg/L	5	3/1/2018 11:06:24 AM	A49487
EPA METHOD 8270C: PAHS							Analyst: DAM
Naphthalene	ND	0.50		µg/L	1	3/6/2018 7:59:28 PM	36638
1-Methylnaphthalene	10	0.50		µg/L	1	3/6/2018 7:59:28 PM	36638
2-Methylnaphthalene	ND	0.50		µg/L	1	3/6/2018 7:59:28 PM	36638
Acenaphthylene	ND	0.50		µg/L	1	3/6/2018 7:59:28 PM	36638
Acenaphthene	ND	0.50		µg/L	1	3/6/2018 7:59:28 PM	36638
Fluorene	ND	0.50		µg/L	1	3/6/2018 7:59:28 PM	36638
Phenanthrene	ND	0.50		µg/L	1	3/6/2018 7:59:28 PM	36638
Anthracene	ND	0.50		µg/L	1	3/6/2018 7:59:28 PM	36638
Fluoranthene	ND	0.50		µg/L	1	3/6/2018 7:59:28 PM	36638
Pyrene	ND	0.50		µg/L	1	3/6/2018 7:59:28 PM	36638
Benz(a)anthracene	ND	0.50		µg/L	1	3/6/2018 7:59:28 PM	36638
Chrysene	ND	0.50		µg/L	1	3/6/2018 7:59:28 PM	36638
Benzo(b)fluoranthene	ND	0.50		µg/L	1	3/6/2018 7:59:28 PM	36638
Benzo(k)fluoranthene	ND	0.50		µg/L	1	3/6/2018 7:59:28 PM	36638
Benzo(a)pyrene	ND	0.50		µg/L	1	3/6/2018 7:59:28 PM	36638
Dibenz(a,h)anthracene	ND	0.50		µg/L	1	3/6/2018 7:59:28 PM	36638
Benzo(g,h,i)perylene	ND	0.50		µg/L	1	3/6/2018 7:59:28 PM	36638
Indeno(1,2,3-cd)pyrene	ND	0.50		µg/L	1	3/6/2018 7:59:28 PM	36638
Surr: N-hexadecane	88.1	18.7-145		%Rec	1	3/6/2018 7:59:28 PM	36638
Surr: Benzo(e)pyrene	98.8	28.2-137		%Rec	1	3/6/2018 7:59:28 PM	36638
EPA METHOD 8260B: VOLATILES							Analyst: RAA
Benzene	ND	1.0		µg/L	1	2/21/2018 10:17:00 PM	R49300
Toluene	ND	1.0		µg/L	1	2/21/2018 10:17:00 PM	R49300
Ethylbenzene	ND	1.0		µg/L	1	2/21/2018 10:17:00 PM	R49300
Methyl tert-butyl ether (MTBE)	ND	1.0		µg/L	1	2/21/2018 10:17:00 PM	R49300
1,2,4-Trimethylbenzene	ND	1.0		µg/L	1	2/21/2018 10:17:00 PM	R49300
1,3,5-Trimethylbenzene	ND	1.0		µg/L	1	2/21/2018 10:17:00 PM	R49300
1,2-Dichloroethane (EDC)	ND	1.0		µg/L	1	2/21/2018 10:17:00 PM	R49300
1,2-Dibromoethane (EDB)	ND	1.0		µg/L	1	2/21/2018 10:17:00 PM	R49300
Naphthalene	ND	2.0		µg/L	1	2/21/2018 10:17:00 PM	R49300
1-Methylnaphthalene	12	4.0		µg/L	1	2/21/2018 10:17:00 PM	R49300
2-Methylnaphthalene	ND	4.0		µg/L	1	2/21/2018 10:17:00 PM	R49300
Acetone	ND	10		µg/L	1	2/21/2018 10:17:00 PM	R49300
Bromobenzene	ND	1.0		µg/L	1	2/21/2018 10:17:00 PM	R49300
Bromodichloromethane	ND	1.0		µg/L	1	2/21/2018 10:17:00 PM	R49300

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

Qualifiers:	*	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
	PQL	Practical Quantitative Limit	RL	Reporting Detection Limit
	S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified

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Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8260B: VOLATILES							Analyst: RAA
Bromoform	ND	1.0		µg/L	1	2/21/2018 10:17:00 PM	R49300
Bromomethane	ND	3.0		µg/L	1	2/21/2018 10:17:00 PM	R49300
2-Butanone	ND	10		µg/L	1	2/21/2018 10:17:00 PM	R49300
Carbon disulfide	ND	10		µg/L	1	2/21/2018 10:17:00 PM	R49300
Carbon Tetrachloride	ND	1.0		µg/L	1	2/21/2018 10:17:00 PM	R49300
Chlorobenzene	ND	1.0		µg/L	1	2/21/2018 10:17:00 PM	R49300
Chloroethane	ND	2.0		µg/L	1	2/21/2018 10:17:00 PM	R49300
Chloroform	ND	1.0		µg/L	1	2/21/2018 10:17:00 PM	R49300
Chloromethane	ND	3.0		µg/L	1	2/21/2018 10:17:00 PM	R49300
2-Chlorotoluene	ND	1.0		µg/L	1	2/21/2018 10:17:00 PM	R49300
4-Chlorotoluene	ND	1.0		µg/L	1	2/21/2018 10:17:00 PM	R49300
cis-1,2-DCE	ND	1.0		µg/L	1	2/21/2018 10:17:00 PM	R49300
cis-1,3-Dichloropropene	ND	1.0		µg/L	1	2/21/2018 10:17:00 PM	R49300
1,2-Dibromo-3-chloropropane	ND	2.0		µg/L	1	2/21/2018 10:17:00 PM	R49300
Dibromochloromethane	ND	1.0		µg/L	1	2/21/2018 10:17:00 PM	R49300
Dibromomethane	ND	1.0		µg/L	1	2/21/2018 10:17:00 PM	R49300
1,2-Dichlorobenzene	ND	1.0		µg/L	1	2/21/2018 10:17:00 PM	R49300
1,3-Dichlorobenzene	ND	1.0		µg/L	1	2/21/2018 10:17:00 PM	R49300
1,4-Dichlorobenzene	ND	1.0		µg/L	1	2/21/2018 10:17:00 PM	R49300
Dichlorodifluoromethane	ND	1.0		µg/L	1	2/21/2018 10:17:00 PM	R49300
1,1-Dichloroethane	ND	1.0		µg/L	1	2/21/2018 10:17:00 PM	R49300
1,1-Dichloroethene	ND	1.0		µg/L	1	2/21/2018 10:17:00 PM	R49300
1,2-Dichloropropane	ND	1.0		µg/L	1	2/21/2018 10:17:00 PM	R49300
1,3-Dichloropropane	ND	1.0		µg/L	1	2/21/2018 10:17:00 PM	R49300
2,2-Dichloropropane	ND	2.0		µg/L	1	2/21/2018 10:17:00 PM	R49300
1,1-Dichloropropene	ND	1.0		µg/L	1	2/21/2018 10:17:00 PM	R49300
Hexachlorobutadiene	ND	1.0		µg/L	1	2/21/2018 10:17:00 PM	R49300
2-Hexanone	ND	10		µg/L	1	2/21/2018 10:17:00 PM	R49300
Isopropylbenzene	11	1.0		µg/L	1	2/21/2018 10:17:00 PM	R49300
4-Isopropyltoluene	2.6	1.0		µg/L	1	2/21/2018 10:17:00 PM	R49300
4-Methyl-2-pentanone	ND	10		µg/L	1	2/21/2018 10:17:00 PM	R49300
Methylene Chloride	ND	3.0		µg/L	1	2/21/2018 10:17:00 PM	R49300
n-Butylbenzene	10	3.0		µg/L	1	2/21/2018 10:17:00 PM	R49300
n-Propylbenzene	97	1.0		µg/L	1	2/21/2018 10:17:00 PM	R49300
sec-Butylbenzene	18	1.0		µg/L	1	2/21/2018 10:17:00 PM	R49300
Styrene	ND	1.0		µg/L	1	2/21/2018 10:17:00 PM	R49300
tert-Butylbenzene	ND	1.0		µg/L	1	2/21/2018 10:17:00 PM	R49300
1,1,1,2-Tetrachloroethane	ND	1.0		µg/L	1	2/21/2018 10:17:00 PM	R49300
1,1,2,2-Tetrachloroethane	ND	2.0		µg/L	1	2/21/2018 10:17:00 PM	R49300

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

Qualifiers:	* 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
	PQL Practical Quantitative Limit	RL Reporting Detection Limit
	S % Recovery outside of range due to dilution or matrix	W Sample container temperature is out of limit as specified

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Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8260B: VOLATILES							Analyst: RAA
Tetrachloroethene (PCE)	ND	1.0		µg/L	1	2/21/2018 10:17:00 PM	R49300
trans-1,2-DCE	ND	1.0		µg/L	1	2/21/2018 10:17:00 PM	R49300
trans-1,3-Dichloropropene	ND	1.0		µg/L	1	2/21/2018 10:17:00 PM	R49300
1,2,3-Trichlorobenzene	ND	1.0		µg/L	1	2/21/2018 10:17:00 PM	R49300
1,2,4-Trichlorobenzene	ND	1.0		µg/L	1	2/21/2018 10:17:00 PM	R49300
1,1,1-Trichloroethane	ND	1.0		µg/L	1	2/21/2018 10:17:00 PM	R49300
1,1,2-Trichloroethane	ND	1.0		µg/L	1	2/21/2018 10:17:00 PM	R49300
Trichloroethene (TCE)	ND	1.0		µg/L	1	2/21/2018 10:17:00 PM	R49300
Trichlorofluoromethane	ND	1.0		µg/L	1	2/21/2018 10:17:00 PM	R49300
1,2,3-Trichloropropane	ND	2.0		µg/L	1	2/21/2018 10:17:00 PM	R49300
Vinyl chloride	ND	1.0		µg/L	1	2/21/2018 10:17:00 PM	R49300
Xylenes, Total	ND	1.5		µg/L	1	2/21/2018 10:17:00 PM	R49300
Surr: 1,2-Dichloroethane-d4	83.5	70-130		%Rec	1	2/21/2018 10:17:00 PM	R49300
Surr: 4-Bromofluorobenzene	82.4	70-130		%Rec	1	2/21/2018 10:17:00 PM	R49300
Surr: Dibromofluoromethane	85.5	70-130		%Rec	1	2/21/2018 10:17:00 PM	R49300
Surr: Toluene-d8	78.1	70-130		%Rec	1	2/21/2018 10:17:00 PM	R49300

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CLIENT: Daniel B. Stephens & Assoc.

Client Sample ID: MW-2R

Project: Sullivan Stables

Collection Date: 2/16/2018 10:20:00 AM

Lab ID: 1802969-002

Matrix: AQUEOUS

Received Date: 2/16/2018 4:10:00 PM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 6010B: DISSOLVED METALS							Analyst: MED
Iron	0.17	0.020		mg/L	1	2/27/2018 12:22:08 PM	B49424
Manganese	1.2	0.010		mg/L	5	3/1/2018 11:09:55 AM	A49487
EPA METHOD 8270C: PAHS							Analyst: DAM
Naphthalene	ND	0.50		µg/L	1	3/6/2018 8:23:36 PM	36638
1-Methylnaphthalene	ND	0.50		µg/L	1	3/6/2018 8:23:36 PM	36638
2-Methylnaphthalene	ND	0.50		µg/L	1	3/6/2018 8:23:36 PM	36638
Acenaphthylene	ND	0.50		µg/L	1	3/6/2018 8:23:36 PM	36638
Acenaphthene	ND	0.50		µg/L	1	3/6/2018 8:23:36 PM	36638
Fluorene	ND	0.50		µg/L	1	3/6/2018 8:23:36 PM	36638
Phenanthrene	ND	0.50		µg/L	1	3/6/2018 8:23:36 PM	36638
Anthracene	ND	0.50		µg/L	1	3/6/2018 8:23:36 PM	36638
Fluoranthene	ND	0.50		µg/L	1	3/6/2018 8:23:36 PM	36638
Pyrene	ND	0.50		µg/L	1	3/6/2018 8:23:36 PM	36638
Benz(a)anthracene	ND	0.50		µg/L	1	3/6/2018 8:23:36 PM	36638
Chrysene	ND	0.50		µg/L	1	3/6/2018 8:23:36 PM	36638
Benzo(b)fluoranthene	ND	0.50		µg/L	1	3/6/2018 8:23:36 PM	36638
Benzo(k)fluoranthene	ND	0.50		µg/L	1	3/6/2018 8:23:36 PM	36638
Benzo(a)pyrene	ND	0.50		µg/L	1	3/6/2018 8:23:36 PM	36638
Dibenz(a,h)anthracene	ND	0.50		µg/L	1	3/6/2018 8:23:36 PM	36638
Benzo(g,h,i)perylene	ND	0.50		µg/L	1	3/6/2018 8:23:36 PM	36638
Indeno(1,2,3-cd)pyrene	ND	0.50		µg/L	1	3/6/2018 8:23:36 PM	36638
Surr: N-hexadecane	73.6	18.7-145		%Rec	1	3/6/2018 8:23:36 PM	36638
Surr: Benzo(e)pyrene	81.5	28.2-137		%Rec	1	3/6/2018 8:23:36 PM	36638
EPA METHOD 8260B: VOLATILES							Analyst: RAA
Benzene	ND	1.0		µg/L	1	2/21/2018 10:41:00 PM	R49300
Toluene	ND	1.0		µg/L	1	2/21/2018 10:41:00 PM	R49300
Ethylbenzene	ND	1.0		µg/L	1	2/21/2018 10:41:00 PM	R49300
Methyl tert-butyl ether (MTBE)	ND	1.0		µg/L	1	2/21/2018 10:41:00 PM	R49300
1,2,4-Trimethylbenzene	ND	1.0		µg/L	1	2/21/2018 10:41:00 PM	R49300
1,3,5-Trimethylbenzene	ND	1.0		µg/L	1	2/21/2018 10:41:00 PM	R49300
1,2-Dichloroethane (EDC)	ND	1.0		µg/L	1	2/21/2018 10:41:00 PM	R49300
1,2-Dibromoethane (EDB)	ND	1.0		µg/L	1	2/21/2018 10:41:00 PM	R49300
Naphthalene	ND	2.0		µg/L	1	2/21/2018 10:41:00 PM	R49300
1-Methylnaphthalene	ND	4.0		µg/L	1	2/21/2018 10:41:00 PM	R49300
2-Methylnaphthalene	ND	4.0		µg/L	1	2/21/2018 10:41:00 PM	R49300
Acetone	ND	10		µg/L	1	2/21/2018 10:41:00 PM	R49300
Bromobenzene	ND	1.0		µg/L	1	2/21/2018 10:41:00 PM	R49300
Bromodichloromethane	ND	1.0		µg/L	1	2/21/2018 10:41:00 PM	R49300

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

Qualifiers:	* Value exceeds Maximum Contaminant Level.	B Analyte detected in the associated Method Blank
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	ND Not Detected at the Reporting Limit	P Sample pH Not In Range
	PQL Practical Quantitative Limit	RL Reporting Detection Limit
	S % Recovery outside of range due to dilution or matrix	W Sample container temperature is out of limit as specified

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EPA METHOD 8260B: VOLATILES							Analyst: RAA
Bromoform	ND	1.0		µg/L	1	2/21/2018 10:41:00 PM	R49300
Bromomethane	ND	3.0		µg/L	1	2/21/2018 10:41:00 PM	R49300
2-Butanone	ND	10		µg/L	1	2/21/2018 10:41:00 PM	R49300
Carbon disulfide	ND	10		µg/L	1	2/21/2018 10:41:00 PM	R49300
Carbon Tetrachloride	ND	1.0		µg/L	1	2/21/2018 10:41:00 PM	R49300
Chlorobenzene	ND	1.0		µg/L	1	2/21/2018 10:41:00 PM	R49300
Chloroethane	ND	2.0		µg/L	1	2/21/2018 10:41:00 PM	R49300
Chloroform	ND	1.0		µg/L	1	2/21/2018 10:41:00 PM	R49300
Chloromethane	ND	3.0		µg/L	1	2/21/2018 10:41:00 PM	R49300
2-Chlorotoluene	ND	1.0		µg/L	1	2/21/2018 10:41:00 PM	R49300
4-Chlorotoluene	ND	1.0		µg/L	1	2/21/2018 10:41:00 PM	R49300
cis-1,2-DCE	ND	1.0		µg/L	1	2/21/2018 10:41:00 PM	R49300
cis-1,3-Dichloropropene	ND	1.0		µg/L	1	2/21/2018 10:41:00 PM	R49300
1,2-Dibromo-3-chloropropane	ND	2.0		µg/L	1	2/21/2018 10:41:00 PM	R49300
Dibromochloromethane	ND	1.0		µg/L	1	2/21/2018 10:41:00 PM	R49300
Dibromomethane	ND	1.0		µg/L	1	2/21/2018 10:41:00 PM	R49300
1,2-Dichlorobenzene	ND	1.0		µg/L	1	2/21/2018 10:41:00 PM	R49300
1,3-Dichlorobenzene	ND	1.0		µg/L	1	2/21/2018 10:41:00 PM	R49300
1,4-Dichlorobenzene	ND	1.0		µg/L	1	2/21/2018 10:41:00 PM	R49300
Dichlorodifluoromethane	ND	1.0		µg/L	1	2/21/2018 10:41:00 PM	R49300
1,1-Dichloroethane	ND	1.0		µg/L	1	2/21/2018 10:41:00 PM	R49300
1,1-Dichloroethene	ND	1.0		µg/L	1	2/21/2018 10:41:00 PM	R49300
1,2-Dichloropropane	ND	1.0		µg/L	1	2/21/2018 10:41:00 PM	R49300
1,3-Dichloropropane	ND	1.0		µg/L	1	2/21/2018 10:41:00 PM	R49300
2,2-Dichloropropane	ND	2.0		µg/L	1	2/21/2018 10:41:00 PM	R49300
1,1-Dichloropropene	ND	1.0		µg/L	1	2/21/2018 10:41:00 PM	R49300
Hexachlorobutadiene	ND	1.0		µg/L	1	2/21/2018 10:41:00 PM	R49300
2-Hexanone	ND	10		µg/L	1	2/21/2018 10:41:00 PM	R49300
Isopropylbenzene	ND	1.0		µg/L	1	2/21/2018 10:41:00 PM	R49300
4-Isopropyltoluene	ND	1.0		µg/L	1	2/21/2018 10:41:00 PM	R49300
4-Methyl-2-pentanone	ND	10		µg/L	1	2/21/2018 10:41:00 PM	R49300
Methylene Chloride	ND	3.0		µg/L	1	2/21/2018 10:41:00 PM	R49300
n-Butylbenzene	ND	3.0		µg/L	1	2/21/2018 10:41:00 PM	R49300
n-Propylbenzene	ND	1.0		µg/L	1	2/21/2018 10:41:00 PM	R49300
sec-Butylbenzene	ND	1.0		µg/L	1	2/21/2018 10:41:00 PM	R49300
Styrene	ND	1.0		µg/L	1	2/21/2018 10:41:00 PM	R49300
tert-Butylbenzene	ND	1.0		µg/L	1	2/21/2018 10:41:00 PM	R49300
1,1,1,2-Tetrachloroethane	ND	1.0		µg/L	1	2/21/2018 10:41:00 PM	R49300
1,1,2,2-Tetrachloroethane	ND	2.0		µg/L	1	2/21/2018 10:41:00 PM	R49300

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Tetrachloroethene (PCE)	ND	1.0		µg/L	1	2/21/2018 10:41:00 PM	R49300
trans-1,2-DCE	ND	1.0		µg/L	1	2/21/2018 10:41:00 PM	R49300
trans-1,3-Dichloropropene	ND	1.0		µg/L	1	2/21/2018 10:41:00 PM	R49300
1,2,3-Trichlorobenzene	ND	1.0		µg/L	1	2/21/2018 10:41:00 PM	R49300
1,2,4-Trichlorobenzene	ND	1.0		µg/L	1	2/21/2018 10:41:00 PM	R49300
1,1,1-Trichloroethane	ND	1.0		µg/L	1	2/21/2018 10:41:00 PM	R49300
1,1,2-Trichloroethane	ND	1.0		µg/L	1	2/21/2018 10:41:00 PM	R49300
Trichloroethene (TCE)	ND	1.0		µg/L	1	2/21/2018 10:41:00 PM	R49300
Trichlorofluoromethane	ND	1.0		µg/L	1	2/21/2018 10:41:00 PM	R49300
1,2,3-Trichloropropane	ND	2.0		µg/L	1	2/21/2018 10:41:00 PM	R49300
Vinyl chloride	ND	1.0		µg/L	1	2/21/2018 10:41:00 PM	R49300
Xylenes, Total	ND	1.5		µg/L	1	2/21/2018 10:41:00 PM	R49300
Surr: 1,2-Dichloroethane-d4	86.5	70-130		%Rec	1	2/21/2018 10:41:00 PM	R49300
Surr: 4-Bromofluorobenzene	78.3	70-130		%Rec	1	2/21/2018 10:41:00 PM	R49300
Surr: Dibromofluoromethane	89.9	70-130		%Rec	1	2/21/2018 10:41:00 PM	R49300
Surr: Toluene-d8	78.2	70-130		%Rec	1	2/21/2018 10:41:00 PM	R49300

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

Qualifiers:	* 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
	PQL Practical Quantitative Limit	RL Reporting Detection Limit
	S % Recovery outside of range due to dilution or matrix	W Sample container temperature is out of limit as specified

Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order 1802969

Date Reported: 3/9/2018

CLIENT: Daniel B. Stephens & Assoc.

Client Sample ID: Trip Blank

Project: Sullivan Stables

Collection Date:

Lab ID: 1802969-003

Matrix: TRIP BLANK

Received Date: 2/16/2018 4:10:00 PM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8260B: VOLATILES							Analyst: RAA
Benzene	ND	1.0		µg/L	1	2/21/2018 11:05:00 PM	R49300
Toluene	ND	1.0		µg/L	1	2/21/2018 11:05:00 PM	R49300
Ethylbenzene	ND	1.0		µg/L	1	2/21/2018 11:05:00 PM	R49300
Methyl tert-butyl ether (MTBE)	ND	1.0		µg/L	1	2/21/2018 11:05:00 PM	R49300
1,2,4-Trimethylbenzene	ND	1.0		µg/L	1	2/21/2018 11:05:00 PM	R49300
1,3,5-Trimethylbenzene	ND	1.0		µg/L	1	2/21/2018 11:05:00 PM	R49300
1,2-Dichloroethane (EDC)	ND	1.0		µg/L	1	2/21/2018 11:05:00 PM	R49300
1,2-Dibromoethane (EDB)	ND	1.0		µg/L	1	2/21/2018 11:05:00 PM	R49300
Naphthalene	ND	2.0		µg/L	1	2/21/2018 11:05:00 PM	R49300
1-Methylnaphthalene	ND	4.0		µg/L	1	2/21/2018 11:05:00 PM	R49300
2-Methylnaphthalene	ND	4.0		µg/L	1	2/21/2018 11:05:00 PM	R49300
Acetone	ND	10		µg/L	1	2/21/2018 11:05:00 PM	R49300
Bromobenzene	ND	1.0		µg/L	1	2/21/2018 11:05:00 PM	R49300
Bromodichloromethane	ND	1.0		µg/L	1	2/21/2018 11:05:00 PM	R49300
Bromoform	ND	1.0		µg/L	1	2/21/2018 11:05:00 PM	R49300
Bromomethane	ND	3.0		µg/L	1	2/21/2018 11:05:00 PM	R49300
2-Butanone	ND	10		µg/L	1	2/21/2018 11:05:00 PM	R49300
Carbon disulfide	ND	10		µg/L	1	2/21/2018 11:05:00 PM	R49300
Carbon Tetrachloride	ND	1.0		µg/L	1	2/21/2018 11:05:00 PM	R49300
Chlorobenzene	ND	1.0		µg/L	1	2/21/2018 11:05:00 PM	R49300
Chloroethane	ND	2.0		µg/L	1	2/21/2018 11:05:00 PM	R49300
Chloroform	ND	1.0		µg/L	1	2/21/2018 11:05:00 PM	R49300
Chloromethane	ND	3.0		µg/L	1	2/21/2018 11:05:00 PM	R49300
2-Chlorotoluene	ND	1.0		µg/L	1	2/21/2018 11:05:00 PM	R49300
4-Chlorotoluene	ND	1.0		µg/L	1	2/21/2018 11:05:00 PM	R49300
cis-1,2-DCE	ND	1.0		µg/L	1	2/21/2018 11:05:00 PM	R49300
cis-1,3-Dichloropropene	ND	1.0		µg/L	1	2/21/2018 11:05:00 PM	R49300
1,2-Dibromo-3-chloropropane	ND	2.0		µg/L	1	2/21/2018 11:05:00 PM	R49300
Dibromochloromethane	ND	1.0		µg/L	1	2/21/2018 11:05:00 PM	R49300
Dibromomethane	ND	1.0		µg/L	1	2/21/2018 11:05:00 PM	R49300
1,2-Dichlorobenzene	ND	1.0		µg/L	1	2/21/2018 11:05:00 PM	R49300
1,3-Dichlorobenzene	ND	1.0		µg/L	1	2/21/2018 11:05:00 PM	R49300
1,4-Dichlorobenzene	ND	1.0		µg/L	1	2/21/2018 11:05:00 PM	R49300
Dichlorodifluoromethane	ND	1.0		µg/L	1	2/21/2018 11:05:00 PM	R49300
1,1-Dichloroethane	ND	1.0		µg/L	1	2/21/2018 11:05:00 PM	R49300
1,1-Dichloroethene	ND	1.0		µg/L	1	2/21/2018 11:05:00 PM	R49300
1,2-Dichloropropane	ND	1.0		µg/L	1	2/21/2018 11:05:00 PM	R49300
1,3-Dichloropropane	ND	1.0		µg/L	1	2/21/2018 11:05:00 PM	R49300
2,2-Dichloropropane	ND	2.0		µg/L	1	2/21/2018 11:05:00 PM	R49300

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

Qualifiers:	* 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
	PQL Practical Quantitative Limit	RL Reporting Detection Limit
	S % Recovery outside of range due to dilution or matrix	W Sample container temperature is out of limit as specified

Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order 1802969

Date Reported: 3/9/2018

CLIENT: Daniel B. Stephens & Assoc.

Client Sample ID: Trip Blank

Project: Sullivan Stables

Collection Date:

Lab ID: 1802969-003

Matrix: TRIP BLANK

Received Date: 2/16/2018 4:10:00 PM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8260B: VOLATILES							Analyst: RAA
1,1-Dichloropropene	ND	1.0		µg/L	1	2/21/2018 11:05:00 PM	R49300
Hexachlorobutadiene	ND	1.0		µg/L	1	2/21/2018 11:05:00 PM	R49300
2-Hexanone	ND	10		µg/L	1	2/21/2018 11:05:00 PM	R49300
Isopropylbenzene	ND	1.0		µg/L	1	2/21/2018 11:05:00 PM	R49300
4-Isopropyltoluene	ND	1.0		µg/L	1	2/21/2018 11:05:00 PM	R49300
4-Methyl-2-pentanone	ND	10		µg/L	1	2/21/2018 11:05:00 PM	R49300
Methylene Chloride	ND	3.0		µg/L	1	2/21/2018 11:05:00 PM	R49300
n-Butylbenzene	ND	3.0		µg/L	1	2/21/2018 11:05:00 PM	R49300
n-Propylbenzene	ND	1.0		µg/L	1	2/21/2018 11:05:00 PM	R49300
sec-Butylbenzene	ND	1.0		µg/L	1	2/21/2018 11:05:00 PM	R49300
Styrene	ND	1.0		µg/L	1	2/21/2018 11:05:00 PM	R49300
tert-Butylbenzene	ND	1.0		µg/L	1	2/21/2018 11:05:00 PM	R49300
1,1,1,2-Tetrachloroethane	ND	1.0		µg/L	1	2/21/2018 11:05:00 PM	R49300
1,1,2,2-Tetrachloroethane	ND	2.0		µg/L	1	2/21/2018 11:05:00 PM	R49300
Tetrachloroethene (PCE)	ND	1.0		µg/L	1	2/21/2018 11:05:00 PM	R49300
trans-1,2-DCE	ND	1.0		µg/L	1	2/21/2018 11:05:00 PM	R49300
trans-1,3-Dichloropropene	ND	1.0		µg/L	1	2/21/2018 11:05:00 PM	R49300
1,2,3-Trichlorobenzene	ND	1.0		µg/L	1	2/21/2018 11:05:00 PM	R49300
1,2,4-Trichlorobenzene	ND	1.0		µg/L	1	2/21/2018 11:05:00 PM	R49300
1,1,1-Trichloroethane	ND	1.0		µg/L	1	2/21/2018 11:05:00 PM	R49300
1,1,2-Trichloroethane	ND	1.0		µg/L	1	2/21/2018 11:05:00 PM	R49300
Trichloroethene (TCE)	ND	1.0		µg/L	1	2/21/2018 11:05:00 PM	R49300
Trichlorofluoromethane	ND	1.0		µg/L	1	2/21/2018 11:05:00 PM	R49300
1,2,3-Trichloropropane	ND	2.0		µg/L	1	2/21/2018 11:05:00 PM	R49300
Vinyl chloride	ND	1.0		µg/L	1	2/21/2018 11:05:00 PM	R49300
Xylenes, Total	ND	1.5		µg/L	1	2/21/2018 11:05:00 PM	R49300
Surr: 1,2-Dichloroethane-d4	85.6	70-130		%Rec	1	2/21/2018 11:05:00 PM	R49300
Surr: 4-Bromofluorobenzene	77.9	70-130		%Rec	1	2/21/2018 11:05:00 PM	R49300
Surr: Dibromofluoromethane	89.0	70-130		%Rec	1	2/21/2018 11:05:00 PM	R49300
Surr: Toluene-d8	78.3	70-130		%Rec	1	2/21/2018 11:05:00 PM	R49300

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

Qualifiers:	* 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
	PQL Practical Quantitative Limit	RL Reporting Detection Limit
	S % Recovery outside of range due to dilution or matrix	W Sample container temperature is out of limit as specified

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 1802969

09-Mar-18

Client: Daniel B. Stephens & Assoc.

Project: Sullivan Stables

Sample ID	100ng lcs	SampType:	LCS	TestCode:	EPA Method 8260B: VOLATILES					
Client ID:	LCSW	Batch ID:	R49300	RunNo:	49300					
Prep Date:		Analysis Date:	2/21/2018	SeqNo:	1590831					
				Units:	µg/L					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	24	1.0	20.00	0	118	70	130			
Toluene	20	1.0	20.00	0	101	70	130			
Chlorobenzene	20	1.0	20.00	0	102	70	130			
1,1-Dichloroethene	26	1.0	20.00	0	128	70	130			
Trichloroethene (TCE)	22	1.0	20.00	0	110	70	130			
Surr: 1,2-Dichloroethane-d4	8.8		10.00		88.4	70	130			
Surr: 4-Bromofluorobenzene	8.0		10.00		79.5	70	130			
Surr: Dibromofluoromethane	9.1		10.00		90.8	70	130			
Surr: Toluene-d8	7.8		10.00		78.2	70	130			

Sample ID	rb	SampType:	MBLK	TestCode:	EPA Method 8260B: VOLATILES					
Client ID:	PBW	Batch ID:	R49300	RunNo:	49300					
Prep Date:		Analysis Date:	2/21/2018	SeqNo:	1590832					
				Units:	µg/L					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	ND	1.0								
Toluene	ND	1.0								
Ethylbenzene	ND	1.0								
Methyl tert-butyl ether (MTBE)	ND	1.0								
1,2,4-Trimethylbenzene	ND	1.0								
1,3,5-Trimethylbenzene	ND	1.0								
1,2-Dichloroethane (EDC)	ND	1.0								
1,2-Dibromoethane (EDB)	ND	1.0								
Naphthalene	ND	2.0								
1-Methylnaphthalene	ND	4.0								
2-Methylnaphthalene	ND	4.0								
Acetone	ND	10								
Bromobenzene	ND	1.0								
Bromodichloromethane	ND	1.0								
Bromoform	ND	1.0								
Bromomethane	ND	3.0								
2-Butanone	ND	10								
Carbon disulfide	ND	10								
Carbon Tetrachloride	ND	1.0								
Chlorobenzene	ND	1.0								
Chloroethane	ND	2.0								
Chloroform	ND	1.0								
Chloromethane	ND	3.0								
2-Chlorotoluene	ND	1.0								

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
- PQL Practical Quantitative Limit
- 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
- W Sample container temperature is out of limit as specified

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 1802969

09-Mar-18

Client: Daniel B. Stephens & Assoc.

Project: Sullivan Stables

Sample ID	rb	SampType:	MBLK	TestCode:	EPA Method 8260B: VOLATILES					
Client ID:	PBW	Batch ID:	R49300	RunNo:	49300					
Prep Date:		Analysis Date:	2/21/2018	SeqNo:	1590832	Units:	µg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
4-Chlorotoluene	ND	1.0								
cis-1,2-DCE	ND	1.0								
cis-1,3-Dichloropropene	ND	1.0								
1,2-Dibromo-3-chloropropane	ND	2.0								
Dibromochloromethane	ND	1.0								
Dibromomethane	ND	1.0								
1,2-Dichlorobenzene	ND	1.0								
1,3-Dichlorobenzene	ND	1.0								
1,4-Dichlorobenzene	ND	1.0								
Dichlorodifluoromethane	ND	1.0								
1,1-Dichloroethane	ND	1.0								
1,1-Dichloroethene	ND	1.0								
1,2-Dichloropropane	ND	1.0								
1,3-Dichloropropane	ND	1.0								
2,2-Dichloropropane	ND	2.0								
1,1-Dichloropropene	ND	1.0								
Hexachlorobutadiene	ND	1.0								
2-Hexanone	ND	10								
Isopropylbenzene	ND	1.0								
4-Isopropyltoluene	ND	1.0								
4-Methyl-2-pentanone	ND	10								
Methylene Chloride	ND	3.0								
n-Butylbenzene	ND	3.0								
n-Propylbenzene	ND	1.0								
sec-Butylbenzene	ND	1.0								
Styrene	ND	1.0								
tert-Butylbenzene	ND	1.0								
1,1,1,2-Tetrachloroethane	ND	1.0								
1,1,2,2-Tetrachloroethane	ND	2.0								
Tetrachloroethene (PCE)	ND	1.0								
trans-1,2-DCE	ND	1.0								
trans-1,3-Dichloropropene	ND	1.0								
1,2,3-Trichlorobenzene	ND	1.0								
1,2,4-Trichlorobenzene	ND	1.0								
1,1,1-Trichloroethane	ND	1.0								
1,1,2-Trichloroethane	ND	1.0								
Trichloroethene (TCE)	ND	1.0								
Trichlorofluoromethane	ND	1.0								
1,2,3-Trichloropropane	ND	2.0								

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
- PQL Practical Quantitative Limit
- 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
- W Sample container temperature is out of limit as specified

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 1802969

09-Mar-18

Client: Daniel B. Stephens & Assoc.

Project: Sullivan Stables

Sample ID	rb	SampType: MBLK		TestCode: EPA Method 8260B: VOLATILES						
Client ID:	PBW	Batch ID: R49300		RunNo: 49300						
Prep Date:		Analysis Date: 2/21/2018		SeqNo: 1590832		Units: µg/L				
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Vinyl chloride	ND	1.0								
Xylenes, Total	ND	1.5								
Surr: 1,2-Dichloroethane-d4	8.9		10.00		88.9	70	130			
Surr: 4-Bromofluorobenzene	7.6		10.00		76.1	70	130			
Surr: Dibromofluoromethane	9.2		10.00		91.7	70	130			
Surr: Toluene-d8	7.7		10.00		77.3	70	130			

Qualifiers:

- | | |
|---|---|
| * 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 |
| PQL Practical Quantitative Limit | RL Reporting Detection Limit |
| S % Recovery outside of range due to dilution or matrix | W Sample container temperature is out of limit as specified |

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 1802969

09-Mar-18

Client: Daniel B. Stephens & Assoc.

Project: Sullivan Stables

Sample ID	Ics-36638		SampType: LCS			TestCode: EPA Method 8270C: PAHs				
Client ID:	LCSW		Batch ID: 36638			RunNo: 49594				
Prep Date:	2/21/2018		Analysis Date: 3/6/2018			SeqNo: 1603242		Units: µg/L		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Naphthalene	14	0.50	20.00	0	72.3	28.6	113			
1-Methylnaphthalene	16	0.50	20.00	0	79.7	27	113			
2-Methylnaphthalene	15	0.50	20.00	0	74.4	26.3	112			
Acenaphthylene	16	0.50	20.00	0	81.0	36.2	114			
Acenaphthene	16	0.50	20.00	0	82.5	35.6	116			
Fluorene	17	0.50	20.00	0	86.6	38.4	116			
Phenanthrene	16	0.50	20.00	0	79.1	42.3	118			
Anthracene	16	0.50	20.00	0	80.1	42.2	117			
Fluoranthene	17	0.50	20.00	0	83.2	42.5	118			
Pyrene	18	0.50	20.00	0	88.6	40.8	121			
Benz(a)anthracene	17	0.50	20.00	0	86.8	43	118			
Chrysene	10	0.50	20.00	0	50.4	39.4	119			
Benzo(b)fluoranthene	20	0.50	20.00	0	99.6	47.8	115			
Benzo(k)fluoranthene	19	0.50	20.00	0	95.5	40.5	120			
Benzo(a)pyrene	18	0.50	20.00	0	89.0	41.5	115			
Dibenz(a,h)anthracene	16	0.50	20.00	0	81.2	48.6	115			
Benzo(g,h,i)perylene	17	0.50	20.00	0	86.9	42	119			
Indeno(1,2,3-cd)pyrene	18	0.50	20.00	0	92.2	42.9	118			
Surr: N-hexadecane	73		87.60		83.5	18.7	145			
Surr: Benzo(e)pyrene	18		20.00		90.8	28.2	137			

Sample ID	Icsd-36638		SampType: LCSD			TestCode: EPA Method 8270C: PAHs				
Client ID:	LCSS02		Batch ID: 36638			RunNo: 49594				
Prep Date:	2/21/2018		Analysis Date: 3/6/2018			SeqNo: 1603243		Units: µg/L		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Naphthalene	12	0.50	20.00	0	58.4	28.6	113	21.3	40.7	
1-Methylnaphthalene	13	0.50	20.00	0	63.1	27	113	23.2	38.4	
2-Methylnaphthalene	12	0.50	20.00	0	59.0	26.3	112	23.1	25.5	
Acenaphthylene	12	0.50	20.00	0	60.6	36.2	114	28.8	34.1	
Acenaphthene	12	0.50	20.00	0	61.3	35.6	116	29.5	32.1	
Fluorene	13	0.50	20.00	0	64.8	38.4	116	28.8	28	R
Phenanthrene	14	0.50	20.00	0	68.5	42.3	118	14.4	37.4	
Anthracene	13	0.50	20.00	0	67.1	42.2	117	17.7	36.2	
Fluoranthene	15	0.50	20.00	0	72.7	42.5	118	13.5	26.6	
Pyrene	15	0.50	20.00	0	74.3	40.8	121	17.6	26.8	
Benz(a)anthracene	14	0.50	20.00	0	71.6	43	118	19.2	25.1	
Chrysene	8.5	0.50	20.00	0	42.7	39.4	119	16.5	23.3	
Benzo(b)fluoranthene	17	0.50	20.00	0	86.5	47.8	115	14.1	22.5	

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
- PQL Practical Quantitative Limit
- 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
- W Sample container temperature is out of limit as specified

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 1802969

09-Mar-18

Client: Daniel B. Stephens & Assoc.

Project: Sullivan Stables

Sample ID icsd-36638	SampType: LCSD		TestCode: EPA Method 8270C: PAHs							
Client ID: LCSS02	Batch ID: 36638		RunNo: 49594							
Prep Date: 2/21/2018	Analysis Date: 3/6/2018		SeqNo: 1603243				Units: µg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzo(k)fluoranthene	17	0.50	20.00	0	86.3	40.5	120	10.1	30.9	
Benzo(a)pyrene	15	0.50	20.00	0	77.2	41.5	115	14.2	23.2	
Dibenz(a,h)anthracene	14	0.50	20.00	0	71.5	48.6	115	12.7	26.5	
Benzo(g,h,i)perylene	14	0.50	20.00	0	71.8	42	119	19.0	30.7	
Indeno(1,2,3-cd)pyrene	15	0.50	20.00	0	77.2	42.9	118	17.7	25.4	
Surr: N-hexadecane	57		87.60		64.6	18.7	145	0	0	
Surr: Benzo(e)pyrene	16		20.00		78.4	28.2	137	0	0	

Sample ID mb-36638	SampType: MBLK		TestCode: EPA Method 8270C: PAHs							
Client ID: PBW	Batch ID: 36638		RunNo: 49594							
Prep Date: 2/21/2018	Analysis Date: 3/6/2018		SeqNo: 1603244				Units: µg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Naphthalene	ND	0.50								
1-Methylnaphthalene	ND	0.50								
2-Methylnaphthalene	ND	0.50								
Acenaphthylene	ND	0.50								
Acenaphthene	ND	0.50								
Fluorene	ND	0.50								
Phenanthrene	ND	0.50								
Anthracene	ND	0.50								
Fluoranthene	ND	0.50								
Pyrene	ND	0.50								
Benzo(a)anthracene	ND	0.50								
Chrysene	ND	0.50								
Benzo(b)fluoranthene	ND	0.50								
Benzo(k)fluoranthene	ND	0.50								
Benzo(a)pyrene	ND	0.50								
Dibenz(a,h)anthracene	ND	0.50								
Benzo(g,h,i)perylene	ND	0.50								
Indeno(1,2,3-cd)pyrene	ND	0.50								
Surr: N-hexadecane	74		87.60		84.3	18.7	145			
Surr: Benzo(e)pyrene	18		20.00		89.1	28.2	137			

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
- PQL Practical Quantitative Limit
- 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
- W Sample container temperature is out of limit as specified

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 1802969

09-Mar-18

Client: Daniel B. Stephens & Assoc.

Project: Sullivan Stables

Sample ID MB-B	SampType: MBLK		TestCode: EPA Method 6010B: Dissolved Metals							
Client ID: PBW	Batch ID: B49424		RunNo: 49424							
Prep Date:	Analysis Date: 2/27/2018		SeqNo: 1595654		Units: mg/L					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Iron	ND	0.020								

Sample ID LCS-B	SampType: LCS		TestCode: EPA Method 6010B: Dissolved Metals							
Client ID: LCSW	Batch ID: B49424		RunNo: 49424							
Prep Date:	Analysis Date: 2/27/2018		SeqNo: 1595655		Units: mg/L					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Iron	0.50	0.020	0.5000	0	99.7	80	120			

Sample ID 1802969-001CMS	SampType: MS		TestCode: EPA Method 6010B: Dissolved Metals							
Client ID: MW-1R	Batch ID: B49424		RunNo: 49424							
Prep Date:	Analysis Date: 2/27/2018		SeqNo: 1595662		Units: mg/L					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Iron	0.51	0.020	0.5000	0.04621	92.2	75	125			

Sample ID 1802969-001CMSD	SampType: MSD		TestCode: EPA Method 6010B: Dissolved Metals							
Client ID: MW-1R	Batch ID: B49424		RunNo: 49424							
Prep Date:	Analysis Date: 2/27/2018		SeqNo: 1595663		Units: mg/L					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Iron	0.53	0.020	0.5000	0.04621	96.8	75	125	4.39	20	

Sample ID MB-A	SampType: MBLK		TestCode: EPA Method 6010B: Dissolved Metals							
Client ID: PBW	Batch ID: A49487		RunNo: 49487							
Prep Date:	Analysis Date: 3/1/2018		SeqNo: 1598693		Units: mg/L					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Manganese	ND	0.0020								

Sample ID LCS-A	SampType: LCS		TestCode: EPA Method 6010B: Dissolved Metals							
Client ID: LCSW	Batch ID: A49487		RunNo: 49487							
Prep Date:	Analysis Date: 3/1/2018		SeqNo: 1598694		Units: mg/L					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Manganese	0.49	0.0020	0.5000	0	97.4	80	120			

Qualifiers:

- | | |
|---|---|
| * 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 |
| PQL Practical Quantitative Limit | RL Reporting Detection Limit |
| S % Recovery outside of range due to dilution or matrix | W Sample container temperature is out of limit as specified |

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 1802969

09-Mar-18

Client: Daniel B. Stephens & Assoc.

Project: Sullivan Stables

Sample ID	1802969-001CMS	SampType:	MS	TestCode:	EPA Method 6010B: Dissolved Metals					
Client ID:	MW-1R	Batch ID:	A49487	RunNo:	49487					
Prep Date:		Analysis Date:	3/1/2018	SeqNo:	1598697	Units:	mg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Manganese	3.2	0.010	2.500	0.7828	95.2	75	125			

Sample ID	1802969-001CMSD	SampType:	MSD	TestCode:	EPA Method 6010B: Dissolved Metals					
Client ID:	MW-1R	Batch ID:	A49487	RunNo:	49487					
Prep Date:		Analysis Date:	3/1/2018	SeqNo:	1598698	Units:	mg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Manganese	3.1	0.010	2.500	0.7828	92.4	75	125	2.27	20	

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
- PQL Practical Quantitative Limit
- 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
- W Sample container temperature is out of limit as specified

Sample Log-In Check List

Client Name: DBS

Work Order Number: 1802969

RcptNo: 1

Received By: Erin Melendrez 2/16/2018 4:10:00 PM *EM*

Completed By: Erin Melendrez 2/19/2018 8:08:13 AM *EM*

Reviewed By: *ERE 02/19/18*

Labeled By: MW 2/19/18

Chain of Custody

1. Is Chain of Custody complete? Yes No Not Present
2. How was the sample delivered? Client

Log In

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

of preserved bottles checked for pH: 3
 (2 or >12 unless noted)

Adjusted? no

Checked by: *ME*

Special Handling (if applicable)

15. Was client notified of all discrepancies with this order? Yes No NA

Person Notified: _____ Date: _____

By Whom: _____ Via: eMail Phone Fax In Person

Regarding: _____

Client Instructions: _____

16. Additional remarks:

17. Cooler Information

Cooler No	Temp °C	Condition	Seal Intact	Seal No	Seal Date	Signed By
1	2.7	Good	Not Present			

Chain-of-Custody Record

Client: DBSA

Turn-Around Time:
 Standard Rush

Mailing Address:
Waco Academy Rd NE Ste 100
ABQ 87109

Project Name:
Sullivan Stables

Phone #: 822-9400

Project #:
ES14.0052.2.3

email or Fax#: jburch@dbstephens

Project Manager:
J. Burch

QA/QC Package:
 Standard Level 4 (Full Validation)

Accreditation
 NELAP Other _____

Sampler: P. Feltman

EDD (Type) _____

On Ice: Yes No

Sample Temperature: 2.7



HALL ENVIRONMENTAL ANALYSIS LABORATORY

www.hallenvironmental.com

4901 Hawkins NE - Albuquerque, NM 87109

Tel. 505-345-3975 Fax 505-345-4107

Analysis Request

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type	HEAL No.	BTEX + MTBE + TMB's (8021)	BTEX + MTBE + TPH (Gas only)	TPH 8015B (GRO / DRO / MRO)	TPH (Method 418.1)	EDB (Method 504.1)	PAH's (8310 or 8270 SIMS)	RCRA 8 Metals	Anions (F, Cl, NO ₃ , NO ₂ , PO ₄ , SO ₄)	8081 Pesticides / 8082 PCB's	8260B (VOA)	8270 (Semi-VOA)	lead diss. Fe, Mn	Air Bubbles (Y or N)
2/16/18	1000	GW	MW-1R	3VOAS 1 amber / 1 pink	HgCl ₂ None / None	1802969 -001						X				X			
2/16/18	1020	GW	MW-2R	↓	↓	-002						X				X			
			Trip Blank	2VOAS	HgCl ₂	-003										X			
<p><i>[Large handwritten signature and date: JFB 2/16/18]</i></p>																			

Date: 2/16/18 Time: 1610 Relinquished by: [Signature] Received by: [Signature] Date: 2/16/18 Time: 1610

Remarks:

If necessary, samples submitted to Hall Environmental may be subcontracted to other accredited laboratories. This serves as notice of this possibility. Any sub-contracted data will be clearly notated on the analytical report.