2017 ANNUAL GROUNDWATER REPORT

Johnston Fed #4
NMOCD Case #: 3RP-201-0
Meter Code: 70194
T31N, R09W, Sec 27, Unit H

SITE DETAILS

Site Location: Latitude: 36.862800 N, Longitude: -107.771983 W
Land Type: Private/Fee
Operator: Hilcorp Energy

SITE BACKGROUND

Environmental Remediation activities at the Johnston Fed #4 (Site) are managed pursuant to the procedures set forth in the document entitled, "Remediation Plan for Groundwater Encountered during Pit Closure Activities" (Remediation Plan, El Paso Natural Gas Company / El Paso Field Services Company, 1995). This Remediation Plan was conditionally approved by the New Mexico Oil Conservation Division (NMOCD) in correspondence dated November 30, 1995; and the NMOCD approval conditions were adopted into El Paso CGP Company (EPCGP's) program methods. Currently, the Site is operated by Hilcorp Energy and is active.

The Site is located on Private/Fee land. An initial site assessment was completed in August 1994, and an excavation of 60 cubic yards (cy) to a depth of approximately 12 feet below ground surface (bgs) was completed in September 1994. Various site investigations have occurred since 1994. Monitoring wells were installed in 1995 (MW-1, MW-2, MW-3), 2006 (MW-4, TMW-5), 2013 (MW-6 through MW-12), and 2014 (MW-13 through MW-20). Temporary monitoring well TMW-5 was plugged and abandoned in 2014. Free product has been observed at the site and is periodically recovered. Mobile dual-phase extraction (MDPE) events to enhance free product recovery were initiated in 2016. In 2017, measureable free product was observed in MW-1, MW-3, MW-8, and MW-11. Currently, groundwater sampling is conducted from selected monitoring wells on a semi-annual basis.

GROUNDWATER SAMPLING ACTIVITIES

Pursuant to the Remediation Plan, Stantec provided field work notifications via email to the NMOCD on May 30, 2017 and November 6, 2017, prior to initiating groundwater sampling activities at the Site. Copies of the 2017 NMOCD notifications are provided in Appendix A. Groundwater monitoring and sampling was completed on June 9 and November 12, 2017. Water levels were gauged at wells MW-1 through MW-4 and MW-6 through MW-20. Monitoring wells MW-1, MW-3, MW-6 through MW-9, MW-11, MW-13, MW-15, MW-16, and MW-18 through MW-20 were selected to be sampled in 2017. Groundwater samples were not collected from MW-1, MW-3, MW-8, and MW-11 in 2017 due to the presence of free product. Groundwater samples were collected from selected monitoring wells using HydraSleeve™ (HydraSleeve) no-purge groundwater sampling devices. The HydraSleeves were set during the previous sampling event approximately 0.5 foot above termination depth of the monitoring wells using a suspension tether and stainless steel weights to collect a sample from the screened interval.

Groundwater samples were placed into laboratory-supplied sample containers, packed on ice, and shipped under standard chain-of-custody protocols to TestAmerica-Pensacola where they were analyzed for benzene, toluene, ethylbenzene, and total xylenes (BTEX). As requested by the OCD on November 13, 2018, BTEX constituents were analyzed using United States Environmental Protection Agency (EPA) Method 8260 during the November sampling event. The unused sample water is combined in a waste container and taken to Basin Disposal, Inc. for disposal. Waste disposal documentation is included as Appendix B.

FREE PRODUCT RECOVERY

Free product was manually recovered from MW-1, MW-3, MW-8, and MW-11 in 2017. Approximately 5 milliliters (mL) of free product were manually recovered from MW-1, approximately 5 mL of free product were recovered from MW-3, a trace amount of free product was recovered from MW-8 and approximately 4 gallons of free product were recovered from MW-11 in 2017. Recovered free product was disposed of with excess wastewater generated during groundwater sampling activities.

MDPE events were completed on July 15 through July 18, 2017, by AcuVac Remediation, LLC, of Houston, Texas (AcuVac). The planned MDPE activities were presented in a work plan dated June 29, 2017, and subsequently approved by the NMOCD. The NMOCD was notified of the start of MDPE activities on July 8, 2017. The purpose of the MDPE events was to enhance free product recovery from monitoring wells MW-1, MW-3, MW-8, and MW-11.

MDPE is a process combining soil vapor extraction (SVE) with groundwater depression to enhance the removal of liquid and vapor phase hydrocarbons. A submersible pump is used to simultaneously remove dissolved-phase contaminated groundwater, inducing a hydraulic gradient toward the extraction well, and creating groundwater depression to expose the hydrocarbon smear zone to SVE. Recovered liquids were transferred to a portable storage tank for off-site disposal. Recovered vapors were used as fuel and burned in the MDPE internal combustion engine (ICE), resulting in little to no emissions. Power generated by the ICE is used to create the induced vacuum for SVE.

The following MDPE events occurred in 2017:

- One 6-hour event was completed using MW-1 as an extraction well; approximately 15.6 gallons of hydrocarbons were recovered.
- One 6-hour event was completed using MW-3 as an extraction well; approximately 7.1 gallons of hydrocarbons were recovered.
- One 8-hour event was completed using MW-11 as an extraction well; approximately 25.2 gallons of hydrocarbons were recovered.
- Two 12-hour events were completed using MW-8 as an extraction well; approximately 90.9 gallons of hydrocarbons were recovered.

AcuVac's report summarizing the MDPE events at the Site is presented as Appendix C. Recovered fluids from the MDPE event where transported to Basin Disposal Inc. for disposal. Waste disposal documentation is included as Appendix B.

SUMMARY TABLES

Historic groundwater analytical results and well gauging data are summarized in Tables 1 and 2, respectively. When free product was present, static water level elevations were corrected for measurable thicknesses of free product (specific gravity of 0.75).

SITE MAPS

Groundwater analytical maps (Figures 1 and 3) and groundwater elevation contour maps (Figures 2 and 4) summarize results of the 2017 groundwater sampling and gauging events.

ANALYTICAL LAB REPORTS

The groundwater analytical lab reports are included as Appendix D.

GROUNDWATER RESULTS

- The groundwater flow direction at the Site is generally to the east-northeast (see Figures 2 and 4). The elevations at MW-12 remained anomalous, consistent with past results.
- Free product was observed in MW-1, MW-3, MW-8, and MW-11 in 2017. No samples were collected from these monitoring wells.
- One or more groundwater samples collected in 2017 from MW-6, MW-9, MW-15, MW-16, MW-19, and MW-20 exceeded the New Mexico Water Quality Control Commission (NMWQCC) standard (10 micrograms per liter [µg/L]) for benzene in groundwater. Groundwater samples from the remaining monitoring wells sampled in 2017 were either below the NMWQCC standard for benzene or not detected.
- Concentrations of toluene were either below the NMWQCC standard (750 µg/L) or not detected in the Site monitoring wells sampled in 2017.
- Concentrations of ethylbenzene were either below the NMWQCC standard (750 µg/L) or not detected in the Site monitoring wells sampled in 2017.
- Concentrations of total xylenes were either below the NMWQCC standard (620 µg/L) or not detected in the Site monitoring wells sampled in 2017.

PLANNED FUTURE ACTIVITIES

Groundwater monitoring events will be conducted on a semi-annual basis, utilizing a selection of site monitoring wells which provides an adequate representation of site conditions. Groundwater samples will be collected from monitoring wells not containing free product and analyzed for BTEX constituents using EPA Method 8260.

Air sparge/soil vapor extraction feasibility testing is planned for 2018 in support of a site-wide plan to remediate the site. A work plan for these activities will be submitted under separate cover for NMOCD approval.

The activities completed in 2018 and their results will be summarized in the 2018 Annual Report, completed for submittal in early 2019.

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TABLES

TABLE 1 – GROUNDWATER ANALYTICAL RESULTS

TABLE 2 – GROUNDWATER ELEVATION RESULTS

TABLE 1 - GROUNDWATER ANALYTICAL RESULTS

Johnston Fed #4					
Location	Date	Benzene (µg/L)	Toluene (µg/L)	Ethylbenzene (µg/L)	Total Xylenes (µg/L)
NMWQCC Standards:		10	750	750	620
MW-1	08/08/95	590	2040	137	1764
MW-1	01/04/96	7380	20900	1480	14600
MW-1	12/17/96	762	1930	107	1270
MW-1	03/06/97	483	1110	66.1	678
MW-1	06/09/09	1630	3000	268	3880
MW-1	06/07/10	1630	3130	213	3840
MW-1	05/10/11	1000	1710	206	2400
MW-1	05/14/12	1200	2170	152	2580
MW-1	06/09/13	3900	14000	610	10000
MW-1	05/29/15	1600	4000	220	2400
MW-2	01/04/96	1104	5107	479	4640
MW-2	12/17/96	5900	8970	197	4670
MW-2	03/06/97	4500	6480	236	4920
MW-2	06/22/01	2800	180	41	140
MW-2	06/03/02	370	11	24	18
MW-2	06/18/03	186	<5	34.9	16.8
MW-2	06/22/04	88.9	24	32.9	15.2
MW-2	06/23/05	283	9.4	27.7	64.5
MW-2	06/07/06	92.1	18.4	4.4	5.9
MW-2	06/19/07	83	<1	7.3	7.2
MW-2	06/17/08	201	4.2	16.6	17.9
MW-2	06/09/09	18.5	0.82 J	2.8	6.9
MW-2	06/07/10	5.6	0.99 J	<2	<6
MW-2	05/10/11	5.3	1.2	0.046 J	J2.3
MW-2	05/14/12	7.2	1.4	0.56 J	2.7 J
MW-2	06/09/13	1.8	<0.30	<0.20	<0.23
MW-2	09/09/13	1.7	<0.30	<0.20	<0.23
MW-2	12/12/13	1.5 J	<0.38	<0.20	0.80 J
MW-2	04/02/14	540	36	230	1500
MW-2	10/23/14	0.74 J	<0.70	<0.50	<1.6
MW-2	05/29/15	0.63 J	<5.0	<1.0	2.6 J
MW-2	11/23/15	<1.0	<1.0	<1.0	<3.0

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Location	**Date**	**Benzene (µg/L)**	**Toluene (µg/L)**	**Ethylbenzene (µg/L)**	**Total Xylenes (µg/L)**
NMWQCC Standards:		10	750	750	620
MW-3	03/19/96	3660	5410	436	3730
MW-3	12/17/96	3910	8210	530	5020
MW-3	03/06/97	6670	12700	759	7020
MW-3	06/09/09	6100	8700	627	6630
MW-3	06/07/10	7440	10800	578	7170
MW-3	05/10/11	4180	4990	421	3780
MW-3	05/14/12	8100	15800	1040	11100
MW-3	06/09/13	5100	12000	870	11000
MW-4	06/19/07	<1	<1	<1	<2
MW-4	06/17/08	<1	<1	<1	<2
MW-4	06/09/09	<1	0.47 J	<1	0.77 J
MW-4	06/07/10	<2	<2	<2	<6
MW-4	05/10/11	<1	<1	<1	<3
MW-4	05/14/12	0.41 J	0.36 J	0.33 J	<1
MW-4	06/09/13	<0.14	<0.30	<0.20	<0.23
MW-4	09/09/13	<0.14	<0.30	<0.20	<0.23
MW-4	12/12/13	<0.20	<0.38	<0.20	<0.65
MW-4	04/02/14	<0.20	<0.38	<0.20	<0.65
MW-4	10/23/14	<0.38	<0.70	<0.50	<1.6
MW-4	05/29/15	<1.0	1.3 J	<1.0	<5.0
MW-4	11/23/15	<1.0	<1.0	<1.0	<3.0
TMW-5	06/19/07	2730	7.6	680	1160
TMW-5	06/17/08	3190	217	651	1220
TMW-5	06/09/09	1540	285	568	784
TMW-5	06/07/10	1970	207	591	746
TMW-5	05/10/11	3730	124	459	221
TMW-5	05/14/12	6180	52.6	614	243
TMW-5	06/09/13	6400	210	400	180
TMW-5	09/09/13	5600	26	470	100
TMW-5	12/12/13	3900	29 J	400	120
TMW-5	04/02/14	4900	770	510	630
TMW-5	Well abandoned 8/11/2014				

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Location	Date	Benzene (µg/L)	Toluene (µg/L)	Ethylbenzene (µg/L)	Total Xylenes (µg/L)
NMWQCC Standards:		10	750	750	620
MW-6	10/23/14	230	3.3	420	120
MW-6	05/29/15	130	4.8 J	210	86
MW-6	11/23/15	330	21	260	84
MW-6	04/16/16	49	52	140	40
MW-6	10/12/16	77	25	17	<5.0
MW-6	06/09/17	36	<5.0	<1.0	15
MW-6	11/12/17	66	20	9.5	83
MW-7	12/12/13	120	110	49 J	490
MW-7	04/02/14	3.5	3.6	4	<0.65
MW-7	10/23/14	4.6	<0.70	2.8	<1.6
MW-7	05/29/15	<1.0	<5.0	<1.0	<5.0
MW-7	11/23/15	<1.0	<1.0	<1.0	<3.0
MW-7	04/16/16	<1.0	<5.0	<1.0	<5.0
MW-7	10/12/16	<1.0	<5.0	<1.0	<5.0
MW-7	06/09/17	<1.0	<5.0	<1.0	<5.0
MW-7	11/12/17	<1.0	<1.0	<1.0	<10
MW-9	12/12/13	180	310	46	430
MW-9	04/02/14	230	27	140	810
MW-9	10/23/14	10	1.6	9.4	2.9 J
MW-9	05/29/15	15	8.4 J	6	21
MW-9	11/23/15	9	2.8	<1.0	<3.0
MW-9	04/16/16	29	24	4.3	8.3
MW-9	10/12/16	1	8.7	<1.0	<5.0
MW-9	06/09/17	29	11	<1.0	5.4
MW-9	11/12/17	130	42	2.1	10
MW-10	12/12/13	1200	3500	300	3200
MW-10	04/02/14	4.3	7	<0.20	13
MW-10	10/23/14	93	1.3	87	50
MW-10	05/29/15	130	8.5	31	13
MW-10	11/23/15	120	20	8.8	11
MW-12	12/12/13	<0.14	<0.30	<0.20	0.39 J
MW-12	04/02/14	<0.20	0.54 J	<0.20	<0.65
MW-12	10/23/14	0.71 J	<0.70	0.59 J	<1.6
MW-12	05/29/15	<1.0	<5.0	<1.0	<5.0
MW-12	11/23/15	<1.0	<1.0	<1.0	<3.0

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Location	**Date**	**Benzene (µg/L)**	**Toluene (µg/L)**	**Ethylbenzene (µg/L)**	**Total Xylenes (µg/L)**
NMWQCC Standards:		10	750	750	620
MW-13	10/23/14	710	2	7.8	21
MW-13	05/29/15	6.1	<5.0	0.81 J	2.4 J
MW-13	11/23/15	3.7	<1.0	<1.0	<3.0
MW-13	04/16/16	1.6	<5.0	<1.0	<5.0
MW-13	10/12/16	1.8	<5.0	<1.0	<5.0
MW-13	06/09/17	3.4	<5.0	<1.0	<5.0
MW-13	11/12/17	<1.0	<1.0	<1.0	<10
MW-14	10/23/14	<0.38	<0.70	<0.50	<1.6
MW-14	05/29/15	<1.0	<5.0	<1.0	<5.0
MW-14	11/23/15	<1.0	<1.0	<1.0	<3.0
MW-15	10/23/14	61	1	18	120
MW-15	05/29/15	3200	1500	410	1700
MW-15	11/23/15	180	19	19	24
MW-15	04/16/16	5.8	9.5	<1.0	8.5
MW-15	10/12/16	8.3	7.6	<1.0	6.2
MW-15	06/09/17	19	<5.0	3	15
MW-15	11/12/17	1100	180	71	290
MW-16	10/23/14	0.93 J	<0.70	<0.50	3.4 J
MW-16	05/29/15	54	15	22	24
MW-16	11/23/15	4.2	1.1	2.3	<3.0
MW-16	04/16/16	590	120	140	430
MW-16	10/12/16	<1.0	<5.0	<1.0	<5.0
MW-16	06/09/17	<1.0	<5.0	<1.0	<5.0
MW-16	11/12/17	29	2.3	2.8	14
MW-17	10/23/14	3	<0.70	1.5	4.6 J
MW-17	05/29/15	6.7	0.98 J	3.4	16
MW-17	11/23/15	14	<1.0	5.9	12
MW-17	04/16/16	NS	NS	NS	NS
MW-18	10/23/14	6.5	3.2	<0.50	11
MW-18	05/29/15	12	7.2	2.8	16
MW-18	11/23/15	18	10	3.6	24
MW-18	04/16/16	2.4	<5.0	1.1	7.5
MW-18	10/12/16	1.4	<5.0	<1.0	<5.0
MW-18	06/09/17	8.7	<5.0	3.5	24
MW-18	11/12/17	<1.0	<1.0	<1.0	<10

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Johnston Fed #4					
Location	**Date**	**Benzene (µg/L)**	**Toluene (µg/L)**	**Ethylbenzene (µg/L)**	**Total Xylenes (µg/L)**
NMWQCC Standards:		10	750	750	620
MW-19	10/23/14	22	6	1.7	20
MW-19	05/29/15	3.7	<5.0	1.3	2.6 J
MW-19	11/23/15	67	18	15	40
MW-19	04/16/16	<1.0	<5.0	<1.0	<5.0
MW-19	10/12/16	<1.0	<5.0	<1.0	<5.0
MW-19	06/09/17	64	31	7.3	55
MW-19	11/12/17	68	20	8.5	62
MW-20	10/23/14	28	2.7	2.6	42
MW-20	05/29/15	28	3.7 J	10	6.3
MW-20	11/23/15	6.9	<1.0	12	<3.0
MW-20	04/16/16	<1.0	<5.0	<1.0	<5.0
MW-20	10/12/16	NS	NS	NS	NS
MW-20	06/09/17	42	11	1.1	37
MW-20	11/12/17	58	25	1.3	17

Notes:

The groundwater monitoring dates for each monitoring well where no groundwater samples were collected and analyzed have been omitted.

"µg/L" = micrograms per liter

Results highlighted yellow exceed their respective New Mexico Water Quality Control Commission (NMWQCC) standards.

"J" = Result is less than the reporting limit but greater than or equal to the method detection limit and the result in an approximate value.

"<" = analyte was not detected at the indicated reporting limit (some historic data were reported at the detection limit).

TABLE 2 - GROUNDWATER ELEVATION RESULTS

Johnston Fed #4						
Location	Date	TOC	Depth to Water (ft.)	Depth to LNAPL (ft.)	LNAPL Thickness (ft.)	GW Elevation (ft.)
MW-1	08/08/95	6073.45	50.08	NR		6023.37
MW-1	01/04/96	6073.45	50.23	NR		6023.22
MW-1	12/17/96	6073.45	50.50	49.94	0.56	6023.37
MW-1	03/06/97	6073.45	50.38	49.99	0.39	6023.36
MW-1	06/22/01	6073.45	49.96	49.82	0.14	6023.59
MW-1	09/04/01	6073.45	50.05	49.94	0.11	6023.48
MW-1	03/04/02	6073.45	50.40	50.23	0.17	6023.18
MW-1	06/03/02	6073.45	50.50	50.31	0.19	6023.09
MW-1	09/10/02	6073.45	50.70	50.51	0.19	6022.89
MW-1	12/12/02	6073.45	50.83	50.60	0.23	6022.79
MW-1	03/14/03	6073.45	50.90	50.73	0.17	6022.68
MW-1	06/18/03	6073.45	51.28	50.74	0.54	6022.57
MW-1	09/16/03	6073.45	51.70	50.78	0.92	6022.44
MW-1	12/17/03	6073.45	51.15	50.92	0.23	6022.47
MW-1	03/16/04	6073.45	51.14	50.98	0.16	6022.43
MW-1	06/22/04	6073.45	51.15	51.02	0.13	6022.40
MW-1	09/22/04	6073.45	51.18	51.06	0.12	6022.36
MW-1	12/21/04	6073.45	51.15	51.08	0.07	6022.35
MW-1	03/23/05	6073.45	51.13	ND		6022.32
MW-1	06/23/05	6073.45	51.09	ND		6022.36
MW-1	09/20/05	6073.45	51.12	ND		6022.33
MW-1	12/14/05	6073.45	51.02	ND		6022.43
MW-1	12/15/05	6073.45	51.02	ND		6022.43
MW-1	03/27/06	6073.45	51.86	ND		6021.59
MW-1	06/07/06	6073.45	50.92	ND		6022.53
MW-1	09/25/06	6073.45	51.09	ND		6022.36
MW-1	12/07/06	6073.45	51.06	ND		6022.39
MW-1	03/28/07	6073.45	50.85	ND		6022.60
MW-1	06/18/07	6073.45	50.90	ND		6022.55
MW-1	09/17/07	6073.45	51.04	ND		6022.41
MW-1	12/17/07	6073.45	51.05	ND		6022.40
MW-1	03/10/08	6073.45	50.93	ND		6022.52
MW-1	06/17/08	6073.45	50.14	ND		6023.31
MW-1	09/10/08	6073.45	49.81	ND		6023.64
MW-1	12/02/08	6073.45	49.66	ND		6023.79
MW-1	03/03/09	6073.45	49.60	ND		6023.85
MW-1	06/09/09	6073.45	49.61	ND		6023.84
MW-1	08/28/09	6073.45	49.71	ND		6023.74
MW-1	11/04/09	6073.45	49.83	ND		6023.62
MW-1	02/11/10	6073.45	49.93	ND		6023.52
MW-1	06/07/10	6073.45	50.12	ND		6023.33

TABLE 2 - GROUNDWATER ELEVATION RESULTS

Johnston Fed #4						
Location	**Date**	**TOC**	**Depth to Water (ft.)**	**Depth to LNAPL (ft.)**	**LNAPL Thickness (ft.)**	**GW Elevation (ft.)**
MW-1	09/24/10	6073.45	50.33	ND		6023.12
MW-1	11/02/10	6073.45	50.40	ND		6023.05
MW-1	02/07/11	6073.45	50.53	ND		6022.92
MW-1	05/10/11	6073.45	50.69	ND		6022.76
MW-1	09/23/11	6073.45	50.93	ND		6022.52
MW-1	11/01/11	6073.45	50.99	ND		6022.46
MW-1	02/21/12	6073.45	51.15	ND		6022.30
MW-1	05/14/12	6073.45	51.24	ND		6022.21
MW-1	06/09/13	6073.45	51.68	51.61	0.07	6021.82
MW-1	09/09/13	6073.45	51.84	51.78	0.06	6021.65
MW-1	12/12/13	6073.45	51.85	51.80	0.05	6021.64
MW-1	04/02/14	6073.45	51.81	ND		6021.64
MW-1	10/23/14	6073.45	52.04	51.95	TRACE	6021.48
MW-1	05/29/15	6073.45	52.02	ND		6021.43
MW-1	11/23/15	6073.45	51.76	51.76	TRACE	6021.69
MW-1	04/16/16	6073.45	51.68	51.61	0.07	6021.82
MW-1	10/12/16	6073.45	51.73	51.71	0.02	6021.73
MW-1	06/09/17	6073.45	51.78	51.76	0.02	6021.68
MW-1	11/12/17	6073.45	51.86	51.85	0.01	6021.60

TABLE 2 - GROUNDWATER ELEVATION RESULTS

Johnston Fed #4						
Location	Date	TOC	Depth to Water (ft.)	Depth to LNAPL (ft.)	LNAPL Thickness (ft.)	GW Elevation (ft.)
MW-2	01/04/96	6072.14	48.71	NR		6023.43
MW-2	12/17/96	6072.14	48.84	NR		6023.30
MW-2	03/06/97	6072.14	48.94	NR		6023.20
MW-2	06/22/01	6072.14	48.62	NR		6023.52
MW-2	09/04/01	6072.14	48.78	NR		6023.36
MW-2	06/03/02	6072.14	49.15	NR		6022.99
MW-2	09/10/02	6072.14	49.27	NR		6022.87
MW-2	12/12/02	6072.14	49.42	NR		6022.72
MW-2	06/18/03	6072.14	49.62	ND		6022.52
MW-2	09/16/03	6072.14	49.76	ND		6022.38
MW-2	12/17/03	6072.14	49.72	ND		6022.42
MW-2	03/16/04	6072.14	49.78	ND		6022.36
MW-2	06/22/04	6072.14	49.82	ND		6022.32
MW-2	09/22/04	6072.14	49.84	ND		6022.30
MW-2	12/21/04	6072.14	49.86	ND		6022.28
MW-2	03/23/05	6072.14	49.89	ND		6022.25
MW-2	06/23/05	6072.14	49.87	ND		6022.27
MW-2	09/20/05	6072.14	49.89	ND		6022.25
MW-2	12/14/05	6072.14	49.75	ND		6022.39
MW-2	03/27/06	6072.14	49.62	ND		6022.52
MW-2	06/07/06	6072.14	49.67	ND		6022.47
MW-2	09/25/06	6072.14	49.85	ND		6022.29
MW-2	12/07/06	6072.14	49.82	ND		6022.32
MW-2	03/28/07	6072.14	49.63	ND		6022.51
MW-2	06/19/07	6072.14	49.67	ND		6022.47
MW-2	09/17/07	6072.14	49.82	ND		6022.32
MW-2	12/17/07	6072.14	49.82	ND		6022.32
MW-2	03/10/08	6072.14	49.92	ND		6022.22
MW-2	06/17/08	6072.14	48.93	ND		6023.21
MW-2	09/10/08	6072.14	48.60	ND		6023.54
MW-2	12/02/08	6072.14	48.43	ND		6023.71
MW-2	03/03/09	6072.14	48.37	ND		6023.77
MW-2	06/04/09	6072.14	48.38	ND		6023.76
MW-2	06/09/09	6072.14	48.43	ND		6023.71
MW-2	08/28/09	6072.14	48.50	ND		6023.64
MW-2	11/04/09	6072.14	48.62	ND		6023.52
MW-2	02/11/10	6072.14	48.72	ND		6023.42
MW-2	06/07/10	6072.14	48.98	ND		6023.16
MW-2	09/24/10	6072.14	49.11	ND		6023.03
MW-2	11/02/10	6072.14	49.17	ND		6022.97
MW-2	02/07/11	6072.14	49.33	ND		6022.81

TABLE 2 - GROUNDWATER ELEVATION RESULTS

Johnston Fed #4						
Location	**Date**	**TOC**	**Depth to Water (ft.)**	**Depth to LNAPL (ft.)**	**LNAPL Thickness (ft.)**	**GW Elevation (ft.)**
MW-2	05/10/11	6072.14	49.45	ND		6022.69
MW-2	09/23/11	6072.14	49.72	ND		6022.42
MW-2	11/01/11	6072.14	49.77	ND		6022.37
MW-2	02/21/12	6072.14	49.91	ND		6022.23
MW-2	05/14/12	6072.14	50.00	ND		6022.14
MW-2	06/09/13	6072.14	50.38	ND		6021.76
MW-2	09/09/13	6072.14	50.56	ND		6021.58
MW-2	12/12/13	6072.14	50.56	ND		6021.58
MW-2	04/02/14	6072.14	50.59	ND		6021.55
MW-2	10/23/14	6072.14	50.73	ND		6021.41
MW-2	05/29/15	6072.14	50.80	ND		6021.34
MW-2	11/23/15	6072.14	50.54	ND		6021.60
MW-2	04/16/16	6072.14	50.39	ND		6021.75
MW-2	10/12/16	6072.14	50.47	ND		6021.67
MW-2	06/09/17	6072.14	50.52	ND		6021.62
MW-2	11/12/17	6072.14	50.65	ND		6021.49

TABLE 2 - GROUNDWATER ELEVATION RESULTS

Johnston Fed #4						
Location	Date	TOC	Depth to Water (ft.)	Depth to LNAPL (ft.)	LNAPL Thickness (ft.)	GW Elevation (ft.)
MW-3	03/19/96	6073.11	49.81	NR		6023.30
MW-3	12/17/96	6073.11	49.84	NR		6023.27
MW-3	03/06/97	6073.11	49.87	49.83	0.04	6023.27
MW-3	06/22/01	6073.11	49.66	49.58	0.08	6023.51
MW-3	09/04/01	6073.11	49.76	49.70	0.06	6023.39
MW-3	03/04/02	6073.11	50.35	49.91	0.44	6023.09
MW-3	06/03/02	6073.11	50.62	49.96	0.66	6022.98
MW-3	09/10/02	6073.11	50.79	50.12	0.67	6022.82
MW-3	12/12/02	6073.11	50.95	50.25	0.70	6022.68
MW-3	03/14/03	6073.11	51.03	50.34	0.69	6022.60
MW-3	06/18/03	6073.11	51.16	50.45	0.71	6022.48
MW-3	09/16/03	6073.11	51.30	50.59	0.71	6022.34
MW-3	12/17/03	6073.11	51.08	50.60	0.48	6022.39
MW-3	03/16/04	6073.11	51.10	50.68	0.42	6022.32
MW-3	06/22/04	6073.11	51.22	50.68	0.54	6022.29
MW-3	09/22/04	6073.11	51.30	50.69	0.61	6022.27
MW-3	12/21/04	6073.11	51.32	50.71	0.61	6022.25
MW-3	03/23/05	6073.11	51.85	50.76	1.09	6022.08
MW-3	06/23/05	6073.11	51.20	50.76	0.44	6022.24
MW-3	09/20/05	6073.11	51.43	ND		6021.68
MW-3	12/14/05	6073.11	51.31	ND		6021.80
MW-3	12/15/05	6073.11	51.32	50.92	0.40	6022.09
MW-3	03/27/06	6073.11	50.92	50.58	0.34	6022.44
MW-3	06/07/06	6073.11	51.01	50.56	0.45	6022.44
MW-3	09/25/06	6073.11	51.27	50.80	0.47	6022.19
MW-3	12/07/06	6073.11	51.07	50.77	0.30	6022.26
MW-3	03/28/07	6073.11	50.99	50.66	0.33	6022.37
MW-3	06/18/07	6073.11	50.97	50.58	0.39	6022.43
MW-3	09/17/07	6073.11	51.15	50.78	0.37	6022.24
MW-3	12/17/07	6073.11	51.08	50.78	0.30	6022.25
MW-3	03/10/08	6073.11	50.90	50.75	0.15	6022.32
MW-3	06/17/08	6073.11	49.98	49.89	0.09	6023.20
MW-3	09/10/08	6073.11	49.77	ND		6023.34
MW-3	12/02/08	6073.11	49.58	ND		6023.53
MW-3	03/03/09	6073.11	49.55	ND		6023.56
MW-3	06/09/09	6073.11	49.39	ND		6023.72
MW-3	08/28/09	6073.11	49.65	ND		6023.46
MW-3	11/04/09	6073.11	49.63	ND		6023.48
MW-3	02/11/10	6073.11	49.83	ND		6023.28
MW-3	06/07/10	6073.11	49.90	49.70	0.20	6023.36
MW-3	09/24/10	6073.11	50.19	ND		6022.92

TABLE 2 - GROUNDWATER ELEVATION RESULTS

Johnston Fed #4						
Location	**Date**	**TOC**	**Depth to Water (ft.)**	**Depth to LNAPL (ft.)**	**LNAPL Thickness (ft.)**	**GW Elevation (ft.)**
MW-3	11/02/10	6073.11	50.26	ND		6022.85
MW-3	02/07/11	6073.11	50.40	ND		6022.71
MW-3	05/10/11	6073.11	50.46	ND		6022.65
MW-3	09/23/11	6073.11	50.73	ND		6022.38
MW-3	11/01/11	6073.11	50.82	ND		6022.29
MW-3	02/21/12	6073.11	51.36	50.86	0.50	6022.12
MW-3	05/14/12	6073.11	51.50	50.84	0.66	6022.10
MW-3	06/09/13	6073.11	52.02	51.15	0.87	6021.74
MW-3	09/09/13	6073.11	52.36	51.29	1.07	6021.55
MW-3	12/12/13	6073.11	52.39	51.30	1.09	6021.54
MW-3	04/02/14	6073.11	52.41	51.30	1.11	6021.53
MW-3	10/23/14	6073.11	52.59	51.43	1.16	6021.39
MW-3	05/29/15	6073.11	52.64	51.51	1.13	6021.32
MW-3	11/23/15	6073.11	52.11	51.32	0.79	6021.59
MW-3	04/16/16	6073.11	51.90	51.20	0.70	6021.73
MW-3	10/12/16	6073.11	51.42	ND		6021.69
MW-3	06/09/17	6073.11	51.52	51.50	0.02	6021.60
MW-3	11/12/17	6073.11	51.55	51.54	0.01	6021.57

TABLE 2 - GROUNDWATER ELEVATION RESULTS

Johnston Fed #4						
Location	Date	TOC	Depth to Water (ft.)	Depth to LNAPL (ft.)	LNAPL Thickness (ft.)	GW Elevation (ft.)
MW-4	12/07/06	6072.71	50.40	ND		6022.31
MW-4	03/28/07	6072.71	50.19	ND		6022.52
MW-4	06/19/07	6072.71	50.21	ND		6022.50
MW-4	09/17/07	6072.71	50.34	ND		6022.37
MW-4	12/17/07	6072.71	49.78	ND		6022.93
MW-4	03/10/08	6072.71	50.30	ND		6022.41
MW-4	06/17/08	6072.71	49.50	ND		6023.21
MW-4	09/10/08	6072.71	49.17	ND		6023.54
MW-4	12/02/08	6072.71	49.00	ND		6023.71
MW-4	03/03/09	6072.71	48.93	ND		6023.78
MW-4	06/09/09	6072.71	48.94	ND		6023.77
MW-4	08/28/09	6072.71	49.04	ND		6023.67
MW-4	11/04/09	6072.71	49.16	ND		6023.55
MW-4	02/11/10	6072.71	49.26	ND		6023.45
MW-4	06/07/10	6072.71	49.45	ND		6023.26
MW-4	09/24/10	6072.71	49.15	ND		6023.56
MW-4	11/02/10	6072.71	49.73	ND		6022.98
MW-4	02/07/11	6072.71	49.86	ND		6022.85
MW-4	05/10/11	6072.71	49.98	ND		6022.73
MW-4	09/23/11	6072.71	50.09	ND		6022.62
MW-4	11/01/11	6072.71	50.31	ND		6022.40
MW-4	02/21/12	6072.71	50.46	ND		6022.25
MW-4	05/14/12	6072.71	50.55	ND		6022.16
MW-4	06/09/13	6072.71	50.93	ND		6021.78
MW-4	09/09/13	6072.71	51.11	ND		6021.60
MW-4	12/12/13	6072.71	51.12	ND		6021.59
MW-4	04/02/14	6072.71	51.14	ND		6021.57
MW-4	10/23/14	6072.71	51.26	ND		6021.45
MW-4	05/29/15	6072.71	51.33	ND		6021.38
MW-4	11/23/15	6072.71	51.08	ND		6021.63
MW-4	04/16/16	6072.71	50.92	ND		6021.79
MW-4	10/12/16	6072.71	51.01	ND		6021.70
MW-4	06/09/17	6072.71	51.07	ND		6021.64
MW-4	11/12/17	6072.71	51.17	ND		6021.54

TABLE 2 - GROUNDWATER ELEVATION RESULTS

Johnston Fed #4						
Location	**Date**	**TOC**	**Depth to Water (ft.)**	**Depth to LNAPL (ft.)**	**LNAPL Thickness (ft.)**	**GW Elevation (ft.)**
TMW-5	12/07/06	6072.29	49.83	ND		6022.46
TMW-5	03/28/07	6072.29	49.58	ND		6022.71
TMW-5	06/19/07	6072.29	49.64	ND		6022.65
TMW-5	09/17/07	6072.29	49.77	ND		6022.52
TMW-5	12/17/07	6072.29	50.38	ND		6021.91
TMW-5	03/10/08	6072.29	46.59	ND		6025.70
TMW-5	06/17/08	6072.29	48.87	ND		6023.42
TMW-5	09/10/08	6072.29	48.56	ND		6023.73
TMW-5	12/02/08	6072.29	48.44	ND		6023.85
TMW-5	03/03/09	6072.29	44.40	ND		6027.89
TMW-5	06/09/09	6072.29	48.38	ND		6023.91
TMW-5	08/28/09	6072.29	DRY	ND		0.00
TMW-5	11/04/09	6072.29	48.58	ND		6023.71
TMW-5	02/11/10	6072.29	48.67	ND		6023.62
TMW-5	06/07/10	6072.29	48.81	ND		6023.48
TMW-5	09/24/10	6072.29	49.04	ND		6023.25
TMW-5	11/02/10	6072.29	49.12	ND		6023.17
TMW-5	02/07/11	6072.29	49.30	ND		6022.99
TMW-5	05/10/11	6072.29	49.41	ND		6022.88
TMW-5	09/23/11	6072.29	49.70	ND		6022.59
TMW-5	11/01/11	6072.29	49.71	ND		6022.58
TMW-5	02/21/12	6072.29	49.87	ND		6022.42
TMW-5	05/14/12	6072.29	49.96	ND		6022.33
TMW-5	06/09/13	6072.29	50.31	ND		6021.98
TMW-5	09/09/13	6072.29	50.48	ND		6021.81
TMW-5	12/12/13	6072.29	50.53	ND		6021.76
TMW-5	04/02/14	6072.29	50.54	ND		6021.75
TMW-5	Well abandoned 8/11/2014					

TABLE 2 - GROUNDWATER ELEVATION RESULTS

Johnston Fed #4						
Location	**Date**	**TOC**	**Depth to Water (ft.)**	**Depth to LNAPL (ft.)**	**LNAPL Thickness (ft.)**	**GW Elevation (ft.)**
MW-6	12/12/13	6072.74	51.13	51.10	0.03	6021.63
MW-6	04/02/14	6072.74	51.15	51.12	0.03	6021.61
MW-6	10/23/14	6072.74	51.26	ND		6021.48
MW-6	05/29/15	6072.74	51.34	ND		6021.40
MW-6	11/23/15	6072.74	51.08	ND		6021.66
MW-6	04/16/16	6072.74	50.89	ND		6021.85
MW-6	10/12/16	6072.74	51.02	ND		6021.72
MW-6	06/09/17	6072.74	51.08	ND		6021.66
MW-6	11/12/17	6072.74	51.19	ND		6021.55
MW-7	12/12/13	6072.63	51.12	ND		6021.51
MW-7	04/02/14	6072.63	51.13	ND		6021.50
MW-7	10/23/14	6072.63	51.25	ND		6021.38
MW-7	05/29/15	6072.63	51.33	ND		6021.30
MW-7	11/23/15	6072.63	51.06	ND		6021.57
MW-7	04/16/16	6072.63	50.90	ND		6021.73
MW-7	10/12/16	6072.63	51.01	ND		6021.62
MW-7	06/09/17	6072.63	51.07	ND		6021.56
MW-7	11/12/17	6072.63	51.18	ND		6021.45
MW-8	12/12/13	6072.62	51.94	50.80	1.14	6021.54
MW-8	04/02/14	6072.62	51.93	50.81	1.12	6021.53
MW-8	10/23/14	6072.62	52.12	50.93	1.19	6021.39
MW-8	05/29/15	6072.62	52.18	51.00	1.18	6021.33
MW-8	11/23/15	6072.62	51.63	50.83	0.80	6021.59
MW-8	04/16/16	6072.62	51.44	50.68	0.76	6021.75
MW-8	10/12/16	6072.62	51.52	50.81	0.71	6021.63
MW-8	06/09/17	6072.62	51.11	51.01	0.10	6021.59
MW-8	11/12/17	6072.62	50.82	50.78	0.04	6021.83
MW-9	12/12/13	6073.63	51.85	ND		6021.78
MW-9	04/02/14	6073.63	51.87	ND		6021.76
MW-9	10/23/14	6073.63	52.01	ND		6021.62
MW-9	05/29/15	6073.63	52.08	ND		6021.55
MW-9	11/23/15	6073.63	51.83	ND		6021.80
MW-9	04/16/16	6073.63	51.66	ND		6021.97
MW-9	10/12/16	6073.63	51.77	ND		6021.86
MW-9	06/09/17	6073.63	51.83	ND		6021.80
MW-9	11/12/17	6073.63	52.00	ND		6021.63

TABLE 2 - GROUNDWATER ELEVATION RESULTS

Johnston Fed #4						
Location	**Date**	**TOC**	**Depth to Water (ft.)**	**Depth to LNAPL (ft.)**	**LNAPL Thickness (ft.)**	**GW Elevation (ft.)**
MW-10	12/12/13	6073.44	51.79	ND		6021.65
MW-10	04/02/14	6073.44	51.81	ND		6021.63
MW-10	10/23/14	6073.44	51.94	ND		6021.50
MW-10	05/29/15	6073.44	52.03	ND		6021.41
MW-10	11/23/15	6073.44	51.74	ND		6021.70
MW-10	04/16/16	6073.44	51.60	ND		6021.84
MW-10	10/12/16	6073.44	51.70	ND		6021.74
MW-10	06/09/17	6073.44	51.75	ND		6021.69
MW-10	11/12/17	6073.44	51.86	ND		6021.58
MW-11	12/12/13	6073.38	52.43	51.60	0.83	6021.57
MW-11	04/02/14	6073.38	52.33	51.61	0.72	6021.59
MW-11	10/23/14	6073.38	52.59	51.73	0.86	6021.44
MW-11	05/29/15	6073.38	52.69	51.79	0.90	6021.37
MW-11	11/23/15	6073.38	52.14	51.61	0.53	6021.64
MW-11	04/16/16	6073.38	51.80	51.51	0.29	6021.80
MW-11	10/12/16	6073.38	51.80	51.68	0.12	6021.67
MW-11	06/09/17	6073.38	53.24	51.22	2.02	6021.66
MW-11	11/12/17	6073.38	51.54	51.52	0.02	6021.86
MW-12	12/12/13	6073.30	48.13	ND		6025.17
MW-12	04/02/14	6073.30	48.09	ND		6025.21
MW-12	10/23/14	6073.30	48.31	ND		6024.99
MW-12	05/29/15	6073.30	48.31	ND		6024.99
MW-12	11/23/15	6073.30	48.11	ND		6025.19
MW-12	04/16/16	6073.30	47.85	ND		6025.45
MW-12	10/12/16	6073.30	47.57	ND		6025.73
MW-12	06/09/17	6073.30	47.54	ND		6025.76
MW-12	11/12/17	6073.30	47.51	ND		6025.79
MW-13	10/23/14	6073.25	51.62	ND		6021.63
MW-13	05/29/15	6073.25	51.69	ND		6021.56
MW-13	11/23/15	6073.25	51.42	ND		6021.83
MW-13	04/16/16	6073.25	51.29	ND		6021.96
MW-13	10/12/16	6073.25	51.37	ND		6021.88
MW-13	06/09/17	6073.25	51.44	ND		6021.81
MW-13	11/12/17	6073.25	51.54	ND		6021.71

TABLE 2 - GROUNDWATER ELEVATION RESULTS

Johnston Fed #4						
Location	**Date**	**TOC**	**Depth to Water (ft.)**	**Depth to LNAPL (ft.)**	**LNAPL Thickness (ft.)**	**GW Elevation (ft.)**
MW-14	10/23/14	6073.14	51.53	ND		6021.61
MW-14	05/29/15	6073.14	51.60	ND		6021.54
MW-14	11/23/15	6073.14	51.33	ND		6021.81
MW-14	04/16/16	6073.14	51.19	ND		6021.95
MW-14	10/12/16	6073.14	51.30	ND		6021.84
MW-14	06/09/17	6073.14	51.35	ND		6021.79
MW-14	11/12/17	6073.14	51.46	ND		6021.68
MW-15	10/23/14	6072.47	51.14	ND		6021.33
MW-15	05/29/15	6072.47	51.19	ND		6021.28
MW-15	11/23/15	6072.47	50.93	ND		6021.54
MW-15	04/16/16	6072.47	50.78	ND		6021.69
MW-15	10/12/16	6072.47	50.87	ND		6021.60
MW-15	06/09/17	6072.47	50.96	ND		6021.51
MW-15	11/12/17	6072.47	51.06	ND		6021.41
MW-16	10/23/14	6071.78	50.49	ND		6021.29
MW-16	05/29/15	6071.78	50.57	ND		6021.21
MW-16	11/23/15	6071.78	50.30	ND		6021.48
MW-16	04/16/16	6071.78	50.15	ND		6021.63
MW-16	10/12/16	6071.78	50.24	ND		6021.54
MW-16	06/09/17	6071.78	50.32	ND		6021.46
MW-16	11/12/17	6071.78	50.44	ND		6021.34
MW-17	10/23/14	6071.79	50.51	ND		6021.28
MW-17	05/29/15	6071.79	50.58	ND		6021.21
MW-17	11/23/15	6071.79	50.31	ND		6021.48
MW-17	04/16/16	6071.79	50.16	ND		6021.63
MW-17	10/12/16	6071.79	50.26	ND		6021.53
MW-17	06/09/17	6071.79	50.30	ND		6021.49
MW-17	11/12/17	6071.79	50.43	ND		6021.36
MW-18	10/23/14	6072.71	51.28	ND		6021.43
MW-18	05/29/15	6072.71	51.37	ND		6021.34
MW-18	11/23/15	6072.71	51.09	ND		6021.62
MW-18	04/16/16	6072.71	50.94	ND		6021.77
MW-18	10/12/16	6072.71	51.03	ND		6021.68
MW-18	06/09/17	6072.71	51.10	ND		6021.61
MW-18	11/12/17	6072.71	51.20	ND		6021.51

TABLE 2 - GROUNDWATER ELEVATION RESULTS

Johnston Fed #4						
Location	**Date**	**TOC**	**Depth to Water (ft.)**	**Depth to LNAPL (ft.)**	**LNAPL Thickness (ft.)**	**GW Elevation (ft.)**
MW-19	10/23/14	6074.00	52.41	ND		6021.59
MW-19	05/29/15	6074.00	52.48	ND		6021.52
MW-19	11/23/15	6074.00	52.21	ND		6021.79
MW-19	04/16/16	6074.00	52.17	ND		6021.83
MW-19	10/12/16	6074.00	52.15	ND		6021.85
MW-19	06/09/17	6074.00	52.22	ND		6021.78
MW-19	11/12/17	6074.00	52.32	ND		6021.68
MW-20	10/23/14	6072.77	51.33	ND		6021.44
MW-20	05/29/15	6072.77	51.41	ND		6021.36
MW-20	11/23/15	6072.77	51.14	ND		6021.63
MW-20	04/16/16	6072.77	50.99	ND		6021.78
MW-20	10/12/16	6072.77	51.09	ND		6021.68
MW-20	06/09/17	6072.77	51.14	ND		6021.63
MW-20	11/12/17	6072.77	51.24	ND		6021.53

Notes:
"ft" = feet
"TOC" - Top of casing
"LNAPL" = light non-aqueous phase liquid
"ND" = LNAPL not detected
"NR" = LNAPL not recorded

FIGURES

FIGURE 1: JUNE 9, 2017 GROUNDWATER ANALYTICAL RESULTS MAP

FIGURE 2: JUNE 9, 2017 GROUNDWATER ELEVATION MAP

FIGURE 3: NOVEMBER 12, 2017 GROUNDWATER ANALYTICAL RESULTS MAP

FIGURE 4: NOVEMBER 12, 2017 GROUNDWATER ELEVATION MAP

L:\San Juan River Basin\SJRB GENERAL\GIS-NEW_MXDs\JOHNSTON FED #4\2017 MAPS\JFed_#4_GARM_1SA_2017.mxd

SMA BENCHMARK
ELEV 6070.54'
NAD 83 NAVD 88
STATE PLANE COORDINATE SYSTEM
NEW MEXICO WEST

MW-4
NS

AREA OF FORMER PIT
OR EXCAVATION

MW-19
B: **64**
T: 31
E: 7.3
X: 55

MW-6
B: **36**
T: <5.0
E: <1.0
X: 15

MW-18
B: 8.7
T: <5.0
E: 3.5
X: 24

FORMER EPC PIT
EXCAVATED TO 12 FEET

MW-1
NS

MW-3
NS

MW-7
B: <1.0
T: <5.0
E: <1.0
X: <5.0

MW-9
B: **29**
T: 11
E: <1.0
X: 5.4

MW-2
NS

MW-17
NS

MW-20
B: **42**
T: 11
E: 1.1
X: 37

MW-8
NS

MW-16
B: <1.0
T: <5.0
E: <1.0
X: <5.0

MW-10
NS

MW-13
B: 3.4
T: <5.0
E: <1.0
X: <5.0

MW-11
NS

MW-15
B: **19**
T: <5.0
E: 3
X: 15

TMW-5

MW-12
NS

MW-14
NS

Conoco Phillips MW-2

Conoco Phillips MW-1

Conoco Phillips MW-4

Conoco Phillips MW-3

6070

ROM GOOGLE EARTH; DATED 10/5/2016.

LEGEND:

- 6070 — APPROX. GROUND SURFACE CONTOUR AND ELEVATION, FEET
- ACCESS ROAD
- G A S — GAS LINE
- FENCE
- ABANDONED MONITORING WELL
- CONOCO PHILLIPS MONITORING WELL
- MONITORING WELL
- MONITORING WELL WITH MEASUREABLE FREE PRODUCT
- SMA BENCHMARK

EXPLANATION OF ANALYTES AND APPLICABLE STANDARDS:

RESULTS IN **BOLDFACE** TYPE INDICATE CONCENTRATION IN EXCESS OF THE STANDARD FOR THAT ANALYTE.
NS = NOT SAMPLED
µg/L = MICROGRAMS PER LITER
<1 = BELOW METHOD DETECTION LIMIT

ANALYTE	NMWQCC STANDARDS
B = Benzene	10 µg/L
T = Toluene	750 µg/L
E = Ethylbenzene	750 µg/L
X = Total Xylenes	620 µg/L

N

SCALE IN FEET
0 30 60

REVISION	DATE	DESIGN BY	DRAWN BY	REVIEWED BY
	7/17/2017	SLG	SLG	SRV

TITLE:
GROUNDWATER ANALYTICAL RESULTS
JUNE 9, 2017

PROJECT:
JOHNSTON FED #4
SAN JUAN RIVER BASIN
SAN JUAN COUNTY, NEW MEXICO

Stantec

Figure No.:
1

L:\San Juan River Basin\SJRB GENERAL\GIS-NEW_MXDs\JOHNSTON FED #4\2017 MAPS\JFed_#4_GECM_1SA_2017.mxd

SMA BENCHMARK
ELEV 6070.54'
NAD 83 NAVD 88
STATE PLANE COORDINATE SYSTEM
NEW MEXICO WEST

AREA OF FORMER PIT
OR EXCAVATION

FORMER EPC PIT
EXCAVATED TO 12 FEET

MW-4 6021.64
MW-19 6021.78
MW-9 6021.80
MW-1 6021.68
MW-01
MW-2 6021.62
MW-3 6021.60
MW-03
MW-7 6021.56
MW-07
MW-20 6021.63
MW-02
MW-20
MW-8 6021.59
MW-08
MW-10 6021.69
MW-10
MW-11 6021.66
MW-11
MW-6 6021.66
MW-06
MW-18 6021.61
MW-18
MW-17 6021.49
MW-17
MW-16 6021.46
MW-16
MW-15 6021.51
MW-15
MW-13 6021.81
TMW-5
MW-13
MW-12 6025.76*
MW-12
MW-14 6021.79
MW-14

Conoco Phillips MW-2
Conoco Phillips MW-1
Conoco Phillips MW-4
Conoco Phillips MW-3

6070
6021.8
6021.7
6021.6
6021.5

ROM GOOGLE EARTH; DATED 10/5/2016.

LEGEND:

- 6070 — APPROX. GROUND SURFACE CONTOUR AND ELEVATION, FEET
- ACCESS ROAD
- G A S — GAS LINE
- FENCE
- ABANDONED MONITORING WELL
- CONOCO PHILLIPS MONITORING WELL
- MONITORING WELL
- MONITORING WELL WITH MEASUREABLE FREE PRODUCT
- SMA BENCHMARK

NOTES:

6021.62 — GROUNDWATER ELEVATION CORRECTED FOR PRODUCT THICKNESS WHERE PRESENT (FEET ABOVE MEAN SEA LEVEL).

6021.5 — CORRECTED WATER LEVEL ELEVATION CONTOUR DASHED WHERE INFERRED (FEET ABOVE MEAN SEA LEVEL, 0.1 FOOT CONTOUR INTERVAL)

DIRECTION OF APPARENT GROUNDWATER FLOW

* GROUNDWATER ELEVATION APPEARS ANOMALOUS FOR MW-12 AND WAS NOT INCLUDED IN THE GROUNDWATER ELEVATION CONTOURS.

N

SCALE IN FEET
0 30 60

REVISION	DATE	DESIGN BY	DRAWN BY	REVIEWED BY
A	7/18/2017	SLG	SLG	SRV

TITLE:

GROUNDWATER ELEVATION MAP
JUNE 9, 2017

PROJECT:

JOHNSTON FED #4
SAN JUAN RIVER BASIN
SAN JUAN COUNTY, NEW MEXICO

Stantec

Figure No.: 2

L:\San Juan River Basin\SJRB GENERAL\GIS-NEW_MXDs\JOHNSTON FED #4\2017 MAPS\JFed_#4_GARM_2SA_2017.mxd

SMA BENCHMARK
ELEV 6070.54'
NAD 83 NAVD 88
STATE PLANE COORDINATE SYSTEM
NEW MEXICO WEST

MW-4
NS
MW-4

MW-19
B: **68**
T: 20
E: 8.5
X: 62
MW-19

AREA OF FORMER PIT
OR EXCAVATION

MW-6
B: **66**
T: 20
E: 9.5
X: 83
MW-6

MW-18
B: <1.0
T: <1.0
E: <1.0
X: <10
MW-18

FORMER EPC PIT
EXCAVATED TO 12 FEET

MW-7
B: <1.0
T: <1.0
E: <1.0
X: <10
MW-7

MW-1
NS
MW-1

MW-3
NS
MW-3

MW-9
B: **130**
T: 42
E: 2.1
X: 10
MW-9

MW-2
NS
MW-2

MW-17
NS
MW-17

MW-20
MW-20
B: **58**
T: 25
E: 1.3
X: 17

MW-8
NS
MW-8

MW-16
B: **29**
T: 2.3
E: 2.8
X: 14
MW-16

Conoco
Phillips
MW-2

MW-10
NS
MW-10

MW-11
NS
MW-11

MW-13
B: <1.0
T: <1.0
E: <1.0
X: <10

MW-15
B: **1100**
T: 180
E: 71
X: 290
MW-15

Conoco
Phillips
MW-1

TMW-5
MW-13

Conoco
Phillips
MW-4

6070

MW-12
NS
MW-12

MW-14
NS
MW-14

Conoco
Phillips
MW-3

ROM GOOGLE EARTH; DATED 10/5/2016.

LEGEND:

- 6070 — APPROX. GROUND SURFACE CONTOUR AND ELEVATION, FEET
- ACCESS ROAD
- G A S — GAS LINE
- FENCE
- ABANDONED MONITORING WELL
- CONOCO PHILLIPS MONITORING WELL
- MONITORING WELL
- MONITORING WELL WITH MEASUREABLE FREE PRODUCT
- SMA BENCHMARK

EXPLANATION OF ANALYTES AND APPLICABLE STANDARDS:

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NS = NOT SAMPLED
µg/L = MICROGRAMS PER LITER
<1 = BELOW METHOD DETECTION LIMIT

ANALYTE	NMWQCC STANDARDS
B = Benzene	10 µg/L
T = Toluene	750 µg/L
E = Ethylbenzene	750 µg/L
X = Total Xylenes	620 µg/L

N

SCALE IN FEET
0 30 60

REVISION	DATE	DESIGN BY	DRAWN BY	REVIEWED BY
	12/5/2017	SLG	SLG	SRV

TITLE:

GROUNDWATER ANALYTICAL RESULTS
NOVEMBER 12, 2017

PROJECT:

JOHNSTON FED #4
SAN JUAN RIVER BASIN
SAN JUAN COUNTY, NEW MEXICO

Stantec

Figure No.:
3

L:\San Juan River Basin\SJRB GENERAL\GIS-NEW_MXDs\JOHNSTON FED #4\2017 MAPS\JFed_#4_GECM_2SA_2017.mxd

SMA BENCHMARK
ELEV 6070.54'
NAD 83 NAVD 88
STATE PLANE COORDINATE SYSTEM
NEW MEXICO WEST

AREA OF FORMER PIT
OR EXCAVATION

FORMER EPC PIT
EXCAVATED TO 12 FEET

MW-4 6021.54
MW-19 6021.68
MW-6 6021.55
MW-18 6021.51
MW-1 6021.60
MW-3 6021.57
MW-7 6021.45
MW-9 6021.63
MW-2 6021.49
MW-20 6021.53
MW-17 6021.36
MW-8 6021.83
MW-10 6021.58
MW-11 6021.86
MW-16 6021.34
MW-13 6021.71
MW-15 6021.41
MW-12 6025.79*
MW-14 6021.68

6021.55
6021.75
6021.35
6070

Conoco Phillips MW-2
Conoco Phillips MW-1
Conoco Phillips MW-4
Conoco Phillips MW-3

TMW-5

ROM GOOGLE EARTH; DATED 10/5/2016.

LEGEND:

- 6070 — APPROX. GROUND SURFACE CONTOUR AND ELEVATION, FEET
- ACCESS ROAD
- G A S — GAS LINE
- FENCE
- ABANDONED MONITORING WELL
- CONOCO PHILLIPS MONITORING WELL
- MONITORING WELL
- MONITORING WELL WITH MEASUREABLE FREE PRODUCT
- SMA BENCHMARK

NOTES:

6021.62 — GROUNDWATER ELEVATION CORRECTED FOR PRODUCT THICKNESS WHERE PRESENT (FEET ABOVE MEAN SEA LEVEL).

6021.5 — CORRECTED WATER LEVEL ELEVATION CONTOUR DASHED WHERE INFERRED (FEET ABOVE MEAN SEA LEVEL, 0.1 FOOT CONTOUR INTERVAL)

DIRECTION OF APPARENT GROUNDWATER FLOW

* GROUNDWATER ELEVATION APPEARS ANOMALOUS FOR MW-12 AND WAS NOT INCLUDED IN THE GROUNDWATER ELEVATION CONTOURS.

N

SCALE IN FEET
0 30 60

REVISION	DATE	DESIGN BY	DRAWN BY	REVIEWED BY
A	1/17/2018	SLG	SLG	SRV

TITLE:

GROUNDWATER ELEVATION MAP
NOVEMBER 12, 2017

PROJECT:

JOHNSTON FED #4
SAN JUAN RIVER BASIN
SAN JUAN COUNTY, NEW MEXICO

Stantec

Figure No.: 4

APPENDICES

APPENDIX A – NOTIFICATION OF SITE ACTIVITIES

APPENDIX B – WASTE DISPOSAL DOCUMENTATION

APPENDIX C – MDPE REPORT

APPENDIX D – JUNE 9, 2017 GROUNDWATER SAMPLING ANALYTICAL REPORT
NOVEMBER 12, 2017 GROUNDWATER SAMPLING ANALYTICAL REPORT

APPENDIX A

From: Varsa, Steve
To: Randolph.Bayliss@state.nm.us
Cc: brandon.powell@state.nm.us; Wiley, Joe
Subject: El Paso CGP Company - Notice of upcoming groundwater sampling activities
Date: Tuesday, May 30, 2017 3:05:18 PM

Hi Randy –

This correspondence is to provide notice to the NMOCD of upcoming semi-annual groundwater sampling and monitoring activities at the following project sites:

Site Name	NMOCD Case #
Canada Mesa #2	3RP-155-0
Fields A#7A	3RP-170-0
Fogelson 4-1	3RP-068-0
Gallegos Canyon Unit #124E	3RP-407-0
GCU Com A #142E	3RP-179-0
Hammond #41A	3RP-186-0
James F. Bell #1E	3RP-196-0
Johnston Fed #4	3RP-201-0
Johnston Fed #6A	3RP-202-0
K27 LDO72	3RP-204-0
Knight #1	3RP-207-0
Lateral L 40 Line Drip	3RP-212-0
Lat O-21 Line Drip	3RP-213-0
Lindrith B #24	3RP-214-0
Miles Fed #1A	3RP-223-0
Sandoval GC A #1A	3RP-235-0
Standard Oil Com #1	3RP-238-0
State Gas Com N #1	3RP-239-0

Groundwater sampling and monitoring is planned to be conducted the week of June 5, 2017.

Thank you,
Steve

Stephen Varsa, P.G.
Supervising Hydrogeologist
MWH, now part of Stantec
11153 Aurora Avenue
Des Moines, Iowa 50322
Direct: (515) 251-1020
Cell: (515) 710-7523

Office: (515) 253-0830
steve.varsa@stantec.com

From:	Varsa, Steve
To:	Bayliss, Randolph, EMNRD
Cc:	Griswold, Jim, EMNRD; Perrin, Charlie, EMNRD; Powell, Brandon, EMNRD; Smith, Cory, EMNRD; Fields, Vanessa, EMNRD; Wiley, Joe
Subject:	RE: MPDE Work Plan Approvals
Date:	Saturday, July 08, 2017 4:55:00 PM

Hi Randy –

Pursuant to the conditions in the above-referenced July 5, 2017, approval letter, the following is the schedule for the MDPE activities:

James F. Bell #1E – start late the afternoon of Tuesday, July 11, and will go through Friday, July 14.
Johnston Federal #4 and Johnston Federal #6A – both sites beginning on Saturday, July 15, and go through Tuesday, July 18.
No work planned for Wednesday, July 19 (rest day).
GCU #124 – Thursday, July 20 through Sunday, July 23.
Knight #1 – Monday and Tuesday, July 24 and 25.
K27 LD072 – Wednesday, July 26.
Miles Federal #1A – Thursday, July 27.

As noted in the work plan submittal, work at State Gas Com N#1 is still pending receipt of a State Water Easement. NMOCD will be notified once the State Gas Com pilot testing activities have been scheduled, or if there are changes to the schedule offered above. Do you anticipate any OCD staff will be on-site during one or more of these events?

Thank you,
Steve

Stephen Varsa, P.G.
Supervising Hydrogeologist
MWH, now part of Stantec
11153 Aurora Avenue
Des Moines, Iowa 50322
Direct: (515) 251-1020
Cell: (515) 710-7523
Office: (515) 253-0830
steve.varsa@stantec.com

From: Bayliss, Randolph, EMNRD [mailto:Randolph.Bayliss@state.nm.us]
Sent: Wednesday, July 05, 2017 9:08 AM
To: Wiley, Joe <Joe_Wiley@kindermorgan.com>; Varsa, Steve <steve.varsa@stantec.com>
Cc: Griswold, Jim, EMNRD <Jim.Griswold@state.nm.us>; Perrin, Charlie, EMNRD <charlie.perrin@state.nm.us>; Powell, Brandon, EMNRD <Brandon.Powell@state.nm.us>; Smith, Cory, EMNRD <Cory.Smith@state.nm.us>; Fields, Vanessa, EMNRD <Vanessa.Fields@state.nm.us>

Subject: MPDE Work Plan Approvals

Good morning Joe, Steve, others.

Thank you for your proposed MPDE efforts.

Cheers

Randolph Bayliss, P.E.
Hydrologist, Districts III and IV
NMOCD Environmental Bureau
1220 S St Francis St, Santa Fe, NM 87505
505-476-3084, Cell 575-840-5961

From: Varsa, Steve
To: Bayliss, Randolph, EMNRD
Cc: Smith, Cory, EMNRD; Fields, Vanessa, EMNRD; Wiley, Joe
Subject: El Paso CGP Company - Notice of upcoming groundwater sampling activities
Date: Monday, November 06, 2017 11:41:36 AM

Hi Randy –

This correspondence is to provide notice to the NMOCD of upcoming semiannual groundwater sampling and monitoring activities at the following project sites:

Site Name	NMOCD Case #
Canada Mesa #2	3RP-155-0
Fields A#7A	3RP-170-0
Fogelson 4-1	3RP-068-0
Gallegos Canyon Unit #124E	3RP-407-0
GCU Com A #142E	3RP-179-0
James F. Bell #1E	3RP-196-0
Johnston Fed #4	3RP-201-0
Johnston Fed #6A	3RP-202-0
K27 LDO72	3RP-204-0
Knight #1	3RP-207-0
Lateral L 40 Line Drip	3RP-212-0
Lat O-21 Line Drip	3RP-213-0
Miles Fed #1A	3RP-223-0
Sandoval GC A #1A	3RP-235-0
Standard Oil Com #1	3RP-238-0
State Gas Com N #1	3RP-239-0

Groundwater sampling and monitoring is planned to be conducted November 10-14, 2017.

Please contact Joe Wiley, remediation manager with El Paso CGP Company, at (713) 420-3475, or me, if you have any questions.

Thank you,
Steve

Stephen Varsa, P.G.
Supervising Hydrogeologist
MWH, now part of Stantec
11153 Aurora Avenue
Des Moines, Iowa 50322
Direct: (515) 251-1020
Cell: (515) 710-7523
Office: (515) 253-0830
steve.varsa@stantec.com

APPENDIX B

30 Years of Environmental Health and Safety Excellence

BASIN DISPOSAL

200 Montana, Bloomfield, NM 87413
505-632-8936 or 505-334-3013
OPEN 24 Hours per Day

NO. 688185
NMOCD PERMIT: NM -001-0005
Oil Field Waste Document, Form C138
INVOICE:

DATE 6/11/17
DEL. TKT#.
GENERATOR: ElPaso CGP
BILL TO: ElPaso CGP
HAULING CO. ~~Stan. Oil~~ Stantel
DRIVER:
(Print Full Name)
ORDERED BY: Joseph Wiley
CODES:

WASTE DESCRIPTION: ☒ **Exempt Oilfield Waste** ☑ Produced Water ☐ Drilling/Completion Fluids ☐ Reserve Pit

STATE: ☐ NM ☐ CO ☐ AZ ☐ UT

TREATMENT/DISPOSAL METHODS: ☒ EVAPORATION ☒ INJECTION ☒ TREATING PLANT

NO.	TRUCK	LOCATION(S)	VOLUME	COST	H2S	COST	TOTAL	TIME
1		Fogelson 4-1, Gallegos CO 124E	50 BBL					
2		SCU Com A 142E Johnson Fed 4						
3		Johnston Lateral L-40 Fed 6A Lat 0-21 line						
4		Sandoval GC Standard oil A#1A Com 1						
5								

I, Samuel Spicer representitive or authorized agent for the above generator and hauler hereby certify that according to the Resource Conservation and Recovery Act (RCRA) and the US Environmental Protection Agency's July 1988 regulatory determination that the above described waste is RCRA Exempt Oil field wastes.

☑ Approved ☐ Denied ATTENDANT SIGNATURE

san juan reproduction 168-6

BASIN DISPOSAL

30 Years of Environmental Health and Safety Excellence

200 Montana, Bloomfield, NM 87413

505-632-8936 or 505-334-3013

OPEN 24 Hours per Day

NO. 690535

NMOCD PERMIT: NM -001-0005

Oil Field Waste Document, Form C138

INVOICE:

DATE _____ DEL. TKT#. _____

GENERATOR: El Paso BILL TO: El Paso

HAULING CO. Serra DRIVER: Ted

(Print Full Name)

ORDERED BY: Joseph Ealy CODES: _____

WASTE DESCRIPTION: ☒ Exempt Oilfield Waste ☐ Produced Water ☐ Drilling/Completion Fluids ☐ Reserve Pit

STATE: ☐ NM ☐ CO ☐ AZ ☐ UT TREATMENT/DISPOSAL METHODS: ☒ EVAPORATION ☒ INJECTION ☒ TREATING PLANT

NO.	TRUCK	LOCATION(S)	VOLUME	COST	H2S	COST	TOTAL	TIME
1	54	Johnson Fed #4	12	25			12 25	
2							'17 JUL 17 11:05AM	
3								
4								
5		San Mateo						

I, _____ representitive or authorized agent for the above generator and hauler hereby certify that according to the Resource Conservation and Recovery Act (RCRA) and the US Environmental Protection Agency's July 1988 regulatory determination that the above described waste is RCRA Exempt Oil field wastes.

☒ Approved ☐ Denied ATTENDANT SIGNATURE _____

san juan reproduction 168-6

BASIN DISPOSAL

30 Years of Environmental Health and Safety Excellence

200 Montana, Bloomfield, NM 87413
505-632-8936 or 505-334-3013
OPEN 24 Hours per Day

NO. 690489
NMOCD PERMIT: NM -001-0005
Oil Field Waste Document, Form C138
INVOICE:

DATE 7.16.17

DEL. TKT#.

GENERATOR: El Paso CGP Company

BILL TO: El Paso CGP Company

HAULING CO. Stone Oilfield

DRIVER: Juan
(Print Full Name)

ORDERED BY: Joseph Wiley

CODES:

WASTE DESCRIPTION: ☒ Exempt Oilfield Waste ☐ Produced Water ☑ Drilling/Completion Fluids ☐ Reserve Pit

STATE: ☑ NM ☐ CO ☐ AZ ☐ UT

TREATMENT/DISPOSAL METHODS: ☒ EVAPORATION ☒ INJECTION ☒ TREATING PLANT

NO.	TRUCK	LOCATION(S)	VOLUME	COST	H2S	COST	TOTAL	TIME
1	54	Johnson Fed #4	21	.25			15.25	
2								
3								
4								
5		Jim Mederos.						

I, _____ representitive or authorized agent for the above generator and hauler hereby certify that according to the Resource Conservation and Recovery Act (RCRA) and the US Environmental Protection Agency's July 1988 regulatory determination that the above described waste is RCRA Exempt Oil field wastes.

☑ Approved ☐ Denied ATTENDANT SIGNATURE Stanley Gomez

san juan reproduction 168-6

BASIN DISPOSAL

30 Years of Environmental Health and Safety Excellence

200 Montana, Bloomfield, NM 87413
505-632-8936 or 505-334-3013
OPEN 24 Hours per Day

NO. 690520
NMOCD PERMIT: NM -001-0005
Oil Field Waste Document, Form C138
INVOICE:

DATE 7.17.17
DEL. TKT#.
GENERATOR: El Paso
BILL TO: El Paso
HAULING CO. Sierra Oilfield
DRIVER: Juan (Print Full Name)
ORDERED BY: Joseph Wilks
CODES:

WASTE DESCRIPTION: ☒ Exempt Oilfield Waste ☐ Produced Water ☑ Drilling/Completion Fluids ☐ Reserve Pit

STATE: ☑ NM ☐ CO ☐ AZ ☐ UT

TREATMENT/DISPOSAL METHODS: ☒ EVAPORATION ☒ INJECTION ☒ TREATING PLANT

NO.	TRUCK	LOCATION(S)	VOLUME	COST	H2S	COST	TOTAL	TIME
1	54	Johnson Fed #4	14	.75			10.50	
2							17 JUL 17	7:31 AM
3								
4								
5		Juan Matado						

I, _____ representitive or authorized agent for the above generator and hauler hereby certify that according to the Resource Conservation and Recovery Act (RCRA) and the US Environmental Protection Agency's July 1988 regulatory determination that the above described waste is RCRA Exempt Oil field wastes.

☑ Approved ☐ Denied ATTENDANT SIGNATURE Stanley Cruz

BASIN DISPOSAL

30 Years of Environmental Health and Safety Excellence

200 Montana, Bloomfield, NM 87413

505-632-8936 or 505-334-3013

OPEN 24 Hours per Day

NO. 690556

NMOCD PERMIT: NM -001-0005

Oil Field Waste Document, Form C138

INVOICE:

DATE 7.17.17

DEL. TKT#.

GENERATOR: El Paso

BILL TO: El Paso

HAULING CO. Silver Oilfield

DRIVER: Juan
(Print Full Name)

ORDERED BY: Joseph Wilcox

CODES:

WASTE DESCRIPTION: ☒ Exempt Oilfield Waste ☐ Produced Water ☑ Drilling/Completion Fluids ☐ Reserve Pit

STATE: ☐ NM ☐ CO ☐ AZ ☐ UT

TREATMENT/DISPOSAL METHODS: ☒ EVAPORATION ☒ INJECTION ☒ TREATING PLANT

NO.	TRUCK	LOCATION(S)	VOLUME	COST	H2S	COST	TOTAL	TIME
1	54	Johnson Fed #4	60 / 14	@ .25			10.50	
2								
3							17 JUL 17	1:04pm
4								
5								

I, _____ representitive or authorized agent for the above generator and hauler hereby certify that according to the Resource Conservation and Recovery Act (RCRA) and the US Environmental Protection Agency's July 1988 regulatory determination that the above described waste is RCRA Exempt Oil field wastes.

☑ Approved ☐ Denied ATTENDANT SIGNATURE Stanley Casey

san juan reproduction 168-6

BASIN DISPOSAL

30 Years of Environmental Health and Safety Excellence

200 Montana, Bloomfield, NM 87413
505-632-8936 or 505-334-3013
OPEN 24 Hours per Day

NO. 690621
NMOCD PERMIT: NM -001-0005
Oil Field Waste Document, Form C138
INVOICE:

DATE 7-18-17

GENERATOR: El Paso

HAULING CO. Sierra

ORDERED BY: Joseph Wiley

DEL. TKT#.

BILL TO: El Paso

DRIVER: Jose N
(Print Full Name)

CODES:

WASTE DESCRIPTION: ☒ Exempt Oilfield Waste ☑ Produced Water ☐ Drilling/Completion Fluids ☐ Reserve Pit

STATE: ☐ NM ☐ CO ☐ AZ ☐ UT

TREATMENT/DISPOSAL METHODS: ☒ EVAPORATION ☒ INJECTION ☒ TREATING PLANT

NO.	TRUCK	LOCATION(S)	VOLUME	COST	H2S	COST	TOTAL	TIME
1	54	Johnson Fed 4	22 00	759			16 50	
2							'17 JUL 18	1:18pm
3								
4								
5								

I, [illegible] representitive or authorized agent for the above generator and hauler hereby certify that according to the Resource Conservation and Recovery Act (RCRA) and the US Environmental Protection Agency's July 1988 regulatory determination that the above described waste is RCRA Exempt Oil field wastes.

☑ Approved ☐ Denied ATTENDANT SIGNATURE

san juan reproduction 168-6

30 Years of Environmental Health and Safety Excellence

BASIN DISPOSAL

200 Montana, Bloomfield, NM 87413
505-632-8936 or 505-334-3013
OPEN 24 Hours per Day

NO. 690608
NMOCD PERMIT: NM -001-0005
Oil Field Waste Document, Form C138
INVOICE:

DATE 7-18-17
DEL. TKT#.
GENERATOR: El Paso
BILL TO: El Paso
HAULING CO. Sierra
DRIVER: Juan
(Print Full Name)
ORDERED BY: Joseph Wiley
CODES:

WASTE DESCRIPTION: ☒ Exempt Oilfield Waste ☒ Produced Water ☐ Drilling/Completion Fluids ☐ Reserve Pit

STATE: ☒ NM ☐ CO ☐ AZ ☐ UT

TREATMENT/DISPOSAL METHODS: ☒ EVAPORATION ☒ INJECTION ☒ TREATING PLANT

NO.	TRUCK	LOCATION(S)	VOLUME	COST	H2S	COST	TOTAL	TIME
1	54	Johnson Fed 4	12	25			9 00	
2							'17 JUL 18 10:45AM	
3								
4								
5								

I, Jim Medina representitive or authorized agent for the above generator and hauler hereby certify that according to the Resource Conservation and Recovery Act (RCRA) and the US Environmental Protection Agency's July 1988 regulatory determination that the above described waste is RCRA Exempt Oil field wastes.

☒ Approved ☐ Denied ATTENDANT SIGNATURE

san juan reproduction 168-6

BASIN DISPOSAL

30 Years of Environmental Health and Safety Excellence

200 Montana, Bloomfield, NM 87413
505-632-8936 or 505-334-3013
OPEN 24 Hours per Day

NO. 699930
NMOCD PERMIT: NM -001-0005
Oil Field Waste Document, Form C138
INVOICE:

DATE 11.12.17

GENERATOR: El Paso

HAULING CO. Stantec

ORDERED BY: Joe Wiley

DEL. TKT#.

BILL TO: Stantec

DRIVER: Sam Spiering
(Print Full Name)

CODES:

WASTE DESCRIPTION: ☒ Exempt Oilfield Waste ☐ Produced Water ☑ Drilling/Completion Fluids ☐ Reserve Pit

STATE: ☑ NM ☐ CO ☐ AZ ☐ UT

TREATMENT/DISPOSAL METHODS: ☒ EVAPORATION ☒ INJECTION ☒ TREATING PLANT

NO.	TRUCK	LOCATION(S)	VOLUME	COST	H2S	COST	TOTAL	TIME
1		Fogelson 4.1	1	70			70 17 NOV 12	1:45PM
2		State Gas Com, Knight, JF Bell Lat L-40, Std Oil Com						
3		Sandoval, GCU 124E, J-Fed 4 J-Fed 6						
4								
5								

I, [signature], representitive or authorized agent for the above generator and hauler hereby certify that according to the Resource Conservation and Recovery Act (RCRA) and the US Environmental Protection Agency's July 1988 regulatory determination that the above described waste is RCRA Exempt Oil field wastes.

☑ Approved ☐ Denied ATTENDANT SIGNATURE [signature]

san juan reproduction 168-6

APPENDIX C

AcuVac Remediation, LLC
1656-H Townhurst, Houston, Texas 77043
713.468.6688 • www.acuvac.com

August 18, 2017

Mr. Stephen Varsa
Supervising Hydrogeologist
Stantec Consulting Services, Inc.
11153 Aurora Avenue
Des Moines, IA 50322

Dear Steve:

Re: Johnston Federal No. 4, San Juan County, NM (Event #2)

At your request, AcuVac Remediation, LLC (AcuVac) performed five Mobile Dual Phase Extraction (MDPE) events as follows; 1) 8.0 hour Event #2A on well MW-11 on July 15, 2017, 2) 12.0 hour Event #2B on well MW-8 on July 16, 2017, 3) 6.0 hour Event #2C on well MW-1 on July 17, 2017, 4) 6.0 hour Event #2D on well MW-3 on July 17, 2017, and 5) 12.0 hour Event #2E on well MW-8 on July 17 and 18, 2017, at the above referenced site (Site). Following is the Report and a copy of the Operating Data collected during Event #2. Additionally, the attached Table #1 contains the Summary Well Data, and Table #2 contains the Summary Recovery Data.

The purpose of the MDPE events was to enhance recovery of Phase Separated Hydrocarbons (PSH) present at the Site through the removal of petroleum hydrocarbons in both liquid and vapor phases. PSH is referred to as petroleum hydrocarbons and Light Non-Aqueous Phase Liquids (LNAPL). The source of the PSH is a historical release of natural gas condensate.

OBJECTIVES

The objectives of the MDPE events were to:

- Maximize liquid and vapor phase petroleum hydrocarbon removal from groundwater and soils in the subsurface formations within the influence of the extraction well.
- Expose the capillary fringe area and below to the extraction well induced vacuums.
- Increase the vapor phase and liquid LNAPL specific yields with high induced vacuums.
- Create an induced hydraulic gradient to gain hydraulic control of the area surrounding the extraction well during the event periods.
- Select and monitor the groundwater depression and pump rates to accomplish the above objectives.

METHODS AND EQUIPMENT

AcuVac owns and maintains an inventory of equipment to perform MDPE events. No third party equipment was utilized. The events at the Site were conducted using the AcuVac I-6 System (System) with a Roots RAI-33 blower used as a vacuum pump and a Roots RAI-22 positive displacement blower. The table on the following page lists equipment and instrumentation employed during Event #2, and the data element captured by each.

Equipment and Instrumentation Employed by AcuVac	
Measurement Equipment	**Data Element**
Extraction Well Induced Vacuum and Flow	
Dwyer Magnehelic Gauges	Extraction Well Vacuum
Dwyer Averaging Pitot Tubes / Magnehelic Gauges	Extractions Well Vapor Flow
Observation Wells	
Dwyer Digital Manometer	Vacuum / Pressure Influence
Extraction Well Vapor Monitoring	
V-1 vacuum box	Extraction Well Non-Diluted Vapor Sample Collection
HORIBA® Analyzer	Extraction Well Vapor TPH Concentration
QRae Mini II O_2 Monitor	Extraction Well Vapor Oxygen Content
LNAPL Thickness (if present)	
Solinst Interface Probes Model 122	Depth to LNAPL and Depth to Groundwater
Liquid Recovery	
Totalizer Flow Meter	Liquid Flow and Total Volume
Grundfos Red-Flo 2 Total Fluids Pump	In-Well Pumping
Grundfos Variable Frequency Drive	Pump Speed and Other Diagnostics
Groundwater Depression / Upwelling	
In-Situ Level Troll 700 Data Logger	Liquid Column in Extraction and Observation Wells
In-Situ Vented Cable with Chamber	Equalize Well Vacuum/Pressure
In-Situ Rugged Reader Data Logger Interface	Capture Readings from Data Logger Trolls
Atmospheric Conditions	
Testo Model 511	Relative and Absolute Barometric Pressure

The vacuum extraction portion of the System consists of a vacuum pump driven by an internal combustion engine (IC engine). The vacuum pump was connected to the extraction well, and the vacuum created on the extraction well caused light hydrocarbons in the soil and on the groundwater to volatilize and flow through a moisture knockout tank to the vacuum pump and the IC engine where they were burned as part of the normal combustion process. Propane was used as auxiliary fuel to help power the engine if the well vapors did not provide the required energy.

The IC engine provided the power necessary to achieve and maintain high induced vacuums and/or high well vapor flows required to maximize the vacuum radius of influence for short term event remediation.

Emissions from the engine were passed through three catalytic converters to maximize destruction of removed hydrocarbon vapors. The engine's fuel-to-air ratio was adjusted to maintain efficient combustion. Because the engine is the power source for the equipment, the System stops when the engine stops. This prevents an uncontrolled release of hydrocarbons. Since the System is held entirely under vacuum, any leaks in the seals or connections are leaked into the System and not emitted into the atmosphere. The engine is automatically shut down by vacuum loss, low oil pressure, over speed, or overheating.

Groundwater extraction was provided by an in-well Grundfos Redi-Flo 2 total fluids pump that discharged through a totalizer/flow meter. The discharge line from this meter was then connected to a stand-by collection tank. The electrical power for the groundwater pump was supplied from a 120v Honda generator. The groundwater flow rate was adjusted to maintain a target level. An interface meter was used to collect depth to groundwater and depth to LNAPL measurements. Grab samples of recovered liquid were taken periodically in a graduated cylinder to determine the average percentage of LANPL being recovered.

The design of the AcuVac System enabled independent control of both the induced well vacuum and the groundwater pumping functions such that the AcuVac team controlled the induced hydraulic gradient to increase exposure of the formation to soil vapor extraction (SVE). The ability to separate the vapor and liquid flows within the extraction well improved the LNAPL recovery rates and enabled the AcuVac team to record data specific to each media.

RECOVERY SUMMARY FOR MDPE EVENT #2

The Recovery Summary table below lists the groundwater and LNAPL recovery data for Event #2, and compares the results to the previous Event #1.

Recovery Summary							
	Event #2A	Event #2B	Event #2C	Event #2D	Event #2E	Total	Total
	MW-11	MW-8	MW-1	MW-3	MW-8	Event #2	Event #1
Event Hours	8.0	12.0	6.0	6.0	12.0	44.0	15.5
GW Recovery	464	1,798	790	760	636	4,448	1,428
LNAPL Recovery							
Liquid	9.3	0	0	0	0	9.3	2.1
Vapor	15.9	46.5	15.6	7.1	44.4	129.5	19.9
Total	25.2	46.5	15.6	7.1	44.4	138.8	22.0
Gallons/Hour	**3.15**	**3.88**	**2.60**	**1.18**	**3.70**	**3.15**	**1.42**

SUMMARY OF MDPE EVENT #2A- WELL MW-11

- The total event time was 8.0 hours. The Event was conducted on July 15, 2017. This was the first event completed from well MW-11, and therefore, there was no comparative data from this well.
- The total liquid volume recovered was 464 gals, of which 2.00% or 9.3 gals were liquid LNAPL.
- Based on the HORIBA® analytical data, total vapor LNAPL burned as IC engine fuel was 15.9 gals, for a total liquid and vapor LNAPL recovery of 25.2 gals, or 3.15 gals per hour.

- The HORIBA® analytical data from the influent vapor samples for Event #2A is presented in the table below.

Influent Vapor Data Well MW-11		
Data Element		**Event #2A**
TPH- Maximum	ppmv	94,680
TPH- Average	ppmv	93,005
TPH- Minimum	ppmv	90,910
TPH- Initial	ppmv	90,910
TPH- Final	ppmv	92,080
CO2- Average	%	2.88
CO- Average	%	8.37
O_2- Average	%	7.3
H_2S- Average	ppm	0

- The Event #2A extraction well induced vacuum and well vapor flow are presented in the table below.

Well Vacuum and Well Vapor Flow Well MW-11		
Data Element		**Event #2A**
Well Vacuum- Maximum	"H_2O	10.00
Well Vacuum- Average	"H_2O	10.00
Well Vacuum- Minimum	"H_2O	10.00
Well Vapor Flow- Maximum	scfm	12.23
Well Vapor Flow- Average	scfm	9.87
Well Vapor Flow- Minimum	scfm	8.74

- The groundwater pump inlet was initially set at 67.0 ft BTOC, or 1.0 ft above the well bottom of well MW-11. The average groundwater pump rate was 0.88 gpm, and the maximum groundwater pump rate was 0.97 gpm.
- The average groundwater depression, based on the positioning of the groundwater pump, was 15.0 ft below the hydro-equivalent static level.
- A LNAPL thickness in well MW-11 of 1.84 ft was recorded prior to the start of Event #2A and an LNAPL thickness of 2.50 ft was recorded at the conclusion of the Event #2A.

The total LNAPL removed, including liquid and vapor, during the 8.0 hour Event #2A, Well MW-11, was 25.2 gals.

ADDITIONAL INFORMATION

- The lower percentage of the LNAPL volume, 9.3 gals or 36.90%, was recovered as liquid within hours after the start of Event #2A. The LNAPL was present in the well bore and most likely in the area immediately surrounding the well. No quantifiable liquid LNAPL was recovered after the first 60 minutes of Event #2A.
- A higher percentage of the LNAPL volume, 15.9 gals or 63.10%, was burned as IC engine fuel as a result of the TPH content in the influent vapors.

- The TPH concentration in the well vapors provided 100% of the IC engine fuel.
- The TPH vapor concentrations were mostly steady during Event #2A. The initial TPH reading, which was also the minimum reading, was 90,910 ppmv, the average reading was 93,005 ppmv, the maximum reading, 94,680 ppmv, was recorded at event hour 4.0.
- At approximately 1600 hours, a Stop Work was issued due to inclement weather moving into the area.

SUMMARY OF MDPE EVENT #2B- WELL MW-8

- The total event time was 12.0 hours. The Event was conducted on July 16, 2017. The data is compared to Event #1A conducted on November 30, 2016, which had total event time of 7.5 hours.
- The total liquid volume recovered was 1,798 gals, with no measureable liquid LNAPL recovered.
- Based on the HORIBA® analytical data, total vapor LNAPL burned as IC engine fuel was 46.5 gals, for a total liquid and vapor LNAPL recovery of 46.5 gals, or 3.88 gals per hour.
- The volume of liquid and vapor LNPAL recovered during Event #2B is compared with Event #1A in the table below.

LNAPL Recovery Well MW-8					
		Event #2B		Event #1A	
		Amount	Percent	Amount	Percent
Event Hours		12.0	-	7.50	-
GW Recovery	gals	1,798	-	798	-
Liquid	gals	0	-	2.1	13.75
Vapor	gals	46.5	100.00	13.2	86.25
Total	gals	46.5	100.00	15.3	100.00
Gallons/Hour		**3.88**	**-**	**2.04**	**-**

- The HORIBA® analytical data from the influent vapor samples for Event #2B is compared with Event #1A in the table below:

Influent Vapor Data Well MW-8			
Data Element		**Event #2B**	**Event #1A**
TPH- Maximum	ppmv	79,970	35,760
TPH- Average	ppmv	72,850	33,500
TPH- Minimum	ppmv	65,150	29,160
TPH- Initial	ppmv	65,150	29,160
TPH- Final	ppmv	72,860	34,570
CO_2- Average	%	3.67	4.70
CO- Average	%	3.41	0.49
O_2- Average	%	5.2	9.0
H_2S- Average	ppm	0	1

- The Event #2B extraction well induced vacuum and well vapor flow are compared with Event #1A in the table below.

Well Vacuum and Well Vapor Flow Well MW-8			
Data Element		**Event #2B**	**Event #1A**
Well Vacuum- Maximum	"H_2O	52.00	80.00
Well Vacuum- Average	"H_2O	51.47	67.33
Well Vacuum- Minimum	"H_2O	50.00	50.00
Well Vapor Flow- Maximum	scfm	25.10	32.87
Well Vapor Flow- A Average	scfm	24.62	24.25
Well Vapor Flow- Minimum	scfm	20.92	13.44

- The groundwater pump inlet was initially set at 63.0 ft BTOC, or 1.0 ft above the well bottom of well MW-8. The average groundwater pump rate was 2.41 gpm, and the maximum groundwater pump rate was 2.75 gpm.
- The average groundwater depression, based on the positioning of the groundwater pump, was 9.8 ft below the hydro-equivalent static level.
- A LNAPL thickness in well MW-8 of 1.60 ft was recorded prior to the start of Event #2B and no LNAPL thickness was recorded at the conclusion of the Event #2B.

The total LNAPL removed, including liquid and vapor, during the 12.0 hour Event #2B, Well MW-8, was 46.5 gals.

ADDITIONAL INFORMATION

- Well MW-8 produced a steady amount of liquid volume during the course of the Event #2B. However, no quantifiable liquid LNAPL was recovered from well MW-8.
- All LNAPL volume recovered, 46.5 gals, was burned as IC engine fuel.
- From event hour 3.0 and for the remainder of the event, the TPH concentration in the well vapors provided 100% of the IC engine fuel.
- The TPH vapor concentrations increased steadily during Event #2B until event hour 6.5 and then decreased for the remainder of the event. The initial TPH reading, which was also the minimum, was 65,150 ppmv, the average reading was 72,850 ppmv, the maximum reading, 79,970 ppmv, was recorded at event hour 5.5. The final reading was 72,860 ppmv.

SUMMARY OF MDPE EVENT #2C- WELL MW-1

- The total event time was 6.0 hours. The Event was conducted on July 17, 2017. This was the first event completed from well MW-1, and therefore there was no comparative data from this well.
- The total liquid volume recovered was 790 gals with no measureable liquid LNAPL recovered.
- Based on the HORIBA® analytical data, total vapor LNAPL burned as IC engine fuel was 15.6 gals, for a total liquid and vapor LNAPL recovery of 15.6 gals, or 2.60 gals per hour.

- The HORIBA® analytical data from the influent vapor samples for Event #2C is presented in the table below:

Influent Vapor Data Well MW-1		
Data Element		**Event #2C**
TPH- Maximum	ppmv	72,190
TPH- Average	ppmv	69,377
TPH- Minimum	ppmv	64,960
TPH- Initial	ppmv	72,190
TPH- Final	ppmv	71,120
CO2- Average	%	5.74
CO- Average	%	2.70
O_2- Average	%	3.0
H_2S- Average	ppm	0

- The Event #2C extraction well induced vacuum and well vapor flow are presented in the table below.

Well Vacuum and Well Vapor Flow Well MW-1		
Data Element		**Event #2C**
Well Vacuum- Maximum	"H_2O	56.00
Well Vacuum- Average	"H_2O	54.80
Well Vacuum- Minimum	"H_2O	54.00
Well Vapor Flow- Maximum	scfm	20.77
Well Vapor Flow- Average	scfm	17.36
Well Vapor Flow- Minimum	scfm	15.09

- The groundwater pump inlet was initially set at approximately 66.0 ft BTOC, or 1.0 ft above the well bottom. The average groundwater pump rate for Event #2C was 1.92 gpm, and the maximum groundwater pump rate was 3.23 gpm.
- The average groundwater depression, based on the positioning of the groundwater pump, was 8.0 ft below the hydro-equivalent static level.
- A LNAPL thickness of 0.02 ft in extraction well MW-1 was recorded prior to the start of Event #2C, and no LNAPL thickness was recorded in extraction well MW-1 at the conclusion of the Event #2C.

The total LNAPL removed, including liquid and vapor, during the 6.0 hour Event #2C, Well MW-1, was 15.6 gals.

ADDITIONAL INFORMATION

- Well MW-1 produced a steady amount of liquid volume during the course of the Event #2C. However, no quantifiable liquid LNAPL was recovered from well MW-1.
- All LNAPL volume recovered, 15.6 gals, was burned as IC engine fuel.
- From event hour 1.5 and for the remainder of the event, the TPH concentration in the well vapors provided 100% of the IC engine fuel.

- The TPH vapor concentrations steadily decreased during Event #2C until event hour 3.0 and then increased at event hour 5.0. The initial TPH reading, which was also the maximum, was 72,190 ppmv, the average reading was 69,377 ppmv, the lowest reading, 64,960 ppmv, was at event hour 4.5. The final reading was 71,120 ppmv.

SUMMARY OF MDPE EVENT #2D- WELL MW-3

- The total event time was 6.0 hours. The Event was conducted on July 17, 2017. The data is compared to Event #1B conducted on December 1, 2016, which had total event time of 7.0 hours.
- The total liquid volume recovered was 760 gals with no measureable liquid LNAPL recovered.
- Based on the HORIBA® analytical data, total vapor LNAPL burned as IC engine fuel was 7.1 gals, for a total liquid and vapor LNAPL recovery of 7.1 gals, or 1.18 gals per hour.
- The volume of liquid and vapor LNPAL recovered during Event #2D is compared with Event #1B in the table below.

LNAPL Recovery Well MW-3					
		Event #2D		Event #1B	
		Amount	Percent	Amount	Percent
Event Hours		6.0	-	7.0	-
GW Recovery	gals	760	-	630	-
Liquid	gals	0	0	0	0
Vapor	gals	7.1	100.00	5.9	100.00
Total	gals	7.1	100.00	5.9	100.00
Gallons/Hour		**1.18**	**-**	**0.84**	**-**

- The HORIBA® analytical data from the influent vapor samples for Event #2D is compared with Event #1B in the table below:

Influent Vapor Data Well MW-3			
Data Element		**Event #2D**	**Event #1B**
TPH- Maximum	ppmv	41,520	27,210
TPH- Average	ppmv	37,748	26,676
TPH- Minimum	ppmv	28,630	25,650
TPH- Initial	ppmv	28,630	27,140
TPH- Final	ppmv	41,430	25,650
CO_2- Average	%	6.06	6.86
CO- Average	%	0.58	0.24
O_2- Average	%	5.3	7.4
H_2S- Average	ppm	0	0

- The Event #2D extraction well induced vacuum and well vapor flow are compared with Event #1B in the table below.

Well Vacuum and Well Vapor Flow Well MW-3			
Data Element		**Event #2D**	**Event #1B**
Well Vacuum- Maximum	"H_2O	40.00	80.00
Well Vacuum- Average	"H_2O	40.00	70.67
Well Vacuum- Minimum	"H_2O	40.00	60.00
Well Vapor Flow- Maximum	scfm	14.41	19.25
Well Vapor Flow- A Average	scfm	14.41	14.53
Well Vapor Flow- Minimum	scfm	14.41	2.41

- The groundwater pump inlet was set at approximately 56.0 ft BTOC or 1.0 ft above the well bottom. The average groundwater pump rate for Event #2D was 2.13 gpm, and the maximum groundwater pump rate was 3.56 gpm.
- The average groundwater depression, based on the positioning of the groundwater pump, was 8.0 ft below the hydro-equivalent static level.
- No measurable LNAPL thickness in extraction well MW-3 was recorded prior to the start of Event #2D, and no measurable LNAPL thickness was recorded in extraction well MW-3 at the conclusion of the Event #2D.

The total LNAPL removed, including liquid and vapor, during the 6.0 hour Event #2D, well MW-3, was 7.1 gals.

ADDITIONAL INFORMATION

- Well MW-3 produced a steady amount of liquid volume during the course of the Event #2D. However, no quantifiable liquid LNAPL was recovered from well MW-3.
- Although the TPH concentrations in the well vapors were higher than Event #1B, supplemental propane was required for the IC engine.
- The TPH vapor concentrations steadily increased during Event #2D. The initial TPH reading, which was also the minimum, was 28,630 ppmv, the average reading was 37,748 ppmv, the maximum reading, 41,520 ppmv, was at event hour 4.0. The final reading was 41,630 ppmv.

SUMMARY OF MDPE EVENT #2E- WELL MW-8

- The total event time was 12.0 hours. The Event was conducted on July 17 and 18, 2017. The data is compared to Event #2B conducted on July 15, 2017, which had total event time of 12.0 hours.
- The total liquid volume recovered was 636 gals with no measureable liquid LNAPL recovered.
- Based on the HORIBA® analytical data, total vapor LNAPL burned as IC engine fuel was 44.4 gals, for a total liquid and vapor LNAPL recovery of 44.4 gals, or 3.70 gals per hour.

- The volume of liquid and vapor LNPAL recovered during Event #2E is compared with Event #2B in the table below.

LNAPL Recovery Well MW-8				
	Event #2E		Event #2B	
	Amount	Percent	Amount	Percent
Event Hours	12.0	-	12.0	-
GW Recovery gals	636	-	1,798	-
Liquid gals	0	0	0	0
Vapor gals	44.4	100.00	46.5	100.00
Total gals	44.4	100.00	46.5	100.00
Gallons/Hour	**3.70**	**-**	**3.88**	**-**

- The HORIBA® analytical data from the influent vapor samples for Event #2E is compared with Event #2B in the table below:

Influent Vapor Data Well MW-8			
Data Element		Event #2E	Event #2B
TPH- Maximum	ppmv	78,800	79,970
TPH- Average	ppmv	72,343	72,850
TPH- Minimum	ppmv	59,820	65,150
TPH- Initial	ppmv	78,800	65,150
TPH- Final	ppmv	59,820	72,860
CO_2- Average	%	3.59	3.67
CO- Average	%	3.53	3.41
O_2- Average	%	5.8	5.2
H_2S- Average	ppm	0	0

- The Event #2E extraction well induced vacuum and well vapor flow are compared with Event #2B in the table below.

Well Vacuum and Well Vapor Flow Well MW-8			
Data Element		Event #2E	Event #2B
Well Vacuum- Maximum	"H_2O	45.00	52.00
Well Vacuum- Average	"H_2O	45.00	51.47
Well Vacuum- Minimum	"H_2O	45.00	50.00
Well Vapor Flow- Maximum	scfm	23.64	25.10
Well Vapor Flow- A Average	scfm	23.64	24.62
Well Vapor Flow- Minimum	scfm	23.64	20.92

- The groundwater pump inlet was set at 52.5 ft BTOC of well MW-8. This position was based on results of Event #2B. This position placed the groundwater pump within 1.0 ft of the then hydro-equivalent. The average groundwater pump rate was 0.87 gpm, and the maximum groundwater pump rate was 1.44 gpm.

- The average groundwater depression, based on the positioning of the groundwater pump, was 2.70 ft below the hydro-equivalent static level.
- A LNAPL thickness in well MW-8 of 0.56 ft was recorded prior to the start of Event #2E, and a LNAPL thickness of 2.50 ft was recorded at the conclusion of the Event #2E.

The total LNAPL removed, including liquid and vapor, during the 12.0 hour Event #2E, Well MW-8, was 44.4 gals.

ADDITIONAL INFORMATION

- Well MW-8 produced a steady amount of liquid volume during the course of the Event #2E. However, no quantifiable liquid LNAPL was recovered from well MW-8.
- All LNAPL volume recovered, 44.4 gals, was burned as IC engine fuel.
- The TPH concentration in the well vapors provided 100% of the IC engine fuel.
- The TPH vapor concentrations were on a mostly decreasing trend during Event #2E. The initial TPH reading, which was also the maximum, was 78,800 ppmv, the average reading was 72,343 ppmv, the minimum reading, 59,820 ppmv, was at event hour 12.0.

The total LNAPL removed, including liquid and vapor, during the 44.0 hour Event #2, wells MW-1, MW-3, MW-8, and MW-11 was 138.8 gals.

METHOD OF CALIBRATION AND CALCULATIONS

The HORIBA® Analytical instrument is calibrated with hexane, carbon monoxide and carbon dioxide. The formula used to calculate the emission rate is:

$$ER = TPH\ (ppmv) \times MW\ (hexane) \times Flow\ Rate\ (scfm) \times 1.58E^{-7} \frac{(min)(lb\ mole)}{(hr)(ppmv)(ft^3)} = lbs/hr$$

INFORMATION INCLUDED WITH REPORT

- Table #1 Summary Well Data
- Table #2 Summary Recovery Data
- Recorded Data
- Photographs of the MDPE System, well MW-3 and MW-8.

After you have reviewed the report and if you have any questions, please contact me. We appreciate you selecting AcuVac to provide this service.

Sincerely,
ACUVAC REMEDIATION, LLC

Paul D. Faucher
Vice President, Operations

Summary Well Data
Table #1

Event		2A	2B	2C	2D	2E
WELL NO.		**MW-11**	**MW-8**	**MW-1**	**MW-3**	**MW-8**
Current Event Hours		8.0	12.0	6.0	6.0	12.0
Cumulative Event Hours		8.0	19.5	6.0	13.0	31.5
TD	ft BGS	65.0	67.0	57.0	57.0	67.0
Well Screen	ft BGS	35.0 – 65.0	35.0 – 65.0	41.8 – 57.0	41.8 – 57.0	35.0 – 65.0
Well Size	in	2.0	2.0	4.0	2.0	2.0
Well Data						
DTGW - Static - Start Event	ft BTOC	53.13	52.28	51.87	51.77	51.71
DTLNAPL - Static - Start Event	ft BTOC	51.29	50.68	51.85	-	51.15
LNAPL	ft BTOC	1.84	1.60	0.02	-	0.56
Hydro-Equivalent- Beginning	ft BTOC	51.77	51.10	51.86	51.77	51.30
DTGW - End Event	ft BTOC	53.95	51.65	52.06	51.84	53.13
DTLNAPL - End Event	ft BTOC	51.45	-	-	-	50.63
LNAPL	ft BTOC	2.50	-	-	-	2.50
Hydro-Equivalent- Ending	ft BTOC	52.10	51.65	52.06	51.84	51.28
Extraction Data						
Maximum Extraction Well Vacuum	"H_2O	10.00	52.00	56.00	40.00	45.00
Average Extraction Well Vacuum	"H_2O	10.00	51.47	54.80	40.00	45.00
Minimum Extraction Well Vacuum	"H_2O	10.00	50.00	54.00	40.00	45.00
Maximum Extraction Well Vapor Flow	scfm	12.23	25.10	20.77	14.41	23.64
Average Extraction Well Vapor Flow	scfm	9.87	24.62	17.36	14.41	23.64
Minimum Extraction Well Vapor Flow	scfm	8.74	20.42	15.09	14.41	23.64
Maximum GW / LNAPL Pump Rate	gpm	0.97	2.75	3.23	3.56	1.44
Average GW / LNAPL Pump Rate	gpm	0.88	2.41	1.92	2.13	0.87
Influent Data						
Maximum TPH	ppmv	94,680	79,970	72,190	41,520	78,800
Average TPH	ppmv	93,005	72,850	69,377	37,748	72,343
Minimum TPH	ppmv	90,910	65,150	64,960	28,630	59,820
Initial TPH	ppmv	90,910	65,150	72,190	28,630	78,800
Final TPH	ppmv	92,080	72,860	71,120	41,430	59,820
Average CO_2	%	2.88	3.67	5.74	6.06	3.59
Average CO	%	8.37	3.41	2.70	0.58	3.53
Average O_2	%	7.3	5.2	3.0	5.3	5.8
Average H_2S	ppm	0	0	0	0	0

Summary Recovery Data
Table #2

Event		2A	2B	2C	2D	2E
WELL NO.		**MW-11**	**MW-8**	**MW-1**	**MW-3**	**MW-8**
Recovery Data- Current Event						
Total Liquid Volume Recovered	gals	464	1,798	790	760	636
Total Liquid LNAPL Recovered	gals	9.3	0	0	0	0
Total Liquid LNAPL Recovered / Total Liquid	%	2.00	0	0	0	0
Total Liquid LNAPL Recovered / Total LNAPL	%	36.90	0	0	0	0
Total Vapor LNAPL Recovered	gals	15.9	46.5	15.6	7.1	44.4
Total Vapor LNAPL Recovered / Total LNAPL	%	63.10	100.00	100.00	100.00	100.00
Total Vapor and Liquid LNAPL Recovered	gals	25.2	46.5	15.6	7.1	44.4
Average LNAPL Recovery	gals/hr	3.15	3.88	2.60	1.18	3.70
Total LNAPL Recovered	lbs	176	326	109	49	310
Total Volume of Well Vapors	cu. ft	4,738	17,726	6,250	5,188	17,021
Recovery Data- Cumulative						
Total Liquid Volume Recovered	gals	464	2,596	790	1,390	3,231
Total Liquid LNAPL Recovered	gals	9.3	2.1	0	0	2.1
Total Vapor LNAPL Recovered	gals	15.9	59.7	15.6	12.9	104.0
Total Vapor and Liquid LNAPL Recovered	gals	25.2	61.8	15.6	12.9	106.1
Average LNAPL Recovery	gals/hr	3.15	3.17	2.60	0.99	3.37
Total LNAPL Recovered	lbs	176	433	109	90	743
Total Volume of Well Vapors	cu. ft	4,738	28,639	6,250	11,290	45,660

AcuVac Remediation

OPERATING DATA – EVENT # 2A **PAGE # 1** **ACUVAC MDP SYSTEM**

Location: Johnston Federal #4, San Juan County, NM **Project Managers: Faucher / Hendley**

MW-11

		Date	7/15/17					
		Time	0800	0830	0900	0930	1000	1030
		Hr Meter	7908.0	7908.5	7909.0	7909.5	7910.0	7910.5
ENGINE / BLOWER	Engine Speed	RPM	1800	1800	1800	1800	1800	1800
	Oil Pressure	psi	50	50	50	50	50	50
	Water Temp	°F	130	130	130	130	130	130
	Alternator	Volts	14	14	14	14	14	14
	Intake Vacuum	"Hg	16	16	16	16	16	16
	Gas Flow Fuel/Propane	cfh	0	0	0	0	0	0
ATMOSPHERE VACUUM / AIR	Extraction Well Vac.	"H_2O	10	10	10	10	10	10
	Extraction Well Flow	scfm	8.74	8.74	8.74	8.74	8.74	8.74
	Influent Vapor Temp.	°F	70	70	70	70	70	70
	Air Temp	°F	-	-	-	-	-	-
	Barometric Pressure	"Hg	-	-	-	-	-	-
VAPOR / INFLUENT	TPH	ppmv	-	90,910	-	-	-	-
	CO_2	%	-	2.52	-	-	-	-
	CO	%	-	9.52	-	-	-	-
	O_2	%	-	7.8	-	-	-	-
	H_2S	ppm	-	0	-	-	-	-

NOTES

SEE PAGE 2 FOR NOTES CONCERNING EVENT START UP.

WELL VAC AND WELL VAPOR FLOW STEADY DURING PERIOD.

GROUNDWATER PUMP RATE .97 GPM HELD A CONSTANT GROUNDWATER DEPRESSION OF APPROXIMATELY 15.0 FT FROM THE STATIC LEVEL

RECOVERY	GW Pump	ON/OFF	ON/OFF	ON	ON	ON	ON	ON
		gals/min	.98	.97	.97	.57	.97	.57
	Total Volume	gals	-	29	58	87	116	145
	NAPL	% Vol	-	SHEEN	SHEEN	SHEEN	SHEEN	SHEEN
	NAPL	Gals	-	-	-	-	-	-
	GW Depression	ft	-15.0	-15.0	-15.0	-15.0	-15.0	-15.0
	Extraction Well	DTNAPL	51.29					
	Extraction Well	DTGW	53.13					

LNAPL 1.84

AcuVac Remediation

OPERATING NOTES - EVENT # 2A PAGE # 2 ACUVAC MDP SYSTEM

Location: Johnston Federal #4, San Juan County, NM Project Managers: Faucher / Hendley

NOTES

7/5/17 0730 HRS ARRIVED ON SITE. HELD TAILGATE SAFETY MEETING. SURVEYED THE SITE. DETERMINED THE POSITION OF THE ACUVAC SYSTEM AND THE STANDBY COLLECTION TANK. POSITIONED THE ACUVAC SYSTEM CENTRAL TO WELLS MW-1, MW-3, MW-8 AND MW-11.

CONNECTED THE ACUVAC SYSTEM TO THE STANDBY PROPANE TANK. POSITIONED THE REDI-FLO2 IN-WELL PUMP INLET AT APPROX 67 BTOC. WITH d/s APPROXIMATELY 1.0 FT ABOVE WELL BOTTOM. CONNECTED THE VACUUM HOSE TO THE WELL MANIFOLD AND THE ACUVAC SYSTEM. CONNECTED THE LIQUID DISCHARGE HOSE TO THE TOTALIZER FLOW METER AND THE STANDBY COLLECTION TANK. PERFORMED ALL SAFETY CHECKS - ALL OK.

0800 EVENT STARTED. INITIAL WELL VAC 10 "H_2O RESULTING IN A WVF OF 8.74 SCFM. ALMOST IMMEDIATELY AFTER STARTUP THE TPH CONCENTRATIONS IN THE WELL VAPORS PROVIDED 100% OF THE IC ENGINE FUEL. IN-WELL PUMP STARTED AT APPROX 0815 HRS.

0900 INITIAL WELL VAPOR SAMPLE OBTAINED. TPH CONCENTRATIONS 50,560 PPMV.

AcuVac Remediation

OPERATING DATA – EVENT # 2A **PAGE # 3** **ACUVAC MDP SYSTEM**

Location: Johnston Federal #4, San Juan County, NM **Project Managers: Faucher / Hendley**

		Date	7/15/17					
		Time	1100	1130	1200	1230	1300	1330
	MW-11	Hr Meter	7911.0	7911.5	7912.0	7912.5	7913.0	7913.5
ENGINE / BLOWER	Engine Speed	RPM	1800	1800	1800	1800	1800	1800
	Oil Pressure	psi	50	50	50	50	50	50
	Water Temp	°F	140	140	140	140	140	140
	Alternator	Volts	14	14	14	14	14	14
	Intake Vacuum	"Hg	16	16	16	16	16	16
	Gas Flow Fuel/Propane	cfh	0	0	0	6	6	0
ATMOSPHERE VACUUM / AIR	Extraction Well Vac.	"H_2O	10	10	10	10	10	10
	Extraction Well Flow	scfm	8.74	8.74	8.74	8.74	8.74	10.49
	Influent Vapor Temp.	°F	70	70	70	70	70	70
	Air Temp	°F	-	-	-	-	-	-
	Barometric Pressure	"Hg	-	-	-	-	-	-
VAPOR / INFLUENT	TPH	ppmv	-	-	94,680	-	-	-
	CO_2	%	-	-	2.82	-	-	-
	CO	%	-	-	5.24	-	-	-
	O_2	%	-	-	7.4	-	-	-
	H_2S	ppm	-	-	0	-	-	-

NOTES

TPH VAPOR CONCENTRATIONS ON AN INCREASING TREND.
LNAPL RECOVERY REPORTED AS A SHEEN DUE TO THE AMOUNT OF BIOMASS IN THE RECOVERED LIQUID. THE EXTENT OF FREE PHASE NAPL RECOVERY WILL BE DETERMINED AT THE END OF THE EVENT. BASED ON A VISUAL INSPECTION OF THE COLLECTION TANK.

RECOVERY	GW Pump	ON/OFF	ON	ON	ON	ON	ON	ON
	Pump Rate	gals/min	.97	.97	.97	.97	.97	.97
	Total Volume	gals	174	203	232	261	290	319
	NAPL	% Vol	SHEEN	SHEEN	SHEEN	SHEEN	SHEEN	SHEEN
	NAPL	Gals	-	-	-	-	-	-
	GW Depression	ft	-15.0	-15.0	-15.0	-15.0	-16.0	-15.0
	Extraction Well	DTNAPL						
	Extraction Well	DTGW						

AcuVac Remediation

OPERATING DATA – EVENT # 2A PAGE # 4 ACUVAC MDP SYSTEM

Location: Johnston Federal #4, San Juan County, NM **Project Managers:** Faucher / Hendley

		Date	7/15					
		Time	1400	1430	1500	1530	1600	
	MW-11	Hr Meter	7914.0	7914.5	7915.0	7915.5	7916.0	
ENGINE / BLOWER	Engine Speed	RPM	1800	1800	1800	1800	1800	
	Oil Pressure	psi	50	50	50	50	50	
	Water Temp	°F	150	150	150	150	150	
	Alternator	Volts	14	14	14	14	14	
	Intake Vacuum	"Hg	16	16	16	16	16	
	Gas Flow Fuel/Propane	cfh	0	0	0	0	0	
ATMOSPHERE VACUUM / AIR	Extraction Well Vac.	"H_2O	10	10	10	10	10	
	Extraction Well Flow	scfm	20.49	12.23	12.23	12.23	12.23	
	Influent Vapor Temp.	°F	70	70	70	70	70	
	Air Temp	°F	–	–	–	–	–	
	Barometric Pressure	"Hg	–	–	–	–	–	
VAPOR / INFLUENT	TPH	ppmv	–	94,350	–	–	92,080	
	CO_2	%	–	2.70	–	–	3.06	
	CO	%	–	6.73	–	–	7.99	
	O_2	%	–	7.5	–	–	6.5	
	H_2S	ppm	–	0	–	–	0	

NOTES

TPH VAPOR CONCENTRATIONS MOSTLY STEADY DURING PERIOD.

WELL VAC AND WELL VAPOR FLOW STEADY DURING PERIOD.

COLLECTION TANK EXAMINED AT CONCLUSION OF EVENT AND IT WAS DETERMINED THAT APPROXIMATELY 2% OR 9 GALLONS OF LIQUID NAPL WERE RECOVERED AT 1600 STOP WORK ORDERED DUE TO RAIN MOVING INTO THE AREA.

RECOVERY	GW Pump	ON/OFF	ON	ON	ON	ON	OFF	
	Pump Rate	gals/min	.97	.97	.97	.97	.97	
	Total Volume	gals	348	327	406	475	464	
	NAPL	% Vol	SHEEN	SHEEN	SHEEN	SHEEN	SHEEN	
	NAPL	Gals	–	–	–	–	–	
	GW Depression	ft	-15.0	-15.0	-15.0	-15.0	-15.0	
	Extraction Well	DTNAPL					ND	
	Extraction Well	DTGW					ND	

AcuVac Remediation

OPERATING DATA – EVENT # 2B **PAGE # 1** **ACUVAC MDP SYSTEM**

Location: Johnston Federal #4, San Juan County, NM **Project Managers: Faucher / Hendley**

MW-8
TD 65.0 Ft BGS

		Date	7/16/17					
		Time	0630	0700	0730	0800	0830	0900
		Hr Meter	7916.5	7917.0	7917.5	7918.0	7918.5	7919.0
ENGINE / BLOWER	Engine Speed	RPM	1800	1900	1900	1900	1900	2000
	Oil Pressure	psi	50	50	50	50	50	50
	Water Temp	°F	130	130	130	130	130	130
	Alternator	Volts	14	14	14	14	14	14
	Intake Vacuum	"Hg	18	18	18	18	18	18
	Gas Flow Fuel/Propane	cfh	100	60	50	50	50	40
ATMOSPHERE VACUUM / AIR	Extraction Well Vac.	"H_2O	50	50	50	50	50	52
	Extraction Well Flow	scfm	20.92	22.59	23.43	24.27	25.10	25.10
	Influent Vapor Temp.	°F	70	70	70	70	70	70
	Air Temp	°F	-	-	-	-	-	-
	Barometric Pressure	"Hg	-	-	-	-	-	-
VAPOR / INFLUENT	TPH	ppmv	-	65,150	-	67,980	-	69,630
	CO_2	%	-	3.50	-	3.92	-	2.84
	CO	%	-	2.25	-	2.62	-	3.78
	O_2	%	-	8.0	-	4.2	-	3.5
	H_2S	ppm	-	0	-	0	-	0
NOTES	ARRIVED ON SITE AT 0600 HRS. MOBILIZED WELL MW-8. DTNAPL 50.68 FT BTOC. DTGW 52.28 FT BTOC, NAPL THICKNESS 1.60 FT. POSITIONED IN-WELL PUMP INLET AT 63.0 FT BTOC OR 2.0 FT ABOVE WELL BOTTOM. THE GW PUMP RATE OF 2.1 GPM WAS NOT SUFFICIENT TO CREATE A GROUNDWATER DEPRESSION. AT 0900 HRS THE PUMP RATE ↑ TO 2.8 GPM. THE GROUNDWATER LEVEL STARTED TO DECREASE. TPH VAPOR CONCENTRATIONS ON AN INCREASING TREND DURING THE PERIOD.							
RECOVERY	GW Pump	ON/OFF	ON/OFF	ON	ON	ON	ON	ON
	Pump Rate	gals/min	1.80	2.50	2.75	2.75	2.75	2.75
	Total Volume	gals	-	54	129	212	295	378
	NAPL	% Vol	-	SHEEN	SHEEN	SHEEN	SHEEN	SHEEN
	NAPL	Gals	-	-	-	-	-	-
	GW Depression 14.21 DL	ft	-	-	-	-	-	-3.0
	Extraction Well	DTNAPL	50.68					
	Extraction Well	DTGW	52.28					

LNAPL 1.60

AcuVac Remediation

OPERATING DATA – EVENT # 23 **PAGE # 2** **ACUVAC MDP SYSTEM**

Location: Johnston Federal #4, San Juan County, NM **Project Managers: Faucher / Hendley**

MW-8

		Date	7/16/17					
		Time	0930	1000	1030	1100	1130	1200
		Hr Meter	7919.5	7920.0	7920.5	7921.0	7921.5	7922.0
ENGINE / BLOWER	Engine Speed	RPM	2000	2000	2000	2000	2000	2000
	Oil Pressure	psi	50	50	50	50	50	50
	Water Temp	°F	130	130	130	140	140	140
	Alternator	Volts	14	14	14	14	14	14
	Intake Vacuum	"Hg	18	18	18	18	18	18
	Gas Flow Fuel/Propane	cfh	0	0	0	0	0	0
ATMOSPHERE VACUUM / AIR	Extraction Well Vac.	"H_2O	52	52	52	–	52	52
	Extraction Well Flow	scfm	25.10	25.10	25.10	–	25.10	25.10
	Influent Vapor Temp.	°F	70	70	70	–	70	70
	Air Temp	°F	–	–	–	–	–	–
	Barometric Pressure	"Hg	–	–	–	–	–	–
VAPOR / INFLUENT	TPH	ppmv	–	74,130	–	–	–	79,970
	CO_2	%	–	3.76	–	–	–	3.84
	CO	%	–	3.37	–	–	–	4.14
	O_2	%	–	4.3	–	–	–	5.5
	H_2S	ppm	–	0	–	–	–	0

NOTES

AT 1100 HRS REDUCED THE WELL VAC IN ORDER TO PUMP DOWN THE WELL. DATA LOGGER HEAD REDUCED FROM 14.31 FT TO .99 FT. RELOCATED IN-WELL PUMP TO 59.0 FT BTOC. RESUMED VACUUM. GW UPWELLING OCCURRED AND DATA LOGGER RETURNED 7.52 FT. WELL RECHARGE RATE IN EXCESS OF PUMP RATE. WITH NO LIQUID LNAPL RECOVERY VISIBLE, THE PUMP RATE WAS REDUCED TO 2.5 GPM.

RECOVERY	GW Pump	ON/OFF	ON	ON	ON	ON	ON	ON
	Pump Rate	gals/min	2.75	2.75	2.75	2.75	2.50	2.50
	Total Volume	gals	461	544	627	710	793	868
	NAPL	% Vol	SHEEN	SHEEN	SHEEN	SHEEN	SHEEN	SHEEN
	NAPL	Gals	–	–	–	–	–	–
	GW Depression	ft	-5.0	-5.0	-5.0	-5.0	-5.0	-5.0
	Extraction Well	DTNAPL						
	Extraction Well	DTGW						

AcuVac Remediation

OPERATING DATA – EVENT # 23 **PAGE # 3** **ACUVAC MDP SYSTEM**

Location: Johnston Federal #4, San Juan County, NM **Project Managers: Faucher / Hendley**

MW-8

		Date	7/16/17					
		Time	1300	1330	1400	1430	1500	1550
		Hr Meter	7922.5	7923.0	7923.5	7924.0	7924.5	7925.0
ENGINE / BLOWER	Engine Speed	RPM	2000	2000	2000	2000	2000	2000
	Oil Pressure	psi	50	50	50	50	50	50
	Water Temp	°F	140	140	140	140	140	140
	Alternator	Volts	14	14	14	14	14	14
	Intake Vacuum	"Hg	18	18	18	18	18	18
	Gas Flow Fuel/Propane	cfh	0	0	0	0	0	0
ATMOSPHERE VACUUM / AIR	Extraction Well Vac.	"H_2O	52	52	52	52	52	52
	Extraction Well Flow	scfm	25.10	25.10	25.10	25.10	25.10	25.10
	Influent Vapor Temp.	°F	70	70	70	70	70	70
	Air Temp	°F	-	-	-	-	-	-
	Barometric Pressure	"Hg	-	-	-	-	-	-
VAPOR / INFLUENT	TPH	ppmv	77,800	-	75,690	-	72,440	-
	CO_2	%	3.88	-	3.68	-	3.57	-
	CO	%	3.86	-	3.34	-	4.02	-
	O_2	%	5.2	-	5.8	-	5.4	-
	H_2S	ppm	6	-	0	-	0	-

NOTES

WELL VAC & WVF STEADY DURING PERIOD. GW PUMP RATE STEADY DURING PERIOD. TPH VAPOR CONCENTRATIONS MOSTLY STEADY DURING PERIOD. NO MEASURABLE NAPL BEING RECOVERED.

RECOVERY	GW Pump	ON/OFF	ON	ON	ON	ON	ON	ON
	Pump Rate	gals/min	2.50	2.50	2.50	2.50	2.50	2.50
	Total Volume	gals	1018	1093	1168	1243	1318	1393
	NAPL	% Vol	SHEEN	SHEEN	SHEEN	SHEEN	SHEEN	SHEEN
	NAPL	Gals	-	-	-	-	-	-
	GW Depression	ft	-5.0	-5.0	-5.0	-5.0	-5.0	-5.0
	Extraction Well	DTNAPL						
	Extraction Well	DTGW						

AcuVac Remediation

OPERATING DATA – EVENT # 2B **PAGE # 4** **ACUVAC MDP SYSTEM**

Location: Johnston Federal #4, San Juan County, NM **Project Managers: Faucher / Hendley**

MW-8		Date	7/16					
		Time	1600	1630	1700	1730	1800	1830
		Hr Meter	7925.5	7926.0	7926.5	7927.0	7927.5	7928.0
ENGINE / BLOWER	Engine Speed	RPM	2000	2000	2000	2000	2000	2000
	Oil Pressure	psi	50	50	50	50	50	50
	Water Temp	°F	140	140	140	140	140	140
	Alternator	Volts	14	14	14	14	14	14
	Intake Vacuum	"Hg	18	18	18	18	18	18
	Gas Flow Fuel/Propane	cfh	0	0	0	0	0	0
ATMOSPHERE VACUUM / AIR	Extraction Well Vac.	"H_2O	52	OFF	OFF	OFF	OFF	OFF
	Extraction Well Flow	scfm	25.10	OFF	OFF	OFF	OFF	OFF
	Influent Vapor Temp.	°F	70	70	70	70	70	70
	Air Temp	°F	–	–	–	–	–	–
	Barometric Pressure	"Hg	–	–	–	–	–	–
VAPOR / INFLUENT	TPH	ppmv	72,860	–	–	–	–	–
	CO_2	%	3.62	–	–	–	–	–
	CO	%	3.32	–	–	–	–	–
	O_2	%	4.5	–	–	–	–	–
	H_2S	ppm	0	–	–	–	–	–

NOTES

AT 1630 HRS DISCONTINUED THE WELL VAC IN ORDER TO PUMP DOWN THE WELL AND VACATE ANY LNAPL IN THE WELL. THE LIQUID LEVEL WAS DECREASED TO WITHIN 1.0 FT OF THE GW PUMP INLET. AT 1815 DISCONTINUED GW PUMPING AS ONLY 300 GAL OF LIQUID STORAGE REMAINED. NO MEASURABLE LIQUID NAPL WAS DETECTED IN THE RECOVERED LIQUID OR IN THE WELL AT THE END OF THE EVENT.

RECOVERY	GW Pump	ON/OFF	ON	ON	ON	ON	ON	OFF
	Pump Rate	gals/min	2.5	2.0	2.0	2.0	2.0	1.0
	Total Volume	gals	1468	1543	1603	1663	1738	1798
	NAPL	% Vol	SHEEN	SHEEN	SHEEN	SHEEN	SHEEN	SHEEN
	NAPL	Gals	–	–	–	–		
	GW Depression	ft						
	Extraction Well	DTNAPL						–
	Extraction Well	DTGW						51.65

SHEEN

AcuVac Remediation

OPERATING DATA – EVENT # 2C **PAGE # 1** **ACUVAC MDP SYSTEM**

Location: Johnston Federal #4, San Juan County, NM **Project Managers: Faucher / Hendley**

MW-1

		Date	7/17/17					
		Time	0700	0730	0800	0830	0900	0930
		Hr Meter	7828.5	7829.0	7829.5	7830.0	7830.5	7831.0
ENGINE / BLOWER	Engine Speed	RPM	2000	1800	1800	1800	1800	1800
	Oil Pressure	psi	50	50	50	50	50	50
	Water Temp	°F	130	130	130	140	140	140
	Alternator	Volts	14	14	14	14	14	14
	Intake Vacuum	"Hg	14	14	14	14	14	14
	Gas Flow Fuel/Propane	cfh	20	20	20	0	0	0
ATMOSPHERE VACUUM / AIR	Extraction Well Vac.	"H_2O	54	54	54	54	54	54
	Extraction Well Flow	scfm	15.09	15.09	15.09	15.09	15.09	15.09
	Influent Vapor Temp.	°F	70	70	70	70	70	70
	Air Temp	°F	-	-	-	-	-	-
	Barometric Pressure	"Hg	-	-	-	-	-	-
VAPOR / INFLUENT	TPH	ppmv	72,190	-	69,990	-	68,650	-
	CO_2	%	5.14	-	5.50	-	5.26	-
	CO	%	3.26	-	2.78	-	2.36	-
	O_2	%	3.4	-	3.6	-	2.8	-
	H_2S	ppm	0	-	0	-	0	-

NOTES

SEE PAGE 2 FOR NOTES CONCERNING MOBILIZATION AND STARTUP PROCEDURES.
INITIAL WELL VAPOR SAMPLE HAD TPH CONCENTRATIONS OF 72,190 PPMV.
TPH CONCENTRATIONS ON A SLIGHTLY DECREASING TREND DURING PERIOD
GW PUMP RATE INCREASED TO DETERMINE RATE REQUIRED TO DECREASE THE
WATER LEVEL IN WELL MW-1. LIMITED AMOUNT OF LIQUID STORAGE CONSTRAINED
THE TOTAL VOLUME OF LIQUID THAT COULD BE RECOVERED.

RECOVERY	GW Pump	ON/OFF	ON/OFF	ON	ON	ON	ON	ON
	TOTALIZER	gals/min	990.26	1030.73	1073.16	1115.12	1179.52	1256.17
	Total Volume	gals	-	40.47	82.90	124.86	189.26	265.91
	NAPL	% Vol	-	SHEEN	SHEEN	SHEEN	SHEEN	SHEEN
	NAPL	Gals	-	-	-	-	-	-
	GW Depression 4.32	ft	-	-	-	-	-	-
	Extraction Well	DTNAPL	51.85					
	Extraction Well	DTGW	51.87					

LNAPL .02

AcuVac Remediation

OPERATING NOTES - EVENT # 2C **PAGE # 2** **ACUVAC MDP SYSTEM**

Location: Johnston Federal #4, San Juan County, NM **Project Managers:** Faucher / Hendley

NOTES

7/17/17 0600 HRS ARRIVED ON SITE GAUGED WELLS MW-1, MW-3, MW-8 AND MW-11. DISCUSSED WORK PLAN FOR THE DAY WITH JUSTEN GARVEY. IT WAS DETERMINED THAT EVENT #2C WOULD BE A 6 HR EVENT ON WELL MW-1, EVENT #2D WOULD BE A 6 HR EVENT ON WELL MW-3 AND EVENT #2E WOULD BE A 12 HR EVENT ON WELL MW-8.

MOBILIZED THE AcuVac EQUIPMENT ON WELL MW-1. CONNECTED LIQUID DISCHARGE HOSE TO TOTALIZER FLOW METER AND THEN TO THE STANDBY COLLECTION TANK

CONNECTED WELL VAC HOSE TO WELL MANIFOLD AND THE AcuVac SYSTEM. PERFORMED ALL SAFETY CHECKS - ALL ok.

POSITIONED IN-WELL PUMP 1.0 FT ABOVE WELL BOTTOM OR 66.0 FT BTOC.

0700 HRS EVENT STARTED. INITIAL WELL VAC SET AT 54" H_2O RESULTING IN A WVF OF 15.09 SCFM. IN-WELL PUMP RATE SET AT 1.35 GPM.

THE LIQUID IN THE WELL STARTED TO UPWELL AS A RESULT OF THE INDUCED VACUUM. THE PUMP RATE WAS INCREASED TO OFFSET THE UPWELLING. THE INCREASE IN PUMP RATE APPEARED TO SLOW THE UPWELLING

AcuVac Remediation

OPERATING DATA – EVENT # 2C PAGE # 3 ACUVAC MDP SYSTEM

Location: Johnston Federal #4, San Juan County, NM **Project Managers:** Faucher / Hendley

		Date						
	MW-1	Time	1000	1100	1200	1300		
		Hr Meter	7931.5	7932.5	7933.5	7934.5		
ENGINE / BLOWER	Engine Speed	RPM	1800	1800	1800	1806		
	Oil Pressure	psi	50	50	50	50		
	Water Temp	°F	140	140	140	140		
	Alternator	Volts	14	14	14	14		
	Intake Vacuum	"Hg	14	14	14	14		
	Gas Flow Fuel/Propane	cfh	0	0	0	0		
ATMOSPHERE VACUUM / AIR	Extraction Well Vac.	"H_2O	56	56	56	56		
	Extraction Well Flow	scfm	20.77	20.77	20.77	20.77		
	Influent Vapor Temp.	°F	70	70	70	70.		
	Air Temp	°F	-	-	-	-		
	Barometric Pressure	"Hg	-	-	-	-		
VAPOR / INFLUENT	TPH	ppmv	69,350	64,960	71,120	-		
	CO_2	%	5.86	5.93	6.64	-		
	CO	%	2.65	2.19	2.94	-		
	O_2	%	3.0	2.2	2.9	-		
	H_2S	ppm	0	0	0	-		
RECOVERY	GW Pump	ON/OFF	ON	ON	ON	OFF		
	Pump Rate	gals/min	1352.94	1545.39	1711.46	1778.96		
	Total Volume	gals	362.68	555.13	724.20	789.70		
	NAPL	% Vol	SHEEN	SHEEN	SHEEN	SHEEN		
	NAPL	Gals	-	-	-	-		
	GW Depression	ft	-2.0	-3.0	-4.0	-4.0		
	Extraction Well	DTNAPL				-		
	Extraction Well	DTGW				52.06		

NOTES

TPH VAPOR CONCENTRATIONS ON AN OVERALL INCREASING TREND.

AT 1100 HRS GW PUMP RATE ↓ TO 2.77 GPM. THE GW PUMP RATE WOULD NEED TO BE IN THE 3.50 TO 4.00 GPM IN ORDER TO DE-WATER THE AREA SURROUNDING MW-1.

WVF FLOW INCREASING AT 1000 HRS AS GW DEPRESSION INCREASED.

AT 1100 HRS DECREASED GW PUMP RATE SLIGHTLY DUE TO LIMITED LIQUID STORAGE AVAILABLE - 300 GAL

Ø

AcuVac Remediation

OPERATING DATA – EVENT # 2D PAGE # 1 ACUVAC MDP SYSTEM

Location: Johnston Federal #4, San Juan County, NM **Project Managers:** Faucher / Hendley

		Date	7/17/17					
	MW-3	Time	1300	1330	1400	1430	1500	1530
		Hr Meter	7934.5	7935.0	7935.5	7936.0	7936.5	7937.0
ENGINE / BLOWER	Engine Speed	RPM	1900	1900	1900	1900	1900	1900
	Oil Pressure	psi	50	50	50	50	50	50
	Water Temp	°F	160	160	160	160	160	160
	Alternator	Volts	14	14	14	14	14	14
	Intake Vacuum	"Hg	14	14	14	14	14	14
	Gas Flow Fuel/Propane	cfh	110	110	110	110	110	110
ATMOSPHERE VACUUM / AIR	Extraction Well Vac.	"H_2O	40	40	40	40	40	40
	Extraction Well Flow	scfm	14.41	14.41	14.41	14.41	14.41	14.41
	Influent Vapor Temp.	°F	70	70	70	70	70	70
	Air Temp	°F	–	–	–	–	–	–
	Barometric Pressure	"Hg	–	–	–	–	–	–
VAPOR / INFLUENT	TPH	ppmv	28,630	–	41,520	–	39,460	–
	CO_2	%	4.88	–	6.62	–	6.46	–
	CO	%	.30	–	.70	–	.62	–
	O_2	%	4.0	–	6.6	–	5.5	–
	H_2S	ppm	0	–	0	–	0	–

NOTES

AT 1300 HRS RELOCATED VACUUM AND IN-WELL PUMP TO WELL MW-3 AND STARTED EVENT. INITIAL WELL VAPOR SAMPLE YIELDED TPH CONCENTRATIONS OF 28,630 PPMV TPH VAPORS INCREASED TO THE 40,000 PPMV RANGE AND REMAINED MOSTLY STEADY FOR REMAINDER OF EVENT. GW PUMP RATE IN THE 3.5 GPM RANGE UNTIL 1400 HRS AND THEN DECREASED TO THE 2.6 GPM RANGE. EFFLUENT LIQUID WAS CLOUDY WITH NO MEASURABLE FREE NAPL VISIBLE.

RECOVERY								
	GW Pump	ON/OFF	ON	ON	ON	ON	ON	ON
	TOTALIZER	gals/min	1779.96	1827.83	1930.69	2037.62	2117.14	2196.41
	Total Volume	gals	–	47.87	150.73	257.66	337.18	416.45
	NAPL	% Vol	–	SHEEN	SHEEN	SHEEN	SHEEN	SHEEN
	NAPL	Gals	–	–	–	–	–	–
	GW Depression	ft	-3.0	-3.0	-3.0	-3.0	-3.0	-3.0
	Extraction Well	DTNAPL	–					
	Extraction Well	DTGW	51.77					

CNAPL = Ø

AcuVac Remediation

OPERATING DATA – EVENT # 2D PAGE # 2 ACUVAC MDP SYSTEM

Location: Johnston Federal #4, San Juan County, NM **Project Managers:** Faucher / Hendley

MW-3

		Date	7/17/17					
		Time	1600	1700	1800	1900		
		Hr Meter	7537.5	7538.0	7538.5	7539.0		
ENGINE / BLOWER	Engine Speed	RPM	1900	1900	1900	1900		
	Oil Pressure	psi	50	50	50	50		
	Water Temp	°F	160	160	160	160		
	Alternator	Volts	14	14	14	14		
	Intake Vacuum	"Hg	14	14	14	14		
	Gas Flow Fuel/Propane	cfh	110	110	110	110		
ATMOSPHERE VACUUM / AIR	Extraction Well Vac.	"H_2O	40	40	40	40		
	Extraction Well Flow	scfm	14.41	14.41	14.41	14.41		
	Influent Vapor Temp.	°F	70	70	70	70		
	Air Temp	°F	–		–	–		
	Barometric Pressure	"Hg	–		–	–		
VAPOR / INFLUENT	TPH	ppmv	–	41,430	–	–		
	CO_2	%	–	6.28	–	–		
	CO	%	–	.71	–	–		
	O_2	%	–	5.2	–	–		
	H_2S	ppm	–	0	–	–		

NOTES

WELL VAC AND WELL VAPOR FLOW STEADY DURING PERIOD.
EFFLUENT LIQUID REMAINED CLOUDY WITH NO MEASURABLE LNAPL VISIBLE IN THE SITE GLASS.

RECOVERY	GW Pump	ON/OFF	ON	ON	ON	OFF		
	TOTALIZER	gals/min	2295.82	2377.62	2469.46	2540.45		
	Total Volume	gals	515.86	597.66	689.50	760.49		
	NAPL	% Vol	SHEEN	SHEEN	SHEEN	SHEEN		
	NAPL	Gals	–	–	–	–		
	GW Depression	ft	-3.0	-3.0	-3.0	-3.0		
	Extraction Well	DTNAPL				0		
	Extraction Well	DTGW				51.84		

Ø

AcuVac Remediation

OPERATING DATA – EVENT # 2E **PAGE # 1** **ACUVAC MDP SYSTEM**

Location: Johnston Federal #4, San Juan County, NM **Project Managers: Faucher / Hendley**

MW-8	Date	7/17/17					
	Time	1900	1930	2000	2030	2100	2130
	Hr Meter	7538.0	7539.5	7540.0	7540.5	7541.0	7541.5
ENGINE / BLOWER	Engine Speed RPM	1800	1800	1800	1800	1800	1800
	Oil Pressure psi	50	50	50	50	50	50
	Water Temp °F	140	140	140	140	140	140
	Alternator Volts	14	14	14	14	14	14
	Intake Vacuum "Hg	10	10	10	10	10	10
	Gas Flow Fuel/Propane cfh	0	0	0	0	0	0
ATMOSPHERE VACUUM / AIR	Extraction Well Vac. "H_2O	45	45	45	45	45	45
	Extraction Well Flow scfm	23.64	23.64	23.64	23.64	23.64	23.64
	Influent Vapor Temp. °F	70	70	70	70	70	70
	Air Temp °F	–	–	–	–	–	–
	Barometric Pressure "Hg	⌐	⌐	⌐	⌐	⌐	⌐
VAPOR / INFLUENT	TPH ppmv	–	78,800	–	–	75000	–
	CO_2 %	–	3.64	–	–	3.38	–
	CO %	–	4.43	–	–	3.52	–
	O_2 %	–	5.9	–	–	4.8	–
	H_2S ppm	–	0	–	–	0	–

NOTES

1900 Event started.
1930 Initial vapor sample obtained. TPH 78,800.
2100 Vapor samples obtained. TPH, CO, CO_2, O_2, H_2S consistent. No H_2S. Flow rate steady at 1.0 gallon per minute.

RECOVERY	~~GW Pump~~ Totalizer ~~ON/OFF~~	2540.45	2564.18	2600.42	2633.84	2667.25	2703.70
	Pump Rate gals/min	–	~~24~~	1.0	1.0	1.0	1.0
	Total Volume gals	–	24	60	93	127	163
	NAPL % Vol	SHEEN	SHEEN	SHEEN	SHEEN	SHEEN	SHEEN
	NAPL Gals	–	–	–	–	–	–
	GW Depression ft	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0
	Extraction Well DTNAPL						
	Extraction Well DTGW						

AcuVac Remediation

OPERATING DATA – EVENT # 2E **PAGE # 2** **ACUVAC MDP SYSTEM**

Location: Johnston Federal #4, San Juan County, NM **Project Managers: Faucher / Hendley**

MW-8

	Date		7/17/17			7/18/17		
	Time		2200	2300	2400	0100	0200	0300
	Hr Meter		7542.0	7543.0	7544.0	7545.0	7546.0	7547.0
ENGINE / BLOWER	Engine Speed	RPM	1900	1800	1800	1800	1900	1900
	Oil Pressure	psi	50	50	50	50	50	50
	Water Temp	°F	140	140	140	140	140	140
	Alternator	Volts	14	14	14	14	14	14
	Intake Vacuum	"Hg	10	10	10	10	10	10
	Gas Flow Fuel/Propane	cfh	0	0	0	0	0	0
ATMOSPHERE VACUUM / AIR	Extraction Well Vac.	"H_2O	45	45	45	45	45	45
	Extraction Well Flow	scfm	23.64	23.64	23.64	23.64	23.64	23.64
	Influent Vapor Temp.	°F	70	70	70	70	70	70
	Air Temp	°F	-	-	-	-	-	-
	Barometric Pressure	"Hg	-	-	-	-	-	-
VAPOR / INFLUENT	TPH	ppmv	—	63,230	—	66,940	—	65,550
	CO_2	%	—	3.75	—	3.78	—	3.66
	CO	%	—	2.63	—	2.70	—	2.65
	O_2	%	-	6.7	-	5.5	—	6.9
	H_2S	ppm	-	0	—	0	—	0

NOTES

2300 Vapor samples obtained at 2300, 100, 300. TPH, CO_2, Co, Ox constant. No H_2S present.

0200 Flow rate started to decrease to .75 gallons per minute.

RECOVERY	~~GW Pump~~ Totalizer ~~ON/OFF~~		2739.06	2806.79	2866.20	2918.60	2963.88	3006.50
	Pump Rate	gals/min	1.0	1.2	1.0	1.0	.75	.75
	Total Volume	gals	199	266	326	378	423	466
	NAPL	% Vol	SHEEN	SHEEN	SHEEN	SHEEN	SHEEN	SHEEN
	NAPL	Gals	-	-	-	-	-	-
	GW Depression	ft	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0
	Extraction Well	DTNAPL						
	Extraction Well	DTGW						

AcuVac Remediation

OPERATING DATA – EVENT # 2E PAGE # 3 ACUVAC MDP SYSTEM

Location: Johnston Federal #4, San Juan County, NM **Project Managers:** Faucher / Hendley

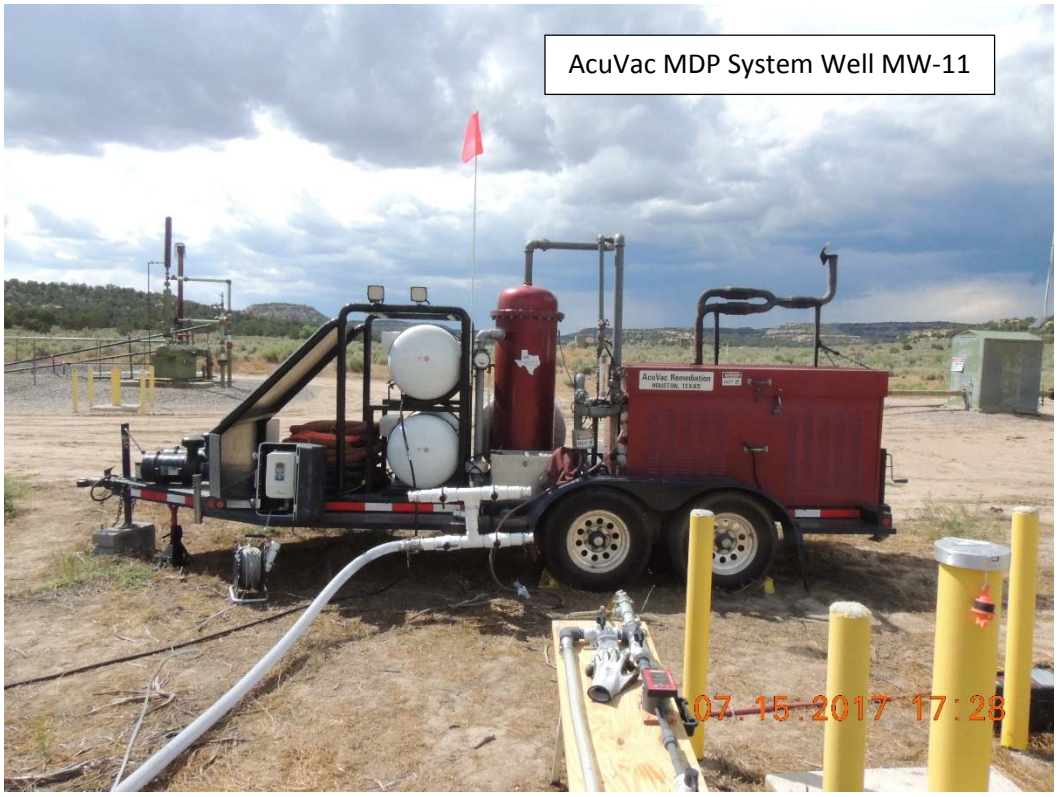
MW-8

	Date		7/18/17					
	Time		0400	0500	0600	0700		
	Hr Meter		7548.0	7549.0	7550.0	7551.0		
ENGINE / BLOWER	Engine Speed	RPM	1800	1800	1800	1800		
	Oil Pressure	psi	50	50	50	50		
	Water Temp	°F	140	140	140	140		
	Alternator	Volts	14	14	14	14		
	Intake Vacuum	"Hg	10	10	10	10		
	Gas Flow Fuel/Propane	cfh	0	0	0	0		
ATMOSPHERE VACUUM / AIR	Extraction Well Vac.	"H_2O	45	45	45	45		
	Extraction Well Flow	scfm	23.64	23.64	23.64	23.64		
	Influent Vapor Temp.	°F	70	70	70	70		
	Air Temp	°F	-	-	-	-		
	Barometric Pressure	"Hg	-	-	-	-		
VAPOR / INFLUENT	TPH	ppmv	64,520	-	-	55,820		
	CO_2	%	3.70	-	-	4.50		
	CO	%	2.20	-	-	2.08		
	O_2	%	6.8	-	-	7.4		
	H_2S	ppm	0	-	-	0		
RECOVERY	TOTALIZER	GALS	3005.02	3093.10	3137.90	3176.65		
	Pump Rate	gals/min	1.44	.75	.65	-		
	Total Volume	gals	466	553	597	636		
	NAPL	% Vol	SHEEN	SHEEN	SHEEN	SHEEN		
	NAPL	Gals	-	-	-	-		
	GW Depression	ft	-	-	-	-		
	Extraction Well	DTNAPL	-2.0	-2.0	-2.0	-2.0		
	Extraction Well	DTGW						

NOTES

WELL VAC AND WVF STEADY DURING THE PERIOD. TPH VAPOR CONCENTRATIONS ↓ SLIGHTLY AT 0700 HRS. GW PUMP RATE MOSTLY STEADY DURING PERIOD ALTHOUGH NO MEASURABLE LNAPL WAS RECOVERED. AT 0700 HRS EVENT CONCLUDED.

JOHNSTON FEDERAL #4
SAN JUAN COUNTY, NM



JOHNSTON FEDERAL #4
SAN JUAN COUNTY, NM

JOHNSTON FEDERAL #4
SAN JUAN COUNTY, NM

APPENDIX D

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

ANALYTICAL REPORT

TestAmerica Laboratories, Inc.
TestAmerica Pensacola
3355 McLemore Drive
Pensacola, FL 32514
Tel: (850)474-1001

TestAmerica Job ID: 400-139103-1
Client Project/Site: ElPaso CGP Company, LLC - JohnstonFed #4

For:
Stantec Consulting Services Inc
1560 Broadway
Suite 1800
Denver, Colorado 80202

Attn: Ms. Sarah Gardner

Debra A Vergin

Authorized for release by:
6/20/2017 5:06:06 PM
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Designee for

Carol Webb, Project Manager II
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Client: Stantec Consulting Services Inc
Project/Site: ElPaso CGP Company, LLC - JohnstonFed #4

TestAmerica Job ID: 400-139103-1

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

Case Narrative

Client: Stantec Consulting Services Inc
Project/Site: ElPaso CGP Company, LLC - JohnstonFed #4

TestAmerica Job ID: 400-139103-1

Job ID: 400-139103-1

Laboratory: TestAmerica Pensacola

Narrative

Job Narrative
400-139103-1

Comments
No additional comments.

Receipt
The samples were received on 6/10/2017 8:18 AM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperature of the cooler at receipt was 3.2º C.

GC VOA
No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

VOA Prep
No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Detection Summary

Client: Stantec Consulting Services Inc
Project/Site: ElPaso CGP Company, LLC - JohnstonFed #4

TestAmerica Job ID: 400-139103-1

Client Sample ID: MW-6 — Lab Sample ID: 400-139103-1

Analyte	Result	Qualifier	RL		Unit	Dil Fac	D	Method	Prep Type
Benzene	36		1.0		ug/L	1		8021B	Total/NA
Xylenes, Total	15		5.0		ug/L	1		8021B	Total/NA

Client Sample ID: MW-7 — Lab Sample ID: 400-139103-2

No Detections.

Client Sample ID: MW-9 — Lab Sample ID: 400-139103-3

Analyte	Result	Qualifier	RL		Unit	Dil Fac	D	Method	Prep Type
Benzene	29		1.0		ug/L	1		8021B	Total/NA
Toluene	11		5.0		ug/L	1		8021B	Total/NA
Xylenes, Total	5.4		5.0		ug/L	1		8021B	Total/NA

Client Sample ID: MW-13 — Lab Sample ID: 400-139103-4

Analyte	Result	Qualifier	RL		Unit	Dil Fac	D	Method	Prep Type
Benzene	3.4		1.0		ug/L	1		8021B	Total/NA

Client Sample ID: MW-15 — Lab Sample ID: 400-139103-5

Analyte	Result	Qualifier	RL		Unit	Dil Fac	D	Method	Prep Type
Benzene	19		1.0		ug/L	1		8021B	Total/NA
Ethylbenzene	3.0		1.0		ug/L	1		8021B	Total/NA
Xylenes, Total	15		5.0		ug/L	1		8021B	Total/NA

Client Sample ID: MW-16 — Lab Sample ID: 400-139103-6

No Detections.

Client Sample ID: MW-18 — Lab Sample ID: 400-139103-7

Analyte	Result	Qualifier	RL		Unit	Dil Fac	D	Method	Prep Type
Benzene	8.7		1.0		ug/L	1		8021B	Total/NA
Ethylbenzene	3.5		1.0		ug/L	1		8021B	Total/NA
Xylenes, Total	24		5.0		ug/L	1		8021B	Total/NA

Client Sample ID: MW-19 — Lab Sample ID: 400-139103-8

Analyte	Result	Qualifier	RL		Unit	Dil Fac	D	Method	Prep Type
Benzene	64		1.0		ug/L	1		8021B	Total/NA
Ethylbenzene	7.3		1.0		ug/L	1		8021B	Total/NA
Toluene	31		5.0		ug/L	1		8021B	Total/NA
Xylenes, Total	55		5.0		ug/L	1		8021B	Total/NA

Client Sample ID: MW-20 — Lab Sample ID: 400-139103-9

Analyte	Result	Qualifier	RL		Unit	Dil Fac	D	Method	Prep Type
Benzene	42		1.0		ug/L	1		8021B	Total/NA
Ethylbenzene	1.1		1.0		ug/L	1		8021B	Total/NA
Toluene	11		5.0		ug/L	1		8021B	Total/NA

This Detection Summary does not include radiochemical test results.

Detection Summary

Client: Stantec Consulting Services Inc
Project/Site: ElPaso CGP Company, LLC - JohnstonFed #4

TestAmerica Job ID: 400-139103-1

Client Sample ID: MW-20 (Continued)

Lab Sample ID: 400-139103-9

Analyte	Result	Qualifier	RL		Unit	Dil Fac	D	Method	Prep Type
Xylenes, Total	37		5.0		ug/L	1		8021B	Total/NA

Client Sample ID: TRIP BLANK

Lab Sample ID: 400-139103-10

No Detections.

This Detection Summary does not include radiochemical test results.

Sample Summary

Client: Stantec Consulting Services Inc
Project/Site: ElPaso CGP Company, LLC - JohnstonFed #4

TestAmerica Job ID: 400-139103-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
400-139103-1	MW-6	Water	06/09/17 10:00	06/10/17 08:18
400-139103-2	MW-7	Water	06/09/17 08:50	06/10/17 08:18
400-139103-3	MW-9	Water	06/09/17 09:00	06/10/17 08:18
400-139103-4	MW-13	Water	06/09/17 09:10	06/10/17 08:18
400-139103-5	MW-15	Water	06/09/17 09:45	06/10/17 08:18
400-139103-6	MW-16	Water	06/09/17 08:40	06/10/17 08:18
400-139103-7	MW-18	Water	06/09/17 09:30	06/10/17 08:18
400-139103-8	MW-19	Water	06/09/17 08:30	06/10/17 08:18
400-139103-9	MW-20	Water	06/09/17 09:20	06/10/17 08:18
400-139103-10	TRIP BLANK	Water	06/09/17 08:00	06/10/17 08:18

Client: Stantec Consulting Services Inc
Project/Site: ElPaso CGP Company, LLC - JohnstonFed #4

TestAmerica Job ID: 400-139103-1

Client Sample ID: MW-6
Date Collected: 06/09/17 10:00
Date Received: 06/10/17 08:18

Lab Sample ID: 400-139103-1
Matrix: Water

Method: 8021B - Volatile Organic Compounds (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Benzene	**36**		1.0		ug/L			06/14/17 19:02	1
Ethylbenzene	<1.0		1.0		ug/L			06/14/17 19:02	1
Toluene	<5.0		5.0		ug/L			06/14/17 19:02	1
Xylenes, Total	**15**		5.0		ug/L			06/14/17 19:02	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
a,a,a-Trifluorotoluene (pid)	*96*		*78 - 124*		*06/14/17 19:02*	*1*

Client: Stantec Consulting Services Inc
Project/Site: ElPaso CGP Company, LLC - JohnstonFed #4

TestAmerica Job ID: 400-139103-1

Client Sample ID: MW-7
Date Collected: 06/09/17 08:50
Date Received: 06/10/17 08:18

Lab Sample ID: 400-139103-2
Matrix: Water

Method: 8021B - Volatile Organic Compounds (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Benzene	<1.0		1.0		ug/L			06/14/17 19:38	1
Ethylbenzene	<1.0		1.0		ug/L			06/14/17 19:38	1
Toluene	<5.0		5.0		ug/L			06/14/17 19:38	1
Xylenes, Total	<5.0		5.0		ug/L			06/14/17 19:38	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
a,a,a-Trifluorotoluene (pid)	*98*		*78 - 124*		*06/14/17 19:38*	*1*

Client: Stantec Consulting Services Inc
Project/Site: ElPaso CGP Company, LLC - JohnstonFed #4

TestAmerica Job ID: 400-139103-1

Client Sample ID: MW-9
Date Collected: 06/09/17 09:00
Date Received: 06/10/17 08:18

Lab Sample ID: 400-139103-3
Matrix: Water

Method: 8021B - Volatile Organic Compounds (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Benzene	**29**		1.0		ug/L			06/14/17 20:13	1
Ethylbenzene	<1.0		1.0		ug/L			06/14/17 20:13	1
Toluene	**11**		5.0		ug/L			06/14/17 20:13	1
Xylenes, Total	**5.4**		5.0		ug/L			06/14/17 20:13	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
a,a,a-Trifluorotoluene (pid)	*94*		*78 - 124*		*06/14/17 20:13*	*1*

Client: Stantec Consulting Services Inc
Project/Site: ElPaso CGP Company, LLC - JohnstonFed #4

TestAmerica Job ID: 400-139103-1

Client Sample ID: MW-13
Date Collected: 06/09/17 09:10
Date Received: 06/10/17 08:18

Lab Sample ID: 400-139103-4
Matrix: Water

Method: 8021B - Volatile Organic Compounds (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Benzene	**3.4**		1.0		ug/L			06/14/17 20:49	1
Ethylbenzene	<1.0		1.0		ug/L			06/14/17 20:49	1
Toluene	<5.0		5.0		ug/L			06/14/17 20:49	1
Xylenes, Total	<5.0		5.0		ug/L			06/14/17 20:49	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
a,a,a-Trifluorotoluene (pid)	*94*		*78 - 124*		*06/14/17 20:49*	*1*

Client: Stantec Consulting Services Inc
Project/Site: ElPaso CGP Company, LLC - JohnstonFed #4

TestAmerica Job ID: 400-139103-1

Client Sample ID: MW-15
Date Collected: 06/09/17 09:45
Date Received: 06/10/17 08:18

Lab Sample ID: 400-139103-5
Matrix: Water

Method: 8021B - Volatile Organic Compounds (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Benzene	**19**		1.0		ug/L			06/14/17 21:24	1
Ethylbenzene	**3.0**		1.0		ug/L			06/14/17 21:24	1
Toluene	<5.0		5.0		ug/L			06/14/17 21:24	1
Xylenes, Total	**15**		5.0		ug/L			06/14/17 21:24	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
a,a,a-Trifluorotoluene (pid)	*90*		*78 - 124*		*06/14/17 21:24*	*1*

Client: Stantec Consulting Services Inc
Project/Site: ElPaso CGP Company, LLC - JohnstonFed #4

TestAmerica Job ID: 400-139103-1

Client Sample ID: MW-16
Date Collected: 06/09/17 08:40
Date Received: 06/10/17 08:18

Lab Sample ID: 400-139103-6
Matrix: Water

Method: 8021B - Volatile Organic Compounds (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Benzene	<1.0		1.0		ug/L			06/14/17 22:00	1
Ethylbenzene	<1.0		1.0		ug/L			06/14/17 22:00	1
Toluene	<5.0		5.0		ug/L			06/14/17 22:00	1
Xylenes, Total	<5.0		5.0		ug/L			06/14/17 22:00	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
a,a,a-Trifluorotoluene (pid)	*93*		*78 - 124*		*06/14/17 22:00*	*1*

Client: Stantec Consulting Services Inc
Project/Site: ElPaso CGP Company, LLC - JohnstonFed #4

TestAmerica Job ID: 400-139103-1

Client Sample ID: MW-18
Date Collected: 06/09/17 09:30
Date Received: 06/10/17 08:18

Lab Sample ID: 400-139103-7
Matrix: Water

Method: 8021B - Volatile Organic Compounds (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Benzene	**8.7**		1.0		ug/L			06/16/17 00:27	1
Ethylbenzene	**3.5**		1.0		ug/L			06/16/17 00:27	1
Toluene	<5.0		5.0		ug/L			06/16/17 00:27	1
Xylenes, Total	**24**		5.0		ug/L			06/16/17 00:27	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
a,a,a-Trifluorotoluene (pid)	*103*		*78 - 124*		*06/16/17 00:27*	*1*

Client: Stantec Consulting Services Inc
Project/Site: ElPaso CGP Company, LLC - JohnstonFed #4

TestAmerica Job ID: 400-139103-1

Client Sample ID: MW-19
Date Collected: 06/09/17 08:30
Date Received: 06/10/17 08:18

Lab Sample ID: 400-139103-8
Matrix: Water

Method: 8021B - Volatile Organic Compounds (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Benzene	64		1.0		ug/L			06/16/17 02:14	1
Ethylbenzene	7.3		1.0		ug/L			06/16/17 02:14	1
Toluene	31		5.0		ug/L			06/16/17 02:14	1
Xylenes, Total	55		5.0		ug/L			06/16/17 02:14	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
a,a,a-Trifluorotoluene (pid)	*104*		*78 - 124*		*06/16/17 02:14*	*1*

Client: Stantec Consulting Services Inc
Project/Site: ElPaso CGP Company, LLC - JohnstonFed #4

TestAmerica Job ID: 400-139103-1

Client Sample ID: MW-20
Date Collected: 06/09/17 09:20
Date Received: 06/10/17 08:18

Lab Sample ID: 400-139103-9
Matrix: Water

Method: 8021B - Volatile Organic Compounds (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Benzene	42		1.0		ug/L			06/16/17 02:49	1
Ethylbenzene	1.1		1.0		ug/L			06/16/17 02:49	1
Toluene	11		5.0		ug/L			06/16/17 02:49	1
Xylenes, Total	37		5.0		ug/L			06/16/17 02:49	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
a,a,a-Trifluorotoluene (pid)	*106*		*78 - 124*		*06/16/17 02:49*	*1*

Client: Stantec Consulting Services Inc
Project/Site: ElPaso CGP Company, LLC - JohnstonFed #4

TestAmerica Job ID: 400-139103-1

Client Sample ID: TRIP BLANK
Date Collected: 06/09/17 08:00
Date Received: 06/10/17 08:18

Lab Sample ID: 400-139103-10
Matrix: Water

Method: 8021B - Volatile Organic Compounds (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Benzene	<1.0		1.0		ug/L			06/16/17 03:24	1
Ethylbenzene	<1.0		1.0		ug/L			06/16/17 03:24	1
Toluene	<5.0		5.0		ug/L			06/16/17 03:24	1
Xylenes, Total	<5.0		5.0		ug/L			06/16/17 03:24	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
a,a,a-Trifluorotoluene (pid)	*98*		*78 - 124*		*06/16/17 03:24*	*1*

GC VOA

Analysis Batch: 356860

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
400-139103-1	MW-6	Total/NA	Water	8021B	
400-139103-2	MW-7	Total/NA	Water	8021B	
400-139103-3	MW-9	Total/NA	Water	8021B	
400-139103-4	MW-13	Total/NA	Water	8021B	
400-139103-5	MW-15	Total/NA	Water	8021B	
400-139103-6	MW-16	Total/NA	Water	8021B	
MB 400-356860/34	Method Blank	Total/NA	Water	8021B	
LCS 400-356860/1033	Lab Control Sample	Total/NA	Water	8021B	
400-139057-A-1 MS	Matrix Spike	Total/NA	Water	8021B	
400-139057-A-1 MSD	Matrix Spike Duplicate	Total/NA	Water	8021B	

Analysis Batch: 356986

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
400-139103-7	MW-18	Total/NA	Water	8021B	
400-139103-8	MW-19	Total/NA	Water	8021B	
400-139103-9	MW-20	Total/NA	Water	8021B	
400-139103-10	TRIP BLANK	Total/NA	Water	8021B	
MB 400-356986/4	Method Blank	Total/NA	Water	8021B	
LCS 400-356986/1002	Lab Control Sample	Total/NA	Water	8021B	
400-139102-A-1 MS	Matrix Spike	Total/NA	Water	8021B	
400-139102-A-1 MSD	Matrix Spike Duplicate	Total/NA	Water	8021B	

Method: 8021B - Volatile Organic Compounds (GC)

Lab Sample ID: MB 400-356860/34
Matrix: Water
Analysis Batch: 356860

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Benzene	<1.0		1.0		ug/L			06/14/17 10:04	1
Ethylbenzene	<1.0		1.0		ug/L			06/14/17 10:04	1
Toluene	<5.0		5.0		ug/L			06/14/17 10:04	1
Xylenes, Total	<5.0		5.0		ug/L			06/14/17 10:04	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
a,a,a-Trifluorotoluene (pid)	*94*		*78 - 124*		*06/14/17 10:04*	*1*

Lab Sample ID: LCS 400-356860/1033
Matrix: Water
Analysis Batch: 356860

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
Benzene			50.0	49.5		ug/L		99	85 - 115		
Ethylbenzene			50.0	50.6		ug/L		101	85 - 115		
Toluene			50.0	50.7		ug/L		101	85 - 115		
Xylenes, Total			150	150		ug/L		100	85 - 115		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
a,a,a-Trifluorotoluene (pid)	*97*		*78 - 124*

Lab Sample ID: 400-139057-A-1 MS
Matrix: Water
Analysis Batch: 356860

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits		
Benzene	<1.0		50.0	49.5		ug/L		99	44 - 150		
Ethylbenzene	<1.0		50.0	51.6		ug/L		103	70 - 142		
Toluene	<5.0		50.0	50.9		ug/L		102	69 - 136		
Xylenes, Total	<5.0		150	154		ug/L		103	68 - 142		

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
a,a,a-Trifluorotoluene (pid)	*97*		*78 - 124*

Lab Sample ID: 400-139057-A-1 MSD
Matrix: Water
Analysis Batch: 356860

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Benzene	<1.0		50.0	48.7		ug/L		97	44 - 150	2	16
Ethylbenzene	<1.0		50.0	50.9		ug/L		102	70 - 142	1	16
Toluene	<5.0		50.0	50.8		ug/L		102	69 - 136	0	16
Xylenes, Total	<5.0		150	153		ug/L		102	68 - 142	1	15

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
a,a,a-Trifluorotoluene (pid)	*95*		*78 - 124*

Method: 8021B - Volatile Organic Compounds (GC) (Continued)

Lab Sample ID: MB 400-356986/4
Matrix: Water
Analysis Batch: 356986

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Benzene	<1.0		1.0		ug/L			06/15/17 13:13	1
Ethylbenzene	<1.0		1.0		ug/L			06/15/17 13:13	1
Toluene	<5.0		5.0		ug/L			06/15/17 13:13	1
Xylenes, Total	<5.0		5.0		ug/L			06/15/17 13:13	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
a,a,a-Trifluorotoluene (pid)	*95*		*78 - 124*		*06/15/17 13:13*	*1*

Lab Sample ID: LCS 400-356986/1002
Matrix: Water
Analysis Batch: 356986

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
Benzene			50.0	44.0		ug/L		88	85 - 115		
Ethylbenzene			50.0	45.1		ug/L		90	85 - 115		
Toluene			50.0	45.2		ug/L		90	85 - 115		
Xylenes, Total			150	135		ug/L		90	85 - 115		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
a,a,a-Trifluorotoluene (pid)	*101*		*78 - 124*

Lab Sample ID: 400-139102-A-1 MS
Matrix: Water
Analysis Batch: 356986

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits		
Benzene	<1.0		50.0	54.7		ug/L		109	44 - 150		
Ethylbenzene	<1.0		50.0	56.2		ug/L		112	70 - 142		
Toluene	<5.0		50.0	55.5		ug/L		111	69 - 136		
Xylenes, Total	<5.0		150	169		ug/L		113	68 - 142		

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
a,a,a-Trifluorotoluene (pid)	*97*		*78 - 124*

Lab Sample ID: 400-139102-A-1 MSD
Matrix: Water
Analysis Batch: 356986

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Benzene	<1.0		50.0	60.9		ug/L		122	44 - 150	11	16
Ethylbenzene	<1.0		50.0	61.9		ug/L		124	70 - 142	10	16
Toluene	<5.0		50.0	61.5		ug/L		123	69 - 136	10	16
Xylenes, Total	<5.0		150	186		ug/L		124	68 - 142	9	15

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
a,a,a-Trifluorotoluene (pid)	*103*		*78 - 124*

Lab Chronicle

Client: Stantec Consulting Services Inc
Project/Site: ElPaso CGP Company, LLC - JohnstonFed #4

TestAmerica Job ID: 400-139103-1

Client Sample ID: MW-6
Date Collected: 06/09/17 10:00
Date Received: 06/10/17 08:18

Lab Sample ID: 400-139103-1
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8021B		1	5 mL	5 mL	356860	06/14/17 19:02	GRK	TAL PEN
	Instrument ID: CH_JOAN									

Client Sample ID: MW-7
Date Collected: 06/09/17 08:50
Date Received: 06/10/17 08:18

Lab Sample ID: 400-139103-2
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8021B		1	5 mL	5 mL	356860	06/14/17 19:38	GRK	TAL PEN
	Instrument ID: CH_JOAN									

Client Sample ID: MW-9
Date Collected: 06/09/17 09:00
Date Received: 06/10/17 08:18

Lab Sample ID: 400-139103-3
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8021B		1	5 mL	5 mL	356860	06/14/17 20:13	GRK	TAL PEN
	Instrument ID: CH_JOAN									

Client Sample ID: MW-13
Date Collected: 06/09/17 09:10
Date Received: 06/10/17 08:18

Lab Sample ID: 400-139103-4
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8021B		1	5 mL	5 mL	356860	06/14/17 20:49	GRK	TAL PEN
	Instrument ID: CH_JOAN									

Client Sample ID: MW-15
Date Collected: 06/09/17 09:45
Date Received: 06/10/17 08:18

Lab Sample ID: 400-139103-5
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8021B		1	5 mL	5 mL	356860	06/14/17 21:24	GRK	TAL PEN
	Instrument ID: CH_JOAN									

Client Sample ID: MW-16
Date Collected: 06/09/17 08:40
Date Received: 06/10/17 08:18

Lab Sample ID: 400-139103-6
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8021B		1	5 mL	5 mL	356860	06/14/17 22:00	GRK	TAL PEN
	Instrument ID: CH_JOAN									

Lab Chronicle

Client: Stantec Consulting Services Inc
Project/Site: ElPaso CGP Company, LLC - JohnstonFed #4

TestAmerica Job ID: 400-139103-1

Client Sample ID: MW-18

Lab Sample ID: 400-139103-7

Date Collected: 06/09/17 09:30
Matrix: Water
Date Received: 06/10/17 08:18

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8021B		1	5 mL	5 mL	356986	06/16/17 00:27	GRK	TAL PEN
	Instrument ID: CH_JOAN									

Client Sample ID: MW-19

Lab Sample ID: 400-139103-8

Date Collected: 06/09/17 08:30
Matrix: Water
Date Received: 06/10/17 08:18

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8021B		1	5 mL	5 mL	356986	06/16/17 02:14	GRK	TAL PEN
	Instrument ID: CH_JOAN									

Client Sample ID: MW-20

Lab Sample ID: 400-139103-9

Date Collected: 06/09/17 09:20
Matrix: Water
Date Received: 06/10/17 08:18

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8021B		1	5 mL	5 mL	356986	06/16/17 02:49	GRK	TAL PEN
	Instrument ID: CH_JOAN									

Client Sample ID: TRIP BLANK

Lab Sample ID: 400-139103-10

Date Collected: 06/09/17 08:00
Matrix: Water
Date Received: 06/10/17 08:18

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8021B		1	5 mL	5 mL	356986	06/16/17 03:24	GRK	TAL PEN
	Instrument ID: CH_JOAN									

Laboratory References:

TAL PEN = TestAmerica Pensacola, 3355 McLemore Drive, Pensacola, FL 32514, TEL (850)474-1001

Accreditation/Certification Summary

Client: Stantec Consulting Services Inc
TestAmerica Job ID: 400-139103-1
Project/Site: ElPaso CGP Company, LLC - JohnstonFed #4

Laboratory: TestAmerica Pensacola

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	EPA Region	Identification Number	Expiration Date
Alabama	State Program	4	40150	06-30-17
Arizona	State Program	9	AZ0710	01-11-18
Arkansas DEQ	State Program	6	88-0689	09-01-17
California	ELAP	9	2510	03-31-18
Florida	NELAP	4	E81010	06-30-18
Georgia	State Program	4	N/A	06-30-17
Illinois	NELAP	5	200041	10-09-17
Iowa	State Program	7	367	08-01-18
Kansas	NELAP	7	E-10253	10-31-17
Kentucky (UST)	State Program	4	53	06-30-17
Kentucky (WW)	State Program	4	98030	12-31-17
L-A-B	ISO/IEC 17025		L2471	02-22-20
Louisiana	NELAP	6	30976	06-30-18
Louisiana (DW)	NELAP	6	LA170005	12-31-17
Maryland	State Program	3	233	09-30-17
Massachusetts	State Program	1	M-FL094	06-30-17
Michigan	State Program	5	9912	06-30-17
New Jersey	NELAP	2	FL006	06-30-17
North Carolina (WW/SW)	State Program	4	314	12-31-17
Oklahoma	State Program	6	9810	08-31-17
Pennsylvania	NELAP	3	68-00467	01-31-18
Rhode Island	State Program	1	LAO00307	12-30-17
South Carolina	State Program	4	96026	06-30-17
Tennessee	State Program	4	TN02907	06-30-17
Texas	NELAP	6	T104704286-16-10	09-30-17
USDA	Federal		P330-16-00172	05-24-19
Virginia	NELAP	3	460166	06-14-18
Washington	State Program	10	C915	05-15-18
West Virginia DEP	State Program	3	136	06-30-17

Method Summary

Client: Stantec Consulting Services Inc
Project/Site: ElPaso CGP Company, LLC - JohnstonFed #4

TestAmerica Job ID: 400-139103-1

Method	Method Description	Protocol	Laboratory
8021B	Volatile Organic Compounds (GC)	SW846	TAL PEN

Protocol References:

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

TAL PEN = TestAmerica Pensacola, 3355 McLemore Drive, Pensacola, FL 32514, TEL (850)474-1001

TestAmerica Pensacola
3355 McLemore Drive
Pensacola, FL 32514
Phone (850) 474-1001 Fax (850) 478-2671

Chain of Custody Record

400-139103 COC

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THE LEADER IN ENVIRONMENTAL TESTING

Client Information	Sampler: S. Gardner / J. Garvey	Lab PM: Webb, Carol M	Carrier Tracking No(s):	COC No: 400-65862-26937.1
Client Contact: Ms. Sarah Gardner	Phone: 303 291 2239	E-Mail: carol.webb@testamericainc.com		Page: Page 1 of 1
Company: Stantec Consulting Services Inc				Job #:
Address: 1560 Broadway Suite 1800	Due Date Requested:			
City: Denver	TAT Requested (days): Standard			
State, Zip: CO, 80202	PO #: Purchase Order Requested			
Phone: 303-291-2239(Tel)	WO #:			
Email: sarah.gardner@mwhglobal.com	Project #: 40005479			
Project Name: Johnston Fed #4	SSOW#:			
Site: Johnston Fed #4				

Analysis Requested

Preservation Codes:

A - HCL, B - NaOH, C - Zn Acetate, D - Nitric Acid, E - NaHSO4, F - MeOH, G - Amchlor, H - Ascorbic Acid, I - Ice, J - DI Water, K - EDTA, L - EDA, M - Hexane, N - None, O - AsNaO2, P - Na2O4S, Q - Na2SO3, R - Na2S2O3, S - H2SO4, T - TSP Dodecahydrate, U - Acetone, V - MCAA, W - pH 4-5, Z - other (specify)

Other:

Sample Identification	Sample Date	Sample Time	Sample Type (C=comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	8021B - BTEX 8021	Total Number of containers	Special Instructions/Note:
			Preservation Code:				A		
mw-6	June 9, 2017	1000	G	W	N	N	2	2	
mw-7	June 9, 2017	850	G	W	N	N	2	2	
mw-9	June 9, 2017	900	G	W	N	N	2	2	
mw-13	June 9, 2017	910	G	W	N	N	2	2	
mw-15	June 9, 2017	945	G	W	N	N	2	2	
mw-16	June 9, 2017	840	G	W	N	N	2	2	
mw-18	June 9, 2017	930	G	W	N	N	2	2	
mw-19	June 9, 2017	830	G	W	N	N	2	2	
mw-20	June 9, 2017	920	G	W	N	N	2	2	
TRIP BLANK	June 9, 2017	800	—	W	N	N	2	2	

Possible Hazard Identification
☒ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown ☐ Radiological

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
☐ Return To Client ☒ Disposal By Lab ☐ Archive For _____ Months

Deliverable Requested: I, II, III, IV, Other (specify)

Special Instructions/QC Requirements:

Empty Kit Relinquished by:	Date:	Time:	Method of Shipment:

	Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
1	[signature]	6/9/2017 1500	Stantec	[signature]	6/10/17 0818	TA TAL
2	Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
3	Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company

Custody Seals Intact: Δ Yes Δ No | Custody Seal No.: | Cooler Temperature(s) °C and Other Remarks: 3.2°C IR 2

Login Sample Receipt Checklist

Client: Stantec Consulting Services Inc

Job Number: 400-139103-1

Login Number: 139103

List Source: TestAmerica Pensacola

List Number: 1

Creator: Perez, Trina M

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	N/A	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	N/A	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	3.2°C IR-2
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

ANALYTICAL REPORT

TestAmerica Laboratories, Inc.
TestAmerica Pensacola
3355 McLemore Drive
Pensacola, FL 32514
Tel: (850)474-1001

TestAmerica Job ID: 400-145968-1
Client Project/Site: El Paso CGP Company - Johnston Fed 4

For:
Stantec Consulting Services Inc
1560 Broadway
Suite 1800
Denver, Colorado 80202

Attn: Ms. Sarah Gardner

Madonna Myers

Authorized for release by:
11/20/2017 12:14:29 PM
Madonna Myers, Project Manager II
(615)796-1870
madonna.myers@testamericainc.com

Designee for

Carol Webb, Project Manager II
(850)471-6250
carol.webb@testamericainc.com

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Definitions/Glossary

Client: Stantec Consulting Services Inc
Project/Site: El Paso CGP Company - Johnston Fed 4

TestAmerica Job ID: 400-145968-1

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
X	Surrogate is outside control limits

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

Job ID: 400-145968-1

Laboratory: TestAmerica Pensacola

Narrative

Job Narrative
400-145968-1

Comments
No additional comments.

Receipt
The samples were received on 11/14/2017 9:01 AM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperature of the cooler at receipt was 1.9º C.

Receipt Exceptions

The Chain-of-Custody (COC) was incomplete as received and/or improperly completed. Per client instructions, method 8260 was used in place of method 8021.

GC/MS VOA
Method(s) 8260C: Surrogate recovery for the following sample was outside control limits: MW-19 (400-145968-2). Evidence of matrix interference is present; therefore, re-extraction and/or re-analysis was not performed.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

VOA Prep
No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Detection Summary

Client: Stantec Consulting Services Inc
Project/Site: El Paso CGP Company - Johnston Fed 4

TestAmerica Job ID: 400-145968-1

Client Sample ID: MW-6 — Lab Sample ID: 400-145968-1

Analyte	Result	Qualifier	RL		Unit	Dil Fac	D	Method	Prep Type
Benzene	66		1.0		ug/L	1		8260C	Total/NA
Toluene	20		1.0		ug/L	1		8260C	Total/NA
Ethylbenzene	9.5		1.0		ug/L	1		8260C	Total/NA
Xylenes, Total	83		10		ug/L	1		8260C	Total/NA

Client Sample ID: MW-19 — Lab Sample ID: 400-145968-2

Analyte	Result	Qualifier	RL		Unit	Dil Fac	D	Method	Prep Type
Benzene	68		1.0		ug/L	1		8260C	Total/NA
Toluene	20		1.0		ug/L	1		8260C	Total/NA
Ethylbenzene	8.5		1.0		ug/L	1		8260C	Total/NA
Xylenes, Total	62		10		ug/L	1		8260C	Total/NA

Client Sample ID: MW-9 — Lab Sample ID: 400-145968-3

Analyte	Result	Qualifier	RL		Unit	Dil Fac	D	Method	Prep Type
Benzene	130		1.0		ug/L	1		8260C	Total/NA
Toluene	42		1.0		ug/L	1		8260C	Total/NA
Ethylbenzene	2.1		1.0		ug/L	1		8260C	Total/NA
Xylenes, Total	10		10		ug/L	1		8260C	Total/NA

Client Sample ID: MW-20 — Lab Sample ID: 400-145968-4

Analyte	Result	Qualifier	RL		Unit	Dil Fac	D	Method	Prep Type
Benzene	58		1.0		ug/L	1		8260C	Total/NA
Toluene	25		1.0		ug/L	1		8260C	Total/NA
Ethylbenzene	1.3		1.0		ug/L	1		8260C	Total/NA
Xylenes, Total	17		10		ug/L	1		8260C	Total/NA

Client Sample ID: MW-13 — Lab Sample ID: 400-145968-5

No Detections.

Client Sample ID: MW-15 — Lab Sample ID: 400-145968-6

Analyte	Result	Qualifier	RL		Unit	Dil Fac	D	Method	Prep Type
Benzene	1100		10		ug/L	10		8260C	Total/NA
Toluene	180		10		ug/L	10		8260C	Total/NA
Ethylbenzene	71		10		ug/L	10		8260C	Total/NA
Xylenes, Total	290		100		ug/L	10		8260C	Total/NA

Client Sample ID: MW-16 — Lab Sample ID: 400-145968-7

Analyte	Result	Qualifier	RL		Unit	Dil Fac	D	Method	Prep Type
Benzene	29		1.0		ug/L	1		8260C	Total/NA
Toluene	2.3		1.0		ug/L	1		8260C	Total/NA
Ethylbenzene	2.8		1.0		ug/L	1		8260C	Total/NA
Xylenes, Total	14		10		ug/L	1		8260C	Total/NA

This Detection Summary does not include radiochemical test results.

Detection Summary

Client: Stantec Consulting Services Inc
Project/Site: El Paso CGP Company - Johnston Fed 4

TestAmerica Job ID: 400-145968-1

Client Sample ID: MW-7 — Lab Sample ID: 400-145968-8

No Detections.

Client Sample ID: MW-18 — Lab Sample ID: 400-145968-9

No Detections.

Client Sample ID: TRIP BLANK — Lab Sample ID: 400-145968-10

No Detections.

This Detection Summary does not include radiochemical test results.

Sample Summary

Client: Stantec Consulting Services Inc
Project/Site: El Paso CGP Company - Johnston Fed 4

TestAmerica Job ID: 400-145968-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
400-145968-1	MW-6	Water	11/12/17 09:45	11/14/17 09:01
400-145968-2	MW-19	Water	11/12/17 09:38	11/14/17 09:01
400-145968-3	MW-9	Water	11/12/17 09:32	11/14/17 09:01
400-145968-4	MW-20	Water	11/12/17 09:26	11/14/17 09:01
400-145968-5	MW-13	Water	11/12/17 09:19	11/14/17 09:01
400-145968-6	MW-15	Water	11/12/17 09:13	11/14/17 09:01
400-145968-7	MW-16	Water	11/12/17 09:06	11/14/17 09:01
400-145968-8	MW-7	Water	11/12/17 08:58	11/14/17 09:01
400-145968-9	MW-18	Water	11/12/17 08:54	11/14/17 09:01
400-145968-10	TRIP BLANK	Water	11/12/17 08:50	11/14/17 09:01

Client: Stantec Consulting Services Inc
Project/Site: El Paso CGP Company - Johnston Fed 4

TestAmerica Job ID: 400-145968-1

Client Sample ID: MW-6
Date Collected: 11/12/17 09:45
Date Received: 11/14/17 09:01

Lab Sample ID: 400-145968-1
Matrix: Water

Method: 8260C - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Benzene	66		1.0		ug/L			11/17/17 14:07	1
Toluene	20		1.0		ug/L			11/17/17 14:07	1
Ethylbenzene	9.5		1.0		ug/L			11/17/17 14:07	1
Xylenes, Total	83		10		ug/L			11/17/17 14:07	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Dibromofluoromethane	*105*		*81 - 121*		*11/17/17 14:07*	*1*
4-Bromofluorobenzene	*112*		*78 - 118*		*11/17/17 14:07*	*1*
Toluene-d8 (Surr)	*106*		*80 - 120*		*11/17/17 14:07*	*1*

Client: Stantec Consulting Services Inc
Project/Site: El Paso CGP Company - Johnston Fed 4

TestAmerica Job ID: 400-145968-1

Client Sample ID: MW-19
Date Collected: 11/12/17 09:38
Date Received: 11/14/17 09:01

Lab Sample ID: 400-145968-2
Matrix: Water

Method: 8260C - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Benzene	68		1.0		ug/L			11/17/17 14:29	1
Toluene	20		1.0		ug/L			11/17/17 14:29	1
Ethylbenzene	8.5		1.0		ug/L			11/17/17 14:29	1
Xylenes, Total	62		10		ug/L			11/17/17 14:29	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Dibromofluoromethane	*102*		*81 - 121*		*11/17/17 14:29*	*1*
4-Bromofluorobenzene	*122*	*X*	*78 - 118*		*11/17/17 14:29*	*1*
Toluene-d8 (Surr)	*104*		*80 - 120*		*11/17/17 14:29*	*1*

Client: Stantec Consulting Services Inc
Project/Site: El Paso CGP Company - Johnston Fed 4

TestAmerica Job ID: 400-145968-1

Client Sample ID: MW-9
Date Collected: 11/12/17 09:32
Date Received: 11/14/17 09:01

Lab Sample ID: 400-145968-3
Matrix: Water

Method: 8260C - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Benzene	130		1.0		ug/L			11/17/17 14:51	1
Toluene	42		1.0		ug/L			11/17/17 14:51	1
Ethylbenzene	2.1		1.0		ug/L			11/17/17 14:51	1
Xylenes, Total	10		10		ug/L			11/17/17 14:51	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Dibromofluoromethane	*102*		*81 - 121*		*11/17/17 14:51*	*1*
4-Bromofluorobenzene	*116*		*78 - 118*		*11/17/17 14:51*	*1*
Toluene-d8 (Surr)	*105*		*80 - 120*		*11/17/17 14:51*	*1*

Client Sample ID: MW-20
Date Collected: 11/12/17 09:26
Date Received: 11/14/17 09:01

Lab Sample ID: 400-145968-4
Matrix: Water

Method: 8260C - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Benzene	58		1.0		ug/L			11/17/17 15:13	1
Toluene	25		1.0		ug/L			11/17/17 15:13	1
Ethylbenzene	1.3		1.0		ug/L			11/17/17 15:13	1
Xylenes, Total	17		10		ug/L			11/17/17 15:13	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Dibromofluoromethane	*100*		*81 - 121*		*11/17/17 15:13*	*1*
4-Bromofluorobenzene	*114*		*78 - 118*		*11/17/17 15:13*	*1*
Toluene-d8 (Surr)	*104*		*80 - 120*		*11/17/17 15:13*	*1*

Client: Stantec Consulting Services Inc
Project/Site: El Paso CGP Company - Johnston Fed 4

TestAmerica Job ID: 400-145968-1

Client Sample ID: MW-13
Date Collected: 11/12/17 09:19
Date Received: 11/14/17 09:01

Lab Sample ID: 400-145968-5
Matrix: Water

Method: 8260C - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Benzene	<1.0		1.0		ug/L			11/17/17 11:54	1
Toluene	<1.0		1.0		ug/L			11/17/17 11:54	1
Ethylbenzene	<1.0		1.0		ug/L			11/17/17 11:54	1
Xylenes, Total	<10		10		ug/L			11/17/17 11:54	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Dibromofluoromethane	*105*		*81 - 121*		*11/17/17 11:54*	*1*
4-Bromofluorobenzene	*116*		*78 - 118*		*11/17/17 11:54*	*1*
Toluene-d8 (Surr)	*107*		*80 - 120*		*11/17/17 11:54*	*1*

Client Sample ID: MW-15
Date Collected: 11/12/17 09:13
Date Received: 11/14/17 09:01

Lab Sample ID: 400-145968-6
Matrix: Water

Method: 8260C - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Benzene	1100		10		ug/L			11/17/17 17:48	10
Toluene	180		10		ug/L			11/17/17 17:48	10
Ethylbenzene	71		10		ug/L			11/17/17 17:48	10
Xylenes, Total	290		100		ug/L			11/17/17 17:48	10

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Dibromofluoromethane	*103*		*81 - 121*		*11/17/17 17:48*	*10*
4-Bromofluorobenzene	*110*		*78 - 118*		*11/17/17 17:48*	*10*
Toluene-d8 (Surr)	*105*		*80 - 120*		*11/17/17 17:48*	*10*

Client Sample Results

Client: Stantec Consulting Services Inc
Project/Site: El Paso CGP Company - Johnston Fed 4

TestAmerica Job ID: 400-145968-1

Client Sample ID: MW-16
Date Collected: 11/12/17 09:06
Date Received: 11/14/17 09:01

Lab Sample ID: 400-145968-7
Matrix: Water

Method: 8260C - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Benzene	29		1.0		ug/L			11/17/17 15:35	1
Toluene	2.3		1.0		ug/L			11/17/17 15:35	1
Ethylbenzene	2.8		1.0		ug/L			11/17/17 15:35	1
Xylenes, Total	14		10		ug/L			11/17/17 15:35	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Dibromofluoromethane	*100*		*81 - 121*		*11/17/17 15:35*	*1*
4-Bromofluorobenzene	*111*		*78 - 118*		*11/17/17 15:35*	*1*
Toluene-d8 (Surr)	*106*		*80 - 120*		*11/17/17 15:35*	*1*

Client Sample ID: MW-7
Date Collected: 11/12/17 08:58
Date Received: 11/14/17 09:01

Lab Sample ID: 400-145968-8
Matrix: Water

Method: 8260C - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Benzene	<1.0		1.0		ug/L			11/17/17 15:57	1
Toluene	<1.0		1.0		ug/L			11/17/17 15:57	1
Ethylbenzene	<1.0		1.0		ug/L			11/17/17 15:57	1
Xylenes, Total	<10		10		ug/L			11/17/17 15:57	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Dibromofluoromethane	*102*		*81 - 121*		*11/17/17 15:57*	*1*
4-Bromofluorobenzene	*112*		*78 - 118*		*11/17/17 15:57*	*1*
Toluene-d8 (Surr)	*104*		*80 - 120*		*11/17/17 15:57*	*1*

Client: Stantec Consulting Services Inc
Project/Site: El Paso CGP Company - Johnston Fed 4

TestAmerica Job ID: 400-145968-1

Client Sample ID: MW-18
Date Collected: 11/12/17 08:54
Date Received: 11/14/17 09:01

Lab Sample ID: 400-145968-9
Matrix: Water

Method: 8260C - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Benzene	<1.0		1.0		ug/L			11/17/17 16:20	1
Toluene	<1.0		1.0		ug/L			11/17/17 16:20	1
Ethylbenzene	<1.0		1.0		ug/L			11/17/17 16:20	1
Xylenes, Total	<10		10		ug/L			11/17/17 16:20	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Dibromofluoromethane	*104*		*81 - 121*		*11/17/17 16:20*	*1*
4-Bromofluorobenzene	*114*		*78 - 118*		*11/17/17 16:20*	*1*
Toluene-d8 (Surr)	*106*		*80 - 120*		*11/17/17 16:20*	*1*

Client: Stantec Consulting Services Inc
Project/Site: El Paso CGP Company - Johnston Fed 4

TestAmerica Job ID: 400-145968-1

Client Sample ID: TRIP BLANK
Date Collected: 11/12/17 08:50
Date Received: 11/14/17 09:01

Lab Sample ID: 400-145968-10
Matrix: Water

Method: 8260C - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Benzene	<1.0		1.0		ug/L			11/17/17 13:23	1
Toluene	<1.0		1.0		ug/L			11/17/17 13:23	1
Ethylbenzene	<1.0		1.0		ug/L			11/17/17 13:23	1
Xylenes, Total	<10		10		ug/L			11/17/17 13:23	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Dibromofluoromethane	*102*		*81 - 121*		*11/17/17 13:23*	*1*
4-Bromofluorobenzene	*112*		*78 - 118*		*11/17/17 13:23*	*1*
Toluene-d8 (Surr)	*106*		*80 - 120*		*11/17/17 13:23*	*1*

QC Association Summary

Client: Stantec Consulting Services Inc
Project/Site: El Paso CGP Company - Johnston Fed 4

TestAmerica Job ID: 400-145968-1

GC/MS VOA

Analysis Batch: 376328

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
400-145968-1	MW-6	Total/NA	Water	8260C	
400-145968-2	MW-19	Total/NA	Water	8260C	
400-145968-3	MW-9	Total/NA	Water	8260C	
400-145968-4	MW-20	Total/NA	Water	8260C	
400-145968-5	MW-13	Total/NA	Water	8260C	
400-145968-6	MW-15	Total/NA	Water	8260C	
400-145968-7	MW-16	Total/NA	Water	8260C	
400-145968-8	MW-7	Total/NA	Water	8260C	
400-145968-9	MW-18	Total/NA	Water	8260C	
400-145968-10	TRIP BLANK	Total/NA	Water	8260C	
MB 400-376328/4	Method Blank	Total/NA	Water	8260C	
LCS 400-376328/1002	Lab Control Sample	Total/NA	Water	8260C	
400-145968-5 MS	MW-13	Total/NA	Water	8260C	
400-145968-5 MSD	MW-13	Total/NA	Water	8260C	

Method: 8260C - Volatile Organic Compounds by GC/MS

Lab Sample ID: MB 400-376328/4
Matrix: Water
Analysis Batch: 376328

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Benzene	<1.0		1.0		ug/L			11/17/17 11:32	1
Toluene	<1.0		1.0		ug/L			11/17/17 11:32	1
Ethylbenzene	<1.0		1.0		ug/L			11/17/17 11:32	1
Xylenes, Total	<10		10		ug/L			11/17/17 11:32	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Dibromofluoromethane	*101*		*81 - 121*		*11/17/17 11:32*	*1*
4-Bromofluorobenzene	*114*		*78 - 118*		*11/17/17 11:32*	*1*
Toluene-d8 (Surr)	*104*		*80 - 120*		*11/17/17 11:32*	*1*

Lab Sample ID: LCS 400-376328/1002
Matrix: Water
Analysis Batch: 376328

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
Benzene			50.0	48.1		ug/L		96	70 - 130		
Toluene			50.0	51.7		ug/L		103	70 - 130		
Ethylbenzene			50.0	54.1		ug/L		108	70 - 130		
Xylenes, Total			100	109		ug/L		109	70 - 130		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
Dibromofluoromethane	*105*		*81 - 121*
4-Bromofluorobenzene	*112*		*78 - 118*
Toluene-d8 (Surr)	*104*		*80 - 120*

Lab Sample ID: 400-145968-5 MS
Matrix: Water
Analysis Batch: 376328

Client Sample ID: MW-13
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits		
Benzene	<1.0		50.0	46.6		ug/L		92	56 - 142		
Toluene	<1.0		50.0	46.2		ug/L		92	65 - 130		
Ethylbenzene	<1.0		50.0	46.5		ug/L		93	58 - 131		
Xylenes, Total	<10		100	95.0		ug/L		95	59 - 130		

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
Dibromofluoromethane	*104*		*81 - 121*
4-Bromofluorobenzene	*114*		*78 - 118*
Toluene-d8 (Surr)	*105*		*80 - 120*

Lab Sample ID: 400-145968-5 MSD
Matrix: Water
Analysis Batch: 376328

Client Sample ID: MW-13
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Benzene	<1.0		50.0	45.5		ug/L		90	56 - 142	2	30
Toluene	<1.0		50.0	46.2		ug/L		92	65 - 130	0	30

Client: Stantec Consulting Services Inc
Project/Site: El Paso CGP Company - Johnston Fed 4

TestAmerica Job ID: 400-145968-1

Method: 8260C - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: 400-145968-5 MSD
Matrix: Water
Analysis Batch: 376328

Client Sample ID: MW-13
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Ethylbenzene	<1.0		50.0	48.6		ug/L		97	58 - 131	4	30
Xylenes, Total	<10		100	97.2		ug/L		97	59 - 130	2	30

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
Dibromofluoromethane	*103*		*81 - 121*
4-Bromofluorobenzene	*117*		*78 - 118*
Toluene-d8 (Surr)	*105*		*80 - 120*

Lab Chronicle

Client: Stantec Consulting Services Inc
Project/Site: El Paso CGP Company - Johnston Fed 4

TestAmerica Job ID: 400-145968-1

Client Sample ID: MW-6
Date Collected: 11/12/17 09:45
Date Received: 11/14/17 09:01

Lab Sample ID: 400-145968-1
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260C		1	5 mL	5 mL	376328	11/17/17 14:07	CAR	TAL PEN
	Instrument ID: Darwin									

Client Sample ID: MW-19
Date Collected: 11/12/17 09:38
Date Received: 11/14/17 09:01

Lab Sample ID: 400-145968-2
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260C		1	5 mL	5 mL	376328	11/17/17 14:29	CAR	TAL PEN
	Instrument ID: Darwin									

Client Sample ID: MW-9
Date Collected: 11/12/17 09:32
Date Received: 11/14/17 09:01

Lab Sample ID: 400-145968-3
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260C		1	5 mL	5 mL	376328	11/17/17 14:51	CAR	TAL PEN
	Instrument ID: Darwin									

Client Sample ID: MW-20
Date Collected: 11/12/17 09:26
Date Received: 11/14/17 09:01

Lab Sample ID: 400-145968-4
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260C		1	5 mL	5 mL	376328	11/17/17 15:13	CAR	TAL PEN
	Instrument ID: Darwin									

Client Sample ID: MW-13
Date Collected: 11/12/17 09:19
Date Received: 11/14/17 09:01

Lab Sample ID: 400-145968-5
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260C		1	5 mL	5 mL	376328	11/17/17 11:54	CAR	TAL PEN
	Instrument ID: Darwin									

Client Sample ID: MW-15
Date Collected: 11/12/17 09:13
Date Received: 11/14/17 09:01

Lab Sample ID: 400-145968-6
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260C		10	5 mL	5 mL	376328	11/17/17 17:48	CAR	TAL PEN
	Instrument ID: Darwin									

Lab Chronicle

Client: Stantec Consulting Services Inc
Project/Site: El Paso CGP Company - Johnston Fed 4

TestAmerica Job ID: 400-145968-1

Client Sample ID: MW-16

Date Collected: 11/12/17 09:06
Date Received: 11/14/17 09:01

Lab Sample ID: 400-145968-7
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260C		1	5 mL	5 mL	376328	11/17/17 15:35	CAR	TAL PEN
	Instrument ID: Darwin									

Client Sample ID: MW-7

Date Collected: 11/12/17 08:58
Date Received: 11/14/17 09:01

Lab Sample ID: 400-145968-8
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260C		1	5 mL	5 mL	376328	11/17/17 15:57	CAR	TAL PEN
	Instrument ID: Darwin									

Client Sample ID: MW-18

Date Collected: 11/12/17 08:54
Date Received: 11/14/17 09:01

Lab Sample ID: 400-145968-9
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260C		1	5 mL	5 mL	376328	11/17/17 16:20	CAR	TAL PEN
	Instrument ID: Darwin									

Client Sample ID: TRIP BLANK

Date Collected: 11/12/17 08:50
Date Received: 11/14/17 09:01

Lab Sample ID: 400-145968-10
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260C		1	5 mL	5 mL	376328	11/17/17 13:23	CAR	TAL PEN
	Instrument ID: Darwin									

Laboratory References:

TAL PEN = TestAmerica Pensacola, 3355 McLemore Drive, Pensacola, FL 32514, TEL (850)474-1001

Accreditation/Certification Summary

Client: Stantec Consulting Services Inc
TestAmerica Job ID: 400-145968-1
Project/Site: El Paso CGP Company - Johnston Fed 4

Laboratory: TestAmerica Pensacola

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	EPA Region	Identification Number	Expiration Date
Alabama	State Program	4	40150	06-30-18
Arizona	State Program	9	AZ0710	01-11-18
Arkansas DEQ	State Program	6	88-0689	09-01-18
California	ELAP	9	2510	03-31-18
Florida	NELAP	4	E81010	06-30-18
Georgia	State Program	4	N/A	06-30-18
Illinois	NELAP	5	200041	10-09-18
Iowa	State Program	7	367	08-01-18
Kansas	NELAP	7	E-10253	12-31-17
Kentucky (UST)	State Program	4	53	06-30-18
Kentucky (WW)	State Program	4	98030	12-31-17
L-A-B	ISO/IEC 17025		L2471	02-22-20
Louisiana	NELAP	6	30976	06-30-18
Louisiana (DW)	NELAP	6	LA170005	12-31-17
Maryland	State Program	3	233	09-30-18
Massachusetts	State Program	1	M-FL094	06-30-18
Michigan	State Program	5	9912	06-30-18
New Jersey	NELAP	2	FL006	06-30-18
North Carolina (WW/SW)	State Program	4	314	12-31-17
Oklahoma	State Program	6	9810	08-31-18
Pennsylvania	NELAP	3	68-00467	01-31-18
Rhode Island	State Program	1	LAO00307	12-30-17
South Carolina	State Program	4	96026	06-30-18
Tennessee	State Program	4	TN02907	06-30-18
Texas	NELAP	6	T104704286-17-12	09-30-18
USDA	Federal		P330-16-00172	05-24-19
Virginia	NELAP	3	460166	06-14-18
Washington	State Program	10	C915	05-15-18
West Virginia DEP	State Program	3	136	06-30-18

Method Summary

Client: Stantec Consulting Services Inc
Project/Site: El Paso CGP Company - Johnston Fed 4

TestAmerica Job ID: 400-145968-1

Method	Method Description	Protocol	Laboratory
8260C	Volatile Organic Compounds by GC/MS	SW846	TAL PEN

Protocol References:

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

TAL PEN = TestAmerica Pensacola, 3355 McLemore Drive, Pensacola, FL 32514, TEL (850)474-1001

TestAmerica Pensacola
3355 McLemore Drive
Pensacola, FL 32514
Phone (850) 474-1001 Fax (850) 478-2671

Chain of Custody Record

00-145968 COC

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Client Information	Sampler: Daniel Babcock	Lab PM: Webb, Carol M	Carrier Tracking No(s):	COC No: 400-69059-27993.1
Client Contact: Ms. Sarah Gardner	Phone:	E-Mail: carol.webb@testamericainc.com		Page: Page 1 of 1
Company: Stantec Consulting Services Inc		Analysis Requested		Job #: 203720281
Address: 1560 Broadway Suite 1800	Due Date Requested: Normal			Preservation Codes:
City: Denver	TAT Requested (days): 10 Day Std.			A - HCL, B - NaOH, C - Zn Acetate, D - Nitric Acid, E - NaHSO4, F - MeOH, G - Amchlor, H - Ascorbic Acid, I - Ice, J - DI Water, K - EDTA, L - EDA, M - Hexane, N - None, O - AsNaO2, P - Na2O4S, Q - Na2SO3, R - Na2S2O3, S - H2SO4, T - TSP Dodecahydrate, U - Acetone, V - MCAA, W - pH 4-5, Z - other (specify)
State, Zip: CO, 80202	PO #: Purchase Order Requested			
Phone: 303-291-2239(Tel)	WO#: ARF W-ERG-STN-05-17-17-SLS-08			
Email: sarah.gardner@mwhglobal.com	Project #: 40005479 Johnson Fed #4			Other:
Project Name: Johnston Fed #4 Nov 2017	SSOW#:			
Site:				

Sample Identification	Sample Date	Sample Time	Sample Type (C=comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	8021B - BTEX 8021	Special Instructions/Note:
MW-6	11/12/17	0945	G	W	2	Per ARF
MW-19	11/12/17	0938	G	W	2	
MW-9	11/12/17	0932	G	W	2	
MW-20	11/12/17	0926	G	W	2	
MW-13	11/12/17	0919	G	W	2	
MW-15	11/12/17	0913	G	W	2	
MW-16	11/12/17	0906	G	W	2	
MW-7	11/12/17	0858	G	W	2	
MW-18	11/12/17	0854	G	W	2	
~~MW-8~~ DB (11/12/17) DB(11/12/17)	11/12/17	0 DB(11/12/17)				
Trip blank	11/12/17	0850	G	W	2	

Possible Hazard Identification
☒ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown ☐ Radiological

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
☐ Return To Client ☒ Disposal By Lab ☐ Archive For _____ Months

Deliverable Requested: I, II, III, IV, Other (specify)

Special Instructions/QC Requirements:

Empty Kit Relinquished by:	Date:	Time:	Method of Shipment:

Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
Daniel Babcock	11/13/17 1100	Stantec	FedEx		FedEx
Relinquished by:	Date/Time:	Company	Received by:	Date/Time: 11/14/17 0901	Company TA PW
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company

Custody Seals Intact: Δ Yes Δ No	Custody Seal No.:	Cooler Temperature(s) °C and Other Remarks: 1.9°C IR8

Ver: 08/04/2016

Login Sample Receipt Checklist

Client: Stantec Consulting Services Inc

Job Number: 400-145968-1

Login Number: 145968
List Number: 1
Creator: Perez, Trina M

List Source: TestAmerica Pensacola

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	N/A	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	N/A	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	1.9°C IR-8
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	