

2014 ANNUAL GROUNDWATER REPORT

Johnston Fed #6A

Meter Code: 89232

T31N, R9W, Sec35, Unit F

SITE DETAILS

Site Location: Latitude: 36.856422 N, Longitude: -107.753819 W

Land Type: Federal

Operator: Burlington Resources Oil & Gas Company, LP

SITE BACKGROUND

- **Site Assessment:** 8/94
- **Excavation:** 9/94 (80 cy)

Johnston Fed #6A (Site) is being 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 (OCD) in correspondence dated November 30, 1995; and the OCD approval conditions were adopted into El Paso CGP Company (EPCGP's) program methods. Currently, the Site is operated by Burlington Resources Oil & Gas Company, LP and is active.

The Site is located on Federal land. Various site investigations have occurred from 1994 through 2006. Monitoring wells were installed in 1994 (MW-1 through MW-4), 1997 (temporary monitoring wells PZ-01 through PZ-07), 2000 (MW-5), and 2006 (MW-6). Free product recovery has been periodically conducted since 1997. Currently, groundwater sampling is conducted on a semi-annual basis and free product was observed in 2014.

SUMMARY OF 2014 ACTIVITIES

On April 2 and October 23, 2014, water levels were gauged at MW-1, MW-2, MW-3, MW-4, MW-5, and MW-6 and groundwater samples were collected from each well that did not contain free product using HydraSleeve™ (HydraSleeve) no-purge passive 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 Laboratories, Inc. in Corpus Christi, Texas where they were analyzed for benzene, toluene, ethylbenzene, and total xylenes (BTEX). Additional field parameters were collected including dissolved oxygen, temperature, conductivity, pH, and oxidation-reduction potential (ORP) using a YSI multi-parameter instrument, if free product was not present. The water remaining in the HydraSleeves was combined in a waste container and taken to Basin Disposal, Inc. for disposal.

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SUMMARY TABLES

Historic analytical and water level data are summarized in Table 1. 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 the results of the 2014 groundwater sampling and gauging events.

ANALYTICAL LAB REPORTS

The groundwater analytical lab reports are included in Appendix A.

RESULTS

- The groundwater flow direction at the Site is generally to the north-northeast (see Figures 2 and 4).
- Approximately 0.33 foot of free product was detected in MW-1 during the April 2014 sampling event. Approximately 0.21 foot of free product was detected on October 23, 2014. Groundwater samples were not collected from MW-1 during 2014 due to the presence of free product.
- BTEX constituents were not detected in groundwater samples collected from MW-2 during the 2014 sampling events.
- Concentrations of BTEX constituents from groundwater samples collected from MW-3 remained below the New Mexico Water Quality Control Commission (NMWQCC) standards during the April 2014 sampling event. Benzene, toluene, and total xylenes were not detected in the October 2014 groundwater samples, and ethylbenzene was reported below the NMWQCC standard.
- Toluene was reported as an estimated value below the reporting limit (J-flagged) at MW-4 for the April sampling event and non-detect for the October 2014 sampling event. Benzene, ethylbenzene, and total xylenes were not detected in April or October 2014 at MW-4.
- BTEX constituents were not detected in groundwater samples collected from MW-5 during the April 2014 sampling event. Benzene and ethylbenzene were not detected, and toluene and total xylenes were J-flagged during the October 2014 sampling event.

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- BTEX constituents were not detected in groundwater samples collected from MW-6 during the 2014 sampling events.

PLANNED FUTURE ACTIVITIES

Installation of additional monitoring wells is planned, after establishment of a right-of-way with the United States Bureau of Land Management. The wells will be installed to further assess the extent of dissolved-phase hydrocarbons and to confirm and/or further define the groundwater gradient at the Site. MW-1 through MW-6 and the newly-installed monitoring wells will be sampled on a semi-annual basis.

TABLE

TABLE 1 – GROUNDWATER ANALYTICAL AND WATER LEVEL RESULTS

TABLE 1 - GROUNDWATER ANALYTICAL RESULTS

Johnston Fed #6								
Location	Date	Benzene (µg/L)	Toluene (µg/L)	Ethylbenzene (µg/L)	Total Xylenes (µg/L)	Depth to Water (ft.)	Depth to LNAPL (ft.)	LNAPL Thickness (ft.)
NMWQCC Standards:		10	750	750	620	NA	NA	NA
MW-1	08/10/95	605	1380	74.6	718	37.24	-	-
MW-1	12/13/95	1330	1610	235	1540	37.35	-	-
MW-1	04/11/96	775	1070	124	810	37.48	-	-
MW-1	07/23/96	676	1980	233	2090	37.55	-	-
MW-1	10/14/96	1790	8350	580	6200	37.22	37.07	0.15
MW-1	01/22/97	6420	19800	934	10700	38.26	37.43	0.83
MW-1	04/11/97	7310	23500	1010	10800	38.31	37.20	1.11
MW-1	06/18/01					38.21	37.34	0.87
MW-1	09/04/01					38.27	37.54	0.73
MW-1	03/04/02					38.35	37.74	0.61
MW-1	06/04/02					38.14	37.81	0.33
MW-1	09/10/02					38.24	38.00	0.23
MW-1	12/12/02					38.11	38.01	0.10
MW-1	03/14/03					38.08	37.95	0.13
MW-1	06/18/03					38.47	37.88	0.59
MW-1	09/16/03					38.25	38.17	0.08
MW-1	12/17/03					38.23	38.13	0.10
MW-1	03/16/04					38.57	37.90	0.67
MW-1	06/22/04					38.65	37.90	0.75
MW-1	09/22/04					38.60	38.21	0.39
MW-1	12/21/04					38.38	38.20	0.18
MW-1	03/23/05					38.50	37.95	0.55
MW-1	06/17/05					38.62	38.13	0.49
MW-1	09/20/05					38.83	38.40	0.43
MW-1	12/14/05					38.72	38.31	0.41
MW-1	03/25/06					38.66	38.15	0.51
MW-1	03/27/06					38.62	38.05	0.57
MW-1	06/06/06					38.84	38.29	0.55
MW-1	09/25/06					39.01	38.51	0.50
MW-1	12/07/06					38.33	-	-
MW-1	03/28/07					38.09	38.02	0.07
MW-1	06/18/07					38.86	38.09	0.77
MW-1	09/17/07					39.32	38.40	0.92
MW-1	12/17/07					39.13	38.42	0.71
MW-1	03/10/08					38.24	37.90	0.34
MW-1	06/17/08					37.71	37.38	0.33
MW-1	09/10/08					37.72	37.41	0.31
MW-1	12/02/08					37.89	37.51	0.38
MW-1	03/05/09					37.63	37.20	0.43
MW-1	06/02/09					37.83	37.49	0.34
MW-1	08/28/09					37.99	37.65	0.34
MW-1	11/04/09					37.77	-	-
MW-1	02/17/10					38.11	37.60	0.51
MW-1	05/24/10					38.27	37.81	0.46
MW-1	09/24/10					38.46	38.05	0.41
MW-1	11/02/10					38.55	38.16	0.39
MW-1	02/07/11	611	8260	1260	11600	38.37	37.93	0.44
MW-1	05/02/11					38.57	-	-
MW-1	09/23/11					38.75	38.32	0.43
MW-1	11/01/11					38.80	-	-
MW-1	02/21/12	577	5510	916	5420	38.65	38.21	0.44
MW-1	05/14/12					38.84	38.36	0.48
MW-1	06/09/13	510	17000	1400	15000	39.22	38.41	0.81
MW-1	09/09/13					39.21	38.60	0.61
MW-1	12/12/13					39.01	38.65	0.36

TABLE 1 - GROUNDWATER ANALYTICAL RESULTS

Johnston Fed #6								
Location	Date	Benzene (µg/L)	Toluene (µg/L)	Ethylbenzene (µg/L)	Total Xylenes (µg/L)	Depth to Water (ft.)	Depth to LNAPL (ft.)	LNAPL Thickness (ft.)
NMWQCC Standards:		10	750	750	620	NA	NA	NA
MW-1	04/02/14					38.94	38.61	0.33
MW-1	10/23/14					39.03	38.82	0.21

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Location	Date	Benzene (µg/L)	Toluene (µg/L)	Ethylbenzene (µg/L)	Total Xylenes (µg/L)	Depth to Water (ft.)	Depth to LNAPL (ft.)	LNAPL Thickness (ft.)
NMWQCC Standards:		10	750	750	620	NA	NA	NA
MW-2	12/13/95	15.1	50.8	<2.5	53.8	37.39	-	-
MW-2	04/11/96	<1	<1	<1	3.13	37.47	-	-
MW-2	07/23/96	<1	1.15	<1	4.06	37.60	-	-
MW-2	10/14/96	<1	1.04	<1	4.85	37.70	-	-
MW-2	01/22/97	<1	<1	<1	<3	37.66	-	-
MW-2	04/11/97	<1	<1	<1	<3	37.58	-	-
MW-2	10/09/00	<0.5	<0.5	<0.5	<0.5	37.56	-	-
MW-2	06/18/01	<0.5	<0.5	<0.5	<0.5	37.58	-	-
MW-2	09/04/01					37.75	-	-
MW-2	06/03/02	<0.5	<0.5	<0.5	<1	37.88	-	-
MW-2	09/10/02					38.02	-	-
MW-2	12/12/02					38.01	-	-
MW-2	03/14/03					37.97	-	-
MW-2	06/18/03					38.01	-	-
MW-2	09/16/03					38.18	-	-
MW-2	12/17/03					38.13	-	-
MW-2	03/16/04					38.04	-	-
MW-2	06/22/04					38.05	-	-
MW-2	09/22/04					38.26	-	-
MW-2	12/21/04					38.20	-	-
MW-2	03/23/05					38.07	-	-
MW-2	06/17/05					38.07	-	-
MW-2	09/20/05					38.33	-	-
MW-2	12/14/05					38.24	-	-
MW-2	03/27/06					38.16	-	-
MW-2	06/06/06					38.22	-	-
MW-2	09/25/06					38.42	-	-
MW-2	12/07/06					38.35	-	-
MW-2	03/28/07					38.13	-	-
MW-2	06/18/07					38.14	-	-
MW-2	09/17/07					38.35	-	-
MW-2	12/17/07					38.33	-	-
MW-2	03/10/08					37.80	-	-
MW-2	06/17/08					37.41	-	-
MW-2	09/10/08					37.40	-	-
MW-2	12/02/08					37.39	-	-
MW-2	03/05/09					37.38	-	-
MW-2	06/02/09					37.40	-	-
MW-2	08/28/09					37.60	-	-
MW-2	11/04/09					37.73	-	-
MW-2	02/17/10					37.76	-	-
MW-2	05/24/10					37.77	-	-
MW-2	09/24/10					37.97	-	-
MW-2	11/02/10					38.01	-	-
MW-2	02/07/11					38.05	-	-
MW-2	05/02/11					38.09	-	-
MW-2	09/23/11					38.25	38.23	0.02
MW-2	11/01/11					38.26	-	-
MW-2	02/21/12					38.31	-	-
MW-2	05/14/12					38.36	-	-
MW-2	06/09/13	<0.14	<0.30	<0.20	<0.23	38.56	-	-
MW-2	09/09/13	<0.14	<0.30	<0.20	<0.23	38.68	-	-
MW-2	12/12/13	<0.20	<0.38	<0.20	<0.65	38.67	-	-
MW-2	04/02/14	<0.20	<0.38	<0.20	<0.65	38.63	-	-
MW-2	10/23/14	<0.38	<0.70	<0.50	<1.6	38.79	-	-

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Location	Date	Benzene (µg/L)	Toluene (µg/L)	Ethylbenzene (µg/L)	Total Xylenes (µg/L)	Depth to Water (ft.)	Depth to LNAPL (ft.)	LNAPL Thickness (ft.)
NMWQCC Standards:		10	750	750	620	NA	NA	NA
MW-3	12/13/95	488	1020	104	1120	37.11	-	-
MW-3	04/11/96	772	231	113	379	37.17	-	-
MW-3	07/25/96	687	112	115	209	37.30	-	-
MW-3	10/14/96	900	240	140	340	37.40	-	-
MW-3	01/22/97	907	234	215	340	37.35	-	-
MW-3	04/11/97	944	209	223	322	37.29	-	-
MW-3	06/18/01	510	23	160	98	37.26	-	-
MW-3	09/04/01					37.42	-	-
MW-3	06/03/02	380	<5	110	29	37.55	-	-
MW-3	12/12/02					37.70	-	-
MW-3	03/14/03					37.66	-	-
MW-3	06/18/03					37.87	37.63	0.24
MW-3	09/16/03					37.89	37.87	0.02
MW-3	12/17/03					37.80	-	-
MW-3	03/16/04					37.85	37.72	0.13
MW-3	06/22/04					37.88	37.72	0.16
MW-3	09/22/04					38.07	37.96	0.11
MW-3	12/21/04					37.96	37.93	0.03
MW-3	03/23/05					37.88	37.80	0.08
MW-3	06/17/05					37.92	-	-
MW-3	09/20/05					38.16	-	-
MW-3	12/14/05					38.09	-	-
MW-3	03/25/06					38.09	-	-
MW-3	03/27/06					37.88	-	-
MW-3	06/06/06					37.98	-	-
MW-3	09/25/06					38.16	-	-
MW-3	12/07/06					38.06	-	-
MW-3	03/28/07					37.87	-	-
MW-3	06/18/07					37.86	-	-
MW-3	09/17/07					38.10	-	-
MW-3	12/17/07					38.09	-	-
MW-3	03/10/08					37.80	-	-
MW-3	06/17/08					37.10	-	-
MW-3	09/10/08					37.13	-	-
MW-3	12/02/08					37.14	-	-
MW-3	03/05/09	1.2	17.9	9.4	59	37.14	-	-
MW-3	06/02/09					37.12	-	-
MW-3	08/28/09					37.40	-	-
MW-3	11/04/09					37.52	-	-
MW-3	02/17/10	3.2	4.5	3.4	25.9	37.53	-	-
MW-3	05/24/10					37.53	-	-
MW-3	09/24/10					37.72	-	-
MW-3	11/02/10					37.79	-	-
MW-3	02/07/11	8.6	1.3	6	13.1	37.83	-	-
MW-3	05/02/11					38.86	-	-
MW-3	09/23/11					38.02	-	-
MW-3	11/01/11					38.06	-	-
MW-3	02/21/12	4.7	7.6	23.1	19.1	38.11	-	-
MW-3	05/14/12					38.15	-	-
MW-3	06/09/13	<0.14	0.71 J	49	12	38.32	-	-
MW-3	09/09/13	0.78 J	0.48 J	30	2.2 J	38.48	-	-
MW-3	12/12/13	<0.20	51	23	5.4	38.45	-	-
MW-3	04/02/14	3.5	57	19	8.7	38.42	-	-
MW-3	10/23/14	<0.38	<0.70	6.2	<1.6	38.57	-	-

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Location	Date	Benzene (µg/L)	Toluene (µg/L)	Ethylbenzene (µg/L)	Total Xylenes (µg/L)	Depth to Water (ft.)	Depth to LNAPL (ft.)	LNAPL Thickness (ft.)
NMWQCC Standards:		10	750	750	620	NA	NA	NA
MW-4	12/13/95	545	121	114	177	37.34	-	-
MW-4	04/11/96	591	160	133	193	37.42	-	-
MW-4	07/25/96	793	96.4	172	174	37.54	-	-
MW-4	10/14/96	800	100	130	235	37.64	-	-
MW-4	01/22/97	899	26.7	157	186	37.60	-	-
MW-4	04/11/97	703	20.1	149	138	37.47	-	-
MW-4	10/09/00	81	36	45	20	37.56	-	-
MW-4	06/18/01	490	70	91	96	37.53	-	-
MW-4	09/04/01					37.66	-	-
MW-4	06/03/02	16	<5	17	2.2	37.80	-	-
MW-4	09/10/02					37.95	-	-
MW-4	12/12/02					38.95	-	-
MW-4	03/14/03					37.91	-	-
MW-4	06/18/03	<1	<1	1.7	<3	37.95	-	-
MW-4	09/16/03					38.17	-	-
MW-4	12/17/03					38.06	-	-
MW-4	03/16/04					38.00	-	-
MW-4	06/22/04	0.56 J	1.1	2.8	<1	38.04	-	-
MW-4	09/22/04					38.27	-	-
MW-4	12/21/04					38.23	-	-
MW-4	03/23/05	<1	<1	<1	0.99	38.11	-	-
MW-4	06/17/05					38.08	-	-
MW-4	09/20/05					38.35	-	-
MW-4	12/14/05					38.24	-	-
MW-4	03/27/06	0.39 J	<1	<1	0.83 J	38.16	-	-
MW-4	06/06/06					38.24	-	-
MW-4	09/25/06					38.45	-	-
MW-4	12/07/06					38.34	-	-
MW-4	03/28/07	0.39 J	0.6 J	<1	1.7 J	38.16	-	-
MW-4	06/18/07					38.14	-	-
MW-4	09/17/07					38.37	-	-
MW-4	12/17/07					38.36	-	-
MW-4	03/10/08	0.25 J	<1	<1	<2	38.05	-	-
MW-4	06/17/08					37.35	-	-
MW-4	09/10/08					37.43	-	-
MW-4	12/02/08					37.40	-	-
MW-4	03/05/09					37.40	-	-
MW-4	06/02/09					37.43	-	-
MW-4	08/28/09					37.64	-	-
MW-4	11/04/09					37.76	-	-
MW-4	02/17/10					37.80	-	-
MW-4	05/24/10					37.80	-	-
MW-4	09/24/10					38.03	-	-
MW-4	11/02/10					38.05	-	-
MW-4	02/07/11					38.08	-	-
MW-4	05/02/11					38.15	-	-
MW-4	09/23/11					38.30	-	-
MW-4	11/01/11					38.32	-	-
MW-4	02/21/12					38.37	-	-
MW-4	05/14/12					38.40	-	-
MW-4	06/09/13	<0.14	<0.30	<0.20	<0.23	38.62	-	-
MW-4	09/09/13	<0.14	<0.30	<0.20	<0.23	38.79	-	-
MW-4	12/12/13	<0.20	0.51 J	<0.20	<0.65	38.77	-	-
MW-4	04/02/14	<0.20	1.2 J	<0.20	<0.65	38.74	-	-
MW-4	10/23/14	<0.38	<0.70	<0.50	<1.6	38.94	-	-

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Location	Date	Benzene (µg/L)	Toluene (µg/L)	Ethylbenzene (µg/L)	Total Xylenes (µg/L)	Depth to Water (ft.)	Depth to LNAPL (ft.)	LNAPL Thickness (ft.)
NMWQCC Standards:		10	750	750	620	NA	NA	NA
MW-5	08/30/00	130	180	56	650	38.11	-	-
MW-5	06/18/01	170	300	68	630	38.13	-	-
MW-5	09/04/01					38.33	-	-
MW-5	06/04/02	43	87	31	360	38.51	-	-
MW-5	09/10/02					39.13	-	-
MW-5	12/12/02					38.83	-	-
MW-5	03/14/03					38.70	-	-
MW-5	06/18/03					38.85	-	-
MW-5	09/16/03					38.88	-	-
MW-5	12/17/03					38.75	-	-
MW-5	03/16/04					38.72	-	-
MW-5	06/22/04					38.74	-	-
MW-5	09/22/04					38.74	-	-
MW-5	12/21/04					38.93	-	-
MW-5	03/23/05					38.72	-	-
MW-5	06/17/05					38.72	-	-
MW-5	09/20/05					39.06	-	-
MW-5	12/14/05					38.94	-	-
MW-5	03/27/06					38.86	-	-
MW-5	06/06/06					38.97	-	-
MW-5	09/25/06					37.20	-	-
MW-5	12/07/06					39.07	-	-
MW-5	03/28/07					38.83	-	-
MW-5	06/18/07					38.84	-	-
MW-5	09/17/07					39.09	-	-
MW-5	12/17/07					39.04	-	-
MW-5	03/10/08					38.48	-	-
MW-5	06/17/08					37.83	-	-
MW-5	09/10/08					37.91	-	-
MW-5	12/02/08					37.95	-	-
MW-5	03/05/09	1.9	9.8	44	120	37.93	-	-
MW-5	06/02/09					37.95	-	-
MW-5	08/28/09					38.19	-	-
MW-5	11/04/09					38.32	-	-
MW-5	02/17/10	1.7	2.6	2.7	19.2	38.38	-	-
MW-5	05/24/10					38.35	-	-
MW-5	09/24/10					38.61	-	-
MW-5	11/02/10					38.66	-	-
MW-5	02/07/11	11.9	920	177	1870	38.74	-	-
MW-5	05/02/11					38.81	-	-
MW-5	09/23/11					38.99	-	-
MW-5	11/01/11					39.09	-	-
MW-5	02/21/12	2.7	1.7	5.2	85.5	39.09	-	-
MW-5	05/14/12					39.16	-	-
MW-5	06/09/13	<0.14	<0.30	0.31 J	0.79 J	39.38	-	-
MW-5	09/09/13	<0.14	<0.30	<0.20	<0.23	39.56	-	-
MW-5	12/12/13	<0.20	<0.38	<0.20	<0.65	39.55	-	-
MW-5	04/02/14	<0.20	<0.38	<0.20	<0.65	39.52	-	-
MW-5	10/23/14	<0.38	0.96 J	<0.50	1.9 J	39.71	-	-

TABLE 1 - GROUNDWATER ANALYTICAL RESULTS

Johnston Fed #6								
Location	Date	Benzene (µg/L)	Toluene (µg/L)	Ethylbenzene (µg/L)	Total Xylenes (µg/L)	Depth to Water (ft.)	Depth to LNAPL (ft.)	LNAPL Thickness (ft.)
NMWQCC Standards:		10	750	750	620	NA	NA	NA
MW-6	12/07/06					39.62	-	-
MW-6	03/28/07	<1	<1	<1	<2	39.43	-	-
MW-6	06/18/07					39.43	-	-
MW-6	09/17/07					39.43	-	-
MW-6	12/17/07					38.65	-	-
MW-6	03/10/08	9.4	<1	0.5 J	139	39.21	-	-
MW-6	03/05/09	<1	<1	<1	<2	37.61	-	-
MW-6	06/02/09					37.46	-	-
MW-6	08/28/09					37.89	-	-
MW-6	11/04/09					38.03	-	-
MW-6	05/24/10					38.07	-	-
MW-6	09/24/10					38.30	-	-
MW-6	11/02/10					38.36	-	-
MW-6	02/07/11	<1	<1	<1	<2	38.39	-	-
MW-6	05/02/11					36.42	-	-
MW-6	09/23/11					38.65	-	-
MW-6	11/01/11					38.70	-	-
MW-6	02/21/12	<1	<1	<1	<2	38.75	-	-
MW-6	05/14/12					38.79	-	-
MW-6	06/09/13	<0.14	<0.30	<0.20	<0.23	39.08	-	-
MW-6	09/09/13	<0.14	<0.30	<0.20	<0.23	39.28	-	-
MW-6	12/12/13	<0.20	<0.38	<0.20	<0.65	39.26	-	-
MW-6	10/23/14	<0.38	<0.70	<0.50	<1.6	39.43	-	-

B1(33-37)	01/06/06	U1	J0.55	U1	J1.3	-	-	-
B2(34-38)	01/06/06	U1	J0.89	U1	2.2	-	-	-
MW-6	04/02/14	<0.20	<0.38	<0.20	<0.65	39.24	-	-

Notes:

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

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

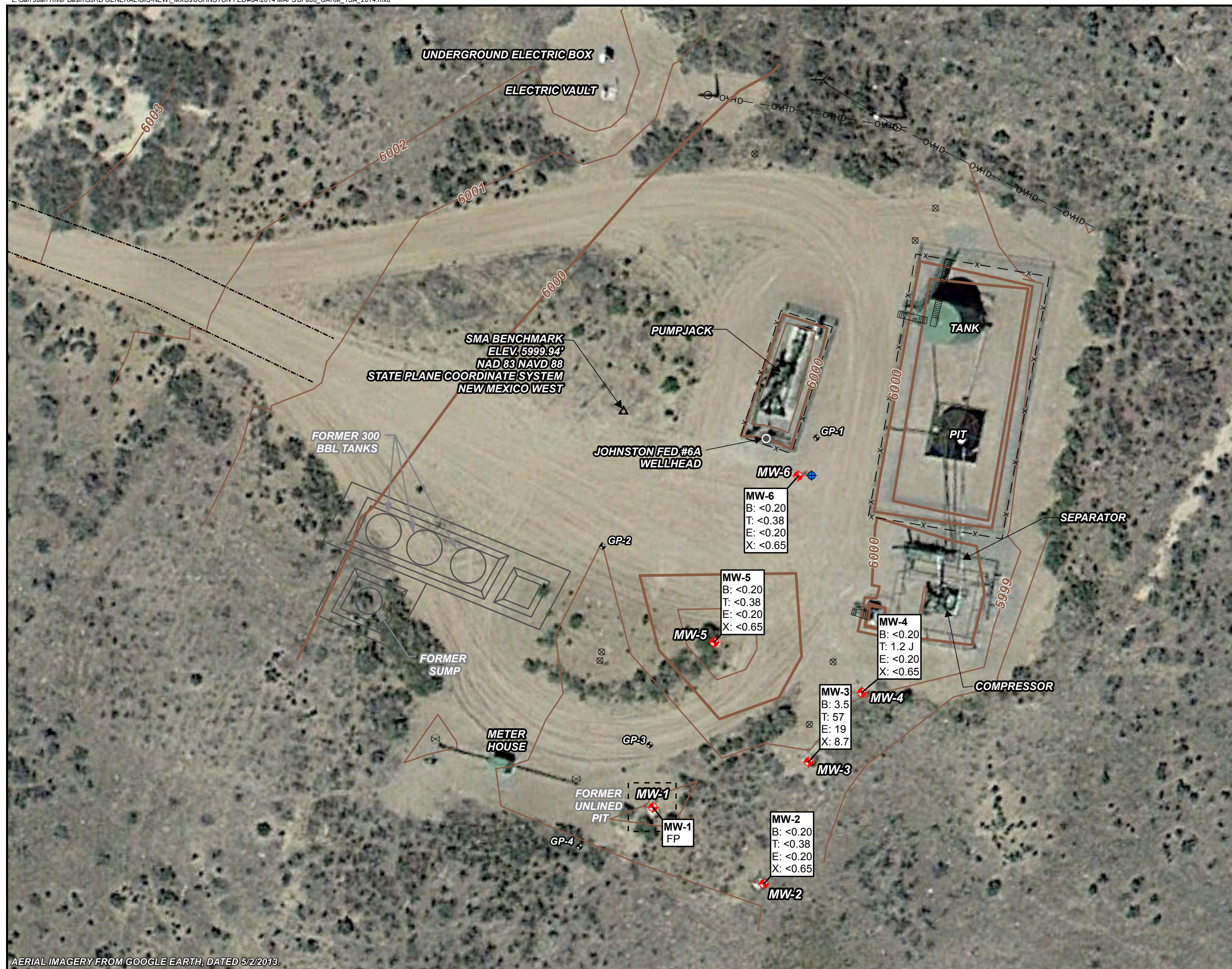
FIGURES

FIGURE 1: APRIL 2, 2014 GROUNDWATER ANALYTICAL RESULTS MAP

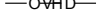
FIGURE 2: APRIL 2, 2014 GROUNDWATER ELEVATION MAP

FIGURE 3: OCTOBER 23, 2014 GROUNDWATER ANALYTICAL RESULTS MAP

FIGURE 4: OCTOBER 23, 2014 GROUNDWATER ELEVATION MAP



LEGEND:

- | | |
|---|---|
|  | APPROXIMATE GROUND SURFACE
CONTOUR AND ELEVATION, FEET |
|  | CORRECTED GROUNDWATER
ELEVATION CONTOUR |
|  | ACCESS ROAD |
|  | OVERHEAD POWER LINE |
|  | PRODUCED WATER LINE |
|  | MONITORING WELL |
|  | OTHER MONITORING WELL |
|  | SOIL BORING LOCATIONS |
|  | SMA BENCHMARK |
|  | RIG ANCHOR |
|  | FREE PRODUCT |

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

<0.30 = BELOW METHOD DETECTION LIMIT

J = RESULT IS LESS THAN THE RL, BUT GREATER THAN OR EQUAL TO THE MDL AND THE CONCENTRATION IS AN APPROXIMATE VALUE.

MDL = METHOD DETECTION LIMIT

RL = REPORTING LIMIT OR REQUESTED LIMIT
(RADIOCHEMISTRY)

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



SCALE IN FEET



REVISION	DATE	DESIGN BY	DRAWN BY	REVIEWED BY
A	10/15/2014	CCL	CCL	DAW

TITLE:

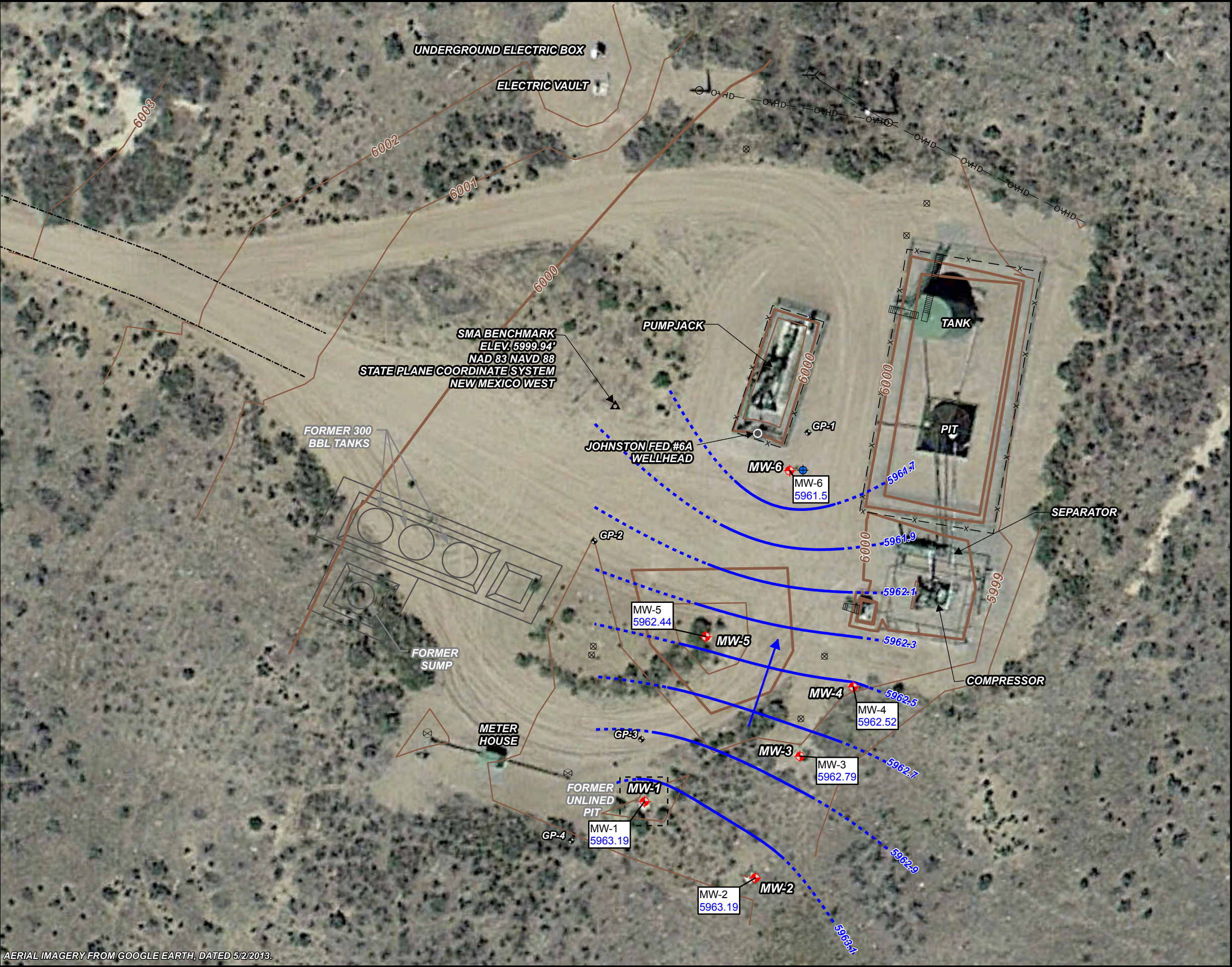
**JOHNSTON FED #6
GROUNDWATER ANALYTICAL RESULTS
SAMPLED APRIL 2, 2014**

PROJECT:

**SAN JUAN RIVER BASIN
MONITORING AND REMEDIATION
SAN JUAN COUNTY, NEW MEXICO**



Figure No.:



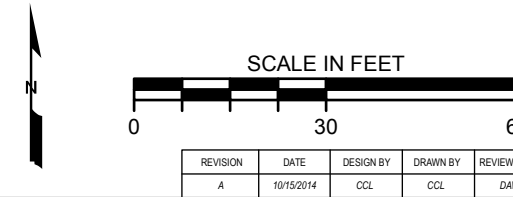
AERIAL IMAGERY FROM GOOGLE EARTH, DATED 5/2/2013.

LEGEND:

- 6503 — APPROXIMATE GROUND SURFACE CONTOUR AND ELEVATION, FEET
- 5961.75- CORRECTED GROUNDWATER ELEVATION CONTOUR
- ACCESS ROAD
- O V H D — OVERHEAD POWER LINE
- P W — PRODUCED WATER LINE
- MONITORING WELL
- OTHER MONITORING WELL
- SOIL BORING LOCATIONS
- ▲ SMA BENCHMARK
- X RIG ANCHOR
- FP FREE PRODUCT

NOTES:

- 5318.24 GROUNDWATER ELEVATION CORRECTED FOR PRODUCT THICKNESS. FEET ABOVE MEAN SEA LEVEL
- 5317- CORRECTED WATER LEVEL ELEVATION CONTOUR DASHED WHERE INFERRED (FEET ABOVE MEAN SEA LEVEL, 0.2 FOOT CONTOUR INTERVAL)
- DIRECTION OF GROUNDWATER FLOW



TITLE: JOHNSTON FED #6 GROUNDWATER ELEVATION MAP SAMPLED APRIL 2, 2014				
PROJECT: SAN JUAN RIVER BASIN MONITORING AND REMEDIATION SAN JUAN COUNTY, NEW MEXICO				
MWH				Figure No.: 2



AERIAL IMAGERY FROM GOOGLE EARTH, DATED 5/2/2013.

LEGEND:

- APPROXIMATE GROUND SURFACE CONTOUR AND ELEVATION, FEET
- CORRECTED GROUNDWATER ELEVATION CONTOUR
- ACCESS ROAD
- OVERHEAD POWER LINE
- PRODUCED WATER LINE
- MONITORING WELL
- OTHER MONITORING WELL
- SOIL BORING LOCATIONS
- SMA BENCHMARK
- RIG ANCHOR
- FREE PRODUCT

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
<0.30 = BELOW METHOD DETECTION LIMIT
J = RESULT IS LESS THAN THE RL, BUT GREATER THAN OR EQUAL TO THE MDL AND THE CONCENTRATION IS AN APPROXIMATE VALUE.
MDL = METHOD DETECTION LIMIT
RL = REPORTING LIMIT OR REQUESTED LIMIT (RADIOCHEMISTRY)

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

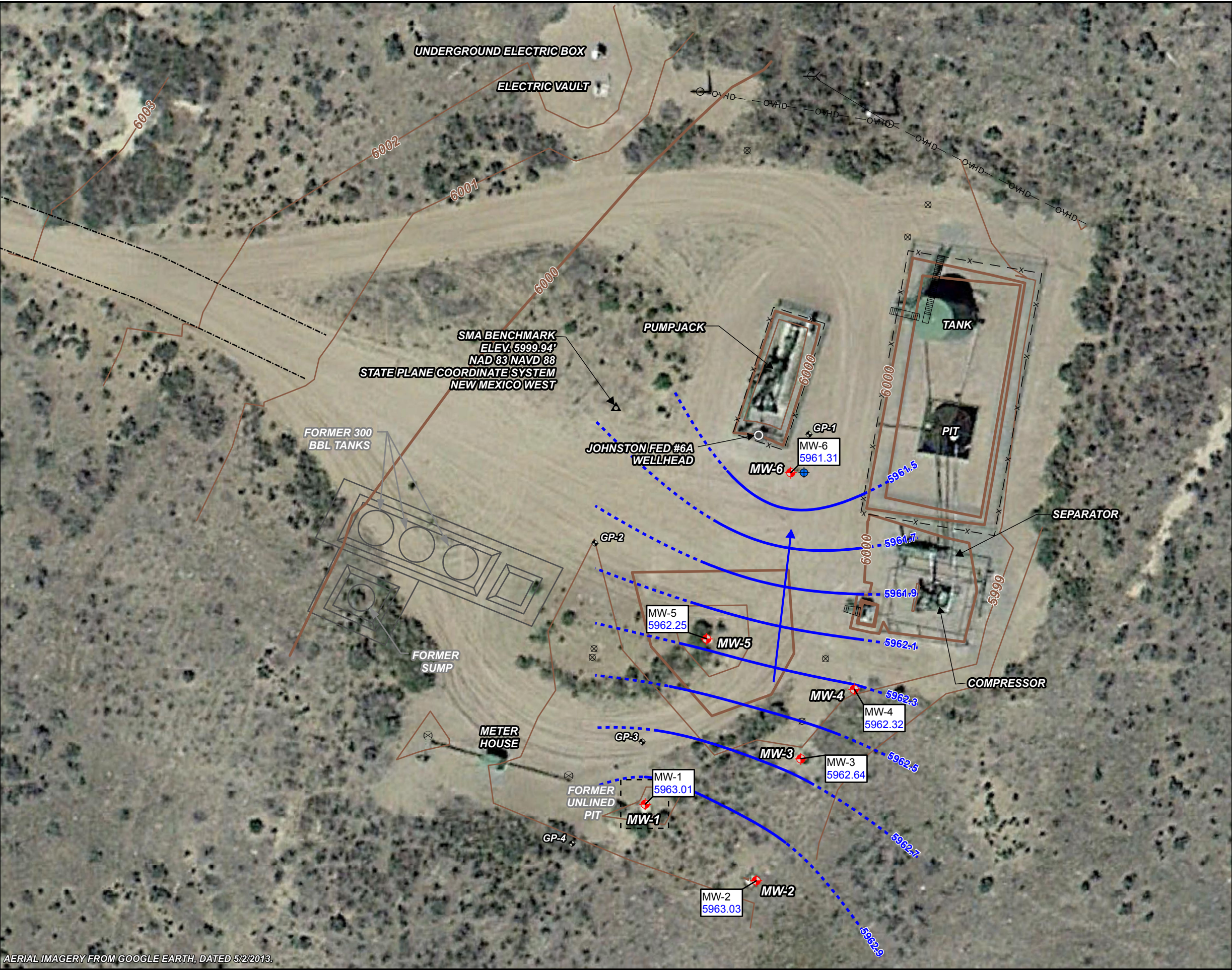


REVISION	DATE	DESIGN BY	DRAWN BY	REVIEWED BY
A	11/17/2014	CCL	CCL	DAW

TITLE: **JOHNSTON FED #6
GROUNWATER ANALYTICAL RESULTS
SAMPLED OCTOBER 23, 2014**

PROJECT: **SAN JUAN RIVER BASIN
MONITORING AND REMEDIATION
SAN JUAN COUNTY, NEW MEXICO**

Figure No.: **3**



AERIAL IMAGERY FROM GOOGLE EARTH, DATED 5/2/2013.

LEGEND:

- 6503 — APPROXIMATE GROUND SURFACE CONTOUR AND ELEVATION, FEET
- 5961.75- CORRECTED GROUNDWATER ELEVATION CONTOUR
- ACCESS ROAD
- O V H D — OVERHEAD POWER LINE
- P W — PRODUCED WATER LINE
- MONITORING WELL
- OTHER MONITORING WELL
- ⊗ SOIL BORING LOCATIONS
- ▲ SMA BENCHMARK
- ⊗ RIG ANCHOR
- FP FREE PRODUCT

NOTES:

- 5318.24 GROUNDWATER ELEVATION CORRECTED FOR PRODUCT THICKNESS. FEET ABOVE MEAN SEA LEVEL
- 5317- CORRECTED WATER LEVEL ELEVATION CONTOUR DASHED WHERE INFERRED (FEET ABOVE MEAN SEA LEVEL, 0.2 FOOT CONTOUR INTERVAL)
- DIRECTION OF GROUNDWATER FLOW



REVISION	DATE	DESIGN BY	DRAWN BY	REVIEWED BY
A	11/17/2014	CCL	CCL	DAW

TITLE:
**JOHNSTON FED #6
GROUNWATER ELEVATION MAP
SAMPLED OCTOBER 23, 2014**

PROJECT: **SAN JUAN RIVER BASIN
MONITORING AND REMEDIATION
SAN JUAN COUNTY, NEW MEXICO**



Figure No.:

4

APPENDIX A

APRIL 2, 2014 GROUNDWATER SAMPLING ANALYTICAL REPORT

OCTOBER 23, 2014 GROUNDWATER SAMPLING ANALYTICAL REPORT

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

ANALYTICAL REPORT

TestAmerica Laboratories, Inc.

TestAmerica Corpus Christi
1733 N. Padre Island Drive
Corpus Christi, TX 78408
Tel: (361)289-2673

TestAmerica Job ID: 560-46614-1

Client Project/Site: Johnston Federal #6, 4/2/14 BTEX

For:

MWH Americas Inc
1801 California Street
Suite 2900
Denver, Colorado 80202

Attn: Ms. Sarah Gardner



Authorized for release by:
4/22/2014 1:48:19 PM

Neal Salcher, Senior Project Manager
neal.salcher@testamericainc.com

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The test results in this report meet all 2003 NELAC and 2009 TNI requirements for accredited parameters, exceptions are noted in this report. This report may not be reproduced except in full, and with written approval from the laboratory. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.

This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

Definitions/Glossary

Client: MWH Americas Inc
Project/Site: Johnston Federal #6, 4/2/14 BTEX

TestAmerica Job ID: 560-46614-1

Qualifiers

GC VOA

Qualifier	Qualifier Description
X	Surrogate is outside control limits
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
α	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CNF	Contains no Free Liquid
DER	Duplicate error ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision level concentration
MDA	Minimum detectable activity
EDL	Estimated Detection Limit
MDC	Minimum detectable concentration
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
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: MWH Americas Inc
Project/Site: Johnston Federal #6, 4/2/14 BTEX

TestAmerica Job ID: 560-46614-1

Job ID: 560-46614-1

Laboratory: TestAmerica Corpus Christi

Narrative

Job Narrative
560-46614-1

Comments

No additional comments.

Receipt

The samples were received on 4/8/2014 9:45 AM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperature of the cooler at receipt was 1.9° C.

GC VOA

Method(s) 8021B: Surrogate recovery for the following sample(s) was outside control limits: Evidence of matrix interference is present; therefore, re-extraction and/or re-analysis was not performed.

8021
Batch 100888

No other analytical or quality issues were noted.

Organic Prep

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

Detection Summary

Client: MWH Americas Inc
Project/Site: Johnston Federal #6, 4/2/14 BTEX

TestAmerica Job ID: 560-46614-1

Client Sample ID: MW-2

Lab Sample ID: 560-46614-1

No Detections.

Client Sample ID: MW-3

Lab Sample ID: 560-46614-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Benzene	3.5		2.0	0.20	ug/L	1		8021B	Total/NA
Toluene	57		2.0	0.38	ug/L	1		8021B	Total/NA
Ethylbenzene	19		2.0	0.20	ug/L	1		8021B	Total/NA
Xylenes, Total	8.7		2.0	0.65	ug/L	1		8021B	Total/NA

Client Sample ID: MW-4

Lab Sample ID: 560-46614-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Toluene	1.2	J	2.0	0.38	ug/L	1		8021B	Total/NA

Client Sample ID: MW-5

Lab Sample ID: 560-46614-4

No Detections.

Client Sample ID: MW-6

Lab Sample ID: 560-46614-5

No Detections.

This Detection Summary does not include radiochemical test results.

TestAmerica Corpus Christi

Client Sample Results

Client: MWH Americas Inc
Project/Site: Johnston Federal #6, 4/2/14 BTEX

TestAmerica Job ID: 560-46614-1

Client Sample ID: MW-2

Date Collected: 04/02/14 13:55

Date Received: 04/08/14 09:45

Lab Sample ID: 560-46614-1

Matrix: Water

Method: 8021B - Volatile Organic Compounds (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	<0.20		2.0	0.20	ug/L			04/16/14 11:42	1
Toluene	<0.38		2.0	0.38	ug/L			04/16/14 11:42	1
Ethylbenzene	<0.20		2.0	0.20	ug/L			04/16/14 11:42	1
Xylenes, Total	<0.65		2.0	0.65	ug/L			04/16/14 11:42	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	100		58 - 129					04/16/14 11:42	1
Trifluorotoluene (Surr)	91		54 - 130					04/16/14 11:42	1

Client Sample ID: MW-3

Date Collected: 04/02/14 13:50

Date Received: 04/08/14 09:45

Lab Sample ID: 560-46614-2

Matrix: Water

Method: 8021B - Volatile Organic Compounds (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	3.5		2.0	0.20	ug/L			04/16/14 12:10	1
Toluene	57		2.0	0.38	ug/L			04/16/14 12:10	1
Ethylbenzene	19		2.0	0.20	ug/L			04/16/14 12:10	1
Xylenes, Total	8.7		2.0	0.65	ug/L			04/16/14 12:10	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	103		58 - 129					04/16/14 12:10	1
Trifluorotoluene (Surr)	150	X	54 - 130					04/16/14 12:10	1

Client Sample ID: MW-4

Date Collected: 04/02/14 13:45

Date Received: 04/08/14 09:45

Lab Sample ID: 560-46614-3

Matrix: Water

Method: 8021B - Volatile Organic Compounds (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	<0.20		2.0	0.20	ug/L			04/16/14 12:38	1
Toluene	1.2	J	2.0	0.38	ug/L			04/16/14 12:38	1
Ethylbenzene	<0.20		2.0	0.20	ug/L			04/16/14 12:38	1
Xylenes, Total	<0.65		2.0	0.65	ug/L			04/16/14 12:38	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	104		58 - 129					04/16/14 12:38	1
Trifluorotoluene (Surr)	89		54 - 130					04/16/14 12:38	1

Client Sample ID: MW-5

Date Collected: 04/02/14 13:35

Date Received: 04/08/14 09:45

Lab Sample ID: 560-46614-4

Matrix: Water

Method: 8021B - Volatile Organic Compounds (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	<0.20		2.0	0.20	ug/L			04/16/14 13:06	1
Toluene	<0.38		2.0	0.38	ug/L			04/16/14 13:06	1
Ethylbenzene	<0.20		2.0	0.20	ug/L			04/16/14 13:06	1
Xylenes, Total	<0.65		2.0	0.65	ug/L			04/16/14 13:06	1

TestAmerica Corpus Christi

Client Sample Results

Client: MWH Americas Inc
Project/Site: Johnston Federal #6, 4/2/14 BTEX

TestAmerica Job ID: 560-46614-1

Client Sample ID: MW-5

Date Collected: 04/02/14 13:35

Date Received: 04/08/14 09:45

Lab Sample ID: 560-46614-4

Matrix: Water

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	98		58 - 129		04/16/14 13:06	1
Trifluorotoluene (Surr)	108		54 - 130		04/16/14 13:06	1

Client Sample ID: MW-6

Date Collected: 04/02/14 13:30

Date Received: 04/08/14 09:45

Lab Sample ID: 560-46614-5

Matrix: Water

Method: 8021B - Volatile Organic Compounds (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	<0.20		2.0	0.20	ug/L			04/16/14 13:34	1
Toluene	<0.38		2.0	0.38	ug/L			04/16/14 13:34	1
Ethylbenzene	<0.20		2.0	0.20	ug/L			04/16/14 13:34	1
Xylenes, Total	<0.65		2.0	0.65	ug/L			04/16/14 13:34	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	98		58 - 129		04/16/14 13:34	1
Trifluorotoluene (Surr)	91		54 - 130		04/16/14 13:34	1

QC Sample Results

Client: MWH Americas Inc
Project/Site: Johnston Federal #6, 4/2/14 BTEX

TestAmerica Job ID: 560-46614-1

Method: 8021B - Volatile Organic Compounds (GC)

Lab Sample ID: MB 560-100888/3

Matrix: Water

Analysis Batch: 100888

Client Sample ID: Method Blank

Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	<0.20		2.0	0.20	ug/L			04/16/14 10:43	1
Toluene	<0.38		2.0	0.38	ug/L			04/16/14 10:43	1
Ethylbenzene	<0.20		2.0	0.20	ug/L			04/16/14 10:43	1
Xylenes, Total	<0.65		2.0	0.65	ug/L			04/16/14 10:43	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	103		58 - 129		04/16/14 10:43	1
Trifluorotoluene (Surr)	88		54 - 130		04/16/14 10:43	1

Lab Sample ID: LCS 560-100888/2

Matrix: Water

Analysis Batch: 100888

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Benzene	40.0	40.0		ug/L		100	70 - 130
Toluene	40.0	41.1		ug/L		103	70 - 130
Ethylbenzene	40.0	40.9		ug/L		102	70 - 130
Xylenes, Total	120	118		ug/L		98	70 - 130

Surrogate	LCS %Recovery	LCS Qualifier	Limits
4-Bromofluorobenzene (Surr)	109		58 - 129
Trifluorotoluene (Surr)	99		54 - 130

TestAmerica Corpus Christi

Certification Summary

Client: MWH Americas Inc
Project/Site: Johnston Federal #6, 4/2/14 BTEX

TestAmerica Job ID: 560-46614-1

Laboratory: TestAmerica Corpus Christi

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

Authority	Program	EPA Region	Certification ID	Expiration Date
Kansas	NELAP	7	E-10362	10-31-14
Oklahoma	State Program	6	9968	08-31-14
Texas	NELAP	6	T104704210	03-31-15

Method Summary

Client: MWH Americas Inc
Project/Site: Johnston Federal #6, 4/2/14 BTEX

TestAmerica Job ID: 560-46614-1

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

Protocol References:

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

Laboratory References:

TAL CC = TestAmerica Corpus Christi, 1733 N. Padre Island Drive, Corpus Christi, TX 78408, TEL (361)289-2673

Sample Summary

Client: MWH Americas Inc
Project/Site: Johnston Federal #6, 4/2/14 BTEX

TestAmerica Job ID: 560-46614-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
560-46614-1	MW-2	Water	04/02/14 13:55	04/08/14 09:45
560-46614-2	MW-3	Water	04/02/14 13:50	04/08/14 09:45
560-46614-3	MW-4	Water	04/02/14 13:45	04/08/14 09:45
560-46614-4	MW-5	Water	04/02/14 13:35	04/08/14 09:45
560-46614-5	MW-6	Water	04/02/14 13:30	04/08/14 09:45

TestAmerica Corpus Christi
1733 N. Padre Island Drive
Corpus Christi, TX 78408
Phone (361) 289-2673 Fax (361) 289-2471

Chain of Custody Record

Client Information Client Contact: <u>Sarah Gardner</u> Company: <u>MWH Americas Inc</u> Address: <u>1801 California Street Suite 2900</u> City: <u>Denver</u> State: <u>CO</u> Zip: <u>80202</u> Phone: <u>733-291-2239</u> Email: <u>Sarah.gardner@mwhglobal.com</u> Project Name: <u>San Juan River Basin Pit Sites</u> Site: <u>Johnston Federal #6</u>		Sampler: <u>Sarah Gardner / Chris Lee</u> Phone: <u>303 291 2239</u> Lab PM: <u>Kim Kellogg, Timothy L.</u> E-Mail: <u>tim.kellogg@testamericainc.com</u>		Carrier Tracking No(s): <u>Fedex</u> Job #: <u>963645897188</u> Loc: <u>560</u> <u>46614</u>	
Due Date Requested: TAT Requested (days): PO #: Purchase Order not required WO #: Project #: SOW#:		Analysis Requested			
Sample Identification Sample Date Sample Time Sample Type (C=comp, G=grab) Matrix (W=water, S=solid, O=waste/oil, B=soil, A=air) Preservation Code:		Perform MS/MSD (Yes or No) ☒ A Field Filtered Sample (Yes or No) ☒ A Total Number of Containers			
mw-1 mw-2 mw-3 mw-4 mw-5 mw-6		4/2/14 4/2/14 4/2/14 4/2/14 4/2/14 4/2/14		1355 1350 1345 1335 1330	
Water Water Water Water Water Water		X X X X X		Not Sampled 3 3 3 3 3	
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: <u>Sarah Gardner</u> Relinquished by: <u>Sarah Gardner</u> Relinquished by:		Method of Shipment:			
Date/Time: <u>4/7/14 900</u> Date/Time:		Date/Time: <u>4/8/14 9:45</u> Date/Time:			
Date/Time:		Date/Time:			
Custody Seals Intact: <u>Yes</u> ☒ No ☐		Cooler Temperature(s) °C and Other Remarks: <u>17.2 Cor 1.99 JPY Seal</u>			

Login Sample Receipt Checklist

Client: MWH Americas Inc

Job Number: 560-46614-1

SDG Number:

Login Number: 46614

List Number: 1

Creator: Rood, Vivian R

List Source: TestAmerica Corpus Christi

Question	Answer	Comment
Radioactivity wasn't checked or is $\leq$ 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.	True	
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	
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.	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 $<6\text{mm}$ (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	True	

ANALYTICAL REPORT

TestAmerica Laboratories, Inc.

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

TestAmerica Job ID: 400-97676-1

Client Project/Site: KM Johnston Fed #6A

For:

MWH Americas Inc
1801 California Street
Suite 2900
Denver, Colorado 80202

Attn: Ms. Sarah Gardner



Authorized for release by:

11/6/2014 1:39:17 PM

Bernard Kirkland, Manager of Project Management
(912)354-7858 e.3238

bernard.kirkland@testamericainc.com

Designee for

Neal Salcher, Senior Project Manager
(713)690-4444

neal.salcher@testamericainc.com

LINKS

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www.testamericainc.com

The test results in this report meet all 2003 NELAC and 2009 TNI requirements for accredited parameters, exceptions are noted in this report. This report may not be reproduced except in full, and with written approval from the laboratory. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.

This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

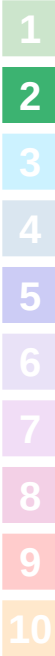


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Definitions/Glossary

Client: MWH Americas Inc
Project/Site: KM Johnston Fed #6A

TestAmerica Job ID: 400-97676-1

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
α	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, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision level concentration
MDA	Minimum detectable activity
EDL	Estimated Detection Limit
MDC	Minimum detectable concentration
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
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: MWH Americas Inc
Project/Site: KM Johnston Fed #6A

TestAmerica Job ID: 400-97676-1

Job ID: 400-97676-1

Laboratory: TestAmerica Pensacola

Narrative

Job Narrative 400-97676-1

Comments

No additional comments.

Receipt

The samples were received on 10/28/2014 9:39 AM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperature of the cooler at receipt was 3.0° C.

Sample MW-1 was listed on the on the COC but was not received. Client was contacted and informed the laboratory that it was not sampled.

GC/MS 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.

Sample Summary

Client: MWH Americas Inc
Project/Site: KM Johnston Fed #6A

TestAmerica Job ID: 400-97676-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
400-97676-2	MW-2	Water	10/23/14 14:00	10/28/14 09:39
400-97676-3	MW-3	Water	10/23/14 13:55	10/28/14 09:39
400-97676-4	MW-4	Water	10/23/14 13:50	10/28/14 09:39
400-97676-5	MW-5	Water	10/23/14 13:45	10/28/14 09:39
400-97676-6	MW-6	Water	10/23/14 13:40	10/28/14 09:39
400-97676-7	TRIP BLANK	Water	10/23/14 15:00	10/28/14 09:39

Client Sample Results

Client: MWH Americas Inc
Project/Site: KM Johnston Fed #6A

TestAmerica Job ID: 400-97676-1

Client Sample ID: MW-2

Date Collected: 10/23/14 14:00

Date Received: 10/28/14 09:39

Lab Sample ID: 400-97676-2

Matrix: Water

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	<0.38		1.0	0.38	ug/L			11/01/14 13:07	1
Ethylbenzene	<0.50		1.0	0.50	ug/L			11/01/14 13:07	1
Toluene	<0.70		1.0	0.70	ug/L			11/01/14 13:07	1
Xylenes, Total	<1.6		10	1.6	ug/L			11/01/14 13:07	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene	92		78 - 118					11/01/14 13:07	1
Dibromofluoromethane	104		81 - 121					11/01/14 13:07	1
Toluene-d8 (Surr)	91		80 - 120					11/01/14 13:07	1

Client Sample ID: MW-3

Date Collected: 10/23/14 13:55

Date Received: 10/28/14 09:39

Lab Sample ID: 400-97676-3

Matrix: Water

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	<0.38		1.0	0.38	ug/L			11/01/14 13:31	1
Ethylbenzene	6.2		1.0	0.50	ug/L			11/01/14 13:31	1
Toluene	<0.70		1.0	0.70	ug/L			11/01/14 13:31	1
Xylenes, Total	<1.6		10	1.6	ug/L			11/01/14 13:31	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene	114		78 - 118					11/01/14 13:31	1
Dibromofluoromethane	101		81 - 121					11/01/14 13:31	1
Toluene-d8 (Surr)	99		80 - 120					11/01/14 13:31	1

Client Sample ID: MW-4

Date Collected: 10/23/14 13:50

Date Received: 10/28/14 09:39

Lab Sample ID: 400-97676-4

Matrix: Water

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	<0.38		1.0	0.38	ug/L			11/01/14 13:56	1
Ethylbenzene	<0.50		1.0	0.50	ug/L			11/01/14 13:56	1
Toluene	<0.70		1.0	0.70	ug/L			11/01/14 13:56	1
Xylenes, Total	<1.6		10	1.6	ug/L			11/01/14 13:56	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene	92		78 - 118					11/01/14 13:56	1
Dibromofluoromethane	107		81 - 121					11/01/14 13:56	1
Toluene-d8 (Surr)	91		80 - 120					11/01/14 13:56	1

Client Sample ID: MW-5

Date Collected: 10/23/14 13:45

Date Received: 10/28/14 09:39

Lab Sample ID: 400-97676-5

Matrix: Water

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	<0.38		1.0	0.38	ug/L			11/01/14 14:21	1
Ethylbenzene	<0.50		1.0	0.50	ug/L			11/01/14 14:21	1
Toluene	0.96	J	1.0	0.70	ug/L			11/01/14 14:21	1

TestAmerica Pensacola

Client Sample Results

Client: MWH Americas Inc
Project/Site: KM Johnston Fed #6A

TestAmerica Job ID: 400-97676-1

Client Sample ID: MW-5

Date Collected: 10/23/14 13:45

Date Received: 10/28/14 09:39

Lab Sample ID: 400-97676-5

Matrix: Water

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Xylenes, Total	1.9	J	10	1.6	ug/L			11/01/14 14:21	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene	96		78 - 118		11/01/14 14:21	1
Dibromofluoromethane	102		81 - 121		11/01/14 14:21	1
Toluene-d8 (Surr)	90		80 - 120		11/01/14 14:21	1

Client Sample ID: MW-6

Date Collected: 10/23/14 13:40

Date Received: 10/28/14 09:39

Lab Sample ID: 400-97676-6

Matrix: Water

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	<0.38		1.0	0.38	ug/L			11/01/14 14:46	1
Ethylbenzene	<0.50		1.0	0.50	ug/L			11/01/14 14:46	1
Toluene	<0.70		1.0	0.70	ug/L			11/01/14 14:46	1
Xylenes, Total	<1.6		10	1.6	ug/L			11/01/14 14:46	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene	92		78 - 118		11/01/14 14:46	1
Dibromofluoromethane	106		81 - 121		11/01/14 14:46	1
Toluene-d8 (Surr)	91		80 - 120		11/01/14 14:46	1

Client Sample ID: TRIP BLANK

Date Collected: 10/23/14 15:00

Date Received: 10/28/14 09:39

Lab Sample ID: 400-97676-7

Matrix: Water

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	<0.38		1.0	0.38	ug/L			11/01/14 11:28	1
Ethylbenzene	<0.50		1.0	0.50	ug/L			11/01/14 11:28	1
Toluene	<0.70		1.0	0.70	ug/L			11/01/14 11:28	1
Xylenes, Total	<1.6		10	1.6	ug/L			11/01/14 11:28	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene	93		78 - 118		11/01/14 11:28	1
Dibromofluoromethane	103		81 - 121		11/01/14 11:28	1
Toluene-d8 (Surr)	91		80 - 120		11/01/14 11:28	1

QC Sample Results

Client: MWH Americas Inc
Project/Site: KM Johnston Fed #6A

TestAmerica Job ID: 400-97676-1

Method: 8260B - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 400-235149/4

Matrix: Water

Analysis Batch: 235149

Client Sample ID: Method Blank

Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	<0.38		1.0	0.38	ug/L			11/01/14 11:00	1
Ethylbenzene	<0.50		1.0	0.50	ug/L			11/01/14 11:00	1
Toluene	<0.70		1.0	0.70	ug/L			11/01/14 11:00	1
Xylenes, Total	<1.6		10	1.6	ug/L			11/01/14 11:00	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene	92		78 - 118		11/01/14 11:00	1
Dibromofluoromethane	102		81 - 121		11/01/14 11:00	1
Toluene-d8 (Surr)	94		80 - 120		11/01/14 11:00	1

Lab Sample ID: LCS 400-235149/1002

Matrix: Water

Analysis Batch: 235149

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	58.9		ug/L		118	79 - 120
Ethylbenzene	50.0	52.1		ug/L		104	80 - 120
Toluene	50.0	50.3		ug/L		101	80 - 120
Xylenes, Total	100	105		ug/L		105	70 - 130

Surrogate	LCS %Recovery	LCS Qualifier	Limits
4-Bromofluorobenzene	91		78 - 118
Dibromofluoromethane	106		81 - 121
Toluene-d8 (Surr)	93		80 - 120

Lab Sample ID: 400-97676-2 MS

Matrix: Water

Analysis Batch: 235149

Client Sample ID: MW-2

Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Benzene	<0.38		50.0	59.4		ug/L		119	10 - 150
Ethylbenzene	<0.50		50.0	51.8		ug/L		104	10 - 150
Toluene	<0.70		50.0	49.9		ug/L		100	10 - 150
Xylenes, Total	<1.6		100	104		ug/L		104	10 - 150

Surrogate	MS %Recovery	MS Qualifier	Limits
4-Bromofluorobenzene	92		78 - 118
Dibromofluoromethane	107		81 - 121
Toluene-d8 (Surr)	93		80 - 120

Lab Sample ID: 400-97676-2 MSD

Matrix: Water

Analysis Batch: 235149

Client Sample ID: MW-2

Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	Limit
Benzene	<0.38		50.0	60.1		ug/L		120	10 - 150	1	19
Ethylbenzene	<0.50		50.0	52.9		ug/L		106	10 - 150	2	40

TestAmerica Pensacola

QC Sample Results

Client: MWH Americas Inc
Project/Site: KM Johnston Fed #6A

TestAmerica Job ID: 400-97676-1

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

Lab Sample ID: 400-97676-2 MSD

Matrix: Water

Analysis Batch: 235149

Client Sample ID: MW-2

Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Toluene	<0.70		50.0	51.3		ug/L		103	10 - 150	3	26
Xylenes, Total	<1.6		100	106		ug/L		106	10 - 150	2	41

Surrogate	MSD %Recovery	MSD Qualifier	Limits
4-Bromofluorobenzene	90		78 - 118
Dibromofluoromethane	108		81 - 121
Toluene-d8 (Surr)	93		80 - 120

Lab Chronicle

Client: MWH Americas Inc
Project/Site: KM Johnston Fed #6A

TestAmerica Job ID: 400-97676-1

Client Sample ID: MW-2

Date Collected: 10/23/14 14:00

Date Received: 10/28/14 09:39

Lab Sample ID: 400-97676-2

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	235149	11/01/14 13:07	CLN	TAL PEN

Client Sample ID: MW-3

Date Collected: 10/23/14 13:55

Date Received: 10/28/14 09:39

Lab Sample ID: 400-97676-3

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	235149	11/01/14 13:31	CLN	TAL PEN

Client Sample ID: MW-4

Date Collected: 10/23/14 13:50

Date Received: 10/28/14 09:39

Lab Sample ID: 400-97676-4

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	235149	11/01/14 13:56	CLN	TAL PEN

Client Sample ID: MW-5

Date Collected: 10/23/14 13:45

Date Received: 10/28/14 09:39

Lab Sample ID: 400-97676-5

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	235149	11/01/14 14:21	CLN	TAL PEN

Client Sample ID: MW-6

Date Collected: 10/23/14 13:40

Date Received: 10/28/14 09:39

Lab Sample ID: 400-97676-6

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	235149	11/01/14 14:46	CLN	TAL PEN

Client Sample ID: TRIP BLANK

Date Collected: 10/23/14 15:00

Date Received: 10/28/14 09:39

Lab Sample ID: 400-97676-7

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	235149	11/01/14 11:28	CLN	TAL PEN

Laboratory References:

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

TestAmerica Pensacola

Method Summary

Client: MWH Americas Inc
Project/Site: KM Johnston Fed #6A

TestAmerica Job ID: 400-97676-1

Method	Method Description	Protocol	Laboratory
8260B	Volatile Organic Compounds (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 Corpus Christi
1733 N. Padre Island Drive
Corpus Christi, TX 78408
Phone (361) 289-2673 Fax (361) 289-2471

Chain of Custody Record

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Client Information Client Contact: Ms. Sarah Gardner Phone: 361 291-2239 Email: sarah.gardner@mvhglobal.com Project Name: KJM Johnston Fed #6A Site:		Lab PWT: Lab PWT: Salcher, Neal E-Mail: neal.salcher@testamericainc.com		Carrier Tracking No(s): 560-15217-1513.1 Page: 1 of 1 Job #:	
Address: 1801 California Street, Suite 2900 City: Denver State, Zip: CO, 80202 Phone: 303-281-2239 (Tel) Email: sarah.gardner@mvhglobal.com Project Name: KJM Johnston Fed #6A Site:		Analysis Requested Due Date Requested: TAT Requested (days): PO #: Purchase Order Requested WO #: As per Enfos Project #: 56004970 SSOW#:			
Sample Identification Sample ID: MW-1 MW-2 MW-3 MW-4 MW-5 MW-6 TRIP BLANK		Sample Date 10/23/14 10/23/14 10/23/14 10/23/14 10/23/14 10/23/14		Sample Time 1405 1400 1355 1350 1345 1340 1500	
Sample Type (C=Comp, G=grab) G G G G G G		Matrix (H=Water, S=Soil, C=Concrete, L=Leak, A=Air) Water Water Water Water Water Water Water		Special Instructions/Note: Not Sampled	
Possible Hazard Identification ☒ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown ☐ Radiological Deliverable Requested: I, II, III, IV, Other (specify)		Sample Disposal (A fee may be assessed if samples are retained longer than 1 month) ☐ Return To Client ☒ Disposal By Lab ☐ Archive For Months			
Empty Kit Relinquished by: Relinquished by: <i>Chris Lee</i> Date/Time: 10/27/14 915 Company:		Relinquished by: Relinquished by: <i>Chris Lee</i> Date/Time: 10-28-14 915 Company:			
Custody Seal No.: Custody Seal Intact: ☒ Yes ☐ No		Cooler Temperature(s) °C and Other Remarks: 3.0°C IL-2			

Chain of Custody Record

Client Information Client Contact: Ms. Sarah Gardner Phone: 303 291-2239 E-Mail: sarah.gardner@mwglobal.com Project Name: KM Johnston Fed #6A Site:		Lab PM: Salcher, Neal E-Mail: neal.salcher@testamericainc.com		Carrier Tracking No(s): COC No: 560-15217-1513.1 Page: Page 1 of 1 Job #:	
Due Date Requested: TAT Requested (days): PO #: 303-291-2239(Tel) Purchase Order Requested WO #: 56004970 As per Enfos Project #: 56004970 SSOW#:		Analysis Requested			
Address: 1801 California Street, Suite 2900 City: Denver State, Zip: CO, 80202 Phone: 303-291-2239(Tel) Email: sarah.gardner@mwglobal.com Project Name: KM Johnston Fed #6A Site:		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 Other: M - Hexane N - None O - AsNaO2 P - Na2OAS Q - Na2SO3 R - Na2S2O3 S - H2SO4 T - TSP Dodecalhydrate U - Acetone V - MCAA W - ph 4-5 Z - other (specify)			
Sample Identification MW-1 MW-2 MW-3 MW-4 MW-5 MW-6 TRIP BLANK		Sample Date 10/23/14 10/23/14 10/23/14 10/23/14 10/23/14 10/23/14		Sample Time 1405 1400 1355 1350 1345 1340 1500	
Sample Type (C=Comp, G=grab) G G G G G G G		Matrix (W=water, S=solid, O=oil, BT=Tissue, A=Air) Water Water Water Water Water Water Water		Field Filtered Sample (Yes or No) 8260B - BTEX Perform MS/MSD (Yes or No)	
Total Number of Containers		Total Number of Containers		Special Instructions/Note:	
Sample Disposal (A fee may be assessed if samples are retained longer than 1 month) ☐ Return To Client ☒ Disposal By Lab ☐ Archive For _____ Months					
Possible Hazard Identification ☒ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown ☐ Radiological Deliverable Requested: I, II, III, IV, Other (specify)					
Empty Kit Relinquished by:		Date/Time: 10/27/14 915		Date/Time: 10-28-14 915	
Relinquished by:		Date/Time:		Date/Time:	
Relinquished by:		Date/Time:		Date/Time:	
Custody Seals Intact:		Custody Seal No.:		Cooler Temperature(s) °C and Other Remarks: 30°C IR-2	