

3R – 205

2014 AGWMR

02 / 20 / 2015



MWH®

BUILDING A BETTER WORLD

February 20, 2015

Mr. Glenn von Gonten
New Mexico Oil Conservation Division
1220 South St. Francis Drive
Santa Fe, NM 87505

RE: Groundwater Monitoring Report and Request for Site Closure
K-31 Line Drip Site
NMOCD Case No. 3RP-205-0
METER CODE: LD087
T25N, R6W, Sec16, Unit N

Mr. Glenn von Gonten:

MWH, on behalf of El Paso CGP Company, LLC (EPCGP), requests regulatory closure of the K-31 Line Drip site (NMOCD Case No. 3RP-205-0). This correspondence documents the analytical results from site monitoring activities that have been completed in accordance with the Remediation Plan approved by the New Mexico Oil Conservation Division (OCD) on November 30, 1995. EPCGP is requesting closure of the K-31 Line Drip site (the Site) based on the data obtained and the closure criteria outlined in the Remediation Plan.

Site Background

The Site was assessed in 1994, and 90 cubic yards (CY) of impacted soil was excavated from the former pit location in August 1994. In November 1995, an additional 1,786 CY were excavated. Monitoring wells were installed in 1997 (MW-1), 2000 (MW-2 and MW-3), 2006 (MW-4 and MW-5), and 2012 (MW-6 through MW-9). In November 2002, approximately 75 pounds of Oxygen Release Compound (ORC®) was injected between wells MW-1 and MW-2, in an effort to enhance natural biodegradation processes. Since the fourth calendar quarter of 2013, groundwater sampling has been conducted in all site wells on a quarterly basis (MW-3 has been dry). Monitoring well and construction logs are provided in Attachment A.

Groundwater Monitoring Data

Groundwater monitoring at the Site has been conducted since April 1997. Benzene, toluene, ethylbenzene, and xylene (BTEX) concentrations in all site wells have been below the New Mexico Water Quality Control Commission (NMWQCC) standards for the past four quarters. Groundwater sampling results, groundwater elevations, and additional field parameters, including dissolved oxygen, temperature, conductivity, pH, and oxidation-reduction potential (ORP), are summarized in Table 1 and depicted in Figures 1-8.

Since June 2013, groundwater samples have been collected using HydraSleeve™ no-purge groundwater sampling devices (HydraSleeves). HydraSleeve sampling devices provide no-purge groundwater samples from the undisturbed water column, and have been proven in independent testing to provide groundwater quality data comparable to low-flow groundwater sampling methods. The HydraSleeves were set during the previous sampling events approximately 0.5 foot above termination depth of the monitoring wells, using a suspension tether and stainless steel weights. On the following sample event, field personnel returned to the Site and collected a direct, undisturbed sample from the water column in the screened interval of each well by pulling the HydraSleeve from the well. 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 or Pensacola, Florida where they were analyzed for BTEX. Laboratory analytical reports for the past four quarters are provided in Attachment B.

Request for Site Closure

Based on the occurrence of four consecutive quarterly groundwater sampling events with no reported contaminant concentrations exceeding NMOCD standards, EPCGP respectfully requests that the NMOCD grant site closure for this case.

If you have any comments or questions concerning this correspondence, please contact me at (515) 251-1005 or Joseph Wiley with EPCGP at (713) 420-3475.

Sincerely,



Clint Oberbroeckling
Project Manager

/cwo:hls

cc: Joseph Wiley, EPCGP

TABLE



MWH

TABLE 1
GROUNDWATER MONITORING RESULTS
K-31 LINE DRIP SITE

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.)	Oxygen (mg/L)	Conductivity (µS/cm)	Potential (mV)	pH (field)	Comments
NMWQCC Standards:		10	750	750	620	NA	NA	NA	NA	NA	NA	6 - 9	
MW-1	04/16/97	84.9	25.7	43.6	206	15.00	-	-	-	-	-	-	
MW-1	06/06/97	115	<1	37.8	76.1	17.99	-	-	1.5	-	-	-	
MW-1	09/11/97	259	10.8	124	58.4	18.48	-	-	1.5	-	-	-	
MW-1	12/09/97	201	<1	71.5	25.8	18.09	-	-	1.5	-	-	-	
MW-1	03/19/98	61.2	<1	17.8	2.35	17.59	-	-	1.5	-	-	-	
MW-1	06/02/98	98.3	1.48	27.2	14.7	17.98	-	-	1.5	-	-	-	
MW-1	06/14/99	65	3.7	4.2	10	17.98	-	-	1	-	-	-	
MW-1	06/27/00	29	<0.5	3.5	12	18.10	-	-	-	-	-	7.05	
MW-1	04/03/01	5	1.4	1.1	4.1	17.79	-	-	-	-	-	6.66	
MW-1	10/01/01	3.3	1.1	0.8	5.6	18.94	-	-	-	-	-	6.85	
MW-1	04/01/02	<2.5	<2.5	<2.5	<5	18.05	-	-	1.85	-	-	7.34	
MW-1	10/08/02	0.6	<0.5	<0.5	1.3	18.86	-	-	-	6840	-	-	
MW-1	03/13/03					17.91	-	-	-	-	-	-	
MW-1	09/15/03					19.03	-	-	-	-	-	-	
MW-1	03/22/04					18.04	-	-	-	-	-	-	
MW-1	09/14/04					19.23	-	-	-	-	-	-	
MW-1	03/22/05					18.20	-	-	-	-	-	-	
MW-1	06/24/05					18.74	-	-	-	-	-	-	
MW-1	09/14/05					19.26	-	-	-	-	-	-	
MW-1	12/14/05					18.78	-	-	-	-	-	-	
MW-1	03/28/06					18.34	-	-	-	-	-	-	
MW-1	06/07/06					18.78	-	-	-	-	-	-	
MW-1	12/26/06					18.14	-	-	-	-	-	-	
MW-1	06/12/07					18.09	-	-	-	-	-	-	
MW-1	12/18/07					16.46	-	-	-	-	-	-	
MW-1	06/16/08					18.43	-	-	-	-	-	-	
MW-1	12/10/08					18.69	-	-	-	-	-	-	
MW-1	06/10/09					18.46	-	-	-	-	-	-	
MW-1	11/02/09					18.82	-	-	-	-	-	-	
MW-1	06/02/10					18.24	-	-	-	-	-	-	
MW-1	11/08/10					18.87	-	-	-	-	-	-	
MW-1	05/09/11					18.17	-	-	-	-	-	-	
MW-1	11/10/11					19.02	-	-	-	-	-	-	
MW-1	06/05/13	<0.14	<0.30	<0.20	<0.23	18.76	-	-	0.88	1057	-52.8	6.74	
MW-1	09/10/13	<0.14	<0.30	<0.20	<0.23	19.46	-	-	0.84	8.096	-55.4	6.46	
MW-1	12/11/13	<0.20	<0.38	<0.20	<0.65	18.73	-	-	NA	NA	NA	NA	No parameters; temps below freezing
MW-1	04/04/14	<0.20	<0.38	<0.20	<0.65	18.28	-	-	1.53	9916	-72.5	7.26	
MW-1	09/07/14	<0.14	<0.30	<0.20	<0.23	19.31	-	-	-	-	-	-	
MW-1	10/22/14	<0.38	<0.70	<0.50	<1.6	19.22	-	-	5.37	11.102	-11.3	7.16	
MW-1	01/21/15	<1.0	<5.0	<1.0	<5.0	18.70	-	-	-	-	-	-	

TABLE 1
GROUNDWATER MONITORING RESULTS
K-31 LINE DRIP SITE

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.)	Oxygen (mg/L)	Conductivity (µS/cm)	Potential (mV)	pH (field)	Comments
NMWQCC Standards:		10	750	750	620	NA	NA	NA	NA	NA	NA	6 - 9	
MW-2	08/31/00	1800	590	86	490	17.36	-	-	-	-	-	-	
MW-2	04/03/01	340	4	8.7	3.3	16.82	-	-	-	-	-	5.98	
MW-2	10/01/01	190	3	4.5	3.7	17.63	-	-	-	-	-	6.95	
MW-2	04/01/02	230	3.4	<2.5	<5	16.78	-	-	3.59	-	-	7.14	
MW-2	10/08/02	104	1.6	2.3	1.6	17.62	-	-	-	9220	-	-	
MW-2	03/13/03	254	5.6	3.5	1.4	16.64	-	-	-	898	-	-	
MW-2	03/25/03					16.65	-	-	1.05	-	-	-	
MW-2	09/15/03	125	2.6	5.2	3	17.78	-	-	1.67	7800	-	7.06	
MW-2	03/22/04	176	3.7	7.7	1.4	16.76	-	-	2.98	7770	-	7.1	
MW-2	09/14/04	32.2	1.4	2.4	1.3 J	17.21	-	-	2.84	7590	-	7.06	
MW-2	03/22/05	93.7	0.56	4.2	<2	16.91	-	-	-	7770	-	7.1	
MW-2	06/24/05	322	1.9	11	2.5	17.44	-	-	-	3260	-	7.02	
MW-2	09/14/05	7.6	0.79 J	0.78 J	1.4 J	17.92	-	-	-	-	-	-	
MW-2	12/14/05	6.3 J	0.48 J	0.68 J	0.89 J	17.46	-	-	-	-	-	-	
MW-2	03/28/06	40.8	0.68 J	2.7	1.4 J	17.02	-	-	-	-	-	-	
MW-2	06/07/06	44.3	<1	2.7	0.86 J	17.47	-	-	-	-	-	-	
MW-2	12/26/06	50.8	<1	2.4	0.37 J	16.90	-	-	-	-	-	-	
MW-2	06/12/07	502	2.3	4.7	5	16.83	-	-	-	-	-	-	
MW-2	12/18/07	10.2	<2	<2	<6	17.22	-	-	-	-	-	-	
MW-2	06/16/08	123	<1	<1	<2	17.15	-	-	-	-	-	-	
MW-2	12/10/08	1.8	<1	<1	0.64 J	17.45	-	-	-	-	-	-	
MW-2	06/10/09	34.7	<1	<1	<2	17.22	-	-	-	-	-	-	
MW-2	11/02/09	0.51 J	<1	<1	<2	17.76	-	-	-	-	-	-	
MW-2	06/02/10	209	0.95 J	<2	5.6 J	16.96	-	-	-	-	-	-	
MW-2	11/08/10	<2	<2	<2	<6	17.72	-	-	-	-	-	-	
MW-2	05/09/11	12.1	<2	<2	<6	16.90	-	-	-	-	-	-	
MW-2	11/10/11	1.3	<1	<1	<3	17.80	-	-	-	-	-	-	
MW-2	05/15/12	<1	<1	<1	<3	17.24	-	-	-	-	-	-	
MW-2	06/05/13	<0.14	<0.30	<0.20	<0.23	17.51	-	-	1.20	16.27	-52.4	6.68	
MW-2	09/10/13	1.24	<0.30	<0.20	<0.23	18.19	-	-	0.88	11.44	-65.7	6.33	
MW-2	12/11/13	<0.20	<0.38	<0.20	<0.65	17.49	-	-	NA	NA	NA	NA	No parameters; temps below freezing
MW-2	04/04/14	<0.20	<0.38	<0.20	<0.65	17.03	-	-	1.44	16451	-57.6	7.22	
MW-2	09/07/14	<0.14	<0.30	<0.20	<0.23	18.03	-	-	-	-	-	-	
MW-2	10/22/14	<0.38	<0.70	<0.50	<1.6	17.92	-	-	4.02	14725	-45.8	6.97	
MW-2	01/21/15	<1.0	<5.0	<1.0	<5.0	17.43	-	-	-	-	-	-	
MW-3	08/31/00	<0.5	<0.5	<0.5	<0.5	17.69	-	-	-	-	-	-	
MW-3	10/01/01					17.97	-	-	-	-	-	-	
MW-3	10/08/02					17.92	-	-	-	-	-	-	
MW-3	03/13/03					16.98	-	-	-	-	-	-	
MW-3	09/15/03					18.08	-	-	-	-	-	-	
MW-3	03/22/04					17.09	-	-	-	-	-	-	
MW-3	09/14/04					17.95	-	-	-	-	-	-	
MW-3	03/22/05					17.24	-	-	-	-	-	-	
MW-3	06/24/05					17.78	-	-	-	-	-	-	
MW-3	09/14/05					18.00	-	-	-	-	-	-	
MW-3	12/14/05					17.78	-	-	-	-	-	-	
MW-3	03/28/06					17.34	-	-	-	-	-	-	

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K-31 LINE DRIP SITE

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.)	Oxygen (mg/L)	Conductivity (µS/cm)	Potential (mV)	pH (field)	Comments
NMWQCC Standards:		10	750	750	620	NA	NA	NA	NA	NA	NA	6 - 9	
MW-3	06/07/06					17.82	-	-	-	-	-	-	
MW-3	12/26/06					17.22	-	-	-	-	-	-	
MW-3	06/12/07					17.15	-	-	-	-	-	-	
MW-3	12/18/07					17.53	-	-	-	-	-	-	
MW-3	06/16/08					17.51	-	-	-	-	-	-	
MW-3	12/10/08					17.76	-	-	-	-	-	-	
MW-3	06/10/09					17.57	-	-	-	-	-	-	
MW-3	11/02/09					17.86	-	-	-	-	-	-	
MW-3	06/02/10					17.27	-	-	-	-	-	-	
MW-3	11/08/10					17.92	-	-	-	-	-	-	
MW-3	05/09/11					17.22	-	-	-	-	-	-	
MW-3	11/10/11					18.03	-	-	-	-	-	-	
MW-3	05/15/12					17.55	-	-	-	-	-	-	
MW-3	06/05/13					DRY	-	-	-	-	-	-	
MW-3	09/10/13					DRY	-	-	-	-	-	-	
MW-3	12/11/13					DRY	-	-	-	-	-	-	
MW-3	04/04/14					DRY	-	-	-	-	-	-	
MW-3	09/07/14					DRY	-	-	-	-	-	-	
MW-3	10/22/14					DRY	-	-	-	-	-	-	
MW-3	01/15/15					DRY	-	-	-	-	-	-	
MW-4	12/26/06	131	<1	2.4	<2	16.64	-	-	-	-	-	-	
MW-4	06/12/07	99.8	2.5	<1	6.9	15.58	-	-	-	-	-	-	
MW-4	12/18/07	70.1	14.5	1.2 J	15	15.97	-	-	-	-	-	-	
MW-4	06/16/08	28.9	25.8	1.3	21.6	16.92	-	-	-	-	-	-	
MW-4	12/10/08	20.8	4.5	6.3	12.6	16.22	-	-	-	-	-	-	
MW-4	06/10/09	38.5	23.2	1.6	18.3	15.97	-	-	-	-	-	-	
MW-4	11/02/09	9.5	1.5	<1	8.6	16.50	-	-	-	-	-	-	
MW-4	06/02/10	94.1	28.8	1.1 J	7.3	15.73	-	-	-	-	-	-	
MW-4	11/08/10	15.6	6.2	<2	5.1 J	16.41	-	-	-	-	-	-	
MW-4	05/09/11	11.4	11.4	<2	2.8 J	15.71	-	-	-	-	-	-	
MW-4	11/10/11	<1	<1	<1	<3	16.57	-	-	-	-	-	-	
MW-4	05/15/12	<1	<1	<1	<3	16.02	-	-	-	-	-	-	
MW-4	06/05/13	<0.14	<0.30	<0.20	<0.23	16.25	-	-	0.75	11.30	-59.7	6.77	
MW-4	09/10/13	<0.14	<0.30	<0.20	<0.23	16.94	-	-	1.76	8.67	-39.5	6.40	
MW-4	12/11/13	<0.20	<0.38	<0.20	<0.65	16.21	-	-	NA	NA	NA	NA	No parameters; temps below freezing
MW-4	04/04/14	<0.20	<0.38	<0.20	<0.65	15.77	-	-	2.54	11408	-67.1	7.32	
MW-4	09/07/14	<0.14	<0.30	<0.20	<0.23	16.78	-	-	-	-	-	-	
MW-4	10/22/14	<0.38	<0.70	<0.50	<1.6	16.88	-	-	4.66	11303	-67.6	7.19	
MW-4	01/21/15	<1.0	<5.0	<1.0	<5.0	16.26	-	-	-	-	-	-	
MW-5	12/26/06	7.5	<1	37.3	<2	17.46	-	-					
MW-5	06/12/07	5.3	1.5	15.2	7.3	17.39	-	-					
MW-5	12/18/07	87	15.3	50.4	10.1	17.78	-	-					
MW-5	06/16/08	45.7	7.9	18.7	5.7	17.75	-	-					
MW-5	12/10/08	63.5	5	5.1	6.4	18.02	-	-					
MW-5	06/10/09	29	6	4.8	6	17.81	-	-					
MW-5	11/02/09	15.5	1.4	1.2	3.9	18.33	-	-					
MW-5	06/02/10	47.4	1.4 J	10	4.1 J	17.55	-	-					

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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.)	Oxygen (mg/L)	Conductivity (µS/cm)	Potential (mV)	pH (field)	Comments
NMWQCC Standards:		10	750	750	620	NA	NA	NA	NA	NA	NA	6 - 9	
MW-5	11/08/10	21.2	<2	1.4 J	3.3 J	18.20	-	-					
MW-5	05/09/11	31.2	<2	7.7	2.9 J	17.52	-	-					
MW-5	11/10/11	1.5	<1	<1	<3	18.32	-	-					
MW-5	05/15/12	2.6	<1	2.5	1 J	17.78	-	-					
MW-5	06/05/13	0.17	<0.30	<0.20	<0.23	18.08	-	-	0.90	8.810	-92.9	6.67	
MW-5	09/10/13	1.6	<0.30	<0.20	<0.23	18.79	-	-	1.11	6.716	-79.5	6.44	
MW-5	12/11/13	0.70 J	<0.38	<0.20	<0.65	18.05	-	-	NA	NA	NA	NA	No parameters; temps below freezing
MW-5	04/04/14	<0.20	<0.38	<0.20	<0.65	17.60	-	-	2.08	8873	-110.6	7.24	
MW-5	09/07/14	<0.14	<0.20	<0.30	<0.23	18.61	-	-	-	-	-	-	
MW-5	10/22/14	<0.38	<0.70	<0.50	<1.6	18.51	-	-	4.87	8847	-114.9	7.12	
MW-5	01/21/15	<1.0	<5.0	<1.0	<5.0	16.00	-	-	-	-	-	-	
MW-6	12/11/13	2.6	<0.38	<0.20	<0.65	17.75	-	-	NA	NA	NA	NA	No parameters; temps below freezing
MW-6	04/04/14	<0.20	<0.38	<0.20	<0.65	17.31	-	-	1.57	9514	-54.5	7.21	
MW-6	09/07/14	<0.14	<0.30	<0.20	<0.23	18.31	-	-	-	-	-	-	No parameters collected
MW-6	10/22/14	<0.38	<0.70	<0.50	<1.6	18.20	-	-	5.12	9402	-60.7	7.05	
MW-6	01/21/15	<1.0	<5.0	<1.0	<5.0	17.70	-	-	-	-	-	-	
MW-7	12/11/13	<0.20	7.2	14	62	20.22	-	-	NA	NA	NA	NA	No parameters; temps below freezing
MW-7	04/04/14	<0.20	<0.38	<0.20	1.6 J	19.80	-	-	1.54	8185	-113.8	7.33	
MW-7	09/07/14	0.37 J	3.3	<0.30	<0.23	20.83	-	-	-	-	-	-	
MW-7	10/22/14	0.38 J	<0.70	0.76 J	<1.6	20.71	-	-	4.03	9434	-78.3	7.1	
MW-7	01/21/15	2.4	0.99 J	<1.0	1.8 J	20.21	-	-					
MW-8	12/11/13	25	18	1.6 J	11	17.84	-	-	NA	NA	NA	NA	No parameters; temps below freezing
MW-8	04/04/14	<0.20	<0.38	<0.20	<0.65	17.41	-	-	1.78	10316	-4.8	7.22	
MW-8	09/07/14	<0.14	<0.30	<0.20	<0.23	18.42	-	-	NA	NA	NA	NA	
MW-8	10/22/14	<0.38	<0.70	<0.50	<1.6	18.30	-	-	3.41	10207	-6.3	7	
MW-8	01/21/15	<1.0	<5.0	<1.0	<5.0	19.49	-	-	-	-	-	-	
MW-9	12/11/13	<0.20	<0.38	<0.20	<0.65	19.55	-	-	NA	NA	NA	NA	No parameters; temps below freezing
MW-9	04/04/14	<0.20	<0.38	<0.20	<0.65	19.09	-	-	2.16	8014	-60.7	7.23	
MW-9	09/07/14	<0.14	<0.30	<0.20	<0.23	20.10	-	-	NA	NA	NA	NA	No parameters; temps below freezing
MW-9	10/22/14	<0.38	<0.70	<0.50	<1.6	19.99	-	-	3.59	8097	-29.3	7.01	
MW-9	01/21/15	<1.0	<5.0	<1.0	<5.0	17.81	-	-	-	-	-	-	

Notes:

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

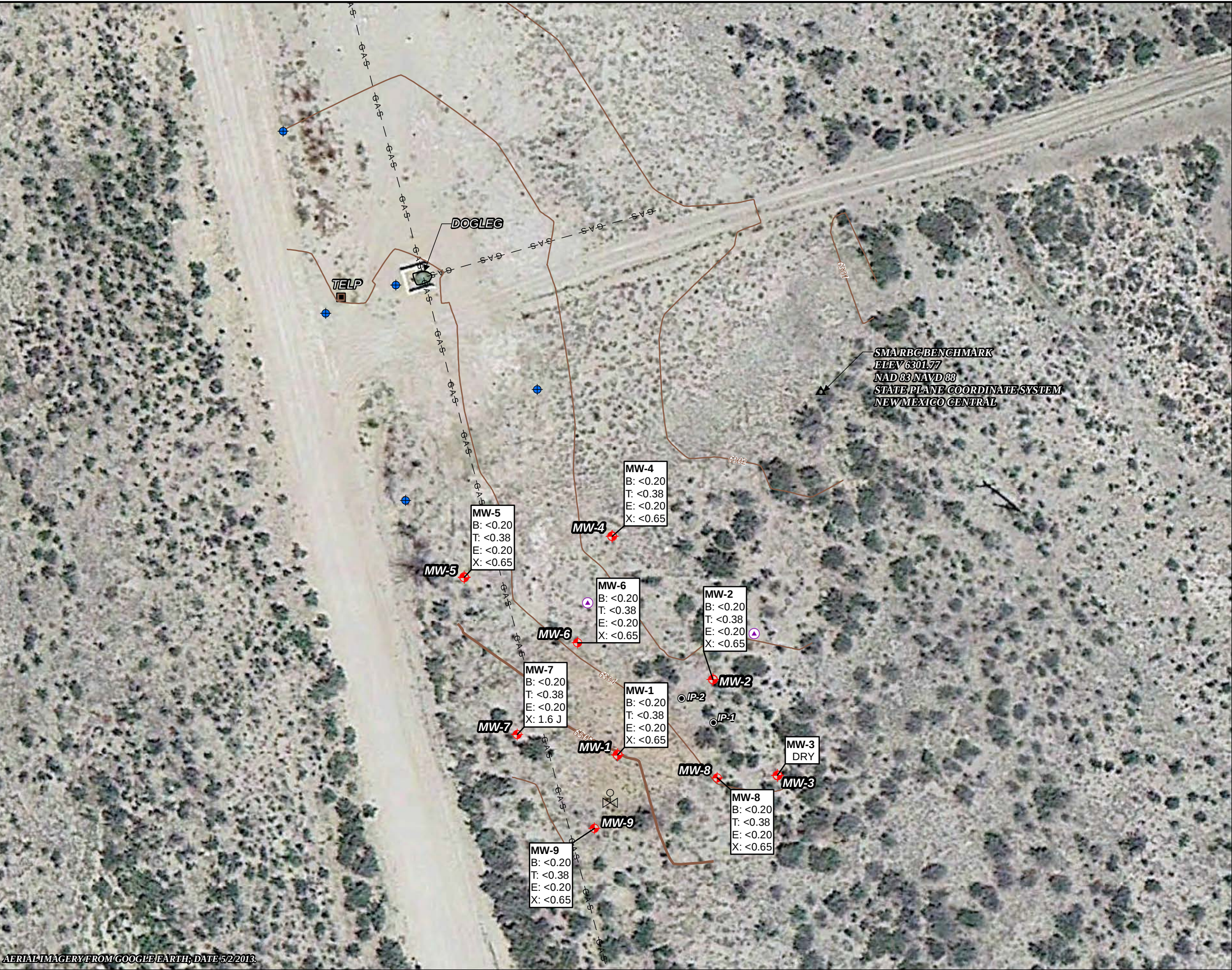
J = Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.

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

FIGURES



MWH



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

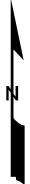
LEGEND:

- APPROXIMATE GROUND SURFACE CONTOUR AND ELEVATION, FEET
- ACCESS ROAD
- NATURAL GAS LINE
- DRIP LINE
- GEOPROBE BORING LOCATION
- MONITORING WELL
- MONITORING WELL ASSOCIATED WITH UNRELATED RELEASE
- ORC INJECTION POINT (2002)
- 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
<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

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

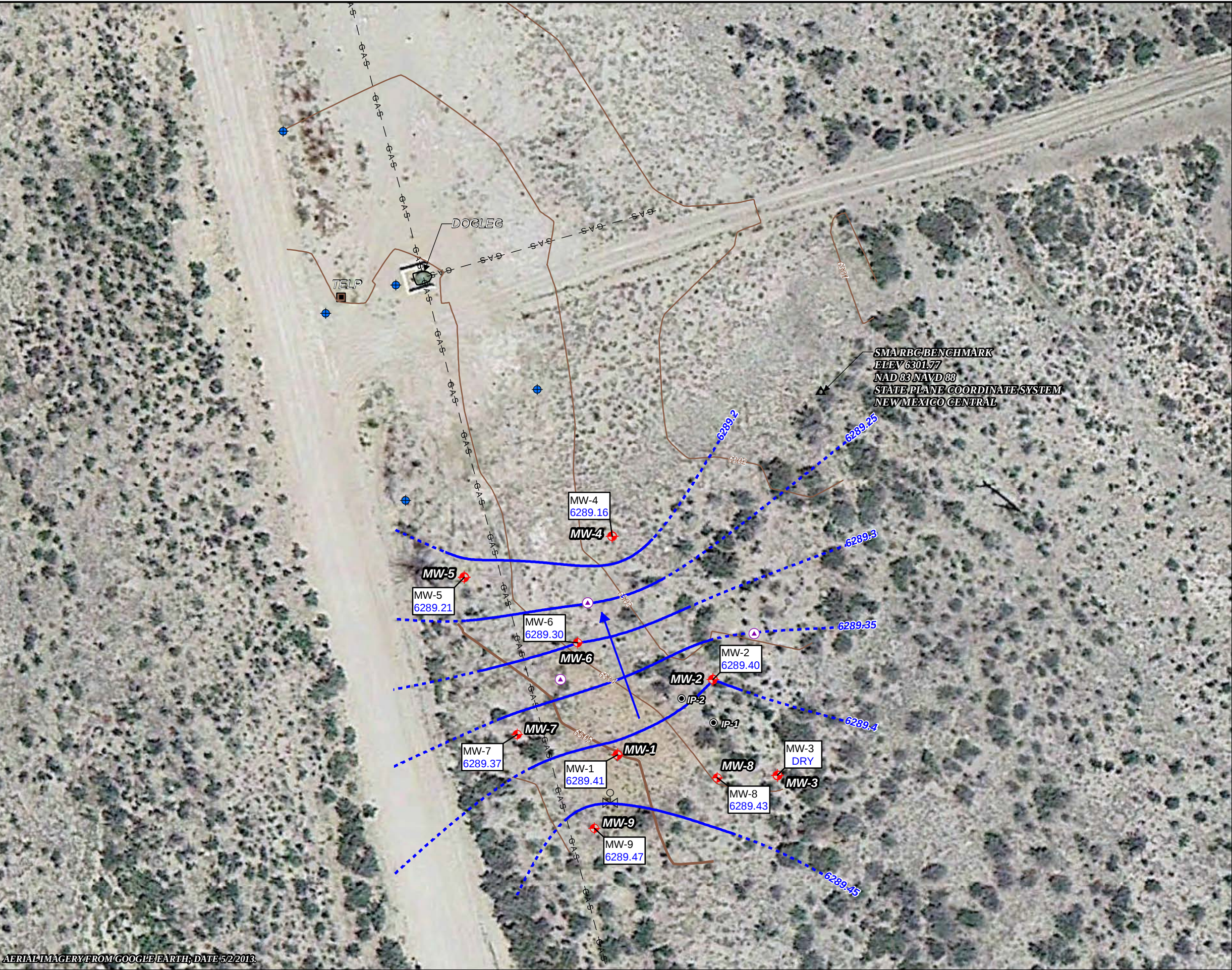


REVISION	DATE	DESIGN BY	DRAWN BY	REVIEWED BY
A	2/13/2015	CCL	CCL	DAW

TITLE:
K-31 LINE DRIP
GROUNDWATER ANALYTICAL RESULTS
SAMPLED APRIL 4, 2014

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

Figure No.: **1**

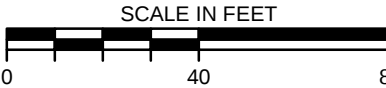
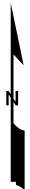


LEGEND:

- APPROXIMATE GROUND SURFACE CONTOUR AND ELEVATION, FEET
- ACCESS ROAD
- NATURAL GAS LINE
- DRIP LINE
- GEOPROBE BORING LOCATION
- MONITORING WELL
- MONITORING WELL ASSOCIATED WITH UNRELATED RELEASE
- ORC INJECTION POINT (2002)
- SMA BENCHMARK

NOTES:

- GROUNDWATER ELEVATION CORRECTED FOR PRODUCT THICKNESS. FEET ABOVE MEAN SEA LEVEL
- CORRECTED WATER LEVEL ELEVATION CONTOUR DASHED WHERE INFERRED (FEET ABOVE MEAN SEA LEVEL, 0.05 FOOT CONTOUR INTERVAL)
- DIRECTION OF GROUNDWATER FLOW



REVISION	DATE	DESIGN BY	DRAWN BY	REVIEWED BY
A	2/13/2015	CCL	CCL	DAW

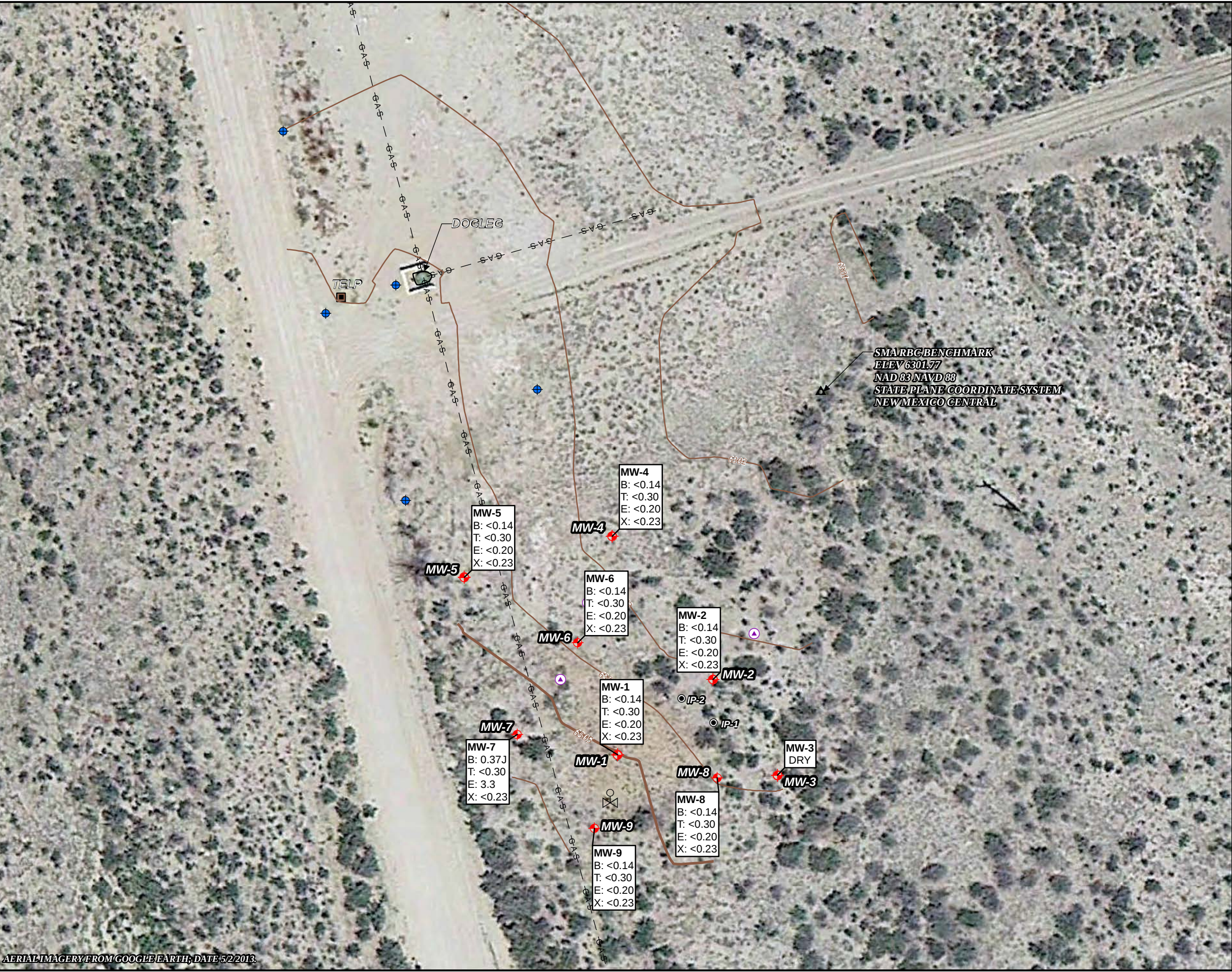
TITLE:
K-31 LINE DRIP
GROUNDWATER ELEVATION MAP
GAUGED APRIL 4, 2014

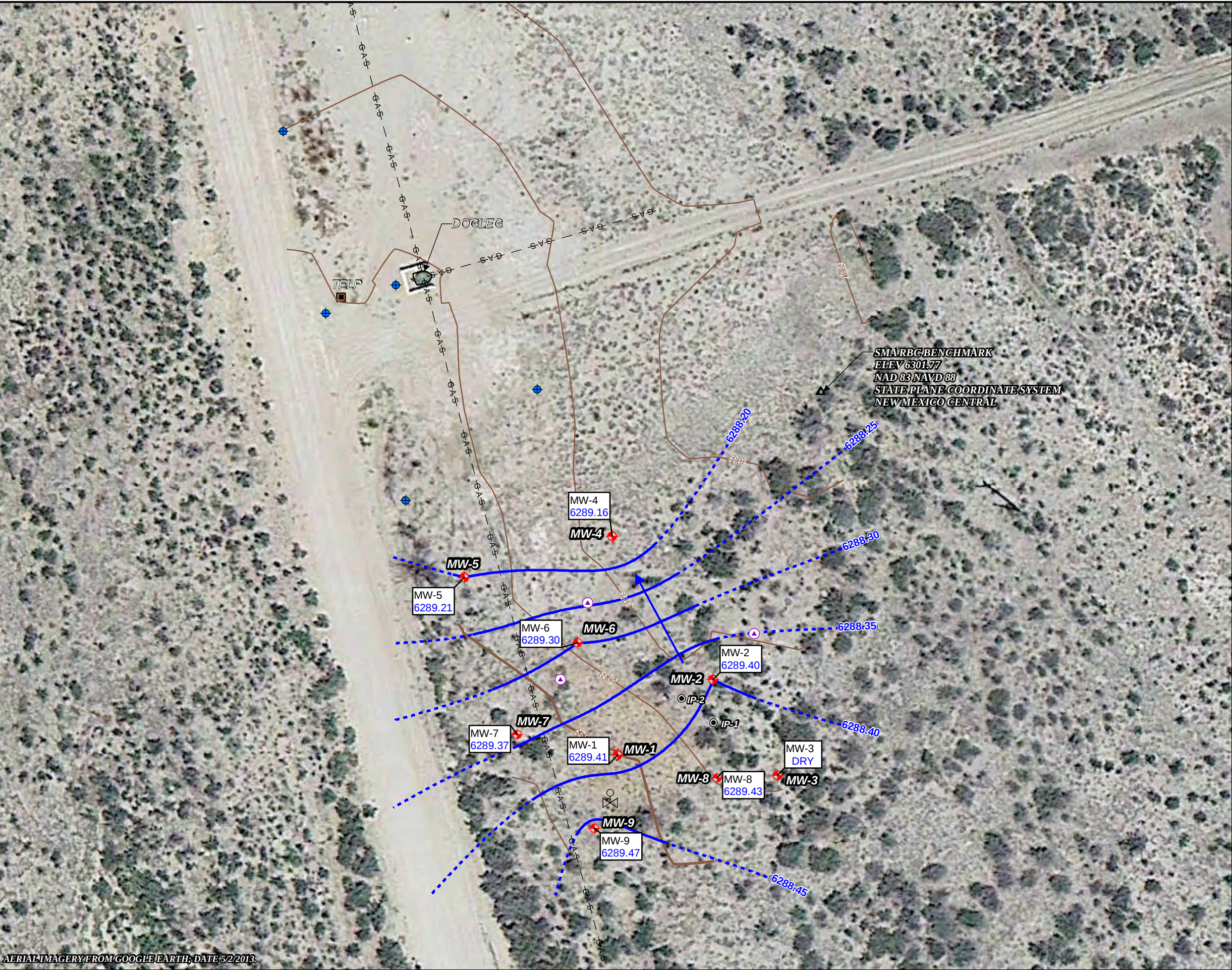
PROJECT: SAN JUAN RIVER BASIN
MONITORING AND REMEDIATION
RIO ARriba COUNTY, NEW MEXICO



Figure No.:

2





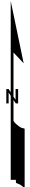
AERIAL IMAGERY FROM GOOGLE EARTH, DATE 5/2/2013.

LEGEND:

- APPROXIMATE GROUND SURFACE CONTOUR AND ELEVATION, FEET
- ACCESS ROAD
- NATURAL GAS LINE
- DRIP LINE
- GEOPROBE BORING LOCATION
- MONITORING WELL
- MONITORING WELL ASSOCIATED WITH UNRELATED RELEASE
- ORC INJECTION POINT (2002)
- SMA BENCHMARK

NOTES:

- GROUNDWATER ELEVATION CORRECTED FOR PRODUCT THICKNESS. FEET ABOVE MEAN SEA LEVEL
- CORRECTED WATER LEVEL ELEVATION CONTOUR DASHED WHERE INFERRED (FEET ABOVE MEAN SEA LEVEL, 0.05 FOOT CONTOUR INTERVAL)
- DIRECTION OF GROUNDWATER FLOW



REVISION	DATE	DESIGN BY	DRAWN BY	REVIEWED BY
A	2/13/2015	CCL	CCL	CO

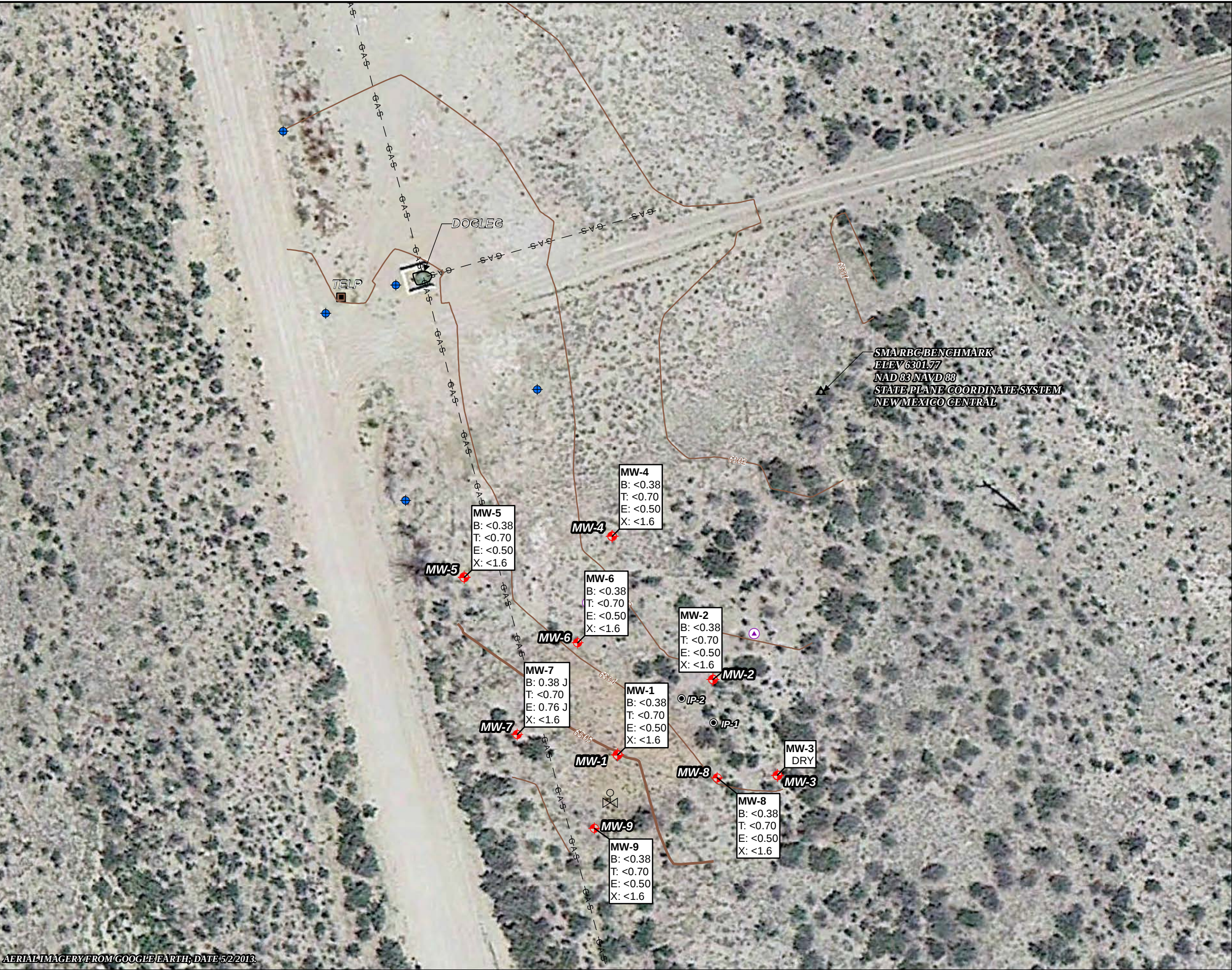
TITLE:
*K-31 LINE DRIP
GROUNDWATER ELEVATION MAP
GAUGED SEPTEMBER 7, 2014*

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



Figure No.:

4



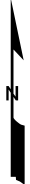
LEGEND:

- APPROXIMATE GROUND SURFACE CONTOUR AND ELEVATION, FEET
- ACCESS ROAD
- NATURAL GAS LINE
- DRIP LINE
- GEOPROBE BORING LOCATION
- MONITORING WELL
- MONITORING WELL ASSOCIATED WITH UNRELATED RELEASE
- ORC INJECTION POINT (2002)
- 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
<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

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



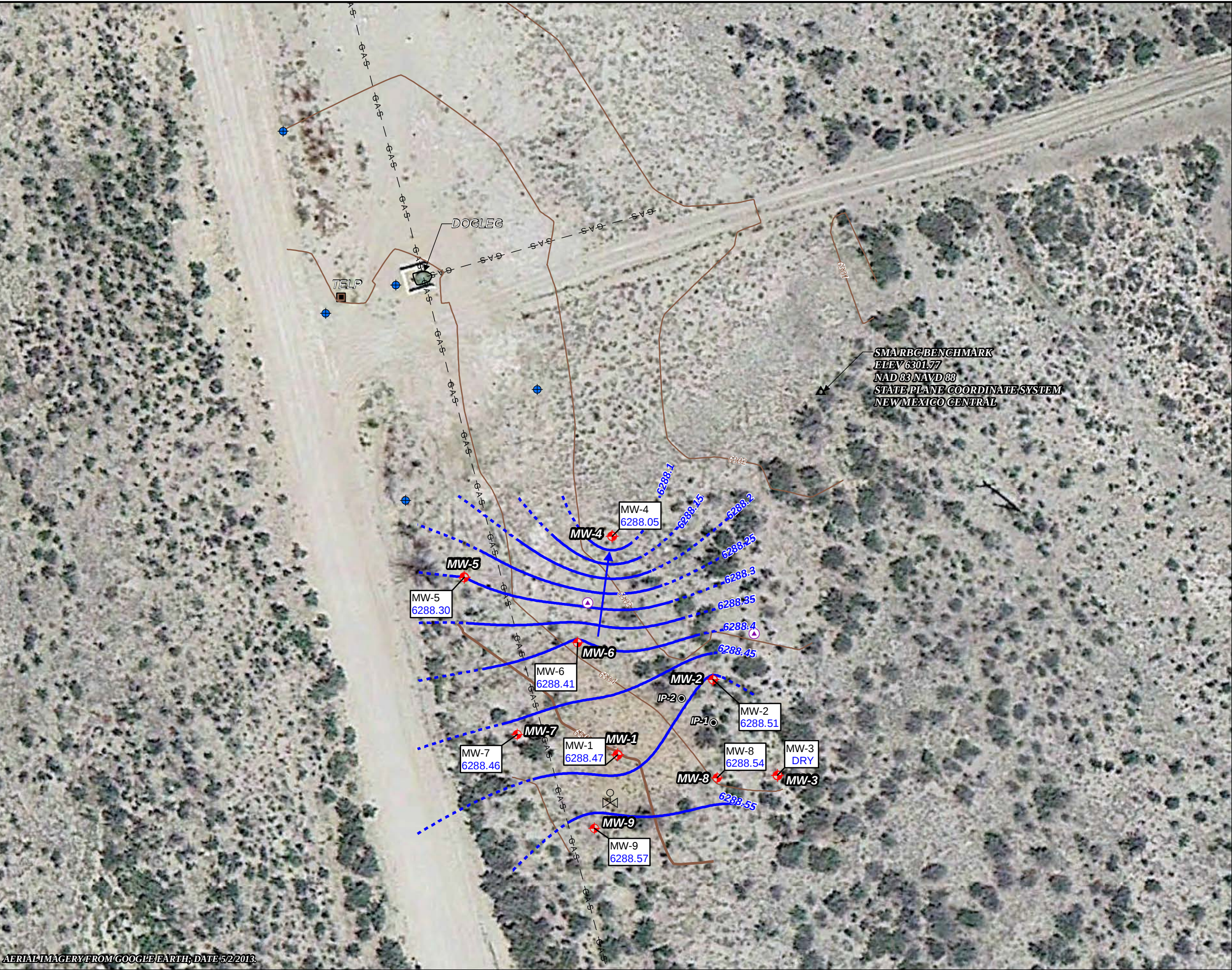
REVISION	DATE	DESIGN BY	DRAWN BY	REVIEWED BY
A	2/13/2015	CCL	CCL	CO

TITLE:
K-31 LINE DRIP
GROUNDWATER ANALYTICAL RESULTS
SAMPLED OCTOBER 22, 2014

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



Figure No.:
5



LEGEND:

- APPROXIMATE GROUND SURFACE CONTOUR AND ELEVATION, FEET
- ACCESS ROAD
- NATURAL GAS LINE
- DRIP LINE
- GEOPROBE BORING LOCATION
- MONITORING WELL
- MONITORING WELL ASSOCIATED WITH UNRELATED RELEASE
- ORC INJECTION POINT (2002)
- SMA BENCHMARK

NOTES:

- GROUNDWATER ELEVATION CORRECTED FOR PRODUCT THICKNESS. FEET ABOVE MEAN SEA LEVEL
- CORRECTED WATER LEVEL ELEVATION CONTOUR DASHED WHERE INFERRED (FEET ABOVE MEAN SEA LEVEL, 0.05 FOOT CONTOUR INTERVAL)
- DIRECTION OF GROUNDWATER FLOW



REVISION	DATE	DESIGN BY	DRAWN BY	REVIEWED BY
A	2/13/2015	CCL	CCL	CO

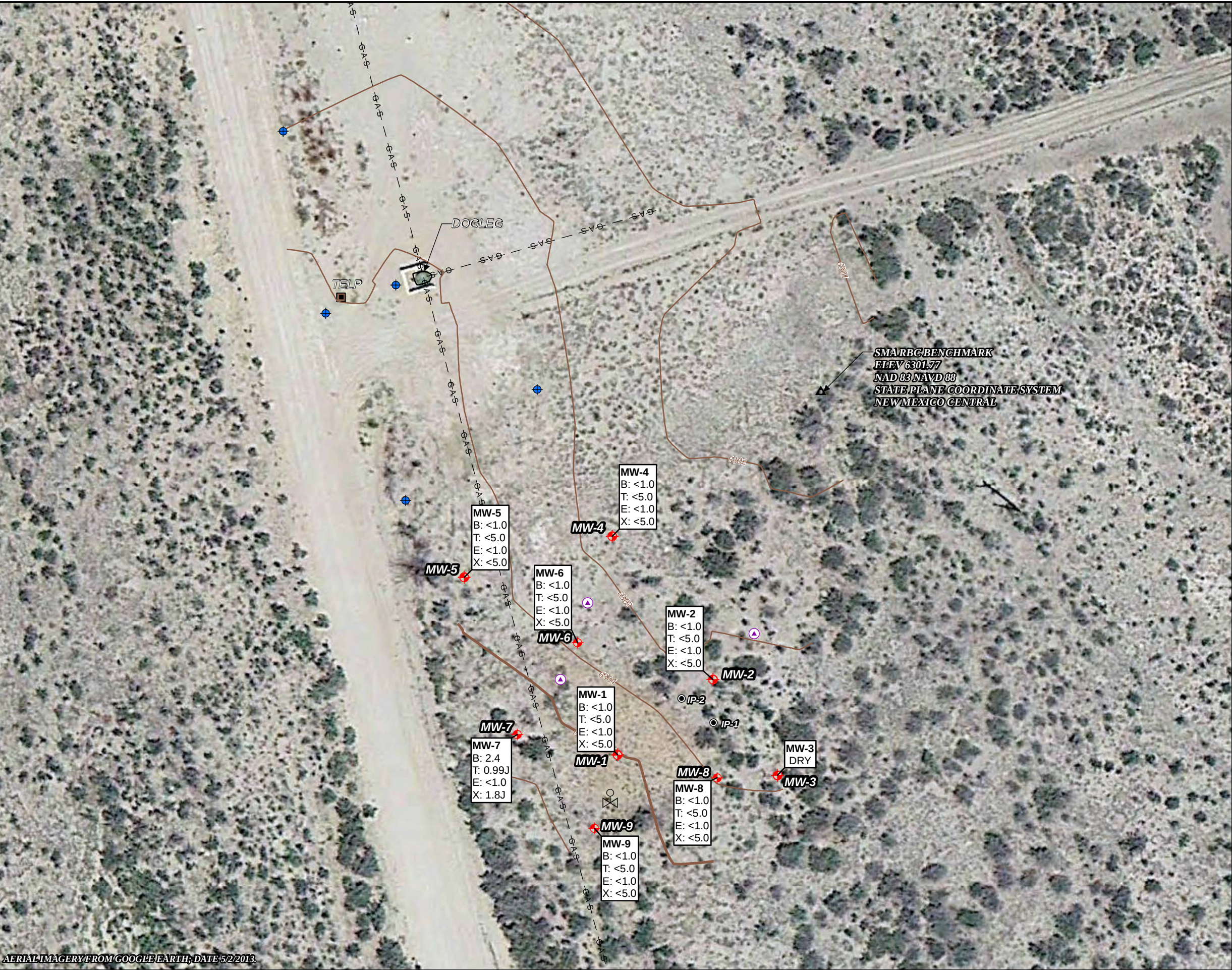
TITLE:
*K-31 LINE DRIP
GROUNDWATER ELEVATION MAP
GAUGED OCTOBER 22, 2014*

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



Figure No.:

6



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

LEGEND:

- APPROXIMATE GROUND SURFACE CONTOUR AND ELEVATION, FEET
- ACCESS ROAD
- NATURAL GAS LINE
- DRIP LINE
- GEOPROBE BORING LOCATION
- MONITORING WELL
- MONITORING WELL ASSOCIATED WITH UNRELATED RELEASE
- ORC INJECTION POINT (2002)
- SMA BENCHMARK

EXPLANATION OF ANALYTES AND APPLICABLE STANDARDS:
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<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

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	2/13/2015	CCL	CCL	CO

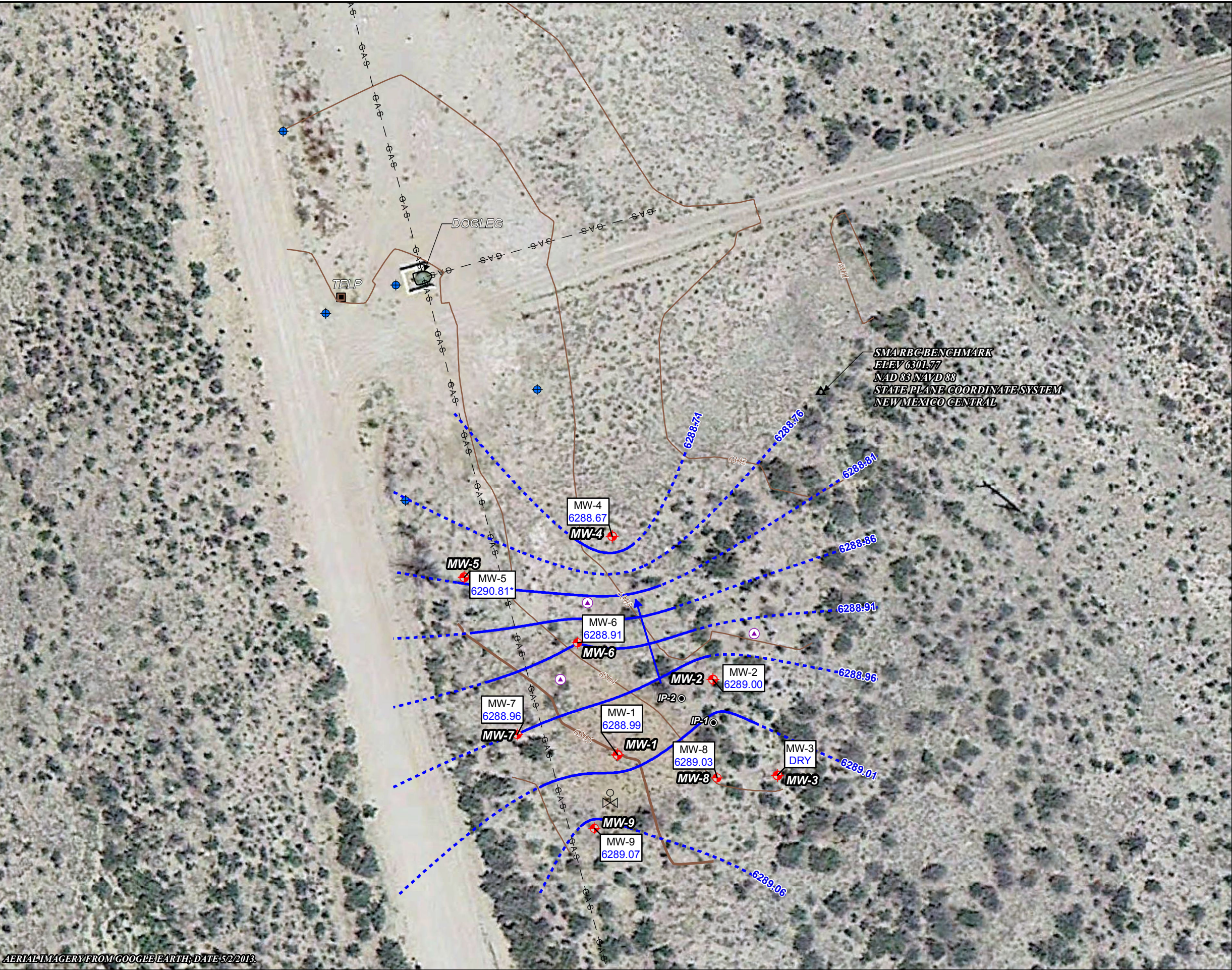
TITLE:
**K-31 LINE DRIP
GROUNDWATER ANALYTICAL RESULTS
SAMPLED JANUARY 21, 2015**

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



Figure No.:

7



LEGEND:

- APPROXIMATE GROUND SURFACE CONTOUR AND ELEVATION, FEET
- ACCESS ROAD
- NATURAL GAS LINE
- DRIP LINE
- GEOPROBE BORING LOCATION
- MONITORING WELL
- MONITORING WELL ASSOCIATED WITH UNRELATED RELEASE
- ORC INJECTION POINT (2002)
- SMA BENCHMARK

NOTES:

- GROUNDWATER ELEVATION CORRECTED FOR PRODUCT THICKNESS. FEET ABOVE MEAN SEA LEVEL
- CORRECTED WATER LEVEL ELEVATION CONTOUR DASHED WHERE INFERRED (FEET ABOVE MEAN SEA LEVEL, 0.05 FOOT CONTOUR INTERVAL)
- DIRECTION OF GROUNDWATER FLOW
- GROUNDWATER ELEVATION APPEARS ANOMALOUS FOR MW-5 AND WAS NOT INCLUDED IN THE FLOW ANALYSIS



REVISION	DATE	DESIGN BY	DRAWN BY	REVIEWED BY
A	2/13/2015	CCL	CCL	CO

TITLE:
**K-31 LINE DRIP
GROUNDWATER ELEVATION MAP
GAUGED JANUARY 21, 2015**

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



Figure No.:

8

ATTACHMENT A



MWH

RECORD OF SUBSURFACE EXPLORATION

PHILIP ENVIRONMENTAL SERVICES INC.

4000 Monroe Road

Farmington, New Mexico 87401

(505) 326-2262 FAX (505) 326-2388

Borehole # BH- 2

Well # 1

Page 1 of 1

Project Name EPFS GW PITS

Project Number 17520 Phase 6001.77

Project Location K-31 LINE DRIP - L0087

Elevation

Borehole Location T25 RB - S116 - Ltr N

GWL Depth 21' BGS

Logged By D CESARK

Drilled By M DUNHUE

Date/Time Started 3/10/97 = 1400

Date/Time Completed " = 1600

Well Logged By D CESARK

Personnel On-Site D CHARLEY, S ARCHULETA

Contractors On-Site

Client Personnel On-Site TONY

Drilling Method 4 1/4" ID HSA

Air Monitoring Method PID, CGI

Depth (Feet)	Sample Number	Sample Interval	Sample Type & Recovery (inches)	Sample Description Classification System: USCS	USCS Symbol	Depth Lithology Change (feet)	Air Monitoring Units: PPM			Drilling Conditions & Blow Counts
							BZ	BH	S	
0										
5				BACKFILL						
10				TO						
15				21'						
20				GWC 21' BGS						
25										
30				TD = 30'						
35										
40										

Comments:

GW ENCOUNTERED @ 21' BGS; OVER-DRILLED TO 30' BGS & SET MW.
NO SAMPLES COLLECTED. PLEASE REFER TO WELL COMPLETION DIAGRAM.

Geologist Signature

[Signature]

MONITORING WELL INSTALLATION RECORD

Philip Environmental Services, Inc.

4000 Monroe Rd.

Farmington, NM 87401

(505) 326-2262 FAX (505) 326-2388

Borehole # 2

Well # 1

Page 1 of 1

Project Name EPFS GW PITS

Project Number 17520

Phase 6002.77

Site Location K-31 LINE DRIP - L0087

On-Site Geologist D CESARK

Personnel On-Site D CHARLEY, S ARCHULETA

Contractors On-Site

Client Personnel On-Site

Elevation

Well Location T25N-R6W-S16-L1N

GWL Depth 21' BGS

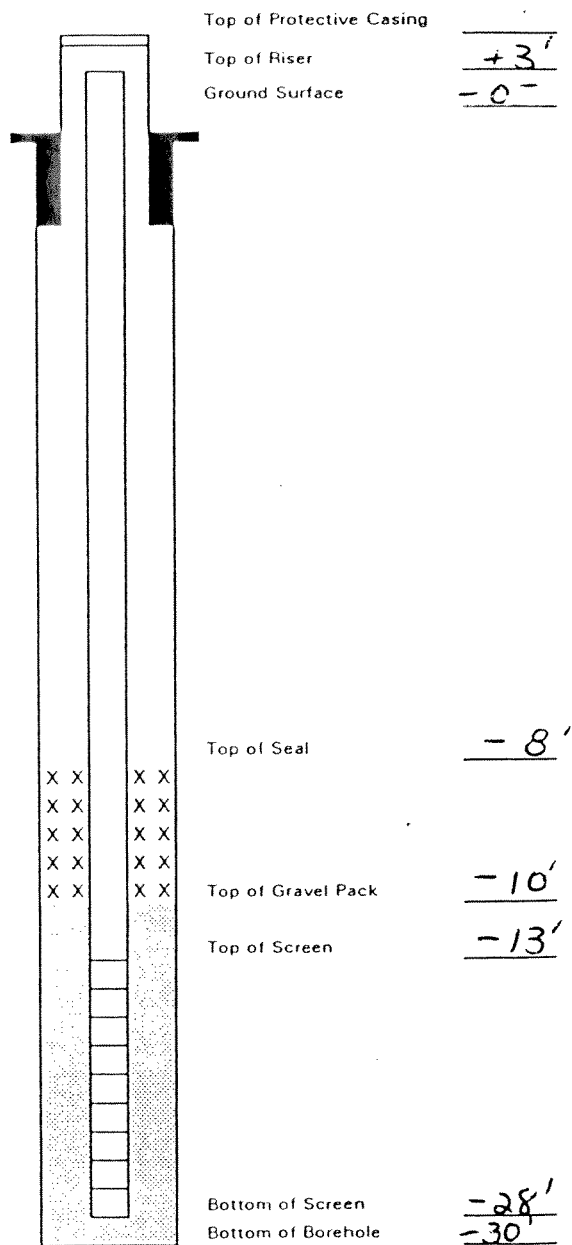
Installed By M DONOHUE

Date/Time Started 3/10/97 - 1600

Date/Time Completed 3/10/97 - 1745

Depths in Reference to Ground Surface

Item	Material	Depth (feet)
Top of Protective Casing		
Bottom of Protective Casing		
Top of Permanent Borehole Casing		N/A
Bottom of Permanent Borehole Casing		N/A
Top of Concrete		
Bottom of Concrete		
Top of Grout		
Bottom of Grout		
Top of Well Riser	SCH 40 PVC	+3'
Bottom of Well Riser	"	-13'
Top of Well Screen	1010 SLOT	-13'
Bottom of Well Screen	"	-28'
Top of Peltonite Seal	ENVIROPLUG	-8'
Bottom of Peltonite Seal	"	-10'
Top of Gravel Pack	10-20 S. SAND	-10'
Bottom of Gravel Pack	"	-28'
Top of Natural Cave-In		-28'
Bottom of Natural Cave-In		-30'
Top of Groundwater		-21'
Total Depth of Borehole		-30'



Comments:

Geologist Signature

[Signature]

RECORD OF SUBSURFACE EXPLORATION

PHILIP SERVICES CORP.

4000 Monroe Road
Farmington, New Mexico 87401
(505) 326-2282 FAX (505) 326-2388

Borehole # MAW-2 1
Well # MLW-2
Page 1 of 2

Project Number 62800219 Phase 35
Project Name EPTS DRILLING
Project Location K-31 LD
LARGO CANYON

Elevation _____
Borehole Location K-31
GWL Depth _____
Drilled By DANNY PADILLA, RYAN Lefebvre
Well Logged By S STELLAVATO
Date Started 7/28/00 1000
Date Completed 7/28/00 1115

Weather: hot, dry, ~ 90°F ↑

Drilling Method 4 1/4 ID HSA CME-75
Air Monitoring Method PID

Depth (Feet)	Sample Number	Sample Interval	Sample Type & Recovery (Inches)	Sample Description Classification System: USCS	USCS Symbol	Depth Lithology Change (feet)	Air Monitoring Units: PPM BZ BH S			Drilling Conditions & Blow Counts
0										
5	1	5-7'	16"	5-7' Light-GRAY hard CLAY GRADING INTO med-brown fine (+) SANDY CLAY MOIST			Ø	Ø	Ø	9 COUNTS Headspace 51 PPM
10	2	10-12'	6"	10'-12' med-brown fine SANDY CLAY MOIST			Ø	Ø	Ø	10 COUNTS Headspace 513 PPM
15	3	15-17'	6"	15-17' med-brown fine SANDY CLAY. wet at 17 feet.			Ø	Ø	Ø	3 COUNTS Headspace 37 PPM
20				TD = 20' BGS						
25										
30										
35										
40										

Comments: No problems encountered, Well completed.

Geologist Signature

Stephen Stellavato

Philip Services Corp.

Farmington, NM 87401

(505) 326-2262 FAX (505) 326-2388

Borehole MW-2
Well # _____
Page 2 of 2

Project Name EPFS Drilling
Project Number 62B00219 Phase 35
Site Location LARGO CANYON
K-31 LD

On-Site Geologist	<u>S STELLAVATO</u>
Personnel On-Site	<u>RYAN Lefebvre</u>
Contractors On-Site	<u>NONE</u>
Client Personnel On-Site	<u>NONE</u>

Elevation _____
Well Location K-31 LD
GWL Depth -10.20'
Installed By Danny Padilla

Date/Time Started 7/28/00 1000
Date/Time Complete 7/28/00 1115

Depths in Reference to Ground Surface		
Item	Material	Depth (feet)
Top of Protective Casing		+ 3.5'
Bottom of Protective Casing		+ 0
Top of Permanent Borehole Casing		
Bottom of Permanent Borehole Casing		
Top of Concrete		
Bottom of Concrete		
Top of Grout		
Bottom of Grout		0
Top of Well Riser	PVC SCH 10 2"	+ 3'
Bottom of Well Riser	PVC SCH 10 2"	- 5'
Top of Well Screen	PVC 0.010 2"	- 5'
Bottom of Well Screen	PVC 0.010 2"	- 20'
Top of Peltonite Seal	3/8 Holeplug	0
Bottom of Peltonite Seal	3/8 Holeplug	- 3'
Top of Gravel Pack	10x20 Silica Sand	- 3'
Bottom of Gravel Pack	10x20 Silica Sand	- 20'
Top of Natural Cave-In		
Bottom of Natural Cave-In		
Top of Groundwater		- 10.20'
Total Depth of Borehole		- 20'

Top of Protective Casing + 3.5'

Top of Riser (survey elev.) + 3

Ground Surface 0

Top of Seal 0

3/8 BENTONITE Holeplug (2 BAGS)

Top of Gravel Pack - 3'

Top of Screen - 5'

10x20 silica sand (8 bags)

Bottom of Screen - 20'

Bottom of Borehole - 20'

Commen

Geologist Signature

Stephen Sellars

RECORD OF SUBSURFACE EXPLORATION

PHILIP SERVICES CORP.

4000 Monroe Road

Farmington, New Mexico 87401

(505) 326-2262 FAX (505) 326-2388

Borehole # MW 32
Well # NA
Page 1 of 2

Project Number 62800219 Phase 35
Project Name EPFS DRILLING
Project Location LARGO CANYON
K-31 LD

Elevation _____
Borehole Location _____
GWL Depth _____
Drilled By DANNY PADILLA
Well Logged By S STELLAVATO
Date Started 7/28/00 1130
Date Completed NOT COMPLETED

Weather: hot, dry, $\approx 95^{\circ}\text{F}$ ↑

Drilling Method 4 1/4 ID HSA
Air Monitoring Method PID

Depth (Feet)	Sample Number	Sample Interval	Sample Type & Recovery (Inches)	Sample Description Classification System: USCS	USCS Symbol	Depth Lithology Change (feet)	Air Monitoring Units: PPM			Drilling Conditions & Blow Counts
							BZ	BH	S	
0										
5	1	5-7'	12"	5-7' Light-Gray Hard dense dry clay.			Ø	Ø	Ø	18 counts Headspace 0.4 ppm
10		10-12'	Ø	10'-12' NO Recovery						10 counts
15		15-17'	Ø	15'-17' NO Recovery water						3 counts
20	2	20-22'	6"	20-22' med-brown fine sandy clay. Moist.						4 counts
25										
30				ABANDONED well NO WATER.						
35										
40										

Comments:

Moved to new location to Redrill MW-3.

Geologist Signature

Stephen Stellavato

RECORD OF SUBSURFACE EXPLORATION

PHILIP SERVICES CORP.

4000 Monroe Road

Farmington, New Mexico 87401

(505) 326-2262 FAX (505) 326-2388

Borehole # MW-33
Well # MW-3
Page 1 of 2

Project Number 62800219 Phase 35

Project Name EPFS DRILLING

Project Location LARGO CANYON
K-31 LD

Elevation _____

Borehole Location K-31

GWL Depth _____

Drilled By DANNY PADILLA

Well Logged By S STELLAVATO

Date Started 7/28/00 1310

Date Completed 7/28/00 1415

Drilling Method 4 1/4 ID HSA

CME-75

Air Monitoring Method PID

Depth (Feet)	Sample Number	Sample Interval	Sample Type & Recovery (Inches)	Sample Description Classification System: USCS	USCS Symbol	Depth Lithology Change (feet)	Air Monitoring Units: PPM BZ BH S			Drilling Conditions & Blow Counts
0										16 COUNTS
5	1	5-7'	6"	5-7' Light-Gray hard Clay Grading into med-brown fine sandy clay. moist			Ø	Ø	Ø	Headspace 31 PPM
10	2	10-12'	18"	10-12' med-brown fine sandy clay. moist			Ø	Ø	Ø	9 COUNTS Headspace 2.1 PPM
15				15-17' med-brown fine sandy clay. wet			Ø	Ø	Ø	6 COUNTS Headspace 27 PPM
20				TD = 20' BGS						
25										
30										
35										
40										

Comments:

Had to relocate MW-3 due to dry well at first location.

Geologist Signature

Stephen Stellavato

MONITOR WELL INSTALLATION FORM

Philip Services Corp.

4000 Monroe Rd.

Farmington, NM 87401

(505) 326-2262 FAX (505) 326-2388

Borehole # MW 3-3

Well # MW 3

Page 2 of 2

Elevation

Well Location K-31

GWL Depth

Installed By DANNY SPADILLA

Project Name EPFS DRILLING

Project Number 62800219 Phase 35

Site Location LARGO CANYON

K-31 LD

On-Site Geologist S. STALLAVATO

Personnel On-Site RYAN Lefebvre

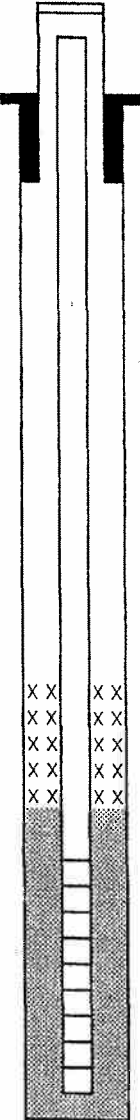
Contractors On-Site NONE

Client Personnel On-Site NONE

Date/Time Started 7/28/00 1310

Date/Time Complete 7/28/00 1415

Depths in Reference to Ground Surface		
Item	Material	Depth (feet)
Top of Protective Casing		+ 3.05'
Bottom of Protective Casing		0
Top of Permanent Borehole Casing		
Bottom of Permanent Borehole Casing		
Top of Concrete		
Bottom of Concrete		
Top of Grout		
Bottom of Grout		
Top of Well Riser	PVC SCH 10 2"	+ 3.05'
Bottom of Well Riser	PVC SCH 10 2"	- 5'
Top of Well Screen	PVC 0.010 2"	- 5'
Bottom of Well Screen	PVC 0.010 2"	- 20'
Top of Peltonite Seal	3/8 Bentonite Holeplug	0
Bottom of Peltonite Seal	3/8 Bentonite Holeplug	- 3'
Top of Gravel Pack	10x20 Silica Sand	- 3'
Bottom of Gravel Pack	10x20 Silica Sand	- 20'
Top of Natural Cave-In		
Bottom of Natural Cave-In		
Top of Groundwater		- 13.00'
Total Depth of Borehole		- 20'



Top of Protective Casing + 3.05'

Top of Riser (survey elev.) + 3.05'

Ground Surface 0

Top of Seal 0

3/8 Bentonite Holeplug (2 BAGS) - 3'

Top of Gravel Pack - 3'

Top of Screen - 5'

10 x 20 Silica Sand (8 bags)

Bottom of Screen - 20

Bottom of Borehole - 20

Comments

Geologist Signature

Stephen Stallavato

RECORD OF SUBSURFACE EXPLORATION

LodeStar Services
P.O. Box 4465
Durango, CO 81302
303-917-6288

Borehole #: _____
Well #: MW-4
Page: 1 of 1

Project Number: _____
Project Name: MWH Ground Water
Project Location: K-31 LD

Borehole Location: 36° 23.611' N, 107° 28.488' W
GWL Depth: 16'
Drilled By: Envirotech
Well Logged By: Martin Nee
Date Started: 11/6/2006 11:00
Date Completed: 11/7/2006 9:40

Drilling Method: Hollow Stem Auger
Air Monitoring Method: PID

Depth (feet)	Sample Number	Sample Interval	Sample Type & Recovery (inches)	Sample Description	Air Monitoring	Drilling Conditions
0		0-15.25'		0-15.25' = silty sand, sand is very fine to medium, pale yellowish brown, unconsolidated, moderately well sorted, SM	0	Easy
5		5-7'	split spoon 13/24"	Clay stringer at 6' is 6" thick, CL Silty sand, SM	0	
10		10-12'	split spoon 24/24"	Grades to clay at 10.5', then back to silty sand at 12'	0	
15				15.25-17' = sand, pale yellowish brown, SW very fine to coarse sand, poorly sorted, unconsolidated, saturated	0	
20						

Comments: 11:42: let sit to measure water in auger.
12:02: DTW is 13' BGS. Will drill to 25' BGS.
1208: TD, no discernable cuttings after 17'.
Site is in the flood plain of Largo Wash; interbedded silts, clays and sands. Contacts are gradational.

Geologist Signature: Martin Nee

MONITORING WELL INSTALLATION RECORD

Lodestar Services, Inc

PO Box 3861

Farmington, New Mexico 87499

(505) 334-2791

Borehole # _____

Well # MW-4

Page 1 of 1

Project Name MWH Ground Water

Project Number _____ Cost Code _____

Project Location K-31

Elevation _____

Well Location 36° 23.611' N, 107° 28.488' W

GWL Depth 13.2'

Installed By Envirotech

On-Site Geologist Martin Nee

Personnel On-Site _____

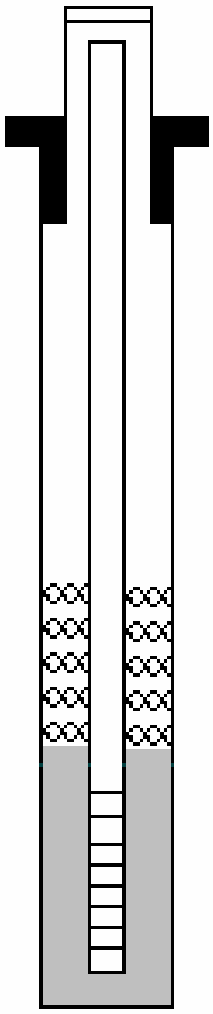
Contractors On-Site Kelly Padilla and assistant

Client Personnel On-Site _____

Date/Time Started 11/6/06; 11:43

Date/Time Completed 11/6/06; 09:45

Depths in Reference to Ground Surface				
Item	Material	Depth (feet)		
Top of Protective Casing	Steel	2.66		
Bottom of Protective Casing		-2.33		
Top of Permanent Borehole Casing				
Bottom of Permanent Borehole Casing				
Top of Concrete	Concrete	0.3		
Bottom of Concrete		0		
Top of Grout		0		
Bottom of Grout		-5.1		
Top of Well Riser	Sch. 40 PVC	2.0		
Bottom of Well Riser		-10		
Top of Well Screen	Sch. 40 PVC	-10		
Bottom of Well Screen		-24.75		
Top of Peltonite Seal	Bentonite	-5.1		
Bottom of Peltonite Seal		-7.6		
Top of Gravel Pack	Sand	-7.6		
Bottom of Gravel Pack		-25		
Top of Natural Cave-In				
Bottom of Natural Cave-In				
Top of Groundwater		-13.2		
Total Depth of Borehole		-25		



Top of Protective Casing 2.66

Top of Riser 2.0

Ground Surface 0

Top of Seal -5.1

Top of Gravel Pack -7.6

Top of Screen -10

Bottom of Screen -24.75

Bottom of Borehole -25

Comments: 1/2 (2 #90 port/sand + 10 # quick gel + 35 gal water) used. 1/2 for MW-4 and 1/2 for MW-5.

Geologist Signature Martin Nee

RECORD OF SUBSURFACE EXPLORATION

LodeStar Services
P.O. Box 4465
Durango, CO 81302
303-917-6288

Borehole #: _____
Well #: MW-5
Page: 1 of 2

Project Number: _____
Project Name: MWH Ground Water
Project Location: K-31 LD

Borehole Location: 36° 23.608' N, 107° 28.499' W
GWL Depth: 16.6'
Drilled By: Envirotech
Well Logged By: Martin Nee
Date Started: 11/6/2006 13:41
Date Completed: 11/7/2006 9:35

Drilling Method: Hollow Stem Auger
Air Monitoring Method: PID

Depth (feet)	Sample Number	Sample Interval	Sample Type & Recovery (inches)	Sample Description	Air Monitoring	Drilling Conditions
0		0-5.25'	cuttings	sand, moderately sorted, yellowish brown, very fine to medium, unconsolidated, subangular, SP.	0	Easy
5		5-7'	split spoon 17/24"	Clay, dark yellowish brown, CL	0	
10		10-10.25 10.25-11.75 11.75-12	split spoon 24/24"	sand, as above, SP clay, as above, CL yellowish brown silt, ML	0	
15		No sample		No Sample		
20						

Comments: There is a 3" layer of silt sand that is black w/no odor at ~7.5' bgs.
No discernable cuttings after 22'
Site is on the flood plain of Largo Wash, interbedded silts, clays and sand, contacts are
gradational.
 Geologist Signature: Martin Nee

LodeStar Services
P.O. Box 4465
Durango, CO 81302
303-917-6288

Project Number: _____
Project Name: MWH Ground Water
Project Location: K-31 LD

Drilling Method: Hollow Stem Auger
Air Monitoring Method: PID

Comments: _____

Geologist Signature: Martin Nee

MONITORING WELL INSTALLATION RECORD

Lodestar Services, Inc

PO Box 3861

Farmington, New Mexico 87499

(505) 334-2791

Borehole # _____

Well # MW-5

Page 1 of 1

Project Name MWH Ground Water

Project Number _____ Cost Code _____

Project Location K-31

Elevation _____

Well Location 36° 23.608' N, 107° 28.499' W

GWL Depth 16.6'

Installed By Envirotech

On-Site Geologist Martin Nee

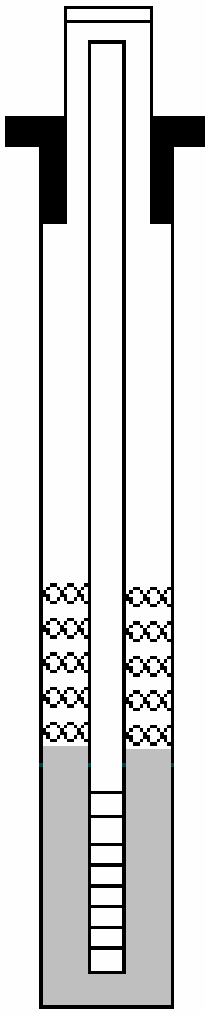
Personnel On-Site _____

Contractors On-Site Kelly Padilla and assistant

Client Personnel On-Site _____

Date/Time Started 11/6/06;

Date/Time Completed 11/6/06; 09:35

Depths in Reference to Ground Surface				
Item	Material	Depth (feet)		
Top of Protective Casing	Steel	2.66	Top of Protective Casing <u>2.66</u>	
Bottom of Protective Casing		-2.33	Top of Riser <u>2.17</u>	
Top of Permanent Borehole Casing			Ground Surface <u>0</u>	
Bottom of Permanent Borehole Casing				
Top of Concrete	Concrete	0.3		
Bottom of Concrete		0		
Top of Grout		0		
Bottom of Grout		-7.5		
Top of Well Riser	Sch. 40 PVC	2.17	Top of Seal <u>-7.5</u>	
Bottom of Well Riser		-11.75	Top of Gravel Pack <u>-10</u>	
Top of Well Screen	Sch. 40 PVC	-11.75		
Bottom of Well Screen		-26.75	Top of Screen <u>-11.75</u>	
Top of Peltonite Seal	Bentonite	-7.5	Bottom of Screen <u>-26.75</u>	
Bottom of Peltonite Seal		-10		
Top of Gravel Pack	Sand	-10	Bottom of Borehole <u>-27</u>	
Bottom of Gravel Pack		-25		
Top of Natural Cave-In		-25		
Bottom of Natural Cave-In		-27		
Top of Groundwater		-16.6		
Total Depth of Borehole		-27		

Comments: 1/2 (2 #90 port/sand + 10 # quick gel + 35 gal water) used. 1/2 for MW-4 and 1/2 for MW-5.

Geologist Signature Martin Nee

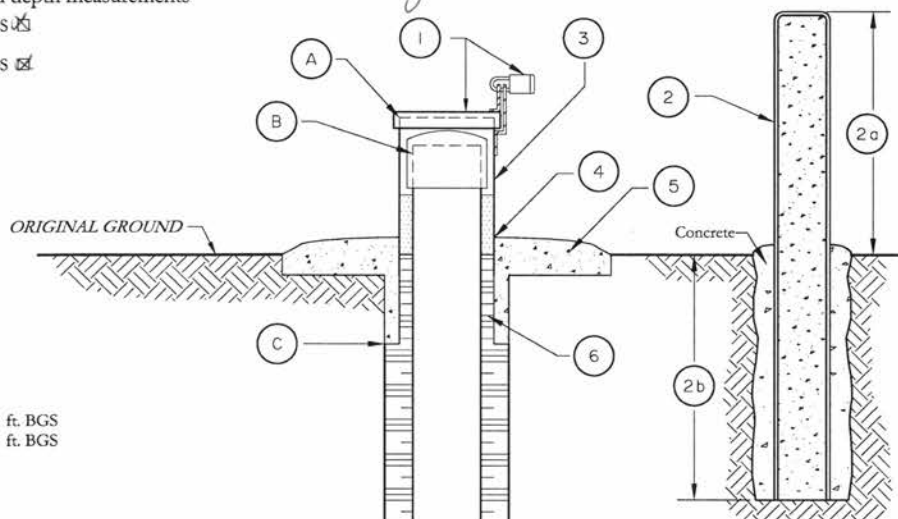
Facility/Project Name: K-31 Line Driv
Well Number: MW-6

Date Well Installed: From 11/22/13 To 11/22/13
Well Installed By (Person's Name & Firm): Dave Burr

Type of Protective Cover:
Above-Ground ☒
Flush-To-Ground ☐

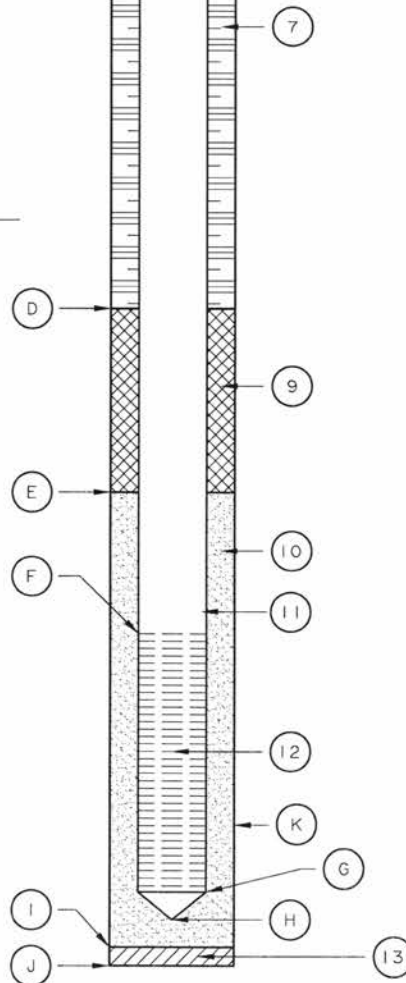
NOTE: Use Ground Surface (BGS or AGS) for all depth measurements

- (A) - Protective casing 3 ft. BGS ☐ or AGS ☒
(B) - Well casing, top 3 ft. BGS ☐ or AGS ☒
(C) - Surface seal, bottom 0.5 ft. BGS
(D) - Bentonite seal, top 4.5 ft. BGS
(E) - Primary filter, top 9 ft. BGS
(F) - Screen joint, top 10 ft. BGS
(G) - Screen joint, bottom 29.5 ft. BGS
(H) - End cap bottom 30 ft. BGS
(I) - Filter pack, bottom 30 ft. BGS
(J) - Borehole, bottom 30 ft. BGS
(K) - Borehole, diameter 8 in. to 30 ft. BGS
(L) - O.D. well casing _____ in. _____ ft. BGS
(M) - I.D. well casing 2 in.
(N) - 24 hr. water level after completion _____ ft. BGS _____ ft. TOC



Note: Protective Posts Field Located As Needed

- (1) - Cap and Lock? Yes ☒ No ☐
(2) - Protective posts? Yes ☒ No ☐ No. of Posts 4
a. Height AGS: Feet: 3 b. Depth BGS: Feet: 2
(3) - Protective casing:
a. Inside diameter: Inches: 6 b. Depth: Feet: 2
(4) - Drainage port (s)? Yes ☐ No ☒
(5) - Surface seal material a. Cap: Concrete b. Annular space seal: Concrete
(6) - Material between well casing and protective casing: 3cm
(7) - Annular space seal: Mix: Grout
- How installed: Tremie ☐ Tremie pumped ☐ Gravity ☒
(8) - Centralizers: No ☒ Yes ☐ Depths (BGS) _____
(9) - Bentonite seal:
a. Bentonite granules ☐ or b. Bentonite pellets 1/4in. ☐ 3/8in. ☐ 1/2in. ☒
c. _____ ☐ other 2 bags x 50lbs
(10) - Filter pack material: Manufacturer, product name, & mesh size
a. Colorado Silver Sand
b. Volume added _____ ft./3 _____ bags/Size x 50lbs
(11) - Well casing: Flush threaded PVC schedule 40 ☒
Flush threaded PVC schedule 80 ☐
Other ☐
(12) - Screen material: PVC
a. Screen type:
Factory cut ☐ Continuous slot ☒ Other ☐
b. Manufacturer: Campbell Moseley
c. Slot size: .010
d. Slotted length: _____
(13) - Backfill material (below filter pack): None ☒
Other ☐
(14) - USCS classification of soil near screen: None ☐
GP ☐ GM ☐ GC ☐ GW ☐ SW ☒ SP ☐ Bedrock ☐
SM ☒ SC ☐ ML ☒ MH ☐ CL ☐ CH ☐
(15) - Sieve analysis attached? Yes ☐ No ☒
(16) - Drilling method used: Rotary ☐ Hollow Stem Auger ☒ Other ☐
(17) - Drilling fluid used: Water ☐ Air ☐ Drilling Mud ☐ None ☒
(18) - Drilling additives used? Yes ☐ No ☒
Describe: _____



REV. No.	REVISIONS	REV. DATE	DESIGN BY	DRAWN BY	REVIEWED AND SIGNED BY

MWH

PROJECT No: 127010.131806
AutoCAD FILE: TYPICAL-WELL-MOSES
SCALE: _____ FIGURE No: _____
Not To Scale

WELL CONSTRUCTION FORM

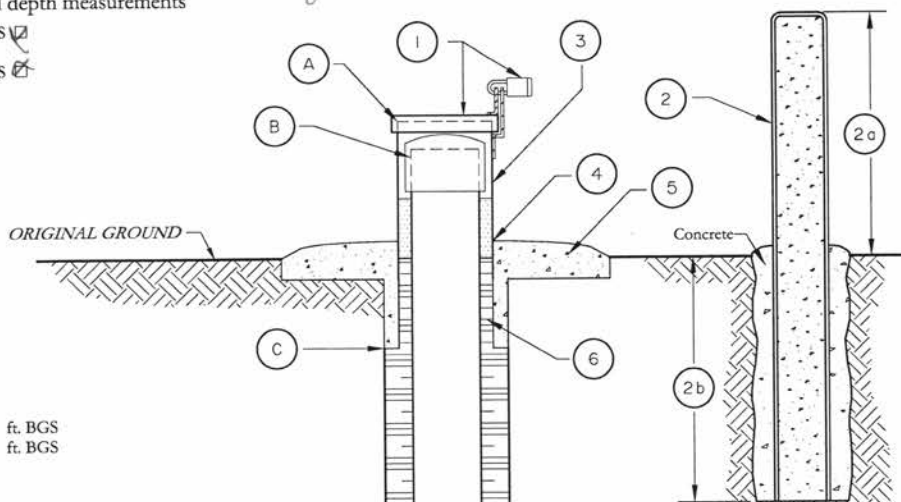
Facility/Project Name: K-31 Line Drip
Well Number: MW-7

Date Well Installed: From 11/22/13 To 11/22/13
Well Installed By (Person's Name & Firm): Doug Barr (MWH)

Type of Protective Cover:
Above-Ground ☒
Flush-To-Ground ☐

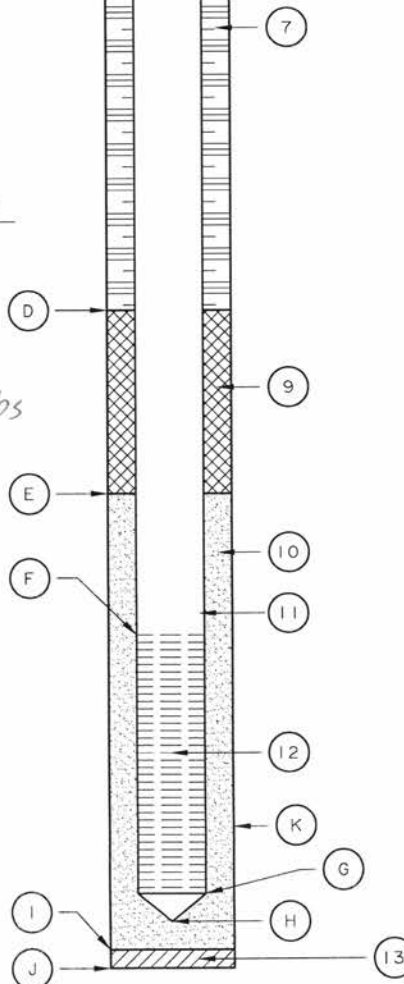
NOTE: Use Ground Surface (BGS or AGS) for all depth measurements

- (A) - Protective casing 3 ft. BGS ☐ or AGS ☒
(B) - Well casing, top 3 ft. BGS ☐ or AGS ☒
(C) - Surface seal, bottom 0 ft. BGS
(D) - Bentonite seal, top 5 ft. BGS
(E) - Primary filter, top 8 ft. BGS
(F) - Screen joint, top 10 ft. BGS
(G) - Screen joint, bottom 29.5 ft. BGS
(H) - End cap bottom 30 ft. BGS
(I) - Filter pack, bottom 30 ft. BGS
(J) - Borehole, bottom 30 ft. BGS
(K) - Borehole, diameter 8 in. to 30 ft. BGS
(L) - O.D. well casing _____ in. _____ ft. BGS
(M) - I.D. well casing 7 in.
(N) - 24 hr. water level after completion _____ ft. BGS _____ ft. TOC



Note: Protective Posts Field Located As Needed

- (1) - Cap and Lock? Yes ☒ No ☐
(2) - Protective posts? Yes ☒ No ☐ No. of Posts 4
a. Height AGS: Feet: 3 b. Depth BGS: Feet: 2
(3) - Protective casing:
a. Inside diameter: Inches: 6 b. Depth: Feet: 2
(4) - Drainage port (s)? Yes ☐ No ☒
(5) - Surface seal material a. Cap: Concrete b. Annular space seal: Concrete
(6) - Material between well casing and protective casing: Seal
(7) - Annular space seal: Mix: Grout
How installed: Tremie ☐ Tremie pumped ☐ Gravity ☒
(8) - Centralizers: No ☐ Yes ☐ Depths (BGS) _____
(9) - Bentonite seal:
a. Bentonite granules ☐ or b. Bentonite pellets 1/4in. ☐ 3/8in. ☐ 1/2in. ☒
c. _____ other 2 bags x 50 lbs
(10) - Filter pack material: Manufacturer, product name, & mesh size
a. Colorado Silver Sand 10x20
b. Volume added _____ ft./3 _____ Bags/Size 13 x 50 lbs
(11) - Well casing: Flush threaded PVC schedule 40 ☒
Flush threaded PVC schedule 80 ☐
Other ☐
(12) - Screen material: PVC
a. Screen type:
Factory cut ☐ Continuous slot ☒ Other ☐
b. Manufacturer: Campbell Mandox
c. Slot size: 0.10
d. Slotted length: _____
(13) - Backfill material (below filter pack): None ☒
Other ☐
(14) - USCS classification of soil near screen: None ☐
GP ☐ GM ☐ GC ☐ GW ☐ SW ☐ SP ☐ Bedrock ☐
SM ☒ SC ☐ ML ☐ MH ☐ CL ☐ CH ☐
(15) - Sieve analysis attached? Yes ☐ No ☒
(16) - Drilling method used: Rotary ☐ Hollow Stem Auger ☒ Other ☐
(17) - Drilling fluid used: Water ☐ Air ☐ Drilling Mud ☐ None ☒
(18) - Drilling additives used? Yes ☐ No ☒
Describe: _____



REV. No.	REVISIONS	REV. DATE	DESIGN BY	DRAWN BY	REVIEWED AND SIGNED BY

PROJECT No. 1227010.13/1806
AutoCAD FILE: TYPICAL-WELL-MOSES
SCALE: _____ FIGURE No. _____
Not To Scale



WELL CONSTRUCTION FORM

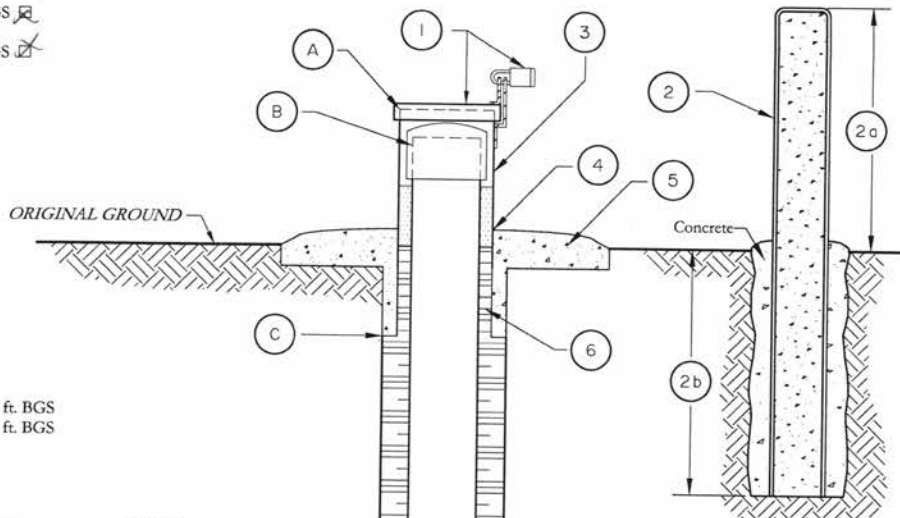
Facility/Project Name: K-31 Line Drip
Well Number: MW-8

Date Well Installed: From 11/21/13 To 11/21/13
Well Installed By (Person's Name & Firm) Dave Burr (MWH)

Type of Protective Cover:
Above-Ground ☒
Flush-To-Ground ☐

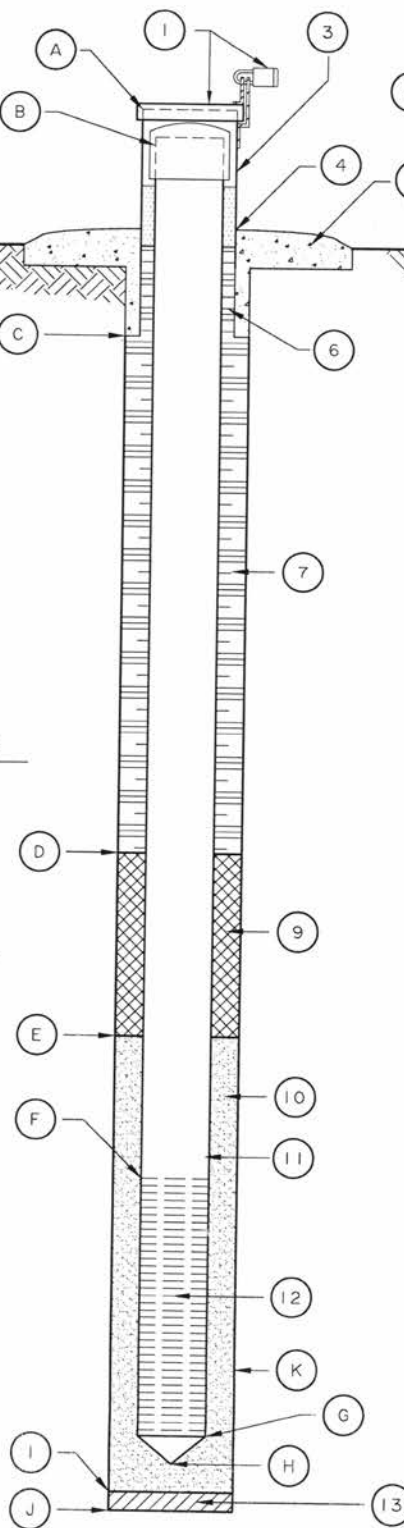
NOTE: Use Ground Surface (BGS or AGS) for all depth measurements

- (A) - Protective casing 3 ft. BGS ☐ or AGS ☒
(B) - Well casing, top 3 ft. BGS ☐ or AGS ☒
(C) - Surface seal, bottom 0 ft. BGS
(D) - Bentonite seal, top 5 ft. BGS
(E) - Primary filter, top 8 ft. BGS
(F) - Screen joint, top 10 ft. BGS
(G) - Screen joint, bottom 29.5 ft. BGS
(H) - End cap bottom 30 ft. BGS
(I) - Filter pack, bottom 30 ft. BGS
(J) - Borehole, bottom 30 ft. BGS
(K) - Borehole, diameter 8 in. to 30 ft. BGS
(L) - O.D. well casing _____ in. to _____ ft. BGS
(M) - I.D. well casing 2 in.
(N) - 24 hr. water level after completion _____ ft. BGS _____ ft. TOC



Note: Protective Posts Field Located As Needed

- (1) - Cap and Lock? Yes ☒ No ☐
(2) - Protective posts? Yes ☒ No ☐ No. of Posts 4
a. Height AGS: Feet 3 b. Depth BGS: Feet 2
(3) - Protective casing:
a. Inside diameter: Inches: 6 b. Depth: Feet: 2
(4) - Drainage port (s)? Yes ☐ No ☒
(5) - Surface seal material a. Cap: Concrete b. Annular space seal: Concrete
(6) - Material between well casing and protective casing: Seal
(7) - Annular space seal: Mix: Grout
- How installed: Tremie ☐ Tremie pumped ☐ Gravity ☒
(8) - Centralizers: No ☐ Yes ☐ Depths (BGS) _____
(9) - Bentonite seal:
a. Bentonite granules ☐ or b. Bentonite pellets 1/4in. ☐ 3/8in. ☐ 1/2in. ☒
c. _____ other 2 bags x 50lbs
(10) - Filter pack material: Manufacturer, product name, & mesh size
a. Colorado Silver Seal 10x20
b. Volume added _____ ft./3 14x 50lbs
(11) - Well casing: Flush threaded PVC schedule 40 ☒
Flush threaded PVC schedule 80 ☐
Other ☐
(12) - Screen material: PVC
a. Screen type:
Factory cut ☐ Continuous slot ☒ Other ☐
b. Manufacturer Campbell Monotek
c. Slot size: .010
d. Slotted length: _____
(13) - Backfill material (below filter pack): None ☒
Other ☐
(14) - USCS classification of soil near screen: None ☐
GP ☐ GM ☐ GC ☐ GW ☐ SW ☐ SP ☒
SM ☒ SC ☐ ML ☐ MH ☐ CL ☐ CH ☐ Bedrock ☐
(15) - Sieve analysis attached? Yes ☐ No ☒
(16) - Drilling method used: Rotary ☐ Hollow Stem Auger ☒ Other ☐
(17) - Drilling fluid used: Water ☐ Air ☐ Drilling Mud ☐ None ☒
(18) - Drilling additives used? Yes ☐ No ☒
Describe: _____



REV. No.	REVISIONS	REV. DATE	DESIGN BY	DRAWN BY	REVIEWED AND SIGNED BY

PROJECT No. 1227010.131806
AutoCAD FILE: TYPICAL-WELL-MOSES
SCALE: Not To Scale
FIGURE No. _____



WELL CONSTRUCTION FORM

Facility/Project Name: K-31 Line Drop
Well Number: MW-9

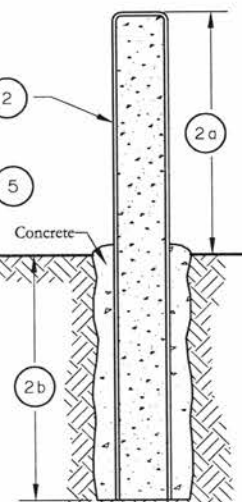
Date Well Installed: From 11/21/13 To 11/21/13
Well Installed By (Person's Name & Firm): Davey B.M.

Type of Protective Cover:
Above-Ground ☒
Flush-To-Ground ☐

NOTE: Use Ground Surface (BGS or AGS) for all depth measurements

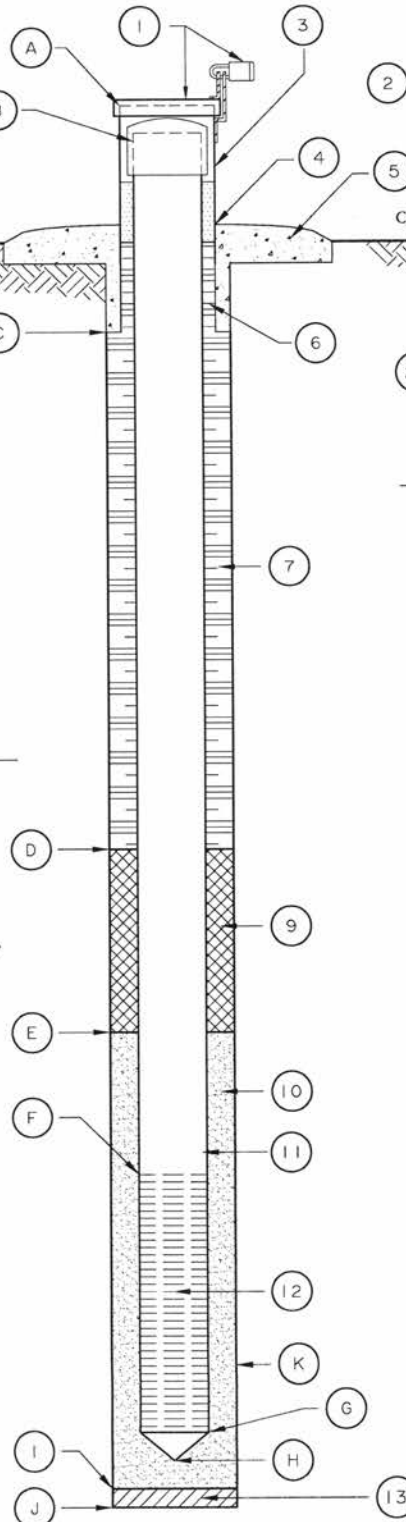
- (A) - Protective casing 3 ft. BGS ☐ or AGS ☒
(B) - Well casing, top 3 ft. BGS ☐ or AGS ☒
(C) - Surface seal, bottom 0.5 ft. BGS
(D) - Bentonite seal, top 5 ft. BGS
(E) - Primary filter, top 8 ft. BGS
(F) - Screen joint, top 10 ft. BGS
(G) - Screen joint, bottom 29.5 ft. BGS
(H) - End cap bottom 30 ft. BGS
(I) - Filter pack, bottom 30 ft. BGS
(J) - Borehole, bottom 30 ft. BGS
(K) - Borehole, diameter 8 in. to 30 ft. BGS
(L) - O.D. well casing _____ in. _____ ft. BGS
(M) - I.D. well casing 2 in.
(N) - 24 hr. water level after completion _____ ft. BGS _____ ft. TOC

ORIGINAL GROUND



Note: Protective Posts Field Located As Needed

- (1) - Cap and Lock? Yes ☒ No ☐
(2) - Protective posts? Yes ☒ No ☐ No. of Posts 4
a. Height AGS: Feet: 3 b. Depth BGS: Feet: 2
(3) - Protective casing:
a. Inside diameter: Inches: 6 b. Depth: Feet: 2
(4) - Drainage port (s)? Yes ☐ No ☒
(5) - Surface seal material a. Cap: Concrete b. Annular space seal: Concrete
(6) - Material between well casing and protective casing: Sand
(7) - Annular space seal: Mix: Grout
- How installed: Tremie ☐ Tremie pumped ☐ Gravity ☒
(8) - Centralizers: No ☐ Yes ☐ Depths (BGS) _____
(9) - Bentonite seal:
a. Bentonite granules ☐ or b. Bentonite pellets 1/4in. ☐ 3/8in. ☐ 1/2in. ☒
c. _____ ☐ other 2 bags x 50lbs
(10) - Filter pack material: Manufacturer, product name, & mesh size
a. Colorado Silica Sand 10x20
b. Volume added _____ ft./3 15 bags/Size 15 x 50lbs
(11) - Well casing: Flush threaded PVC schedule 40 ☒
Flush threaded PVC schedule 80 ☐
Other ☐
(12) - Screen material: PVC
a. Screen type:
Factory cut ☐ Continuous slot ☒ Other ☐
b. Manufacturer: Empire Monoblox
c. Slot size: 0.0
d. Slotted length: _____
(13) - Backfill material (below filter pack): None ☒
Other ☐
(14) - USCS classification of soil near screen: None ☐
GP ☐ GM ☐ GC ☐ GW ☐ SW ☐ SP ☒ Bedrock ☐
SM ☒ SC ☐ ML ☐ MH ☐ CL ☐ CH ☐
(15) - Sieve analysis attached? Yes ☐ No ☒
(16) - Drilling method used: Rotary ☐ Hollow Stem Auger ☒ Other ☐
(17) - Drilling fluid used: Water ☐ Air ☐ Drilling Mud ☐ None ☒
(18) - Drilling additives used? Yes ☐ No ☒
Describe: _____



REV. No.	REVISIONS	REV. DATE	DESIGN BY	DRAWN BY	REVIEWED AND SIGNED BY

PROJECT No. 1227010.131806
AutoCAD FILE: TYPICAL-WELL-MOSES
SCALE: _____ FIGURE No. _____
Not To Scale



WELL CONSTRUCTION FORM

BOREHOLE NUMBER:

SHEET 1 OF 2

BORING LOCATION: K-31 - Line Drive MW-6

SURFACE ELEVATION:

DRILLING COMPANY: National

DATE/TIME STARTED: 11/22/13 1230

DRILLER: Miguel Alvarado

DATE/TIME FINISHED: 11/22/13 1310

EQUIPMENT: CME USA

LOGGED BY: Dave Burr

DEPTH (ft)	%REC	RQD	FRAC FREQ.	LITH	STRUCT	PID (ppm)	SOIL/ROCK DESCRIPTION	WELL CONST.
2						NA		
4							Hard Augered to 5' no sample recovered	
6	0					NA	Sandy silt, 10YR 5/4, yellowish brown, dry, siltb, moderate cementation, white velvety (Fungal) present, very fine sands	
8				ML		2.7		
10	100					0.0		
12	20			SM			Silty sand, 10YR 4/4, dark yellowish brown, dry, loose, weak cementation, 50% sand	
14	100			SM ML		0.0	Very silty sand, 10YR 4/4, dark yellowish brown, dry, medium siltb, weak cementation, predominantly fine sands	
16	0					NA		
18	100					990	color change to 10YR 5/2, greyish brown, mottled w/ black 10YR 3/1 w/ clay 4/5G4, dark greenish grey. mottled, moderate cementation, strong TPH odor	
20							Sample K-31-MW-6-17.5 collected @ 1315	
22	0					NA		
				SM		60	Silty sand, 10YR 5/3, brown, mottled w/ 10YR 5/1, grey, siltb, wet weak cementation, 30% med sands	

REV. No.

REVISIONS

REV. DATE

DESIGN BY

DRAWN BY



MWH

PROJECT No.

FILE

FIGURE No.

BOREHOLE NUMBER:

SHEET 2 OF 2

BORING LOCATION: K-31 Line Strip MW-6

SURFACE ELEVATION:

DRILLING COMPANY: National

DATE/TIME STARTED: 11/22/13 1230

DRILLER: Manuel Alvarez

DATE/TIME FINISHED: 11/22/13 1310

EQUIPMENT: CME HSA

LOGGED BY: Doug Biv

DEPTH (ft)	%REC	RQD	FRAC FREQ.	LITH	STRUCT	PID (ppm)	SOIL/ROCK DESCRIPTION	WELL CONST.
	100			SN		6.0	As Above	
26	0					NA		
28							As Above	
30	50					18.3		
TD = 30'								

REV.
No.

REVISIONS

REV. DATE

DESIGN BY

DRAWN BY

PROJECT No.

FILE

FIGURE No.



MWH

BOREHOLE NUMBER:

SHEET 1 OF 2

BORING LOCATION: K-31 Line Drive MW-7

SURFACE ELEVATION:

DRILLING COMPANY: Nabors

DATE/TIME STARTED: 11/22/13 1030

DRILLER: Miguel Alvarez

DATE/TIME FINISHED: 11/22/13 1100

EQUIPMENT: CME HSA

LOGGED BY: Doug Biv

DEPTH (ft)	%REC	RQD	FRAC FREQ.	LITH	STRUCT	PID (ppm)	SOIL/ROCK DESCRIPTION	WELL CONST.
2	100						Hand augered to 5' bgs (no sample recovered)	
4	100			ML		0.0	Sandy silt, 10 YR 5/4, yellowish brown, dry, stiff, moderate consolidation, white clay (bungs) present, very fine sands	
6	100			SM ML		0.0	Very silty sand, 10 YR 5/4, yellowish brown, dry, medium stiff, weak consolidation, predominantly fine sands	
8	0					NA		
10	50			SM		0.0	Silty sand, 10 YR 5/6, yellowish brown, dry, loose, weak consolidation 50% medium sand	
12	0					NA		
14	50					2.2	As above, minor iron oxide staining	
16	0					NA		
18	50							
20	0					NA		
22	40					DS	* Sample K-31-MW-7-22.5 collected @ 1110 color change @ 23.5' to 2.5 Y 5/3, light olive brown, minor white lensing	
TPH obs, wet								
REV. No.	REVISIONS	REV. DATE	DESIGN BY	DRAWN BY	PROJECT No.			
					FILE:			
					FIGURE No.			



MWH

BOREHOLE NUMBER:

SHEET 2 OF 2

BORING LOCATION: K-31 Line Drip MW-7

SURFACE ELEVATION:

DRILLING COMPANY: National

DATE/TIME STARTED: 11/22/13 1030

DRILLER: Miguel Alvarado

DATE/TIME FINISHED: 11/22/13 1100

EQUIPMENT: CMF H5A

LOGGED BY: Doug Biv

DEPTH (ft)	%REC	RQD	FRAC FREQ.	LITH	STRUCT	PID (ppm)	SOIL/ROCK DESCRIPTION	WELL CONST.
26	40					105	As Above	
28	0					NA		
30	50			gr ml		1.0	very silty sand, 10 YR 5/3, brown, mottled w/ 5Y 6/1, gray, medium silt, moist, sands are very fine TD = 30'	

REV.
No.

REVISIONS

REV. DATE

DESIGN BY

DRAWN BY



MWH

PROJECT No.

FILE:

FIGURE No.

BOREHOLE NUMBER:

SHEET 1 of 2

BORING LOCATION: K-31 Line Delp MW-8
DRILLING COMPANY: National
DRILLER: Miguel Alvarado
EQUIPMENT: CME HSA

SURFACE ELEVATION:
DATE/TIME STARTED: 11/21/13 1200
DATE/TIME FINISHED: 11/21/13 1250
LOGGED BY: Dory Brant

DEPTH (ft)	%REC	RQD	FAC FREQ.	LITH	STRUCT	PID (ppm)	SOIL/ROCK DESCRIPTION	WELL CONST.
2	0						Hand augered to 5' bays (no sample recovered)	
4								
6	50			ML		0.0	Sandy silt, 10YR 5/4, yellowish brown, dry, silt, moderate cementation, white velvety (fungus) present, very fine sands.	
8	100			SM		0.0	Silty sand, 10YR 5/6, yellowish brown, dry, medium dense-loose, weak cementation predominantly fine sands	
10	0				NA			
12								
14	100			CL	SM	0.5	Clay, 10YR 4/4, dark yellowish brown, very silt, moist, moderate cementation, medium plasticity As described @ 8'	
16	0				NA			
18	100			SP	SM	1640	Poorly graded sand, clay 2.5%, black, moist, loose, weak cementation strong TPH odor, fine to medium sand Very silty sand, 10YR 5/4, yellowish brown, moist, medium silt, weak cementation, sands are very fine. TPH odor	
20	0				NA			
22	50			SP	35		Sample K-31-MW-8-22.5 collected @ 1300 Poorly graded sand, 2.5Y 5/4, light olive brown, wet, loose, fine to medium sand, predominantly quartz	

REV.

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REV. DATE

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PROJECT No.

FILE

FIGURE No.



MWH

BOREHOLE NUMBER:

SHEET 2 OF 2

BORING LOCATION: *K-31 Line Drip MW-2*
 DRILLING COMPANY: *National*
 DRILLER: *Miguel Arzanda*
 EQUIPMENT: *CME HSA*

SURFACE ELEVATION:
 DATE/TIME STARTED: *11/21/13 1200*
 DATE/TIME FINISHED: *11/21/13 1250*
 LOGGED BY: *Doug Brun*

DEPTH (ft)	%REC	RQD	FRAC FREQ.	LITH	STRUCT	PID (ppm)	SOIL/ROCK DESCRIPTION	WELL CONST.
26	0				35	NA	As Above	
28	100				11		As above, mottled w/ 2.546/6, olive brown minor clay lens @ 29' (as described @ 12.5')	
30							TP = 30' logs	

REV. No.

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MWH

PROJECT No.

FILE

FIGURE No.

BOREHOLE NUMBER:

SHEET 1 OF 2

BORING LOCATION: K-31 Line Drip MW-9
 DRILLING COMPANY: National
 DRILLER: Miguel Alvarado
 EQUIPMENT: CME HSA

SURFACE ELEVATION:
 DATE/TIME STARTED: 11/21/13 1450
 DATE/TIME FINISHED: 11/21/13 1530
 LOGGED BY: Doug BMT

DEPTH (ft)	%REC	RQD	FRAC FREQ.	LITH	STRUCT	PID (ppm)	SOIL/ROCK DESCRIPTION	WELL CONST.
2						NA		
4							Hand augered to 5' bgs no sample recovered	
6	50				SM	0.0	Sandy silt, 10YR 5/4, yellowish-brown, dry, silt, moderate concentration white rotting (Fungus) present, very fine sands	
8	100					2.1		
10	0				SM	NA	Silty sand, 10YR 5/6, yellowish brown, dry, medium dense, weak concentration, predominantly fine sands.	
12								
14	50					1.4	As above, increase in fine sand silt content & medium sand clay lenses at 15', 10YR 4/3, brown, some black mottling	
16	0					NA		
18							Sample K-31-MW-9-17.5' collected @ 1530	
20	100					233	As above, color change @ 20' to Gray 2.5/N, Black. ^{strong} TPH odor, (minor lenses, approx 2"), moist-web	
22	20				SM	10.1	color change to 10YR 5/4, yellowish brown, web	
	100					3.9	As above, increase in medium sands, predominantly quartz	

REV. No.

REVISIONS

REV. DATE

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PROJECT No.

FILE

FIGURE No.



MWH

BOREHOLE NUMBER:

SHEET 2 OF 2

BORING LOCATION: K-31 Line Delf MW-9

SURFACE ELEVATION:

DRILLING COMPANY: National

DATE/TIME STARTED: 1/21/13 1450

DRILLER: Miguel Alvarez

DATE/TIME FINISHED: 1/21/13 1530

EQUIPMENT: CME HSA

LOGGED BY: Doug Bow

DEPTH (ft)	%REC	RQD	FRAC FREQ.	LITH	STRUCT	PID (ppm)	SOIL/ROCK DESCRIPTION	WELL CONST.
26	100			SM		3.9	Very silty sand, 10YR 5/4, yellowish brown, moist, stiff, weak cementation mottled w/ 10YR 5/1, grey, very fine sands	
28	0					NA	As Above	
30	100			SM		2.4	As described @ 22.5', wet	
TD = 30'								

REV. No.	REVISIONS	REV. DATE	DESIGN BY	DRAWN BY
PROJECT No.		FILE		
		FIGURE No.		



MWH

ATTACHMENT B



MWH

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: 400-97700-1

Client Project/Site: KM K-31 Line Drip

For:

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

Attn: Ms. Sarah Gardner



Authorized for release by:

11/6/2014 2:07:02 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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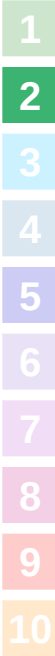


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Definitions/Glossary

Client: MWH Americas Inc
Project/Site: KM K-31 Line Drip

TestAmerica Job ID: 400-97700-1

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
H	Sample was prepped or analyzed beyond the specified holding time
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 K-31 Line Drip

TestAmerica Job ID: 400-97700-1

Job ID: 400-97700-1

Laboratory: TestAmerica Pensacola

Narrative

Job Narrative 400-97700-1

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 5.8° C.

GC/MS VOA

Method(s) 8260B: Samples MW-2 (400-97700-2), MW-5 (400-97700-4) were analyzed outside of holding time due to the pH being out of range. The samples were marked as preserved when received at the lab. The holding time expired on 10.29.14 and the samples were analyzed on 11.02.14.

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.

Sample Summary

Client: MWH Americas Inc
Project/Site: KM K-31 Line Drip

TestAmerica Job ID: 400-97700-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
400-97700-1	MW-1	Water	10/22/14 14:40	10/29/14 09:39
400-97700-2	MW-2	Water	10/22/14 14:50	10/29/14 09:39
400-97700-3	MW-4	Water	10/22/14 14:20	10/29/14 09:39
400-97700-4	MW-5	Water	10/22/14 14:25	10/29/14 09:39
400-97700-5	MW-6	Water	10/22/14 14:30	10/29/14 09:39
400-97700-6	MW-7	Water	10/22/14 14:35	10/29/14 09:39
400-97700-7	MW-8	Water	10/22/14 14:50	10/29/14 09:39
400-97700-8	MW-9	Water	10/22/14 14:45	10/29/14 09:39
400-97700-9	TRIP BLANK	Water	10/22/14 15:10	10/29/14 09:39

Client Sample Results

Client: MWH Americas Inc
Project/Site: KM K-31 Line Drip

TestAmerica Job ID: 400-97700-1

Client Sample ID: MW-1

Date Collected: 10/22/14 14:40

Date Received: 10/29/14 09:39

Lab Sample ID: 400-97700-1

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			11/02/14 16:14	1
Ethylbenzene	<0.50		1.0	0.50	ug/L			11/02/14 16:14	1
Toluene	<0.70		1.0	0.70	ug/L			11/02/14 16:14	1
Xylenes, Total	<1.6		10	1.6	ug/L			11/02/14 16:14	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene	92		78 - 118					11/02/14 16:14	1
Dibromofluoromethane	112		81 - 121					11/02/14 16:14	1
Toluene-d8 (Surr)	88		80 - 120					11/02/14 16:14	1

Client Sample ID: MW-2

Date Collected: 10/22/14 14:50

Date Received: 10/29/14 09:39

Lab Sample ID: 400-97700-2

Matrix: Water

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	<0.38	H	1.0	0.38	ug/L			11/02/14 16:41	1
Ethylbenzene	<0.50	H	1.0	0.50	ug/L			11/02/14 16:41	1
Toluene	<0.70	H	1.0	0.70	ug/L			11/02/14 16:41	1
Xylenes, Total	<1.6	H	10	1.6	ug/L			11/02/14 16:41	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene	93		78 - 118					11/02/14 16:41	1
Dibromofluoromethane	108		81 - 121					11/02/14 16:41	1
Toluene-d8 (Surr)	87		80 - 120					11/02/14 16:41	1

Client Sample ID: MW-4

Date Collected: 10/22/14 14:20

Date Received: 10/29/14 09:39

Lab Sample ID: 400-97700-3

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			11/02/14 17:09	1
Ethylbenzene	<0.50		1.0	0.50	ug/L			11/02/14 17:09	1
Toluene	<0.70		1.0	0.70	ug/L			11/02/14 17:09	1
Xylenes, Total	<1.6		10	1.6	ug/L			11/02/14 17:09	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene	98		78 - 118					11/02/14 17:09	1
Dibromofluoromethane	109		81 - 121					11/02/14 17:09	1
Toluene-d8 (Surr)	85		80 - 120					11/02/14 17:09	1

Client Sample ID: MW-5

Date Collected: 10/22/14 14:25

Date Received: 10/29/14 09:39

Lab Sample ID: 400-97700-4

Matrix: Water

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	<0.38	H	1.0	0.38	ug/L			11/02/14 17:36	1
Ethylbenzene	<0.50	H	1.0	0.50	ug/L			11/02/14 17:36	1
Toluene	<0.70	H	1.0	0.70	ug/L			11/02/14 17:36	1

TestAmerica Pensacola

Client Sample Results

Client: MWH Americas Inc
Project/Site: KM K-31 Line Drip

TestAmerica Job ID: 400-97700-1

Client Sample ID: MW-5

Date Collected: 10/22/14 14:25

Date Received: 10/29/14 09:39

Lab Sample ID: 400-97700-4

Matrix: Water

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Xylenes, Total	<1.6	H	10	1.6	ug/L			11/02/14 17:36	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene	95		78 - 118					11/02/14 17:36	1
Dibromofluoromethane	111		81 - 121					11/02/14 17:36	1
Toluene-d8 (Surr)	86		80 - 120					11/02/14 17:36	1

Client Sample ID: MW-6

Date Collected: 10/22/14 14:30

Date Received: 10/29/14 09:39

Lab Sample ID: 400-97700-5

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			11/02/14 18:03	1
Ethylbenzene	<0.50		1.0	0.50	ug/L			11/02/14 18:03	1
Toluene	<0.70		1.0	0.70	ug/L			11/02/14 18:03	1
Xylenes, Total	<1.6		10	1.6	ug/L			11/02/14 18:03	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene	92		78 - 118					11/02/14 18:03	1
Dibromofluoromethane	112		81 - 121					11/02/14 18:03	1
Toluene-d8 (Surr)	87		80 - 120					11/02/14 18:03	1

Client Sample ID: MW-7

Date Collected: 10/22/14 14:35

Date Received: 10/29/14 09:39

Lab Sample ID: 400-97700-6

Matrix: Water

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	0.38	J	1.0	0.38	ug/L			11/02/14 18:30	1
Ethylbenzene	0.76	J	1.0	0.50	ug/L			11/02/14 18:30	1
Toluene	<0.70		1.0	0.70	ug/L			11/02/14 18:30	1
Xylenes, Total	<1.6		10	1.6	ug/L			11/02/14 18:30	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene	96		78 - 118					11/02/14 18:30	1
Dibromofluoromethane	110		81 - 121					11/02/14 18:30	1
Toluene-d8 (Surr)	89		80 - 120					11/02/14 18:30	1

Client Sample ID: MW-8

Date Collected: 10/22/14 14:50

Date Received: 10/29/14 09:39

Lab Sample ID: 400-97700-7

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			11/02/14 18:57	1
Ethylbenzene	<0.50		1.0	0.50	ug/L			11/02/14 18:57	1
Toluene	<0.70		1.0	0.70	ug/L			11/02/14 18:57	1
Xylenes, Total	<1.6		10	1.6	ug/L			11/02/14 18:57	1

TestAmerica Pensacola

Client Sample Results

Client: MWH Americas Inc
Project/Site: KM K-31 Line Drip

TestAmerica Job ID: 400-97700-1

Client Sample ID: MW-8

Date Collected: 10/22/14 14:50

Date Received: 10/29/14 09:39

Lab Sample ID: 400-97700-7

Matrix: Water

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene	91		78 - 118		11/02/14 18:57	1
Dibromofluoromethane	111		81 - 121		11/02/14 18:57	1
Toluene-d8 (Surr)	88		80 - 120		11/02/14 18:57	1

Client Sample ID: MW-9

Date Collected: 10/22/14 14:45

Date Received: 10/29/14 09:39

Lab Sample ID: 400-97700-8

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			11/02/14 19:24	1
Ethylbenzene	<0.50		1.0	0.50	ug/L			11/02/14 19:24	1
Toluene	<0.70		1.0	0.70	ug/L			11/02/14 19:24	1
Xylenes, Total	<1.6		10	1.6	ug/L			11/02/14 19:24	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene	94		78 - 118		11/02/14 19:24	1
Dibromofluoromethane	111		81 - 121		11/02/14 19:24	1
Toluene-d8 (Surr)	86		80 - 120		11/02/14 19:24	1

Client Sample ID: TRIP BLANK

Date Collected: 10/22/14 15:10

Date Received: 10/29/14 09:39

Lab Sample ID: 400-97700-9

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			11/03/14 11:21	1
Ethylbenzene	<0.50		1.0	0.50	ug/L			11/03/14 11:21	1
Toluene	<0.70		1.0	0.70	ug/L			11/03/14 11:21	1
Xylenes, Total	<1.6		10	1.6	ug/L			11/03/14 11:21	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene	92		78 - 118		11/03/14 11:21	1
Dibromofluoromethane	100		81 - 121		11/03/14 11:21	1
Toluene-d8 (Surr)	99		80 - 120		11/03/14 11:21	1

QC Sample Results

Client: MWH Americas Inc
Project/Site: KM K-31 Line Drip

TestAmerica Job ID: 400-97700-1

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

Lab Sample ID: MB 400-235167/4

Matrix: Water

Analysis Batch: 235167

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			11/02/14 10:13	1
Ethylbenzene	<0.50		1.0	0.50	ug/L			11/02/14 10:13	1
Toluene	<0.70		1.0	0.70	ug/L			11/02/14 10:13	1
Xylenes, Total	<1.6		10	1.6	ug/L			11/02/14 10:13	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene	92		78 - 118		11/02/14 10:13	1
Dibromofluoromethane	105		81 - 121		11/02/14 10:13	1
Toluene-d8 (Surr)	89		80 - 120		11/02/14 10:13	1

Lab Sample ID: LCS 400-235167/1002

Matrix: Water

Analysis Batch: 235167

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	55.0		ug/L		110	79 - 120
Ethylbenzene	50.0	49.5		ug/L		99	80 - 120
Toluene	50.0	48.8		ug/L		98	80 - 120
Xylenes, Total	100	99.2		ug/L		99	70 - 130

Surrogate	LCS %Recovery	LCS Qualifier	Limits
4-Bromofluorobenzene	98		78 - 118
Dibromofluoromethane	112		81 - 121
Toluene-d8 (Surr)	94		80 - 120

Lab Sample ID: 400-97700-1 MS

Matrix: Water

Analysis Batch: 235167

Client Sample ID: MW-1

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	58.2		ug/L		116	10 - 150
Ethylbenzene	<0.50		50.0	49.4		ug/L		99	10 - 150
Toluene	<0.70		50.0	48.4		ug/L		97	10 - 150
Xylenes, Total	<1.6		100	98.2		ug/L		98	10 - 150

Surrogate	MS %Recovery	MS Qualifier	Limits
4-Bromofluorobenzene	93		78 - 118
Dibromofluoromethane	117		81 - 121
Toluene-d8 (Surr)	88		80 - 120

Lab Sample ID: 400-97700-1 MSD

Matrix: Water

Analysis Batch: 235167

Client Sample ID: MW-1

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	50.8		ug/L		102	10 - 150	14	19
Ethylbenzene	<0.50		50.0	40.8		ug/L		82	10 - 150	19	40

TestAmerica Pensacola

QC Sample Results

Client: MWH Americas Inc
Project/Site: KM K-31 Line Drip

TestAmerica Job ID: 400-97700-1

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

Lab Sample ID: 400-97700-1 MSD

Matrix: Water

Analysis Batch: 235167

Client Sample ID: MW-1

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	42.8		ug/L		86	10 - 150	12	26
Xylenes, Total	<1.6		100	85.4		ug/L		85	10 - 150	14	41

Surrogate	MSD %Recovery	MSD Qualifier	Limits
4-Bromofluorobenzene	94		78 - 118
Dibromofluoromethane	111		81 - 121
Toluene-d8 (Surr)	88		80 - 120

Lab Sample ID: MB 400-235210/4

Matrix: Water

Analysis Batch: 235210

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			11/03/14 10:54	1
Ethylbenzene	<0.50		1.0	0.50	ug/L			11/03/14 10:54	1
Toluene	<0.70		1.0	0.70	ug/L			11/03/14 10:54	1
Xylenes, Total	<1.6		10	1.6	ug/L			11/03/14 10:54	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene	94		78 - 118		11/03/14 10:54	1
Dibromofluoromethane	100		81 - 121		11/03/14 10:54	1
Toluene-d8 (Surr)	101		80 - 120		11/03/14 10:54	1

Lab Sample ID: LCS 400-235210/1002

Matrix: Water

Analysis Batch: 235210

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	46.0		ug/L		92	79 - 120
Ethylbenzene	50.0	48.3		ug/L		97	80 - 120
Toluene	50.0	48.0		ug/L		96	80 - 120
Xylenes, Total	100	96.2		ug/L		96	70 - 130

Surrogate	LCS %Recovery	LCS Qualifier	Limits
4-Bromofluorobenzene	97		78 - 118
Dibromofluoromethane	107		81 - 121
Toluene-d8 (Surr)	99		80 - 120

TestAmerica Pensacola

Lab Chronicle

Client: MWH Americas Inc
Project/Site: KM K-31 Line Drip

TestAmerica Job ID: 400-97700-1

Client Sample ID: MW-1

Date Collected: 10/22/14 14:40

Date Received: 10/29/14 09:39

Lab Sample ID: 400-97700-1

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	235167	11/02/14 16:14	EAS	TAL PEN

Client Sample ID: MW-2

Date Collected: 10/22/14 14:50

Date Received: 10/29/14 09:39

Lab Sample ID: 400-97700-2

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	235167	11/02/14 16:41	EAS	TAL PEN

Client Sample ID: MW-4

Date Collected: 10/22/14 14:20

Date Received: 10/29/14 09:39

Lab Sample ID: 400-97700-3

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	235167	11/02/14 17:09	EAS	TAL PEN

Client Sample ID: MW-5

Date Collected: 10/22/14 14:25

Date Received: 10/29/14 09:39

Lab Sample ID: 400-97700-4

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	235167	11/02/14 17:36	EAS	TAL PEN

Client Sample ID: MW-6

Date Collected: 10/22/14 14:30

Date Received: 10/29/14 09:39

Lab Sample ID: 400-97700-5

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	235167	11/02/14 18:03	EAS	TAL PEN

Client Sample ID: MW-7

Date Collected: 10/22/14 14:35

Date Received: 10/29/14 09:39

Lab Sample ID: 400-97700-6

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	235167	11/02/14 18:30	EAS	TAL PEN

Lab Chronicle

Client: MWH Americas Inc
Project/Site: KM K-31 Line Drip

TestAmerica Job ID: 400-97700-1

Client Sample ID: MW-8

Date Collected: 10/22/14 14:50

Date Received: 10/29/14 09:39

Lab Sample ID: 400-97700-7

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	235167	11/02/14 18:57	EAS	TAL PEN

Client Sample ID: MW-9

Date Collected: 10/22/14 14:45

Date Received: 10/29/14 09:39

Lab Sample ID: 400-97700-8

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	235167	11/02/14 19:24	EAS	TAL PEN

Client Sample ID: TRIP BLANK

Date Collected: 10/22/14 15:10

Date Received: 10/29/14 09:39

Lab Sample ID: 400-97700-9

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	235210	11/03/14 11:21	EAS	TAL PEN

Laboratory References:

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

Method Summary

Client: MWH Americas Inc
Project/Site: KM K-31 Line Drip

TestAmerica Job ID: 400-97700-1

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

Chain of Custody Record

Client Information Client Contact: Ms. Sarah Gardner Phone: 303 291-2242 Company: MWH Americas Inc		Sampler: <i>Chris Lee, Sarah Gardner</i> Lab Pmt: Satcher, Neal E-Mail: neal.satcher@testamericainc.com		Carrier Tracking No(s): COC No: 560-15301-1535.1 Page: Page 1 of 1 Job #:					
Address: 1801 California Street Suite 2900 City: Denver State, Zip: CO, 80202 Phone: 303-291-2239 (Tel) Email: sarah.gardner@mwhglobal.com Project #: KM K-31 Line Drip Site:		Due Date Requested: TAT Requested (days): PO #: 303-291-2239 (Tel) Purchase Order Requested WO #: As per Enfos Project #: 56004977 SSOW#:		Analysis Requested  400-97700 COC					
Sample Identification	Sample Date	Sample Time	Sample Type (C=Comp, G=grab)	Matrix (W=water, S=solid, O=oil, BT=tissue, A=air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	0260B - BTEX	Total Number of Containers	Special Instructions/Note:
MW-1	10/22/14	1440	G	Water			X		
MW-2	10/22/14	1450	G	Water			X		
MW-3	10/22/14			Water			X		NOT SAMPLED
MW-4	10/22/14	1420	G	Water			X		
MW-5	10/22/14	1425	G	Water			X		
MW-6	10/22/14	1430	G	Water			X		
MW-7	10/22/14	1435	G	Water			X		
MW-8	10/22/14	1450	G	Water			X		
MW-9	10/22/14	1445	G	Water			X		
TRIP BLANK	10/22/14	1510	G	Water			X		
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									
Special Instructions/OC Requirements:									
Empty Kit Relinquished by: <i>Chris Lee</i> Date/Time: 10/22/14 9:15 Relinquished by: <i>Chris Lee</i> Date/Time: 10/28/14 9:29 Relinquished by: _____ Date/Time: _____ Relinquished by: _____ Date/Time: _____		Method of Shipment: _____ Date/Time: 10/28/14 9:29 Date/Time: _____ Date/Time: _____ Cooler Temperature(s) °C and Other Remarks: 5.8°C ID-2							

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: 560-49817-1

Client Project/Site: K-31 Line Drip

For:

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

Attn: Ms. Sarah Gardner



Authorized for release by:

9/15/2014 10:47:57 AM

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

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.

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Definitions/Glossary

Client: MWH Americas Inc
Project/Site: K-31 Line Drip

TestAmerica Job ID: 560-49817-1

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: K-31 Line Drip

TestAmerica Job ID: 560-49817-1

Job ID: 560-49817-1

Laboratory: TestAmerica Corpus Christi

Narrative

Job Narrative
560-49817-1

Comments

No additional comments.

Receipt

The samples were received on 9/10/2014 10:15 AM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperature of the cooler at receipt was 3.3° C.

Except:

Cooler was received with ice in a trash bag, the samples were double bagged sitting on top of the trash bag. I temped the samples and got 9.8°C. I found a temp blank under the ice in the trash bag it was temped at 3.3°C. I have noted both temperatures.

A trip blank was submitted for analysis with these samples; however, it was not listed on the Chain of Custody (COC).

GC/MS VOA

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

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: K-31 Line Drip

TestAmerica Job ID: 560-49817-1

Client Sample ID: MW-1

Lab Sample ID: 560-49817-1

No Detections.

Client Sample ID: MW-2

Lab Sample ID: 560-49817-2

No Detections.

Client Sample ID: MW-4

Lab Sample ID: 560-49817-3

No Detections.

Client Sample ID: MW-5

Lab Sample ID: 560-49817-4

No Detections.

Client Sample ID: MW-6

Lab Sample ID: 560-49817-5

No Detections.

Client Sample ID: MW-7

Lab Sample ID: 560-49817-6

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Benzene	0.37	J	1.0	0.14	ug/L	1		8260B	Total/NA
Ethylbenzene	3.3		1.0	0.20	ug/L	1		8260B	Total/NA

Client Sample ID: MW-8

Lab Sample ID: 560-49817-7

No Detections.

Client Sample ID: MW-9

Lab Sample ID: 560-49817-8

No Detections.

Client Sample ID: Trip Blank

Lab Sample ID: 560-49817-9

No Detections.

This Detection Summary does not include radiochemical test results.

TestAmerica Corpus Christi

Client Sample Results

Client: MWH Americas Inc
Project/Site: K-31 Line Drip

TestAmerica Job ID: 560-49817-1

Client Sample ID: MW-1

Date Collected: 09/07/14 09:10

Date Received: 09/10/14 10:15

Lab Sample ID: 560-49817-1

Matrix: Water

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	<0.14		1.0	0.14	ug/L			09/12/14 12:11	1
Ethylbenzene	<0.20		1.0	0.20	ug/L			09/12/14 12:11	1
Toluene	<0.30		1.0	0.30	ug/L			09/12/14 12:11	1
Xylenes, Total	<0.23		2.0	0.23	ug/L			09/12/14 12:11	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
Toluene-d8 (Surr)	99		70 - 130					09/12/14 12:11	1
4-Bromofluorobenzene (Surr)	95		70 - 130					09/12/14 12:11	1
Dibromofluoromethane (Surr)	100		69 - 130					09/12/14 12:11	1
1,2-Dichloroethane-d4 (Surr)	102		70 - 140					09/12/14 12:11	1

Client Sample ID: MW-2

Date Collected: 09/07/14 09:20

Date Received: 09/10/14 10:15

Lab Sample ID: 560-49817-2

Matrix: Water

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	<0.14		1.0	0.14	ug/L			09/12/14 12:36	1
Ethylbenzene	<0.20		1.0	0.20	ug/L			09/12/14 12:36	1
Toluene	<0.30		1.0	0.30	ug/L			09/12/14 12:36	1
Xylenes, Total	<0.23		2.0	0.23	ug/L			09/12/14 12:36	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
Toluene-d8 (Surr)	100		70 - 130					09/12/14 12:36	1
4-Bromofluorobenzene (Surr)	93		70 - 130					09/12/14 12:36	1
Dibromofluoromethane (Surr)	102		69 - 130					09/12/14 12:36	1
1,2-Dichloroethane-d4 (Surr)	98		70 - 140					09/12/14 12:36	1

Client Sample ID: MW-4

Date Collected: 09/07/14 09:15

Date Received: 09/10/14 10:15

Lab Sample ID: 560-49817-3

Matrix: Water

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	<0.14		1.0	0.14	ug/L			09/12/14 13:26	1
Ethylbenzene	<0.20		1.0	0.20	ug/L			09/12/14 13:26	1
Toluene	<0.30		1.0	0.30	ug/L			09/12/14 13:26	1
Xylenes, Total	<0.23		2.0	0.23	ug/L			09/12/14 13:26	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
Toluene-d8 (Surr)	97		70 - 130					09/12/14 13:26	1
4-Bromofluorobenzene (Surr)	97		70 - 130					09/12/14 13:26	1
Dibromofluoromethane (Surr)	99		69 - 130					09/12/14 13:26	1
1,2-Dichloroethane-d4 (Surr)	101		70 - 140					09/12/14 13:26	1

TestAmerica Corpus Christi

Client Sample Results

Client: MWH Americas Inc
Project/Site: K-31 Line Drip

TestAmerica Job ID: 560-49817-1

Client Sample ID: MW-5

Lab Sample ID: 560-49817-4

Date Collected: 09/07/14 10:00

Matrix: Water

Date Received: 09/10/14 10:15

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	<0.14		1.0	0.14	ug/L			09/12/14 13:01	1
Ethylbenzene	<0.20		1.0	0.20	ug/L			09/12/14 13:01	1
Toluene	<0.30		1.0	0.30	ug/L			09/12/14 13:01	1
Xylenes, Total	<0.23		2.0	0.23	ug/L			09/12/14 13:01	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Toluene-d8 (Surr)	99		70 - 130		09/12/14 13:01	1
4-Bromofluorobenzene (Surr)	92		70 - 130		09/12/14 13:01	1
Dibromofluoromethane (Surr)	104		69 - 130		09/12/14 13:01	1
1,2-Dichloroethane-d4 (Surr)	101		70 - 140		09/12/14 13:01	1

Client Sample ID: MW-6

Lab Sample ID: 560-49817-5

Date Collected: 09/07/14 10:10

Matrix: Water

Date Received: 09/10/14 10:15

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	<0.14		1.0	0.14	ug/L			09/12/14 13:51	1
Ethylbenzene	<0.20		1.0	0.20	ug/L			09/12/14 13:51	1
Toluene	<0.30		1.0	0.30	ug/L			09/12/14 13:51	1
Xylenes, Total	<0.23		2.0	0.23	ug/L			09/12/14 13:51	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Toluene-d8 (Surr)	98		70 - 130		09/12/14 13:51	1
4-Bromofluorobenzene (Surr)	93		70 - 130		09/12/14 13:51	1
Dibromofluoromethane (Surr)	101		69 - 130		09/12/14 13:51	1
1,2-Dichloroethane-d4 (Surr)	103		70 - 140		09/12/14 13:51	1

Client Sample ID: MW-7

Lab Sample ID: 560-49817-6

Date Collected: 09/07/14 09:35

Matrix: Water

Date Received: 09/10/14 10:15

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	0.37	J	1.0	0.14	ug/L			09/12/14 14:16	1
Ethylbenzene	3.3		1.0	0.20	ug/L			09/12/14 14:16	1
Toluene	<0.30		1.0	0.30	ug/L			09/12/14 14:16	1
Xylenes, Total	<0.23		2.0	0.23	ug/L			09/12/14 14:16	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Toluene-d8 (Surr)	99		70 - 130		09/12/14 14:16	1
4-Bromofluorobenzene (Surr)	99		70 - 130		09/12/14 14:16	1
Dibromofluoromethane (Surr)	99		69 - 130		09/12/14 14:16	1
1,2-Dichloroethane-d4 (Surr)	101		70 - 140		09/12/14 14:16	1

TestAmerica Corpus Christi

Client Sample Results

Client: MWH Americas Inc
Project/Site: K-31 Line Drip

TestAmerica Job ID: 560-49817-1

Client Sample ID: MW-8

Date Collected: 09/07/14 09:50

Date Received: 09/10/14 10:15

Lab Sample ID: 560-49817-7

Matrix: Water

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	<0.14		1.0	0.14	ug/L			09/12/14 14:41	1
Ethylbenzene	<0.20		1.0	0.20	ug/L			09/12/14 14:41	1
Toluene	<0.30		1.0	0.30	ug/L			09/12/14 14:41	1
Xylenes, Total	<0.23		2.0	0.23	ug/L			09/12/14 14:41	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Toluene-d8 (Surr)	96		70 - 130		09/12/14 14:41	1
4-Bromofluorobenzene (Surr)	95		70 - 130		09/12/14 14:41	1
Dibromofluoromethane (Surr)	103		69 - 130		09/12/14 14:41	1
1,2-Dichloroethane-d4 (Surr)	101		70 - 140		09/12/14 14:41	1

Client Sample ID: MW-9

Date Collected: 09/07/14 10:20

Date Received: 09/10/14 10:15

Lab Sample ID: 560-49817-8

Matrix: Water

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	<0.14		1.0	0.14	ug/L			09/12/14 15:06	1
Ethylbenzene	<0.20		1.0	0.20	ug/L			09/12/14 15:06	1
Toluene	<0.30		1.0	0.30	ug/L			09/12/14 15:06	1
Xylenes, Total	<0.23		2.0	0.23	ug/L			09/12/14 15:06	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Toluene-d8 (Surr)	93		70 - 130		09/12/14 15:06	1
4-Bromofluorobenzene (Surr)	93		70 - 130		09/12/14 15:06	1
Dibromofluoromethane (Surr)	104		69 - 130		09/12/14 15:06	1
1,2-Dichloroethane-d4 (Surr)	103		70 - 140		09/12/14 15:06	1

Client Sample ID: Trip Blank

Date Collected: 09/07/14 00:00

Date Received: 09/10/14 10:15

Lab Sample ID: 560-49817-9

Matrix: Water

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	<0.14		1.0	0.14	ug/L			09/12/14 15:31	1
Ethylbenzene	<0.20		1.0	0.20	ug/L			09/12/14 15:31	1
Toluene	<0.30		1.0	0.30	ug/L			09/12/14 15:31	1
Xylenes, Total	<0.23		2.0	0.23	ug/L			09/12/14 15:31	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Toluene-d8 (Surr)	97		70 - 130		09/12/14 15:31	1
4-Bromofluorobenzene (Surr)	92		70 - 130		09/12/14 15:31	1
Dibromofluoromethane (Surr)	101		69 - 130		09/12/14 15:31	1
1,2-Dichloroethane-d4 (Surr)	102		70 - 140		09/12/14 15:31	1

TestAmerica Corpus Christi

QC Sample Results

Client: MWH Americas Inc
Project/Site: K-31 Line Drip

TestAmerica Job ID: 560-49817-1

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

Lab Sample ID: MB 560-106984/8

Matrix: Water

Analysis Batch: 106984

Client Sample ID: Method Blank

Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	<0.14		1.0	0.14	ug/L			09/12/14 11:46	1
Ethylbenzene	<0.20		1.0	0.20	ug/L			09/12/14 11:46	1
Toluene	<0.30		1.0	0.30	ug/L			09/12/14 11:46	1
Xylenes, Total	<0.23		2.0	0.23	ug/L			09/12/14 11:46	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
Toluene-d8 (Surr)	98		70 - 130		09/12/14 11:46	1
4-Bromofluorobenzene (Surr)	95		70 - 130		09/12/14 11:46	1
Dibromofluoromethane (Surr)	102		69 - 130		09/12/14 11:46	1
1,2-Dichloroethane-d4 (Surr)	102		70 - 140		09/12/14 11:46	1

Lab Sample ID: LCS 560-106984/3

Matrix: Water

Analysis Batch: 106984

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Benzene	25.0	27.1		ug/L		108	70 - 130
Ethylbenzene	25.0	25.7		ug/L		103	70 - 130
Toluene	25.0	25.6		ug/L		102	70 - 130
Xylenes, Total	50.0	51.9		ug/L		104	70 - 130

Surrogate	LCS %Recovery	LCS Qualifier	Limits
Toluene-d8 (Surr)	98		70 - 130
4-Bromofluorobenzene (Surr)	99		70 - 130
Dibromofluoromethane (Surr)	100		69 - 130
1,2-Dichloroethane-d4 (Surr)	101		70 - 140

Lab Sample ID: 560-49817-1 MS

Matrix: Water

Analysis Batch: 106984

Client Sample ID: MW-1

Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Benzene	<0.14		25.0	27.2		ug/L		109	70 - 130
Ethylbenzene	<0.20		25.0	26.5		ug/L		106	70 - 130
Toluene	<0.30		25.0	26.5		ug/L		106	70 - 130
Xylenes, Total	<0.23		50.0	53.0		ug/L		106	70 - 130

Surrogate	MS %Recovery	MS Qualifier	Limits
Toluene-d8 (Surr)	98		70 - 130
4-Bromofluorobenzene (Surr)	98		70 - 130
Dibromofluoromethane (Surr)	101		69 - 130
1,2-Dichloroethane-d4 (Surr)	103		70 - 140

TestAmerica Corpus Christi

QC Sample Results

Client: MWH Americas Inc
Project/Site: K-31 Line Drip

TestAmerica Job ID: 560-49817-1

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

Lab Sample ID: 560-49817-1 MSD

Matrix: Water

Analysis Batch: 106984

Client Sample ID: MW-1

Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Benzene	<0.14		25.0	28.6		ug/L		114	70 - 130	5	20
Ethylbenzene	<0.20		25.0	26.8		ug/L		107	70 - 130	1	20
Toluene	<0.30		25.0	27.3		ug/L		109	70 - 130	3	20
Xylenes, Total	<0.23		50.0	55.0		ug/L		110	70 - 130	4	20

Surrogate	MSD %Recovery	MSD Qualifier	Limits
Toluene-d8 (Surr)	97		70 - 130
4-Bromofluorobenzene (Surr)	99		70 - 130
Dibromofluoromethane (Surr)	102		69 - 130
1,2-Dichloroethane-d4 (Surr)	104		70 - 140

Certification Summary

Client: MWH Americas Inc
Project/Site: K-31 Line Drip

TestAmerica Job ID: 560-49817-1

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	08-31-15
Texas	NELAP	6	T104704210	03-31-15

Method Summary

Client: MWH Americas Inc
Project/Site: K-31 Line Drip

TestAmerica Job ID: 560-49817-1

Method	Method Description	Protocol	Laboratory
8260B	Volatile Organic Compounds (GC/MS)	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: K-31 Line Drip

TestAmerica Job ID: 560-49817-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
560-49817-1	MW-1	Water	09/07/14 09:10	09/10/14 10:15
560-49817-2	MW-2	Water	09/07/14 09:20	09/10/14 10:15
560-49817-3	MW-4	Water	09/07/14 09:15	09/10/14 10:15
560-49817-4	MW-5	Water	09/07/14 10:00	09/10/14 10:15
560-49817-5	MW-6	Water	09/07/14 10:10	09/10/14 10:15
560-49817-6	MW-7	Water	09/07/14 09:35	09/10/14 10:15
560-49817-7	MW-8	Water	09/07/14 09:50	09/10/14 10:15
560-49817-8	MW-9	Water	09/07/14 10:20	09/10/14 10:15
560-49817-9	Trip Blank	Water	09/07/14 00:00	09/10/14 10:15

9/15/2014

Login Sample Receipt Checklist

Client: MWH Americas Inc

Job Number: 560-49817-1

Login Number: 49817

List Source: TestAmerica Corpus Christi

List Number: 1

Creator: Rood, Vivian R

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.	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	Refer to Job Narrative for details.
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 <6mm (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

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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: 560-46618-1

Client Project/Site: K-31, 4/4/14 BTEX

For:

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

Attn: Ms. Sarah Gardner



Authorized for release by:
4/22/2014 2:10:16 PM

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

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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: K-31, 4/4/14 BTEX

TestAmerica Job ID: 560-46618-1

Qualifiers

GC 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
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: K-31, 4/4/14 BTEX

TestAmerica Job ID: 560-46618-1

Job ID: 560-46618-1

Laboratory: TestAmerica Corpus Christi

Narrative

Job Narrative
560-46618-1

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 1.8° C.

GC VOA

Method(s) 8021B: The sample size used in the preparation of the matrix spike/matrix spike duplicate (MS/MSD) associated with batch 100701 was outside the 10% difference. As the relative percent difference (RPD) calculation is based upon the MS/MSD concentration as opposed to the MS/MSD percent recovery, elevated %RPD values were obtained.

8021
Batch100701

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: K-31, 4/4/14 BTEX

TestAmerica Job ID: 560-46618-1

Client Sample ID: MW-1

Lab Sample ID: 560-46618-1

No Detections.

Client Sample ID: MW-2

Lab Sample ID: 560-46618-2

No Detections.

Client Sample ID: MW-4

Lab Sample ID: 560-46618-3

No Detections.

Client Sample ID: MW-5

Lab Sample ID: 560-46618-4

No Detections.

Client Sample ID: MW-6

Lab Sample ID: 560-46618-5

No Detections.

Client Sample ID: MW-7

Lab Sample ID: 560-46618-6

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Xylenes, Total	1.6	J	2.0	0.65	ug/L	1		8021B	Total/NA

Client Sample ID: MW-8

Lab Sample ID: 560-46618-7

No Detections.

Client Sample ID: MW-9

Lab Sample ID: 560-46618-8

No Detections.

This Detection Summary does not include radiochemical test results.

TestAmerica Corpus Christi

Client Sample Results

Client: MWH Americas Inc
Project/Site: K-31, 4/4/14 BTEX

TestAmerica Job ID: 560-46618-1

Client Sample ID: MW-1

Date Collected: 04/04/14 11:05

Date Received: 04/08/14 09:45

Lab Sample ID: 560-46618-1

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			04/17/14 15:08	1
Toluene	<0.38		2.0	0.38	ug/L			04/17/14 15:08	1
Ethylbenzene	<0.20		2.0	0.20	ug/L			04/17/14 15:08	1
Xylenes, Total	<0.65		2.0	0.65	ug/L			04/17/14 15:08	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	101		58 - 129					04/17/14 15:08	1
Trifluorotoluene (Surr)	81		54 - 130					04/17/14 15:08	1

Client Sample ID: MW-2

Date Collected: 04/04/14 11:00

Date Received: 04/08/14 09:45

Lab Sample ID: 560-46618-2

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			04/11/14 15:35	1
Toluene	<0.38		2.0	0.38	ug/L			04/11/14 15:35	1
Ethylbenzene	<0.20		2.0	0.20	ug/L			04/11/14 15:35	1
Xylenes, Total	<0.65		2.0	0.65	ug/L			04/11/14 15:35	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	89		58 - 129					04/11/14 15:35	1
Trifluorotoluene (Surr)	90		54 - 130					04/11/14 15:35	1

Client Sample ID: MW-4

Date Collected: 04/04/14 10:30

Date Received: 04/08/14 09:45

Lab Sample ID: 560-46618-3

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			04/17/14 15:35	1
Toluene	<0.38		2.0	0.38	ug/L			04/17/14 15:35	1
Ethylbenzene	<0.20		2.0	0.20	ug/L			04/17/14 15:35	1
Xylenes, Total	<0.65		2.0	0.65	ug/L			04/17/14 15:35	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	98		58 - 129					04/17/14 15:35	1
Trifluorotoluene (Surr)	78		54 - 130					04/17/14 15:35	1

Client Sample ID: MW-5

Date Collected: 04/04/14 10:35

Date Received: 04/08/14 09:45

Lab Sample ID: 560-46618-4

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			04/17/14 16:02	1
Toluene	<0.38		2.0	0.38	ug/L			04/17/14 16:02	1
Ethylbenzene	<0.20		2.0	0.20	ug/L			04/17/14 16:02	1
Xylenes, Total	<0.65		2.0	0.65	ug/L			04/17/14 16:02	1

TestAmerica Corpus Christi

Client Sample Results

Client: MWH Americas Inc
Project/Site: K-31, 4/4/14 BTEX

TestAmerica Job ID: 560-46618-1

Client Sample ID: MW-5

Date Collected: 04/04/14 10:35

Date Received: 04/08/14 09:45

Lab Sample ID: 560-46618-4

Matrix: Water

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	103		58 - 129		04/17/14 16:02	1
Trifluorotoluene (Surr)	83		54 - 130		04/17/14 16:02	1

Client Sample ID: MW-6

Date Collected: 04/04/14 10:40

Date Received: 04/08/14 09:45

Lab Sample ID: 560-46618-5

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	-		04/17/14 16:29	1
Toluene	<0.38		2.0	0.38	ug/L			04/17/14 16:29	1
Ethylbenzene	<0.20		2.0	0.20	ug/L			04/17/14 16:29	1
Xylenes, Total	<0.65		2.0	0.65	ug/L			04/17/14 16:29	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	107		58 - 129					04/17/14 16:29	1
Trifluorotoluene (Surr)	81		54 - 130					04/17/14 16:29	1

Client Sample ID: MW-7

Date Collected: 04/04/14 10:45

Date Received: 04/08/14 09:45

Lab Sample ID: 560-46618-6

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			04/17/14 18:06	1
Toluene	<0.38		2.0	0.38	ug/L			04/17/14 18:06	1
Ethylbenzene	<0.20		2.0	0.20	ug/L			04/17/14 18:06	1
Xylenes, Total	1.6	J	2.0	0.65	ug/L			04/17/14 18:06	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	100		58 - 129					04/17/14 18:06	1
Trifluorotoluene (Surr)	87		54 - 130					04/17/14 18:06	1

Client Sample ID: MW-8

Date Collected: 04/04/14 10:55

Date Received: 04/08/14 09:45

Lab Sample ID: 560-46618-7

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 19:38	1
Toluene	<0.38		2.0	0.38	ug/L			04/16/14 19:38	1
Ethylbenzene	<0.20		2.0	0.20	ug/L			04/16/14 19:38	1
Xylenes, Total	<0.65		2.0	0.65	ug/L			04/16/14 19:38	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	102		58 - 129					04/16/14 19:38	1
Trifluorotoluene (Surr)	85		54 - 130					04/16/14 19:38	1

TestAmerica Corpus Christi

Client Sample Results

Client: MWH Americas Inc
Project/Site: K-31, 4/4/14 BTEX

TestAmerica Job ID: 560-46618-1

Client Sample ID: MW-9

Lab Sample ID: 560-46618-8

Date Collected: 04/04/14 10:50

Matrix: Water

Date Received: 04/08/14 09:45

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			04/17/14 18:33	1
Toluene	<0.38		2.0	0.38	ug/L			04/17/14 18:33	1
Ethylbenzene	<0.20		2.0	0.20	ug/L			04/17/14 18:33	1
Xylenes, Total	<0.65		2.0	0.65	ug/L			04/17/14 18:33	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	106		58 - 129		04/17/14 18:33	1
Trifluorotoluene (Surr)	86		54 - 130		04/17/14 18:33	1

QC Sample Results

Client: MWH Americas Inc
Project/Site: K-31, 4/4/14 BTEX

TestAmerica Job ID: 560-46618-1

Method: 8021B - Volatile Organic Compounds (GC)

Lab Sample ID: MB 560-100701/5

Matrix: Water

Analysis Batch: 100701

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			04/11/14 12:22	1
Toluene	<0.38		2.0	0.38	ug/L			04/11/14 12:22	1
Ethylbenzene	<0.20		2.0	0.20	ug/L			04/11/14 12:22	1
Xylenes, Total	<0.65		2.0	0.65	ug/L			04/11/14 12:22	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	95		58 - 129		04/11/14 12:22	1
Trifluorotoluene (Surr)	87		54 - 130		04/11/14 12:22	1

Lab Sample ID: LCS 560-100701/4

Matrix: Water

Analysis Batch: 100701

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	39.0		ug/L		98	70 - 130
Toluene	40.0	41.3		ug/L		103	70 - 130
Ethylbenzene	40.0	39.9		ug/L		100	70 - 130
Xylenes, Total	120	114		ug/L		95	70 - 130

Surrogate	LCS %Recovery	LCS Qualifier	Limits
4-Bromofluorobenzene (Surr)	101		58 - 129
Trifluorotoluene (Surr)	92		54 - 130

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

TestAmerica Corpus Christi

QC Sample Results

Client: MWH Americas Inc
Project/Site: K-31, 4/4/14 BTEX

TestAmerica Job ID: 560-46618-1

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

Lab Sample ID: LCS 560-100888/2

Matrix: Water

Analysis Batch: 100888

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

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

Lab Sample ID: MB 560-100952/3

Matrix: Water

Analysis Batch: 100952

Client Sample ID: Method Blank

Prep Type: Total/NA

	MB	MB								
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil	Fac
Benzene	<0.20		2.0	0.20	ug/L			04/17/14 11:05	1	
Toluene	<0.38		2.0	0.38	ug/L			04/17/14 11:05	1	
Ethylbenzene	<0.20		2.0	0.20	ug/L			04/17/14 11:05	1	
Xylenes, Total	<0.65		2.0	0.65	ug/L			04/17/14 11:05	1	

	MB	MB								
Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil	Fac			
4-Bromofluorobenzene (Surr)	105		58 - 129		04/17/14 11:05	1				
Trifluorotoluene (Surr)	77		54 - 130		04/17/14 11:05	1				

Lab Sample ID: LCS 560-100952/2

Matrix: Water

Analysis Batch: 100952

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

	Spike	LCS	LCS						%Rec.	
Analyte	Added	Result	Qualifier	Unit	D	%Rec	Limits			
Benzene	40.0	38.8		ug/L		97	70 - 130			
Toluene	40.0	40.3		ug/L		101	70 - 130			
Ethylbenzene	40.0	39.8		ug/L		99	70 - 130			
Xylenes, Total	120	114		ug/L		95	70 - 130			

	LCS	LCS	
Surrogate	%Recovery	Qualifier	Limits
4-Bromofluorobenzene (Surr)	112		58 - 129
Trifluorotoluene (Surr)	82		54 - 130

TestAmerica Corpus Christi

Certification Summary

Client: MWH Americas Inc
Project/Site: K-31, 4/4/14 BTEX

TestAmerica Job ID: 560-46618-1

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: K-31, 4/4/14 BTEX

TestAmerica Job ID: 560-46618-1

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: K-31, 4/4/14 BTEX

TestAmerica Job ID: 560-46618-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
560-46618-1	MW-1	Water	04/04/14 11:05	04/08/14 09:45
560-46618-2	MW-2	Water	04/04/14 11:00	04/08/14 09:45
560-46618-3	MW-4	Water	04/04/14 10:30	04/08/14 09:45
560-46618-4	MW-5	Water	04/04/14 10:35	04/08/14 09:45
560-46618-5	MW-6	Water	04/04/14 10:40	04/08/14 09:45
560-46618-6	MW-7	Water	04/04/14 10:45	04/08/14 09:45
560-46618-7	MW-8	Water	04/04/14 10:55	04/08/14 09:45
560-46618-8	MW-9	Water	04/04/14 10:50	04/08/14 09:45

Chain of Custody Record

Client Information Client Contact: <u>Mr. Daniel Wade</u> Company: <u>MWH Americas Inc</u> Address: <u>1801 California Street Suite 2900</u> City: <u>Denver</u> State, Zip: <u>CO, 80202</u> Phone: <u>713-420-3414 (Tel)</u> Email: <u>Sarah.gardner@us.mwhglobal.com</u> Project Name: <u>San Juan River Basin Pil Sites</u> Site: <u>K-31</u>		Sampler: <u>Sarah Gardner</u> Phone: <u>303 291 2239</u> Lab PM: <u>Kellogg, Timothy L.</u> E-Mail: <u>tim.kellogg@testamericainc.com</u>		Carrier Tracking No(s): <u>Reflex</u> Job #: <u>6452757372</u> Lab No: <u>560-13131-1157</u> Page: <u>1</u> Loc: <u>560</u> 46618	
Due Date Requested: TAT Requested (days): PO #: Purchase Order not required WO #: TWO # C-STLI- Project #: 56000058 SSOW#:		Analysis Requested Preserval: A - HCL B - NaOH C - Zn Acet D - Nitric Ac. E - NaHSO4 F - MeOH G - Amchlor H - Ascorbic Acid I - Ice J - DI Water K - EDTA L - EDA Other:			
Sample Identification Sample ID Sample Date Sample Time Sample Type (C=comp, G=grab) Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)		Perform MS/MSD (Yes or No) Field Filtered Sample (Yes or No) 8260B - BTEX Special Instructions/Note:			
mw-1 mw-2 mw-3 mw-4 mw-5 mw-6 mw-7 mw-8 mw-9		4/4/14 4/4/14 4/4/14 4/4/14 4/4/14 4/4/14 4/4/14 4/4/14 4/4/14		1105 1100 1030 1035 1040 1045 1055 1050	
Water Water Water Water Water Water Water Water		X X X X X X X X X			
mw-1 mw-2 mw-3 mw-4 mw-5 mw-6 mw-7 mw-8 mw-9		4/4/14 4/4/14 4/4/14 4/4/14 4/4/14 4/4/14 4/4/14 4/4/14 4/4/14		1105 1100 1030 1035 1040 1045 1055 1050	
Water Water Water Water Water Water Water Water		X X X X X X X X X			
mw-1 mw-2 mw-3 mw-4 mw-5 mw-6 mw-7 mw-8 mw-9		4/4/14 4/4/14 4/4/14 4/4/14 4/4/14 4/4/14 4/4/14 4/4/14 4/4/14		1105 1100 1030 1035 1040 1045 1055 1050	
Water Water Water Water Water Water Water Water		X X X X X X X X X			
mw-1 mw-2 mw-3 mw-4 mw-5 mw-6 mw-7 mw-8 mw-9		4/4/14 4/4/14 4/4/14 4/4/14 4/4/14 4/4/14 4/4/14 4/4/14 4/4/14		1105 1100 1030 1035 1040 1045 1055 1050	
Water Water Water Water Water Water Water Water		X X X X X X X X X			
mw-1 mw-2 mw-3 mw-4 mw-5 mw-6 mw-7 mw-8 mw-9		4/4/14 4/4/14 4/4/14 4/4/14 4/4/14 4/4/14 4/4/14 4/4/14 4/4/14		1105 1100 1030 1035 1040 1045 1055 1050	
Water Water Water Water Water Water Water Water		X X X X X X X X X			
mw-1 mw-2 mw-3 mw-4 mw-5 mw-6 mw-7 mw-8 mw-9		4/4/14 4/4/14 4/4/14 4/4/14 4/4/14 4/4/14 4/4/14 4/4/14 4/4/14		1105 1100 1030 1035 1040 1045 1055 1050	
Water Water Water Water Water Water Water Water		X X X X X X X X X			
mw-1 mw-2 mw-3 mw-4 mw-5 mw-6 mw-7 mw-8 mw-9		4/4/14 4/4/14 4/4/14 4/4/14 4/4/14 4/4/14 4/4/14 4/4/14 4/4/14		1105 1100 1030 1035 1040 1045 1055 1050	
Water Water Water Water Water Water Water Water		X X X X X X X X X			
mw-1 mw-2 mw-3 mw-4 mw-5 mw-6 mw-7 mw-8 mw-9		4/4/14 4/4/14 4/4/14 4/4/14 4/4/14 4/4/14 4/4/14 4/4/14 4/4/14		1105 1100 1030 1035 1040 1045 1055 1050	
Water Water Water Water Water Water Water Water		X X X X X X X X X			
mw-1 mw-2 mw-3 mw-4 mw-5 mw-6 mw-7 mw-8 mw-9		4/4/14 4/4/14 4/4/14 4/4/14 4/4/14 4/4/14 4/4/14 4/4/14 4/4/14		1105 1100 1030 1035 1040 1045 1055 1050	
Water Water Water Water Water Water Water Water		X X X X X X X X X			
mw-1 mw-2 mw-3 mw-4 mw-5 mw-6 mw-7 mw-8 mw-9		4/4/14 4/4/14 4/4/14 4/4/14 4/4/14 4/4/14 4/4/14 4/4/14 4/4/14		1105 1100 1030 1035 1040 1045 1055 1050	
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mw-1 mw-2 mw-3 mw-4 mw-5 mw-6 mw-7 mw-8 mw-9		4/4/14 4/4/14 4/4/14 4/4/14 4/4/14 4/4/14 4/4/14 4/4/14 4/4/14		1105 1100 1030 1035 1040 1045 1055 1050	
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mw-1 mw-2 mw-3 mw-4 mw-5 mw-6 mw-7 mw-8 mw-9		4/4/14 4/4/14 4/4/14 4/4/14 4/4/14 4/4/14 4/4/14 4/4/14 4/4/14		1105 1100 1030 1035 1040 1045 1055 1050	
Water Water Water Water Water Water Water Water		X X X X X X X X X			
mw-1 mw-2 mw-3 mw-4 mw-5 mw-6 mw-7 mw-8 mw-9		4/4/14 4/4/14 4/4/14 4/4/14 4/4/14 4/4/14 4/4/14 4/4/14 4/4/14		1105 1100 1030 1035 1040 1045 1055 1050	
Water Water Water Water Water Water Water Water		X X X X X X X X X			
mw-1 mw-2 mw-3 mw-4 mw-5 mw-6 mw-7 mw-8 mw-9		4/4/14 4/4/14 4/4/14 4/4/14 4/4/14 4/4/14 4/4/14 4/4/14 4/4/14		1105 1100 1030 1035 1040 1045 1055 1050	
Water Water Water Water Water Water Water Water		X X X X X X X X X			
mw-1 mw-2 mw-3 mw-4 mw-5 mw-6 mw-7 mw-8 mw-9		4/4/14 4/4/14 4/4/14 4/4/14 4/4/14 4/4/14 4/4/14 4/4/14 4/4/14		1105 1100 1030 1035 1040 1045 1055 1050	
Water Water Water Water Water Water Water Water		X X X X X X X X X			
mw-1 mw-2 mw-3 mw-4 mw-5 mw-6 mw-7 mw-8 mw-9		4/4/14 4/4/14 4/4/14 4/4/14 4/4/14 4/4/14 4/4/14 4/4/14 4/4/14		1105 1100 1030 1035 1040 1045 1055 1050	
Water Water Water Water Water Water Water Water		X X X X X X X X X			
mw-1 mw-2 mw-3 mw-4 mw-5 mw-6 mw-7 mw-8 mw-9		4/4/14 4/4/14 4/4/14 4/4/14 4/4/14 4/4/14 4/4/14 4/4/14 4/4/14		1105 1100 1030 1035 1040 1045 1055 1050	
Water Water Water Water Water Water Water Water		X X X X X X X X X			
mw-1 mw-2 mw-3 mw-4 mw-5 mw-6 mw-7 mw-8 mw-9		4/4/14 4/4/14 4/4/14 4/4/14 4/4/14 4/4/14 4/4/14 4/4/14 4/4/14		1105 1100 1030 1035 1040 1045 1055 1050	
Water Water Water Water Water Water Water Water		X X X X X X X X X			
mw-1 mw-2 mw-3 mw-4 mw-5 mw-6 mw-7 mw-8 mw-9		4/4/14 4/4/14 4/4/14 4/4/14 4/4/14 4/4/14 4/4/14 4/4/14 4/4/14		1105 1100 1030 1035 1040 1045 1055 1050	
Water Water Water Water Water Water Water Water		X X X X X X X X X			
mw-1 mw-2 mw-3 mw-4 mw-5 mw-6 mw-7 mw-8 mw-9		4/4/14 4/4/14 4/4/14 4/4/14 4/4/14 4/4/14 4/4/14 4/4/14 4/4/14		1105 1100 1030 1035 1040 1045 1055 1050	
Water Water Water Water Water Water Water Water		X X X X X X X X X			
mw-1 mw-2 mw-3 mw-4 mw-5 mw-6 mw-7 mw-8 mw-9		4/4/14 4/4/14 4/4/14 4/4/14 4/4/14 4/4/14 4/4/14 4/4/14 4/4/14		1105 1100 1030 1035 1040 1045 1055 1050	
Water Water Water Water Water Water Water Water		X X X X X X X X X			
mw-1 mw-2 mw-3 mw-4 mw-5 mw-6 mw-7 mw-8 mw-9		4/4/14 4/4/14 4/4/14 4/4/14 4/4/14 4/4/14 4/4/14 4/4/14 4/4/14		1105 1100 1030 1035 1040 1045 1055 1050	
Water Water Water Water Water Water Water Water		X X X X X X X X X			
mw-1 mw-2 mw-3 mw-4 mw-5 mw-6 mw-7 mw-8 mw-9		4/4/14 4/4/14 4/4/14 4/4/14 4/4/14 4/4/14 4/4/14 4/4/14 4/4/14		1105 1100 1030 1035 1040 1045 1055 1050	
Water Water Water Water Water Water Water Water		X X X X X X X X X			
mw-1 mw-2 mw-3 mw-4 mw-5 mw-6 mw-7 mw-8 mw-9		4/4/14 4/4/14 4/4/14 4/4/14 4/4/14 4/4/14 4/4/14 4/4/14 4/4/14		1105 1100 1030 1035 1040 1045 1055 1050	
Water Water Water Water Water Water Water Water		X X X X X X X X X			
mw-1 mw-2 mw-3 mw-4 mw-5 mw-6 mw-7 mw-8 mw-9		4/4/14 4/4/14 4/4/14 4/4/14 4/4/14 4/4/14 4/4/14 4/4/14 4/4/14		1105 1100 1030 1035 1040 1045 1055 1050	
Water Water Water Water Water Water Water Water		X X X X X X X X X			
mw-1 mw-2 mw-3 mw-4 mw-5 mw-6 mw-7 mw-8 mw-9		4/4/14 4/4/14 4/4/14 4/4/14 4/4/14 4/4/14 4/4/14 4/4/14 4/4/14		1105 1100 1030 1035 1040 1045 1055 1050	
Water Water Water Water Water Water Water Water		X X X X X X X X X			
mw-1 mw-2 mw-3 mw-4 mw-5 mw-6 mw-7 mw-8 mw-9		4/4/14 4/4/14 4/4/14 4/4/14 4/4/14 4/4/14 4/4/14 4/4/14 4/4/14		1105 1100 1030 1035 1040 1045 1055 1050	
Water Water Water Water Water Water Water Water		X X X X X X X X X			
mw-1 mw-2 mw-3 mw-4 mw-5 mw-6 mw-7 mw-8 mw-9		4/4/14 4/4/14 4/4/14 4/4/14 4/4/14 4/4/14 4/4/14 4/4/14 4/4/14		1105 1100 1030 1035 1040 1045 1055 1050	
Water Water Water Water Water Water Water Water		X X X X X X X X X			
mw-1 mw-2 mw-3 mw-4 mw-5 mw-6 mw-7 mw-8 mw-9		4/4/14 4/4/14 4/4/14 4/4/14 4/4/14 4/4/14 4/4/14 4/4/14 4/4/14		1105 1100 1030 1035 1040 1045 1055 1050	
Water Water Water Water Water Water Water Water		X X X X X X X X X			
mw-1 mw-2 mw-3 mw-4 mw-5 mw-6 mw-7 mw-8 mw-9		4/4/14 			

Login Sample Receipt Checklist

Client: MWH Americas Inc

Job Number: 560-46618-1

SDG Number:

Login Number: 46618

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	

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: 400-101171-1

Client Project/Site: K-31 Line Drip

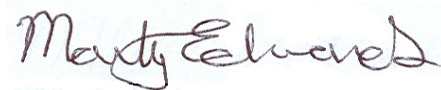
For:

MWH Americas Inc

11153 Aurora Avenue

Des Moines, Iowa 50322-7904

Attn: Mr. Mike Alowitz



Authorized for release by:

1/30/2015 10:41:18 AM

Marty Edwards, Manager of Project Management

(850)474-1001

marty.edwards@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: K-31 Line Drip

TestAmerica Job ID: 400-101171-1

Qualifiers

GC VOA

Qualifier	Qualifier Description
F2	MS/MSD RPD exceeds 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
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: K-31 Line Drip

TestAmerica Job ID: 400-101171-1

Job ID: 400-101171-1

Laboratory: TestAmerica Pensacola

Narrative

Job Narrative
400-101171-1

Comments

No additional comments.

Receipt

The samples were received on 1/23/2015 9:10 AM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperature of the cooler at receipt was 5.6° C.

GC VOA

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

Detection Summary

Client: MWH Americas Inc
Project/Site: K-31 Line Drip

TestAmerica Job ID: 400-101171-1

Client Sample ID: MW-1

Lab Sample ID: 400-101171-1

No Detections.

Client Sample ID: MW-2

Lab Sample ID: 400-101171-2

No Detections.

Client Sample ID: MW-4

Lab Sample ID: 400-101171-3

No Detections.

Client Sample ID: MW-5

Lab Sample ID: 400-101171-4

No Detections.

Client Sample ID: MW-6

Lab Sample ID: 400-101171-5

No Detections.

Client Sample ID: MW-7

Lab Sample ID: 400-101171-6

Analyte	Result	Qualifier	RL	MDL	Unit	Dil	Fac	D	Method	Prep Type
Benzene	2.4		1.0	0.56	ug/L	1			8021B	Total/NA
Toluene	0.99	J	5.0	0.98	ug/L	1			8021B	Total/NA
Xylenes, Total	1.8	J	5.0	1.7	ug/L	1			8021B	Total/NA

Client Sample ID: MW-8

Lab Sample ID: 400-101171-7

No Detections.

Client Sample ID: MW-9

Lab Sample ID: 400-101171-8

No Detections.

Client Sample ID: TRIP BLANK

Lab Sample ID: 400-101171-9

No Detections.

This Detection Summary does not include radiochemical test results.

TestAmerica Pensacola

Sample Summary

Client: MWH Americas Inc
Project/Site: K-31 Line Drip

TestAmerica Job ID: 400-101171-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
400-101171-1	MW-1	Water	01/21/15 16:55	01/23/15 09:10
400-101171-2	MW-2	Water	01/21/15 17:05	01/23/15 09:10
400-101171-3	MW-4	Water	01/21/15 16:20	01/23/15 09:10
400-101171-4	MW-5	Water	01/21/15 16:30	01/23/15 09:10
400-101171-5	MW-6	Water	01/21/15 16:35	01/23/15 09:10
400-101171-6	MW-7	Water	01/21/15 16:40	01/23/15 09:10
400-101171-7	MW-8	Water	01/21/15 17:00	01/23/15 09:10
400-101171-8	MW-9	Water	01/21/15 16:50	01/23/15 09:10
400-101171-9	TRIP BLANK	Water	01/21/15 00:00	01/23/15 09:10

Client Sample Results

Client: MWH Americas Inc
Project/Site: K-31 Line Drip

TestAmerica Job ID: 400-101171-1

Client Sample ID: MW-1

Lab Sample ID: 400-101171-1

Date Collected: 01/21/15 16:55

Matrix: Water

Date Received: 01/23/15 09:10

Method: 8021B - Volatile Organic Compounds (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	<1.0		1.0	0.56	ug/L			01/26/15 13:38	1
Ethylbenzene	<1.0		1.0	0.64	ug/L			01/26/15 13:38	1
Toluene	<5.0		5.0	0.98	ug/L			01/26/15 13:38	1
Xylenes, Total	<5.0		5.0	1.7	ug/L			01/26/15 13:38	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
a,a,a-Trifluorotoluene (pid)	98		78 - 124					01/26/15 13:38	1

Client Sample Results

Client: MWH Americas Inc
Project/Site: K-31 Line Drip

TestAmerica Job ID: 400-101171-1

Client Sample ID: MW-2

Lab Sample ID: 400-101171-2

Date Collected: 01/21/15 17:05

Matrix: Water

Date Received: 01/23/15 09:10

Method: 8021B - Volatile Organic Compounds (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	<1.0		1.0	0.56	ug/L			01/26/15 14:09	1
Ethylbenzene	<1.0		1.0	0.64	ug/L			01/26/15 14:09	1
Toluene	<5.0		5.0	0.98	ug/L			01/26/15 14:09	1
Xylenes, Total	<5.0		5.0	1.7	ug/L			01/26/15 14:09	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
a,a,a-Trifluorotoluene (pid)	99		78 - 124					01/26/15 14:09	1

Client Sample Results

Client: MWH Americas Inc
Project/Site: K-31 Line Drip

TestAmerica Job ID: 400-101171-1

Client Sample ID: MW-4

Lab Sample ID: 400-101171-3

Date Collected: 01/21/15 16:20

Matrix: Water

Date Received: 01/23/15 09:10

Method: 8021B - Volatile Organic Compounds (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	<1.0		1.0	0.56	ug/L			01/26/15 14:41	1
Ethylbenzene	<1.0		1.0	0.64	ug/L			01/26/15 14:41	1
Toluene	<5.0		5.0	0.98	ug/L			01/26/15 14:41	1
Xylenes, Total	<5.0		5.0	1.7	ug/L			01/26/15 14:41	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
a,a,a-Trifluorotoluene (pid)	100		78 - 124					01/26/15 14:41	1

Client Sample Results

Client: MWH Americas Inc
Project/Site: K-31 Line Drip

TestAmerica Job ID: 400-101171-1

Client Sample ID: MW-5

Lab Sample ID: 400-101171-4

Date Collected: 01/21/15 16:30

Matrix: Water

Date Received: 01/23/15 09:10

Method: 8021B - Volatile Organic Compounds (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	<1.0		1.0	0.56	ug/L			01/26/15 15:13	1
Ethylbenzene	<1.0		1.0	0.64	ug/L			01/26/15 15:13	1
Toluene	<5.0		5.0	0.98	ug/L			01/26/15 15:13	1
Xylenes, Total	<5.0		5.0	1.7	ug/L			01/26/15 15:13	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
a,a,a-Trifluorotoluene (pid)	99		78 - 124					01/26/15 15:13	1

Client Sample Results

Client: MWH Americas Inc
Project/Site: K-31 Line Drip

TestAmerica Job ID: 400-101171-1

Client Sample ID: MW-6

Lab Sample ID: 400-101171-5

Date Collected: 01/21/15 16:35

Matrix: Water

Date Received: 01/23/15 09:10

Method: 8021B - Volatile Organic Compounds (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	<1.0		1.0	0.56	ug/L			01/26/15 15:45	1
Ethylbenzene	<1.0		1.0	0.64	ug/L			01/26/15 15:45	1
Toluene	<5.0		5.0	0.98	ug/L			01/26/15 15:45	1
Xylenes, Total	<5.0		5.0	1.7	ug/L			01/26/15 15:45	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
a,a,a-Trifluorotoluene (pid)	99		78 - 124					01/26/15 15:45	1

Client Sample Results

Client: MWH Americas Inc
Project/Site: K-31 Line Drip

TestAmerica Job ID: 400-101171-1

Client Sample ID: MW-7

Lab Sample ID: 400-101171-6

Date Collected: 01/21/15 16:40

Matrix: Water

Date Received: 01/23/15 09:10

Method: 8021B - Volatile Organic Compounds (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	2.4		1.0	0.56	ug/L			01/26/15 16:16	1
Ethylbenzene	<1.0		1.0	0.64	ug/L			01/26/15 16:16	1
Toluene	0.99	J	5.0	0.98	ug/L			01/26/15 16:16	1
Xylenes, Total	1.8	J	5.0	1.7	ug/L			01/26/15 16:16	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
a,a,a-Trifluorotoluene (pid)	93		78 - 124					01/26/15 16:16	1

Client Sample Results

Client: MWH Americas Inc
Project/Site: K-31 Line Drip

TestAmerica Job ID: 400-101171-1

Client Sample ID: MW-8

Date Collected: 01/21/15 17:00

Date Received: 01/23/15 09:10

Lab Sample ID: 400-101171-7

Matrix: Water

Method: 8021B - Volatile Organic Compounds (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	<1.0		1.0	0.56	ug/L			01/26/15 16:48	1
Ethylbenzene	<1.0		1.0	0.64	ug/L			01/26/15 16:48	1
Toluene	<5.0		5.0	0.98	ug/L			01/26/15 16:48	1
Xylenes, Total	<5.0		5.0	1.7	ug/L			01/26/15 16:48	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
a,a,a-Trifluorotoluene (pid)	99		78 - 124					01/26/15 16:48	1

Client Sample Results

Client: MWH Americas Inc
Project/Site: K-31 Line Drip

TestAmerica Job ID: 400-101171-1

Client Sample ID: MW-9

Lab Sample ID: 400-101171-8

Date Collected: 01/21/15 16:50

Matrix: Water

Date Received: 01/23/15 09:10

Method: 8021B - Volatile Organic Compounds (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	<1.0		1.0	0.56	ug/L			01/26/15 18:55	1
Ethylbenzene	<1.0		1.0	0.64	ug/L			01/26/15 18:55	1
Toluene	<5.0		5.0	0.98	ug/L			01/26/15 18:55	1
Xylenes, Total	<5.0		5.0	1.7	ug/L			01/26/15 18:55	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
a,a,a-Trifluorotoluene (pid)	98		78 - 124					01/26/15 18:55	1

Client Sample Results

Client: MWH Americas Inc
Project/Site: K-31 Line Drip

TestAmerica Job ID: 400-101171-1

Client Sample ID: TRIP BLANK

Lab Sample ID: 400-101171-9

Date Collected: 01/21/15 00:00

Matrix: Water

Date Received: 01/23/15 09:10

Method: 8021B - Volatile Organic Compounds (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	<1.0		1.0	0.56	ug/L			01/26/15 19:26	1
Ethylbenzene	<1.0		1.0	0.64	ug/L			01/26/15 19:26	1
Toluene	<5.0		5.0	0.98	ug/L			01/26/15 19:26	1
Xylenes, Total	<5.0		5.0	1.7	ug/L			01/26/15 19:26	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
a,a,a-Trifluorotoluene (pid)	97		78 - 124					01/26/15 19:26	1

QC Association Summary

Client: MWH Americas Inc
Project/Site: K-31 Line Drip

TestAmerica Job ID: 400-101171-1

GC VOA

Analysis Batch: 244318

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
400-101171-1	MW-1	Total/NA	Water	8021B	
400-101171-1 MS	MW-1	Total/NA	Water	8021B	
400-101171-1 MSD	MW-1	Total/NA	Water	8021B	
400-101171-2	MW-2	Total/NA	Water	8021B	
400-101171-3	MW-4	Total/NA	Water	8021B	
400-101171-4	MW-5	Total/NA	Water	8021B	
400-101171-5	MW-6	Total/NA	Water	8021B	
400-101171-6	MW-7	Total/NA	Water	8021B	
400-101171-7	MW-8	Total/NA	Water	8021B	
400-101171-8	MW-9	Total/NA	Water	8021B	
400-101171-9	TRIP BLANK	Total/NA	Water	8021B	
LCS 400-244318/1014	Lab Control Sample	Total/NA	Water	8021B	
MB 400-244318/16	Method Blank	Total/NA	Water	8021B	

QC Sample Results

Client: MWH Americas Inc
Project/Site: K-31 Line Drip

TestAmerica Job ID: 400-101171-1

Method: 8021B - Volatile Organic Compounds (GC)

Lab Sample ID: MB 400-244318/16

Matrix: Water

Analysis Batch: 244318

Client Sample ID: Method Blank

Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	<1.0		1.0	0.56	ug/L			01/26/15 12:34	1
Ethylbenzene	<1.0		1.0	0.64	ug/L			01/26/15 12:34	1
Toluene	<5.0		5.0	0.98	ug/L			01/26/15 12:34	1
Xylenes, Total	<5.0		5.0	1.7	ug/L			01/26/15 12:34	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
a,a,a-Trifluorotoluene (pid)	98		78 - 124		01/26/15 12:34	1

Lab Sample ID: LCS 400-244318/1014

Matrix: Water

Analysis Batch: 244318

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	46.0		ug/L		92	85 - 115
Ethylbenzene	50.0	47.1		ug/L		94	85 - 115
Toluene	50.0	46.0		ug/L		92	85 - 115
Xylenes, Total	150	141		ug/L		94	85 - 115

Surrogate	LCS %Recovery	LCS Qualifier	Limits
a,a,a-Trifluorotoluene (pid)	98		78 - 124

Lab Sample ID: 400-101171-1 MS

Matrix: Water

Analysis Batch: 244318

Client Sample ID: MW-1

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	52.0		ug/L		104	44 - 150
Ethylbenzene	<1.0		50.0	46.1		ug/L		92	70 - 142
Toluene	<5.0		50.0	48.8		ug/L		98	69 - 136
Xylenes, Total	<5.0		150	136		ug/L		91	68 - 142

Surrogate	MS %Recovery	MS Qualifier	Limits
a,a,a-Trifluorotoluene (pid)	96		78 - 124

Lab Sample ID: 400-101171-1 MSD

Matrix: Water

Analysis Batch: 244318

Client Sample ID: MW-1

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	54.1		ug/L		108	44 - 150	4	16
Ethylbenzene	<1.0		50.0	55.2	F2	ug/L		110	70 - 142	18	16
Toluene	<5.0		50.0	54.2		ug/L		108	69 - 136	10	16
Xylenes, Total	<5.0		150	165	F2	ug/L		110	68 - 142	19	15

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

TestAmerica Pensacola

Lab Chronicle

Client: MWH Americas Inc
Project/Site: K-31 Line Drip

TestAmerica Job ID: 400-101171-1

Client Sample ID: MW-1

Date Collected: 01/21/15 16:55

Date Received: 01/23/15 09:10

Lab Sample ID: 400-101171-1

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8021B		1	244318	01/26/15 13:38	ABF	TAL PEN

Client Sample ID: MW-2

Date Collected: 01/21/15 17:05

Date Received: 01/23/15 09:10

Lab Sample ID: 400-101171-2

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8021B		1	244318	01/26/15 14:09	ABF	TAL PEN

Client Sample ID: MW-4

Date Collected: 01/21/15 16:20

Date Received: 01/23/15 09:10

Lab Sample ID: 400-101171-3

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8021B		1	244318	01/26/15 14:41	ABF	TAL PEN

Client Sample ID: MW-5

Date Collected: 01/21/15 16:30

Date Received: 01/23/15 09:10

Lab Sample ID: 400-101171-4

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8021B		1	244318	01/26/15 15:13	ABF	TAL PEN

Client Sample ID: MW-6

Date Collected: 01/21/15 16:35

Date Received: 01/23/15 09:10

Lab Sample ID: 400-101171-5

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8021B		1	244318	01/26/15 15:45	ABF	TAL PEN

Client Sample ID: MW-7

Date Collected: 01/21/15 16:40

Date Received: 01/23/15 09:10

Lab Sample ID: 400-101171-6

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8021B		1	244318	01/26/15 16:16	ABF	TAL PEN

TestAmerica Pensacola

Lab Chronicle

Client: MWH Americas Inc
Project/Site: K-31 Line Drip

TestAmerica Job ID: 400-101171-1

Client Sample ID: MW-8

Date Collected: 01/21/15 17:00

Date Received: 01/23/15 09:10

Lab Sample ID: 400-101171-7

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8021B		1	244318	01/26/15 16:48	ABF	TAL PEN

Client Sample ID: MW-9

Date Collected: 01/21/15 16:50

Date Received: 01/23/15 09:10

Lab Sample ID: 400-101171-8

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8021B		1	244318	01/26/15 18:55	ABF	TAL PEN

Client Sample ID: TRIP BLANK

Date Collected: 01/21/15 00:00

Date Received: 01/23/15 09:10

Lab Sample ID: 400-101171-9

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8021B		1	244318	01/26/15 19:26	ABF	TAL PEN

Laboratory References:

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

Certification Summary

Client: MWH Americas Inc
Project/Site: K-31 Line Drip

TestAmerica Job ID: 400-101171-1

Laboratory: TestAmerica Pensacola

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

Authority	Program	EPA Region	Certification ID	Expiration Date
Alabama	State Program	4	40150	06-30-15
Arizona	State Program	9	AZ0710	01-11-16
Arkansas DEQ	State Program	6	88-0689	09-01-15
Florida	NELAP	4	E81010	06-30-15
Georgia	State Program	4	N/A	06-30-15
Illinois	NELAP	5	200041	10-09-15
Iowa	State Program	7	367	07-31-16
Kansas	NELAP	7	E-10253	03-31-15
Kentucky (UST)	State Program	4	53	06-30-15
Kentucky (WW)	State Program	4	98030	12-31-15
Louisiana	NELAP	6	30976	06-30-15
Maryland	State Program	3	233	09-30-15
Massachusetts	State Program	1	M-FL094	06-30-15
Michigan	State Program	5	9912	06-30-15
New Jersey	NELAP	2	FL006	06-30-15
North Carolina (WW/SW)	State Program	4	314	12-31-15
Oklahoma	State Program	6	9810	08-31-15
Pennsylvania	NELAP	3	68-00467	01-31-16
Rhode Island	State Program	1	LAO00307	12-30-15
South Carolina	State Program	4	96026	06-30-15
Tennessee	State Program	4	TN02907	06-30-15
Texas	NELAP	6	T104704286-12-5	09-30-15
USDA	Federal		P330-13-00193	07-01-16
Virginia	NELAP	3	460166	06-14-15
West Virginia DEP	State Program	3	136	06-30-15

Method Summary

Client: MWH Americas Inc
Project/Site: K-31 Line Drip

TestAmerica Job ID: 400-101171-1

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

Client Information Client Contact: Accounts Payable Company: El Paso Energy Corporation Address: 1001 Louisiana Street Room S1905B City: Houston State, Zip: TX, 77002 Phone:		Lab Pmt: Edwards, Marty P E-Mail: marty.edwards@testamericainc.com Phone: 515-253-0830 Date: 5/15/2015		Carrier Tracking No(s): 400-41952-21009.1 Page: 1 of 1 Job #: 8065 1998 1868		Analysis Requested  400-101171 COC 8021B - BTEX 12/1/15	
Due Date Requested: TAT Requested (days): STANDARD PO #: Purchase Order Requested WO #: Project #: 40003949 SSOW#:		Sample Date Sample Time Sample Type (G=comp, G=grab) Matrix (W=water, S=solid, O=other)		Preservation Codes: A - HCL B - NaOH C - Zn Acetate D - Nitric Acid E - NaHSO4 F - MeOH G - Anchlor H - Ascorbic Acid I - Ice J - DI Water K - EDTA L - EDA Other:		Special Instructions/Note:	
Sample Identification MW-1 MW-2 MW-4 MW-5 MW-6 MW-7 MW-8 MW-9 Trip Blank		Sample Date Sample Time Sample Type (G=comp, G=grab) Matrix (W=water, S=solid, O=other)		Preservation Codes: A - HCL B - NaOH C - Zn Acetate D - Nitric Acid E - NaHSO4 F - MeOH G - Anchlor H - Ascorbic Acid I - Ice J - DI Water K - EDTA L - EDA Other:		Special Instructions/Note:	
Possible Hazard Identification ☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown ☐ Radiological Deliverable Requested: I, II, III, IV, Other (specify)		Date/Time: 1-22-15 1430 Date/Time: Date/Time:		Date/Time: 12-15-910 Date/Time: Date/Time:		Sample Disposal (A fee may be assessed if samples are retained longer than 1 month) ☐ Return To Client ☒ Disposal By Lab ☐ Archive For _____ Months Special Instructions/QC Requirements:	
Empty Kit Relinquished by:		Relinquished by: [Signature] Relinquished by: [Signature] Relinquished by:		Relinquished by: [Signature] Relinquished by: [Signature] Relinquished by:		Relinquished by: [Signature] Relinquished by: [Signature] Relinquished by:	
Custody Seals Intact: A Yes A No Custody Seal No.:		Cooler Temperature(s) °C and Other Remarks:		Cooler Temperature(s) °C and Other Remarks:		Cooler Temperature(s) °C and Other Remarks:	

Login Sample Receipt Checklist

Client: MWH Americas Inc

Job Number: 400-101171-1

Login Number: 101171

List Source: TestAmerica Pensacola

List Number: 1

Creator: Crawford, Lauren E

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.	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	5.6°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.	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.	N/A	