

3R – 190

2015 AGWMR

10 / 09 / 2015



MWH®

BUILDING A BETTER WORLD

October 9, 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
Horton #1E Site
NMOCD Case No. 3RP-190-0
METER CODE: 9388
T31N, R9W, Sec16, Unit H

Mr. Glenn von Gonten:

MWH, on behalf of El Paso CGP Company, LLC (EPCGP), requests regulatory closure of the Horton #1E site (NMOCD Case No. 3RP-190-0). 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 Horton #1E 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 60 cubic yards (CY) of impacted soil was excavated from the former pit location in October 1994. In August 1997, an additional 180 CY were excavated. Monitoring wells were installed in 1995 (MW-1), 1999 (MW-2 and MW-3), and 2014 (MW-4 through MW-7). Since the fourth calendar quarter of 2014, groundwater sampling has been conducted in all site wells on a quarterly basis. Monitoring well and construction logs are provided in Attachment A.

Groundwater Monitoring Data

Groundwater monitoring at the Site has been conducted since August 1995. 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. No concentrations in excess of the NMWQCC standards have been reported for any groundwater samples collected from the Site since December 2008. 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 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 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,

A handwritten signature in blue ink, appearing to read 'Clint Oberbroeckling', with a long, sweeping horizontal line extending to the right.

Clint Oberbroeckling
Project Manager

/cwo:vas

cc: Joseph Wiley, EPCGP

TABLE

TABLE 1 - GROUNDWATER ANALYTICAL RESULTS

HORTON #1E

Location	Date	Benzene (µg/L)	Toluene (µg/L)	Ethylbenzene (µg/L)	Total Xylenes (µg/L)	Depth to Water (ft.)	LNAPL Thickness (ft.)	GW Elevation (ft.)	Dissolved Oxygen (mg/L)	Specific Conductivity (µS/cm)	RedOx Potential (mV)	pH (field)	Comments
NMWQCC Standards:		10	750	750	620	NA	NA					6 - 9	
MW-1	8/7/1995	308	483	16.9	190	48.99	0.00	6082.10	-	-	-	-	
MW-1	12/17/1996	86.8	55.5	1	6.66	48.96	0.00	6082.13	-	-	-	-	
MW-1	3/10/1997	93.3	55.3	1.02	6.34	48.93	0.00	6082.16	-	-	-	-	
MW-1	6/2/1997	96.1	58.8	1.07	6.82	48.94	0.00	6082.15	-	-	-	-	
MW-1	9/8/1997	132	80.7	1.59	9.46	48.88	0.00	6082.21	-	-	-	-	
MW-1	12/10/1997	74.9	47.1	1	5.94	48.76	0.00	6082.33	-	-	-	-	
MW-1	3/23/1998	63.6	35.9	1	6.93	48.78	0.00	6082.31	-	-	-	-	
MW-1	6/4/1998	68.1	30.6	1	6.6	48.76	0.00	6082.33	-	-	-	-	
MW-1	9/14/1998	67.7	19.4	1	3.26	48.85	0.00	6082.24	-	-	-	-	
MW-1	12/17/1998	100	29	1.1	5.8	48.87	0.00	6082.22	-	-	-	-	
MW-1	3/23/1999	70.1	30.6	1	3	48.88	0.00	6082.21	-	-	-	-	
MW-1	6/11/1999	71	19	0.8	2.6	48.92	0.00	6082.17	-	-	-	-	
MW-1	9/2/1999	120	30	1.8	5.8	48.91	0.00	6082.18	-	-	-	-	
MW-1	12/9/1999	50	9.1	0.5	1.8	48.89	0.00	6082.20	-	-	-	-	
MW-1	4/12/2000	67	16	3.6	7.2	48.77	0.00	6082.32	-	-	-	-	Cloudy, light brown - sampled at 1355
MW-1	6/9/2000	110	37	1.1	7.4	48.75	0.00	6082.34	-	-	-	-	Cloudy and brown.
MW-1	9/8/2000	140	18	0.8	7.6	48.81	0.00	6082.28	-	-	-	-	Brown, cloudy, no odor
MW-1	12/11/2000	93	7.2	0.6	5.3	48.75	0.00	6082.34	-	-	-	-	
MW-1	3/13/2001	130	3.8	0.7	6.6	48.81	0.00	6082.28	-	-	-	-	
MW-1	9/7/2001	80	43	1.3	11	48.83	0.00	6082.26	-	-	-	-	sampled for BTEX time 1510. Cloudy no odor
MW-1	3/20/2002	60	30	0.6	4.9	49.07	0.00	6082.02	-	-	-	-	cloudy light grey mild septic odor
MW-1	9/10/2002	167	49.9	2.4	12.7	49.96	0.00	6081.13	-	-	-	-	
MW-1	3/14/2003	100	25.5	0.5	6.1	49.00	0.00	6082.09	-	-	-	-	
MW-1	9/16/2003	95.5	95.8	1.3	12.5	49.18	0.00	6081.91	-	-	-	-	
MW-1	10/10/2003					49.10	0.00	6081.99	-	-	-	-	
MW-1	3/23/2004	27.8	6.1	0.029	1.2	49.01	0.00	6082.08	-	-	-	-	
MW-1	9/22/2004	12.8	4.5	0.5	1	49.12	0.00	6081.97	-	-	-	-	pulled ORC socks on 9/21/04 and replaced
MW-1	3/23/2005	22.8	3.7	1	1.4	49.12	0.00	6081.97	-	-	-	-	
MW-1	6/23/2005	30.6	4.4	1	1.8	49.18	0.00	6081.91	-	-	-	-	
MW-1	9/20/2005	12.8	0.47	1	2	49.24	0.00	6081.85	-	-	-	-	
MW-1	12/14/2005	8.8	2.4	1	0.74	49.14	0.00	6081.95	-	-	-	-	
MW-1	3/27/2006	12.5	2.7	1	0.82	49.17	0.00	6081.92	-	-	-	-	
MW-1	6/7/2006	5.6	1.3	1	2	49.21	0.00	6081.88	-	-	-	-	
MW-1	9/25/2006	6.5	1	1	2	49.28	0.00	6081.81	-	-	-	-	
MW-1	12/27/2006	4.3	2.9	1	0.39	49.19	0.00	6081.90	-	-	-	-	
MW-1	3/28/2007	11.9	11.3	1	1.5	49.20	0.00	6081.89	-	-	-	-	
MW-1	6/18/2007	12.6	12.5	1	2	49.23	0.00	6081.86	-	-	-	-	
MW-1	9/17/2007	2.5	1	1	2	49.27	0.00	6081.82	-	-	-	-	
MW-1	12/17/2007	14.2	7.6	2	1.1	49.27	0.00	6081.82	-	-	-	-	
MW-1	3/11/2008	14.7	15.5	0.46	2.2	49.17	0.00	6081.92	-	-	-	-	
MW-1	6/17/2008	16.2	10.3	1	0.99	48.75	0.00	6082.34	-	-	-	-	
MW-1	9/10/2008	11.6	1	1	3	48.78	0.00	6082.31	-	-	-	-	
MW-1	12/2/2008	3.7	1.8	1	2	48.85	0.00	6082.24	-	-	-	-	

TABLE 1 - GROUNDWATER ANALYTICAL RESULTS

HORTON #1E

Location	Date	Benzene (µg/L)	Toluene (µg/L)	Ethylbenzene (µg/L)	Total Xylenes (µg/L)	Depth to Water (ft.)	LNAPL Thickness (ft.)	GW Elevation (ft.)	Dissolved Oxygen (mg/L)	Specific Conductivity (µS/cm)	RedOx Potential (mV)	pH (field)	Comments
NMWQCC Standards:		10	750	750	620	NA	NA					6 - 9	
MW-1	3/3/2009	2.7	1.9	1	2	48.92	0.00	6082.17	-	-	-	-	sample BTEX
MW-1	6/2/2009	3.6	1.4	1	2	48.96	0.00	6082.13	-	-	-	-	sample BTEX
MW-1	9/16/2009	0.44	1	1	2	49.03	0.00	6082.06	-	-	-	-	
MW-1	4/2/2014	4.6	13	<0.20	2.9	49.57	0.00	6081.52	1.42	2207	13.1	6.77	
MW-1	10/23/2014	<0.38	<0.70	<0.50	<1.6	49.83	0.00	6081.26	5.25	2175	57.2	6.72	
MW-1	1/21/2015	<1.0	<5.0	<1.0	<5.0	49.79	0.00	6081.30	0.39	2187	-	6.90	
MW-1	5/29/2015	<1.0	<5.0	<1.0	<5.0	49.84	0.00	6081.25	1.63	2179	-8.8	6.70	
MW-1	9/13/2015	2.1	<5.0	<1.0	<5.0	49.71	0.00	6081.38	-	-	-	-	
MW-2	10/20/1999	0.5	0.5	0.5	0.5	43.95	0.00	6085.35	-	-	-	-	From old DB - near installation (JS)
MW-2	10/9/2000	0.5	0.7	0.5	1.1	46.41	0.00	6082.89	-	-	-	-	Clear, no odor
MW-2	3/13/2001	0.5	0.5	0.5	0.5	46.47	0.00	6082.83	-	-	-	-	
MW-2	9/7/2001					46.59	0.00	6082.71	-	-	-	-	
MW-2	3/20/2002	0.5	0.5	0.5	1	46.75	0.00	6082.55	-	-	-	-	cloudy light brown no odor
MW-2	9/10/2002					46.76	0.00	6082.54	-	-	-	-	
MW-2	9/16/2003					46.86	0.00	6082.44	-	-	-	-	
MW-2	3/23/2004					46.67	0.00	6082.63	-	-	-	-	
MW-2	9/22/2004					46.80	0.00	6082.50	-	-	-	-	
MW-2	3/23/2005					46.81	0.00	6082.49	-	-	-	-	
MW-2	6/23/2005					46.88	0.00	6082.42	-	-	-	-	
MW-2	9/20/2005					46.94	0.00	6082.36	-	-	-	-	
MW-2	12/14/2005					46.85	0.00	6082.45	-	-	-	-	
MW-2	3/27/2006					46.86	0.00	6082.44	-	-	-	-	
MW-2	6/7/2006					46.90	0.00	6082.40	-	-	-	-	
MW-2	9/25/2006					46.98	0.00	6082.32	-	-	-	-	
MW-2	12/27/2006					46.88	0.00	6082.42	-	-	-	-	
MW-2	3/31/2007	1	1	1	2	46.89	0.00	6082.41	-	-	-	-	
MW-2	6/18/2007					46.00	0.00	6083.30	-	-	-	-	
MW-2	9/17/2007					46.98	0.00	6082.32	-	-	-	-	
MW-2	12/17/2007					47.04	0.00	6082.26	-	-	-	-	
MW-2	3/11/2008					46.92	0.00	6082.38	-	-	-	-	
MW-2	6/17/2008					46.37	0.00	6082.93	-	-	-	-	
MW-2	9/10/2008					46.51	0.00	6082.79	-	-	-	-	
MW-2	12/2/2008					46.47	0.00	6082.83	-	-	-	-	
MW-2	3/3/2009					46.56	0.00	6082.74	-	-	-	-	
MW-2	6/2/2009					46.71	0.00	6082.59	-	-	-	-	
MW-2	9/16/2009	1	1	1	2	46.78	0.00	6082.52	-	-	-	-	
MW-2	4/2/2014	<0.20	<0.38	<0.20	<0.65	47.34	0.00	6081.96	0.9	2123	-1.7	6.87	
MW-2	10/23/2014	<0.38	<0.70	<0.50	<1.6	47.53	0.00	6081.77	3.7	2.102	-3	6.94	
MW-2	1/21/2015	<1.0	<5.0	<1.0	<5.0	47.50	0.00	6081.80	2.32	2105	-	7.21	
MW-2	5/29/2015	<1.0	<5.0	<1.0	<5.0	47.54	0.00	6081.76	1.9	2.054	-47.4	7.02	
MW-2	9/13/2015	<1.0	<5.0	<1.0	<5.0	47.38	0.00	6081.92	-	-	-	-	

TABLE 1 - GROUNDWATER ANALYTICAL RESULTS

HORTON #1E

Location	Date	Benzene (µg/L)	Toluene (µg/L)	Ethylbenzene (µg/L)	Total Xylenes (µg/L)	Depth to Water (ft.)	LNAPL Thickness (ft.)	GW Elevation (ft.)	Dissolved Oxygen (mg/L)	Specific Conductivity (µS/cm)	RedOx Potential (mV)	pH (field)	Comments
NMWQCC Standards:		10	750	750	620	NA	NA					6 - 9	
MW-3	10/20/1999	0.5	0.5	0.5	0.8	47.65	0.00	6081.81	-	-	-	-	From old DB - near installation (JS)
MW-3	10/10/2000	0.5	1	0.5	2	50.12	0.00	6079.34	-	-	-	-	Brown, muddy, no odor
MW-3	3/13/2001	0.5	0.5	0.5	0.5	50.18	0.00	6079.28	-	-	-	-	Duplicate Sample taken at 1338
MW-3	9/7/2001					50.18	0.00	6079.28	-	-	-	-	
MW-3	3/20/2002	0.5	0.5	0.5	1	50.40	0.00	6079.06	-	-	-	-	cloudy brown mild septic odor
MW-3	9/10/2002					50.38	0.00	6079.08	-	-	-	-	tan colored silt on probe
MW-3	9/16/2003					50.45	0.00	6079.01	-	-	-	-	
MW-3	3/23/2004					50.40	0.00	6079.06	-	-	-	-	
MW-3	9/22/2004					50.46	0.00	6079.00	-	-	-	-	
MW-3	3/23/2005					50.46	0.00	6079.00	-	-	-	-	
MW-3	6/23/2005					50.51	0.00	6078.95	-	-	-	-	
MW-3	9/20/2005					50.57	0.00	6078.89	-	-	-	-	
MW-3	12/14/2005					50.52	0.00	6078.94	-	-	-	-	
MW-3	3/27/2006					50.52	0.00	6078.94	-	-	-	-	
MW-3	6/7/2006					50.54	0.00	6078.92	-	-	-	-	
MW-3	9/25/2006					50.61	0.00	6078.85	-	-	-	-	
MW-3	12/27/2006					50.51	0.00	6078.95	-	-	-	-	
MW-3	3/31/2007	1	1	1	2	50.52	0.00	6078.94	-	-	-	-	
MW-3	6/18/2007					50.56	0.00	6078.90	-	-	-	-	
MW-3	9/17/2007					50.60	0.00	6078.86	-	-	-	-	
MW-3	12/17/2007					50.60	0.00	6078.86	-	-	-	-	
MW-3	3/11/2008					50.55	0.00	6078.91	-	-	-	-	
MW-3	6/17/2008					50.29	0.00	6079.17	-	-	-	-	
MW-3	9/10/2008					50.25	0.00	6079.21	-	-	-	-	
MW-3	12/2/2008					50.25	0.00	6079.21	-	-	-	-	
MW-3	3/3/2009					50.30	0.00	6079.16	-	-	-	-	
MW-3	6/2/2009					50.33	0.00	6079.13	-	-	-	-	
MW-3	9/16/2009	1	1	1	2	50.42	0.00	6079.04	-	-	-	-	
MW-3	4/2/2014	<0.20	1.0J	<0.20	1.5J	50.82	0.00	6078.64	1.09	1938	10.8	6.63	
MW-3	10/23/2014	<0.38	<0.70	<0.50	<1.6	50.92	0.00	6078.54	3.76	2335	45.9	6.85	
MW-3	1/21/2015	<1.0	<5.0	<1.0	<5.0	50.86	0.00	6078.60	1.85	2200	-	7.14	
MW-3	5/29/2015	<1.0	<5.0	<1.0	3.7 J	50.94	0.00	6078.52	1.99	2250	-37.7	6.90	
MW-3	9/13/2015	<1.0	<5.0	<1.0	<5.0	50.89	0.00	6078.57	-	-	-	-	
MW-4	10/23/2014	<0.38	<0.70	<0.50	<1.6	53.22	0.00	6078.88	3.01	2177	51.4	6.65	
MW-4	1/21/2015	<1.0	<5.0	<1.0	<5.0	53.16	0.00	6078.94	-	-	-	-	
MW-4	5/29/2015	<1.0	<5.0	<1.0	<5.0	53.23	0.00	6078.87	1.62	2154	-15.3	6.67	
MW-4	9/13/2015	<1.0	<5.0	<1.0	<5.0	53.15	0.00	6078.95	-	-	-	-	

TABLE 1 - GROUNDWATER ANALYTICAL RESULTS

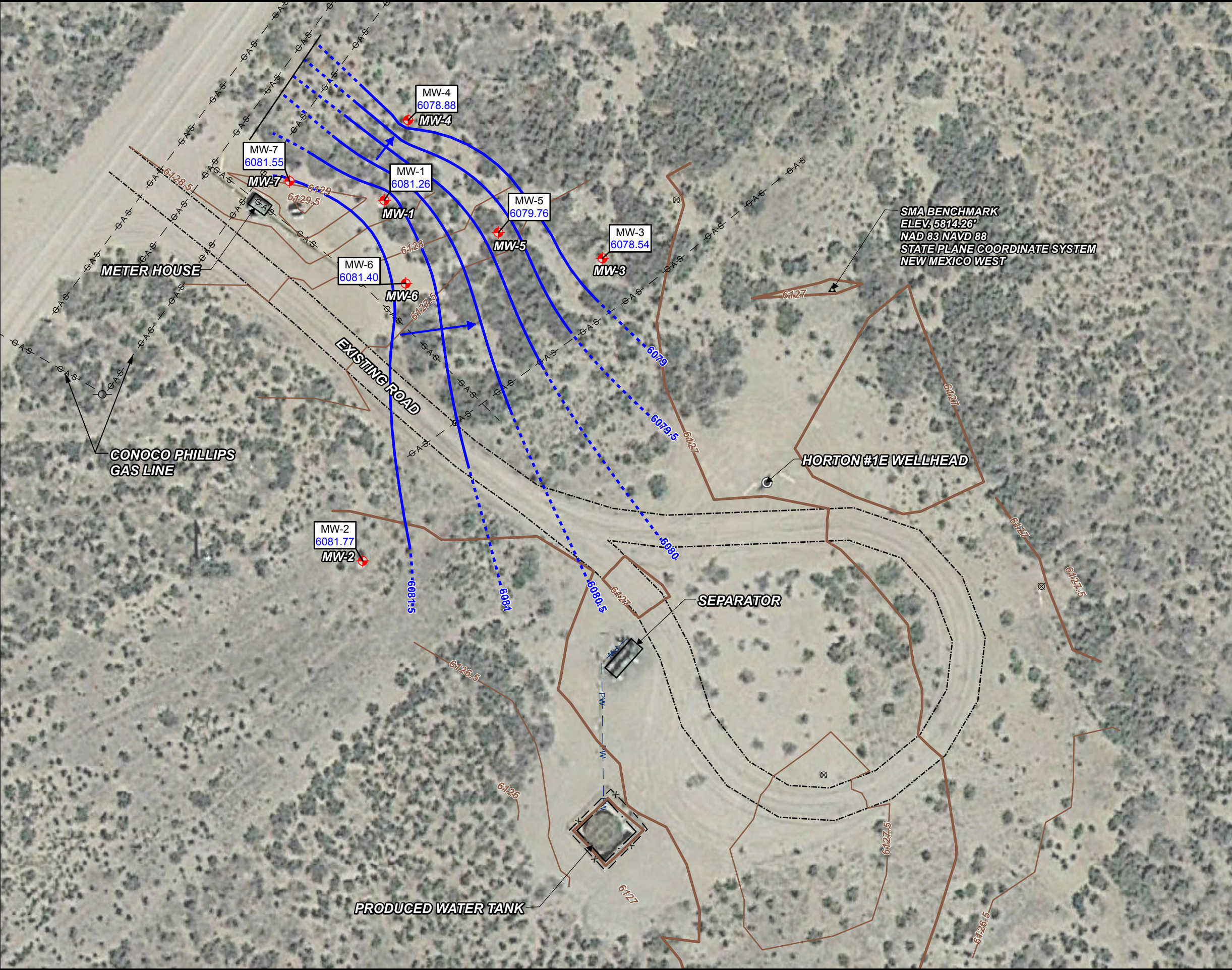
HORTON #1E

Location	Date	Benzene (µg/L)	Toluene (µg/L)	Ethylbenzene (µg/L)	Total Xylenes (µg/L)	Depth to Water (ft.)	LNAPL Thickness (ft.)	GW Elevation (ft.)	Dissolved Oxygen (mg/L)	Specific Conductivity (µS/cm)	RedOx Potential (mV)	pH (field)	Comments
NMWQCC Standards:		10	750	750	620	NA	NA					6 - 9	
MW-5	10/23/2014	<0.38	<0.70	<0.50	<1.6	50.45	0.00	6079.76	3.82	2164	77.7	6.75	
MW-5	1/21/2015	<1.0	<5.0	<1.0	<5.0	50.34	0.00	6079.87	1.35	2201	-	6.98	
MW-5	5/29/2015	<1.0	<5.0	<1.0	<5.0	50.38	0.00	6079.83	1.8	2207	-16.4	6.77	
MW-5	9/13/2015	<1.0	<5.0	<1.0	<5.0	50.28	0.00	6079.93	-	-	-	-	
MW-6	10/23/2014	<0.38	<0.70	<0.50	<1.6	48.98	0.00	6081.40	3.55	1884	-37.2	7.12	
MW-6	1/21/2015	<1.0	<5.0	<1.0	<5.0	48.97	0.00	6081.41	1.4	1930	-	7.30	
MW-6	5/29/2015	<1.0	<5.0	<1.0	<5.0	49.01	0.00	6081.37	1.68	1958	-45.5	6.91	
MW-6	9/13/2015	<1.0	<5.0	<1.0	<5.0	48.86	0.00	6081.52	-	-	-	-	
MW-7	10/23/2014	<0.38	<0.70	<0.50	<1.6	50.44	0.00	6081.55	4.09	2181	18.7	6.68	
MW-7	1/21/2015	<1.0	<5.0	<1.0	<5.0	50.38	0.00	6081.61	0.53	2186	-	6.15	
MW-7	5/29/2015	<1.0	<5.0	<1.0	<5.0	50.42	0.00	6081.57	2	2173	-11.3	6.62	
MW-7	9/13/2015	<1.0	<5.0	<1.0	<5.0	50.30	0.00	6081.69	-	-	-	-	

Notes:
Results highlighted yellow exceed their respective New Mexico Water Quality Control Comission 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

Figure No.: **1**

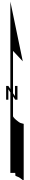


LEGEND:

- APPROXIMATE GROUND SURFACE CONTOUR AND ELEVATION, FEET
- CORRECTED GROUNDWATER ELEVATION CONTOUR
- ACCESS ROAD
- NATURAL GAS LINE
- PRODUCED WATER LINE
- MONITORING WELL
- SMA BENCHMARK
- RIG ANCHOR

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, 0.5 FOOT CONTOUR INTERVAL)
- DIRECTION OF GROUNDWATER FLOW



REVISION	DATE	DESIGN BY	DRAWN BY	REVIEWED BY
A	10/13/2015	CCL	CCL	DCW

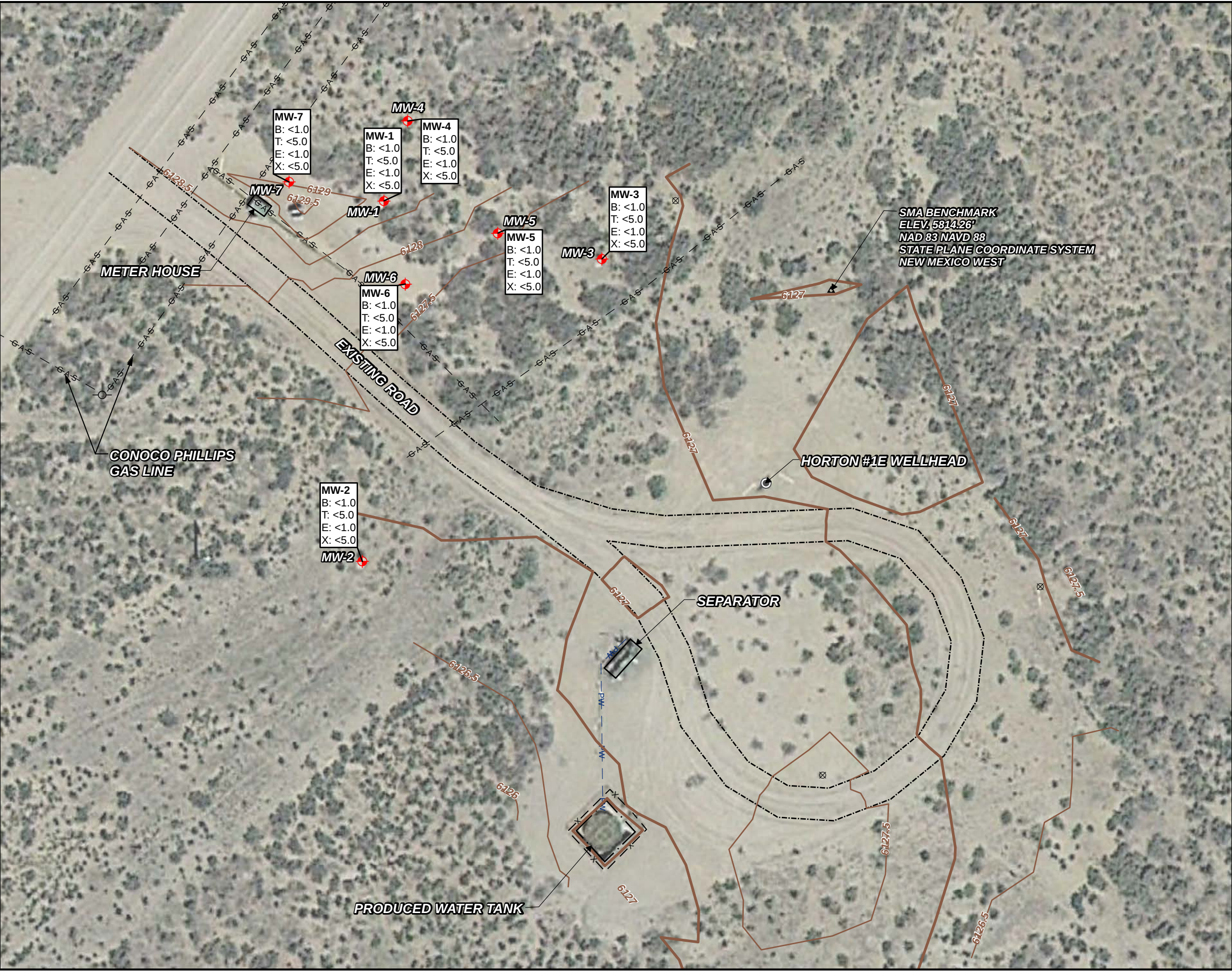
TITLE:
**HORTON #1E
GROUNDWATER ELEVATION MAP
GAUGED OCTOBER 23, 2014**

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



Figure No.:

2



LEGEND:

- APPROXIMATE GROUND SURFACE CONTOUR AND ELEVATION, FEET
- ACCESS ROAD
- NATURAL GAS LINE
- PRODUCED WATER LINE
- MONITORING WELL
- SMA BENCHMARK
- RIG ANCHOR

EXPLANATION OF ANALYTES AND APPLICABLE STANDARDS:
RESULTS IN **BOLDFACE** TYPE INDICATE CONCENTRATION IN EXCESS OF THE STANDARD FOR THAT ANALYTE.
NS = NOT SAMPLED
µg/L = MICROGRAMS PER LITER
<0.30 = BELOW METHOD DETECTION LIMIT
J = RESULT IS LESS THAN THE RL, BUT GREATER THAN OR EQUAL TO THE MDL AND THE CONCENTRATION IS AN APPROXIMATE VALUE.
MDL = METHOD DETECTION LIMIT
RL = REPORTING LIMIT OR REQUESTED LIMIT (RADIOCHEMISTRY)

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



REVISION	DATE	DESIGN BY	DRAWN BY	REVIEWED BY
A	10/9/2015	CCL	CCL	DCW

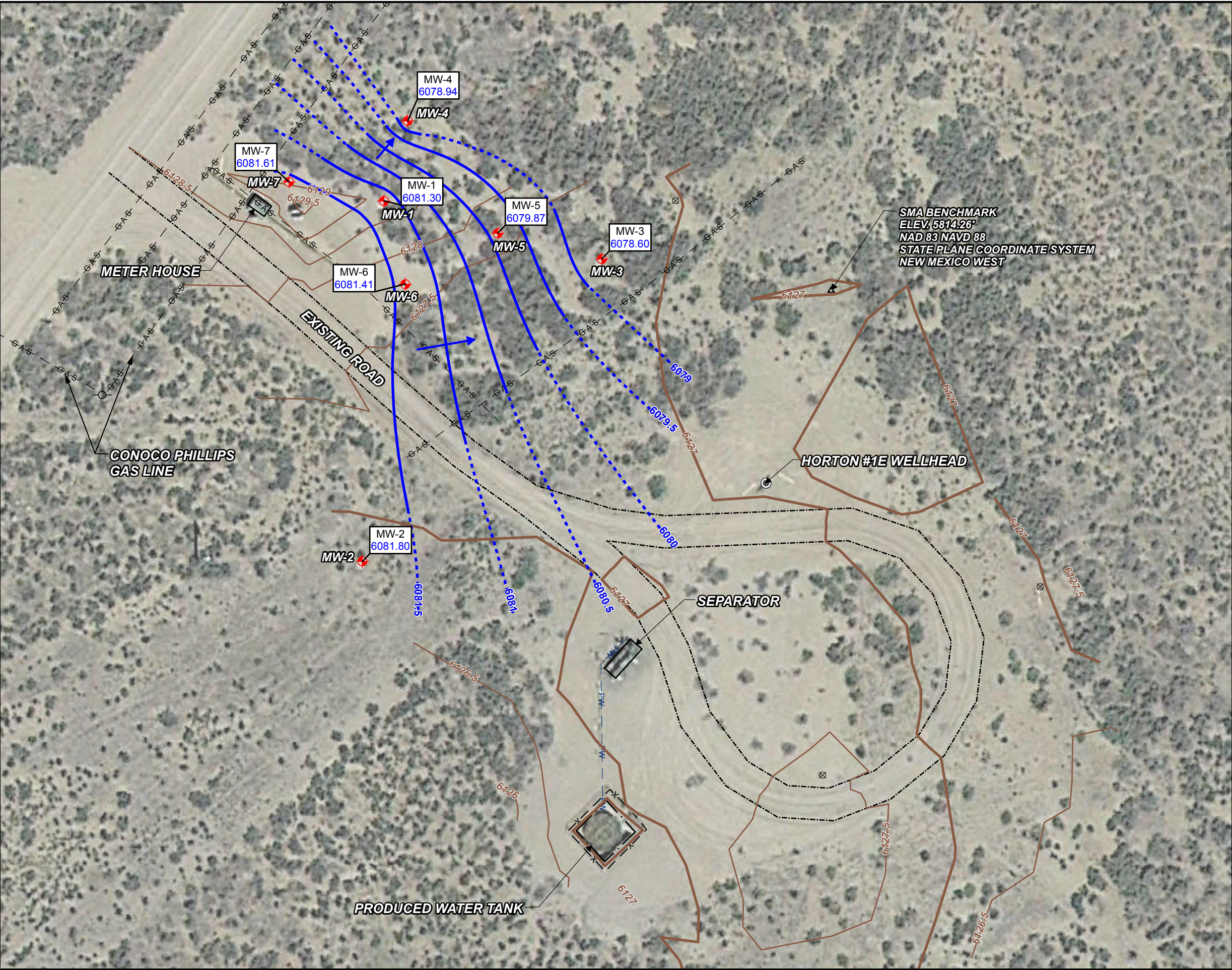
TITLE:
HORTON #1E
GROUNDWATER ANALYTICAL RESULTS
SAMPLED JANUARY 21, 2015

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



Figure No.:

3

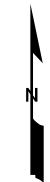


LEGEND:

- APPROXIMATE GROUND SURFACE CONTOUR AND ELEVATION, FEET
- CORRECTED GROUNDWATER ELEVATION CONTOUR
- ACCESS ROAD
- NATURAL GAS LINE
- PRODUCED WATER LINE
- MONITORING WELL
- SMA BENCHMARK
- RIG ANCHOR

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, 0.5 FOOT CONTOUR INTERVAL)
- DIRECTION OF GROUNDWATER FLOW



REVISION	DATE	DESIGN BY	DRAWN BY	REVIEWED BY
A	10/13/2015	CCL	CCL	DCW

TITLE:

**HORTON #1E
GROUNDWATER ELEVATION MAP
GAUGED JANUARY 21, 2015**

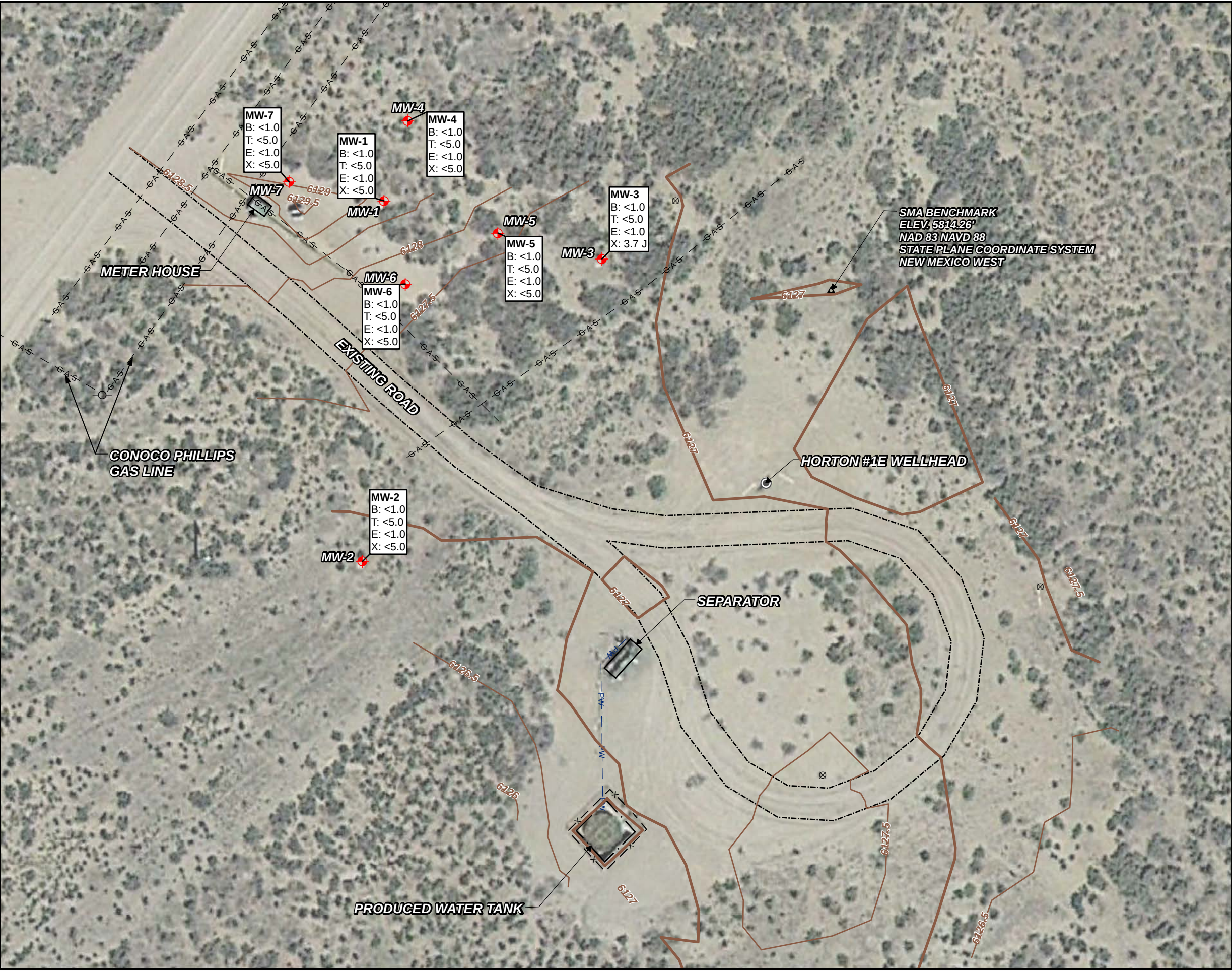
PROJECT:

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



Figure No.:

4



LEGEND:

- APPROXIMATE GROUND SURFACE CONTOUR AND ELEVATION, FEET
- ACCESS ROAD
- NATURAL GAS LINE
- PRODUCED WATER LINE
- MONITORING WELL
- SMA BENCHMARK
- RIG ANCHOR

EXPLANATION OF ANALYTES AND APPLICABLE STANDARDS:
RESULTS IN **BOLDFACE** TYPE INDICATE CONCENTRATION IN EXCESS OF THE STANDARD FOR THAT ANALYTE.
NS = NOT SAMPLED
µg/L = MICROGRAMS PER LITER
<0.30 = BELOW METHOD DETECTION LIMIT
J = RESULT IS LESS THAN THE RL, BUT GREATER THAN OR EQUAL TO THE MDL AND THE CONCENTRATION IS AN APPROXIMATE VALUE.
MDL = METHOD DETECTION LIMIT
RL = REPORTING LIMIT OR REQUESTED LIMIT (RADIOCHEMISTRY)

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



REVISION	DATE	DESIGN BY	DRAWN BY	REVIEWED BY
A	10/9/2015	CCL	CCL	DCW

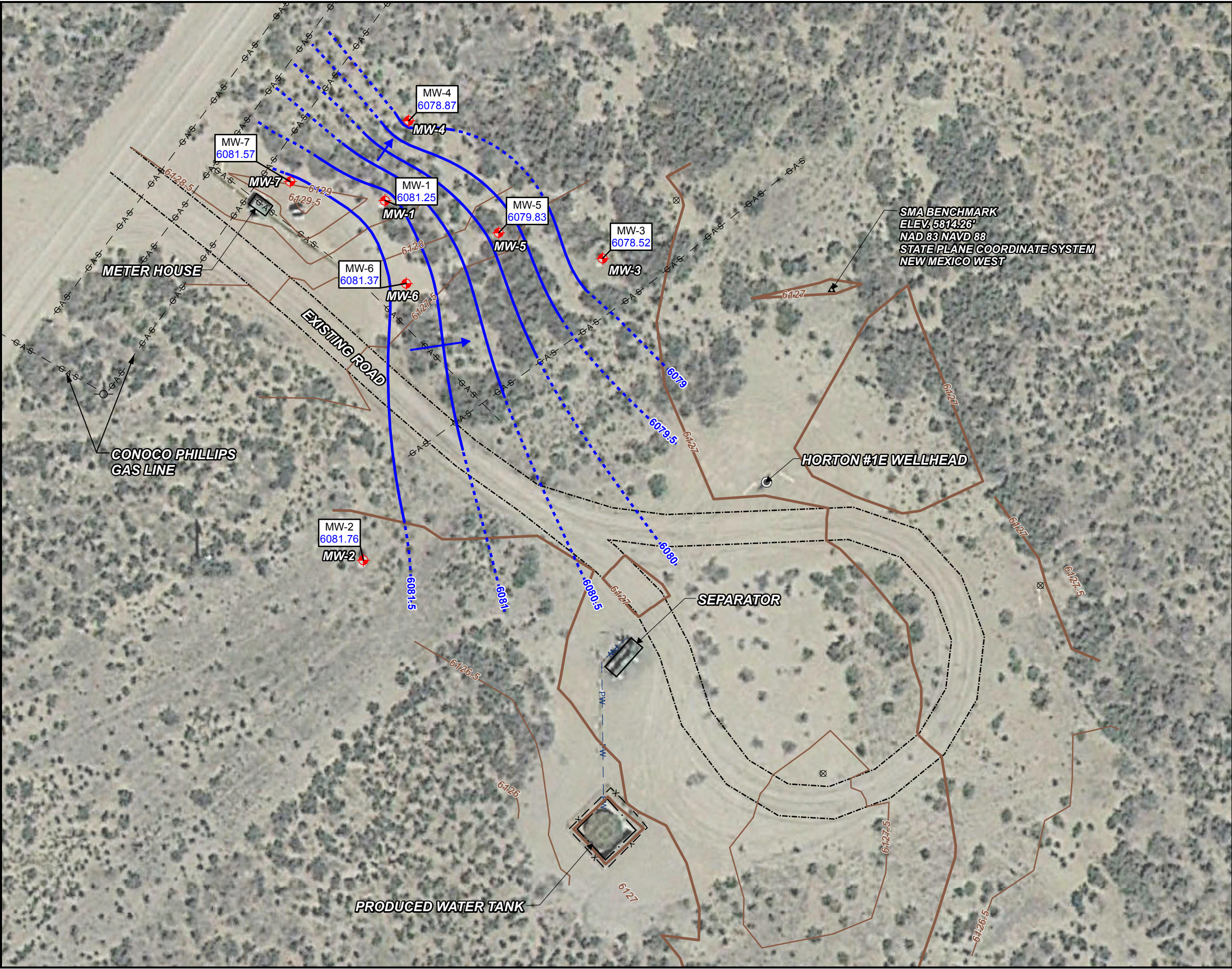
TITLE:
HORTON #1E
GROUNDWATER ANALYTICAL RESULTS
SAMPLED MAY 29, 2015

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



Figure No.:

5

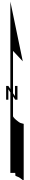


LEGEND:

- 6503 APPROXIMATE GROUND SURFACE CONTOUR AND ELEVATION, FEET
- 6080.5 CORRECTED GROUNDWATER ELEVATION CONTOUR
- ACCESS ROAD
- NATURAL GAS LINE
- PRODUCED WATER LINE
- MONITORING WELL
- SMA BENCHMARK
- RIG ANCHOR

NOTES:

- 5318.24 GROUNDWATER ELEVATION CORRECTED FOR PRODUCT THICKNESS. FEET ABOVE MEAN SEA LEVEL
- 5317 CORRECTED WATER LEVEL ELEVATION CONTOUR DASHED WHERE INFERRED (FEET ABOVE MEAN SEA LEVEL, 0.5 FOOT CONTOUR INTERVAL)
- DIRECTION OF GROUNDWATER FLOW



REVISION	DATE	DESIGN BY	DRAWN BY	REVIEWED BY
A	10/13/2015	CCL	CCL	DCW

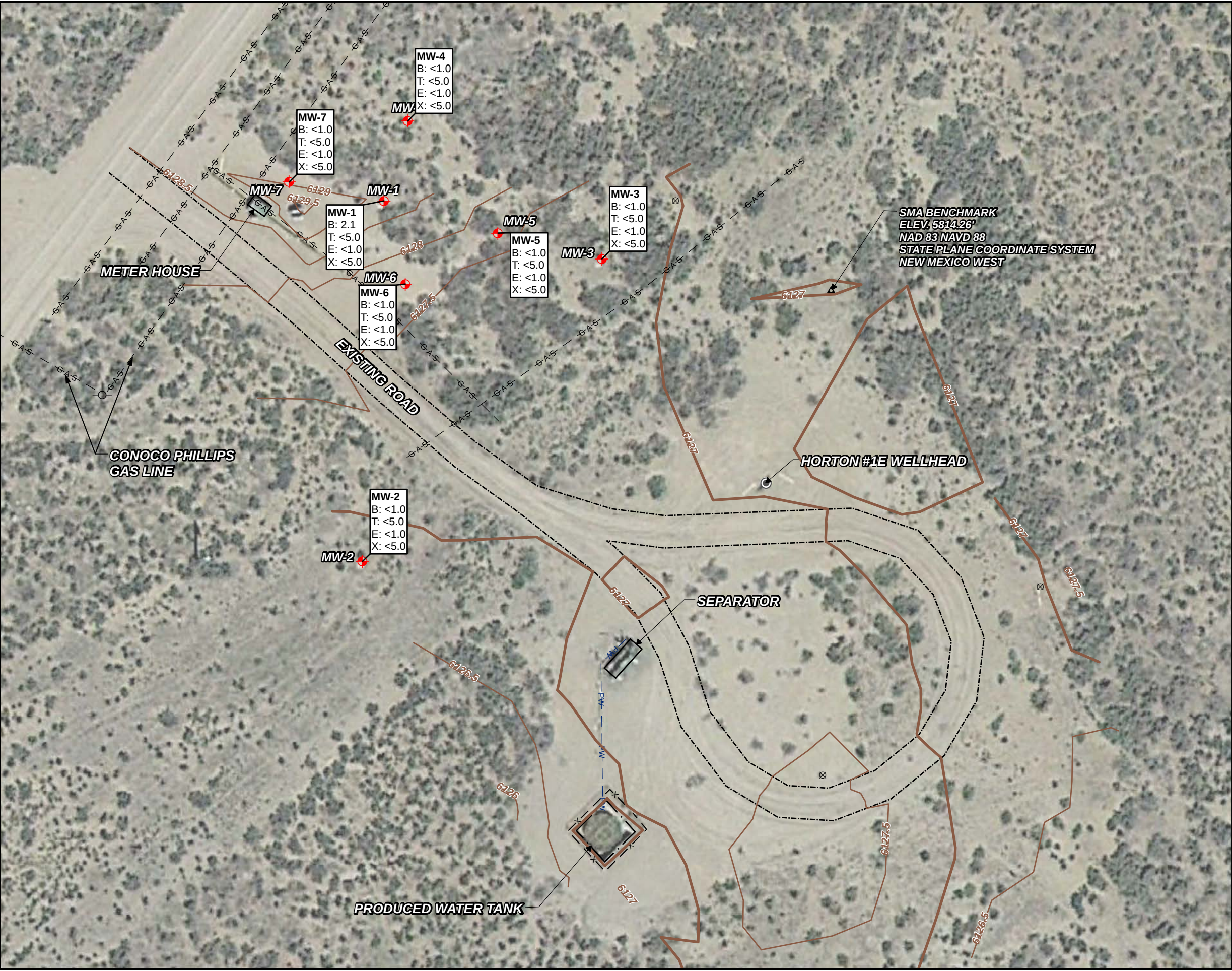
TITLE:
**HORTON #1E
GROUNDWATER ELEVATION MAP
GAUGED MAY 29, 2015**

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



Figure No.:

6



LEGEND:

- APPROXIMATE GROUND SURFACE CONTOUR AND ELEVATION, FEET
- ACCESS ROAD
- NATURAL GAS LINE
- PRODUCED WATER LINE
- MONITORING WELL
- SMA BENCHMARK
- RIG ANCHOR

EXPLANATION OF ANALYTES AND APPLICABLE STANDARDS:
RESULTS IN **BOLDFACE** TYPE INDICATE CONCENTRATION IN EXCESS OF THE STANDARD FOR THAT ANALYTE.
NS = NOT SAMPLED
µg/L = MICROGRAMS PER LITER
<0.30 = BELOW METHOD DETECTION LIMIT
J = RESULT IS LESS THAN THE RL, BUT GREATER THAN OR EQUAL TO THE MDL AND THE CONCENTRATION IS AN APPROXIMATE VALUE.
MDL = METHOD DETECTION LIMIT
RL = REPORTING LIMIT OR REQUESTED LIMIT (RADIOCHEMISTRY)

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



REVISION	DATE	DESIGN BY	DRAWN BY	REVIEWED BY
A	10/9/2015	CCL	CCL	DCW

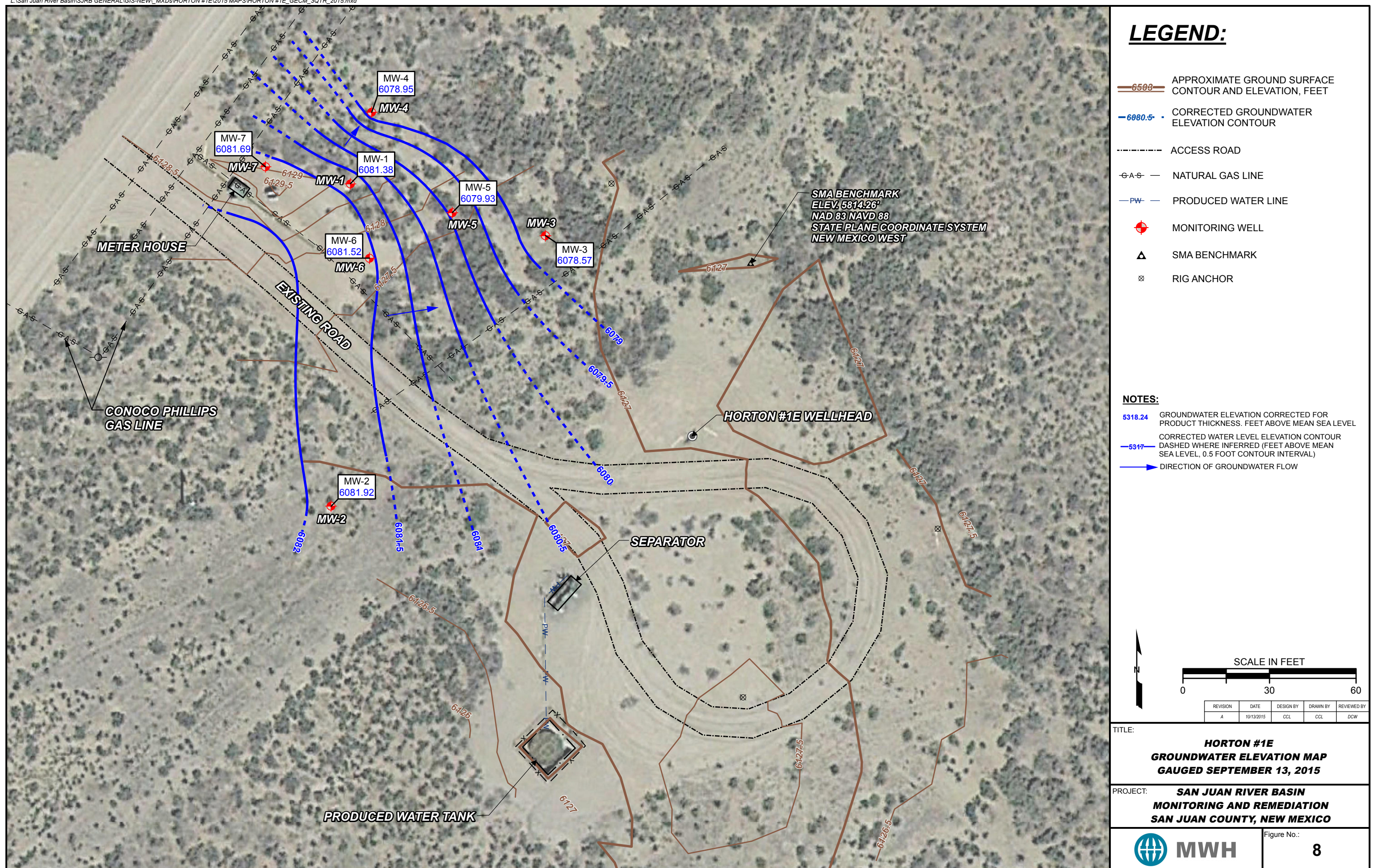
TITLE: **HORTON #1E**
GROUNDWATER ANALYTICAL RESULTS
SAMPLED SEPTEMBER 13, 2015

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



Figure No.:

7



ATTACHMENT A

04-41 Aztec

RECORD OF SUBSURFACE EXPLORATION

Philip Environmental Services Corp.

4000 Monroe Road

Farmington, New Mexico 87401

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

 Borehole # BH #1
 Well # _____
 Page 1 of 2

 Project Name EPNG Pits
 Project Number 14509 Phase 601 6000
 Project Location Horton 1-E, 93-388

 Elevation _____
 Borehole Location T31, R9, S28, H
 GWL Depth _____
 Logged By S. Kelly J. Kindley
 Drilled By m. Anna hve
 Date/Time Started 08/03/95 0855
 Date/Time Completed 08/03/95 1245

 Well Logged By S. Kelly J. Kindley
 Personnel On-Site M. Donahue, J. McKee, J. Long
 Contractors On-Site _____
 Client Personnel On-Site _____
 Drilling Method 4 1/4" HSA
 Air Monitoring Method CGI, 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: NDU			Drilling Conditions & Blow Counts
							BZ	BH	S	
0				Backfill material to 12'						
5										
10										
15										
20	1	18'-20'	1.2 2	SAND, brown, medium grain, dry, loose						345/1234 09:15
25	2	23'-25'	.9 1.3	clayey sand (25% clay), dark brown, medium dense, dry						333/547 0921
30	3	28'-30'	.6 2	clayey silt (25% clay), dark brown, fine grained, dry						283/658 0927
35	4	33'-35'	1 1.5	S.A.A.						204/317 0936
40	5	38'-40'	.6 2	silty clay (10% silt), dark gray, stiff, moist						178/651 0953

Comments:

Geologist Signature _____

RECORD OF SUBSURFACE EXPLORATION

Philip Environmental Services Corp.
4000 Monroe Road
Farmington, New Mexico 87401
(505) 328-2262 FAX (505) 326-2388

Borehole # BH #1
Well # _____
Page 2 of 2

Project Name EPNG Pits
Project Number 14509 Phase 607-6000
Project Location Horton 1-E, 93-388

Elevation _____
Borehole Location T31, R9, S28, H
GWL Depth _____
Logged By S. Kelly J. Kindley
Drilled By M. Donahue
Date/Time Started 08/03/95 0855
Date/Time Completed 08/03/95 1245

Well Logged By S. Kelly J. Kindley
Personnel On-Site M. Donahue, J. O'Kette, J. Long
Contractors On-Site _____
Client Personnel On-Site _____
Drilling Method 4 1/4" HSA
Air Monitoring Method CGI, 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: NDU			Drilling Conditions & Blow Counts
							BZ	BH	S	
40										
45	6	43-45		S.A.A						115/210 0958
50	7	48-50		clayey silt + (30% clay), brown, moist						30/322 1005
55	8	53-55		silty clay (20% silt), dark gray, stiff, wet						• 53' water on rods not able to collect sample
60										
65				Boring terminated at 65'						
70										
75										
80										
85										
90										
95										
100										

Comments:

Geologist Signature _____

MONITORING WELL INSTALLATION RECORD

Philip Environmental Services Corp.
4000 Morroc Road
Farmington, New Mexico 87401
(505) 326-2262 FAX (505) 326-2388

Borehole # BH #1
Well # _____
Page 1 of 1

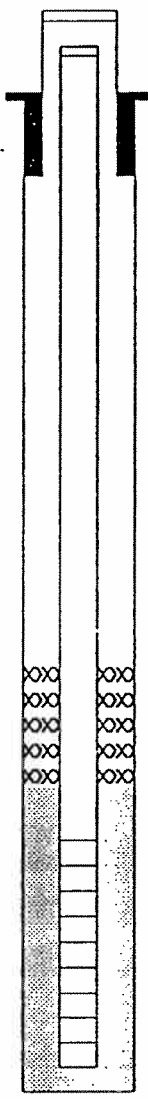
Project Name EPN6 Pits
Project Number 14509 Phase 6000
Project Location Horton J-E, 93-388

Elevation _____
Well Location T31, R9, S 28, H
GWL Depth 53
Installed By M. Donahue

On-Site Geologist J. Kindley
Personnel On-Site M. Donahue, J. O'Keefe, J. Wong
Contractors On-Site _____
Client Personnel On-Site _____

Date/Time Started 08/03/95 0855
Date/Time Completed 08/03/95 1245

Depths in Reference to Ground Surface		
Item	Material	Depth
Top of Protective Casing		
Bottom of Protective Casing		
Top of Permanent Borehole Casing		
Bottom of Permanent Borehole Casing		
Top of Concrete		
Bottom of Concrete		
Top of Grout	Cement Slurry	1
Bottom of Grout	Cement Slurry	42
Top of Well Riser	Schedule 40 4" Blank PVC	+3
Bottom of Well Riser	"	45
Top of Well Screen	Schedule 40 4" PVC 10" slot	48
Bottom of Well Screen	"	63
Top of Bentonite Seal	Emmco plug pellets 50 lb bag	42
Bottom of Bentonite Seal	"	45
Top of Gravel Pack	SCOT 50 lb bags of Silica Sand	45
Bottom of Gravel Pack	"	65
Top of Natural Cave-In		63
Bottom of Natural Cave-In		65
Top of Groundwater		
Total Depth of Borehole		



Top of Protective Casing NA

Top of Riser +3

Ground Surface 0

Top of Seal 42 BGL

Top of Gravel Pack 45 BGL

Top of Screen 48 BGL

Bottom of Screen 63 BGL

Bottom of Borehole 65 BGL

Comments: BGL - Below Ground Level, 15' of screen

Geologist Signature

Jeffrey Kindley

RECORD OF SUBSURFACE EXPLORATION

Philip Environmental Services Corp.

4000 Monroe Road

Farmington, New Mexico 87401

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

Borehole # 1
Well # MW 2
Page 1 of 3

Project Name EPFS GROUNDWATER
Project Number 62K00018 Phase 35
Project Location HORTON #1E

Elevation
Borehole Location T31N R9W S28H
GWL Depth 47.35'
Logged By C. CULLICOTT
Drilled By D. PADILLA & A. W. WHITE
Date/Time Started 10/8/99 8:00 AM
Date/Time Completed 10/8/99 8:24 AM 12:30 PM
mercer 93388

Well Logged By C. CULLICOTT
Personnel On-Site D. PADILLA, D. PADILLA, A. W. WHITE
Contractors On-Site 0
Client Personnel On-Site 0
Drilling Method Auger
Air Monitoring Method Pin

Depth (Feet)	Sample Interval	Sample Type & Recovery (Inches)	Sample Description Classification System: USCS	USCS Symbol	Depth Lithology Change (feet)	Air Monitoring Units: NDU			Drilling Conditions & Blow Counts
						BZ	SH	S	
0			① 3" RECOVERY STIFF BROWN SILT, CLEAN, NO STAIN OR ODOR.						① 16 BLOWS
5	① 5-6 1/2'		② 8" RECOVERY DARK TAN POORLY SORTED SAND. LOOSE & CLEAN						② 11 BLOWS
10	② 10-11 1/2'		③ 6" RECOVERY BROWN FINE TO MEDIUM SILTY SAND CLEAN, DRY						③ 10 BLOWS
15	③ 15-16 1/2'		④ 4" RECOVERY BROWN FINE TO MEDIUM SILTY SAND, SLIGHTLY STIFF, CLEAN, DRY						④ 13 BLOWS
20	④ 20-21 1/2'		⑤ 14" RECOVERY BROWN CLAYEY SILT DAMP, SLIGHTLY PLASTIC SCATTERED ROOT TRACES.						⑤ 16 BLOWS
25	⑤ 25-26 1/2'		⑥ 14" RECOVERY BROWN SILTY CLAY, DAMP, PLASTIC, CLEAN, w/POCKETS OF GYPSUM CRYSTALS & PIECES OF charcoal?						⑥ 15 BLOWS
30	⑥ 30-35'		⑦ FULL RECOVERY STIFF TO PLASTIC BROWN SILTY CLAY w/ GYPSUM CRYSTALS, GRAY MOTTLED CLEAN w/SLATERED BLACK PIECES - UNUSUAL?						⑦ 18 BLOWS
35	⑦ 35-36 1/2'								
40									

Comments: SUNNY, COOL
DTW MW 147'
NO PIN

Geologist Signature Cathy Cullcott

RECORD OF SUBSURFACE EXPLORATION

Philip Environmental Services Corp.

100 Monroe Road

Albuquerque, New Mexico 87401

(505) 822-8222 FAX (505) 326-2388

Well #

Well #

Page 2 of 3

Project Name

Project Number

Project Location

Well Logged By

Personnel On-Site

Contractors On-Site

Client Personnel On-Site

Drilling Method

Air Monitoring Method

Elevation

Borehole Location

SWL Depth

Logged By

Drilled By

Date/Time Started

Date/Time Completed

Depth (Feet)	Sample Interval	Sample Type & Recovery (inches)	Sample Description Classification System: USCS	USCS Symbol	Depth Lithology Change (feet)	Air Monitoring Units: NOU	Drilling Conditions & Blow Counts
40	(8) 40-41 1/2		(8) 14" RECOVERY TAN SILTY SAND, LOOSE COARSE @ TOP OF SPLIT SPOON, FINER TOWARD BOTTOM. STRONG ORANGE STAIN FOR IN NEAR TOP. OCCASIONAL BLACK STAIN IN FINE SAND TOWARDS BOTTOM NO ODOOR LIKELY NATURAL ORGANICS.				(8) 18 Blows
45	(9) 45-46 1/2		(9) FULL RECOVERY DAMP GRAY TO BLACK SANDY SILTY CLAY, w/ plastic PLASTIC, w/ SCATTERED ORANGE STAIN. CLEAN				(9) 5 Blows
50	(10) 50-51 1/2		(10) SPLIT SPOON REFUSAL AT 30 BLOW, BUT NOTHING HARD APPEARED IN SPLIT SPOON. 8" RECOVERY, SATURATED ORANGE SAND, LOOSE. WT ~ 48' CLEAN				(10) 50+ Blows
55	(11) 55-56 1/2		(11) SPLIT SPOON REFUSAL NO BLOWS. SEEMS TO STILL BE IN WATER TABLE BUT VERY HARD DRILLING. SETTING WELL AT 55'. SATURATED ORANGE SAND IN SPLIT SPOON.				

Comments:

Geologist Signature

MONITORING WELL INSTALLATION RECORD

Environmental Services Corp.

Mo Road

Newton, New Mexico 87401

326-2252 FAX (505) 326-2388

Borehole # 1
Well # MW 2
Page 3 of 3

Project Name EPAS GROUNDWATER

Project Number 680001X Phase 35

Project Location HORTON #1E

On-Site Geologist C. CULLICOTT

Personnel On-Site K. PADILLA, D. PADILLA

Contractors On-Site A

Client Personnel On-Site A

A. WERITO

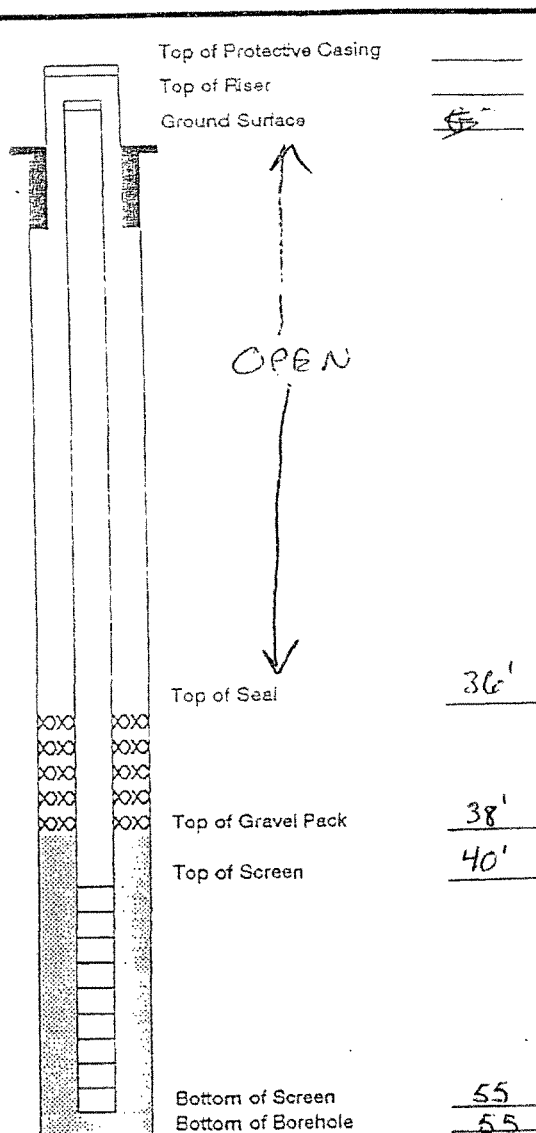
Location T31N R9W S28H
Well Depth 47.35'
Installed By D. PADILLA & A. WERITO

Installation Time Started 10/8/99 9:00 am
Installation Time Completed 10/8/99 12:30 pm

meter 93388

Depths in Reference to Ground Surface

Item	Material	Depth
Top of Protective Casing		
Bottom of Protective Casing		
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	2"	65
Bottom of Well Riser	2"	40
Top of Well Screen	2"	40
Bottom of Well Screen	2"	55
Top of Peltonite Seal	BENT.	36
Bottom of Peltonite Seal	CHIPS	38
Top of Gravel Pack	CO.	38
Bottom of Gravel Pack	SAND	55
Top of Natural Cave-In		
Bottom of Natural Cave-In		
Top of Groundwater		47.35'
Total Depth of Borehole		55



Comments: SOME BACKFILL OF SAND INTO AUGERS, BUT DRILLERS WERE ABLE TO CLEAR IT OUT TO TD.

Geologist Signature

Cathy Cullicott

WELL DEVELOPED WITH 5 gallons bailed 1:50-2:20 pm

DTW 48.15' AFTER BAILING

WATER VERY TURBID--ORANGEISH BROWN. NO OODOR

RECORD OF SUBSURFACE EXPLORATION

Map Environmental Services Corp.

30 Monroe Road

Albuquerque, New Mexico 87401

Phone (505) 326-2388 FAX (505) 326-2388

Rehole #

2

Well #

MW3

Page

1 of 3

Project Name

EPFS GROUNDWATER

Project Number

62800018 Phase 35

Project Location

HORTAN TIE

Well Logged By

P. CULLICOTT

Personnel On-Site

K. PADILLA, D. PADILLA,

Contractors On-Site

0

A. WERITO

Client Personnel On-Site

0

Drilling Method

AUGER

Air Monitoring Method

Elevation

Rehole Location

T31N R9W S28N

WL Depth

47.94'

Logged By

P. CULLICOTT

Drilled By

K. PADILLA, D. PADILLA

Date/Time Started

10/8/99 12:30 PM

Date/Time Completed

10/8/99 2:30 AM

METER 93386

Depth (Feet)	Sample Interval	Sample Type & Recovery (Inches)	Sample Description Classification System: USCS	USCS Symbol	Depth Lithology Change (feet)	Air Monitoring Units: NDU			Drilling Conditions & Blow Counts
						BZ	BH	S	
0									
5									
10	① 10-11 1/2		① 4" RECOVERY FINE BROWN SILTY SAND. LOOSE, DRY, CLEAN						① 10 BLOWS
15									
20	② 20-21 1/2		② FULL RECOVERY LOOSE, DRY, POORLY SORTED SAND → 60% COARSE, W/ SMALL GRAVEL, CLEAN CUTTINGS @ 25' SAME						② 21 BLOWS
25									
30	③ 30-31 1/2		③ 6" RECOVERY STIFF BROWN SILT, W/ SOME LIGHTER MOTTLED. CLEAN. SLIGHTLY DAMP.						③ 19 BLOWS
35									
40									

Comments:

SUNNY, WARM
NO P.D.

Geologist Signature

Cathy Culcott

RECORD OF SUBSURFACE EXPLORATION

Slip Environmental Services Corp.

30 Monroe Road

Albuquerque, New Mexico 87401

(505) 822-8222 FAX (505) 326-2388

Well #

2

Well #

mw3

Page

2 of 3

Project Name

EPES GROUNDWATER

Project Number

62800018

Phase

35

Project Location

HUNTER #1E

Well Logged By

C. CULLICOTT

Personnel On-Site

E. PADILLA, D. PADILLA,

Contractors On-Site

0

A. WERTIC

Client Personnel On-Site

0

Drilling Method

AUGER

Air Monitoring Method

Elevation

Borehole Location

T31N 29W S28E

EWL Depth

47.44'

Logged By

C. CULLICOTT

Drilled By

E. PADILLA & D. PADILLA

Date/Time Started

10/8/99 12:30pm

Date/Time Completed

10/8/99 2:30pm

meter 93388

Depth (Feet)	Sample Interval	Sample Type & Recovery (inches)	Sample Description Classification System: USCS	USCS Symbol	Depth Lithology Change (feet)	Air Monitoring Units: NDU BZ BH S			Drilling Conditions & Blow Counts
40	④ 40-41 1/2		④ FULL RECOVERY BROWN CLAYEY SILT, SLIGHTLY DAMP, LEAN PLASTIC, W/SCATTERED ROOT TRACES & CHARCOAL? mottled gray.						④ 12 BLOWS
50	⑤ 50-51 1/2		⑤ FULL RECOVERY GRAYS AND, SATURATED, NO ODOOR, W/SOME GRAVEL. WT ~ 48%						⑤ 4 BLOWS
55									
60									
25									
30									
35									
40									

Comments:

Geologist Signature

Cathy Cullcott

MONITORING WELL INSTALLATION RECORD

Environmental Services Corp.

Mojo Road

Albuquerque, New Mexico 87401

326-2262 FAX (505) 326-2388

Borehole # 2

Well # mw3

Page 3 of 3

Project Name EPFS GROUNDWATER

Project Number 02800018 Phase 35

Project Location HORTON #1E

On-Site Geologist C. CULLICOTT

Personnel On-Site K. PADILLA, O. PADILLA

Contractors On-Site A. W. ERICSSON

Client Personnel On-Site

Location

Location T31N R9W S28H

Depth 47.94'

Drilled By K. PADILLA

Supervised By O. PADILLA

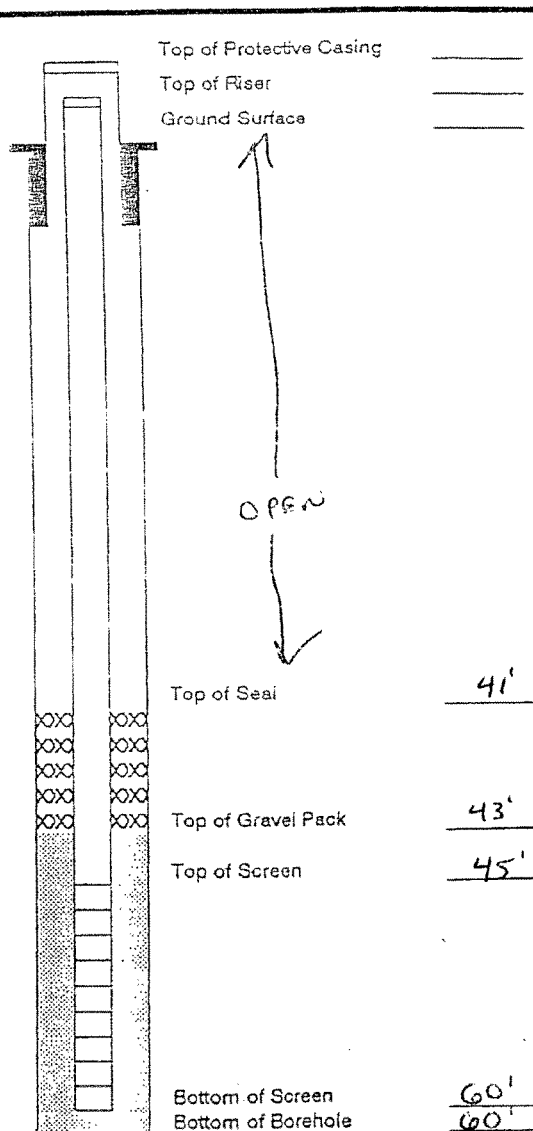
Start Time 10/8/99 12:30 p.m.

Complete Time 10/8/99 2:30 p.m.

meter 93388

Depths in Reference to Ground Surface

Item	Material	Depth
Top of Protective Casing		
Bottom of Protective Casing		
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	2"	GS
Bottom of Well Riser	2"	45'
Top of Well Screen	2"	45'
Bottom of Well Screen	2"	60'
Top of Peltonite Seal	BENT	41'
Bottom of Peltonite Seal	CHIPS	43'
Top of Gravel Pack	CO	43'
Bottom of Gravel Pack	SAND	60'
Top of Natural Cave-In		
Bottom of Natural Cave-In		
Top of Groundwater		47.94'
Total Depth of Borehole		60'



Comments: WELL DEVELOPED w/ 6 gallons removed 2:45-3:10
 DTH AFTER BALANCE 48.8'. Water was clear at first,

then slightly turbid the rest of the time. Might have a slight odor. 48.8'

Geologist Signature

Cathy Cullicott



MWH

Drilling Log

Monitoring Well

MW-4**FINAL**

Page: 1 of 2

Project Horton #1E Owner EPCGPC

Location San Juan County, New Mexico Project Number 10504833.010501

Surface Elev. 6129.23 ft North 2136672.598 East 2738656.434

Top of Casing 6132.10 ft Water Level Initial 6082.1 08/19/14 00:00 Static ▼

Hole Depth 61.0ft Screen: Diameter 2 in Length 20.0 ft Type/Size PVC/0.01 in

Hole Diameter 8.25 in Casing: Diameter 2 in Length 42.5 ft Type PVC

Drill Co. National EWP Drilling Method Hollow-Stem Auger Sand Pack 10-20

Driller Matt Cain/Bryan Nydoske Driller Reg. # WD-1210 Log By Brad Barton

Start Date 8/19/2014 Completion Date 8/20/2014 Checked By Chris Hiatt

COMMENTS

Sage brush in well area

Bentonite Grout Bentonite Granules Grout Portland Cement Sand Pack Sand Pack

Depth (ft)	PID (ppm)	% Recovery	Blow Count Recovery	Graphic Log	USCS	Description (Color, Moisture, Texture, Structure, Odor) Geologic Descriptions are Based on the USCS.	Well Completion
0	0					Silt, sandy, yellowish-brown (10YR 5/4), medium stiff, dry, very fine sand, no hydrocarbon odor, top 10' hydro-excavated	
5	0	0%			ML		
10	0	52%			SM	Sand, silty, yellowish-brown, loose, fine grained, dry, no hydrocarbon odor	
	0					No recovery	
15	0	80%			SM	Sand, silty, yellowish-brown, loose, fine grained, dry, no hydrocarbon odor	
	0					No recovery	
20	0	90%			SM	Sand, silty, yellowish-brown, loose, fine grained, dry, no hydrocarbon odor, driller reports hard drilling	
	0					No recovery	
25	0				SW	Sand, well-graded, yellowish-brown, dry, fine to medium-grained, weak to moderate cementation, angular to subangular, no hydrocarbon odor, driller reports hard drilling	
	0				SW	No recovery	
	0	100%				Sand, well-graded, yellowish-brown, dry, fine to medium-grained, weak to moderate cementation, angular to subangular, no hydrocarbon odor	
30	0	100%			CL	Clay with silt, brown, medium stiff to stiff, dry to slightly moist, low plasticity increasing with depth to medium plasticity at 39' and high plasticity at 43.5', no dilatency, no hydrocarbon odor	
35	0						

Continued Next Page

Drilling Log HORTON #1E.GPJ MWH IA.GDT 11/29/14



MWH

Drilling Log

Monitoring Well

MW-4

FINAL

Page: 2 of 2

Project Horton #1E

Owner EPCGPC

Location San Juan County, New Mexico

Project Number 10504833.010501

Depth (ft)	PID (ppm)	% Recovery	Blow Count Recovery	Graphic Log	USCS	Description (Color, Moisture, Texture, Structure, Odor) Geologic Descriptions are Based on the USCS.	Well Completion
35						<i>Continued</i>	
0		100%					
0					CL		
40							
0		82%					
0.1							
45						No recovery	
0.1						Clay, sandy, tan/brown, at 49.5' color changes to darg greenish-gray (gley2 4/1), moist to very moist, wet at 50', trace gravel up to 1/2" at 50', low to medium plasticity, no dilatency, no hydrocarbon odor	
0.1		100% MW-4 48- 50'			CL		
50							
0.1		78%					
0.1						No recovery	
55							
0.1		100%			SW	Sand, well-graded, brown (7.5YR 4/3), greenish-gray (gley2 4/1) at 58.5', loose, wet, fine to medium-grained, weak cementation increasing with depth, angular to subangular, no hydrocarbon odor	
0.1							
60		100%					
0.1						Well set at 60' Hole depth = 61'	
65							
70							
75							
80							

Drilling Log HORTON #1E.GPJ MWH IA.GDT 11/29/14



MWH

Drilling Log

Monitoring Well

MW-5**FINAL**

Page: 1 of 2

Project Horton #1E Owner EPCGPC

Location San Juan County, New Mexico Project Number 10504833.010501

Surface Elev. 6127.39 ft North 2136637.859 East 2738684.42

Top of Casing 6130.21 ft Water Level Initial 6081.21 08/20/14 00:00 Static ▼

Hole Depth 61.0ft Screen: Diameter 2 in Length 20.0 ft Type/Size PVC/0.01 in

Hole Diameter 8.25 in Casing: Diameter 2 in Length 42.5 ft Type PVC

Drill Co. National EWP Drilling Method Hollow-Stem Auger Sand Pack 10-20

Driller Matt Cain/Bryan Nydoske Driller Reg. # WD-1210 Log By Brad Barton

Start Date 8/19/2014 Completion Date 8/20/2014 Checked By Chris Hiatt

COMMENTS

Sage brush in well area

Bentonite Grout Bentonite Granules Grout Portland Cement Sand Pack Sand Pack

Depth (ft)	PID (ppm)	% Recovery	Blow Count Recovery	Graphic Log	USCS	Description (Color, Moisture, Texture, Structure, Odor) Geologic Descriptions are Based on the USCS.	Well Completion
0	0					Silt, sandy, yellowish-brown, dry, very fine sand, no hydrocarbon odor, top 10' hydro-excavated	
5	0	0%			ML		
10	0	44%			SM	Sand, silty, yellowish-brown (10YR 5/4), dry, none to weak cementation, no hydrocarbon odor	
	0					No recovery	
15	0	60%			SM	Sand, silty, yellowish-brown (10YR 5/4), dry, none to weak cementation, no hydrocarbon odor	
	0					No recovery	
20	0	78%			SM	Sand, silty, yellowish-brown (10YR 5/4), dry, none to weak cementation, no hydrocarbon odor	
	0					No recovery	
25	0	100%				Clay with silt, brown (10YR 5/3), gley mottling, medium stiff, dry to slightly moist, low plasticity, no dilatency, no hydrocarbon odor	
30	0	100%			CL		
35	0						

Continued Next Page

Drilling Log HORTON #1E.GPJ MWH JA.GDT 11/29/14



MWH

Drilling Log

Monitoring Well

MW-5**FINAL**

Page: 2 of 2

Project Horton #1EOwner EPCGPCLocation San Juan County, New MexicoProject Number 10504833.010501

Depth (ft)	PID (ppm)	% Recovery	Blow Count Recovery	Graphic Log	USCS	Description (Color, Moisture, Texture, Structure, Odor) Geologic Descriptions are Based on the USCS.	Well Completion
35						<i>Continued</i>	
0		100%			CL		
40		68%			SW	Sand, well-graded, yellowish-brown (10YR 5/4), loose, dry, increasing moisture with depth, fine to medium-grained, mostly fine-grained with depth, trace clay, angular to subangular, black coloration and iron oxide staining at 43', no hydrocarbon odor	
0						No recovery	
45					CH	Clay, olive-brown, soft to medium stiff, moist to very moist, high plasticity, no dilatency, no hydrocarbon odor	
0		76% MW-5 47- 49'				No recovery	
50		78%			SC	Sand, clayey, brown (7.5YR 4/3), at 52' color changes to dark greenish-gray (gley2 4/1), loose, wet, fine to medium-grained, weak to no cementation, angular to subangular	
0					SW	Sand, brown, well-graded	
0						No recovery	
55		64%			SC	Sand, clayey, brown (7.5YR 4/3), loose, wet, medium to coarse-grained, none to weak cementation, angular to subangular	
0						No recovery	
60		10%			SW	Sand, dark greenish-gray, moist to wet, well-graded, strong cementation, no hydrocarbon odor	
0						No recovery	
65						Well set at 60' Hole depth = 61'	
70							
75							
80							

Drilling Log HORTON #1E.GPJ MWH IA.GDT 11/29/14



MWH

Drilling Log

Monitoring Well

MW-6**FINAL**

Page: 1 of 2

Project Horton #1E Owner EPCGPC

Location San Juan County, New Mexico Project Number 10504833.010501

Surface Elev. 6127.42 ft North 2136622.047 East 2738655.673

Top of Casing 6130.38 ft Water Level Initial 6083.88 08/21/14 00:00 Static ▼

Hole Depth 61.0ft Screen: Diameter 2 in Length 20.0 ft Type/Size PVC/0.01 in

Hole Diameter 8.25 in Casing: Diameter 2 in Length 42.5 ft Type PVC

Drill Co. National EWP Drilling Method Hollow-Stem Auger Sand Pack 10-20

Driller Matt Cain/Bryan Nydoske Driller Reg. # WD-1210 Log By Brad Barton

Start Date 8/19/2014 Completion Date 8/20/2014 Checked By Chris Hiatt

COMMENTS

Bentonite Grout
 Bentonite Granules
 Grout
 Portland Cement
 Sand Pack
 Sand Pack

Depth (ft)	PID (ppm)	% Recovery	Blow Count Recovery	Graphic Log	USCS	Description (Color, Moisture, Texture, Structure, Odor) Geologic Descriptions are Based on the USCS.	Well Completion
0	0					Silt, sandy, yellowish-brown, loose, dry, very fine-grained, no hydrocarbon odor, top 10' hydro-excavated	
5	0	0%			ML		
10	0	52%			SM	Sand, silty, yellowish-brown (10YR 5/4), loose, dry, fine-grained, weak cementation, no hydrocarbon odor	
	0					No recovery	
15	0	68%			SM	Sand, silty, yellowish-brown (10YR 5/4), loose, dry, fine-grained, weak cementation, no hydrocarbon odor	
	0					No recovery	
20	0	80%			SM	Sand, silty, yellowish-brown (10YR 5/4), loose, dry, fine-grained, cementation increasing with depth, no hydrocarbon odor	
	0					No recovery	
25	0	92%			SM	Sand, silty, yellowish-brown (10YR 5/4), loose, dry, fine-grained, cementation increasing with depth, no hydrocarbon odor	
	0				CL	Clay with silt, brown, medium stiff to stiff, dry, low plasticity, no dilatency, no hydrocarbon odor, gley mottling	
30	0	100%			CL	No recovery Clay with silt, brown, soft to medium stiff, dry, plasticity increasing with depth from low to medium, no dilatency, no hydrocarbon odor, gley mottling	
35	0						

Continued Next Page

Drilling Log HORTON #1E.GPJ MWH I.A.GDT 11/29/14



MWH

Drilling Log

Monitoring Well

MW-6

FINAL

Page: 2 of 2

Project Horton #1EOwner EPCGPCLocation San Juan County, New MexicoProject Number 10504833.010501

Depth (ft)	PID (ppm)	% Recovery	Blow Count Recovery	Graphic Log	USCS	Description (Color, Moisture, Texture, Structure, Odor) Geologic Descriptions are Based on the USCS.	Well Completion
35						<i>Continued</i>	
0		100%			CL		
40							
0		72%				No recovery	
45					CH	Clay with sand lenses, brown to very dark gray (7.5YR 3/1), soft to medium stiff, very moist to wet in sand lenses, trace sand and silt, sand lenses medium-grained, high plasticity clay, no hydrocarbon odor	
0	MW-6 45- 47'	78%				No recovery	
50					CH	Clay with sand lenses, brown to very dark gray (7.5YR 3/1) changing at 52' to dark gray with black spots, soft to medium stiff, wet, sand lenses medium-grained, sand content increasing with depth, high plasticity clay, no hydrocarbon odor	
0		76%				No recovery	
55					CL	Clay with sand, sand lens from 57' to 57.5', dark gray, soft to medium stiff, moist to wet, fine-grained sand, medium to high plasticity, greenish-gray striations at 59', no hydrocarbon odor	
0		82%				No recovery	
60		100%				Clay with sand, dark gray, soft per driller, moist to wet, fine-grained sand, medium to high plasticity, no hydrocarbon odor	
						Well set at 60' Hole depth = 61'	
65							
70							
75							
80							

Drilling Log HORTON #1E.GPJ MWH I.A.GDT 11/29/14



MWH

Drilling Log

Monitoring Well

MW-7**FINAL**

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Project Horton #1E Owner EPCGPC

Location San Juan County, New Mexico Project Number 10504833.010501

Surface Elev. 6129.18 ft North 2136653.685 East 2738619.634

Top of Casing 6131.99 ft Water Level Initial 6082.99 08/21/14 00:00 Static ▼

Hole Depth 61.0ft Screen: Diameter 2 in Length 20.0 ft Type/Size PVC/0.01 in

Hole Diameter 8.25 in Casing: Diameter 2 in Length 42.5 ft Type PVC

Drill Co. National EWP Drilling Method Hollow-Stem Auger Sand Pack 10-20

Driller Matt Cain/Bryan Nydoske Driller Reg. # WD-1210 Log By Brad Barton

Start Date 8/19/2014 Completion Date 8/20/2014 Checked By Chris Hiatt

COMMENTS
Near meter house

Bentonite Grout
 Bentonite Granules
 Grout
 Portland Cement
 Sand Pack
 Sand Pack

Depth (ft)	PID (ppm)	% Recovery	Blow Count Recovery	Graphic Log	USCS	Description (Color, Moisture, Texture, Structure, Odor) Geologic Descriptions are Based on the USCS.	Well Completion
0	0					Silt, sandy, yellowish-brown, loose, dry, very fine-grained, no hydrocarbon odor, top 10' hydro-excavated	
5	0	0%			ML		
10	0	74%			SM	Sand, silty, yellowish-brown, loose, dry, fine-grained, no cementation, no hydrocarbon odor	
15	0	72%			SM	No recovery Sand, silty, yellowish-brown, loose, dry, fine-grained, no cementation, no hydrocarbon odor	
20	0	48%			SW	No recovery Sand, well-graded, yellowish-brown, loose, dry, trace gravel up to 1/2", weakly cemented, angular to subangular sand, no hydrocarbon odor	
25	0	94%			SM	Sand, silty, light olive-brown, loose, dry, fine to medium-grained, no cementation, no hydrocarbon odor	
30	0	100%			ML	Silt, clayey, dark brown, soft to medium stiff, dry, none to weak cementation, low plasticity, gley mottling, no hydrocarbon odor	
35	0				CL	No recovery Clay, with silt, brown, soft to medium stiff, dry, low plasticity, no dilatency, gley mottling, no hydrocarbon odor	

Continued Next Page

Drilling Log HORTON #1E.GPJ MWH IA.GDT 11/29/14



MWH

Drilling Log

Monitoring Well

MW-7

FINAL

Page: 2 of 2

Project Horton #1E

Owner EPCGPC

Location San Juan County, New Mexico

Project Number 10504833.010501

Depth (ft)	PID (ppm)	% Recovery	Blow Count Recovery	Graphic Log	USCS	Description (Color, Moisture, Texture, Structure, Odor) Geologic Descriptions are Based on the USCS.	Well Completion
35						<i>Continued</i>	
0		100%			CL		
40		100%			CH	Clay with sand lenses, brown, soft to medium stiff, increasing moisture with depth, high plasticity, no dilatency, minor oxide and black staining 43.2' to 44', no hydrocarbon odor	
45							
0		84% MW-7 47-49'			CH		
50						No recovery	
0		54%			CH	Clay with thin sand lenses, brown, medium stiff, moist to wet, high plasticity, no hydrocarbon odor	
						No recovery	
55							
0		84%			CH	Clay with thin sand lenses, brown, medium stiff, moist to wet, high plasticity, no hydrocarbon odor	
					SW	Sand, well-graded, greenish-gray, loose, slightly moist to wet, strongly cemented, subangular to angular	
60		100%			SW	No recovery Sand, well-graded, greenish-gray, loose, slightly moist to wet, strongly cemented, subangular to angular, driller reports hard drilling	
65						Set well at 60' Hole depth = 61'	
70							
75							
80							

Drilling Log HORTON #1E.GPJ MWH IA.GDT 11/29/14

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: 400-97667-1

Client Project/Site: KM Horton #1E

For:

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

Attn: Ms. Sarah Gardner



Authorized for release by:

11/6/2014 12:42:32 PM

Bernard Kirkland, Manager of Project Management
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Designee for

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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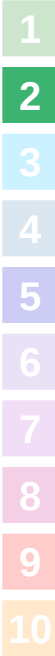


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Definitions/Glossary

Client: MWH Americas Inc
Project/Site: KM Horton #1E

TestAmerica Job ID: 400-97667-1

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
□	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CNF	Contains no Free Liquid
DER	Duplicate error ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL, 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 Horton #1E

TestAmerica Job ID: 400-97667-1

Job ID: 400-97667-1

Laboratory: TestAmerica Pensacola

Narrative

Job Narrative
400-97667-1

Comments

No additional comments.

Receipt

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

GC/MS VOA

Method(s) 8260B: Due to the high concentration of ethylbenzene in the parent sample, the matrix spike / matrix spike duplicate (MS/MSD) for batch 234866 exceeded the linear range of the instrument.

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 Horton #1E

TestAmerica Job ID: 400-97667-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
400-97667-1	MW-1	Water	10/23/14 09:20	10/28/14 09:39
400-97667-2	MW-2	Water	10/23/14 09:25	10/28/14 09:39
400-97667-3	MW-3	Water	10/23/14 09:00	10/28/14 09:39
400-97667-4	MW-4	Water	10/23/14 09:10	10/28/14 09:39
400-97667-5	MW-5	Water	10/23/14 09:05	10/28/14 09:39
400-97667-6	MW-6	Water	10/23/14 08:50	10/28/14 09:39
400-97667-7	MW-7	Water	10/23/14 09:15	10/28/14 09:39
400-97667-8	TRIP BLANK	Water	10/23/14 09:30	10/28/14 09:39

Client Sample Results

Client: MWH Americas Inc
Project/Site: KM Horton #1E

TestAmerica Job ID: 400-97667-1

Client Sample ID: MW-1

Date Collected: 10/23/14 09:20

Date Received: 10/28/14 09:39

Lab Sample ID: 400-97667-1

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			10/30/14 15:20	1
Ethylbenzene	<0.50		1.0	0.50	ug/L			10/30/14 15:20	1
Toluene	<0.70		1.0	0.70	ug/L			10/30/14 15:20	1
Xylenes, Total	<1.6		10	1.6	ug/L			10/30/14 15:20	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene	91		78 - 118					10/30/14 15:20	1
Dibromofluoromethane	109		81 - 121					10/30/14 15:20	1
Toluene-d8 (Surr)	96		80 - 120					10/30/14 15:20	1

Client Sample ID: MW-2

Date Collected: 10/23/14 09:25

Date Received: 10/28/14 09:39

Lab Sample ID: 400-97667-2

Matrix: Water

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	<0.38		1.0	0.38	ug/L			10/30/14 15:46	1
Ethylbenzene	<0.50		1.0	0.50	ug/L			10/30/14 15:46	1
Toluene	<0.70		1.0	0.70	ug/L			10/30/14 15:46	1
Xylenes, Total	<1.6		10	1.6	ug/L			10/30/14 15:46	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene	90		78 - 118					10/30/14 15:46	1
Dibromofluoromethane	109		81 - 121					10/30/14 15:46	1
Toluene-d8 (Surr)	93		80 - 120					10/30/14 15:46	1

Client Sample ID: MW-3

Date Collected: 10/23/14 09:00

Date Received: 10/28/14 09:39

Lab Sample ID: 400-97667-3

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			10/30/14 16:12	1
Ethylbenzene	<0.50		1.0	0.50	ug/L			10/30/14 16:12	1
Toluene	<0.70		1.0	0.70	ug/L			10/30/14 16:12	1
Xylenes, Total	<1.6		10	1.6	ug/L			10/30/14 16:12	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene	90		78 - 118					10/30/14 16:12	1
Dibromofluoromethane	113		81 - 121					10/30/14 16:12	1
Toluene-d8 (Surr)	92		80 - 120					10/30/14 16:12	1

Client Sample ID: MW-4

Date Collected: 10/23/14 09:10

Date Received: 10/28/14 09:39

Lab Sample ID: 400-97667-4

Matrix: Water

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	<0.38		1.0	0.38	ug/L			10/30/14 16:38	1
Ethylbenzene	<0.50		1.0	0.50	ug/L			10/30/14 16:38	1
Toluene	<0.70		1.0	0.70	ug/L			10/30/14 16:38	1

TestAmerica Pensacola

Client Sample Results

Client: MWH Americas Inc
Project/Site: KM Horton #1E

TestAmerica Job ID: 400-97667-1

Client Sample ID: MW-4

Date Collected: 10/23/14 09:10

Date Received: 10/28/14 09:39

Lab Sample ID: 400-97667-4

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		10	1.6	ug/L			10/30/14 16:38	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene	92		78 - 118		10/30/14 16:38	1
Dibromofluoromethane	110		81 - 121		10/30/14 16:38	1
Toluene-d8 (Surr)	93		80 - 120		10/30/14 16:38	1

Client Sample ID: MW-5

Date Collected: 10/23/14 09:05

Date Received: 10/28/14 09:39

Lab Sample ID: 400-97667-5

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			10/30/14 17:04	1
Ethylbenzene	<0.50		1.0	0.50	ug/L			10/30/14 17:04	1
Toluene	<0.70		1.0	0.70	ug/L			10/30/14 17:04	1
Xylenes, Total	<1.6		10	1.6	ug/L			10/30/14 17:04	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene	90		78 - 118		10/30/14 17:04	1
Dibromofluoromethane	106		81 - 121		10/30/14 17:04	1
Toluene-d8 (Surr)	95		80 - 120		10/30/14 17:04	1

Client Sample ID: MW-6

Date Collected: 10/23/14 08:50

Date Received: 10/28/14 09:39

Lab Sample ID: 400-97667-6

Matrix: Water

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	<0.38		1.0	0.38	ug/L			10/30/14 17:30	1
Ethylbenzene	<0.50		1.0	0.50	ug/L			10/30/14 17:30	1
Toluene	<0.70		1.0	0.70	ug/L			10/30/14 17:30	1
Xylenes, Total	<1.6		10	1.6	ug/L			10/30/14 17:30	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene	92		78 - 118		10/30/14 17:30	1
Dibromofluoromethane	109		81 - 121		10/30/14 17:30	1
Toluene-d8 (Surr)	90		80 - 120		10/30/14 17:30	1

Client Sample ID: MW-7

Date Collected: 10/23/14 09:15

Date Received: 10/28/14 09:39

Lab Sample ID: 400-97667-7

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			10/30/14 17:56	1
Ethylbenzene	<0.50		1.0	0.50	ug/L			10/30/14 17:56	1
Toluene	<0.70		1.0	0.70	ug/L			10/30/14 17:56	1
Xylenes, Total	<1.6		10	1.6	ug/L			10/30/14 17:56	1

TestAmerica Pensacola

Client Sample Results

Client: MWH Americas Inc
Project/Site: KM Horton #1E

TestAmerica Job ID: 400-97667-1

Client Sample ID: MW-7

Date Collected: 10/23/14 09:15

Date Received: 10/28/14 09:39

Lab Sample ID: 400-97667-7

Matrix: Water

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene	92		78 - 118		10/30/14 17:56	1
Dibromofluoromethane	107		81 - 121		10/30/14 17:56	1
Toluene-d8 (Surr)	93		80 - 120		10/30/14 17:56	1

Client Sample ID: TRIP BLANK

Date Collected: 10/23/14 09:30

Date Received: 10/28/14 09:39

Lab Sample ID: 400-97667-8

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			10/30/14 18:22	1
Ethylbenzene	<0.50		1.0	0.50	ug/L			10/30/14 18:22	1
Toluene	<0.70		1.0	0.70	ug/L			10/30/14 18:22	1
Xylenes, Total	<1.6		10	1.6	ug/L			10/30/14 18:22	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene	91		78 - 118		10/30/14 18:22	1
Dibromofluoromethane	113		81 - 121		10/30/14 18:22	1
Toluene-d8 (Surr)	94		80 - 120		10/30/14 18:22	1

QC Sample Results

Client: MWH Americas Inc
Project/Site: KM Horton #1E

TestAmerica Job ID: 400-97667-1

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

Lab Sample ID: MB 400-234866/4

Matrix: Water

Analysis Batch: 234866

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			10/30/14 10:50	1
Ethylbenzene	<0.50		1.0	0.50	ug/L			10/30/14 10:50	1
Toluene	<0.70		1.0	0.70	ug/L			10/30/14 10:50	1
Xylenes, Total	<1.6		10	1.6	ug/L			10/30/14 10:50	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene	91		78 - 118		10/30/14 10:50	1
Dibromofluoromethane	111		81 - 121		10/30/14 10:50	1
Toluene-d8 (Surr)	94		80 - 120		10/30/14 10:50	1

Lab Sample ID: LCS 400-234866/1002

Matrix: Water

Analysis Batch: 234866

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	45.8		ug/L		92	79 - 120
Ethylbenzene	50.0	45.8		ug/L		92	80 - 120
Toluene	50.0	44.4		ug/L		89	80 - 120
Xylenes, Total	100	88.0		ug/L		88	70 - 130

Surrogate	LCS %Recovery	LCS Qualifier	Limits
4-Bromofluorobenzene	105		78 - 118
Dibromofluoromethane	104		81 - 121
Toluene-d8 (Surr)	101		80 - 120

TestAmerica Pensacola

Lab Chronicle

Client: MWH Americas Inc
Project/Site: KM Horton #1E

TestAmerica Job ID: 400-97667-1

Client Sample ID: MW-1

Date Collected: 10/23/14 09:20

Date Received: 10/28/14 09:39

Lab Sample ID: 400-97667-1

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	234866	10/30/14 15:20	ARM	TAL PEN

Client Sample ID: MW-2

Date Collected: 10/23/14 09:25

Date Received: 10/28/14 09:39

Lab Sample ID: 400-97667-2

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	234866	10/30/14 15:46	ARM	TAL PEN

Client Sample ID: MW-3

Date Collected: 10/23/14 09:00

Date Received: 10/28/14 09:39

Lab Sample ID: 400-97667-3

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	234866	10/30/14 16:12	ARM	TAL PEN

Client Sample ID: MW-4

Date Collected: 10/23/14 09:10

Date Received: 10/28/14 09:39

Lab Sample ID: 400-97667-4

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	234866	10/30/14 16:38	ARM	TAL PEN

Client Sample ID: MW-5

Date Collected: 10/23/14 09:05

Date Received: 10/28/14 09:39

Lab Sample ID: 400-97667-5

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	234866	10/30/14 17:04	ARM	TAL PEN

Client Sample ID: MW-6

Date Collected: 10/23/14 08:50

Date Received: 10/28/14 09:39

Lab Sample ID: 400-97667-6

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	234866	10/30/14 17:30	ARM	TAL PEN

TestAmerica Pensacola

Lab Chronicle

Client: MWH Americas Inc
Project/Site: KM Horton #1E

TestAmerica Job ID: 400-97667-1

Client Sample ID: MW-7

Date Collected: 10/23/14 09:15

Date Received: 10/28/14 09:39

Lab Sample ID: 400-97667-7

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	234866	10/30/14 17:56	ARM	TAL PEN

Client Sample ID: TRIP BLANK

Date Collected: 10/23/14 09:30

Date Received: 10/28/14 09:39

Lab Sample ID: 400-97667-8

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	234866	10/30/14 18:22	ARM	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 Horton #1E

TestAmerica Job ID: 400-97667-1

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		Sampler: Chris Lee, Sarah Gardner		Lab PM: Salcher, Neal		Carrier Tracking No(s):		COC No: 560-15214-1510.1	
Client Contact: Ms. Sarah Gardner		Phone: 303 291-2242		E-Mail: neal.salcher@testamericainc.com				Page: Page 1 of 1	
Company: MWH Americas Inc		Address: 1801 California Street Suite 2900		City: Denver		State: CO		Zip: 80202	
Phone: 303-291-2239(Tel)		PO #: 303-291-2239(Tel)		Purchase Order Requested		WO #: 56004966		As per Enfos	
Email: sarah.gardner@mwhglobal.com		Project #: 56004966		Project Name: KM Horton #1E		Site: Site:			

Analysis Requested		Due Date Requested:		TAT Requested (days):		PO #:		WO #:		As per Enfos		Project #:		SSOW#:	
400-97667 COC															

Sample Identification	Sample Date	Sample Time	Sample Type (C=Comp, G=Grab)	Matrix (W=Water, S=solid, O=soil, etc.)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	0260B - BTEX	Preservation Code	Special Instructions/Note:
MW-1	10/23/14	920	G	Water			X		
MW-2	10/23/14	925	G	Water			X		
MW-3	10/23/14	900	G	Water			X		
MW-4	10/23/14	910	G	Water			X		
MW-5	10/23/14	905	G	Water			X		
MW-6	10/23/14	850	G	Water			X		
MW-7	10/23/14	915	G	Water			X		
TRIP BLANK	10/23/14	930	G	Water			X		

Possible Hazard Identification		Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown ☐ Radiological ☐	
Deliverable Requested: I, II, III, IV, Other (specify)			
Empty Kit Relinquished by:		Date: 10/27/14	
Relinquished by: Chris Lee		Company: 915	
Relinquished by:		Date/Time:	
Relinquished by:		Date/Time:	
Custody Seals Intact: ☐ Yes ☐ No		Custody Seal No: 302 IP-2	

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: 400-101172-1

Client Project/Site: Horton #1E

For:

MWH Americas Inc

11153 Aurora Avenue

Des Moines, Iowa 50322-7904

Attn: Mr. Mike Alowitz



Authorized for release by:

1/30/2015 11:14:03 AM

Marty Edwards, Manager of Project Management

(850)474-1001

marty.edwards@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: Horton #1E

TestAmerica Job ID: 400-101172-1

Qualifiers

GC VOA

Qualifier	Qualifier Description
F2	MS/MSD RPD exceeds control limits

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: Horton #1E

TestAmerica Job ID: 400-101172-1

Job ID: 400-101172-1

Laboratory: TestAmerica Pensacola

Narrative

Job Narrative
400-101172-1

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.

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: Horton #1E

TestAmerica Job ID: 400-101172-1

Client Sample ID: MW-1

Lab Sample ID: 400-101172-1

No Detections.

Client Sample ID: MW-2

Lab Sample ID: 400-101172-2

No Detections.

Client Sample ID: MW-3

Lab Sample ID: 400-101172-3

No Detections.

Client Sample ID: MW-4

Lab Sample ID: 400-101172-4

No Detections.

Client Sample ID: MW-5

Lab Sample ID: 400-101172-5

No Detections.

Client Sample ID: MW-6

Lab Sample ID: 400-101172-6

No Detections.

Client Sample ID: MW-7

Lab Sample ID: 400-101172-7

No Detections.

Client Sample ID: TRIP BLANK

Lab Sample ID: 400-101172-8

No Detections.

This Detection Summary does not include radiochemical test results.

TestAmerica Pensacola

Sample Summary

Client: MWH Americas Inc
Project/Site: Horton #1E

TestAmerica Job ID: 400-101172-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
400-101172-1	MW-1	Water	01/21/15 12:00	01/23/15 09:10
400-101172-2	MW-2	Water	01/21/15 12:40	01/23/15 09:10
400-101172-3	MW-3	Water	01/21/15 12:15	01/23/15 09:10
400-101172-4	MW-4	Water	01/21/15 11:55	01/23/15 09:10
400-101172-5	MW-5	Water	01/21/15 12:20	01/23/15 09:10
400-101172-6	MW-6	Water	01/21/15 12:30	01/23/15 09:10
400-101172-7	MW-7	Water	01/21/15 11:45	01/23/15 09:10
400-101172-8	TRIP BLANK	Water	01/21/15 00:00	01/23/15 09:10

Client Sample Results

Client: MWH Americas Inc
Project/Site: Horton #1E

TestAmerica Job ID: 400-101172-1

Client Sample ID: MW-1

Lab Sample ID: 400-101172-1

Date Collected: 01/21/15 12:00

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 19:58	1
Ethylbenzene	<1.0		1.0	0.64	ug/L			01/26/15 19:58	1
Toluene	<5.0		5.0	0.98	ug/L			01/26/15 19:58	1
Xylenes, Total	<5.0		5.0	1.7	ug/L			01/26/15 19:58	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
a,a,a-Trifluorotoluene (pid)	96		78 - 124					01/26/15 19:58	1

Client Sample Results

Client: MWH Americas Inc
Project/Site: Horton #1E

TestAmerica Job ID: 400-101172-1

Client Sample ID: MW-2

Lab Sample ID: 400-101172-2

Date Collected: 01/21/15 12:40

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	<1.0		1.0	0.56	ug/L			01/26/15 20:30	1
Ethylbenzene	<1.0		1.0	0.64	ug/L			01/26/15 20:30	1
Toluene	<5.0		5.0	0.98	ug/L			01/26/15 20:30	1
Xylenes, Total	<5.0		5.0	1.7	ug/L			01/26/15 20:30	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
a,a,a-Trifluorotoluene (pid)	97		78 - 124					01/26/15 20:30	1

Client Sample Results

Client: MWH Americas Inc
Project/Site: Horton #1E

TestAmerica Job ID: 400-101172-1

Client Sample ID: MW-3

Lab Sample ID: 400-101172-3

Date Collected: 01/21/15 12:15

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 21:02	1
Ethylbenzene	<1.0		1.0	0.64	ug/L			01/26/15 21:02	1
Toluene	<5.0		5.0	0.98	ug/L			01/26/15 21:02	1
Xylenes, Total	<5.0		5.0	1.7	ug/L			01/26/15 21:02	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
a,a,a-Trifluorotoluene (pid)	96		78 - 124					01/26/15 21:02	1

Client Sample Results

Client: MWH Americas Inc
Project/Site: Horton #1E

TestAmerica Job ID: 400-101172-1

Client Sample ID: MW-4

Lab Sample ID: 400-101172-4

Date Collected: 01/21/15 11:55

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 21:33	1
Ethylbenzene	<1.0		1.0	0.64	ug/L			01/26/15 21:33	1
Toluene	<5.0		5.0	0.98	ug/L			01/26/15 21:33	1
Xylenes, Total	<5.0		5.0	1.7	ug/L			01/26/15 21:33	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
a,a,a-Trifluorotoluene (pid)	95		78 - 124					01/26/15 21:33	1

Client Sample Results

Client: MWH Americas Inc
Project/Site: Horton #1E

TestAmerica Job ID: 400-101172-1

Client Sample ID: MW-5

Lab Sample ID: 400-101172-5

Date Collected: 01/21/15 12:20

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			01/27/15 00:43	1
Ethylbenzene	<1.0		1.0	0.64	ug/L			01/27/15 00:43	1
Toluene	<5.0		5.0	0.98	ug/L			01/27/15 00:43	1
Xylenes, Total	<5.0		5.0	1.7	ug/L			01/27/15 00:43	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
a,a,a-Trifluorotoluene (pid)	95		78 - 124					01/27/15 00:43	1

Client Sample Results

Client: MWH Americas Inc
Project/Site: Horton #1E

TestAmerica Job ID: 400-101172-1

Client Sample ID: MW-6

Lab Sample ID: 400-101172-6

Date Collected: 01/21/15 12:30

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			01/27/15 01:15	1
Ethylbenzene	<1.0		1.0	0.64	ug/L			01/27/15 01:15	1
Toluene	<5.0		5.0	0.98	ug/L			01/27/15 01:15	1
Xylenes, Total	<5.0		5.0	1.7	ug/L			01/27/15 01:15	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
a,a,a-Trifluorotoluene (pid)	96		78 - 124					01/27/15 01:15	1

Client Sample Results

Client: MWH Americas Inc
Project/Site: Horton #1E

TestAmerica Job ID: 400-101172-1

Client Sample ID: MW-7

Date Collected: 01/21/15 11:45

Date Received: 01/23/15 09:10

Lab Sample ID: 400-101172-7

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			01/27/15 01:47	1
Ethylbenzene	<1.0		1.0	0.64	ug/L			01/27/15 01:47	1
Toluene	<5.0		5.0	0.98	ug/L			01/27/15 01:47	1
Xylenes, Total	<5.0		5.0	1.7	ug/L			01/27/15 01:47	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
a,a,a-Trifluorotoluene (pid)	97		78 - 124					01/27/15 01:47	1

Client Sample Results

Client: MWH Americas Inc
Project/Site: Horton #1E

TestAmerica Job ID: 400-101172-1

Client Sample ID: TRIP BLANK

Lab Sample ID: 400-101172-8

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			01/27/15 02:18	1
Ethylbenzene	<1.0		1.0	0.64	ug/L			01/27/15 02:18	1
Toluene	<5.0		5.0	0.98	ug/L			01/27/15 02:18	1
Xylenes, Total	<5.0		5.0	1.7	ug/L			01/27/15 02:18	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
a,a,a-Trifluorotoluene (pid)	95		78 - 124					01/27/15 02:18	1

QC Association Summary

Client: MWH Americas Inc
Project/Site: Horton #1E

TestAmerica Job ID: 400-101172-1

GC VOA

Analysis Batch: 244318

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
400-101171-B-1 MS	Matrix Spike	Total/NA	Water	8021B	
400-101171-B-1 MSD	Matrix Spike Duplicate	Total/NA	Water	8021B	
400-101172-1	MW-1	Total/NA	Water	8021B	
400-101172-2	MW-2	Total/NA	Water	8021B	
400-101172-3	MW-3	Total/NA	Water	8021B	
400-101172-4	MW-4	Total/NA	Water	8021B	
400-101172-5	MW-5	Total/NA	Water	8021B	
400-101172-6	MW-6	Total/NA	Water	8021B	
400-101172-7	MW-7	Total/NA	Water	8021B	
400-101172-8	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: Horton #1E

TestAmerica Job ID: 400-101172-1

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-B-1 MS

Matrix: Water

Analysis Batch: 244318

Client Sample ID: Matrix Spike

Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Benzene	<1.0		50.0	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-B-1 MSD

Matrix: Water

Analysis Batch: 244318

Client Sample ID: Matrix Spike Duplicate

Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Benzene	<1.0		50.0	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: Horton #1E

TestAmerica Job ID: 400-101172-1

Client Sample ID: MW-1

Date Collected: 01/21/15 12:00

Date Received: 01/23/15 09:10

Lab Sample ID: 400-101172-1

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 19:58	ABF	TAL PEN

Client Sample ID: MW-2

Date Collected: 01/21/15 12:40

Date Received: 01/23/15 09:10

Lab Sample ID: 400-101172-2

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 20:30	ABF	TAL PEN

Client Sample ID: MW-3

Date Collected: 01/21/15 12:15

Date Received: 01/23/15 09:10

Lab Sample ID: 400-101172-3

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 21:02	ABF	TAL PEN

Client Sample ID: MW-4

Date Collected: 01/21/15 11:55

Date Received: 01/23/15 09:10

Lab Sample ID: 400-101172-4

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 21:33	ABF	TAL PEN

Client Sample ID: MW-5

Date Collected: 01/21/15 12:20

Date Received: 01/23/15 09:10

Lab Sample ID: 400-101172-5

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8021B		1	244318	01/27/15 00:43	ABF	TAL PEN

Client Sample ID: MW-6

Date Collected: 01/21/15 12:30

Date Received: 01/23/15 09:10

Lab Sample ID: 400-101172-6

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8021B		1	244318	01/27/15 01:15	ABF	TAL PEN

Lab Chronicle

Client: MWH Americas Inc
Project/Site: Horton #1E

TestAmerica Job ID: 400-101172-1

Client Sample ID: MW-7

Date Collected: 01/21/15 11:45

Date Received: 01/23/15 09:10

Lab Sample ID: 400-101172-7

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8021B		1	244318	01/27/15 01:47	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: 400-101172-8

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8021B		1	244318	01/27/15 02:18	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: Horton #1E

TestAmerica Job ID: 400-101172-1

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: Horton #1E

TestAmerica Job ID: 400-101172-1

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

Protocol References:

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

Laboratory References:

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

TestAmerica Pensacola

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

Chain of Custody Record

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

Client Information Client Contact: Ms. Sarah Gardner Company: MWH Americas Inc Address: 1401 17th Street Suite 600 City: Denver State Zip: CO, 80202 Phone: Email: sarah.gardner@mwhglobal.com Project Name: Horton #1E Site:		Sampler: CLIM 03082001200 Lab PM: Edwards, Marty P Phone: 515-263-0830 E-Mail: marty.edwards@testamericainc.com		Carrier Tracking No(s): COC No: 400-41953-21010.1 Page: Page 1 of 1 Job #:	
Due Date Requested: TAT Requested (days): STANDARD PO #: Purchase Order Requested WO #: Project #: 40003949 SSOW#:		Analysis Requested  400-101172 COC 8021B - BTEX 12/1/15			
Sample Identification MW-1 MW-2 MW-3 MW-4 MW-5 MW-6 MW-7 Trip Blank		Sample Date 12/1/15 12/1/15 12/1/15 12/1/15 12/1/15 12/1/15 12/1/15	Sample Time 1200 1240 1215 1155 1220 1230 1145	Sample Type (C-comp, G-grab) G G G G G G G	Matrix (W=water, S=solid, O=waste/oil, BT=Trace, A=Air) Water Water Water Water Water Water Water
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/QC Requirements:			
Empty Kit Relinquished by: Relinquished by:  Relinquished by: Relinquished by:		Method of Shipment: Fed Ex Date/Time: 1/22/15 Date/Time: 1/22/15 Date/Time:			
Custody Seals Intact: ☐ Yes ☐ No Custody Seal No.:		Cooler Temperature(s) °C and Other Remarks: 49°C IR-2			

Login Sample Receipt Checklist

Client: MWH Americas Inc

Job Number: 400-101172-1

Login Number: 101172

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	4.9°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	

ANALYTICAL REPORT

TestAmerica Laboratories, Inc.

TestAmerica Pensacola

3355 McLemore Drive

Pensacola, FL 32514

Tel: (850)474-1001

TestAmerica Job ID: 400-106335-1

Client Project/Site: NM- GW Pits, Horton #1E

For:

MWH Americas Inc

1560 Broadway

Suite 1800

Denver, Colorado 80202

Attn: Ms. Sarah Gardner



Authorized for release by:

6/15/2015 5:35:44 PM

Marty Edwards, Manager of Project Management

(850)474-1001

marty.edwards@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: NM- GW Pits, Horton #1E

TestAmerica Job ID: 400-106335-1

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
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: NM- GW Pits, Horton #1E

TestAmerica Job ID: 400-106335-1

Job ID: 400-106335-1

Laboratory: TestAmerica Pensacola

Narrative

Job Narrative 400-106335-1

Comments

No additional comments.

Receipt

The samples were received on 5/30/2015 9:13 AM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperature of the cooler at receipt was 0.5° C.

GC VOA

Method 8021B: The mid sequence continuing calibration verification (CCV) associated with batch 400-259818 recovered above the upper control limit for Ethyl Benzene and M-P Xylene . The samples associated with this CCV were non-detects for the affected analytes; therefore, the data has been reported.

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

Detection Summary

Client: MWH Americas Inc
Project/Site: NM- GW Pits, Horton #1E

TestAmerica Job ID: 400-106335-1

Client Sample ID: HORTON #1E MW-1

Lab Sample ID: 400-106335-1

☐ No Detections.

Client Sample ID: HORTON #1E MW-2

Lab Sample ID: 400-106335-2

☐ No Detections.

Client Sample ID: HORTON #1E MW-3

Lab Sample ID: 400-106335-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Xylenes, Total	3.7	J	5.0	1.7	ug/L	1		8021B	Total/NA

Client Sample ID: HORTON #1E MW-4

Lab Sample ID: 400-106335-4

☐ No Detections.

Client Sample ID: HORTON #1E MW-5

Lab Sample ID: 400-106335-5

☐ No Detections.

Client Sample ID: HORTON #1E MW-6

Lab Sample ID: 400-106335-6

☐ No Detections.

Client Sample ID: HORTON #1E MW-7

Lab Sample ID: 400-106335-7

☐ No Detections.

Client Sample ID: HORTON #1E TRIP BLANK

Lab Sample ID: 400-106335-8

☐ No Detections.

This Detection Summary does not include radiochemical test results.

TestAmerica Pensacola

Sample Summary

Client: MWH Americas Inc
Project/Site: NM- GW Pits, Horton #1E

TestAmerica Job ID: 400-106335-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
400-106335-1	HORTON #1E MW-1	Water	05/29/15 13:50	05/30/15 09:13
400-106335-2	HORTON #1E MW-2	Water	05/29/15 14:00	05/30/15 09:13
400-106335-3	HORTON #1E MW-3	Water	05/29/15 14:10	05/30/15 09:13
400-106335-4	HORTON #1E MW-4	Water	05/29/15 14:20	05/30/15 09:13
400-106335-5	HORTON #1E MW-5	Water	05/29/15 14:25	05/30/15 09:13
400-106335-6	HORTON #1E MW-6	Water	05/29/15 14:30	05/30/15 09:13
400-106335-7	HORTON #1E MW-7	Water	05/29/15 14:40	05/30/15 09:13
400-106335-8	HORTON #1E TRIP BLANK	Water	05/29/15 13:30	05/30/15 09:13

Client Sample Results

Client: MWH Americas Inc
Project/Site: NM- GW Pits, Horton #1E

TestAmerica Job ID: 400-106335-1

Client Sample ID: HORTON #1E MW-1

Lab Sample ID: 400-106335-1

Date Collected: 05/29/15 13:50

Matrix: Water

Date Received: 05/30/15 09:13

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			06/05/15 05:11	1
Ethylbenzene	<1.0		1.0	0.64	ug/L			06/05/15 05:11	1
Toluene	<5.0		5.0	0.98	ug/L			06/05/15 05:11	1
Xylenes, Total	<5.0		5.0	1.7	ug/L			06/05/15 05:11	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
a,a,a-Trifluorotoluene (pid)	107		78 - 124					06/05/15 05:11	1

Client Sample Results

Client: MWH Americas Inc
Project/Site: NM- GW Pits, Horton #1E

TestAmerica Job ID: 400-106335-1

Client Sample ID: HORTON #1E MW-2

Lab Sample ID: 400-106335-2

Date Collected: 05/29/15 14:00

Matrix: Water

Date Received: 05/30/15 09:13

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			06/05/15 06:10	1
Ethylbenzene	<1.0		1.0	0.64	ug/L			06/05/15 06:10	1
Toluene	<5.0		5.0	0.98	ug/L			06/05/15 06:10	1
Xylenes, Total	<5.0		5.0	1.7	ug/L			06/05/15 06:10	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
a,a,a-Trifluorotoluene (pid)	104		78 - 124					06/05/15 06:10	1

Client Sample Results

Client: MWH Americas Inc
Project/Site: NM- GW Pits, Horton #1E

TestAmerica Job ID: 400-106335-1

Client Sample ID: HORTON #1E MW-3

Lab Sample ID: 400-106335-3

Date Collected: 05/29/15 14:10

Matrix: Water

Date Received: 05/30/15 09:13

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			06/05/15 17:35	1
Ethylbenzene	<1.0		1.0	0.64	ug/L			06/05/15 17:35	1
Toluene	<5.0		5.0	0.98	ug/L			06/05/15 17:35	1
Xylenes, Total	3.7	J	5.0	1.7	ug/L			06/05/15 17:35	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
<i>a,a,a-Trifluorotoluene (pid)</i>	107		78 - 124		06/05/15 17:35	1

Client Sample Results

Client: MWH Americas Inc
Project/Site: NM- GW Pits, Horton #1E

TestAmerica Job ID: 400-106335-1

Client Sample ID: HORTON #1E MW-4

Lab Sample ID: 400-106335-4

Date Collected: 05/29/15 14:20

Matrix: Water

Date Received: 05/30/15 09:13

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			06/05/15 05:38	1
Ethylbenzene	<1.0		1.0	0.64	ug/L			06/05/15 05:38	1
Toluene	<5.0		5.0	0.98	ug/L			06/05/15 05:38	1
Xylenes, Total	<5.0		5.0	1.7	ug/L			06/05/15 05:38	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
a,a,a-Trifluorotoluene (pid)	100		78 - 124					06/05/15 05:38	1

Client Sample Results

Client: MWH Americas Inc
Project/Site: NM- GW Pits, Horton #1E

TestAmerica Job ID: 400-106335-1

Client Sample ID: HORTON #1E MW-5

Lab Sample ID: 400-106335-5

Date Collected: 05/29/15 14:25

Matrix: Water

Date Received: 05/30/15 09:13

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			06/05/15 06:10	1
Ethylbenzene	<1.0		1.0	0.64	ug/L			06/05/15 06:10	1
Toluene	<5.0		5.0	0.98	ug/L			06/05/15 06:10	1
Xylenes, Total	<5.0		5.0	1.7	ug/L			06/05/15 06:10	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
a,a,a-Trifluorotoluene (pid)	98		78 - 124					06/05/15 06:10	1

Client Sample Results

Client: MWH Americas Inc
Project/Site: NM- GW Pits, Horton #1E

TestAmerica Job ID: 400-106335-1

Client Sample ID: HORTON #1E MW-6

Lab Sample ID: 400-106335-6

Date Collected: 05/29/15 14:30

Matrix: Water

Date Received: 05/30/15 09:13

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			06/05/15 08:16	1
Ethylbenzene	<1.0		1.0	0.64	ug/L			06/05/15 08:16	1
Toluene	<5.0		5.0	0.98	ug/L			06/05/15 08:16	1
Xylenes, Total	<5.0		5.0	1.7	ug/L			06/05/15 08:16	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
a,a,a-Trifluorotoluene (pid)	99		78 - 124					06/05/15 08:16	1

Client Sample Results

Client: MWH Americas Inc
Project/Site: NM- GW Pits, Horton #1E

TestAmerica Job ID: 400-106335-1

Client Sample ID: HORTON #1E MW-7

Lab Sample ID: 400-106335-7

Date Collected: 05/29/15 14:40

Matrix: Water

Date Received: 05/30/15 09:13

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			06/05/15 08:48	1
Ethylbenzene	<1.0		1.0	0.64	ug/L			06/05/15 08:48	1
Toluene	<5.0		5.0	0.98	ug/L			06/05/15 08:48	1
Xylenes, Total	<5.0		5.0	1.7	ug/L			06/05/15 08:48	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
a,a,a-Trifluorotoluene (pid)	99		78 - 124					06/05/15 08:48	1

Client Sample Results

Client: MWH Americas Inc
Project/Site: NM- GW Pits, Horton #1E

TestAmerica Job ID: 400-106335-1

Client Sample ID: HORTON #1E TRIP BLANK

Lab Sample ID: 400-106335-8

Date Collected: 05/29/15 13:30

Matrix: Water

Date Received: 05/30/15 09:13

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			06/05/15 07:44	1
Ethylbenzene	<1.0		1.0	0.64	ug/L			06/05/15 07:44	1
Toluene	<5.0		5.0	0.98	ug/L			06/05/15 07:44	1
Xylenes, Total	<5.0		5.0	1.7	ug/L			06/05/15 07:44	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
a,a,a-Trifluorotoluene (pid)	97		78 - 124					06/05/15 07:44	1

QC Association Summary

Client: MWH Americas Inc
Project/Site: NM- GW Pits, Horton #1E

TestAmerica Job ID: 400-106335-1

GC VOA

Analysis Batch: 259818

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
400-106331-A-11 MS	Matrix Spike	Total/NA	Water	8021B	
400-106331-A-11 MSD	Matrix Spike Duplicate	Total/NA	Water	8021B	
400-106335-1	HORTON #1E MW-1	Total/NA	Water	8021B	
400-106335-2	HORTON #1E MW-2	Total/NA	Water	8021B	
LCS 400-259818/1002	Lab Control Sample	Total/NA	Water	8021B	
MB 400-259818/3	Method Blank	Total/NA	Water	8021B	

Analysis Batch: 259941

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
400-106335-4	HORTON #1E MW-4	Total/NA	Water	8021B	
400-106335-5	HORTON #1E MW-5	Total/NA	Water	8021B	
400-106335-6	HORTON #1E MW-6	Total/NA	Water	8021B	
400-106335-7	HORTON #1E MW-7	Total/NA	Water	8021B	
400-106335-8	HORTON #1E TRIP BLANK	Total/NA	Water	8021B	
LCS 400-259941/1035	Lab Control Sample	Total/NA	Water	8021B	
MB 400-259941/36	Method Blank	Total/NA	Water	8021B	

Analysis Batch: 260053

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
400-106335-3	HORTON #1E MW-3	Total/NA	Water	8021B	
400-106530-A-2 MS	Matrix Spike	Total/NA	Water	8021B	
400-106530-A-2 MSD	Matrix Spike Duplicate	Total/NA	Water	8021B	
LCS 400-260053/1001	Lab Control Sample	Total/NA	Water	8021B	
MB 400-260053/2	Method Blank	Total/NA	Water	8021B	

QC Sample Results

Client: MWH Americas Inc
Project/Site: NM- GW Pits, Horton #1E

TestAmerica Job ID: 400-106335-1

Method: 8021B - Volatile Organic Compounds (GC)

Lab Sample ID: MB 400-259818/3

Matrix: Water

Analysis Batch: 259818

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			06/04/15 12:25	1
Ethylbenzene	<1.0		1.0	0.64	ug/L			06/04/15 12:25	1
Toluene	<5.0		5.0	0.98	ug/L			06/04/15 12:25	1
Xylenes, Total	<5.0		5.0	1.7	ug/L			06/04/15 12:25	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
a,a,a-Trifluorotoluene (pid)	106		78 - 124		06/04/15 12:25	1

Lab Sample ID: LCS 400-259818/1002

Matrix: Water

Analysis Batch: 259818

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	52.8		ug/L		106	85 - 115
Ethylbenzene	50.0	54.8		ug/L		110	85 - 115
Toluene	50.0	53.3		ug/L		107	85 - 115
Xylenes, Total	150	163		ug/L		109	85 - 115

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

Lab Sample ID: 400-106331-A-11 MS

Matrix: Water

Analysis Batch: 259818

Client Sample ID: Matrix Spike

Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Benzene	1.9		50.0	47.4		ug/L		91	44 - 150
Ethylbenzene	<1.0		50.0	47.2		ug/L		94	70 - 142
Toluene	<5.0		50.0	46.6		ug/L		93	69 - 136
Xylenes, Total	17		150	154		ug/L		91	68 - 142

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

Lab Sample ID: 400-106331-A-11 MSD

Matrix: Water

Analysis Batch: 259818

Client Sample ID: Matrix Spike Duplicate

Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Benzene	1.9		50.0	48.0		ug/L		92	44 - 150	1	16
Ethylbenzene	<1.0		50.0	48.4		ug/L		97	70 - 142	3	16
Toluene	<5.0		50.0	47.5		ug/L		95	69 - 136	2	16
Xylenes, Total	17		150	159		ug/L		95	68 - 142	3	15

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

TestAmerica Pensacola

QC Sample Results

Client: MWH Americas Inc
Project/Site: NM- GW Pits, Horton #1E

TestAmerica Job ID: 400-106335-1

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

Lab Sample ID: MB 400-259941/36

Matrix: Water

Analysis Batch: 259941

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			06/05/15 07:13	1
Ethylbenzene	<1.0		1.0	0.64	ug/L			06/05/15 07:13	1
Toluene	<5.0		5.0	0.98	ug/L			06/05/15 07:13	1
Xylenes, Total	<5.0		5.0	1.7	ug/L			06/05/15 07:13	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
a,a,a-Trifluorotoluene (pid)	99		78 - 124		06/05/15 07:13	1

Lab Sample ID: LCS 400-259941/1035

Matrix: Water

Analysis Batch: 259941

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	50.1		ug/L		100	85 - 115
Ethylbenzene	50.0	51.1		ug/L		102	85 - 115
Toluene	50.0	50.7		ug/L		101	85 - 115
Xylenes, Total	150	150		ug/L		100	85 - 115

Surrogate	LCS %Recovery	LCS Qualifier	Limits
a,a,a-Trifluorotoluene (pid)	99		78 - 124

Lab Sample ID: MB 400-260053/2

Matrix: Water

Analysis Batch: 260053

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			06/05/15 10:07	1
Ethylbenzene	<1.0		1.0	0.64	ug/L			06/05/15 10:07	1
Toluene	<5.0		5.0	0.98	ug/L			06/05/15 10:07	1
Xylenes, Total	<5.0		5.0	1.7	ug/L			06/05/15 10:07	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
a,a,a-Trifluorotoluene (pid)	106		78 - 124		06/05/15 10:07	1

Lab Sample ID: LCS 400-260053/1001

Matrix: Water

Analysis Batch: 260053

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	54.8		ug/L		110	85 - 115
Ethylbenzene	50.0	56.7		ug/L		113	85 - 115
Toluene	50.0	55.2		ug/L		110	85 - 115
Xylenes, Total	150	169		ug/L		112	85 - 115

Surrogate	LCS %Recovery	LCS Qualifier	Limits
a,a,a-Trifluorotoluene (pid)	102		78 - 124

TestAmerica Pensacola

QC Sample Results

Client: MWH Americas Inc
Project/Site: NM- GW Pits, Horton #1E

TestAmerica Job ID: 400-106335-1

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

Lab Sample ID: 400-106530-A-2 MS

Matrix: Water

Analysis Batch: 260053

Client Sample ID: Matrix Spike

Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Benzene	<1.0		50.0	51.7		ug/L		103	44 - 150
Ethylbenzene	1.1		50.0	53.9		ug/L		106	70 - 142
Toluene	<5.0		50.0	52.3		ug/L		105	69 - 136
Xylenes, Total	<5.0		150	161		ug/L		107	68 - 142

Surrogate	MS %Recovery	MS Qualifier	MS Limits
a,a,a-Trifluorotoluene (pid)	102		78 - 124

Lab Sample ID: 400-106530-A-2 MSD

Matrix: Water

Analysis Batch: 260053

Client Sample ID: Matrix Spike Duplicate

Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Benzene	<1.0		50.0	48.1		ug/L		96	44 - 150	7	16
Ethylbenzene	1.1		50.0	50.1		ug/L		98	70 - 142	7	16
Toluene	<5.0		50.0	48.7		ug/L		97	69 - 136	7	16
Xylenes, Total	<5.0		150	150		ug/L		100	68 - 142	7	15

Surrogate	MSD %Recovery	MSD Qualifier	MSD Limits
a,a,a-Trifluorotoluene (pid)	102		78 - 124

Lab Chronicle

Client: MWH Americas Inc
Project/Site: NM- GW Pits, Horton #1E

TestAmerica Job ID: 400-106335-1

Client Sample ID: HORTON #1E MW-1

Date Collected: 05/29/15 13:50

Date Received: 05/30/15 09:13

Lab Sample ID: 400-106335-1

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8021B		1	5 mL	5 mL	259818	06/05/15 05:11	MKA	TAL PEN
Instrument ID: ETHYL										

Client Sample ID: HORTON #1E MW-2

Date Collected: 05/29/15 14:00

Date Received: 05/30/15 09:13

Lab Sample ID: 400-106335-2

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8021B		1	5 mL	5 mL	259818	06/05/15 06:10	MKA	TAL PEN
Instrument ID: ETHYL										

Client Sample ID: HORTON #1E MW-3

Date Collected: 05/29/15 14:10

Date Received: 05/30/15 09:13

Lab Sample ID: 400-106335-3

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8021B		1	5 mL	5 mL	260053	06/05/15 17:35	MKA	TAL PEN
Instrument ID: ETHYL										

Client Sample ID: HORTON #1E MW-4

Date Collected: 05/29/15 14:20

Date Received: 05/30/15 09:13

Lab Sample ID: 400-106335-4

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8021B		1	5 mL	5 mL	259941	06/05/15 05:38	MKA	TAL PEN
Instrument ID: CH_PAULA										

Client Sample ID: HORTON #1E MW-5

Date Collected: 05/29/15 14:25

Date Received: 05/30/15 09:13

Lab Sample ID: 400-106335-5

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8021B		1	5 mL	5 mL	259941	06/05/15 06:10	MKA	TAL PEN
Instrument ID: CH_PAULA										

Client Sample ID: HORTON #1E MW-6

Date Collected: 05/29/15 14:30

Date Received: 05/30/15 09:13

Lab Sample ID: 400-106335-6

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8021B		1	5 mL	5 mL	259941	06/05/15 08:16	MKA	TAL PEN
Instrument ID: CH_PAULA										

TestAmerica Pensacola

Lab Chronicle

Client: MWH Americas Inc
Project/Site: NM- GW Pits, Horton #1E

TestAmerica Job ID: 400-106335-1

Client Sample ID: HORTON #1E MW-7

Lab Sample ID: 400-106335-7

Date Collected: 05/29/15 14:40

Matrix: Water

Date Received: 05/30/15 09:13

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8021B		1	5 mL	5 mL	259941	06/05/15 08:48	MKA	TAL PEN
Instrument ID: CH_PAULA										

Client Sample ID: HORTON #1E TRIP BLANK

Lab Sample ID: 400-106335-8

Date Collected: 05/29/15 13:30

Matrix: Water

Date Received: 05/30/15 09:13

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8021B		1	5 mL	5 mL	259941	06/05/15 07:44	MKA	TAL PEN
Instrument ID: CH_PAULA										

Laboratory References:

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

Certification Summary

Client: MWH Americas Inc
Project/Site: NM- GW Pits, Horton #1E

TestAmerica Job ID: 400-106335-1

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	06-30-15 *
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

* Certification renewal pending - certification considered valid.

TestAmerica Pensacola

Method Summary

Client: MWH Americas Inc
Project/Site: NM- GW Pits, Horton #1E

TestAmerica Job ID: 400-106335-1

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

Login Sample Receipt Checklist

Client: MWH Americas Inc

Job Number: 400-106335-1

Login Number: 106335

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	0.5°C IR-6
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	

ANALYTICAL REPORT

TestAmerica Laboratories, Inc.

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

TestAmerica Job ID: 400-110988-1

Client Project/Site: Horton #1E

For:

MWH Americas Inc
1560 Broadway
Suite 1800
Denver, Colorado 80202

Attn: Ms. Sarah Gardner



Authorized for release by:
9/26/2015 3:20:17 PM

Marty Edwards, Manager of Project Management
(850)474-1001
marty.edwards@testamericainc.com

LINKS

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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: Horton #1E

TestAmerica Job ID: 400-110988-1

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: Horton #1E

TestAmerica Job ID: 400-110988-1

Job ID: 400-110988-1

Laboratory: TestAmerica Pensacola

Narrative

Job Narrative
400-110988-1

Comments

No additional comments.

Receipt

The samples were received on 9/15/2015 9:31 AM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperature of the cooler at receipt was 1.0° 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: Horton #1E

TestAmerica Job ID: 400-110988-1

Client Sample ID: MW-1

Lab Sample ID: 400-110988-1

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Benzene	2.1		1.0	0.56	ug/L	1		8021B	Total/NA

Client Sample ID: MW-2

Lab Sample ID: 400-110988-2

No Detections.

Client Sample ID: MW-3

Lab Sample ID: 400-110988-3

No Detections.

Client Sample ID: MW-4

Lab Sample ID: 400-110988-4

No Detections.

Client Sample ID: MW-5

Lab Sample ID: 400-110988-5

No Detections.

Client Sample ID: MW-6

Lab Sample ID: 400-110988-6

No Detections.

Client Sample ID: MW-7

Lab Sample ID: 400-110988-7

No Detections.

Client Sample ID: TRIP BLANK

Lab Sample ID: 400-110988-8

No Detections.

This Detection Summary does not include radiochemical test results.

TestAmerica Pensacola

Sample Summary

Client: MWH Americas Inc
Project/Site: Horton #1E

TestAmerica Job ID: 400-110988-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
400-110988-1	MW-1	Water	09/13/15 12:30	09/15/15 09:31
400-110988-2	MW-2	Water	09/13/15 12:40	09/15/15 09:31
400-110988-3	MW-3	Water	09/13/15 12:50	09/15/15 09:31
400-110988-4	MW-4	Water	09/13/15 13:00	09/15/15 09:31
400-110988-5	MW-5	Water	09/13/15 13:10	09/15/15 09:31
400-110988-6	MW-6	Water	09/13/15 13:20	09/15/15 09:31
400-110988-7	MW-7	Water	09/13/15 13:30	09/15/15 09:31
400-110988-8	TRIP BLANK	Water	09/13/15 12:20	09/15/15 09:31

Client Sample Results

Client: MWH Americas Inc
Project/Site: Horton #1E

TestAmerica Job ID: 400-110988-1

Client Sample ID: MW-1

Date Collected: 09/13/15 12:30

Date Received: 09/15/15 09:31

Lab Sample ID: 400-110988-1

Matrix: Water

Method: 8021B - Volatile Organic Compounds (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	2.1		1.0	0.56	ug/L			09/17/15 02:33	1
Ethylbenzene	<1.0		1.0	0.64	ug/L			09/17/15 02:33	1
Toluene	<5.0		5.0	0.98	ug/L			09/17/15 02:33	1
Xylenes, Total	<5.0		5.0	1.7	ug/L			09/17/15 02:33	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
<i>a,a,a-Trifluorotoluene (pid)</i>	96		78 - 124					09/17/15 02:33	1

Client Sample Results

Client: MWH Americas Inc
Project/Site: Horton #1E

TestAmerica Job ID: 400-110988-1

Client Sample ID: MW-2
Date Collected: 09/13/15 12:40
Date Received: 09/15/15 09:31

Lab Sample ID: 400-110988-2
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			09/17/15 03:07	1
Ethylbenzene	<1.0		1.0	0.64	ug/L			09/17/15 03:07	1
Toluene	<5.0		5.0	0.98	ug/L			09/17/15 03:07	1
Xylenes, Total	<5.0		5.0	1.7	ug/L			09/17/15 03:07	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
a,a,a-Trifluorotoluene (pid)	94		78 - 124					09/17/15 03:07	1

Client Sample Results

Client: MWH Americas Inc
Project/Site: Horton #1E

TestAmerica Job ID: 400-110988-1

Client Sample ID: MW-3

Date Collected: 09/13/15 12:50

Date Received: 09/15/15 09:31

Lab Sample ID: 400-110988-3

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			09/17/15 03:42	1
Ethylbenzene	<1.0		1.0	0.64	ug/L			09/17/15 03:42	1
Toluene	<5.0		5.0	0.98	ug/L			09/17/15 03:42	1
Xylenes, Total	<5.0		5.0	1.7	ug/L			09/17/15 03:42	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
a,a,a-Trifluorotoluene (pid)	93		78 - 124					09/17/15 03:42	1

TestAmerica Pensacola

Client Sample Results

Client: MWH Americas Inc
Project/Site: Horton #1E

TestAmerica Job ID: 400-110988-1

Client Sample ID: MW-4
Date Collected: 09/13/15 13:00
Date Received: 09/15/15 09:31

Lab Sample ID: 400-110988-4
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			09/17/15 04:16	1
Ethylbenzene	<1.0		1.0	0.64	ug/L			09/17/15 04:16	1
Toluene	<5.0		5.0	0.98	ug/L			09/17/15 04:16	1
Xylenes, Total	<5.0		5.0	1.7	ug/L			09/17/15 04:16	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
a,a,a-Trifluorotoluene (pid)	93		78 - 124					09/17/15 04:16	1

Client Sample Results

Client: MWH Americas Inc
Project/Site: Horton #1E

TestAmerica Job ID: 400-110988-1

Client Sample ID: MW-5
Date Collected: 09/13/15 13:10
Date Received: 09/15/15 09:31

Lab Sample ID: 400-110988-5
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			09/17/15 04:50	1
Ethylbenzene	<1.0		1.0	0.64	ug/L			09/17/15 04:50	1
Toluene	<5.0		5.0	0.98	ug/L			09/17/15 04:50	1
Xylenes, Total	<5.0		5.0	1.7	ug/L			09/17/15 04:50	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
a,a,a-Trifluorotoluene (pid)	93		78 - 124					09/17/15 04:50	1

Client Sample Results

Client: MWH Americas Inc
Project/Site: Horton #1E

TestAmerica Job ID: 400-110988-1

Client Sample ID: MW-6
Date Collected: 09/13/15 13:20
Date Received: 09/15/15 09:31

Lab Sample ID: 400-110988-6
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			09/17/15 05:25	1
Ethylbenzene	<1.0		1.0	0.64	ug/L			09/17/15 05:25	1
Toluene	<5.0		5.0	0.98	ug/L			09/17/15 05:25	1
Xylenes, Total	<5.0		5.0	1.7	ug/L			09/17/15 05:25	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
a,a,a-Trifluorotoluene (pid)	93		78 - 124					09/17/15 05:25	1

Client Sample Results

Client: MWH Americas Inc
Project/Site: Horton #1E

TestAmerica Job ID: 400-110988-1

Client Sample ID: MW-7
Date Collected: 09/13/15 13:30
Date Received: 09/15/15 09:31

Lab Sample ID: 400-110988-7
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			09/17/15 05:59	1
Ethylbenzene	<1.0		1.0	0.64	ug/L			09/17/15 05:59	1
Toluene	<5.0		5.0	0.98	ug/L			09/17/15 05:59	1
Xylenes, Total	<5.0		5.0	1.7	ug/L			09/17/15 05:59	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
a,a,a-Trifluorotoluene (pid)	95		78 - 124					09/17/15 05:59	1

Client Sample Results

Client: MWH Americas Inc
Project/Site: Horton #1E

TestAmerica Job ID: 400-110988-1

Client Sample ID: TRIP BLANK

Lab Sample ID: 400-110988-8

Date Collected: 09/13/15 12:20

Matrix: Water

Date Received: 09/15/15 09:31

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			09/17/15 07:43	1
Ethylbenzene	<1.0		1.0	0.64	ug/L			09/17/15 07:43	1
Toluene	<5.0		5.0	0.98	ug/L			09/17/15 07:43	1
Xylenes, Total	<5.0		5.0	1.7	ug/L			09/17/15 07:43	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
a,a,a-Trifluorotoluene (pid)	96		78 - 124		09/17/15 07:43	1

QC Association Summary

Client: MWH Americas Inc
Project/Site: Horton #1E

TestAmerica Job ID: 400-110988-1

GC VOA

Analysis Batch: 274699

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
400-110692-A-8 MS	Matrix Spike	Total/NA	Water	8021B	
400-110692-A-8 MSD	Matrix Spike Duplicate	Total/NA	Water	8021B	
400-110988-1	MW-1	Total/NA	Water	8021B	
400-110988-2	MW-2	Total/NA	Water	8021B	
400-110988-3	MW-3	Total/NA	Water	8021B	
400-110988-4	MW-4	Total/NA	Water	8021B	
400-110988-5	MW-5	Total/NA	Water	8021B	
400-110988-6	MW-6	Total/NA	Water	8021B	
400-110988-7	MW-7	Total/NA	Water	8021B	
400-110988-8	TRIP BLANK	Total/NA	Water	8021B	
LCS 400-274699/1001	Lab Control Sample	Total/NA	Water	8021B	
MB 400-274699/2	Method Blank	Total/NA	Water	8021B	

QC Sample Results

Client: MWH Americas Inc
Project/Site: Horton #1E

TestAmerica Job ID: 400-110988-1

Method: 8021B - Volatile Organic Compounds (GC)

Lab Sample ID: MB 400-274699/2

Matrix: Water

Analysis Batch: 274699

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			09/16/15 18:29	1
Ethylbenzene	<1.0		1.0	0.64	ug/L			09/16/15 18:29	1
Toluene	<5.0		5.0	0.98	ug/L			09/16/15 18:29	1
Xylenes, Total	<5.0		5.0	1.7	ug/L			09/16/15 18:29	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
a,a,a-Trifluorotoluene (pid)	93		78 - 124		09/16/15 18:29	1

Lab Sample ID: LCS 400-274699/1001

Matrix: Water

Analysis Batch: 274699

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	45.4		ug/L		91	85 - 115
Ethylbenzene	50.0	46.7		ug/L		93	85 - 115
Toluene	50.0	46.2		ug/L		92	85 - 115
Xylenes, Total	150	140		ug/L		94	85 - 115

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

Lab Sample ID: 400-110692-A-8 MS

Matrix: Water

Analysis Batch: 274699

Client Sample ID: Matrix Spike

Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Benzene	1.7		50.0	56.4		ug/L		109	44 - 150
Ethylbenzene	<1.0		50.0	51.6		ug/L		103	70 - 142
Toluene	<5.0		50.0	50.9		ug/L		102	69 - 136
Xylenes, Total	5.7		150	158		ug/L		102	68 - 142

Surrogate	MS %Recovery	MS Qualifier	Limits
a,a,a-Trifluorotoluene (pid)	105		78 - 124

Lab Sample ID: 400-110692-A-8 MSD

Matrix: Water

Analysis Batch: 274699

Client Sample ID: Matrix Spike Duplicate

Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Benzene	1.7		50.0	51.6		ug/L		100	44 - 150	9	16
Ethylbenzene	<1.0		50.0	50.6		ug/L		101	70 - 142	2	16
Toluene	<5.0		50.0	51.2		ug/L		102	69 - 136	1	16
Xylenes, Total	5.7		150	155		ug/L		100	68 - 142	2	15

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

TestAmerica Pensacola

Lab Chronicle

Client: MWH Americas Inc
Project/Site: Horton #1E

TestAmerica Job ID: 400-110988-1

Client Sample ID: MW-1

Date Collected: 09/13/15 12:30

Date Received: 09/15/15 09:31

Lab Sample ID: 400-110988-1

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8021B		1	5 mL	5 mL	274699	09/17/15 02:33	GRK	TAL PEN
Instrument ID: CH_JOAN										

Client Sample ID: MW-2

Date Collected: 09/13/15 12:40

Date Received: 09/15/15 09:31

Lab Sample ID: 400-110988-2

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8021B		1	5 mL	5 mL	274699	09/17/15 03:07	GRK	TAL PEN
Instrument ID: CH_JOAN										

Client Sample ID: MW-3

Date Collected: 09/13/15 12:50

Date Received: 09/15/15 09:31

Lab Sample ID: 400-110988-3

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8021B		1	5 mL	5 mL	274699	09/17/15 03:42	GRK	TAL PEN
Instrument ID: CH_JOAN										

Client Sample ID: MW-4

Date Collected: 09/13/15 13:00

Date Received: 09/15/15 09:31

Lab Sample ID: 400-110988-4

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8021B		1	5 mL	5 mL	274699	09/17/15 04:16	GRK	TAL PEN
Instrument ID: CH_JOAN										

Client Sample ID: MW-5

Date Collected: 09/13/15 13:10

Date Received: 09/15/15 09:31

Lab Sample ID: 400-110988-5

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8021B		1	5 mL	5 mL	274699	09/17/15 04:50	GRK	TAL PEN
Instrument ID: CH_JOAN										

Client Sample ID: MW-6

Date Collected: 09/13/15 13:20

Date Received: 09/15/15 09:31

Lab Sample ID: 400-110988-6

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8021B		1	5 mL	5 mL	274699	09/17/15 05:25	GRK	TAL PEN
Instrument ID: CH_JOAN										

TestAmerica Pensacola

Lab Chronicle

Client: MWH Americas Inc
Project/Site: Horton #1E

TestAmerica Job ID: 400-110988-1

Client Sample ID: MW-7

Date Collected: 09/13/15 13:30

Date Received: 09/15/15 09:31

Lab Sample ID: 400-110988-7

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8021B		1	5 mL	5 mL	274699	09/17/15 05:59	GRK	TAL PEN
Instrument ID: CH_JOAN										

Client Sample ID: TRIP BLANK

Date Collected: 09/13/15 12:20

Date Received: 09/15/15 09:31

Lab Sample ID: 400-110988-8

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8021B		1	5 mL	5 mL	274699	09/17/15 07:43	GRK	TAL PEN
Instrument ID: CH_JOAN										

Laboratory References:

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

Certification Summary

Client: MWH Americas Inc
Project/Site: Horton #1E

TestAmerica Job ID: 400-110988-1

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	08-31-15 *
Arizona	State Program	9	AZ0710	01-11-16
Arkansas DEQ	State Program	6	88-0689	09-01-16
Florida	NELAP	4	E81010	06-30-16
Georgia	State Program	4	N/A	06-30-16
Illinois	NELAP	5	200041	10-09-15
Iowa	State Program	7	367	07-31-16
Kansas	NELAP	7	E-10253	10-31-15
Kentucky (UST)	State Program	4	53	06-30-16
Kentucky (WW)	State Program	4	98030	12-31-15
Louisiana	NELAP	6	30976	06-30-16
Maryland	State Program	3	233	09-30-16
Massachusetts	State Program	1	M-FL094	06-30-16
Michigan	State Program	5	9912	06-30-16
New Jersey	NELAP	2	FL006	10-30-15
North Carolina (WW/SW)	State Program	4	314	12-31-15
Oklahoma	State Program	6	9810	08-31-16
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	06-30-16
Texas	NELAP	6	T104704286-15-8	09-30-15
USDA	Federal		P330-13-00193	07-01-16
Virginia	NELAP	3	460166	06-14-16
West Virginia DEP	State Program	3	136	06-30-16

* Certification renewal pending - certification considered valid.

TestAmerica Pensacola

Method Summary

Client: MWH Americas Inc
Project/Site: Horton #1E

TestAmerica Job ID: 400-110988-1

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

Chain of Custody Record

Client Information Client Contact: Ms. Sarah Gardner Company: MWH Americas Inc. Address: 1560 Broadway Suite 1800 City: Denver State, Zip: CO, 80202 Phone: 303-291-2239 (Tel) Email: sarah.gardner@mwhglobal.com Project Name: Horton #1E Site:		Sampler: C. HIAW Lab Pmt: Edwards, Merly P Phone: 915-707-3276 E-Mail: marty.edwards@testamericainc.com		Carrier Tracking No(s): COC No: 400-47762-21702.1 Page: 1 of 1 Job #: 10506964.010102	
Due Date Requested: TAT Requested (days): 5 PO #: 303-291-2239 (Tel) WO #: 40005479 Project #: 40005479 SSOW#:		Analysis Requested Preservation Codes: A - HCL B - NaOH C - Zn Acetate D - Nitric Acid E - NaHSO4 F - MeOH G - Archlor H - Ascorbic A I - Ice J - DI Water K - EDTA L - EDA Other:			
Sample Identification Sample Date Sample Time Sample Type (C=Comp, G=grab) Matrix (W=water, S=solid, O=wasteoil, ST=Steam, A=Air)		Special Instructions/Note: 8021B - BTEX 8021			
MW-1	9/13/15	1230	G	Water	X
MW-2		1240		Water	X
MW-3		1250		Water	X
MW-4		1300		Water	X
MW-5		1310		Water	X
MW-6		1320		Water	X
MW-7		1330		Water	X
TRIP BLANK		1220		Water	X
Possible Hazard Identification ☒ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown ☐ Radiological					Sample Disposal (A fee may be assessed if samples are retained longer than 1 month) ☐ Return To Client ☒ Disposal By Lab ☐ Archive For Months
Deliverable Requested: I, II, III, IV, Other (specify)					Special Instructions/QC Requirements:
Empty Kit Relinquished by: [Signature] Relinquished by: [Signature] Relinquished by: [Signature] Relinquished by: [Signature]					Method of Shipment:
Date Time: 9/14/15 9:15 Date Time: 9:15 Date Time: 9:15 Date Time: 9:15					Company: MWH Company: MWH Company: MWH Company: MWH
Custody Seal No.: Custody Seal Intact: ☒ Yes ☐ No					Cooler Temperature(s) °C and Other Remarks: 10°C 100

Login Sample Receipt Checklist

Client: MWH Americas Inc

Job Number: 400-110988-1

Login Number: 110988

List Source: TestAmerica Pensacola

List Number: 1

Creator: Akers, Stephanie C

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	1.0°C IR-6
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	