

2014 ANNUAL GROUNDWATER REPORT

K-27 Line Drip
Meter Code: LD072
T25N, R6W, Sec4, Unit E

SITE DETAILS

Site Location: Latitude: 36.430553 N, Longitude: -107.480164 W
Land Type: Federal
Operator: Enterprise

SITE BACKGROUND

- **Site Assessment:** 7/94
- **Excavation:** 8/94

K-27 Line Drip (Site) is being managed pursuant to the procedures set forth in the document entitled, "Remediation Plan for Groundwater Encountered during Pit Closure Activities" (Remediation Plan, El Paso Natural Gas Company / El Paso Field Services Company, 1995). This remediation plan was conditionally approved by the New Mexico Oil Conservation Division (OCD) in correspondence dated November 30, 1995; and the OCD approval conditions were adopted into El Paso CGP Company, LLC's (EPCGP's) program methods. Currently, the Site is operated by Enterprise and is not active.

The Site is located on Federal land. Various site investigations have occurred from 1995 through 2006. Monitoring wells were installed in 1995 (MW-1), 2000 (MW-2 through MW-3), and 2006 (MW-4). Free product recovery has been periodically conducted at the Site. Currently, groundwater sampling is conducted on a semi-annual basis. Free product was not observed in 2014.

SUMMARY OF 2014 ACTIVITIES

On April 4 and October 22, 2014, water levels were gauged at MW-1, MW-3, and MW-4 and groundwater samples were collected from MW-1 and MW-4 using HydraSleeve™ (HydraSleeve) no-purge passive groundwater sampling devices. The HydraSleeve was set during the previous sampling event approximately 0.5 foot above termination depth of the monitoring wells using a suspension tether and stainless steel weights to collect a sample from the screened interval. Monitoring well MW-2 is damaged and cannot be gauged or sampled, and MW-3 contained an insufficient amount of water to collect a sample during each 2014 semi-annual sampling event. Groundwater samples were placed into laboratory-supplied sample containers, packed on ice, and shipped under standard chain-of-custody protocols to TestAmerica Laboratories, Inc. in Corpus Christi, Texas where they were analyzed for benzene, toluene, ethylbenzene, and total xylenes (BTEX). Additional field parameters were collected including dissolved oxygen, temperature, conductivity, pH, and oxidation-reduction potential (ORP) using a YSI multi-parameter instrument. The water remaining in the HydraSleeves was combined in a waste container and transferred to Basin Disposal, Inc. for disposal.

SUMMARY TABLES

Historic analytical and water level data are summarized in Table 1.

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SITE MAPS

Groundwater analytical maps and groundwater elevation maps from each sampling event are depicted in Figures 1 through 4.

ANALYTICAL LAB REPORTS

The groundwater analytical lab reports are included as Appendix A.

RESULTS

- The groundwater flow direction has historically been to the northeast at the Site; however, since only two wells had groundwater measurements, no groundwater contour or flow direction is shown on the Groundwater Elevation figures (see Figures 2 and 4).
- Concentrations of benzene in groundwater collected from MW-1 remained above the New Mexico Water Quality Control Commission (NMWQCC) standard for each of the 2014 semi-annual sampling events. Toluene, ethylbenzene, and total xylenes concentrations were below NMWQCC standards at MW-1 for each sampling events.
- Monitoring well MW-2 is damaged and cannot be sampled or gauged.
- MW-3 was dry during the April and October 2014 semi-annual sampling events.
- BTEX constituents were not detected in groundwater samples collected from MW-4 during any of the 2014 semi-annual sampling events.

PLANNED FUTURE ACTIVITIES

Installation of additional monitoring wells is planned, after establishment of a right-of-way with the United States Bureau of Land Management. The wells will be installed to further assess the extent of the dissolved-phase hydrocarbons and to confirm and/or further define the groundwater gradient at the Site. Monitoring wells will be installed around and downgradient of the known extent of groundwater hydrocarbons in order to better delineate impacts from the former pit. One well will be installed to replace existing and damaged monitoring well MW-2. After construction, the surface and top-of-casing elevations of the wells will be surveyed by a licensed surveyor using state plane coordinates and the existing site benchmark. Following approval by the New Mexico Environment Department (NMED), the existing monitoring well MW-2 will be plugged and abandoned in accordance with NMED, Ground Water Quality Bureau, Monitoring Well Construction and Abandonment Guidelines, dated March 2011. Additionally, MW-1, MW-3, MW-4, and the newly-installed monitoring wells will be sampled on a semi-annual basis.

TABLES

TABLE 1 – GROUNDWATER ANALYTICAL AND WATER LEVEL RESULTS

TABLE 1 - GROUNDWATER ANALYTICAL RESULTS

K-27 Line Drip								
Location	Date	Benzene (µg/L)	Toluene (µg/L)	Ethylbenzene (µg/L)	Total Xylenes (µg/L)	Depth to Water (ft.)	Depth to LNAPL (ft.)	LNAPL Thickness (ft.)
NMWQCC Standards:		10	750	750	620	NA	NA	NA
MW-1	11/04/96	996	2170	204	1520	37.44	-	-
MW-1	02/05/97	207	613	168	1010	36.89	-	-
MW-1	05/07/97	41.8	114	97.8	500	36.73	-	-
MW-1	08/08/97	1690	2980	298	1930	37.61	-	-
MW-1	11/07/97	533	1210	267	1720	37.33	37.21	0.12
MW-1	02/26/98					36.89	36.71	0.18
MW-1	02/24/99					36.39	36.27	0.12
MW-1	08/19/99	179	379	79.1	777	36.48	-	-
MW-1	11/10/99	39	95	56	390	36.17	36.10	0.07
MW-1	09/05/00					37.22	-	-
MW-1	10/06/00					37.42	-	-
MW-1	07/03/01					36.64	36.49	0.15
MW-1	09/04/01					37.43	37.39	0.04
MW-1	09/24/01					37.45	37.40	0.05
MW-1	04/01/02					37.01	-	-
MW-1	07/15/02					38.02	37.85	0.17
MW-1	10/08/02					38.01	38.00	0.01
MW-1	01/27/03					37.42	-	-
MW-1	04/26/03					37.15	-	-
MW-1	07/17/03					38.36	38.18	0.18
MW-1	10/13/03					38.29	-	-
MW-1	01/19/04					37.69	37.68	0.01
MW-1	04/20/04					37.29	-	-
MW-1	07/27/04					38.45	38.28	0.17
MW-1	10/20/04					38.71	38.68	0.03
MW-1	01/25/05					38.18	38.16	0.02
MW-1	04/14/05					37.84	37.75	0.09
MW-1	07/19/05					38.84	-	-
MW-1	10/12/05					38.46	-	-
MW-1	10/21/05					38.46	-	-
MW-1	01/23/06					37.89	-	-
MW-1	04/28/06					37.57	-	-
MW-1	07/26/06					38.61	-	-
MW-1	11/07/06					36.37	36.31	0.06
MW-1	01/17/07					35.91	-	-
MW-1	04/24/07					35.53	-	-
MW-1	07/31/07					36.57	-	-
MW-1	10/25/07					36.04	-	-
MW-1	01/25/08					35.90	-	-
MW-1	04/18/08					35.47	-	-
MW-1	07/23/08					36.43	-	-
MW-1	10/08/08	7.3	3.9	20.2	68.7	36.95	-	-
MW-1	10/13/08					36.93	-	-
MW-1	01/16/09					36.77	-	-
MW-1	04/06/09					36.30	-	-
MW-1	08/25/09					37.53	-	-
MW-1	11/03/09	355	69.3	45.8	259	37.58	-	-
MW-1	02/16/10					37.32	-	-
MW-1	05/24/10					36.97	-	-
MW-1	09/27/10					37.98	-	-
MW-1	11/08/10	138	29.4	43.9	183	37.70	-	-
MW-1	02/01/11					37.35	-	-
MW-1	05/02/11					37.26	-	-
MW-1	09/23/11					38.45	-	-
MW-1	11/10/11	71.8	57.5	5	62.2	38.30	-	-

TABLE 1 - GROUNDWATER ANALYTICAL RESULTS

K-27 Line Drip								
Location	Date	Benzene (µg/L)	Toluene (µg/L)	Ethylbenzene (µg/L)	Total Xylenes (µg/L)	Depth to Water (ft.)	Depth to LNAPL (ft.)	LNAPL Thickness (ft.)
NMWQCC Standards:		10	750	750	620	NA	NA	NA
MW-1	02/22/12					37.82	-	-
MW-1	05/15/12					37.81	-	-
MW-1	06/05/13	350	61	15	220	38.16	-	-
MW-1	09/10/13	150	32	7	83	38.85	-	-
MW-1	12/11/13	150	100	13	120	38.05	-	-
MW-1	04/04/14	220	51	20	150	37.54	-	-
MW-1	10/22/14	140	53	5.2	73	38.36	-	-

TABLE 1 - GROUNDWATER ANALYTICAL RESULTS

K-27 Line Drip								
Location	Date	Benzene (µg/L)	Toluene (µg/L)	Ethylbenzene (µg/L)	Total Xylenes (µg/L)	Depth to Water (ft.)	Depth to LNAPL (ft.)	LNAPL Thickness (ft.)
NMWQCC Standards:		10	750	750	620	NA	NA	NA
MW-2	08/31/00	5500	14000	670	5800	35.81	-	-
MW-2	09/05/00					37.28	36.11	1.17
MW-2	10/06/00					37.31	36.04	1.27
MW-2	07/03/01					37.37	36.12	1.25
MW-2	09/04/01					36.52	36.25	0.27
MW-2	09/24/01					36.46	36.27	0.19
MW-2	01/02/02					36.97	35.87	1.10
MW-2	04/01/02					36.61	35.67	0.94
MW-2	07/15/02					38.00	-	-
MW-2	10/08/02					37.01	36.94	0.07
MW-2	01/27/03					36.47	36.31	0.16
MW-2	04/26/03					36.88	35.85	1.03
MW-2	07/17/03					38.20	36.75	1.45
MW-2	10/13/03					37.64	37.07	0.57
MW-2	01/19/04					36.72	36.51	0.21
MW-2	04/20/04					36.93	35.91	1.02
MW-2	07/27/04					38.30	36.88	1.42
MW-2	10/20/04					38.23	37.37	0.86
MW-2	01/25/05					42.87	36.77	6.10
MW-2	04/14/05					36.55	36.55	0.00
MW-2	07/19/05					38.16	37.55	0.61
MW-2	10/21/05					38.31	37.06	1.25
MW-2	01/23/06					37.31	36.69	0.62
MW-2	04/28/06					37.01	36.33	0.68
MW-2	07/26/06					38.37	37.42	0.95
MW-2	11/07/06					35.28	35.21	0.07
MW-2	01/17/07					35.35	-	-
MW-2	04/24/07					35.08	-	-
MW-2	07/31/07					36.03	36.01	0.02
MW-2	10/25/07					35.53	-	-
MW-2	01/25/08					35.37	35.34	0.03
MW-2	04/18/08					34.90	-	-
MW-2	07/23/08					35.95	-	-
MW-2	10/13/08					36.39	-	-
MW-2	01/16/09					36.39	36.14	0.25
MW-2	04/06/09					35.98	35.94	0.04
MW-2	08/25/09					37.03	36.97	0.06
MW-2	11/03/09	223	1070	532	2590	37.00	36.96	0.04
MW-2	02/16/10					36.96	-	-
MW-2	05/24/10					36.55	36.48	0.07
MW-2	09/27/10					37.58	37.57	0.01
MW-2	11/08/10	152	547	471	2190	37.72	-	-
MW-2	02/01/11					36.92	-	-
MW-2	05/02/11					36.71	-	-
MW-2	09/23/11					38.01	-	-
MW-2	11/10/11	31.9	101	156	446	37.70	37.69	0.01
MW-2	02/22/12					37.54	37.39	0.15
MW-2	05/15/12					37.48	37.37	0.11
MW-2	06/05/13					NA	NA	-
MW-2	09/10/13					NA	NA	-
MW-2	12/11/13					NA	NA	-
MW-2	04/04/14					NA	NA	-

TABLE 1 - GROUNDWATER ANALYTICAL RESULTS

K-27 Line Drip								
Location	Date	Benzene (µg/L)	Toluene (µg/L)	Ethylbenzene (µg/L)	Total Xylenes (µg/L)	Depth to Water (ft.)	Depth to LNAPL (ft.)	LNAPL Thickness (ft.)
NMWQCC Standards:		10	750	750	620	NA	NA	NA
MW-3	09/05/00	<0.5	<0.5	<0.5	<0.5	37.40	-	-
MW-3	07/03/01	<0.5	<0.5	<0.5	<0.5	37.69	-	-
MW-3	09/04/01					37.50	-	-
MW-3	09/24/01					37.51	-	-
MW-3	04/01/02					37.08	-	-
MW-3	07/15/02					37.13	-	-
MW-3	10/08/02					38.09	-	-
MW-3	07/17/03					38.28	-	-
MW-3	10/13/03					38.34	-	-
MW-3	01/19/04					37.69	-	-
MW-3	04/20/04					37.26	-	-
MW-3	07/27/04					38.36	-	-
MW-3	10/20/04					38.72	-	-
MW-3	01/25/05					38.13	-	-
MW-3	04/14/05					37.74	-	-
MW-3	07/19/05					38.74	-	-
MW-3	10/21/05	<1	<1	<1	<2	38.48	-	-
MW-3	01/23/06					37.89	-	-
MW-3	04/28/06					37.61	-	-
MW-3	07/26/06					38.34	-	-
MW-3	11/07/06	1.1	1.6	0.42 J	2.3	36.50	-	-
MW-3	01/17/07					35.98	-	-
MW-3	04/24/07					35.64	-	-
MW-3	07/31/07					36.59	-	-
MW-3	10/25/07	<1	<1	<1	<2	36.20	-	-
MW-3	01/25/08					36.00	-	-
MW-3	04/18/08					35.56	-	-
MW-3	07/23/08					36.60	-	-
MW-3	10/08/08	<2	<2	<2	<6	37.09	-	-
MW-3	10/13/08					37.09	-	-
MW-3	01/16/09					36.83	-	-
MW-3	04/06/09					36.43	-	-
MW-3	08/25/09					37.62	-	-
MW-3	11/03/09	<1	<1	<1	<2	37.67	-	-
MW-3	02/16/10					37.16	-	-
MW-3	05/24/10					37.02	-	-
MW-3	09/27/10					38.07	-	-
MW-3	11/08/10	<2	<2	<2	<6	37.82	-	-
MW-3	02/01/11					37.39	-	-
MW-3	05/02/11					37.28	-	-
MW-3	09/23/11					38.15	-	-
MW-3	11/10/11	<1	<1	<1	<3	38.13	-	-
MW-3	02/22/12					37.85	-	-
MW-3	05/15/12					37.87	-	-
MW-3	06/05/13	<0.14	<0.30	<0.20	<0.23	38.26	-	-
MW-3	09/10/13					38.95	-	-
MW-3	12/11/13					DRY	-	-
MW-3	04/04/14					DRY	-	-
MW-3	10/22/14					DRY	-	-

TABLE 1 - GROUNDWATER ANALYTICAL RESULTS

K-27 Line Drip								
Location	Date	Benzene (µg/L)	Toluene (µg/L)	Ethylbenzene (µg/L)	Total Xylenes (µg/L)	Depth to Water (ft.)	Depth to LNAPL (ft.)	LNAPL Thickness (ft.)
NMWQCC Standards:		10	750	750	620	NA	NA	NA
MW-4	11/08/06	<1	<1	<1	<2	32.95	-	-
MW-4	01/17/07					32.63	-	-
MW-4	04/24/07					32.30	-	-
MW-4	07/31/07					33.33	-	-
MW-4	10/25/07	<1	<1	<1	<2	32.90	-	-
MW-4	01/25/08					32.64	-	-
MW-4	04/18/08					32.20	-	-
MW-4	07/23/08					33.30	-	-
MW-4	10/08/08	<2	<2	<2	<6	33.79	-	-
MW-4	10/13/08					33.80	-	-
MW-4	01/16/09					33.53	-	-
MW-4	04/06/09					33.18	-	-
MW-4	08/25/09					34.35	-	-
MW-4	11/03/09	<1	<1	<1	<2	34.35	-	-
MW-4	02/16/10					34.05	-	-
MW-4	05/24/10					33.65	-	-
MW-4	09/27/10					34.81	-	-
MW-4	11/08/10	<2	<2	<2	<6	34.55	-	-
MW-4	02/01/11					34.12	-	-
MW-4	05/02/11					33.93	-	-
MW-4	09/23/11					35.22	-	-
MW-4	11/10/11	<1	<1	<1	<3	35.02	-	-
MW-4	02/22/12					34.66	-	-
MW-4	05/15/12					34.61	-	-
MW-4	06/05/13	<0.14	<0.30	<0.20	<0.23	34.96	-	-
MW-4	09/10/13	<0.14	<0.30	<0.20	<0.23	35.61	-	-
MW-4	12/11/13	<0.20	<0.38	<0.20	<0.65	34.73	-	-
MW-4	04/14/14	<0.20	<0.38	<0.20	<0.65	34.21	-	-
MW-4	10/22/14	<0.38	<0.70	<0.50	<1.6	35.10	-	-

Notes:

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

"J" = result is qualified as estimated.

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

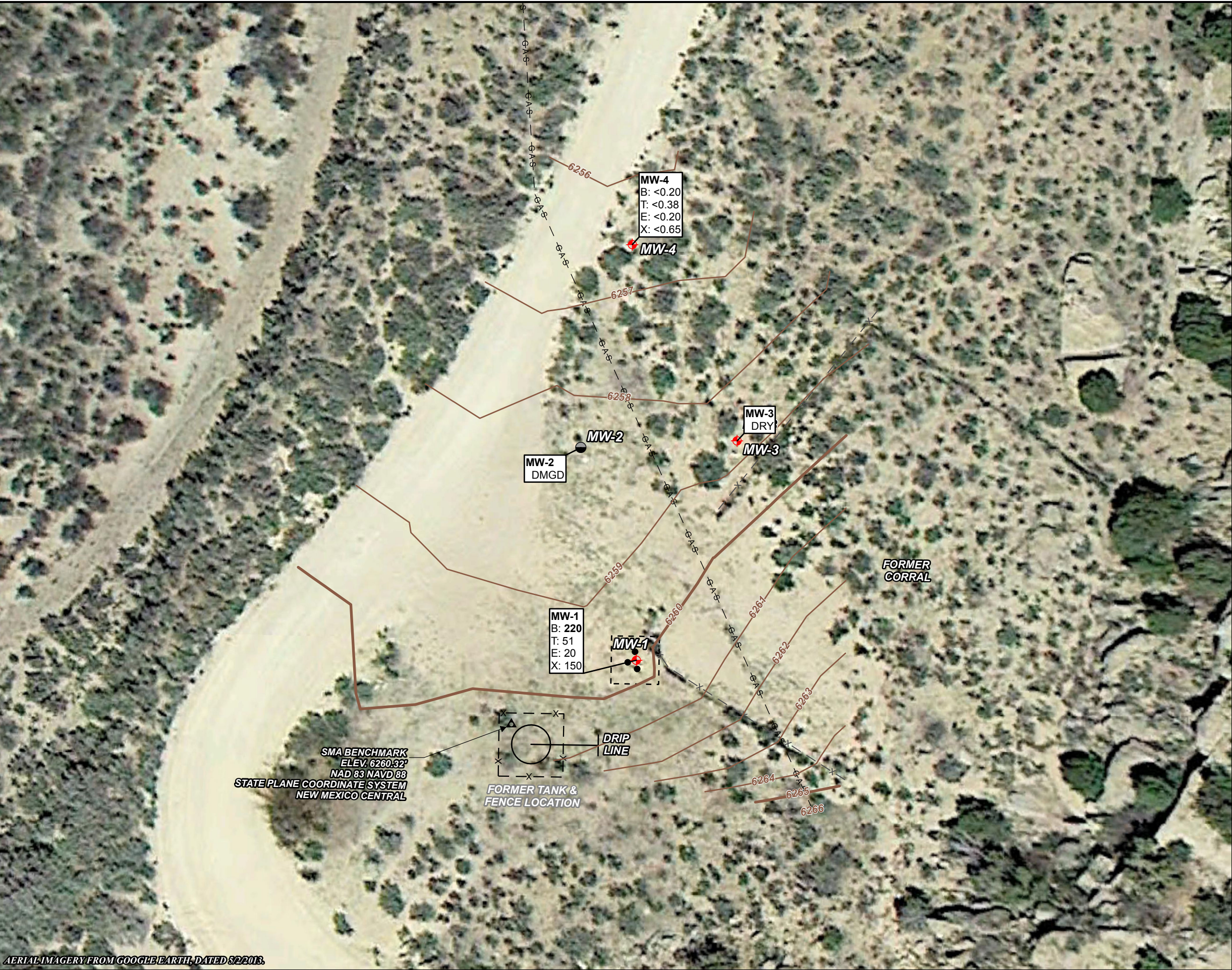
FIGURES

FIGURE 1: APRIL 4, 2014 GROUNDWATER ANALYTICAL RESULTS MAP

FIGURE 2: APRIL 4, 2014 GROUNDWATER ELEVATION MAP

FIGURE 3: OCTOBER 22, 2014 GROUNDWATER ANALYTICAL RESULTS MAP

FIGURE 4: OCTOBER 22, 2014 GROUNDWATER ELEVATION MAP

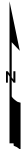


LEGEND:

- APPROXIMATE GROUND SURFACE CONTOUR AND ELEVATION, FEET
- ACCESS ROAD
- NATURAL GAS LINE
- MONITORING WELL
- DAMAGED MONITORING WELL
- SMA BENCHMARK

EXPLANATION OF ANALYTES AND APPLICABLE STANDARDS:
RESULTS IN **BOLDFACE** TYPE INDICATE CONCENTRATION IN EXCESS OF THE STANDARD FOR THAT ANALYTE.
NS = NOT SAMPLED
µg/L = MICROGRAMS PER LITER
<0.30 = BELOW METHOD DETECTION LIMIT

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	10/17/2014	CCL	CCL	DAW

TITLE:
K27 LD072
GROUNDWATER ANALYTICAL RESULTS
SAMPLED APRIL 4, 2014

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



Figure No.:

1



LEGEND:

- APPROXIMATE GROUND SURFACE CONTOUR AND ELEVATION, FEET
- ACCESS ROAD
- NATURAL GAS LINE
- MONITORING WELL
- DAMAGED MONITORING WELL
- SMA BENCHMARK

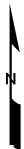


LEGEND:

- APPROXIMATE GROUND SURFACE CONTOUR AND ELEVATION, FEET
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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

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



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

TITLE:
**K27 LD072
GROUNDWATER ANALYTICAL RESULTS
SAMPLED OCTOBER 22, 2014**

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



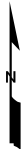
Figure No.:
3



AERIAL IMAGERY FROM GOOGLE EARTH, DATED 8/2/2013.

LEGEND:

- APPROXIMATE GROUND SURFACE CONTOUR AND ELEVATION, FEET
- ACCESS ROAD
- NATURAL GAS LINE
- MONITORING WELL
- DAMAGED MONITORING WELL
- SMA BENCHMARK



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

TITLE: **K27 LD072
GROUNDWATER ELEVATION MAP
GAUGED OCTOBER 22, 2014**

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



Figure No.:

4

APPENDICES

APPENDIX A - APRIL 4, 2014 GROUNDWATER SAMPLING ANALYTICAL REPORT

OCTOBER 22, 2014 GROUNDWATER SAMPLING ANALYTICAL REPORT

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

ANALYTICAL REPORT

TestAmerica Laboratories, Inc.

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

TestAmerica Job ID: 560-46606-1

Client Project/Site: K-27, 4/4/14 BTEX

For:

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

Attn: Ms. Sarah Gardner



Authorized for release by:
4/21/2014 10:14:20 AM

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

LINKS

Review your project
results through

TotalAccess

Have a Question?



Visit us at:

www.testamericainc.com

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

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

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

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Definitions/Glossary

Client: MWH Americas Inc
Project/Site: K-27, 4/4/14 BTEX

TestAmerica Job ID: 560-46606-1

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
CNF	Contains no Free Liquid
DER	Duplicate error ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision level concentration
MDA	Minimum detectable activity
EDL	Estimated Detection Limit
MDC	Minimum detectable concentration
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RER	Relative error ratio
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

Case Narrative

Client: MWH Americas Inc
Project/Site: K-27, 4/4/14 BTEX

TestAmerica Job ID: 560-46606-1

Job ID: 560-46606-1

Laboratory: TestAmerica Corpus Christi

Narrative

Job Narrative
560-46606-1

Comments

No additional comments.

Receipt

The samples were received on 4/8/2014 9:45 AM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperature of the cooler at receipt was 1.8° C.

GC VOA

Method(s) 8021B: LCS and MB are also designated as ICV and ICB for calibration...batch 100781

No other analytical or quality issues were noted.

Organic Prep

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

Detection Summary

Client: MWH Americas Inc
Project/Site: K-27, 4/4/14 BTEX

TestAmerica Job ID: 560-46606-1

Client Sample ID: MW-1

Lab Sample ID: 560-46606-1

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Benzene	220		10	1.0	ug/L	5		8021B	Total/NA
Toluene	51		10	1.9	ug/L	5		8021B	Total/NA
Ethylbenzene	20		10	1.0	ug/L	5		8021B	Total/NA
Xylenes, Total	150		10	3.2	ug/L	5		8021B	Total/NA

Client Sample ID: MW-4

Lab Sample ID: 560-46606-2

No Detections.

This Detection Summary does not include radiochemical test results.

TestAmerica Corpus Christi

Client Sample Results

Client: MWH Americas Inc
Project/Site: K-27, 4/4/14 BTEX

TestAmerica Job ID: 560-46606-1

Client Sample ID: MW-1

Date Collected: 04/04/14 12:10

Date Received: 04/08/14 09:45

Lab Sample ID: 560-46606-1

Matrix: Water

Method: 8021B - Volatile Organic Compounds (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	220		10	1.0	ug/L			04/14/14 20:14	5
Toluene	51		10	1.9	ug/L			04/14/14 20:14	5
Ethylbenzene	20		10	1.0	ug/L			04/14/14 20:14	5
Xylenes, Total	150		10	3.2	ug/L			04/14/14 20:14	5

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	94		58 - 129		04/14/14 20:14	5
Trifluorotoluene (Surr)	110		54 - 130		04/14/14 20:14	5

Client Sample ID: MW-4

Date Collected: 04/04/14 12:00

Date Received: 04/08/14 09:45

Lab Sample ID: 560-46606-2

Matrix: Water

Method: 8021B - Volatile Organic Compounds (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	<0.20		2.0	0.20	ug/L			04/14/14 20:41	1
Toluene	<0.38		2.0	0.38	ug/L			04/14/14 20:41	1
Ethylbenzene	<0.20		2.0	0.20	ug/L			04/14/14 20:41	1
Xylenes, Total	<0.65		2.0	0.65	ug/L			04/14/14 20:41	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	96		58 - 129		04/14/14 20:41	1
Trifluorotoluene (Surr)	100		54 - 130		04/14/14 20:41	1

QC Sample Results

Client: MWH Americas Inc
Project/Site: K-27, 4/4/14 BTEX

TestAmerica Job ID: 560-46606-1

Method: 8021B - Volatile Organic Compounds (GC)

Lab Sample ID: MB 560-100789/7

Matrix: Water

Analysis Batch: 100789

Client Sample ID: Method Blank

Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	<0.20		2.0	0.20	ug/L			04/14/14 16:55	1
Toluene	<0.38		2.0	0.38	ug/L			04/14/14 16:55	1
Ethylbenzene	<0.20		2.0	0.20	ug/L			04/14/14 16:55	1
Xylenes, Total	<0.65		2.0	0.65	ug/L			04/14/14 16:55	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	88		58 - 129		04/14/14 16:55	1
Trifluorotoluene (Surr)	100		54 - 130		04/14/14 16:55	1

Lab Sample ID: LCS 560-100789/6

Matrix: Water

Analysis Batch: 100789

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Benzene	40.0	38.5		ug/L		96	70 - 130
Toluene	40.0	40.6		ug/L		101	70 - 130
Ethylbenzene	40.0	39.6		ug/L		99	70 - 130
Xylenes, Total	120	114		ug/L		95	70 - 130

Surrogate	LCS %Recovery	LCS Qualifier	Limits
4-Bromofluorobenzene (Surr)	104		58 - 129
Trifluorotoluene (Surr)	106		54 - 130

TestAmerica Corpus Christi

Certification Summary

Client: MWH Americas Inc
Project/Site: K-27, 4/4/14 BTEX

TestAmerica Job ID: 560-46606-1

Laboratory: TestAmerica Corpus Christi

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

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

Method Summary

Client: MWH Americas Inc
Project/Site: K-27, 4/4/14 BTEX

TestAmerica Job ID: 560-46606-1

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

Protocol References:

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

Laboratory References:

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

Sample Summary

Client: MWH Americas Inc
Project/Site: K-27, 4/4/14 BTEX

TestAmerica Job ID: 560-46606-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
560-46606-1	MW-1	Water	04/04/14 12:10	04/08/14 09:45
560-46606-2	MW-4	Water	04/04/14 12:00	04/08/14 09:45

Chain of Custody Record

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Login Sample Receipt Checklist

Client: MWH Americas Inc

Job Number: 560-46606-1

Login Number: 46606

List Source: TestAmerica Corpus Christi

List Number: 1

Creator: Rood, Vivian R

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

ANALYTICAL REPORT

TestAmerica Laboratories, Inc.

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

TestAmerica Job ID: 400-97697-1
Client Project/Site: KM K27 LD072

For:

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

Attn: Ms. Sarah Gardner



Authorized for release by:

11/6/2014 2:00:01 PM

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

bernard.kirkland@testamericainc.com

Designee for

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

neal.salcher@testamericainc.com

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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.

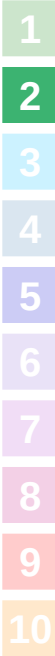


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Definitions/Glossary

Client: MWH Americas Inc
Project/Site: KM K27 LD072

TestAmerica Job ID: 400-97697-1

Qualifiers

GC/MS VOA

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

Glossary

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

Case Narrative

Client: MWH Americas Inc
Project/Site: KM K27 LD072

TestAmerica Job ID: 400-97697-1

Job ID: 400-97697-1

Laboratory: TestAmerica Pensacola

Narrative

Job Narrative 400-97697-1

Comments

No additional comments.

Receipt

The samples were received on 10/28/2014 9:39 AM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperature of the cooler at receipt was 5.8° C.

GC/MS VOA

Method(s) 8260B: The Benzene result in the trip blank was verified by re-analysis. The original results are being reported. (400-97697-3), TRIP BLANK (400-97697-3)

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 K27 LD072

TestAmerica Job ID: 400-97697-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
400-97697-1	MW-1	Water	10/22/14 15:30	10/28/14 09:39
400-97697-2	MW-4	Water	10/22/14 15:35	10/28/14 09:39
400-97697-3	TRIP BLANK	Water	10/22/14 15:45	10/28/14 09:39

Client Sample Results

Client: MWH Americas Inc
Project/Site: KM K27 LD072

TestAmerica Job ID: 400-97697-1

Client Sample ID: MW-1

Date Collected: 10/22/14 15:30

Date Received: 10/28/14 09:39

Lab Sample ID: 400-97697-1

Matrix: Water

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	140		1.0	0.38	ug/L			11/01/14 15:10	1
Ethylbenzene	5.2		1.0	0.50	ug/L			11/01/14 15:10	1
Toluene	53		1.0	0.70	ug/L			11/01/14 15:10	1
Xylenes, Total	73		10	1.6	ug/L			11/01/14 15:10	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene	103		78 - 118					11/01/14 15:10	1
Dibromofluoromethane	102		81 - 121					11/01/14 15:10	1
Toluene-d8 (Surr)	97		80 - 120					11/01/14 15:10	1

Client Sample ID: MW-4

Date Collected: 10/22/14 15:35

Date Received: 10/28/14 09:39

Lab Sample ID: 400-97697-2

Matrix: Water

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	<0.38		1.0	0.38	ug/L			11/01/14 15:35	1
Ethylbenzene	<0.50		1.0	0.50	ug/L			11/01/14 15:35	1
Toluene	<0.70		1.0	0.70	ug/L			11/01/14 15:35	1
Xylenes, Total	<1.6		10	1.6	ug/L			11/01/14 15:35	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene	92		78 - 118					11/01/14 15:35	1
Dibromofluoromethane	108		81 - 121					11/01/14 15:35	1
Toluene-d8 (Surr)	91		80 - 120					11/01/14 15:35	1

Client Sample ID: TRIP BLANK

Date Collected: 10/22/14 15:45

Date Received: 10/28/14 09:39

Lab Sample ID: 400-97697-3

Matrix: Water

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	0.67	J	1.0	0.38	ug/L			11/01/14 16:00	1
Ethylbenzene	<0.50		1.0	0.50	ug/L			11/01/14 16:00	1
Toluene	<0.70		1.0	0.70	ug/L			11/01/14 16:00	1
Xylenes, Total	<1.6		10	1.6	ug/L			11/01/14 16:00	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene	90		78 - 118					11/01/14 16:00	1
Dibromofluoromethane	106		81 - 121					11/01/14 16:00	1
Toluene-d8 (Surr)	90		80 - 120					11/01/14 16:00	1

TestAmerica Pensacola

QC Sample Results

Client: MWH Americas Inc
Project/Site: KM K27 LD072

TestAmerica Job ID: 400-97697-1

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

Lab Sample ID: MB 400-235149/4

Matrix: Water

Analysis Batch: 235149

Client Sample ID: Method Blank

Prep Type: Total/NA

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

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

Lab Sample ID: LCS 400-235149/1002

Matrix: Water

Analysis Batch: 235149

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Benzene	50.0	58.9		ug/L		118	79 - 120
Ethylbenzene	50.0	52.1		ug/L		104	80 - 120
Toluene	50.0	50.3		ug/L		101	80 - 120
Xylenes, Total	100	105		ug/L		105	70 - 130

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

Lab Chronicle

Client: MWH Americas Inc
Project/Site: KM K27 LD072

TestAmerica Job ID: 400-97697-1

Client Sample ID: MW-1

Date Collected: 10/22/14 15:30

Date Received: 10/28/14 09:39

Lab Sample ID: 400-97697-1

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	235149	11/01/14 15:10	CLN	TAL PEN

Client Sample ID: MW-4

Date Collected: 10/22/14 15:35

Date Received: 10/28/14 09:39

Lab Sample ID: 400-97697-2

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	235149	11/01/14 15:35	CLN	TAL PEN

Client Sample ID: TRIP BLANK

Date Collected: 10/22/14 15:45

Date Received: 10/28/14 09:39

Lab Sample ID: 400-97697-3

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	235149	11/01/14 16:00	CLN	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 K27 LD072

TestAmerica Job ID: 400-97697-1

Method	Method Description	Protocol	Laboratory
8260B	Volatile Organic Compounds (GC/MS)	SW846	TAL PEN

Protocol References:

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

Laboratory References:

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

Chain of Custody Record

Client Information Client Contact: Ms. Sarah Gardner Company: MWH Americas Inc Address: 1801 California Street Suite 2900 City: Denver State/Zip: CO, 80202 Phone: 303-291-2239(Tel) Email: sarah.gardner@mwhglobal.com Project Name: KM K27 LD072 Site:		Sampler: Chris Lee, Sarah Gardner Lab PM: Salcher, Neal Phone: 303 291-2242 E-Mail: neal.salcher@testamericainc.com		Carrier Tracking No(s): COC No: 560-15218-1514.1 Page: Page 1 of 1 Job #:					
Due Date Requested: TAT Requested (days): PO #: Purchase Order Requested WO #: As per Enfos Project #: 56004971 SSOW#:		Analysis Requested							
Sample Identification MW-1 MW-4 TRIP BLANK		Sample Date 10/22/14 10/22/14 10/22/14	Sample Time 1530 1535 1545	Sample Type (C=Comp, G=grab) G G G	Matrix (W=water, S=solid, O=wastefoil, BT=Tissue, A=Air) Water Water Water Water Water	Field Filtered Sample (Yes or No) Perform MS/MSD (Yes or No) 8260B - BTEX	Total Number of Containers 400-97697 COC	Preservation Codes: A - HCL B - NaOH C - Zn Acetate D - Nitric Acid E - NaHSO4 F - MeOH G - Anichlor H - Ascorbic Acid I - Ice J - DI Water K - EDTA L - EDA Other: M - Hexane N - None O - AsNaO2 P - Na2O4S Q - Na2SO3 R - Na2S2O3 S - H2SO4 T - TSP Dodecahydrate U - Acetone V - MCAA W - pH 4-5 Z - other (specify)	Special Instructions/Note:
Possible Hazard Identification ☒ Non-Hazard ☐ Flammable ☐ Skin Irritant Deliverable Requested: I, II, III, IV, Other (specify)		☐ 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					
Empty Kit Relinquished by:		Date:		Method of Shipment:					
Relinquished by: <i>Chris Lee</i> Relinquished by:		Date/Time: 10/27/14 915 Date/Time:		Date/Time: 10/28/14 0939 Date/Time:					
Relinquished by:		Date/Time:		Date/Time:					
Custody Seals Intact: Δ Yes Δ No		Custody Seal No.:		Cooler Temperature(s) °C and Other Remarks: 5.8°C TH-2					