

Kerr-McGee Oil & Gas Onshore LP
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June 9, 2015

Mr. Robert Chesson
Environmental Protection Specialist
Colorado Oil and Gas Conservation Commission
1120 Lincoln Street, Suite 801
Denver, Colorado 80203

**Re: No Further Action Status Request
HSR-Eachus 4, 5-23
COGCC Remediation No. 3950
API # 05-123-18125
SENW 23-T3N-R65W**

Dear Mr. Chesson:

Kerr-McGee Oil and Gas Onshore, LP (Kerr-McGee) is submitting this letter report as an update to the Form 27, which was submitted to the Colorado Oil & Gas Conservation Commission (COGCC) on July 11, 2007, and an Update Report, which was submitted on May 20, 2013. As summarized below, three releases occurred at the subject location between December 2006 and October 2012. A topographic Site Location Map is attached as Figure 1. Since all three releases occurred at the tank battery, all three were addressed under COGCC Remediation No. 3950. Kerr-McGee is requesting a No Further Action (NFA) status for this site.

On December 2, 2006, 13 barrels (bbls) of oil overflowed the water sump and was discovered inside containment at the HSR-Eachus 3, 4, 5-23 tank battery. Approximately 13 bbls were recovered from inside containment using a vacuum truck. Approximately 810 cubic yards of petroleum hydrocarbon impacted soil were excavated and transported to the Kerr-McGee land treatment facility in Weld County, Colorado. Kerr-McGee contracted LT Environmental Inc. (LTE) to document field activities, collect confirmation soil samples, assess the groundwater impact, and conduct quarterly groundwater monitoring.

Confirmation soil samples were collected from the excavation sidewalls for total petroleum hydrocarbon (TPH) analysis by United States Environmental Protection Agency (USEPA) Methods 8015 and 8260B. The analytical results confirmed that TPH concentrations were below the COGCC sensitive area allowable level of 1,000 milligrams per kilogram (mg/kg), which was in effect prior to the April 2009 COGCC rules changes, at the extent of the excavation.

Groundwater was encountered in the excavation at approximately 6 feet below ground surface (bgs). One groundwater sample (EGW01) was collected from the open excavation and submitted for laboratory analysis of benzene, toluene, ethylbenzene, and total xylenes (BTEX) by USEPA Method 8260B. Laboratory results for excavation groundwater sample EGW01 indicated that

benzene, toluene, and total xylenes concentrations exceeded the Colorado Groundwater Quality Standards (CGWQS) at 880 micrograms per liter ($\mu\text{g/L}$), 1,800 $\mu\text{g/L}$, and 2,300 $\mu\text{g/L}$, respectively. Five gallons of MicroBlaze[®] microbial solution were applied to the excavation groundwater and exposed smear zone prior to backfilling the excavation.

In order to assess the extent and magnitude of the residual dissolved phase groundwater impacts, three monitoring wells (MW01 through MW03) were installed at the site in May 2007. The wells were sampled for BTEX analysis in June 2007. BTEX concentrations exceeded the CGWQS in monitoring wells MW01 and MW03 during the June 2007 monitoring event, monitoring well MW02 was not sampled during the June 2007 monitoring event due to the presence of free product in the well.

Based on the June 2007 groundwater analytical results and in order to establish points of compliance (POC), twelve additional groundwater monitoring wells (MW04 through MW15) were installed at the site between August 2007 and February 2009. Groundwater monitoring continued on a quarterly basis. Based on the groundwater analytical results for the June 2009 monitoring event, groundwater monitoring wells MW04, MW07, MW08, MW11, MW14, and MW15 were designated as POC wells.

On August 3, 2009, a corrosion hole was discovered in a bypass line at the site. The volume of the release is unknown. Approximately 530 cubic yards of petroleum hydrocarbon impacted soil were excavated and transported to the Kerr-McGee land treatment facility in Weld County, Colorado. Confirmation soil samples were collected from the excavation sidewalls for TPH and BTEX analyses. The analytical results confirmed that TPH and BTEX concentrations were below the COGCC Table 910-1 allowable levels at the extent of the excavation.

Groundwater was encountered in the August 2009 excavation at approximately 5 feet bgs. One groundwater sample (GW01) was collected from the open excavation and submitted for laboratory analysis of BTEX. Laboratory results for excavation groundwater sample GW01 indicated that the benzene concentration continued to exceed the CGWQS at 38 $\mu\text{g/L}$. Ten gallons of MicroBlaze[®] microbial solution were applied to the excavation groundwater and exposed smear zone prior to backfilling the excavation.

Monitoring well MW02 was destroyed during the August 2009 excavation activities and was replaced by well MW02R prior to the December 2009 monitoring event. In December 2010 monitoring well MW04 was destroyed. In June 2011 monitoring wells MW03, MW05, MW10, MW12 and MW13 were destroyed. Therefore, in July 2011, replacement monitoring wells MW04R, MW05R, MW10R, MW12R, and MW13R were installed. In September 2011, monitoring well MW07 was removed from the monitoring program with COGCC approval based on groundwater analytical data showing BTEX concentrations below the CGWQS for four or more consecutive quarterly monitoring events. Groundwater monitoring continued on a quarterly basis.

On October 2, 2012, a field crew discovered fluid surfacing above a leaking dumphine. The volume of the release is unknown. Approximately 300 cubic yards of petroleum hydrocarbon impacted soil were excavated and transported to the Kerr-McGee land treatment facility in Weld

County, Colorado. Confirmation soil samples were collected from the excavation sidewalls for TPH and BTEX analyses. The laboratory analytical results confirmed that TPH and BTEX concentrations were below COGCC Table 910-1 allowable levels at the extent of the excavation.

Groundwater was encountered in the October 2012 excavation at approximately 6 feet bgs. One groundwater sample (GW01) was collected from the open excavation and submitted for laboratory analysis of BTEX. Laboratory results for excavation groundwater sample GW01 indicated that the benzene concentration continued to exceed the CGWQS at 8.5 µg/L. One hundred pounds of BOS 200®, a carbon-based bioremediation product, was applied to the groundwater prior to backfilling the excavation. A Site Map showing the general site layout, excavation outlines, and monitoring well locations is provided as Figure 2.

Quarterly groundwater monitoring continued following the October 2012 excavation. In August 2013, monitoring wells MW06, MW13R, and MW15 were removed from the monitoring program with COGCC approval based on groundwater analytical data showing BTEX concentrations below the CGWQS for four or more consecutive quarterly monitoring events.

On November 4, 2013, all the groundwater monitoring wells remaining in the monitoring program were surveyed to obtain relative groundwater and monitoring well elevation data. The survey data confirmed the groundwater flow direction at the site is generally to the northwest and west. The relative groundwater elevation data is provided in Table 1.

On November 22, 2013, monitoring well MW16 was installed at the site. This monitoring well was installed to provide a POC down-gradient of monitoring well MW09. Based on the groundwater analytical results for the December 2013 quarterly monitoring event, wells MW04R, MW08, MW11R, MW13R, MW14, and MW16 were designated as POC wells. Groundwater monitoring continued on a quarterly basis.

Kerr-McGee contracted LTE to implement a carbon slurry injection program designed to remediate the residual dissolved-phase BTEX impacts to groundwater, as outlined in the Remediation Injections Rule Authorization Application submitted by Kerr-McGee to the USEPA Region 8 Underground Injection Control Unit in February 2014 (see Appendix A). The objective of the injection program was to reduce the residual dissolved-phase benzene concentrations in monitoring wells MW01 and MW02R to below the CGWQS. On March 25, 2014, LTE oversaw the injection of approximately 960 pounds (dry weight) of BOS 200® that was mixed with water and cultured microbes to form an injectable carbon slurry. The BOS 200® injectate is comprised of activated carbon, micro-nutrients, and sulfate that is inoculated with facultative bacteria and placed in a water based matrix. The BOS 200® product is designed to enhance petroleum hydrocarbon degradation by capturing the petroleum hydrocarbons in a carbon matrix and promoting microbial metabolism of the hydrocarbons under both aerobic and anaerobic conditions. Static groundwater monitoring continued on a quarterly basis following completion of the injection program.

BTEX concentrations were below the CGWQS site-wide during the second post-injection monitoring event conducted in June 2014. As of the March 2015 quarterly monitoring event, BTEX concentrations in the eleven monitoring wells (MW01, MW02R, MW04R, MW05R,

MW08, MW09, MW10R, MW11R, MW12R, MW14, and MW16) remaining in the monitoring program had remained below the CGWQS for four consecutive quarterly monitoring events. The groundwater analytical results are summarized in Table 1 and the laboratory analytical reports for the four compliant monitoring events included in Appendix B. Additionally, groundwater elevation data from the last four quarterly monitoring events was used to generate the Groundwater Elevation Contour Maps provided as Figure 3A, Figure 3B, Figure 3C, and Figure 3D, respectively.

Remedial actions employed at the site included excavation of the source area, application of the Microblaze® and BOS 200® amendments to impacted groundwater in the open excavations, and implementation of the BOS 200® injection program. Based on these remedial actions and analytical data showing site-wide BTEX concentrations in groundwater below the CGWQS for four consecutive monitoring events, Kerr-McGee is requesting NFA status for this site.

Feel free to contact me at 970-336-3500 if you have any questions regarding this information.

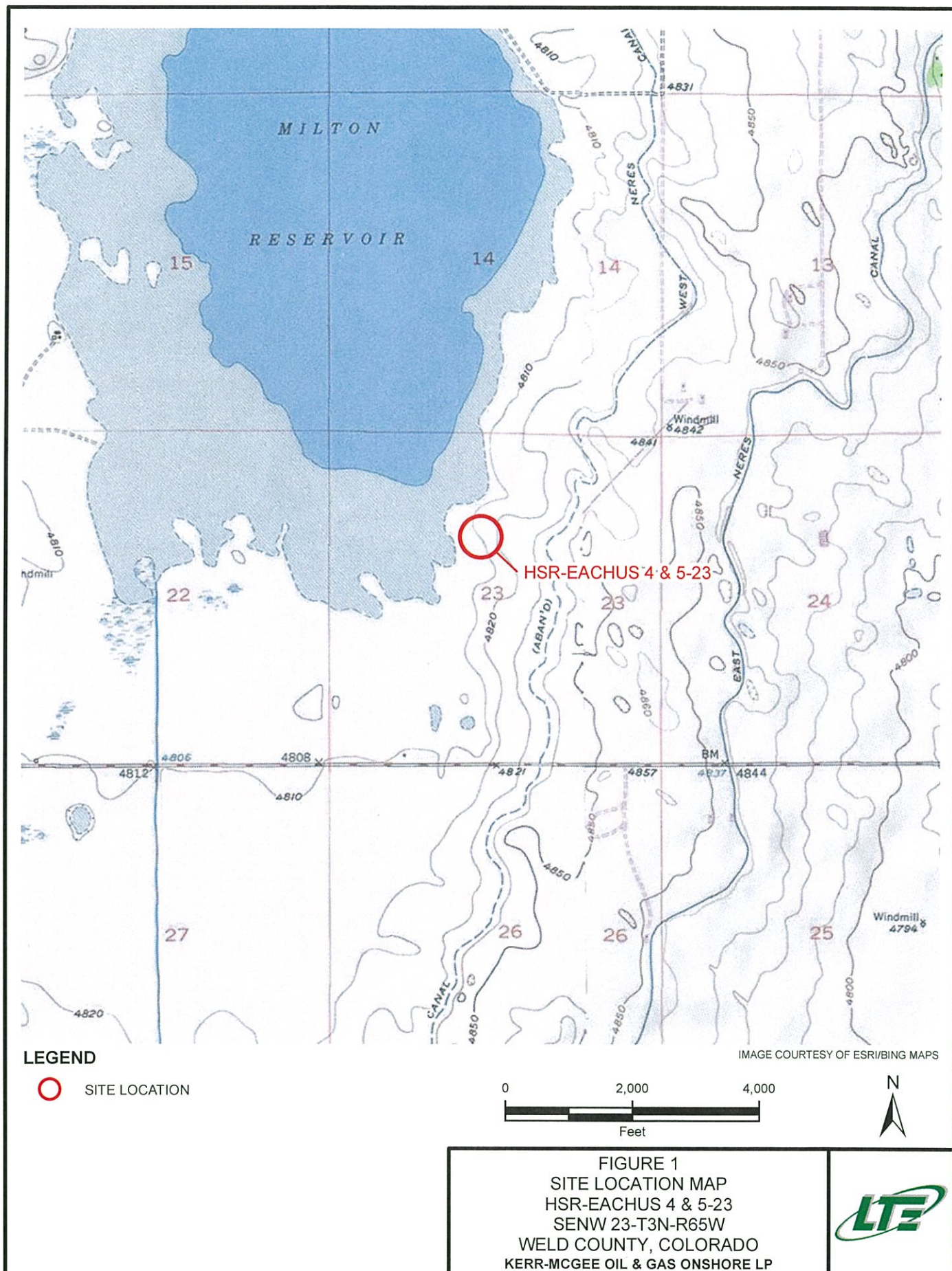
Sincerely,

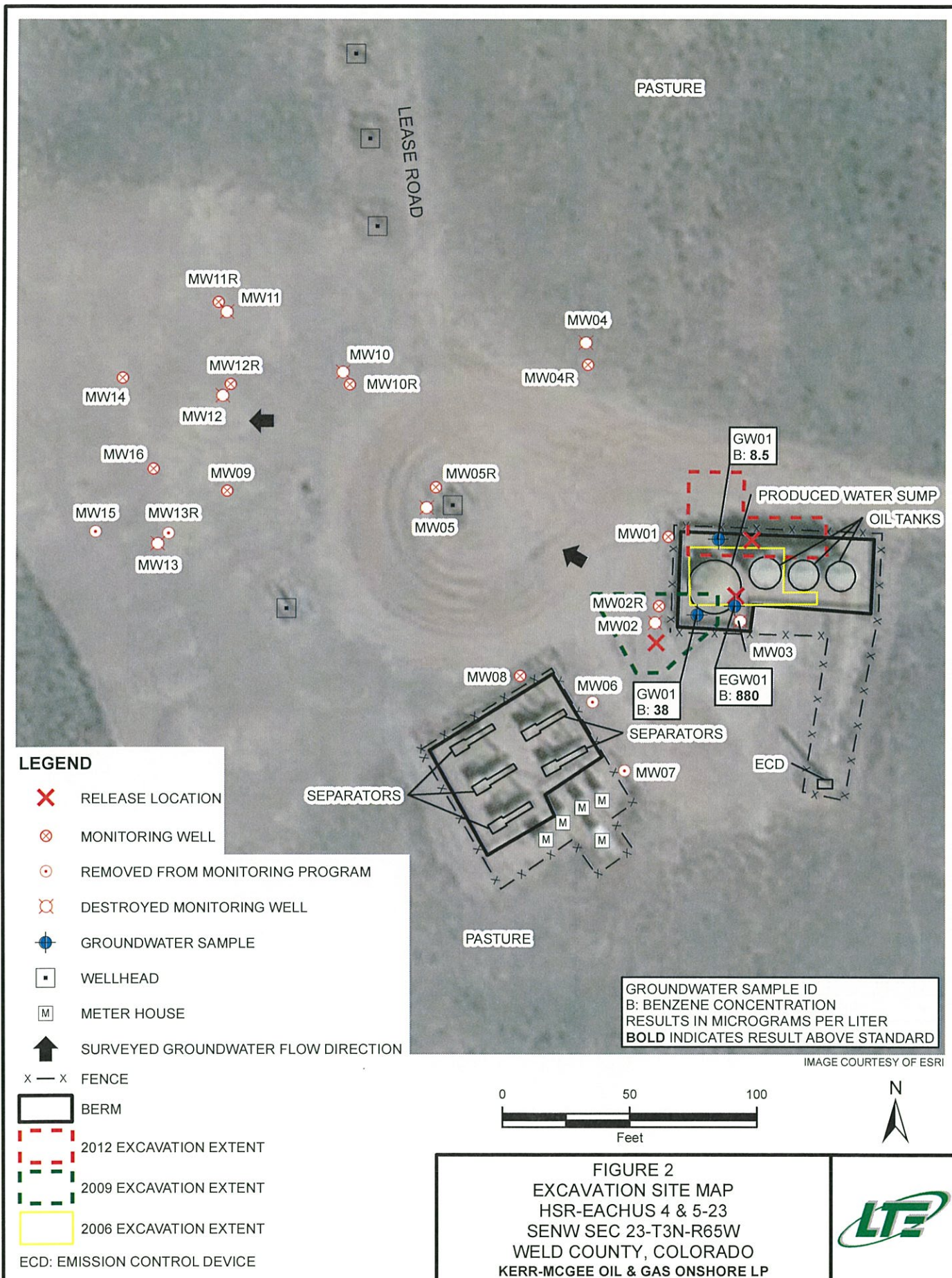
Kerr-McGee Oil & Gas Onshore, LP

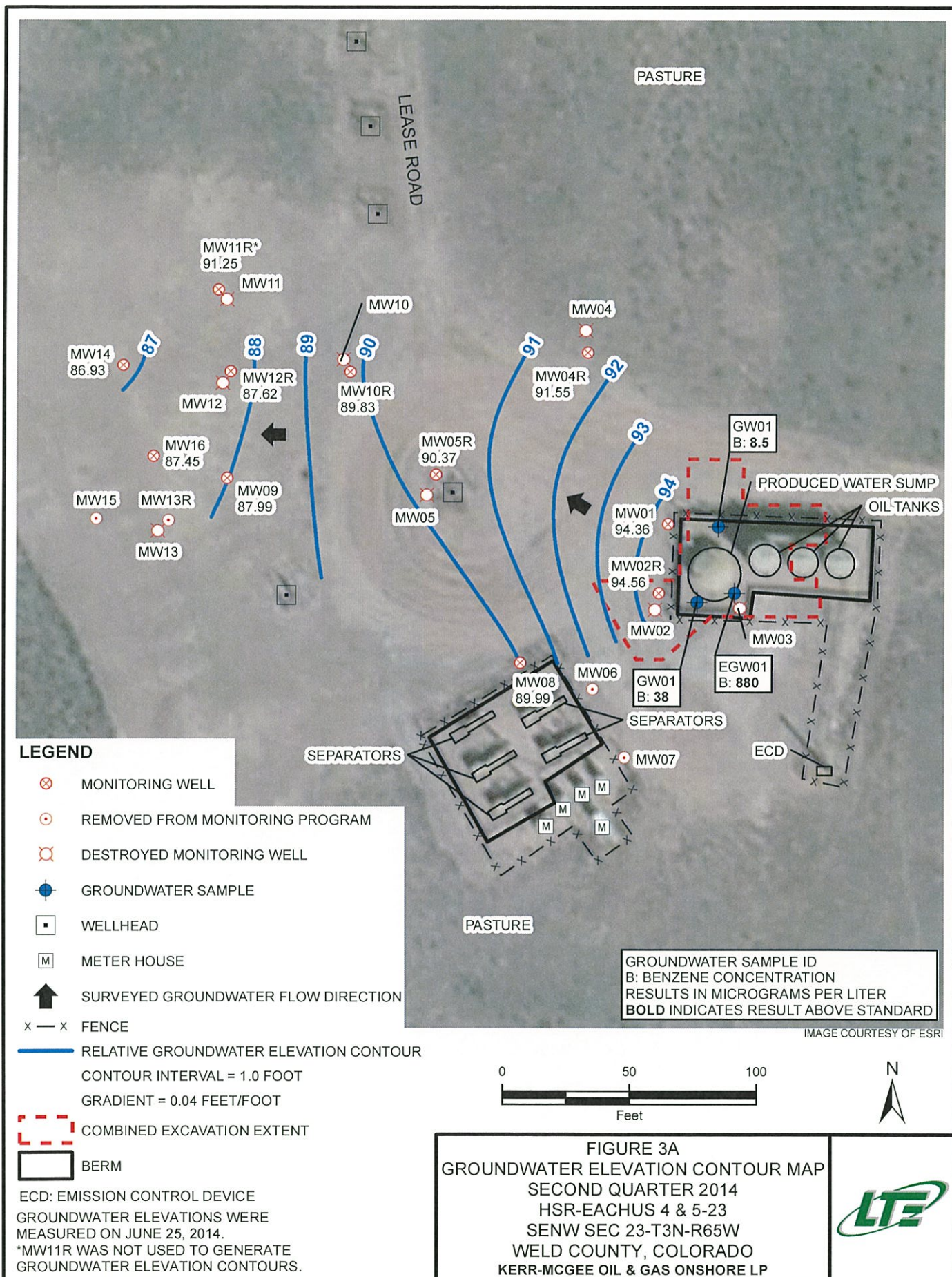


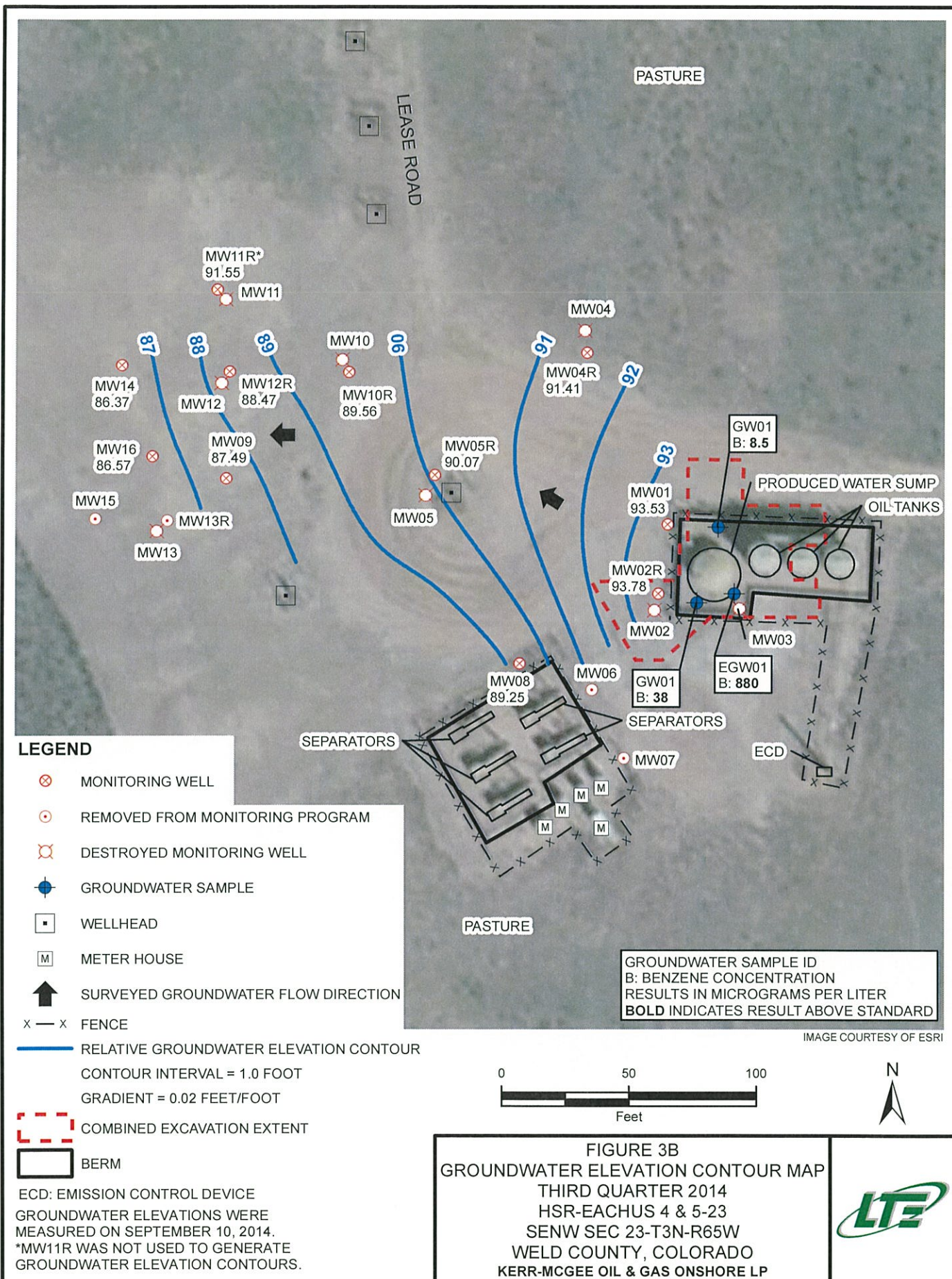
Phillip L. Hamlin
Senior HSE Representative

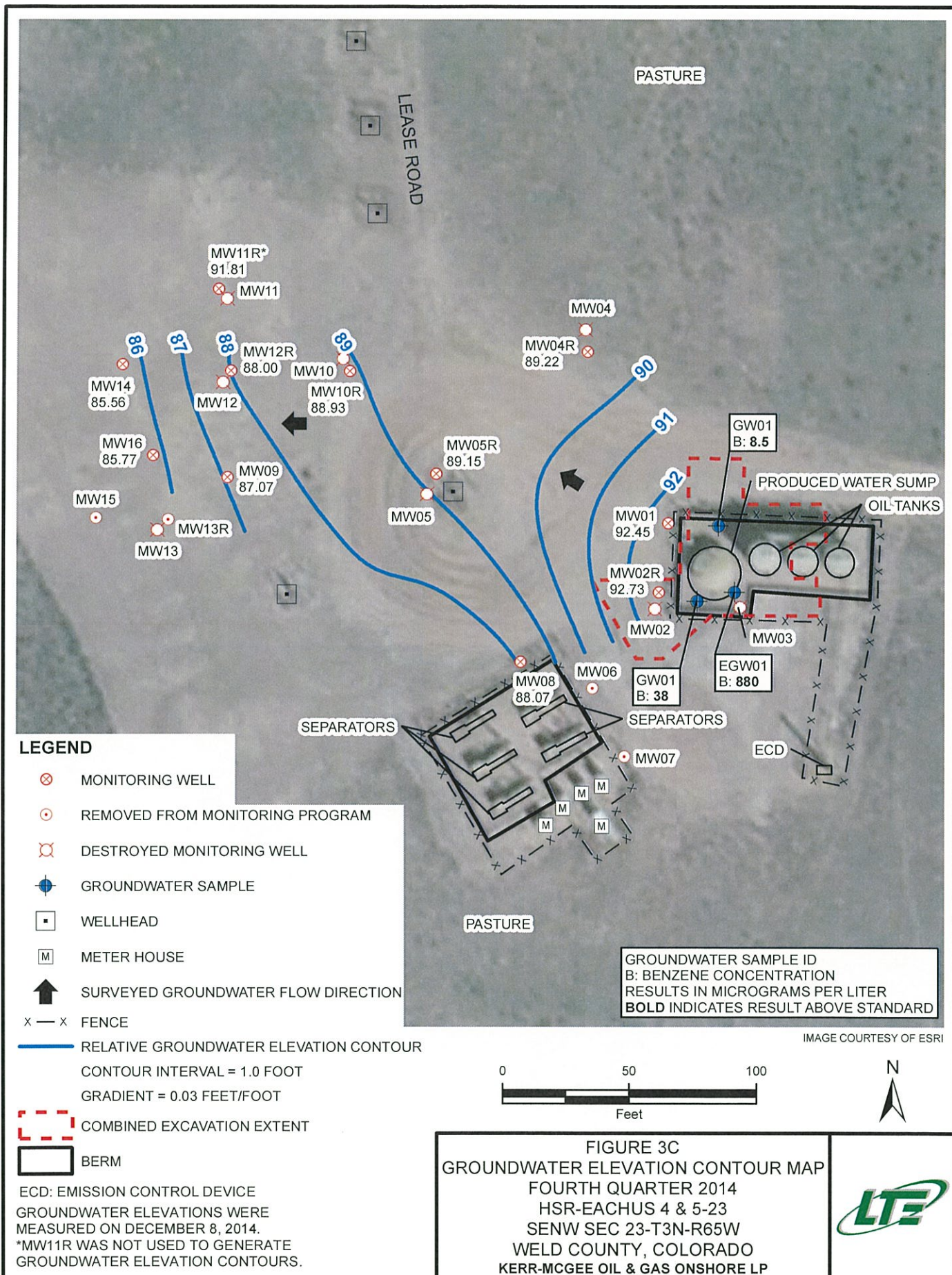
Attachments











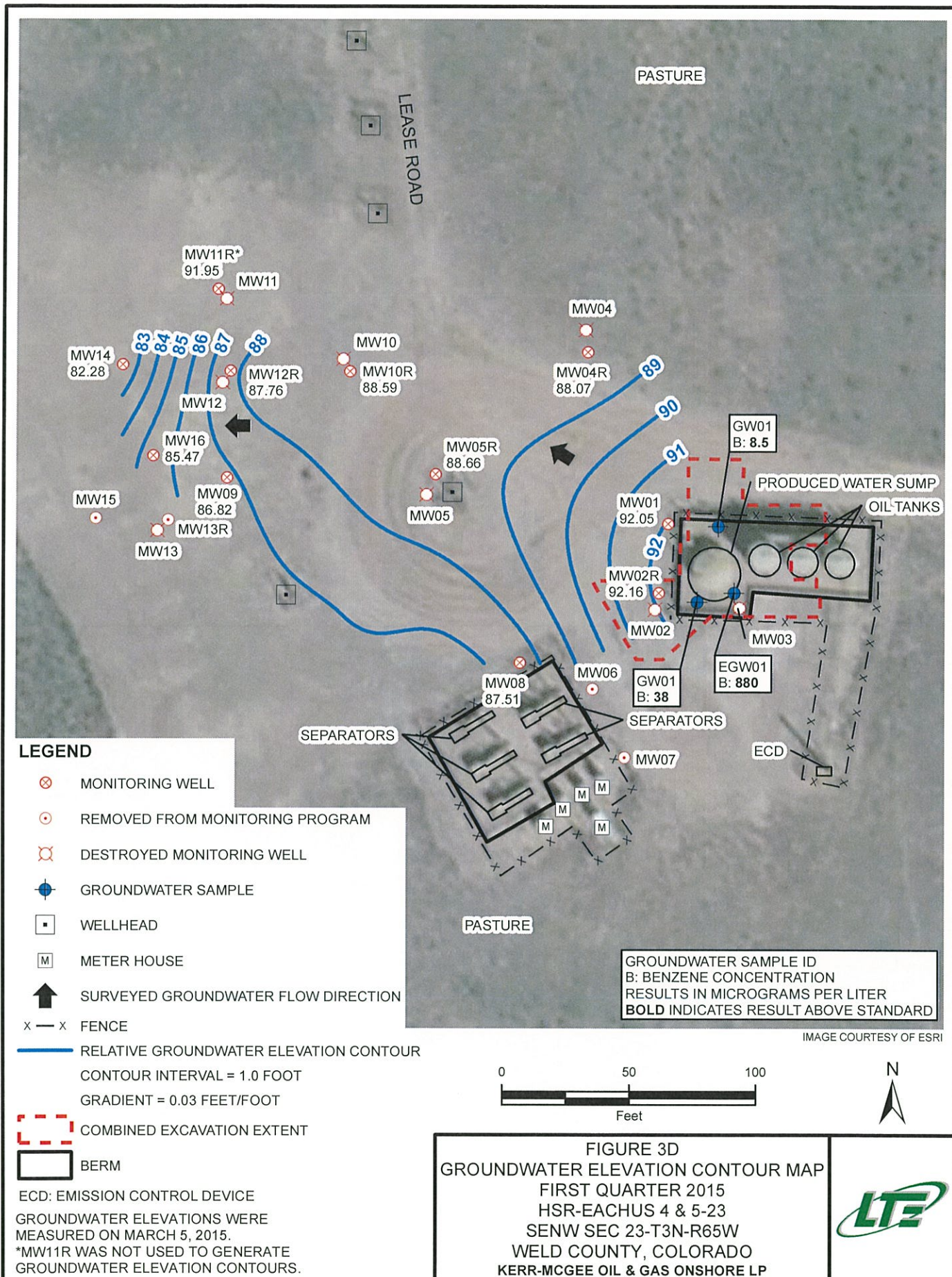


TABLE 1
GROUNDWATER ANALYTICAL AND FIELD RESULTS
HSR-EACHUS 3, 4, 5-23
WELD COUNTY, COLORADO
KERR-MCGEE OIL & GAS ONSHORE LP

Well Name	Date	Benzene (ug/L)	Toluene (ug/L)	Ethylbenzene (ug/L)	Total Xylenes (ug/L)	Depth Water/ (Product Thickness) (ft bgs)	Relative GW Elev. (ft)
EGW01	12/18/2006	880	1800	270	2300	NM	NA
GW01	09/08/2009	38	16	4.1	160	NM	NA
	10/04/2012	8.5	37	4.2	62	NM	NA
MW01	06/07/2007	1200	940	240	1700	6.15	91.80
	09/20/2007	590	120	42	650	4.25	92.50
	12/21/2007	110	<1.0	55	20	5.66	91.09
	03/19/2008	5.7	<1.0	9.5	<1.0	6.60	90.15
	06/13/2008	53	<1.0	99	43	5.39	91.36
	09/16/2008	170	<1.0	20	72	2.97	93.78
	12/11/2008	73	<1.0	64	4.4	4.40	92.45
	03/03/2009	61	<1.0	54	26	NM	NA
	06/15/2009	51	<1.0	39	12	1.89	94.86
	09/28/2009	40	<1.0	1.9	<1.0	4.14	92.61
	12/15/2009	13	<1.0	1.1	<1.0	4.04	92.71
	03/09/2010	12	<1.0	8.6	6.0	4.14	92.61
	06/17/2010	64	<1.0	7.8	13	1.35	95.40
	09/13/2010	11	<1.0	2.0	<1.0	3.26	93.49
	12/15/2010	15	<1.0	3.1	<1.0	4.47	92.28
	03/22/2011	2.0	<1.0	<1.0	<1.0	4.65	92.10
	06/21/2011	110	<1.0	7.2	<1.0	2.78	93.97
	09/07/2011	120	<1.0	11	<1.0	3.23	93.52
	12/21/2011	15	<1.0	5.5	<1.0	3.60	93.15
	03/14/2012	7.0	<1.0	1.9	<1.0	3.97	92.78
	06/18/2012	2.0	<1.0	<1.0	<1.0	3.90	92.85
	09/17/2012	42	<1.0	4.6	<1.0	4.02	92.73
	12/27/2012	4.1	<1.0	1.8	<1.0	PVC Bent	NA
	03/26/2013	1.7	<1.0	<1.0	<1.0	PVC Bent	NA
	06/20/2013	1.5	<1.0	<1.0	<1.0	2.85	93.90
	09/25/2013	12	<1.0	3.0	<1.0	2.77	93.98
	11/04/2013	Survey - Not Sampled				5.31	93.04
	12/12/2013	1.2	<1.0	4.3	<3.0	4.08	92.67
	03/31/2014	<1.0	<1.0	<1.0	<3.0	5.54	92.81
	04/07/2014	Survey - Not Sampled				5.64	92.71
	06/25/2014	<1.0	<1.0	<1.0	<1.0	3.99	94.36



TABLE 1 (Continued)
GROUNDWATER ANALYTICAL AND FIELD RESULTS
HSR-EACHUS 3, 4, 5-23
WELD COUNTY, COLORADO
KERR-MCGEE OIL & GAS ONSHORE LP

Well Name	Date	Benzene (ug/L)	Toluene (ug/L)	Ethylbenzene (ug/L)	Total Xylenes (ug/L)	Depth Water/ (Product Thickness) (ft bgs)	Relative GW Elev. (ft)
MW01	09/10/2014	<1.0	<1.0	<1.0	<1.0	4.82	93.53
	12/08/2014	<1.0	<1.0	<1.0	<1.0	5.90	92.45
	03/05/2015	<1.0	<1.0	1.0	<1.0	6.30	92.05
MW02	06/07/2007	Product - Not Sampled				8.64 (1.00)	NA
	09/20/2007	10000	4000	430	6300	6.14	NA
	12/21/2007	16000	1600	470	7400	7.13	NA
	03/19/2008	17000	790	550	3600	9.95	NA
	06/13/2008	13000	260	450	4100	7.78	NA
	09/16/2008	17000	58	670	7200	3.89	NA
	12/11/2008	14000	25	320	6200	5.20	NA
	03/03/2009	18000	10	720	7200	5.59	NA
	06/15/2009	13000	11	390	3000	3.13	NA
MW02 destroyed as of 9/28/2009							
MW02R	12/15/2009	5900	<1.0	220	2100	5.85	91.71
	03/09/2010	1700	<1.0	82	140	5.50	92.06
	06/17/2010	610	<1.0	53	120	3.09	94.47
	09/13/2010	110	<1.0	28	36	4.41	93.15
	12/15/2010	69	<1.0	55	180	5.33	92.23
	03/22/2011	570	<1.0	120	230	5.74	91.82
	06/21/2011	250	<1.0	20	50	4.01	93.55
	09/07/2011	1000	<1.0	68	120	4.11	93.45
	12/21/2011	980	<1.0	37	4.6	4.55	92.71
	03/14/2012	1500	<1.0	20	<1.0	4.35	93.21
	06/18/2012	96	<1.0	1.9	<1.0	4.21	93.35
	09/17/2012	340	<1.0	11	14	5.22	92.34
	12/27/2012	270	<1.0	1.9	<1.0	7.27	90.29
	03/26/2013	910	<1.0	9.0	<1.0	6.80	90.76
	06/20/2013	320	<1.0	4.6	5.1	3.67	93.89
	09/25/2013	2.2	<1.0	<1.0	<1.0	3.00	94.56
	11/04/2013	Survey - Not Sampled				4.01	93.59
	12/12/2013	11.9	<1.0	<1.0	<3.0	4.48	93.08
	03/31/2014	28.0	<1.0	<1.0	<3.0	4.62	92.98
	04/07/2014	Survey - Not Sampled				4.70	92.91
	06/25/2014	<1.0	<1.0	<1.0	<1.0	3.05	94.56
	09/10/2014	<1.0	<1.0	<1.0	<1.0	3.83	93.78



TABLE 1 (Continued)
GROUNDWATER ANALYTICAL AND FIELD RESULTS
HSR-EACHUS 3, 4, 5-23
WELD COUNTY, COLORADO
KERR-MCGEE OIL & GAS ONSHORE LP

Well Name	Date	Benzene (ug/L)	Toluene (ug/L)	Ethylbenzene (ug/L)	Total Xylenes (ug/L)	Depth Water/ (Product Thickness) (ft bgs)	Relative GW Elev. (ft)
MW02R	12/08/2014	<1.0	<1.0	<1.0	<1.0	4.88	92.73
	03/05/2015	1.6	<1.0	<1.0	<1.0	5.45	92.16
MW03	06/07/2007	4800	1300	50	1400	5.84	NA
	09/20/2007	280	12	7.9	74	4.76	NA
	12/21/2007	<1.0	<1.0	<1.0	<1.0	6.15	NA
	03/19/2008	1.9	1.5	<1.0	11	7.60	NA
	06/13/2008	6.2	<1.0	<1.0	13	6.40	NA
	09/16/2008	3.0	<1.0	<1.0	4.1	2.36	NA
	12/11/2008	2.0	<1.0	<1.0	3.3	4.58	NA
	03/03/2009	<1.0	<1.0	<1.0	<1.0	5.06	NA
	06/15/2009	<1.0	<1.0	<1.0	<1.0	2.71	NA
	09/28/2009	2.0	<1.0	<1.0	<1.0	4.56	NA
	12/15/2009	<1.0	<1.0	<1.0	<1.0	4.43	NA
	03/09/2010	1.4	<1.0	<1.0	<1.0	4.81	NA
	06/17/2010	<1.0	<1.0	<1.0	<1.0	2.46	NA
	09/13/2010	1.6	<1.0	<1.0	<1.0	3.98	NA
	12/15/2010	<1.0	<1.0	<1.0	<1.0	5.09	NA
	03/22/2011	<1.0	<1.0	<1.0	<1.0	5.51	NA
MW03 destroyed as of 6/21/2011							
MW04	10/18/2007	<1.0	<1.0	<1.0	<1.0	7.90	NA
	12/21/2007	<1.0	<1.0	<1.0	<1.0	10.18	NA
	03/19/2008	<1.0	<1.0	<1.0	<1.0	11.85	NA
	06/13/2008	<1.0	<1.0	<1.0	<1.0	10.63	NA
	09/16/2008	<1.0	<1.0	<1.0	<1.0	9.10	NA
	12/11/2008	<1.0	<1.0	<1.0	<1.0	10.27	NA
	03/03/2009	<1.0	<1.0	<1.0	<1.0	9.92	NA
	06/15/2009	<1.0	<1.0	<1.0	<1.0	1.92	NA
	09/28/2009	<1.0	<1.0	<1.0	<1.0	PVC Blocked	NA
	12/15/2009	<1.0	<1.0	<1.0	<1.0	8.30	NA
	03/09/2010	<1.0	<1.0	<1.0	<1.0	8.21	NA
	06/17/2010	<1.0	<1.0	<1.0	<1.0	PVC Blocked	NA
	09/13/2010	Damaged - Not Sampled				PVC Blocked	NA
MW04 destroyed as of 12/15/2010							
MW04R	07/26/2011	<1.0	<1.0	<1.0	<1.0	13.61	85.01
	09/07/2011	<1.0	<1.0	<1.0	<1.0	11.09	87.38



TABLE 1 (Continued)
GROUNDWATER ANALYTICAL AND FIELD RESULTS
HSR-EACHUS 3, 4, 5-23
WELD COUNTY, COLORADO
KERR-MCGEE OIL & GAS ONSHORE LP

Well Name	Date	Benzene (ug/L)	Toluene (ug/L)	Ethylbenzene (ug/L)	Total Xylenes (ug/L)	Depth Water/ (Product Thickness) (ft bgs)	Relative GW Elev. (ft)
MW04R	12/21/2011	<1.0	<1.0	<1.0	<1.0	9.18	89.29
	03/14/2012	<1.0	<1.0	<1.0	<1.0	9.11	89.36
	06/18/2012	<1.0	<1.0	<1.0	<1.0	8.90	89.57
	09/17/2012	<1.0	<1.0	<1.0	<1.0	8.03	90.44
	12/27/2012	<1.0	<1.0	<1.0	<1.0	9.02	89.45
	03/26/2013	<1.0	<1.0	<1.0	<1.0	8.30	90.17
	06/20/2013	<1.0	<1.0	<1.0	<1.0	7.89	90.58
	09/25/2013	<1.0	<1.0	<1.0	<1.0	7.75	90.72
	11/04/2013	Survey - Not Sampled				9.77	88.69
	12/12/2013	<1.0	<1.0	<1.0	<3.0	8.99	89.48
	03/31/2014	<1.0	<1.0	<1.0	<3.0	2.82	95.64
	04/07/2014	Survey - Not Sampled				13.60	85.04
	06/25/2014	<1.0	<1.0	<1.0	<1.0	7.09	91.55
	09/10/2014	<1.0	<1.0	<1.0	<1.0	7.23	91.41
	12/08/2014	<1.0	<1.0	<1.0	<1.0	9.42	89.22
	03/05/2015	<1.0	<1.0	<1.0	<1.0	10.57	88.07
MW05	09/20/2007	<1.0	<1.0	<1.0	<1.0	8.09	NA
	12/21/2007	1.7	<1.0	<1.0	<1.0	9.79	NA
	03/19/2008	48	<1.0	<1.0	<1.0	11.50	NA
	06/13/2008	2300	89	12	160	9.78	NA
	09/16/2008	5800	<1.0	29	89	7.70	NA
	12/11/2008	2600	<1.0	76	250	8.08	NA
	03/03/2009	1800	<1.0	26	7.1	8.82	NA
	06/15/2009	940	<1.0	43	7.2	6.64	NA
	09/28/2009	110	<1.0	34	<1.0	7.01	NA
	12/15/2009	9.0	<1.0	4.6	3.4	6.97	NA
	03/09/2010	2.6	<1.0	1.6	2.6	7.70	NA
	06/17/2010	12	<1.0	1.4	4.5	6.03	NA
	09/13/2010	31	<1.0	2.6	9.3	6.14	NA
	12/15/2010	3.3	<1.0	<1.0	<1.0	7.15	NA
	03/22/2011	2.1	<1.0	1.9	9.1	7.78	NA
MW05 destroyed as of 6/21/2011							
MW05R	07/26/2011	<1.0	<1.0	4.2	8.3	7.25	89.69
	09/07/2011	1.2	<1.0	7.6	5.5	6.86	89.98
	12/21/2011	<1.0	<1.0	1.7	<1.0	6.90	89.94



TABLE 1 (Continued)
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HSR-EACHUS 3, 4, 5-23
WELD COUNTY, COLORADO
KERR-MCGEE OIL & GAS ONSHORE LP

Well Name	Date	Benzene (ug/L)	Toluene (ug/L)	Ethylbenzene (ug/L)	Total Xylenes (ug/L)	Depth Water/ (Product Thickness) (ft bgs)	Relative GW Elev. (ft)
MW05R	03/14/2012	1.5	<1.0	1.8	<1.0	7.02	89.82
	06/18/2012	<1.0	<1.0	<1.0	<1.0	6.95	89.89
	09/17/2012	<1.0	<1.0	<1.0	<1.0	7.64	89.20
	12/27/2012	<1.0	<1.0	<1.0	<1.0	8.35	88.49
	03/26/2013	<1.0	<1.0	<1.0	<1.0	7.75	89.09
	06/20/2013	<1.0	<1.0	<1.0	<1.0	6.28	90.56
	09/25/2013	<1.0	<1.0	<1.0	<1.0	6.20	90.64
	11/04/2013	Survey - Not Sampled				6.65	90.27
	12/12/2013	<1.0	<1.0	<1.0	<3.0	6.97	89.87
	03/31/2014	<1.0	<1.0	<1.0	<3.0	7.40	89.52
	04/07/2014	Survey - Not Sampled				8.37	88.61
	06/25/2014	<1.0	<1.0	<1.0	<1.0	6.61	90.37
	09/10/2014	<1.0	<1.0	<1.0	<1.0	6.91	90.07
	12/08/2014	<1.0	<1.0	<1.0	<1.0	7.83	89.15
	03/05/2015	<1.0	<1.0	<1.0	<1.0	8.32	88.66
MW06	09/20/2007	97	<1.0	5.6	32	7.00	89.64
	12/21/2007	36	<1.0	3.8	<1.0	10.28	86.36
	03/19/2008	1.4	<1.0	<1.0	<1.0	11.43	85.21
	06/13/2008	<1.0	<1.0	<1.0	<1.0	10.35	86.29
	09/16/2008	39	<1.0	<1.0	<1.0	6.37	90.27
	12/11/2008	19	<1.0	<1.0	<1.0	6.91	89.73
	03/03/2009	2.7	<1.0	<1.0	<1.0	8.12	88.52
	06/15/2009	14	<1.0	<1.0	<1.0	5.46	91.18
	09/28/2009	6.7	<1.0	<1.0	<1.0	6.48	90.16
	12/15/2009	2.8	<1.0	<1.0	<1.0	6.70	89.94
	03/09/2010	3.6	<1.0	<1.0	<1.0	7.62	89.02
	06/17/2010	4.3	<1.0	<1.0	<1.0	4.75	91.89
	09/13/2010	1.1	<1.0	<1.0	<1.0	6.38	90.26
	12/15/2010	<1.0	<1.0	<1.0	<1.0	8.12	88.52
	03/22/2011	<1.0	<1.0	<1.0	<1.0	8.82	87.82
	06/21/2011	<1.0	<1.0	<1.0	<1.0	5.81	90.83
	09/07/2011	2.6	<1.0	<1.0	<1.0	6.46	90.18
	12/21/2011	<1.0	<1.0	<1.0	<1.0	7.11	89.53
	03/14/2012	<1.0	<1.0	<1.0	<1.0	7.25	89.39
	06/18/2012	<1.0	<1.0	<1.0	<1.0	7.11	89.53



TABLE 1 (Continued)
GROUNDWATER ANALYTICAL AND FIELD RESULTS
HSR-EACHUS 3, 4, 5-23
WELD COUNTY, COLORADO
KERR-MCGEE OIL & GAS ONSHORE LP

Well Name	Date	Benzene (ug/L)	Toluene (ug/L)	Ethylbenzene (ug/L)	Total Xylenes (ug/L)	Depth Water/ (Product Thickness) (ft bgs)	Relative GW Elev. (ft)
MW06	09/17/2012	<1.0	<1.0	<1.0	<1.0	8.31	88.33
	12/27/2012	<1.0	<1.0	<1.0	<1.0	8.96	87.68
	03/26/2013	<1.0	<1.0	<1.0	<1.0	9.28	87.36
	06/20/2013	<1.0	<1.0	<1.0	<1.0	6.09	90.55
	08/28/2013	Removed from monitoring				NM	NA
	11/04/2013	Survey - Not Sampled				7.14	90.16
MW07	12/21/2007	<1.0	<1.0	<1.0	<1.0	11.08	86.09
	03/19/2008	<1.0	<1.0	<1.0	<1.0	11.13	86.04
	06/13/2008	<1.0	<1.0	<1.0	<1.0	10.80	86.37
	09/16/2008	<1.0	<1.0	<1.0	<1.0	6.83	90.34
	12/11/2008	<1.0	<1.0	<1.0	<1.0	7.36	89.81
	03/03/2009	<1.0	<1.0	<1.0	<1.0	8.69	88.48
	06/15/2009	<1.0	<1.0	<1.0	<1.0	5.61	91.56
	09/28/2009	<1.0	<1.0	<1.0	<1.0	7.20	89.97
	12/15/2009	<1.0	<1.0	<1.0	<1.0	7.56	89.61
	03/09/2010	<1.0	<1.0	<1.0	<1.0	8.27	88.90
	06/17/2010	<1.0	<1.0	<1.0	<1.0	4.80	92.37
	09/13/2010	<1.0	<1.0	<1.0	<1.0	6.96	90.21
	12/15/2010	<1.0	<1.0	<1.0	<1.0	8.48	88.69
	03/22/2011	<1.0	<1.0	<1.0	<1.0	9.46	87.71
	06/21/2011	<1.0	<1.0	<1.0	<1.0	6.20	90.97
	09/07/2011	Removed from monitoring				NM	NA
	11/04/2013	Survey - Not Sampled				7.02	90.14
MW08	12/21/2007	<1.0	<1.0	<1.0	<1.0	9.08	87.52
	03/19/2008	<1.0	<1.0	<1.0	<1.0	11.15	85.45
	06/13/2008	<1.0	<1.0	<1.0	<1.0	10.35	86.25
	09/16/2008	<1.0	<1.0	<1.0	<1.0	7.35	89.25
	12/11/2008	<1.0	<1.0	<1.0	<1.0	7.91	88.69
	03/03/2009	12	<1.0	<1.0	<1.0	8.96	87.64
	06/15/2009	21	<1.0	<1.0	<1.0	6.20	90.40
	09/28/2009	3.7	<1.0	<1.0	<1.0	7.02	89.58
	12/15/2009	1.3	<1.0	<1.0	<1.0	7.02	89.58
	03/09/2010	1.9	<1.0	<1.0	<1.0	7.98	88.62
	06/17/2010	<1.0	<1.0	<1.0	<1.0	5.26	91.34



TABLE 1 (Continued)
GROUNDWATER ANALYTICAL AND FIELD RESULTS
HSR-EACHUS 3, 4, 5-23
WELD COUNTY, COLORADO
KERR-MCGEE OIL & GAS ONSHORE LP

Well Name	Date	Benzene (ug/L)	Toluene (ug/L)	Ethylbenzene (ug/L)	Total Xylenes (ug/L)	Depth Water/ (Product Thickness) (ft bgs)	Relative GW Elev. (ft)
MW08	09/13/2010	<1.0	<1.0	<1.0	<1.0	6.49	90.11
	12/15/2010	<1.0	<1.0	<1.0	<1.0	8.25	88.35
	03/22/2011	<1.0	<1.0	<1.0	<1.0	8.93	87.67
	06/21/2011	<1.0	<1.0	<1.0	<1.0	6.43	90.17
	09/07/2011	<1.0	<1.0	9.7	<1.0	6.92	89.68
	12/21/2011	<1.0	<1.0	<1.0	<1.0	7.31	89.29
	03/14/2012	1.0	<1.0	<1.0	<1.0	7.51	89.09
	06/18/2012	<1.0	<1.0	<1.0	<1.0	7.44	89.16
	09/17/2012	<1.0	<1.0	<1.0	<1.0	8.35	88.25
	12/27/2012	<1.0	<1.0	<1.0	<1.0	9.40	87.20
	03/26/2013	<1.0	<1.0	<1.0	<1.0	8.66	87.94
	06/20/2013	<1.0	<1.0	<1.0	<1.0	6.61	89.99
	09/25/2013	<1.0	<1.0	<1.0	<1.0	7.00	89.60
	11/04/2013	Survey - Not Sampled				7.34	89.48
	12/12/2013	<1.0	<1.0	<1.0	<3.0	7.64	88.96
	03/31/2014	<1.0	<1.0	<1.0	<3.0	8.55	88.27
	04/07/2014	Survey - Not Sampled				12.00	84.85
	06/25/2014	<1.0	<1.0	<1.0	<1.0	6.86	89.99
	09/10/2014	<1.0	<1.0	<1.0	<1.0	7.60	89.25
	12/08/2014	<1.0	<1.0	<1.0	<1.0	8.78	88.07
	03/05/2015	<1.0	<1.0	<1.0	<1.0	9.34	87.51
MW09	07/22/2008	<1.0	<1.0	<1.0	<1.0	15.25	77.06
	09/16/2008	330	140	15	260	8.80	83.64
	12/11/2008	53	<1.0	<1.0	<1.0	8.69	83.75
	03/03/2009	1200	<1.0	48	44	9.25	83.19
	06/15/2009	1100	<1.0	11	12	6.39	86.05
	09/28/2009	25	<1.0	<1.0	<1.0	7.52	84.92
	12/15/2009	3.2	<1.0	<1.0	<1.0	7.22	85.22
	03/09/2010	8.7	<1.0	<1.0	<1.0	7.59	84.85
	06/17/2010	2.0	<1.0	<1.0	<1.0	5.51	86.93
	09/13/2010	1.4	<1.0	<1.0	<1.0	5.95	86.49
	12/15/2010	1.1	<1.0	<1.0	<1.0	6.96	85.48
	03/22/2011	1.7	<1.0	<1.0	<1.0	7.23	85.21
	06/21/2011	<1.0	<1.0	<1.0	<1.0	4.49	87.95
	09/07/2011	<1.0	<1.0	<1.0	<1.0	4.50	87.94



TABLE 1 (Continued)
GROUNDWATER ANALYTICAL AND FIELD RESULTS
HSR-EACHUS 3, 4, 5-23
WELD COUNTY, COLORADO
KERR-MCGEE OIL & GAS ONSHORE LP

Well Name	Date	Benzene (ug/L)	Toluene (ug/L)	Ethylbenzene (ug/L)	Total Xylenes (ug/L)	Depth Water/ (Product Thickness) (ft bgs)	Relative GW Elev. (ft)
MW09	12/21/2011	<1.0	<1.0	<1.0	<1.0	4.58	87.86
	03/14/2012	<1.0	<1.0	<1.0	<1.0	4.82	87.62
	06/18/2012	<1.0	<1.0	<1.0	<1.0	4.79	87.65
	09/17/2012	<1.0	<1.0	<1.0	<1.0	7.46	86.38
	12/27/2012	2.0	<1.0	<1.0	<1.0	7.40	86.44
	03/26/2013	1.1	<1.0	<1.0	<1.0	6.45	87.09
	06/20/2013	1300	<1.0	<1.0	<1.0	5.95	87.89
	09/25/2013	3.0	<1.0	<1.0	<1.0	5.57	88.27
	11/04/2013	Survey - Not Sampled				6.03	87.79
	12/12/2013	<1.0	<1.0	<1.0	<3.0	6.21	87.63
	03/31/2014	<1.0	<1.0	<1.0	<3.0	4.48	89.34
	04/07/2014	Survey - Not Sampled				6.08	87.76
	06/25/2014	<1.0	<1.0	<1.0	<1.0	5.85	87.99
	09/10/2014	<1.0	<1.0	<1.0	<1.0	6.35	87.49
	12/08/2014	<1.0	<1.0	<1.0	<1.0	6.77	87.07
	03/05/2015	<1.0	<1.0	<1.0	<1.0	7.02	86.82
MW10	07/22/2008	Dry - Not Sampled				NM	NA
	09/16/2008	7.2	7.3	<1.0	7.6	11.70	NA
	12/11/2008	240	36	1.9	24	9.15	NA
	03/03/2009	2900	2000	730	6500	9.58	NA
	06/15/2009	440	17	<1.0	12	PVC Blocked	NA
	09/28/2009	1400	1.1	37	40	PVC Blocked	NA
	12/15/2009	270	<1.0	<1.0	<1.0	PVC Bent	NA
	03/09/2010	200	<1.0	1.1	<1.0	PVC Bent	NA
	06/17/2010	210	<1.0	1.6	<1.0	PVC Blocked	NA
	09/13/2010	130	<1.0	2.0	<1.0	PVC Bent	NA
	12/15/2010	210	<1.0	<1.0	<1.0	PVC Bent	NA
	03/22/2011	360	<1.0	<1.0	<1.0	PVC Bent	NA
MW10 destroyed as of 6/21/2011							
MW10R	07/26/2011	<1.0	<1.0	<1.0	<1.0	8.99	87.15
	09/07/2011	<1.0	<1.0	<1.0	<1.0	6.11	89.93
	03/14/2012	<1.0	<1.0	<1.0	<1.0	4.42	94.32
	06/18/2012	Not Found - Not Sampled				NM	NA
	09/17/2012	1.9	<1.0	<1.0	<1.0	8.98	87.06
	12/27/2012	<1.0	<1.0	<1.0	<1.0	7.90	88.14



TABLE 1 (Continued)
GROUNDWATER ANALYTICAL AND FIELD RESULTS
HSR-EACHUS 3, 4, 5-23
WELD COUNTY, COLORADO
KERR-MCGEE OIL & GAS ONSHORE LP

Well Name	Date	Benzene (ug/L)	Toluene (ug/L)	Ethylbenzene (ug/L)	Total Xylenes (ug/L)	Depth Water/ (Product Thickness) (ft bgs)	Relative GW Elev. (ft)
MW10R	03/26/2013	<1.0	<1.0	<1.0	<1.0	7.43	88.61
	06/20/2013	<1.0	<1.0	<1.0	<1.0	3.14	92.90
	09/25/2013	<1.0	<1.0	<1.0	<1.0	7.50	88.54
	11/04/2013	Survey - Not Sampled				6.43	89.63
	12/12/2013	<1.0	<1.0	<1.0	<3.0	6.56	92.28
	03/31/2014	<1.0	<1.0	<1.0	<3.0	3.67	92.39
	04/07/2014	Survey - Not Sampled				10.55	85.56
	06/25/2014	<1.0	<1.0	<1.0	<1.0	6.28	89.83
	09/10/2014	<1.0	<1.0	<1.0	<1.0	6.55	89.56
	12/08/2014	<1.0	<1.0	<1.0	<1.0	7.18	88.93
	03/05/2015	<1.0	<1.0	<1.0	<1.0	7.52	88.59
MW11	12/11/2008	<1.0	<1.0	<1.0	<1.0	NM	NA
	03/03/2009	<1.0	<1.0	<1.0	<1.0	12.32	NA
	06/15/2009	<1.0	<1.0	<1.0	<1.0	7.90	NA
	09/28/2009	<1.0	<1.0	<1.0	<1.0	PVC Blocked	NA
	12/15/2009	Damaged - Not Sampled				Damaged	NA
	MW11 destroyed as of 12/15/2009						
MW11R	06/17/2010	<1.0	<1.0	<1.0	<1.0	3.29	91.09
	09/13/2010	<1.0	<1.0	<1.0	<1.0	3.13	91.25
	12/15/2010	<1.0	<1.0	<1.0	<1.0	2.30	92.08
	03/22/2011	<1.0	<1.0	<1.0	<1.0	2.90	91.48
	06/21/2011	<1.0	<1.0	<1.0	<1.0	3.24	91.14
	09/07/2011	<1.0	<1.0	<1.0	<1.0	3.29	91.09
	12/21/2011	<1.0	<1.0	<1.0	<1.0	2.50	91.88
	03/14/2012	<1.0	<1.0	<1.0	<1.0	2.65	91.73
	06/18/2012	<1.0	<1.0	<1.0	<1.0	2.55	91.83
	09/17/2012	<1.0	<1.0	<1.0	<1.0	2.74	91.64
	12/27/2012	<1.0	<1.0	<1.0	<1.0	2.60	91.78
	03/26/2013	<1.0	<1.0	<1.0	<1.0	2.40	91.98
	06/20/2013	<1.0	<1.0	<1.0	<1.0	2.75	91.63
	09/25/2013	<1.0	<1.0	<1.0	<1.0	2.24	92.14
	11/04/2013	Survey - Not Sampled				2.44	92.08
	12/12/2013	1.0	<1.0	<1.0	<3.0	12.37	82.01
	03/31/2014	2.9	<1.0	<1.0	<3.0	0.35	94.17
	04/07/2014	Survey - Not Sampled				2.98	91.51



TABLE 1 (Continued)
GROUNDWATER ANALYTICAL AND FIELD RESULTS
HSR-EACHUS 3, 4, 5-23
WELD COUNTY, COLORADO
KERR-MCGEE OIL & GAS ONSHORE LP

Well Name	Date	Benzene (ug/L)	Toluene (ug/L)	Ethylbenzene (ug/L)	Total Xylenes (ug/L)	Depth Water/ (Product Thickness) (ft bgs)	Relative GW Elev. (ft)
MW11R	06/25/2014	3.1	<1.0	<1.0	<1.0	3.24	91.25
	09/10/2014	2.5	<1.0	<1.0	<1.0	2.94	91.55
	12/08/2014	<1.0	<1.0	<1.0	<1.0	2.68	91.81
	03/05/2015	<1.0	<1.0	<1.0	<1.0	2.54	91.95
MW12	12/11/2008	110	59	2.9	100	NM	NA
	03/03/2009	3700	100	100	870	8.17	NA
	06/15/2009	660	1.0	4.4	53	5.26	NA
	09/28/2009	270	<1.0	4.0	5.4	6.93	NA
	12/15/2009	320	<1.0	10	4.4	6.71	NA
	03/09/2010	48	<1.0	1.0	<1.0	6.85	NA
	06/17/2010	290	<1.0	<1.0	<1.0	4.46	NA
	09/13/2010	480	<1.0	16	<1.0	5.71	NA
	12/15/2010	3.8	<1.0	<1.0	2.9	6.17	NA
	03/22/2011	<1.0	<1.0	<1.0	<1.0	6.67	NA
MW12 destroyed as of 6/21/2011							
MW12R	07/26/2011	150	4.8	<1.0	35	5.39	89.00
	09/07/2011	48	<1.0	<1.0	<1.0	5.68	88.56
	12/21/2011	<1.0	<1.0	<1.0	<1.0	6.00	88.24
	03/14/2012	<1.0	<1.0	<1.0	<1.0	6.23	88.01
	06/18/2012	13	<1.0	<1.0	<1.0	6.12	88.12
	09/17/2012	<1.0	<1.0	<1.0	<1.0	8.77	85.47
	12/27/2012	<1.0	<1.0	<1.0	<1.0	8.38	85.86
	03/26/2013	<1.0	<1.0	<1.0	<1.0	7.75	86.49
	06/20/2013	<1.0	<1.0	<1.0	<1.0	5.58	88.66
	09/25/2013	<1.0	<1.0	<1.0	<1.0	5.38	88.86
	11/04/2013	Survey - Not Sampled				5.74	88.58
	12/12/2013	<1.0	<1.0	<1.0	<3.0	5.82	88.42
	03/31/2014	<1.0	<1.0	<1.0	<3.0	2.82	91.50
	04/07/2014	Survey - Not Sampled				5.95	88.43
	06/25/2014	<1.0	<1.0	<1.0	<1.0	6.76	87.62
	09/10/2014	<1.0	<1.0	<1.0	<1.0	5.91	88.47
	12/08/2014	<1.0	<1.0	<1.0	<1.0	6.38	88.00
	03/05/2015	<1.0	<1.0	<1.0	<1.0	6.62	87.76
MW13	12/11/2008	1400	450	27	610	NM	NA
	03/03/2009	1700	<1.0	14	81	7.84	NA



TABLE 1 (Continued)
GROUNDWATER ANALYTICAL AND FIELD RESULTS
HSR-EACHUS 3, 4, 5-23
WELD COUNTY, COLORADO
KERR-MCGEE OIL & GAS ONSHORE LP

Well Name	Date	Benzene (ug/L)	Toluene (ug/L)	Ethylbenzene (ug/L)	Total Xylenes (ug/L)	Depth Water/ (Product Thickness) (ft bgs)	Relative GW Elev. (ft)
MW13	06/15/2009	2400	<1.0	1.2	4.8	5.50	NA
	09/28/2009	30	<1.0	<1.0	<1.0	6.99	NA
	12/15/2009	13	<1.0	<1.0	<1.0	6.51	NA
	03/09/2010	<1.0	<1.0	<1.0	<1.0	6.73	NA
	06/17/2010	960	<1.0	1.8	<1.0	4.08	NA
	09/13/2010	1.1	<1.0	<1.0	<1.0	PVC Bent	NA
	12/15/2010	1.0	<1.0	<1.0	<1.0	6.53	NA
	03/22/2011	<1.0	<1.0	<1.0	<1.0	6.76	NA
MW13 destroyed as of 6/21/2011							
MW13R	07/26/2011	<1.0	<1.0	<1.0	<1.0	4.70	88.11
	09/07/2011	<1.0	<1.0	<1.0	<1.0	5.92	86.84
	12/21/2011	<1.0	<1.0	<1.0	<1.0	6.00	86.76
	03/14/2012	<1.0	<1.0	<1.0	<1.0	6.23	86.53
	06/18/2012	<1.0	<1.0	<1.0	<1.0	6.13	86.63
	09/17/2012	<1.0	<1.0	<1.0	<1.0	8.34	84.42
	12/27/2012	<1.0	<1.0	<1.0	<1.0	7.70	85.06
	06/20/2013	<1.0	<1.0	<1.0	<1.0	4.79	87.97
	08/28/2013	Removed from monitoring				NM	NA
	11/04/2013	Survey - Not Sampled				6.06	86.68
MW14	03/03/2009	Dry - Not Sampled				Dry	NA
	06/15/2009	<1.0	<1.0	<1.0	<1.0	14.77	78.01
	09/28/2009	<1.0	<1.0	<1.0	<1.0	7.53	85.25
	12/15/2009	<1.0	<1.0	<1.0	<1.0	7.75	85.03
	03/09/2010	<1.0	<1.0	<1.0	<1.0	7.88	84.90
	06/17/2010	<1.0	<1.0	<1.0	<1.0	4.02	88.76
	09/13/2010	<1.0	<1.0	<1.0	<1.0	5.83	86.95
	12/15/2010	<1.0	<1.0	<1.0	<1.0	6.47	86.31
	03/22/2011	<1.0	<1.0	<1.0	<1.0	6.87	85.91
	06/21/2011	<1.0	<1.0	<1.0	<1.0	5.49	87.29
	09/07/2011	<1.0	<1.0	<1.0	<1.0	5.44	87.34
	12/21/2011	<1.0	<1.0	<1.0	<1.0	5.60	87.18
	03/14/2012	<1.0	<1.0	<1.0	<1.0	5.70	87.08
	06/18/2012	<1.0	<1.0	<1.0	<1.0	5.56	87.22
	09/17/2012	<1.0	<1.0	<1.0	<1.0	7.32	85.46
	12/27/2012	<1.0	<1.0	<1.0	<1.0	8.95	83.83



TABLE 1 (Continued)
GROUNDWATER ANALYTICAL AND FIELD RESULTS
HSR-EACHUS 3, 4, 5-23
WELD COUNTY, COLORADO
KERR-MCGEE OIL & GAS ONSHORE LP

Well Name	Date	Benzene (ug/L)	Toluene (ug/L)	Ethylbenzene (ug/L)	Total Xylenes (ug/L)	Depth Water/ (Product Thickness) (ft bgs)	Relative GW Elev. (ft)
MW14	03/26/2013	<1.0	<1.0	<1.0	<1.0	8.23	84.55
	06/20/2013	<1.0	<1.0	<1.0	<1.0	10.42	82.36
	09/25/2013	<1.0	<1.0	<1.0	<1.0	8.85	83.93
	11/04/2013	Survey - Not Sampled				11.30	81.44
	12/12/2013	<1.0	<1.0	<1.0	<3.0	10.51	82.27
	03/31/2014	<1.0	<1.0	<1.0	<3.0	2.71	90.03
	04/07/2014	Survey - Not Sampled				6.12	86.76
	06/25/2014	<1.0	<1.0	<1.0	<1.0	5.95	86.93
	09/10/2014	<1.0	<1.0	<1.0	<1.0	6.51	86.37
	12/08/2014	<1.0	<1.0	<1.0	<1.0	7.32	85.56
	03/05/2015	<1.0	<1.0	<1.0	<1.0	10.60	82.28
MW15	03/03/2009	Dry - Not Sampled				Dry	NA
	06/15/2009	<1.0	<1.0	<1.0	<1.0	5.17	NA
	09/28/2009	<1.0	<1.0	<1.0	<1.0	6.70	NA
	12/15/2009	<1.0	<1.0	<1.0	<1.0	7.34	NA
	03/09/2010	<1.0	<1.0	<1.0	<1.0	7.16	NA
	06/17/2010	<1.0	<1.0	<1.0	<1.0	3.42	NA
	09/13/2010	<1.0	<1.0	<1.0	<1.0	5.75	NA
	12/15/2010	<1.0	<1.0	<1.0	<1.0	6.54	NA
	03/22/2011	<1.0	<1.0	<1.0	<1.0	6.91	NA
	06/21/2011	<1.0	<1.0	<1.0	<1.0	4.67	NA
	09/07/2011	<1.0	<1.0	<1.0	<1.0	5.21	NA
	12/21/2011	<1.0	<1.0	<1.0	<1.0	5.42	NA
	03/14/2012	<1.0	<1.0	<1.0	<1.0	5.55	NA
	06/18/2012	<1.0	<1.0	<1.0	<1.0	5.51	NA
	09/17/2012	<1.0	<1.0	<1.0	<1.0	7.65	NA
	12/27/2012	<1.0	<1.0	<1.0	<1.0	PVC Bent	NA
	03/26/2013	<1.0	<1.0	<1.0	<1.0	PVC Bent	NA
	06/20/2013	<1.0	<1.0	<1.0	<1.0	Damaged	NA
	08/28/2013	Removed from monitoring				NM	NA
MW16	12/20/2013	<4.0	<4.0	<4.0	<4.0	5.84	NA
	03/31/2014	<4.0	<4.0	<4.0	<12.0	5.31	NA
	04/07/2014	Survey - Not Sampled				5.48	87.11
	06/25/2014	<1.0	<1.0	<1.0	<1.0	5.14	87.45



TABLE 1 (Continued)
GROUNDWATER ANALYTICAL AND FIELD RESULTS
HSR-EACHUS 3, 4, 5-23
WELD COUNTY, COLORADO
KERR-MCGEE OIL & GAS ONSHORE LP

Well Name	Date	Benzene (ug/L)	Toluene (ug/L)	Ethylbenzene (ug/L)	Total Xylenes (ug/L)	Depth Water/ (Product Thickness) (ft bgs)	Relative GW Elev. (ft)
MW16	09/10/2014	<1.0	<1.0	<1.0	<1.0	6.02	86.57
	12/08/2014	<1.0	<1.0	<1.0	<1.0	6.82	85.77
	03/05/2015	<1.0	<1.0	<1.0	<1.0	7.12	85.47
CGWQS		5	1000	700	1400		

Notes: ug/L - micrograms per Liter
ft bgs - feet below ground surface
Bold numbers indicate result exceeded standard.
< - less than laboratory reporting limit
NA - Not Analyzed/Not Available

NM - Not Measured
CGWQS - Colorado Groundwater Quality Standards
Excavation groundwater depth is approximate
Elev. - Elevation
GW - Groundwater

Results in red indicate data from samples collected after completion of carbon slurry injection.



APPENDIX A
UNDERGROUND INJECTION CONTROL PERMIT
APPLICATION

**REMEDATION INJECTION RULE
AUTHORIZATION APPLICATION**

**KERR-MCGEE OIL & GAS ONSHORE LP
HSR-EACHUS 3, 4, 5-23 TANK BATTERY
SENW SEC 23-T3N-R65W
HUDSON, COLORADO 80642**

FEBRUARY 2014

Prepared for:

**U.S. ENVIRONMENTAL PROTECTION AGENCY, REGION 8
1595 Wynkoop Street
Denver, Colorado 80202-1129**

Prepared by:

**LT ENVIRONMENTAL, INC.
4600 West 60th Avenue
Arvada, Colorado 80003
(303) 433-9788**

REMEDATION INJECTION RULE AUTHORIZATION APPLICATION

KERR-MCGEE OIL & GAS ONSHORE LP
HSR-EACHUS 3, 4 & 5-23 TANK BATTERY
SENW SEC 23-T3N-R65W
HUDSON, COLORADO 80642

February 2014

- 1. Property owner of facility including a physical and mailing address; phone and fax numbers.**

Kerr-McGee Oil and Gas Onshore LP (Kerr-McGee) owns and operates the facility where the injection program will occur (see #2).

- 2. Owner/operator of facility including a physical and mailing address; phone and fax numbers.**

Kerr-McGee Oil & Gas Onshore LP
1099 18th Street, Suite 1800
Denver, Colorado 80202
(720) 929-6000 phone
(720) 929-7726 fax
Contact: Mr. Paul Schneider

- 3. Responsible party for the operation, maintenance, and closure of the injection system including a physical and mailing address and phone number.**

LT Environmental, Inc. (LTE)
4600 West 60th Avenue
Arvada, Colorado 80003
(303) 433-9788 phone
(303) 433-1432 fax
Contact: Mr. Justin Solomon or Mr. Brian Sulzberger

- 4. Contact persons representing any other regulatory agencies that have an interest in the site; include a physical and mailing address and phone number.**

Mr. Chris Canfield
Colorado Oil and Gas Conservation Commission
Environmental Protection Specialist
1120 Lincoln Street, Suite 801

Denver, Colorado 80203
(303) 894-2100 (x5112) phone
(303) 637-7179 fax

5. Briefly outline the type of contamination and when it occurred.

A petroleum hydrocarbon release was discovered at this site in December 2006 after a production tank overflowed and released oil inside the containment berm. Site remediation activities included recovery of approximately 13 barrels (bbls) of oil from inside the tank battery containment berm and excavation of approximately 810 cubic yards (yd³) of petroleum hydrocarbon impacted soil.

A second petroleum hydrocarbon release, resulting from a corrosion hole in a bypass line, was discovered at the site in August 2009. An unknown volume of oil and produced water was released. Site remediation activities included excavation of approximately 530 yd³ of petroleum hydrocarbon impacted soil.

A third petroleum hydrocarbon release, also resulting from a corrosion hole in a by-pass line, was discovered at the site in October 2012. An unknown volume of oil and produced water was released. Site remediation activities included excavation of approximately 300 yd³ of petroleum hydrocarbon impacted soil.

6. Map of the site location (1:24,000 topographic map or similar)

See attached Figure 1.

7. Analysis of groundwater from the receiving formation (up gradient from the contamination) and from the contaminated formation (near the source) include tabular data and a map of the contamination plume with the local groundwater flow direction shown.

Groundwater analytical results are provided in Table 1. The monitoring well locations, aerial extent of the contaminant plume and groundwater flow direction are depicted on Figure 2.

8. Analysis of contaminants. Include BTEX and MTBE if fuel spill related.

BTEX concentrations in site groundwater are presented in Table 1. MTBE is not a potential contaminant because this was an unrefined product release.

9. Type of proposed injection well. (example: water well, trench, injection gallery, etc.)

Each injection point will be completed using 1.25-inch outside-diameter (OD) steel rods, driven to depth by a direct-push rig. A steel injection/drive point will be used to install the injectate. Once breakthrough is achieved, the injection

pressures will generally range between approximately 10 and 30 pounds per square inch (psi). After placing the injectate, the rods will be pulled and each 1.25-inch injection hole will be plugged a hydrated bentonite chip seal. The proposed injection area is shown on Figure 2. A summary of the injection plan is presented on Table 2.

10. Analysis of the proposed injectate.

The injectate is prepared by mixing BOS 200[®] with cultured bacteria and fresh water. BOS 200[®] is manufactured by Remediation Products Inc. and is designed for in-situ remediation of petroleum hydrocarbons under anaerobic conditions. Material Safety Data Sheets for the above materials, including the bacteria and activated carbon, are provided in Attachment 1. The mixed slurry composition is summarized in Attachment 2.

11. Hydrogeologic description, location, depth, and current use (if any) of the receiving formations. Include hydrological studies if available.

The site and surrounding properties are zoned for agricultural use. The depth to the observed water table at various locations across the site is approximately 3 to 6 feet below ground surface (bgs). The general direction of groundwater flow at the site is to the northwest. Soils identified at the site consist of sandy-clay (surface to 3 feet bgs), clayey-sand (3 to 7 feet bgs), sandy-clay (7 to 9 feet bgs), and claystone (9 to 15 feet bgs).

12. Location of existing monitoring wells (if any) and the location of proposed monitoring wells.

Existing monitoring well locations are presented in Figure 2. The aerial extent of the dissolved phase petroleum hydrocarbon plume has been defined and point of compliance wells have been established. Additional monitoring wells will not be installed as part of the injection program.

13. Explain how the proposed monitoring system will be able to track contaminant migration and how the proposed remediation system will minimize further migration.

Further plume migration will be minimized by initiating injections at the perimeter of the dissolved plume (impacts above Colorado groundwater standards remain in only two monitoring wells) and working inward toward the source area. It is estimated that less than 10% of the impacted groundwater pore space volume will receive the injectate. Plume reduction should begin to occur within a short period of time, mitigating any potential for further plume migration. Existing monitoring wells will be sampled quarterly to track remediation progress.

14. If injection is into an alluvial aquifer, provide locations of surface water bodies, i.e. rivers, streams, and lakes, within one mile of injection site (may substitute topographic map).

The injection zone is not in an alluvial aquifer. Milton Reservoir is located approximately 0.1 miles to the northwest (down-gradient) of the site. A topographic map of the area around the site is provided as Figure 1.

15. Provide location and description of any drinking water wells within ¼ mile that may be impacted by the proposed injection.

According to the Colorado Division of Water Resources' water well database, there are no water wells (domestic, irrigation, or stock) located within one-quarter mile of the proposed injection site. The one-quarter mile search radius is depicted on Figure 1.

16. Description of the remediation system including operational procedures.

Injection Design

Based on previous site excavation activities and historical groundwater sampling results (Table 1), LTE has identified 8 proposed injection points for the Site. As shown on Figure 2, the plume of elevated benzene concentrations will be treated as one injection area.

For the injection program, LTE designed area-specific subsurface carbon and sulfate loadings based on the radial influence of injection, site-specific lithologic conditions, the vertical distribution of the impacted soil, and area-specific concentrations of dissolved benzene in groundwater. The final design loadings represent the amount of carbon product necessary to reduce existing benzene concentrations to below the Colorado Department of Public Health and Environment - Colorado Groundwater Quality Standard (CGWQS) of 5 micrograms per liter ($\mu\text{g/L}$) for benzene.

Analytical results in monitoring wells MW01 and MW02R for the past five quarters were used to design the BOS 200[®] injection program. Recent benzene concentrations have been significantly less than the historical values, therefore a conservative benzene concentration of 800 ($\mu\text{g/L}$) was used to design the BOS 200[®] injection program.

The injection area encompasses approximately 800 square feet (ft^2) and includes eight proposed injection points symmetrically distributed in a triangular grid pattern. Based on the lithology, area of impact, and the historical groundwater concentrations, a total of 960 pounds of BOS 200[®] will be used to treat the injection area. Injection loadings will be 30 pounds of BOS 200[®] per injection

interval or 120 pounds total per injection point based on the subsurface conditions present within the injection area.

The injection points will be laid out on 10-foot centers in a triangular grid pattern. The objective of the injection program is to create a three-dimensional network of BOS 200[®] slurry interlaced throughout the affected subsurface soils, thus decreasing the likelihood of a significant volume of contaminants moving through the installation without contacting the carbon product. In addition to the horizontal spacing at compact 10-foot centers, injection will be conducted at multiple alternating depths. More precisely, injection depths will alternate between 2, 4, 6, and 8 feet bgs and 3, 5, 7, and 9 feet bgs from one injection point to the next. This provides overlap in the subsurface both vertically and laterally, and creates seams of carbon slurry material that are not separated by more than a few feet. A summary of the injection program is provided in Table 2.

The BOS 200[®] injection operational procedures and equipment are summarized in Attachment 2.

17. If injectate is treated water, is it expected to meet current drinking water standards? If not, what exceedences are expected?

The injectate water will be obtained from a potable water source.

18. Describe effect of injectate on groundwater: reaction products or by-products that are anticipated.

The design radius of influence of the injectate is 5 feet per injection point. The injectate footprint will not extend more than 5 feet beyond the contaminant plume. Within this treated volume, total dissolved solids, conductivity, sulfate, ammonia, and nitrate may exceed initial background levels. As the clean-up progresses, these parameters are expected to slowly return to background levels. A low, but persistent level of sulfate is expected for a period of approximately two or three years due to the injection of gypsum. The solubility of gypsum is low and the average groundwater sulfate concentration is not expected to exceed the Colorado groundwater standard of 250 parts per million (ppm). The gypsum product used in the formulation is principally marketed to the agricultural industry for use as a soil conditioner and plant-growth stimulant.

Byproducts of the anaerobic degradation process include water, carbon dioxide, a variety of light alkane fermentation products such as methane, and sulfide from the reduction of available sulfate. BOS 200[®] is designed to scavenge for sulfide, locking it up into insoluble, non-toxic precipitates. The principal precipitate is expected to be iron sulfide. Consequently, dissolved sulfide is expected to be maintained at a level orders of magnitude below the applicable standard.

19. Bench scale-testing results if available.

A bench scale-test will not be performed.

20. A specific closure plan for the removal, closure, or plugging of the injections system, including an estimate of closing costs.

All monitoring wells and injection holes will be abandoned following Colorado State Engineer guidelines.

21. An executive summary of the approved Corrective Action Plan.

Following the initial petroleum hydrocarbon release from the production tank and recovery of oil from inside the containment berm, excavation of the source area was performed to Colorado Oil and Gas Conservation Commission (COGCC) standards in December 2006. Additional source removal excavations were completed following releases in 2009 and 2012. A network of 14 groundwater monitoring wells was installed to delineate the extent of the dissolved phase plume and perform monitored natural attenuation (MNA). Analytical reports indicate a persistent residual petroleum hydrocarbon impact to groundwater that exceeds the CGWQS in monitoring wells MW01 and MW02R. During the September 2013 quarterly monitoring event, the benzene concentrations in MW01 and MW02R were 12 µg/L and 2.2 µg/L, respectively; however, benzene concentrations have been as high as 120 µg/L and 910 µg/L, respectively, over the preceding four quarters. The remedial design is based upon a conservative benzene concentration of 800 µg/L. Per the COGCC rules (900 Series), hydrocarbon impacts must be remediated to meet the CGWQS for benzene of 5.0 ug/L in groundwater. The remedial option selected for the site is injection of a sulfate-reducing carbon slurry (BOS 200®) designed to capture and bioremediate petroleum hydrocarbons in impacted media.

22. Estimate the time period required to complete the task covered in this Rule authorization request.

It is estimated that all of the injection activities will be completed in approximately two days.

FIGURES



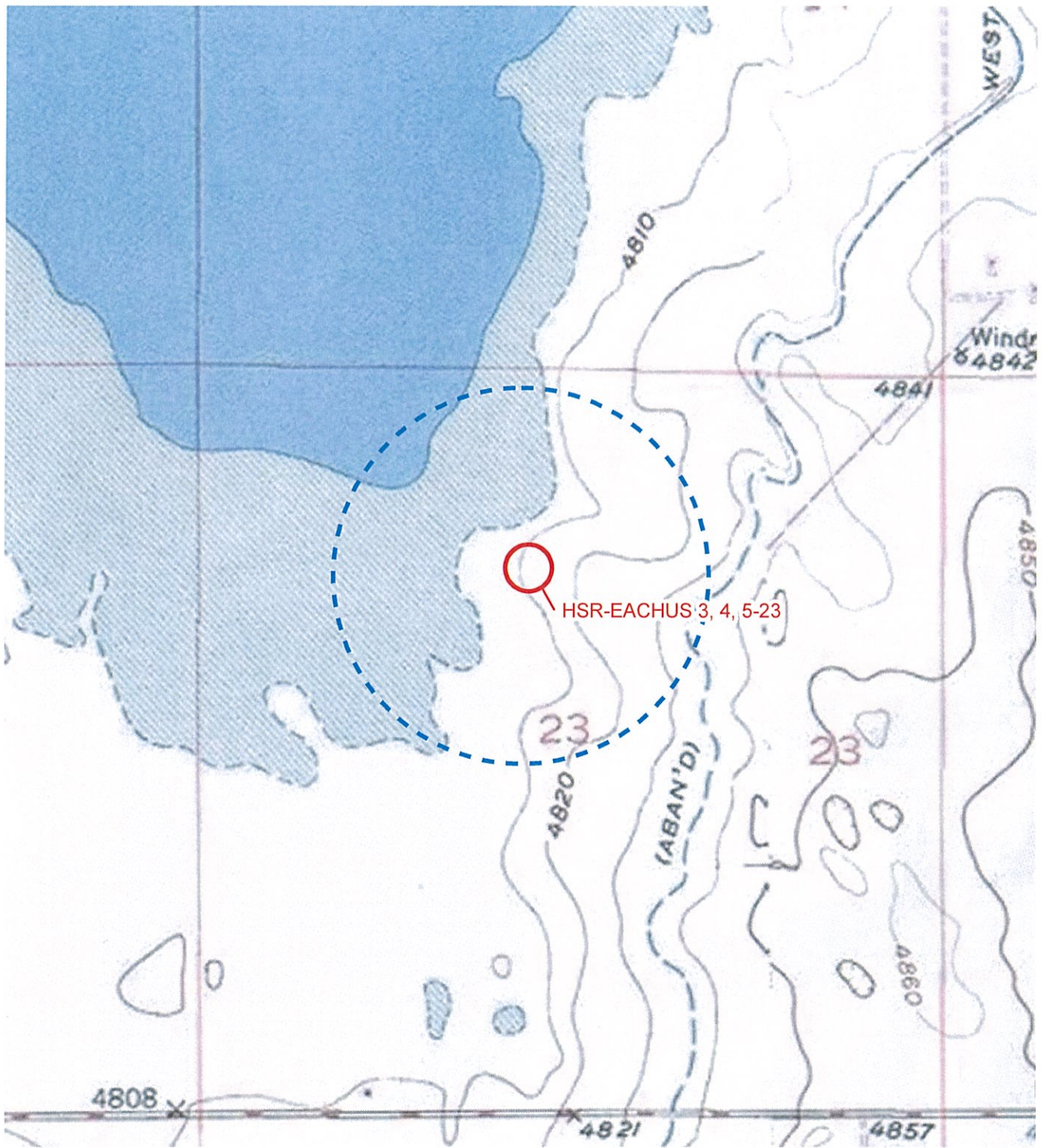


IMAGE COURTESY OF USGS/ESRI

LEGEND

- SITE LOCATION
- ⋯ QUARTER MILE RADIUS

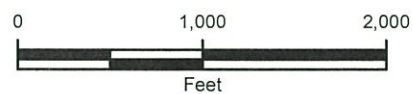


FIGURE 1
 AREA WATER WELLS
 AND TOPOGRAPHIC MAP
 HSR-EACHUS 3, 4, 5-23
 WELD COUNTY, COLORADO
 KERR-MCGEE OIL AND GAS ONSHORE LP



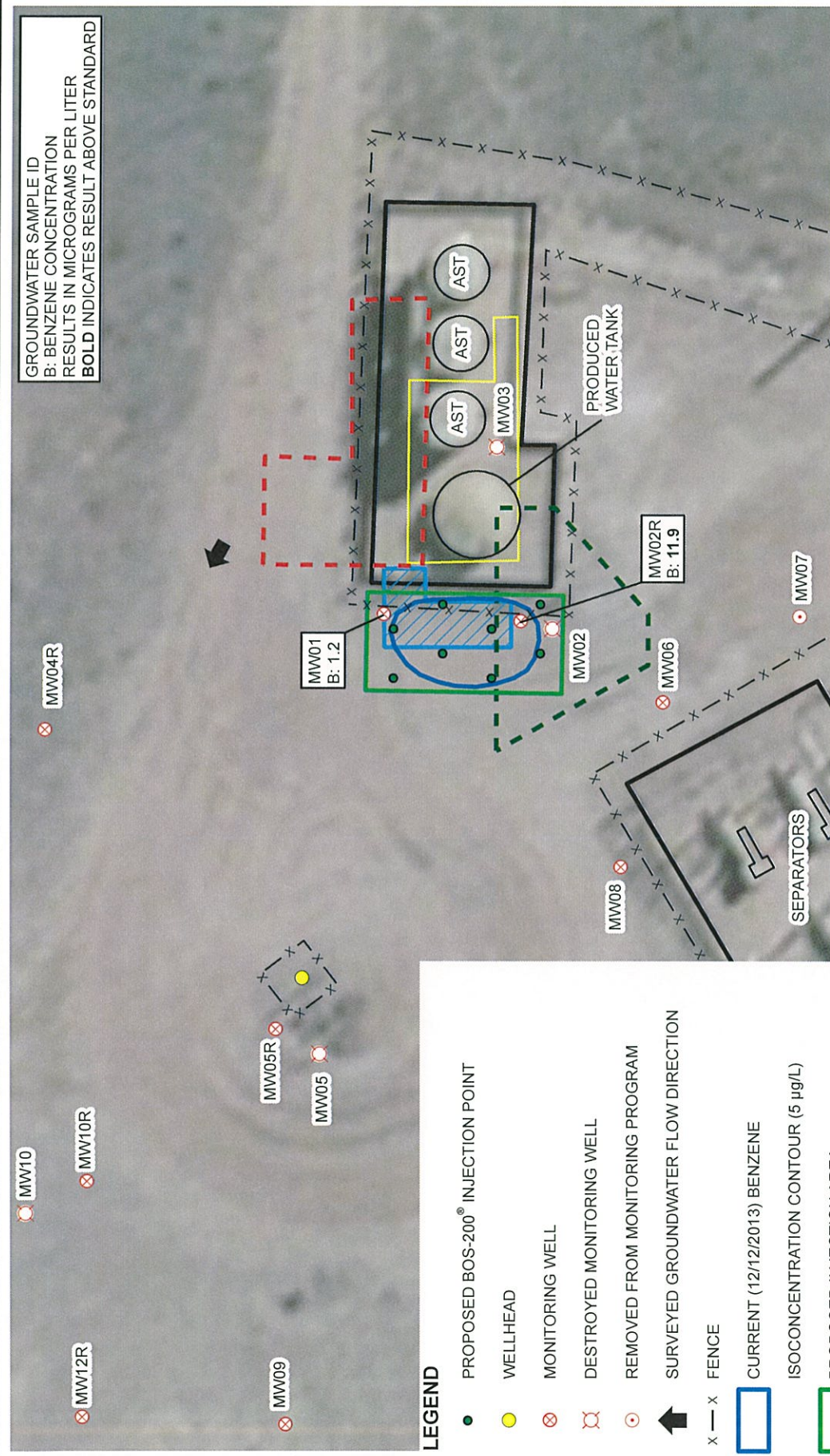


FIGURE 2
SITE MAP
HSR-EACHUS 3, 4, 5-23
SENW 23-T3N-R65W
WELD COUNTY, COLORADO
KERR-MCGEE OIL & GAS ONSHORE LP

TABLES

TABLE 1
GROUNDWATER ANALYTICAL AND FIELD RESULTS
HSR-EACHUS 3, 4, 5-23
WELD COUNTY, COLORADO
KERR-MCGEE OIL & GAS ONSHORE LP

Well Name	Date	Benzene (ug/L)	Toluene (ug/L)	Ethylbenzene (ug/L)	Xylenes (ug/L)	Depth to GW (ft bgs)	Relative GW Elev. (ft)
EGW01	12/18/2006	880	1800	270	2300	NM	NA
GW01	09/08/2009	38	16	4.1	160	NM	NA
	10/04/2012	8.5	37	4.2	62	NM	NA
MW01	06/07/2007	1200	940	240	1700	6.15	92.20
	09/20/2007	590	120	42	650	4.25	94.10
	12/21/2007	110	<1.0	55	20	5.66	92.69
	03/19/2008	5.7	<1.0	9.5	<1.0	6.60	91.75
	06/13/2008	53	<1.0	99	43	5.39	92.96
	09/16/2008	170	<1.0	20	72	2.97	95.38
	12/11/2008	73	<1.0	64	4.4	4.40	93.95
	03/03/2009	61	<1.0	54	26	NM	NA
	06/15/2009	51	<1.0	39	12	1.89	96.46
	09/28/2009	40	<1.0	1.9	<1.0	4.14	94.21
	12/15/2009	13	<1.0	1.1	<1.0	4.04	94.31
	03/09/2010	12	<1.0	8.6	6.0	4.14	94.21
	06/17/2010	64	<1.0	7.8	13	1.35	97.00
	09/13/2010	11	<1.0	2.0	<1.0	3.26	95.09
	12/15/2010	15	<1.0	3.1	<1.0	4.47	93.88
	03/22/2011	2.0	<1.0	<1.0	<1.0	4.65	93.70
	06/21/2011	110	<1.0	7.2	<1.0	2.78	95.57
	09/07/2011	120	<1.0	11	<1.0	3.23	95.12
	12/21/2011	15	<1.0	5.5	<1.0	3.60	94.75
	03/14/2012	7.0	<1.0	1.9	<1.0	3.97	94.38
	06/18/2012	2.0	<1.0	<1.0	<1.0	3.90	94.45
	09/17/2012	42	<1.0	4.6	<1.0	4.02	94.33
	12/27/2012	4.1	<1.0	1.8	<1.0	PVC Bent	NA
	03/26/2013	1.7	<1.0	<1.0	<1.0	PVC Bent	NA
	06/20/2013	1.5	<1.0	<1.0	<1.0	2.85	95.50
	09/25/2013	12	<1.0	3.0	<1.0	2.77	95.58
	12/12/2013	1.2	<1.0	4.3	<3.0	4.08	94.27
MW02	06/07/2007	Product - Not Sampled				8.64 (7.64)	NA
	09/20/2007	10000	4000	430	6300	6.14	NA
	12/21/2007	16000	1600	470	7400	7.13	NA
	03/19/2008	17000	790	550	3600	9.95	NA
	06/13/2008	13000	260	450	4100	7.78	NA



TABLE 1 (Continued)
GROUNDWATER ANALYTICAL AND FIELD RESULTS
HSR-EACHUS 3, 4, 5-23
WELD COUNTY, COLORADO
KERR-MCGEE OIL & GAS ONSHORE LP

Well Name	Date	Benzene (ug/L)	Toluene (ug/L)	Ethylbenzene (ug/L)	Xylenes (ug/L)	Depth to GW (ft bgs)	Relative GW Elev. (ft)
MW02	09/16/2008	17000	58	670	7200	3.89	NA
	12/11/2008	14000	25	320	6200	5.20	NA
	03/03/2009	18000	10	720	7200	5.59	NA
	06/15/2009	13000	11	390	3000	3.13	NA
MW02 destroyed as of 9/28/2009							
MW02R	12/15/2009	5900	<1.0	220	2100	5.85	91.75
	03/09/2010	1700	<1.0	82	140	5.50	92.10
	06/17/2010	610	<1.0	53	120	3.09	94.51
	09/13/2010	110	<1.0	28	36	4.41	93.19
	12/15/2010	69	<1.0	55	180	5.33	92.27
	03/22/2011	570	<1.0	120	230	5.74	91.86
	06/21/2011	250	<1.0	20	50	4.01	93.59
	09/07/2011	1000	<1.0	68	120	4.11	93.49
	12/21/2011	980	<1.0	37	4.6	4.55	93.05
	03/14/2012	1500	<1.0	20	<1.0	4.35	93.25
	06/18/2012	96	<1.0	1.9	<1.0	4.21	93.39
	09/17/2012	340	<1.0	11	14	5.22	92.38
	12/27/2012	270	<1.0	1.9	<1.0	7.27	90.33
	03/26/2013	910	<1.0	9.0	<1.0	6.80	90.80
	06/20/2013	320	<1.0	4.6	5.1	3.67	93.93
	09/25/2013	2.2	<1.0	<1.0	<1.0	3.00	94.60
	12/12/2013	11.9	<1.0	<1.0	<3.0	4.48	93.12
MW03	06/07/2007	4800	1300	50	1400	5.84	NA
	09/20/2007	280	12	7.9	74	4.76	NA
	12/21/2007	<1.0	<1.0	<1.0	<1.0	6.15	NA
	03/19/2008	1.9	1.5	<1.0	11	7.60	NA
	06/13/2008	6.2	<1.0	<1.0	13	6.40	NA
	09/16/2008	3.0	<1.0	<1.0	4.1	2.36	NA
	12/11/2008	2.0	<1.0	<1.0	3.3	4.58	NA
	03/03/2009	<1.0	<1.0	<1.0	<1.0	5.06	NA
	06/15/2009	<1.0	<1.0	<1.0	<1.0	2.71	NA
	09/28/2009	2.0	<1.0	<1.0	<1.0	4.56	NA
	12/15/2009	<1.0	<1.0	<1.0	<1.0	4.43	NA
	03/09/2010	1.4	<1.0	<1.0	<1.0	4.81	NA
	06/17/2010	<1.0	<1.0	<1.0	<1.0	2.46	NA
	09/13/2010	1.6	<1.0	<1.0	<1.0	3.98	NA



TABLE 1 (Continued)
GROUNDWATER ANALYTICAL AND FIELD RESULTS
HSR-EACHUS 3, 4, 5-23
WELD COUNTY, COLORADO
KERR-MCGEE OIL & GAS ONSHORE LP

Well Name	Date	Benzene (ug/L)	Toluene (ug/L)	Ethylbenzene (ug/L)	Xylenes (ug/L)	Depth to GW (ft bgs)	Relative GW Elev. (ft)
MW03	12/15/2010	<1.0	<1.0	<1.0	<1.0	5.09	NA
	03/22/2011	<1.0	<1.0	<1.0	<1.0	5.51	NA
	MW03 destroyed as of 6/21/2011						
MW04	10/18/2007	<1.0	<1.0	<1.0	<1.0	7.90	NA
	12/21/2007	<1.0	<1.0	<1.0	<1.0	10.18	NA
	03/19/2008	<1.0	<1.0	<1.0	<1.0	11.85	NA
	06/13/2008	<1.0	<1.0	<1.0	<1.0	10.63	NA
	09/16/2008	<1.0	<1.0	<1.0	<1.0	9.10	NA
	12/11/2008	<1.0	<1.0	<1.0	<1.0	10.27	NA
	03/03/2009	<1.0	<1.0	<1.0	<1.0	9.92	NA
	06/15/2009	<1.0	<1.0	<1.0	<1.0	1.92	NA
	09/28/2009	<1.0	<1.0	<1.0	<1.0	PVC Blocked	NA
	12/15/2009	<1.0	<1.0	<1.0	<1.0	8.30	NA
	03/09/2010	<1.0	<1.0	<1.0	<1.0	8.21	NA
	06/17/2010	<1.0	<1.0	<1.0	<1.0	PVC Blocked	NA
	09/13/2010	Damaged - Not Sampled				PVC Blocked	NA
MW04 destroyed as of 12/15/2010							
MW04R	07/26/2011	<1.0	<1.0	<1.0	<1.0	13.61	84.85
	09/07/2011	<1.0	<1.0	<1.0	<1.0	11.09	87.37
	12/21/2011	<1.0	<1.0	<1.0	<1.0	9.18	89.28
	03/14/2012	<1.0	<1.0	<1.0	<1.0	9.11	89.35
	06/18/2012	<1.0	<1.0	<1.0	<1.0	8.90	89.56
	09/17/2012	<1.0	<1.0	<1.0	<1.0	8.03	90.43
	12/27/2012	<1.0	<1.0	<1.0	<1.0	9.02	89.44
	03/26/2013	<1.0	<1.0	<1.0	<1.0	8.30	90.16
	06/20/2013	<1.0	<1.0	<1.0	<1.0	7.89	90.57
	09/25/2013	<1.0	<1.0	<1.0	<1.0	7.75	90.71
	12/12/2013	<1.0	<1.0	<1.0	<3.0	8.99	89.47
MW05	09/20/2007	<1.0	<1.0	<1.0	<1.0	8.09	NA
	12/21/2007	1.7	<1.0	<1.0	<1.0	9.79	NA
	03/19/2008	48	<1.0	<1.0	<1.0	11.50	NA
	06/13/2008	2300	89	12	160	9.78	NA
	09/16/2008	5800	<1.0	29	89	7.70	NA
	12/11/2008	2600	<1.0	76	250	8.08	NA
	03/03/2009	1800	<1.0	26	7.1	8.82	NA
	06/15/2009	940	<1.0	43	7.2	6.64	NA



TABLE 1 (Continued)
GROUNDWATER ANALYTICAL AND FIELD RESULTS
HSR-EACHUS 3, 4, 5-23
WELD COUNTY, COLORADO
KERR-MCGEE OIL & GAS ONSHORE LP

Well Name	Date	Benzene (ug/L)	Toluene (ug/L)	Ethylbenzene (ug/L)	Xylenes (ug/L)	Depth to GW (ft bgs)	Relative GW Elev. (ft)
MW05	09/28/2009	110	<1.0	34	<1.0	7.01	NA
	12/15/2009	9.0	<1.0	4.6	3.4	6.97	NA
	03/09/2010	2.6	<1.0	1.6	2.6	7.70	NA
	06/17/2010	12	<1.0	1.4	4.5	6.03	NA
	09/13/2010	31	<1.0	2.6	9.3	6.14	NA
	12/15/2010	3.3	<1.0	<1.0	<1.0	7.15	NA
	03/22/2011	2.1	<1.0	1.9	9.1	7.78	NA
MW05 destroyed as of 6/21/2011							
MW05R	07/26/2011	<1.0	<1.0	4.2	8.3	7.25	89.67
	09/07/2011	1.2	<1.0	7.6	5.5	6.86	90.06
	12/21/2011	<1.0	<1.0	1.7	<1.0	6.90	90.02
	03/14/2012	1.5	<1.0	1.8	<1.0	7.02	89.90
	06/18/2012	<1.0	<1.0	<1.0	<1.0	6.95	89.97
	09/17/2012	<1.0	<1.0	<1.0	<1.0	7.64	89.28
	12/27/2012	<1.0	<1.0	<1.0	<1.0	8.35	88.57
	03/26/2013	<1.0	<1.0	<1.0	<1.0	7.75	89.17
	06/20/2013	<1.0	<1.0	<1.0	<1.0	6.28	90.64
	09/25/2013	<1.0	<1.0	<1.0	<1.0	6.20	90.72
	12/12/2013	<1.0	<1.0	<1.0	<3.0	6.97	89.95
MW06	09/20/2007	97	<1.0	5.6	32	7.00	90.30
	12/21/2007	36	<1.0	3.8	<1.0	10.28	87.02
	03/19/2008	1.4	<1.0	<1.0	<1.0	11.43	85.87
	06/13/2008	<1.0	<1.0	<1.0	<1.0	10.35	86.95
	09/16/2008	39	<1.0	<1.0	<1.0	6.37	90.93
	12/11/2008	19	<1.0	<1.0	<1.0	6.91	90.39
	03/03/2009	2.7	<1.0	<1.0	<1.0	8.12	89.18
	06/15/2009	14	<1.0	<1.0	<1.0	5.46	91.84
	09/28/2009	6.7	<1.0	<1.0	<1.0	6.48	90.82
	12/15/2009	2.8	<1.0	<1.0	<1.0	6.70	90.60
	03/09/2010	3.6	<1.0	<1.0	<1.0	7.62	89.68
	06/17/2010	4.3	<1.0	<1.0	<1.0	4.75	92.55
	09/13/2010	1.1	<1.0	<1.0	<1.0	6.38	90.92
	12/15/2010	<1.0	<1.0	<1.0	<1.0	8.12	89.18
	03/22/2011	<1.0	<1.0	<1.0	<1.0	8.82	88.48
	06/21/2011	<1.0	<1.0	<1.0	<1.0	5.81	91.49
	09/07/2011	2.6	<1.0	<1.0	<1.0	6.46	90.84



TABLE 1 (Continued)
GROUNDWATER ANALYTICAL AND FIELD RESULTS
HSR-EACHUS 3, 4, 5-23
WELD COUNTY, COLORADO
KERR-MCGEE OIL & GAS ONSHORE LP

Well Name	Date	Benzene (ug/L)	Toluene (ug/L)	Ethylbenzene (ug/L)	Xylenes (ug/L)	Depth to GW (ft bgs)	Relative GW Elev. (ft)
MW06	12/21/2011	<1.0	<1.0	<1.0	<1.0	7.11	90.19
	03/14/2012	<1.0	<1.0	<1.0	<1.0	7.25	90.05
	06/18/2012	<1.0	<1.0	<1.0	<1.0	7.11	90.19
	09/17/2012	<1.0	<1.0	<1.0	<1.0	8.31	88.99
	12/27/2012	<1.0	<1.0	<1.0	<1.0	8.96	88.34
	03/26/2013	<1.0	<1.0	<1.0	<1.0	9.28	88.02
	06/20/2013	<1.0	<1.0	<1.0	<1.0	6.09	91.21
	08/28/2013	Removed from monitoring-Not sampled				NM	NA
MW07	12/21/2007	<1.0	<1.0	<1.0	<1.0	11.08	86.08
	03/19/2008	<1.0	<1.0	<1.0	<1.0	11.13	86.03
	06/13/2008	<1.0	<1.0	<1.0	<1.0	10.80	86.36
	09/16/2008	<1.0	<1.0	<1.0	<1.0	6.83	90.33
	12/11/2008	<1.0	<1.0	<1.0	<1.0	7.36	89.80
	03/03/2009	<1.0	<1.0	<1.0	<1.0	8.69	88.47
	06/15/2009	<1.0	<1.0	<1.0	<1.0	5.61	91.55
	09/28/2009	<1.0	<1.0	<1.0	<1.0	7.20	89.96
	12/15/2009	<1.0	<1.0	<1.0	<1.0	7.56	89.60
	03/09/2010	<1.0	<1.0	<1.0	<1.0	8.27	88.89
	06/17/2010	<1.0	<1.0	<1.0	<1.0	4.80	92.36
	09/13/2010	<1.0	<1.0	<1.0	<1.0	6.96	90.20
	12/15/2010	<1.0	<1.0	<1.0	<1.0	8.48	88.68
	03/22/2011	<1.0	<1.0	<1.0	<1.0	9.46	87.70
	06/21/2011	<1.0	<1.0	<1.0	<1.0	6.20	90.96
	09/07/2011	Removed from monitoring				NM	NA
MW08	12/21/2007	<1.0	<1.0	<1.0	<1.0	9.08	87.74
	03/19/2008	<1.0	<1.0	<1.0	<1.0	11.15	85.67
	06/13/2008	<1.0	<1.0	<1.0	<1.0	10.35	86.47
	09/16/2008	<1.0	<1.0	<1.0	<1.0	7.35	89.47
	12/11/2008	<1.0	<1.0	<1.0	<1.0	7.91	88.91
	03/03/2009	12	<1.0	<1.0	<1.0	8.96	87.86
	06/15/2009	21	<1.0	<1.0	<1.0	6.20	90.62
	09/28/2009	3.7	<1.0	<1.0	<1.0	7.02	89.80
	12/15/2009	1.3	<1.0	<1.0	<1.0	7.02	89.80
	03/09/2010	1.9	<1.0	<1.0	<1.0	7.98	88.84
	06/17/2010	<1.0	<1.0	<1.0	<1.0	5.26	91.56



TABLE 1 (Continued)
GROUNDWATER ANALYTICAL AND FIELD RESULTS
HSR-EACHUS 3, 4, 5-23
WELD COUNTY, COLORADO
KERR-MCGEE OIL & GAS ONSHORE LP

Well Name	Date	Benzene (ug/L)	Toluene (ug/L)	Ethylbenzene (ug/L)	Xylenes (ug/L)	Depth to GW (ft bgs)	Relative GW Elev. (ft)
MW08	09/13/2010	<1.0	<1.0	<1.0	<1.0	6.49	90.33
	12/15/2010	<1.0	<1.0	<1.0	<1.0	8.25	88.57
	03/22/2011	<1.0	<1.0	<1.0	<1.0	8.93	87.89
	06/21/2011	<1.0	<1.0	<1.0	<1.0	6.43	90.39
	09/07/2011	<1.0	<1.0	9.7	<1.0	6.92	89.90
	12/21/2011	<1.0	<1.0	<1.0	<1.0	7.31	89.51
	03/14/2012	1.0	<1.0	<1.0	<1.0	7.51	89.31
	06/18/2012	<1.0	<1.0	<1.0	<1.0	7.44	89.38
	09/17/2012	<1.0	<1.0	<1.0	<1.0	8.35	88.47
	12/27/2012	<1.0	<1.0	<1.0	<1.0	9.40	87.42
	03/26/2013	<1.0	<1.0	<1.0	<1.0	8.66	88.16
	06/20/2013	<1.0	<1.0	<1.0	<1.0	6.61	90.21
	09/25/2013	<1.0	<1.0	<1.0	<1.0	7.00	89.82
	12/12/2013	<1.0	<1.0	<1.0	<3.0	7.64	89.18
MW09	07/22/2008	<1.0	<1.0	<1.0	<1.0	15.25	78.57
	09/16/2008	330	140	15	260	8.80	85.02
	12/11/2008	53	<1.0	<1.0	<1.0	8.69	85.13
	03/03/2009	1200	<1.0	48	44	9.25	84.57
	06/15/2009	1100	<1.0	11	12	6.39	87.43
	09/28/2009	25	<1.0	<1.0	<1.0	7.52	86.30
	12/15/2009	3.2	<1.0	<1.0	<1.0	7.22	86.60
	03/09/2010	8.7	<1.0	<1.0	<1.0	7.59	86.23
	06/17/2010	2.0	<1.0	<1.0	<1.0	5.51	88.31
	09/13/2010	1.4	<1.0	<1.0	<1.0	5.95	87.87
	12/15/2010	1.1	<1.0	<1.0	<1.0	6.96	86.86
	03/22/2011	1.7	<1.0	<1.0	<1.0	7.23	86.59
	06/21/2011	<1.0	<1.0	<1.0	<1.0	4.49	89.33
	09/07/2011	<1.0	<1.0	<1.0	<1.0	4.50	89.32
	12/21/2011	<1.0	<1.0	<1.0	<1.0	4.58	89.24
	03/14/2012	<1.0	<1.0	<1.0	<1.0	4.82	89.00
	06/18/2012	<1.0	<1.0	<1.0	<1.0	4.79	89.03
	09/17/2012	<1.0	<1.0	<1.0	<1.0	7.46	86.36
	12/27/2012	2.0	<1.0	<1.0	<1.0	7.40	86.42
	03/26/2013	1.1	<1.0	<1.0	<1.0	6.45	87.37
	06/20/2013	1300	<1.0	<1.0	<1.0	5.95	87.87



TABLE 1 (Continued)
GROUNDWATER ANALYTICAL AND FIELD RESULTS
HSR-EACHUS 3, 4, 5-23
WELD COUNTY, COLORADO
KERR-MCGEE OIL & GAS ONSHORE LP

Well Name	Date	Benzene (ug/L)	Toluene (ug/L)	Ethylbenzene (ug/L)	Xylenes (ug/L)	Depth to GW (ft bgs)	Relative GW Elev. (ft)
MW09	09/25/2013	3.0	<1.0	<1.0	<1.0	5.57	88.25
	11/01/2013	1.9	<1.0	<1.0	<1.0	NM	NA
	12/12/2013	<1.0	<1.0	<1.0	<3.0	6.21	87.61
MW10	07/22/2008	Dry - Not Sampled				NM	NA
	09/16/2008	7.2	7.3	<1.0	7.6	11.70	NA
	12/11/2008	240	36	1.9	24	9.15	NA
	03/03/2009	2900	2000	730	6500	9.58	NA
	06/15/2009	440	17	<1.0	12	PVC Blocked	NA
	09/28/2009	1400	1.1	37	40	PVC Blocked	NA
	12/15/2009	270	<1.0	<1.0	<1.0	PVC Bent	NA
	03/09/2010	200	<1.0	1.1	<1.0	PVC Bent	NA
	06/17/2010	210	<1.0	1.6	<1.0	PVC Blocked	NA
	09/13/2010	130	<1.0	2.0	<1.0	PVC Bent	NA
	12/15/2010	210	<1.0	<1.0	<1.0	PVC Bent	NA
	03/22/2011	360	<1.0	<1.0	<1.0	PVC Bent	NA
MW10 destroyed as of 6/21/2011							
MW10R	07/26/2011	<1.0	<1.0	<1.0	<1.0	8.99	87.07
	09/07/2011	<1.0	<1.0	<1.0	<1.0	6.11	89.95
	03/14/2012	<1.0	<1.0	<1.0	<1.0	4.42	91.64
	06/18/2012	Not Found - Not Sampled				NM	NA
	09/17/2012	1.9	<1.0	<1.0	<1.0	8.98	87.08
	12/27/2012	<1.0	<1.0	<1.0	<1.0	7.90	88.16
	03/26/2013	<1.0	<1.0	<1.0	<1.0	7.43	88.63
	06/20/2013	<1.0	<1.0	<1.0	<1.0	3.14	92.92
	09/25/2013	<1.0	<1.0	<1.0	<1.0	7.50	88.56
	12/12/2013	<1.0	<1.0	<1.0	<3.0	6.56	89.50
MW11	12/11/2008	<1.0	<1.0	<1.0	<1.0	NM	NA
	03/03/2009	<1.0	<1.0	<1.0	<1.0	12.32	NA
	06/15/2009	<1.0	<1.0	<1.0	<1.0	7.90	NA
	09/28/2009	<1.0	<1.0	<1.0	<1.0	PVC Blocked	NA
	12/15/2009	Damaged - Not Sampled				Damaged	NA
MW11 destroyed as of 12/15/2009							
MW11R	06/17/2010	<1.0	<1.0	<1.0	<1.0	3.29	91.23
	09/13/2010	<1.0	<1.0	<1.0	<1.0	3.13	91.39
	12/15/2010	<1.0	<1.0	<1.0	<1.0	2.30	92.22
	03/22/2011	<1.0	<1.0	<1.0	<1.0	2.90	91.62



TABLE 1 (Continued)
GROUNDWATER ANALYTICAL AND FIELD RESULTS
HSR-EACHUS 3, 4, 5-23
WELD COUNTY, COLORADO
KERR-MCGEE OIL & GAS ONSHORE LP

Well Name	Date	Benzene (ug/L)	Toluene (ug/L)	Ethylbenzene (ug/L)	Xylenes (ug/L)	Depth to GW (ft bgs)	Relative GW Elev. (ft)
MW11R	06/21/2011	<1.0	<1.0	<1.0	<1.0	3.24	91.28
	09/07/2011	<1.0	<1.0	<1.0	<1.0	3.29	91.23
	12/21/2011	<1.0	<1.0	<1.0	<1.0	2.50	92.02
	03/14/2012	<1.0	<1.0	<1.0	<1.0	2.65	91.87
	06/18/2012	<1.0	<1.0	<1.0	<1.0	2.55	91.97
	09/17/2012	<1.0	<1.0	<1.0	<1.0	2.74	91.78
	12/27/2012	<1.0	<1.0	<1.0	<1.0	2.60	91.92
	03/26/2013	<1.0	<1.0	<1.0	<1.0	2.40	92.12
	06/20/2013	<1.0	<1.0	<1.0	<1.0	2.75	91.77
	09/25/2013	<1.0	<1.0	<1.0	<1.0	2.24	92.28
	12/12/2013	1.0	<1.0	<1.0	<3.0	12.37	82.15
MW12	12/11/2008	110	59	2.9	100	NM	NA
	03/03/2009	3700	100	100	870	8.17	NA
	06/15/2009	660	1.0	4.4	53	5.26	NA
	09/28/2009	270	<1.0	4.0	5.4	6.93	NA
	12/15/2009	320	<1.0	10	4.4	6.71	NA
	03/09/2010	48	<1.0	1.0	<1.0	6.85	NA
	06/17/2010	290	<1.0	<1.0	<1.0	4.46	NA
	09/13/2010	480	<1.0	16	<1.0	5.71	NA
	12/15/2010	3.8	<1.0	<1.0	2.9	6.17	NA
	03/22/2011	<1.0	<1.0	<1.0	<1.0	6.67	NA
MW12 destroyed as of 6/21/2011							
MW12R	07/26/2011	150	4.8	<1.0	35	5.39	88.93
	09/07/2011	48	<1.0	<1.0	<1.0	5.68	88.64
	12/21/2011	<1.0	<1.0	<1.0	<1.0	6.00	88.32
	03/14/2012	<1.0	<1.0	<1.0	<1.0	6.23	88.09
	06/18/2012	13	<1.0	<1.0	<1.0	6.12	88.20
	09/17/2012	<1.0	<1.0	<1.0	<1.0	8.77	85.55
	12/27/2012	<1.0	<1.0	<1.0	<1.0	8.38	85.94
	03/26/2013	<1.0	<1.0	<1.0	<1.0	7.75	86.57
	06/20/2013	<1.0	<1.0	<1.0	<1.0	5.58	88.74
	09/25/2013	<1.0	<1.0	<1.0	<1.0	5.38	88.94
	12/12/2013	<1.0	<1.0	<1.0	<3.0	5.82	88.50
MW13	12/11/2008	1400	450	27	610	NM	NA
	03/03/2009	1700	<1.0	14	81	7.84	NA
	06/15/2009	2400	<1.0	1.2	4.8	5.50	NA



TABLE 1 (Continued)
GROUNDWATER ANALYTICAL AND FIELD RESULTS
HSR-EACHUS 3, 4, 5-23
WELD COUNTY, COLORADO
KERR-MCGEE OIL & GAS ONSHORE LP

Well Name	Date	Benzene (ug/L)	Toluene (ug/L)	Ethylbenzene (ug/L)	Xylenes (ug/L)	Depth to GW (ft bgs)	Relative GW Elev. (ft)
MW13	09/28/2009	30	<1.0	<1.0	<1.0	6.99	NA
	12/15/2009	13	<1.0	<1.0	<1.0	6.51	NA
	03/09/2010	<1.0	<1.0	<1.0	<1.0	6.73	NA
	06/17/2010	960	<1.0	1.8	<1.0	4.08	NA
	09/13/2010	1.1	<1.0	<1.0	<1.0	PVC Bent	NA
	12/15/2010	1.0	<1.0	<1.0	<1.0	6.53	NA
	03/22/2011	<1.0	<1.0	<1.0	<1.0	6.76	NA
MW13 destroyed as of 6/21/2011							
MW13R	07/26/2011	<1.0	<1.0	<1.0	<1.0	4.70	88.04
	09/07/2011	<1.0	<1.0	<1.0	<1.0	5.92	86.82
	12/21/2011	<1.0	<1.0	<1.0	<1.0	6.00	86.74
	03/14/2012	<1.0	<1.0	<1.0	<1.0	6.23	86.51
	06/18/2012	<1.0	<1.0	<1.0	<1.0	6.13	86.61
	09/17/2012	<1.0	<1.0	<1.0	<1.0	8.34	84.40
	12/27/2012	<1.0	<1.0	<1.0	<1.0	7.70	85.04
	06/20/2013	<1.0	<1.0	<1.0	<1.0	4.79	87.95
	08/28/2013	Removed from monitoring-Not sampled				NM	NA
MW14	03/03/2009	Dry - Not Sampled				Dry	NA
	06/15/2009	<1.0	<1.0	<1.0	<1.0	14.77	77.97
	09/28/2009	<1.0	<1.0	<1.0	<1.0	7.53	85.21
	12/15/2009	<1.0	<1.0	<1.0	<1.0	7.75	84.99
	03/09/2010	<1.0	<1.0	<1.0	<1.0	7.88	84.86
	06/17/2010	<1.0	<1.0	<1.0	<1.0	4.02	88.72
	09/13/2010	<1.0	<1.0	<1.0	<1.0	5.83	86.91
	12/15/2010	<1.0	<1.0	<1.0	<1.0	6.47	86.27
	03/22/2011	<1.0	<1.0	<1.0	<1.0	6.87	85.87
	06/21/2011	<1.0	<1.0	<1.0	<1.0	5.49	87.25
	09/07/2011	<1.0	<1.0	<1.0	<1.0	5.44	87.30
	12/21/2011	<1.0	<1.0	<1.0	<1.0	5.60	87.14
	03/14/2012	<1.0	<1.0	<1.0	<1.0	5.70	87.04
	06/18/2012	<1.0	<1.0	<1.0	<1.0	5.56	87.18
	09/17/2012	<1.0	<1.0	<1.0	<1.0	7.32	85.42
	12/27/2012	<1.0	<1.0	<1.0	<1.0	8.95	83.79
	03/26/2013	<1.0	<1.0	<1.0	<1.0	8.23	84.51
	06/20/2013	<1.0	<1.0	<1.0	<1.0	10.42	82.32
	09/25/2013	<1.0	<1.0	<1.0	<1.0	8.85	83.89



TABLE 1 (Continued)
GROUNDWATER ANALYTICAL AND FIELD RESULTS
HSR-EACHUS 3, 4, 5-23
WELD COUNTY, COLORADO
KERR-MCGEE OIL & GAS ONSHORE LP

Well Name	Date	Benzene (ug/L)	Toluene (ug/L)	Ethylbenzene (ug/L)	Xylenes (ug/L)	Depth to GW (ft bgs)	Relative GW Elev. (ft)
MW14	12/12/2013	<1.0	<1.0	<1.0	<3.0	10.51	82.23
MW15	03/03/2009	Dry - Not Sampled				Dry	NA
	06/15/2009	<1.0	<1.0	<1.0	<1.0	5.17	NA
	09/28/2009	<1.0	<1.0	<1.0	<1.0	6.70	NA
	12/15/2009	<1.0	<1.0	<1.0	<1.0	7.34	NA
	03/09/2010	<1.0	<1.0	<1.0	<1.0	7.16	NA
	06/17/2010	<1.0	<1.0	<1.0	<1.0	3.42	NA
	09/13/2010	<1.0	<1.0	<1.0	<1.0	5.75	NA
	12/15/2010	<1.0	<1.0	<1.0	<1.0	6.54	NA
	03/22/2011	<1.0	<1.0	<1.0	<1.0	6.91	NA
	06/21/2011	<1.0	<1.0	<1.0	<1.0	4.67	NA
	09/07/2011	<1.0	<1.0	<1.0	<1.0	5.21	NA
	12/21/2011	<1.0	<1.0	<1.0	<1.0	5.42	NA
	03/14/2012	<1.0	<1.0	<1.0	<1.0	5.55	NA
	06/18/2012	<1.0	<1.0	<1.0	<1.0	5.51	NA
	09/17/2012	<1.0	<1.0	<1.0	<1.0	7.65	NA
	12/27/2012	<1.0	<1.0	<1.0	<1.0	PVC Bent	NA
	03/26/2013	<1.0	<1.0	<1.0	<1.0	PVC Bent	NA
	06/20/2013	<1.0	<1.0	<1.0	<1.0	Damaged	NA
	08/28/2013	Removed from monitoring - Not sampled				NM	NA
MW16	12/20/2013	<4.0	<4.0	<4.0	<4.0	5.84	NA
Colo GW Quality Standards		5	1000	700	1400		

Notes: < - less than
ug/L - micrograms per Liter
NA - Not Analyzed/Not Available

GW - Groundwater Elev. - Elevation
Bold numbers indicate result equaled or exceeded standard.
NM - Not Measured ft bgs - feet below ground surface



TABLE 2
PROPOSED INJECTION PLAN
HSR-EACHUS 3, 4, 5-23
WELD COUNTY, COLORADO
KERR-MCGEE OIL & GAS ONSHORE LP

INJECTION POINT ID	INJECTION DEPTH INTERVALS (feet bgs)	BOS 200 [®] PER INTERVAL (pounds)	TOTAL NUMBER OF INJECTION INTERVALS	TOTAL BOS 200 [®] (pounds)	TOTAL WATER VOLUME PER POINT (gallons)
A1	3, 5, 7, 9	30	4	120	160
A2	2, 4, 6, 8	30	4	120	160
A3	3, 5, 7, 9	30	4	120	160
A4	2, 4, 6, 8	30	4	120	160
A5	3, 5, 7, 9	30	4	120	160
A6	2, 4, 6, 8	30	4	120	160
A7	3, 5, 7, 9	30	4	120	160
A8	2, 4, 6, 8	30	4	120	160
TOTALS:				960	1280

Notes:
bgs - below ground surface



ATTACHMENT 1
MATERIAL SAFETY DATA SHEETS



Material Safety Data Sheet

Trap & Treat® BOS-200®



Section I

Manufacturer's Name <i>Remediation Products Inc.</i>	Emergency Telephone Number <i>303.487.1000</i>
Address (Number, Street, City, State, and ZIP Code) <i>6390 Joyce Drive, Suite 150 W, Golden, CO 80403</i>	Telephone Number for Information <i>303-487-1000</i>
Prepared by <i>B. Elliott</i>	Date Prepared <i>11/8/2012</i>
	Signature of Preparer (optional)

Section II - Hazard Ingredients/Identity Information

Non-hazardous components are listed at 3 percent (%) or greater. This is not intended to be a complete compositional disclosure.

Hazardous Components (Specific Chemical Identity; Common Name(s))	OSHA PEL	ACGIH TLV	Other Limits Recommended	%(optional)
Carbon	5mg/M ³ (respirable)	10mg/M ³ (Total)	N/A	77
Calcium Sulfate (Gypsum)	“	“	N/A	19
N/A = Not Applicable PELs and TLVs are 8-hour TWAs unless otherwise noted.				

Section III - Physical/Chemical Characteristics

Boiling Point	N/A	Specific Gravity (H ₂ O = 1)	2.33 g/cc real density
Vapor Pressure (mm Hg.)	N/A	Melting Point	Decomposes at 1450°C
Vapor Density (AIR = 1)	N/A	Evaporation Rate (Butyl Acetate = 1)	N/A
Solubility in Water: Negligible			
Appearance and Odor: Black powder. No odor.			

Section IV - Fire and Explosion Hazard Data

Flash Point (Method Used) Not combustible	Flammable Limits	LEL N/A	UEL N/A
Extinguishing Media Flood with plenty of water			
Special Fire Fighting Procedures None			
Unusual Fire and Explosion Hazards			

Contact with strong oxidizer, such as ozone, liquid oxygen, chlorine, permanganate, etc., may result in fire.
NFPA Rating: Health=0; Reactivity=0; Flammability=1

Section V - Reactivity Data

Stability	Unstable		Conditions to Avoid
	Stable	X	None
Incompatibility (<i>Materials to Avoid</i>)			
Strong oxidizers, such as ozone, liquid oxygen, chlorine, permanganate, etc., and acids.			
Hazardous Decomposition	May Occur	X	Conditions to Avoid Above 1450° - SO ₂ & CaO
	Will Not Occur		

Section VI - Health Hazard Data

Route(s) of Entry:	Inhalation? Yes	Skin? Yes	Ingestion? Yes
Health Hazards (<i>Acute and Chronic</i>)			
<p>The effects of long-term, low-level exposures to carbon have not been determined. Safe handling of this material on a long-term basis should emphasize the avoidance of all effects from repetitive acute exposures.</p> <p>Persons subjected to excessive dust will be forced to leave area because of nuisance; i.e., coughing, sneezing and nasal irritation.</p> <p>CAUTION!!! This material, when wet, removes oxygen from air causing a severe hazard to workers inside carbon vessels and enclosed or confined spaces. Before entering such an area, sampling and work procedures for low oxygen levels should be taken to ensure ample oxygen availability, observing all local, state, and federal regulations.</p>			
Carcinogenicity:	NTP?	IARC Monographs?	OSHA Regulated?
	N/A	N/A	No
Signs and Symptoms of Exposure			
<p>Effects and Hazards of Eye Contact: The physical nature of this product may produce eye irritation, if exposed to dusting conditions without protective eye equipment.</p> <p>Effects and Hazards of Skin Contact: The product is not a primary skin irritant. The primary skin irritation (Rabbit) is 0.</p> <p>Effects and Hazards of Inhalation Breathing): This product is practically non-toxic through inhalation. The acute inhalation LD₅₀ (Rat) is >6.4 mg/l (nominal concentration). Could cause irritation to respiratory passages, if exposed to dusting conditions without protective respiratory equipment.</p> <p>Effects and Hazards of Ingestion (Swallowing): Material is non-toxic through ingestion. The acute oral LD₅₀ (Rat) is >10g/kg.</p>			
Medical Conditions Generally Aggravated by Exposure			
N/A			
Emergency and First Aid Procedures			
<p><u>Eyes:</u> Flush with plenty of water for at least 15 minutes. Call physician if irritation continues.</p> <p><u>Skin:</u> Wash with soap and water.</p> <p><u>Inhalation:</u> Move to fresh air.</p>			

Ingestion: N/A

Section VII - Precautions for Safe Handling and Use

Steps to Be Taken in Case Material is Released or Spilled
Sweep or vacuum material from spillages into a waste container for disposal or repackage. Avoid dusting conditions.
Waste Disposal Method
Dispose of unused product in waste container. Dispose of in accordance with local, state, and federal or national regulations.
Precautions to Be Taken in Handling and Storing
CAUTION!!! This product, when wet, removes oxygen from air causing a severe hazard to workers inside carbon vessels and enclosed or confined spaces. Before entering such an area, sampling and work procedures for low oxygen levels should be taken to ensure ample oxygen availability, observing all local, state, and federal or national regulations. Be sure proper ventilation and respiratory and eye protection are used under dusting conditions.
Other Precautions
Wash thoroughly after handling. Exercise caution in the storage and handling of all chemical substances.

Section VIII - Control Measures

Respiratory Protection (<i>Specify Type</i>) Carbon-A NIOSH-approved particulate filter respirator is recommended, if excessive dust is generated.		
Ventilation	Local Exhaust Recommended, when used indoors or in confined spaces	Special Not Required
	Mechanical (<i>General</i>) Recommended, when used indoors or in confined spaces	Other Not required
Protective Gloves Recommended	Eye Protection Safety glasses or goggles recommended	
Other Protective Clothing or Equipment Not required		
Work/Hygienic Practices Use of Tyvek® or Nomex® suits is suggested to protect skin from becoming excessively dirty and clothing from being ruined by contact with product.		



303-487-1001
Fax: 303-487-1083

Materials Safety Data Sheet

Section 1 – Product Identification

Trade Name: Trap & Treat® Bacteria Concentrate
Description: A blend of naturally occurring bacteria and fungi.
Manufacturer: Remediation Products Inc.
Date Prepared: 10/31/12

NFPA 704M/HMIS Rating: 1/1 Health 0/0 Flammability 0/0 Reactivity 0 Other

0=insignificant 1=slight 2=moderate 3=high 4=extreme

Section 2 – Hazardous Ingredients

Our hazard evaluation of the ingredient(s) under OSHA's Hazard Communication Rule, 29 CFR 1910.1200 has found none of the ingredient(s) hazardous.

Section 3 – Precautionary Label Information

CAUTION: May cause irritation to skin and eyes. Avoid contact with eyes. Avoid prolonged or repeated contact with skin. Do not take internally.

Empty containers may contain residual product. Do not reuse container unless properly reconditioned.

Section 4 – First Aid Information

EYES: Flush with water for 15 minutes. Call a physician.
SKIN: Wash thoroughly with soap and rinse with water. Call a physician.
INGESTION: Do not induce vomiting. Give Water. Call a physician.
INHALATION: Remove to fresh air. Treat symptoms. Call a physician.

Note to Physician: No specific antidote is known. Based on the individual reactions of the Patient, the physician's judgment should be used to control symptoms and clinical condition. Caution: If unconscious, having trouble breathing or in convulsions, do not include vomiting or give water.

Section 5 – Health Effects Information

Primary Route(s) of Exposure: Eye, Skin

Eye Contact: May cause irritation with prolonged contact.
Skin Contact: May cause irritation with prolonged contact. Can cause

Ingestion: allergic contact dermatitis in susceptible individuals.
Can cause nausea and diarrhea.
Inhalation: Can cause an allergic reaction in susceptible individuals.

Symptoms of Exposure: A review of available data does not identify any symptoms from exposure.

Aggravation of Existing Conditions: A review of available data does not identify any worsening of existing conditions.

Section 6 – Toxicology Information

Acute Toxicity Studies: No toxicity studies have been conducted on this product.

Section 7 – Physical and Chemical Properties

Color:	Tan to flesh colored	Form:	Liquid	Odor:	Sour Milk
Solubility:	Extremely soluble	Flash Point:	None		

Section 8 – Fire and Explosion Information

Flash Point: None
Extinguisher Media: Not applicable

Section 9 – Reactivity Information

Incompatibility: None known
Storage: Storage temperature should be between 40° and 70°F.

Thermal Decomposition Products: In the event of combustion, CO and CO₂ may be formed. Do not breathe smoke or fumes. Wear suitable protective equipment.

Section 10 – Personal Protection Equipment

Respiratory Protection: If it is possible to generate dust, wear a NIOSH approved or equivalent dust respirator, (see ANSI Z 88.2, 1980 for requirements and selection).

Protective Equipment: Use impermeable gloves and chemical splash goggles (see ANSI Z 87.1 for requirements and selection of gloves, goggles, shoes, etc.) when attaching feeding equipment, doing maintenance or handling product.

If clothing is contaminated, remove clothing and thoroughly wash the affected area. Launder contaminated clothing before reuse.

Section 11 – Spill and Disposal Information

Spill Control Recovery:

Solid Spills: Sweep or vacuum up and reclaim into recovery container for disposal.

Wear the protective equipment specified in Section 10. Refer to CERCLA in Section 14

Disposal: If this product becomes a waste, it does not meet the criteria of a hazardous waste as defined under the Resource Conservation and Recover Act (RCRA) 40 CFR 261, since it does not have the characteristics of Subpart C, (i.e., D001 through D017) nor is it listed under Subpart D.

As a non-hazardous solid waste, it can be disposed of in an industrial waste landfill in accordance with local, state and federal regulations.

Section 12 – Environmental Information

If released into the environment, see CERCLA in Section 14.

Section 13 – Transportation Information

DOT PROPER SHIPPING NAME/HAZARD CODE: Product is not regulated during transportation.

Section 14 – Regulatory Information

The following regulations apply to this product.

Federal Regulations:

OSHA HAZARD COMMUNICATION RULE, 29 CFR 1910.1200:
Based on our hazard evaluation, this product is not hazardous.

CERCLA/SUPERFUND, 40 CFR 117, 302: Notification of spills of this product is not required.

SARA/SUPERFUND AMENDMENTS AND REAUTHORIZATION ACT OF 1986 (TITLE 111) – SECTIONS 302, 311, 312 AND 313.

SECTION 302 – EXTREMELY HAZARDOUS SUBSTANCES (40 CFR 355): This product does not contain ingredients listed in Appendix A and B as an Extremely Hazardous Substance.

SECTION 311 AND 312 – MATERIAL SAFETY DATA SHEET REQUIREMENTS (40CFR 370): Our hazard evaluation has found that this product is not hazardous under 29 CFR 1910.1200.

Under Section 311, submittal MSDS's or a list of product names to the local emergency planning commission, state emergency response commission and local fire department is required after October 17, 1987 if you have:

10,000 pounds or more of a hazardous substance, or
500 pounds or the threshold planning quantity, whichever is less, of an extremely hazardous substance.

SECTION 313 – LIST OF TOXIC CHEMICALS (40 CFR 372): This product does not contain ingredients (at a level of 1% or greater) on the List of Toxic Chemicals.

Toxic Substances Control Act (TSCA): The chemical ingredients in the product are on the 8(b) Inventory List (40 CFR 710)

RESOURCE CONSERVATION AND RECOVERY ACT (RCRA), 40 CFR 261 SUBPART C & D: If this product becomes a waste, it does not meet the criteria of a hazardous waste.

FEDERAL WATER POLLUTION CONTROL ACT, CLEAN WATER ACT 40 CFR 401.15/formerly Sec. 307, 40 CFR 116/formerly Sec 311: None of the ingredients are specifically listed.

CLEAN AIR ACT, 40 CFR 60, SECTION 111, 40 CFR 61, SECTION 112: This product does not contain ingredients covered by the Clean Air Act.

State Regulations:

California Proposition 65:

None of the chemicals on the current Proposition 65 list are known to be present in this product.

Michigan Critical Materials:

This product does not contain ingredients listed on the Michigan Critical Materials Register.

State Right To Know Laws

This product does not contain ingredients listed by State Right To Know Laws.

International Regulations:

This is not a WHMIS controlled product under the House of Commons of Canada Bill C-70.

Section 15 – Additional Information

None

Section 16 – User's Responsibility

This product material safety data sheet provides health and safety information. The product is to be used in applications consistent with our product literature. Individuals handling this product should be informed of the recommended safety precautions and should have access to this information. For any other uses, exposures should be evaluated so that appropriate handling practices and training programs can be established to ensure safe workplace operations. Please consult your sales representative for any further information.

Section 17 – Bibliography

ANNUAL REPORT ON CARCINOGENS, U.S. Department of Health and human Service, Public Health Service, PB 33-135855, 1983.

CASARETT AND DOULL'S TOXICOLOGY, THE BASIC SCIENCE OF POISONS, Doull, J., Klaassen, C.D., and Admur, M.O., eds., Macmillan Publishing Company, Inc., N.Y., 2nd edition, 1980.

CHEMICAL HAZARDS OF THE WORKPLACE, Proctor, N.H., and Hughes, J.P., eds, J.P. Lipincott Company, N.Y., 1981.

DANGEROUS PROPERTIES OF INDUSTRIAL MATERIALS, Sax, N. Irving, ed., Van Nostrand Reinhold Company, N.Y., 6th edition, 1984.

IARC MONOGRAPHS ON THE EVALUATION OF THE CARCINOGENIC RISH OF CHEMICALS TO MAN, Geneva: World Health Organization, International Agency for Research on Cancer, 1972-1977.

PATTY"S INDUSTRIAL HYGIENE AND TOXICOLOGY, Clayton, G.D., Clayton, F. E., eds., John Wiley and Sons, N.Y., 3rd edition, Vol 2 A-C, 1981.

REGISTRY OF TOXIC EFFECT ON CHEMICAL SUBSTANCES, U.S. Department of Health and Human Services, Public Health Service, Centers for Disease Control, National Institute for Occupational Safety and Health, 1983 supplement of 1981 – 1982 edition, Vol. 1-3, OH, 1984.

Title 29 Code of Federal Regulations Part 1910, Subpart Z, Toxic and Hazardous Substances, Occupational Safety and Health Administration (OSHA).

THRESHOLD LIMIT VALUES FOR CHEMICAL SUBSTANCES AND PHYSICAL AGENTS IN THE WORKROOM ENVIRONMENT WITH INTENDED CHANGES, American Conference of Governmental Industrial Hygienists, OH.

ATTACHMENT 2

BOS 200[®] COMPOSITION AND INJECTION PROCEDURES



BOS 200® Composition and Injection Procedures

BOS 200® Slurry Composition

<u>Ingredient</u>	<u>Composition</u>
Activated carbon	7.1 weight percent (wt %)
Micro-nutrients	0.35 wt %
Gypsum	1.8 wt %
Water	90.75 wt %
*Bacteria	6.4×10^7 Colony-Forming Units per gram of carbon

*Bacteria - Commercial products vary over a considerable range and the amount added will depend on the source and whether it is a dry product or a liquid concentrate. Regardless of source, a sufficient amount of bacteria is added so that a targeted slurry concentration of 5 million to 10 million colony-forming units per milliliter is attained.

Injection Equipment

The injection equipment is contained in a box truck. The injection equipment includes the following major components:

- A positive-displacement pump capable of delivering up to 40 gallons per minute at a pressure in excess of 2000 psi;
- High-pressure injection hose;
- Process tanks, including two slurry-mixing tanks; and
- A high volume centrifugal pump.

Pump suction is directly connected to the slurry-mixing tank, and fresh water is transferred to this tank from the water storage tank using a gas driven, high-volume centrifugal pump.

In addition to the injection equipment contained in the box truck, a hydraulically-powered, track-mounted, direct-push drill rig, including all the ancillary tooling, push rod, expendable points, and injection heads are used to complete the injections.

Injection Procedures

A volume of water is transferred into the slurry-mixing tank, a pre-determined amount of BOS 200® is slowly added to the tank, and the mixer is started. A sufficient amount of cultured bacteria is added so that a targeted slurry concentration of 5 million to 10 million colony-forming units per milliliter is obtained. Mixing will be continued for up to 5 minutes when the slurry is first prepared. This allows the carbon to become impregnated with bacteria before injection, giving the cultured microbes an advantage over indigenous microbes.

A small diameter (1.25-inch OD) push rod is driven to the targeted depth, and an injection head is threaded securely onto the rod. The injection head is configured with a valve and quick-connect coupling to facilitate rapid connection to the injection pump discharge hose. Once the slurry is mixed, the pump is engaged, the injection head valve is opened, and the discharge line is pressured up. The injection rod is then pulled up slightly. Pressure is allowed to build until a fracture or fissure is created in the formation and slurry begins to flow out into the formation. The fracture or fissure propagates outward from the point of the injection as additional slurry is pumped into the injection rod.

After injection of the slurry batch, fresh water is transferred into the slurry tank, mixed and then injected to flush the system of residual injectate. The pump is subsequently disengaged, and the injection-head valve is closed. A fresh batch of slurry is then prepared, a new injection rod is installed, and the process is repeated.

After slurry is injected into the formation, back-pressure is present that dissipates over a period of time. Therefore, the injection rod is not immediately removed after the injection of slurry. Instead, the injection rods remain in the ground until the transient pressure dissipates. Residual pressure in the formation is checked by opening the injection head valve. Once residual pressure has dissipated, the rods are safely removed, and the borehole is sealed with hydrated bentonite.

APPENDIX B
LABORATORY ANALYTICAL REPORTS



July 21, 2014

LT Environmental, Inc.

John Cocroft

4600 West 60th Avenue

Arvada

CO 80003

Project Name - KMG - Eachus 4 & 5-23

Project Number - KMG06254

Attached are your analytical results for KMG - Eachus 4 & 5-23 received by Origins Laboratory, Inc. June 25, 2014. This project is associated with Origins project number X406300-01.

The analytical results in the following report were analyzed under the guidelines of EPA Methods. These methods are identified as follows; "SW" are defined in SW-846, "EPA" are defined in 40CFR part 136 and "SM" are defined in the most current revision of Standard Methods For the Examination of Water and Wastewater.

The analytical results apply specifically to the samples and analyses specified per the attached Chain of Custody. As such, this report shall not be reproduced except in full, without the written approval of Origin's laboratory.

Unless otherwise noted, the analytical results for all soil samples are reported on a wet weight basis. All analytical analyses were performed under NELAP guidelines unless noted by a data qualifier.

Any holding time exceedances, deviations from the method specifications or deviations from Origins Laboratory's Standard Operating Procedures are outlined in the case narrative.

Thank you for selecting Origins for your analytical needs. Please contact us with any questions concerning this report, or if we can help with anything at all.

Origins Laboratory, Inc.
303.433.1322
o-squad@oelabinc.com



1725 Elk Place, Denver, CO 80211 | Phone: 303.433.1322 | Fax: 303.265.9645

LT Environmental, Inc.
4600 West 60th Avenue
Arvada CO 80003

John Cocroft
Project Number: KMG06254
Project: KMG - Eachus 4 & 5-23

CROSS REFERENCE REPORT

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
MW01	X406300-01	Water	June 25, 2014 12:30	06/25/2014 16:30
MW02R	X406300-02	Water	June 25, 2014 12:15	06/25/2014 16:30
MW04R	X406300-03	Water	June 25, 2014 10:00	06/25/2014 16:30
MW05R	X406300-04	Water	June 25, 2014 11:45	06/25/2014 16:30
MW08	X406300-05	Water	June 25, 2014 12:00	06/25/2014 16:30
MW09	X406300-06	Water	June 25, 2014 11:30	06/25/2014 16:30
MW10R	X406300-07	Water	June 25, 2014 10:15	06/25/2014 16:30
MW11R	X406300-08	Water	June 25, 2014 10:45	06/25/2014 16:30
MW12R	X406300-09	Water	June 25, 2014 10:30	06/25/2014 16:30
MW14	X406300-10	Water	June 25, 2014 11:00	06/25/2014 16:30
MW16	X406300-11	Water	June 25, 2014 11:15	06/25/2014 16:30

Origins Laboratory, Inc.



The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Noelle Doyle Mathis, President

John Cocroft
Project Number: KMG06254
Project: KMG - Eachus 4 & 5-23

X406300

1725 Elk Place, Denver, CO 80211
Laboratory # - 303.433.1322

Client: LT Environmental, Inc. Project: KMG - Eastus 4 & 5/23		Project Manager: John Corcoran Project Number: KMG06254		Sample Identification		Sample Date		Sample Time		Sampled By		Container		Qty		Analysis	
Number		Matrix		Sample Date	Sample Time	Sampled By	Container	Qty	Analysis			Filter sample					
01-001	MW#1	Water		6/25/11	1230	CT	00_40ml, Clear, Vol. Coats 4" C	3	BTEX by EPA method			Filter sample					
02-001	MW#2R	Water			1215		00_40ml, Clear Vol Coats 4" C	3	BTEX by EPA method			Filter sample					
03-001	MW#4R	Water			1000		00_40ml, Clear Vol Coats 4" C	3	BTEX by EPA method			Filter sample					
04-001	MW#5R	Water			1145		00_40ml, Clear Vol Coats 4" C	3	BTEX by EPA method			Filter sample					
05-001	MW#8	Water			1200		00_40ml, Clear Vol Coats 4" C	3	BTEX by EPA method			Filter sample					
06-001	MW#9	Water			1130		00_40ml, Clear Vol Coats 4" C	3	BTEX by EPA method			Filter sample					
07-001	MW10R	Water			1015		00_40ml, Clear Vol Coats 4" C	3	BTEX by EPA method			Filter sample					
08-001	MW11R	Water			1045		00_40ml, Clear Vol Coats 4" C	3	BTEX by EPA method			Filter sample					
09-001	MW12R	Water			1030		00_40ml, Clear Vol Coats 4" C	3	BTEX by EPA method			Filter sample					
10-001	MW14	Water			1100		00_40ml, Clear Vol Coats 4" C	3	BTEX by EPA method			Filter sample					
11-001	MW16	Water			1115		00_40ml, Clear Vol Coats 4" C	3	BTEX by EPA method			Filter sample					

Temperature on Receipt:	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Turn Around Time:	72-h	Standard
	<input type="checkbox"/>	<input type="checkbox"/>
Same Day:	<input type="checkbox"/>	<input type="checkbox"/>
24-hr:	<input type="checkbox"/>	<input type="checkbox"/>
48-hr:	<input type="checkbox"/>	<input type="checkbox"/>

Date / Time

Reinquired By

Date / Time

Received By

6/25/14	6:30
Date / Time	
6/25/14	6:30
Date / Time	

Origins Laboratory, Inc.

RBm

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

LT Environmental, Inc.
4600 West 60th Avenue
Arvada CO 80003

John Cocroft
Project Number: KMG06254
Project: KMG - Eachus 4 & 5-23

Origins Laboratory

F-012207-01-R1
Effective Date: 01/09/12

Sample Receipt Checklist

Origins Work Order: X406300

Client: LTE

Client Project ID: Eachus 4+5-23

Checklist Completed by: Dee Smith

Shipped Via: Pick up
(UPS, FedEx, Hand Delivered, Pick-up, etc.)

Date/time completed: 6/26/14 8:53

Airbill #: NA

Matrix(s) Received: (Check all that apply): Soil/Solid ☒ Water ☐ Other: ☐

Cooler Number/Temperature: 1 11.2 °C 1 °C 1 °C (Describe) °C

Thermometer ID: T002

Requirement Description	Yes	No	N/A	Comments (if any)
If samples require cooling, was the temperature between 0°C to ≤ 6°C ⁽¹⁾ ?	<input checked="" type="checkbox"/>			
Is there ice present (document if blue ice is used)	<input checked="" type="checkbox"/>			
Are custody seals present on cooler? (if so, document in comments if they are signed and dated, broken or intact)		<input checked="" type="checkbox"/>		
Are custody seals present on each sample container? (if so, document in comments if they are signed and dated, broken or intact)		<input checked="" type="checkbox"/>		
Were all samples received intact ⁽¹⁾ ?	<input checked="" type="checkbox"/>			
Was adequate sample volume provided ⁽¹⁾ ?	<input checked="" type="checkbox"/>			
Are short holding time analytes or samples with HTs due within 48 hours present ⁽¹⁾ ?		<input checked="" type="checkbox"/>		
Is a chain-of-custody (COC) present and filled out completely ⁽¹⁾ ?	<input checked="" type="checkbox"/>			
Does the COC agree with the number and type of sample bottles received ⁽¹⁾ ?	<input checked="" type="checkbox"/>			
Do the sample IDs on the bottle labels match the COC ⁽¹⁾ ?	<input checked="" type="checkbox"/>			
Is the COC properly relinquished by the client with date and time recorded ⁽¹⁾ ?	<input checked="" type="checkbox"/>			
For volatiles in water – is there headspace (> ¼ inch bubble) present? If yes, contact client and note in narrative.		<input checked="" type="checkbox"/>		
Are samples preserved that require preservation and was it checked ⁽¹⁾ ? (note ID of confirmation instrument used in comments) / (preservation is not confirmed for subcontracted analyses in order to insure sample integrity)/(pH <2 for samples preserved with HNO ₃ , HCL, H ₂ SO ₄) / (pH >10 for samples preserved with NaAsO ₂ +NaOH, ZnAc+NaOH)		<input checked="" type="checkbox"/>		Samples will be analyzed within 7 Days of collection
Additional Comments (if any):				

⁽¹⁾ If NO, then contact the client before proceeding with analysis and note date/time and person contacted as well as the corrective action to in the additional comments (above) and the case narrative.

Reviewed by (Project Manager) [Signature]

Date/Time Reviewed 0629-14 2310

Origins Laboratory, Inc.

[Signature]

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

LT Environmental, Inc.
4600 West 60th Avenue
Arvada CO 80003

John Cocroft
Project Number: KMG06254
Project: KMG - Eachus 4 & 5-23

MW01

6/25/2014 12:30:00PM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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Origins Laboratory, Inc.
X406300-01 (Water)

BTEX by EPA 8260C

Benzene	ND	1.0	ug/L	1	4F26013	06/26/2014	06/26/2014	
Toluene	ND	1.0	"	"	"	"	"	
Ethylbenzene	ND	1.0	"	"	"	"	"	
Xylenes, total	ND	1.0	"	"	"	"	"	

Surrogate: 1,2-Dichloroethane-d4	101 %	87.3-113			"	"	"	
Surrogate: Toluene-d8	101 %	90.9-108			"	"	"	
Surrogate: 4-Bromofluorobenzene	102 %	88.6-111			"	"	"	

Origins Laboratory, Inc.



The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Noelle Doyle Mathis, President

LT Environmental, Inc.
4600 West 60th Avenue
Arvada CO 80003

John Cocroft
Project Number: KMG06254
Project: KMG - Eachus 4 & 5-23

MW02R
6/25/2014 12:15:00PM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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Origins Laboratory, Inc.
X406300-02 (Water)

BTEX by EPA 8260C

Benzene	ND	1.0	ug/L	1	4F26013	06/26/2014	06/26/2014	
Toluene	ND	1.0	"	"	"	"	"	
Ethylbenzene	ND	1.0	"	"	"	"	"	
Xylenes, total	ND	1.0	"	"	"	"	"	

Surrogate: 1,2-Dichloroethane-d4	101 %	87.3-113			"	"	"	
Surrogate: Toluene-d8	101 %	90.9-108			"	"	"	
Surrogate: 4-Bromofluorobenzene	105 %	88.6-111			"	"	"	

Origins Laboratory, Inc.



The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Noelle Doyle Mathis, President

LT Environmental, Inc.
4600 West 60th Avenue
Arvada CO 80003

John Cocroft
Project Number: KMG06254
Project: KMG - Eachus 4 & 5-23

MW04R

6/25/2014 10:00:00AM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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Origins Laboratory, Inc.
X406300-03 (Water)

BTEX by EPA 8260C

Benzene	ND	1.0	ug/L	1	4F26013	06/26/2014	06/26/2014	
Toluene	ND	1.0	"	"	"	"	"	
Ethylbenzene	ND	1.0	"	"	"	"	"	
Xylenes, total	ND	1.0	"	"	"	"	"	

Surrogate: 1,2-Dichloroethane-d4	103 %	87.3-113			"	"	"	
Surrogate: Toluene-d8	99.9 %	90.9-108			"	"	"	
Surrogate: 4-Bromofluorobenzene	105 %	88.6-111			"	"	"	

Origins Laboratory, Inc.



The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Noelle Doyle Mathis, President

LT Environmental, Inc.
4600 West 60th Avenue
Arvada CO 80003

John Cocroft
Project Number: KMG06254
Project: KMG - Eachus 4 & 5-23

MW05R

6/25/2014 11:45:00AM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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Origins Laboratory, Inc.
X406300-04 (Water)

BTEX by EPA 8260C

Benzene	ND	1.0	ug/L	1	4F26013	06/26/2014	06/26/2014	
Toluene	ND	1.0	"	"	"	"	"	
Ethylbenzene	ND	1.0	"	"	"	"	"	
Xylenes, total	ND	1.0	"	"	"	"	"	

Surrogate: 1,2-Dichloroethane-d4	103 %	87.3-113			"	"	"	
Surrogate: Toluene-d8	101 %	90.9-108			"	"	"	
Surrogate: 4-Bromofluorobenzene	104 %	88.6-111			"	"	"	

Origins Laboratory, Inc.



The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Noelle Doyle Mathis, President

LT Environmental, Inc.
4600 West 60th Avenue
Arvada CO 80003

John Cocroft
Project Number: KMG06254
Project: KMG - Eachus 4 & 5-23

MW08
6/25/2014 12:00:00PM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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Origins Laboratory, Inc.
X406300-05 (Water)

BTEX by EPA 8260C

Benzene	ND	1.0	ug/L	1	4F26013	06/26/2014	06/26/2014	
Toluene	ND	1.0	"	"	"	"	"	
Ethylbenzene	ND	1.0	"	"	"	"	"	
Xylenes, total	ND	1.0	"	"	"	"	"	

Surrogate: 1,2-Dichloroethane-d4	104 %	87.3-113			"	"	"	
Surrogate: Toluene-d8	99.9 %	90.9-108			"	"	"	
Surrogate: 4-Bromofluorobenzene	104 %	88.6-111			"	"	"	

Origins Laboratory, Inc.



The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Noelle Doyle Mathis, President

LT Environmental, Inc.
4600 West 60th Avenue
Arvada CO 80003

John Cocroft
Project Number: KMG06254
Project: KMG - Eachus 4 & 5-23

MW09
6/25/2014 11:30:00AM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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Origins Laboratory, Inc.
X406300-06 (Water)

BTEX by EPA 8260C

Benzene	ND	1.0	ug/L	1	4F26013	06/26/2014	06/26/2014
Toluene	ND	1.0	"	"	"	"	"
Ethylbenzene	ND	1.0	"	"	"	"	"
Xylenes, total	ND	1.0	"	"	"	"	"

Surrogate: 1,2-Dichloroethane-d4	102 %	87.3-113			"	"	"
Surrogate: Toluene-d8	100 %	90.9-108			"	"	"
Surrogate: 4-Bromofluorobenzene	104 %	88.6-111			"	"	"

Origins Laboratory, Inc.



The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Noelle Doyle Mathis, President

LT Environmental, Inc.
4600 West 60th Avenue
Arvada CO 80003

John Cocroft
Project Number: KMG06254
Project: KMG - Eachus 4 & 5-23

MW10R
6/25/2014 10:15:00AM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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Origins Laboratory, Inc.
X406300-07 (Water)

BTEX by EPA 8260C

Benzene	ND	1.0	ug/L	1	4F26013	06/26/2014	06/26/2014	
Toluene	ND	1.0	"	"	"	"	"	
Ethylbenzene	ND	1.0	"	"	"	"	"	
Xylenes, total	ND	1.0	"	"	"	"	"	

Surrogate: 1,2-Dichloroethane-d4	103 %	87.3-113			"	"	"	
Surrogate: Toluene-d8	100 %	90.9-108			"	"	"	
Surrogate: 4-Bromofluorobenzene	104 %	88.6-111			"	"	"	

Origins Laboratory, Inc.



The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Noelle Doyle Mathis, President

LT Environmental, Inc.
4600 West 60th Avenue
Arvada CO 80003

John Cocroft
Project Number: KMG06254
Project: KMG - Eachus 4 & 5-23

MW11R
6/25/2014 10:45:00AM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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Origins Laboratory, Inc.
X406300-08 (Water)

BTEX by EPA 8260C

Benzene	3.1	1.0	ug/L	1	4F26013	06/26/2014	06/26/2014	
Toluene	ND	1.0	"	"	"	"	"	
Ethylbenzene	ND	1.0	"	"	"	"	"	
Xylenes, total	ND	1.0	"	"	"	"	"	

Surrogate: 1,2-Dichloroethane-d4	104 %	87.3-113			"	"	"	
Surrogate: Toluene-d8	100 %	90.9-108			"	"	"	
Surrogate: 4-Bromofluorobenzene	104 %	88.6-111			"	"	"	

Origins Laboratory, Inc.



The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Noelle Doyle Mathis, President

LT Environmental, Inc.
4600 West 60th Avenue
Arvada CO 80003

John Cocroft
Project Number: KMG06254
Project: KMG - Eachus 4 & 5-23

MW12R

6/25/2014 10:30:00AM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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Origins Laboratory, Inc.
X406300-09 (Water)

BTEX by EPA 8260C

Benzene	ND	1.0	ug/L	1	4F26013	06/26/2014	06/26/2014
Toluene	ND	1.0	"	"	"	"	"
Ethylbenzene	ND	1.0	"	"	"	"	"
Xylenes, total	ND	1.0	"	"	"	"	"

Surrogate: 1,2-Dichloroethane-d4	104 %	87.3-113		"	"	"
Surrogate: Toluene-d8	99.2 %	90.9-108		"	"	"
Surrogate: 4-Bromofluorobenzene	105 %	88.6-111		"	"	"

Origins Laboratory, Inc.



The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Noelle Doyle Mathis, President

LT Environmental, Inc.
4600 West 60th Avenue
Arvada CO 80003

John Cocroft
Project Number: KMG06254
Project: KMG - Eachus 4 & 5-23

MW14
6/25/2014 11:00:00AM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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Origins Laboratory, Inc.
X406300-10 (Water)

BTEX by EPA 8260C

Benzene	ND	1.0	ug/L	1	4F26013	06/26/2014	06/26/2014	
Toluene	ND	1.0	"	"	"	"	"	
Ethylbenzene	ND	1.0	"	"	"	"	"	
Xylenes, total	ND	1.0	"	"	"	"	"	

Surrogate: 1,2-Dichloroethane-d4	106 %	87.3-113		"	"	"
Surrogate: Toluene-d8	100 %	90.9-108		"	"	"
Surrogate: 4-Bromofluorobenzene	105 %	88.6-111		"	"	"

Origins Laboratory, Inc.



The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Noelle Doyle Mathis, President

LT Environmental, Inc.
4600 West 60th Avenue
Arvada CO 80003

John Cocroft
Project Number: KMG06254
Project: KMG - Eachus 4 & 5-23

MW16
6/25/2014 11:15:00AM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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Origins Laboratory, Inc.
X406300-11 (Water)

BTEX by EPA 8260C

Benzene	ND	1.0	ug/L	1	4F26013	06/26/2014	06/26/2014	
Toluene	ND	1.0	"	"	"	"	"	
Ethylbenzene	ND	1.0	"	"	"	"	"	
Xylenes, total	ND	1.0	"	"	"	"	"	

Surrogate: 1,2-Dichloroethane-d4	103 %	87.3-113			"	"	"	
Surrogate: Toluene-d8	100 %	90.9-108			"	"	"	
Surrogate: 4-Bromofluorobenzene	105 %	88.6-111			"	"	"	

Origins Laboratory, Inc.



The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Noelle Doyle Mathis, President

LT Environmental, Inc.
4600 West 60th Avenue
Arvada CO 80003

John Cocroft
Project Number: KMG06254
Project: KMG - Eachus 4 & 5-23

Volatile Organic Compounds by GC/MS SW846 8260C - Quality Control
Origins Laboratory, Inc.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch 4F26013 - EPA 5030B (Water)

Blank (4F26013-BLK1)

Prepared: 06/26/2014 Analyzed: 06/26/2014

Benzene	ND	1.0	ug/L							
Toluene	ND	1.0	"							
Ethylbenzene	ND	1.0	"							
Xylenes, total	ND	1.0	"							
Surrogate: 1,2-Dichloroethane-d4	65		"	62.5		103	87.3-113			
Surrogate: Toluene-d8	62		"	62.5		99.2	90.9-108			
Surrogate: 4-Bromofluorobenzene	66		"	62.5		105	88.6-111			

Origins Laboratory, Inc.



The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Noelle Doyle Mathis, President

LT Environmental, Inc.
4600 West 60th Avenue
Arvada CO 80003

John Cocroft
Project Number: KMG06254
Project: KMG - Eachus 4 & 5-23

Volatile Organic Compounds by GC/MS SW846 8260C - Quality Control
Origins Laboratory, Inc.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 4F26013 - EPA 5030B (Water)										
LCS (4F26013-BS1)					Prepared: 06/26/2014 Analyzed: 06/26/2014					
Benzene	50.1	1.0	ug/L	50.0		100	75-126			
Toluene	46.8	1.0	"	50.0		93.6	78.7-126			
Ethylbenzene	48.4	1.0	"	50.0		96.8	81-130			
m,p-Xylene	95.8	2.0	"	100		95.8	77.2-133			
o-Xylene	48.3	1.0	"	50.0		96.5	77.9-126			
Surrogate: 1,2-Dichloroethane-d4	56		"	62.5		93.5	87.3-113			
Surrogate: Toluene-d8	63		"	62.5		101	90.9-108			
Surrogate: 4-Bromofluorobenzene	64		"	62.5		103	88.6-111			

Origins Laboratory, Inc.



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Noelle Doyle Mathis, President

LT Environmental, Inc.
4600 West 60th Avenue
Arvada CO 80003

John Cocroft
Project Number: KMG06254
Project: KMG - Eachus 4 & 5-23

Volatile Organic Compounds by GC/MS SW846 8260C - Quality Control
Origins Laboratory, Inc.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch 4F26013 - EPA 5030B (Water)

Matrix Spike (4F26013-MS1)		Source: X406312-01			Prepared: 06/26/2014 Analyzed: 06/26/2014					
Benzene	46.8	1.0	ug/L	50.0	ND	93.5	74-130			
Toluene	44.6	1.0	"	50.0	0.4	88.5	73-131			
Ethylbenzene	46.3	1.0	"	50.0	ND	92.6	76-132			
m,p-Xylene	91.4	2.0	"	100	ND	91.4	69-139			
o-Xylene	45.6	1.0	"	50.0	ND	91.2	74-131			
Surrogate: 1,2-Dichloroethane-d4	57		"	62.5		91.4	87.3-113			
Surrogate: Toluene-d8	63		"	62.5		100	90.9-106			
Surrogate: 4-Bromofluorobenzene	63		"	62.5		101	88.6-111			

Origins Laboratory, Inc.



The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Noelle Doyle Mathis, President

LT Environmental, Inc.
4600 West 60th Avenue
Arvada CO 80003

John Cocroft
Project Number: KMG06254
Project: KMG - Eachus 4 & 5-23

Volatile Organic Compounds by GC/MS SW846 8260C - Quality Control
Origins Laboratory, Inc.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
---------	--------	-----------------	-------	-------------	---------------	------	-------------	-----	-----------	-------

Batch 4F26013 - EPA 5030B (Water)

Matrix Spike Dup (4F26013-MSD1)		Source: X406312-01			Prepared: 06/26/2014 Analyzed: 06/26/2014					
Benzene	47.5	1.0	ug/L	50.0	ND	94.9	74-130	1.46	20	
Toluene	45.5	1.0	"	50.0	0.4	90.3	73-131	2.00	20	
Ethylbenzene	47.4	1.0	"	50.0	ND	94.9	76-132	2.48	20	
m,p-Xylene	93.3	2.0	"	100	ND	93.3	69-139	2.01	20	
o-Xylene	47.3	1.0	"	50.0	ND	94.6	74-131	3.57	20	
Surrogate: 1,2-Dichloroethane-d4	56		"	62.5		92.0	87.3-113			
Surrogate: Toluene-d8	62		"	62.5		99.6	90.9-108			
Surrogate: 4-Bromofluorobenzene	65		"	62.5		104	88.6-111			

Origins Laboratory, Inc.



The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Noelle Doyle Mathis, President

LT Environmental, Inc.

4600 West 60th Avenue

Arvada CO 80003

John Cocroft

Project Number: KMG06254

Project: KMG - Eachus 4 & 5-23

Notes and Definitions

ND Analyte NOT DETECTED at or above the reporting limit

RPD Relative Percent Difference

All soil results are reported at a wet weight basis.

Origins Laboratory, Inc.



The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Noelle Doyle Mathis, President



September 17, 2014

LT Environmental, Inc.

John Cocroft

4600 West 60th Avenue

Arvada

CO 80003

Project Name - KMG - Eachus 4 & 5-23

Project Number - KMG06254

Attached are your analytical results for KMG - Eachus 4 & 5-23 received by Origins Laboratory, Inc. September 10, 2014. This project is associated with Origins project number X409111-01.

The analytical results in the following report were analyzed under the guidelines of EPA Methods. These methods are identified as follows; "SW" are defined in SW-846, "EPA" are defined in 40CFR part 136 and "SM" are defined in the most current revision of Standard Methods For the Examination of Water and Wastewater.

The analytical results apply specifically to the samples and analyses specified per the attached Chain of Custody. As such, this report shall not be reproduced except in full, without the written approval of Origin's laboratory.

Unless otherwise noted, the analytical results for all soil samples are reported on a wet weight basis. All analytical analyses were performed under NELAP guidelines unless noted by a data qualifier.

Any holding time exceedances, deviations from the method specifications or deviations from Origins Laboratory's Standard Operating Procedures are outlined in the case narrative.

Thank you for selecting Origins for your analytical needs. Please contact us with any questions concerning this report, or if we can help with anything at all.

Origins Laboratory, Inc.
303.433.1322
o-squad@oelabinc.com



1725 Elk Place, Denver, CO 80211 | Phone: 303.433.1322 | Fax: 303.265.9645

LT Environmental, Inc.
4600 West 60th Avenue
Arvada CO 80003

John Cocroft
Project Number: KMG06254
Project: KMG - Eachus 4 & 5-23

CROSS REFERENCE REPORT

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
MW01	X409111-01	Water	September 10, 2014 13:20	09/10/2014 17:00
MW02R	X409111-02	Water	September 10, 2014 13:30	09/10/2014 17:00
MW04R	X409111-03	Water	September 10, 2014 13:10	09/10/2014 17:00
MW05R	X409111-04	Water	September 10, 2014 13:00	09/10/2014 17:00
MW08	X409111-05	Water	September 10, 2014 13:40	09/10/2014 17:00
MW09	X409111-06	Water	September 10, 2014 12:50	09/10/2014 17:00
MW10R	X409111-07	Water	September 10, 2014 12:30	09/10/2014 17:00
MW11R	X409111-08	Water	September 10, 2014 12:00	09/10/2014 17:00
MW12R	X409111-09	Water	September 10, 2014 12:20	09/10/2014 17:00
MW14	X409111-10	Water	September 10, 2014 12:10	09/10/2014 17:00

Origins Laboratory, Inc.



The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Noelle Doyle Mathis, President

LT Environmental, Inc.

4600 West 60th Avenue

Arvada CO 80003

John Cocroft

Project Number: KMG06254

Project: KMG - Eachus 4 & 5-23

CROSS REFERENCE REPORT

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
MW16	X409111-11	Water	September 10, 2014 12:40	09/10/2014 17:00

Origins Laboratory, Inc.



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Noelle Doyle Mathis, President

LT Environmental, Inc.
4600 West 60th Avenue
Arvada CO 80003

John Cocroft
Project Number: KMG06254
Project: KMG - Eachus 4 & 5-23

ORIGINS
LABORATORY, INC

X409111

1725 Elk Place, Denver, CO 80211
Laboratory # - 303.433.1322

Client: LT Environmental, Inc.		Project Manager: John Cocroft		Project Number: KMG06254	
Project: KMG - Eachus 4 & 5-23		Sample Identification		Matrix	
Number	Sample	Sample Date	Sample Time	Sampled By	Container
01-001	MW001	9/10/14	1320	CT/RP	01_40mL Clear Val Cool to 4° C
02-001	MW002		1330		02_40mL Clear Val Cool to 4° C
03-001	MW003		1310		03_40mL Clear Val Cool to 4° C
04-001	MW004		1300		04_40mL Clear Val Cool to 4° C
05-001	MW005		1340		05_40mL Clear Val Cool to 4° C
06-001	MW006		1250		06_40mL Clear Val Cool to 4° C
07-001	MW007		1230		07_40mL Clear Val Cool to 4° C
08-001	MW008		1200		08_40mL Clear Val Cool to 4° C
09-001	MW009		1210		09_40mL Clear Val Cool to 4° C
10-001	MW010		1240		10_40mL Clear Val Cool to 4° C
11-001	MW011				11_40mL Clear Val Cool to 4° C

Temperature on Receipt: 15.3

Is present? (Yes) No

Turn Around Time: 24-hr 72-hr 48-hr

Retiniquished By: Date / Time

Received By: Date / Time

9/10/14 1700

9/10/14 1700

Origins Laboratory, Inc.

Noelle Doyle Mathis, President

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LT Environmental, Inc.
4600 West 60th Avenue
Arvada CO 80003

John Cocroft
Project Number: KMG06254
Project: KMG - Eachus 4 & 5-23

Origins Laboratory

F-012207-01-R1
Effective Date: 01/09/12

Sample Receipt Checklist

Origins Work Order: 1409111

Client: LTE

Client Project ID: KMG - Eachus 4 & 5-23

Checklist Completed by: Jen Pellegrini

Shipped Via: Pick-up

(UPS, FedEx, Hand Delivered, Pick-up, etc.)

Date/time completed: 9-11-14 0905

Arbill #: 511A

Matrix(s) Received: (Check all that apply): Soil/Solid X Water Other:

Cooler Number/Temperature: 1 / 13.3 °C / 1 °C / 1 °C / 1 °C (Describe)

Thermometer ID: TD02

Requirement Description	Yes	No	N/A	Comments (if any)
If samples require cooling, was the temperature between 0°C to ≤ 8°C ⁽¹⁾ ?		X		collected same day
Is there ice present (document if blue ice is used)	X			
Are custody seals present on cooler? (if so, document in comments if they are signed and dated, broken or intact)		X		
Are custody seals present on each sample container? (if so, document in comments if they are signed and dated, broken or intact)		X		
Were all samples received intact ⁽¹⁾ ?	X			
Was adequate sample volume provided ⁽¹⁾ ?	X			
Are short holding time analyses or samples with HTs due within 48 hours present ⁽¹⁾ ?		X		
Is a chain-of-custody (COC) present and filled out completely ⁽¹⁾ ?	X			
Does the COC agree with the number and type of sample bottles received ⁽¹⁾ ?	X			
Do the sample IDs on the bottle labels match the COC ⁽¹⁾ ?	X			
Is the COC properly relinquished by the client with date and time recorded ⁽¹⁾ ?	X			
For volatiles in water – is there headspace (> ¼ inch bubble) present? If yes, contact client and note in narrative.		X		
Are samples preserved that require preservation and was it checked ⁽¹⁾ ? (note ID of preservation instrument used in comments) / (preservation is not confirmed for subcontracted analyses. In order to insure sample integrity, pH < 2 for samples preserved with HNO ₃ , HCl, H ₂ SO ₄ / (pH > 10 for samples preserved with NaOH/2+NaOH, 2+NaOH-NaOH)	X	X		HT on each
Additional Comments (if any):				

⁽¹⁾ If NO, then contact the client before proceeding with analysis and note date/time and person contacted as well as the corrective action to be taken in the additional comments (above) and the case narrative.

Reviewed by (Project Manager)

Date/Time Reviewed

Origins Laboratory, Inc.

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Noelle Doyle Mathis, President

LT Environmental, Inc.
4600 West 60th Avenue
Arvada CO 80003

John Cocroft
Project Number: KMG06254
Project: KMG - Eachus 4 & 5-23

MW01

9/10/2014 1:20:00PM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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Origins Laboratory, Inc.
X409111-01 (Water)

BTEX by EPA 8260C

Benzene	ND	1.0	ug/L	1	4111015	09/11/2014	09/12/2014	
Toluene	ND	1.0	"	"	"	"	"	
Ethylbenzene	ND	1.0	"	"	"	"	"	
Xylenes, total	ND	1.0	"	"	"	"	"	

Surrogate: 1,2-Dichloroethane-d4	105 %	87.3-113			"	"	"	
Surrogate: Toluene-d8	98.8 %	90.9-108			"	"	"	
Surrogate: 4-Bromofluorobenzene	99.3 %	88.6-111			"	"	"	

Origins Laboratory, Inc.



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Noelle Doyle Mathis, President

LT Environmental, Inc.
4600 West 60th Avenue
Arvada CO 80003

John Cocroft
Project Number: KMG06254
Project: KMG - Eachus 4 & 5-23

MW02R

9/10/2014 1:30:00PM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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Origins Laboratory, Inc.
X409111-02 (Water)

BTEX by EPA 8260C

Benzene	ND	1.0	ug/L	1	4I11015	09/11/2014	09/12/2014	
Toluene	ND	1.0	"	"	"	"	"	
Ethylbenzene	ND	1.0	"	"	"	"	"	
Xylenes, total	ND	1.0	"	"	"	"	"	

Surrogate: 1,2-Dichloroethane-d4	104 %	87.3-113			"	"	"	
Surrogate: Toluene-d8	98.5 %	90.9-108			"	"	"	
Surrogate: 4-Bromofluorobenzene	99.9 %	88.6-111			"	"	"	

Origins Laboratory, Inc.



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Noelle Doyle Mathis, President

LT Environmental, Inc.
4600 West 60th Avenue
Arvada CO 80003

John Cocroft
Project Number: KMG06254
Project: KMG - Eachus 4 & 5-23

MW04R

9/10/2014 1:10:00PM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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Origins Laboratory, Inc.
X409111-03 (Water)

BTEX by EPA 8260C

Benzene	ND	1.0	ug/L	1	4I11015	09/11/2014	09/12/2014	
Toluene	ND	1.0	"	"	"	"	"	
Ethylbenzene	ND	1.0	"	"	"	"	"	
Xylenes, total	ND	1.0	"	"	"	"	"	

Surrogate: 1,2-Dichloroethane-d4	107 %	87.3-113			"	"	"	
Surrogate: Toluene-d8	99.5 %	90.9-108			"	"	"	
Surrogate: 4-Bromofluorobenzene	99.8 %	88.6-111			"	"	"	

Origins Laboratory, Inc.



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Noelle Doyle Mathis, President

LT Environmental, Inc.
4600 West 60th Avenue
Arvada CO 80003

John Cocroft
Project Number: KMG06254
Project: KMG - Eachus 4 & 5-23

MW05R

9/10/2014 1:00:00PM

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Notes
		Limit							

Origins Laboratory, Inc.
X409111-04 (Water)

BTEX by EPA 8260C

Benzene	ND	1.0	ug/L	1	4111015	09/11/2014	09/12/2014
Toluene	ND	1.0	"	"	"	"	"
Ethylbenzene	ND	1.0	"	"	"	"	"
Xylenes, total	ND	1.0	"	"	"	"	"

Surrogate: 1,2-Dichloroethane-d4	104 %	87.3-113	"	"	"
Surrogate: Toluene-d8	99.2 %	90.9-108	"	"	"
Surrogate: 4-Bromofluorobenzene	99.1 %	88.6-111	"	"	"

Origins Laboratory, Inc.



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Noelle Doyle Mathis, President

LT Environmental, Inc.
4600 West 60th Avenue
Arvada CO 80003

John Cocroft
Project Number: KMG06254
Project: KMG - Eachus 4 & 5-23

MW08

9/10/2014 1:40:00PM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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Origins Laboratory, Inc.
X409111-05 (Water)

BTEX by EPA 8260C

Benzene	ND	1.0	ug/L	1	4I11015	09/11/2014	09/12/2014	
Toluene	ND	1.0	"	"	"	"	"	
Ethylbenzene	ND	1.0	"	"	"	"	"	
Xylenes, total	ND	1.0	"	"	"	"	"	

Surrogate: 1,2-Dichloroethane-d4	104 %	87.3-113			"	"	"	
Surrogate: Toluene-d8	97.6 %	90.9-108			"	"	"	
Surrogate: 4-Bromofluorobenzene	98.6 %	88.6-111			"	"	"	

Origins Laboratory, Inc.



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Noelle Doyle Mathis, President

LT Environmental, Inc.
4600 West 60th Avenue
Arvada CO 80003

John Cocroft
Project Number: KMG06254
Project: KMG - Eachus 4 & 5-23

MW09

9/10/2014 12:50:00PM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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Origins Laboratory, Inc.
X409111-06 (Water)

BTEX by EPA 8260C

Benzene	ND	1.0	ug/L	1	4I11015	09/11/2014	09/12/2014	
Toluene	ND	1.0	"	"	"	"	"	
Ethylbenzene	ND	1.0	"	"	"	"	"	
Xylenes, total	ND	1.0	"	"	"	"	"	

Surrogate: 1,2-Dichloroethane-d4	107 %	87.3-113		"	"	"
Surrogate: Toluene-d8	98.5 %	90.9-108		"	"	"
Surrogate: 4-Bromofluorobenzene	99.1 %	88.6-111		"	"	"

Origins Laboratory, Inc.



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Noelle Doyle Mathis, President

LT Environmental, Inc.
4600 West 60th Avenue
Arvada CO 80003

John Cocroft
Project Number: KMG06254
Project: KMG - Eachus 4 & 5-23

MW10R

9/10/2014 12:30:00PM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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Origins Laboratory, Inc.
X409111-07 (Water)

BTEX by EPA 8260C

Benzene	ND	1.0	ug/L	1	4111015	09/11/2014	09/12/2014	
Toluene	ND	1.0	"	"	"	"	"	
Ethylbenzene	ND	1.0	"	"	"	"	"	
Xylenes, total	ND	1.0	"	"	"	"	"	

Surrogate: 1,2-Dichloroethane-d4	109 %	87.3-113			"	"	"	
Surrogate: Toluene-d8	98.9 %	90.9-108			"	"	"	
Surrogate: 4-Bromofluorobenzene	100 %	88.6-111			"	"	"	

Origins Laboratory, Inc.



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Noelle Doyle Mathis, President

LT Environmental, Inc.
4600 West 60th Avenue
Arvada CO 80003

John Cocroft
Project Number: KMG06254
Project: KMG - Eachus 4 & 5-23

MW11R
9/10/2014 12:00:00PM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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Origins Laboratory, Inc.
X409111-08 (Water)

BTEX by EPA 8260C

Benzene	2.5	1.0	ug/L	1	4I11015	09/11/2014	09/12/2014	
Toluene	ND	1.0	"	"	"	"	"	
Ethylbenzene	ND	1.0	"	"	"	"	"	
Xylenes, total	ND	1.0	"	"	"	"	"	

Surrogate: 1,2-Dichloroethane-d4	108 %	87.3-113			"	"	"	
Surrogate: Toluene-d8	98.8 %	90.9-108			"	"	"	
Surrogate: 4-Bromofluorobenzene	100 %	88.6-111			"	"	"	

Origins Laboratory, Inc.



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Noelle Doyle Mathis, President

LT Environmental, Inc.
4600 West 60th Avenue
Arvada CO 80003

John Cocroft
Project Number: KMG06254
Project: KMG - Eachus 4 & 5-23

MW12R

9/10/2014 12:20:00PM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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Origins Laboratory, Inc.
X409111-09 (Water)

BTEX by EPA 8260C

Benzene	ND	1.0	ug/L	1	4111015	09/11/2014	09/12/2014	
Toluene	ND	1.0	"	"	"	"	"	
Ethylbenzene	ND	1.0	"	"	"	"	"	
Xylenes, total	ND	1.0	"	"	"	"	"	
Surrogate: 1,2-Dichloroethane-d4	109 %	87.3-113			"	"	"	
Surrogate: Toluene-d8	99.9 %	90.9-108			"	"	"	
Surrogate: 4-Bromofluorobenzene	100 %	88.6-111			"	"	"	

Origins Laboratory, Inc.



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Noelle Doyle Mathis, President

LT Environmental, Inc.
4600 West 60th Avenue
Arvada CO 80003

John Cocroft
Project Number: KMG06254
Project: KMG - Eachus 4 & 5-23

MW14

9/10/2014 12:10:00PM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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Origins Laboratory, Inc.
X409111-10 (Water)

BTEX by EPA 8260C

Benzene	ND	1.0	ug/L	1	4111015	09/11/2014	09/12/2014	
Toluene	ND	1.0	"	"	"	"	"	
Ethylbenzene	ND	1.0	"	"	"	"	"	
Xylenes, total	ND	1.0	"	"	"	"	"	

Surrogate: 1,2-Dichloroethane-d4	109 %	87.3-113			"	"	"	
Surrogate: Toluene-d8	98.0 %	90.9-108			"	"	"	
Surrogate: 4-Bromofluorobenzene	98.3 %	88.6-111			"	"	"	

Origins Laboratory, Inc.



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Noelle Doyle Mathis, President

LT Environmental, Inc.
4600 West 60th Avenue
Arvada CO 80003

John Cocroft
Project Number: KMG06254
Project: KMG - Eachus 4 & 5-23

MW16
9/10/2014 12:40:00PM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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Origins Laboratory, Inc.
X409111-11 (Water)

BTEX by EPA 8260C

Benzene	ND	1.0	ug/L	1	4I11015	09/11/2014	09/12/2014	
Toluene	ND	1.0	"	"	"	"	"	
Ethylbenzene	ND	1.0	"	"	"	"	"	
Xylenes, total	ND	1.0	"	"	"	"	"	

Surrogate: 1,2-Dichloroethane-d4	108 %	87.3-113		"	"	"	
Surrogate: Toluene-d8	99.6 %	90.9-108		"	"	"	
Surrogate: 4-Bromofluorobenzene	98.6 %	88.6-111		"	"	"	

Origins Laboratory, Inc.



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Noelle Doyle Mathis, President

LT Environmental, Inc.
4600 West 60th Avenue
Arvada CO 80003

John Cocroft
Project Number: KMG06254
Project: KMG - Eachus 4 & 5-23

Volatile Organic Compounds by GC/MS SW846 8260C - Quality Control
Origins Laboratory, Inc.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch 4I11015 - EPA 5030B (Water)

Blank (4I11015-BLK1)

Prepared: 09/11/2014 Analyzed: 09/12/2014

Benzene	ND	1.0	ug/L							
Toluene	ND	1.0	"							
Ethylbenzene	ND	1.0	"							
Xylenes, total	ND	1.0	"							
Surrogate: 1,2-Dichloroethane-d4	63		"	62.5	101		87.3-113			
Surrogate: Toluene-d8	62		"	62.5	100		90.9-108			
Surrogate: 4-Bromofluorobenzene	62		"	62.5	99.1		88.6-111			

Origins Laboratory, Inc.



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Noelle Doyle Mathis, President

LT Environmental, Inc.
4600 West 60th Avenue
Arvada CO 80003

John Cocroft
Project Number: KMG06254
Project: KMG - Eachus 4 & 5-23

Volatile Organic Compounds by GC/MS SW846 8260C - Quality Control
Origins Laboratory, Inc.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch 4111015 - EPA 5030B (Water)

LCS (4111015-BS1)

Prepared: 09/11/2014 Analyzed: 09/12/2014

Benzene	45.3	1.0	ug/L	50.0	90.6	75-126
Toluene	51.0	1.0	"	50.0	102	78.7-126
Ethylbenzene	51.6	1.0	"	50.0	103	81-130
m,p-Xylene	103	2.0	"	100	103	77.2-133
o-Xylene	51.9	1.0	"	50.0	104	77.9-126
Surrogate: 1,2-Dichloroethane-d4	57		"	62.5	90.6	87.3-113
Surrogate: Toluene-d8	63		"	62.5	100	90.9-106
Surrogate: 4-Bromofluorobenzene	63		"	62.5	100	88.6-111

Origins Laboratory, Inc.



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Noelle Doyle Mathis, President

LT Environmental, Inc.
4600 West 60th Avenue
Arvada CO 80003

John Cocroft
Project Number: KMG06254
Project: KMG - Eachus 4 & 5-23

Volatile Organic Compounds by GC/MS SW846 8260C - Quality Control
Origins Laboratory, Inc.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch 4111015 - EPA 5030B (Water)

Matrix Spike (4111015-MS1)		Source: X409111-02			Prepared: 09/11/2014 Analyzed: 09/12/2014					
Benzene	41.0	1.0	ug/L	50.0	0.3	81.4	74-130			
Toluene	46.5	1.0	"	50.0	ND	93.0	73-131			
Ethylbenzene	46.4	1.0	"	50.0	ND	92.8	76-132			
m,p-Xylene	92.8	2.0	"	100	ND	92.8	69-139			
o-Xylene	45.7	1.0	"	50.0	ND	91.3	74-131			
Surrogate: 1,2-Dichloroethane-d4	59		"	62.5		94.1	87.3-113			
Surrogate: Toluene-d8	62		"	62.5		99.0	90.9-106			
Surrogate: 4-Bromofluorobenzene	61		"	62.5		97.1	88.6-111			

Origins Laboratory, Inc.



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Noelle Doyle Mathis, President

LT Environmental, Inc.
4600 West 60th Avenue
Arvada CO 80003

John Cocroft
Project Number: KMG06254
Project: KMG - Eachus 4 & 5-23

Volatile Organic Compounds by GC/MS SW846 8260C - Quality Control
Origins Laboratory, Inc.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch 4111015 - EPA 5030B (Water)

Matrix Spike Dup (4111015-MSD1)		Source: X409111-02			Prepared: 09/11/2014 Analyzed: 09/12/2014					
Benzene	42.8	1.0	ug/L	50.0	0.3	85.0	74-130	4.34	20	
Toluene	47.9	1.0	"	50.0	ND	95.8	73-131	2.88	20	
Ethylbenzene	47.8	1.0	"	50.0	ND	95.7	76-132	3.10	20	
m,p-Xylene	95.7	2.0	"	100	ND	95.7	69-139	3.06	20	
o-Xylene	47.5	1.0	"	50.0	ND	95.1	74-131	4.01	20	
Surrogate: 1,2-Dichloroethane-d4	60		"	62.5		95.9	87.3-113			
Surrogate: Toluene-d8	63		"	62.5		100	90.9-108			
Surrogate: 4-Bromofluorobenzene	61		"	62.5		98.0	88.6-111			

Origins Laboratory, Inc.



The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Noelle Doyle Mathis, President

LT Environmental, Inc.

4600 West 60th Avenue

Arvada CO 80003

John Cocroft

Project Number: KMG06254

Project: KMG - Eachus 4 & 5-23

Notes and Definitions

ND Analyte NOT DETECTED at or above the reporting limit

RPD Relative Percent Difference

All soil results are reported at a wet weight basis.

Origins Laboratory, Inc.



The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Noelle Doyle Mathis, President

December 15, 2014

LT Environmental, Inc.

John Cocroft

4600 West 60th Avenue

Arvada

CO 80003

Project Name - KMG - Eachus 4 & 5-23

Project Number - KMG06254

Attached are your analytical results for KMG - Eachus 4 & 5-23 received by Origins Laboratory, Inc. December 08, 2014. This project is associated with Origins project number X412118-01.

The analytical results in the following report were analyzed under the guidelines of EPA Methods. These methods are identified as follows; "SW" are defined in SW-846, "EPA" are defined in 40CFR part 136 and "SM" are defined in the most current revision of Standard Methods For the Examination of Water and Wastewater.

The analytical results apply specifically to the samples and analyses specified per the attached Chain of Custody. As such, this report shall not be reproduced except in full, without the written approval of Origin's laboratory.

Unless otherwise noted, the analytical results for all soil samples are reported on a wet weight basis. All analytical analyses were performed under NELAP guidelines unless noted by a data qualifier.

Any holding time exceedances, deviations from the method specifications or deviations from Origins Laboratory's Standard Operating Procedures are outlined in the case narrative.

Thank you for selecting Origins for your analytical needs. Please contact us with any questions concerning this report, or if we can help with anything at all.

Origins Laboratory, Inc.
303.433.1322
o-squad@oelabinc.com



LT Environmental, Inc.
4600 West 60th Avenue
Arvada CO 80003

John Cocroft
Project Number: KMG06254
Project: KMG - Eachus 4 & 5-23

CROSS REFERENCE REPORT

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
MW01	X412118-01	Water	December 8, 2014 10:00	12/08/2014 17:00
MW02R	X412118-02	Water	December 8, 2014 10:10	12/08/2014 17:00
MW04R	X412118-03	Water	December 8, 2014 10:20	12/08/2014 17:00
MW05R	X412118-04	Water	December 8, 2014 10:30	12/08/2014 17:00
MW08	X412118-05	Water	December 8, 2014 10:40	12/08/2014 17:00
MW09	X412118-06	Water	December 8, 2014 10:50	12/08/2014 17:00
MW10R	X412118-07	Water	December 8, 2014 11:00	12/08/2014 17:00
MW11R	X412118-08	Water	December 8, 2014 11:10	12/08/2014 17:00
MW12R	X412118-09	Water	December 8, 2014 11:20	12/08/2014 17:00
MW14	X412118-10	Water	December 8, 2014 11:30	12/08/2014 17:00

Origins Laboratory, Inc.



The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

LT Environmental, Inc.

4600 West 60th Avenue

Arvada CO 80003

John Cocroft

Project Number: KMG06254

Project: KMG - Eachus 4 & 5-23

CROSS REFERENCE REPORT

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
MW16	X412118-11	Water	December 8, 2014 11:40	12/08/2014 17:00

Origins Laboratory, Inc.



The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Jen Pellegrini For Noelle Doyle Mathis, President

LT Environmental, Inc.
4600 West 60th Avenue
Arvada CO 80003

John Cocroft
Project Number: KMG06254
Project: KMG - Eachus 4 & 5-23

ORIGINS
LABORATORY, INC

Y412118

1725 Elk Place, Denver, CO 80211
Laboratory # - 303.433.1322

Client: LT Environmental, Inc.		Project Manager: John Cocroft		Project Number: KMG06254	
Project: KMG - Eachus 4 & 5-23		Sampled By: CT/KS		Container: 00.40ml, Clear Vial Cool to 4° C	
Number	Sample Identification	Matrix	Sample Date	Sample Time	Analysis
01-001	MW001	Water	12/03/14	1000	BTEX by EPA 8260C Filter sample
02-001	MW002R	Water		1010	BTEX by EPA 8260C Filter sample
03-001	MW004R	Water		1020	BTEX by EPA 8260C Filter sample
04-001	MW005R	Water		1030	BTEX by EPA 8260C Filter sample
05-001	MW008	Water		1040	BTEX by EPA 8260C Filter sample
06-001	MW009	Water		1050	BTEX by EPA 8260C Filter sample
07-001	MW10R	Water		1100	BTEX by EPA 8260C Filter sample
08-001	MW11R	Water		1110	BTEX by EPA 8260C Filter sample
09-001	MW12R	Water		1120	BTEX by EPA 8260C Filter sample
10-001	MW14	Water		1130	BTEX by EPA 8260C Filter sample
11-001	MW16	Water		1140	BTEX by EPA 8260C Filter sample

Temperature on Receipt: 53

Ice present? Yes No

Turn Around Time:

Same Day: ☐ 24-hr: ☐ 48-hr: ☒ Standard

Relinquished By: Date / Time: 12/03/14 1700

Received By: Date / Time: 12/03/14 1700

Relinquished By: Date / Time: 12/03/14 1700

Received By: Date / Time: 12/03/14 1700

Origins Laboratory, Inc.

Jefe Pellegrini

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

LT Environmental, Inc.
4600 West 60th Avenue
Arvada CO 80003

John Cocroft
Project Number: KMG06254
Project: KMG - Eachus 4 & 5-23

Origins Laboratory

F-012207-01-R1
Effective Date: 01/09/12

Sample Receipt Checklist

Origins Work Order: X412118

Client: LTE
Client Project ID: KMG - Eachus

Checklist Completed by: Jen Pellegrini

Shipped Via: Pickup
(UPS, FedEx, Hand Delivered, Pick-up, etc.)

Date/time completed: 12-9-14

Airbill #: NA

Matrix(s) Received: (Check all that apply): Soil/Solid ☒ Water ☐ Other: ☐ (Describe)

Cooler Number/Temperature: 1 5.3 °C 1 °C 1 °C 1 °C

Thermometer ID: T003

Requirement Description	Yes	No	N/A	Comments (if any)
If samples require cooling, was the temperature between 0°C to ≤ 6°C ⁽¹⁾ ?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Is there ice present (document if blue ice is used)	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Are custody seals present on cooler? (if so, document in comments if they are signed and dated, broken or intact)	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Are custody seals present on each sample container? (if so, document in comments if they are signed and dated, broken or intact)	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Were all samples received intact ⁽¹⁾ ?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Was adequate sample volume provided ⁽¹⁾ ?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Are short holding time analytes or samples with HTs due within 48 hours present ⁽¹⁾ ?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Is a chain-of-custody (COC) present and filled out completely ⁽¹⁾ ?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Does the COC agree with the number and type of sample bottles received ⁽¹⁾ ?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Do the sample IDs on the bottle labels match the COC ⁽¹⁾ ?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Is the COC properly relinquished by the client with date and time recorded ⁽¹⁾ ?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
For volatiles in water - is there headspace (> 1/2 inch bubble) present? If yes, contact client and note in narrative.	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Are samples preserved that require preservation and was it checked ⁽¹⁾ ? (note ID of confirmation instrument used in comments) / (preservation is not confirmed for subcontracted analyses in order to insure sample integrity) / (pH < 2 for samples preserved with HNO ₃ , HCL, H ₂ SO ₄) / (pH > 10 for samples preserved with NaAsO ₂ +NaOH, ZnAc+NaOH).	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Additional Comments (if any):				

⁽¹⁾If NO, then contact the client before proceeding with analysis and note date/time and person contacted as well as the corrective action to in the additional comments (above) and the case narrative.

Reviewed by (Project Manager) Jen Pellegrini

Date/Time Reviewed 12/9/14

Origins Laboratory, Inc.

Jen Pellegrini

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

LT Environmental, Inc.
4600 West 60th Avenue
Arvada CO 80003

John Cocroft
Project Number: KMG06254
Project: KMG - Eachus 4 & 5-23

MW01
12/8/2014 10:00:00AM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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Origins Laboratory, Inc.
X412118-01 (Water)

BTEX by EPA 8260C

Benzene	ND	1.0	ug/L	1	4L11012	12/11/2014	12/14/2014
Toluene	ND	1.0	"	"	"	"	"
Ethylbenzene	ND	1.0	"	"	"	"	"
Xylenes, total	ND	1.0	"	"	"	"	"

Surrogate: 1,2-Dichloroethane-d4	107 %	87.3-113			"	"	"
Surrogate: Toluene-d8	99.3 %	90.9-108			"	"	"
Surrogate: 4-Bromofluorobenzene	101 %	88.6-111			"	"	"

Origins Laboratory, Inc.



The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

LT Environmental, Inc.
4600 West 60th Avenue
Arvada CO 80003

John Cocroft
Project Number: KMG06254
Project: KMG - Eachus 4 & 5-23

MW02R**12/8/2014 10:10:00AM**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Notes
		Limit							

Origins Laboratory, Inc.
X412118-02 (Water)

BTEX by EPA 8260C

Benzene	ND	1.0	ug/L	1	4L11012	12/11/2014	12/14/2014
Toluene	ND	1.0	"	"	"	"	"
Ethylbenzene	ND	1.0	"	"	"	"	"
Xylenes, total	ND	1.0	"	"	"	"	"

Surrogate: 1,2-Dichloroethane-d4	107 %	87.3-113	"	"	"
Surrogate: Toluene-d8	99.5 %	90.9-108	"	"	"
Surrogate: 4-Bromofluorobenzene	101 %	88.6-111	"	"	"

Origins Laboratory, Inc.



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Jen Pellegrini For Noelle Doyle Mathis, President

LT Environmental, Inc.
4600 West 60th Avenue
Arvada CO 80003

John Cocroft
Project Number: KMG06254
Project: KMG - Eachus 4 & 5-23

MW04R**12/8/2014 10:20:00AM**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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Origins Laboratory, Inc.
X412118-03 (Water)

BTEX by EPA 8260C

Benzene	ND	1.0	ug/L	1	4L11012	12/11/2014	12/14/2014
Toluene	ND	1.0	"	"	"	"	"
Ethylbenzene	ND	1.0	"	"	"	"	"
Xylenes, total	ND	1.0	"	"	"	"	"

Surrogate: 1,2-Dichloroethane-d4	111 %	87.3-113	"	"	"
Surrogate: Toluene-d8	99.6 %	90.9-108	"	"	"
Surrogate: 4-Bromofluorobenzene	100 %	88.6-111	"	"	"

Origins Laboratory, Inc.



The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

LT Environmental, Inc.
4600 West 60th Avenue
Arvada CO 80003

John Cocroft
Project Number: KMG06254
Project: KMG - Eachus 4 & 5-23

MW05R**12/8/2014 10:30:00AM**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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Origins Laboratory, Inc.
X412118-04 (Water)

BTEX by EPA 8260C

Benzene	ND	1.0	ug/L	1	4L11012	12/11/2014	12/14/2014
Toluene	ND	1.0	"	"	"	"	"
Ethylbenzene	ND	1.0	"	"	"	"	"
Xylenes, total	ND	1.0	"	"	"	"	"
Surrogate: 1,2-Dichloroethane-d4	108 %	87.3-113			"	"	"
Surrogate: Toluene-d8	99.8 %	90.9-108			"	"	"
Surrogate: 4-Bromofluorobenzene	101 %	88.6-111			"	"	"

Origins Laboratory, Inc.



The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Jen Pellegrini For Noelle Doyle Mathis, President

LT Environmental, Inc.
4600 West 60th Avenue
Arvada CO 80003

John Cocroft
Project Number: KMG06254
Project: KMG - Eachus 4 & 5-23

MW08

12/8/2014 10:40:00AM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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Origins Laboratory, Inc. X412118-05 (Water)

BTEX by EPA 8260C

Benzene	ND	1.0	ug/L	1	4L11012	12/11/2014	12/14/2014	
Toluene	ND	1.0	"	"	"	"	"	
Ethylbenzene	ND	1.0	"	"	"	"	"	
Xylenes, total	ND	1.0	"	"	"	"	"	

Surrogate: 1,2-Dichloroethane-d4	108 %	87.3-113			"	"	"	
Surrogate: Toluene-d8	101 %	90.9-108			"	"	"	
Surrogate: 4-Bromofluorobenzene	101 %	88.6-111			"	"	"	

Origins Laboratory, Inc.



The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

LT Environmental, Inc.
4600 West 60th Avenue
Arvada CO 80003

John Cocroft
Project Number: KMG06254
Project: KMG - Eachus 4 & 5-23

MW09**12/8/2014 10:50:00AM**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Notes
		Limit							

Origins Laboratory, Inc.
X412118-06 (Water)

BTEX by EPA 8260C

Benzene	ND	1.0	ug/L	1	4L11012	12/11/2014	12/14/2014
Toluene	ND	1.0	"	"	"	"	"
Ethylbenzene	ND	1.0	"	"	"	"	"
Xylenes, total	ND	1.0	"	"	"	"	"

Surrogate: 1,2-Dichloroethane-d4	108 %	87.3-113	"	"	"
Surrogate: Toluene-d8	99.8 %	90.9-108	"	"	"
Surrogate: 4-Bromofluorobenzene	100 %	88.6-111	"	"	"

Origins Laboratory, Inc.



The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

LT Environmental, Inc.
4600 West 60th Avenue
Arvada CO 80003

John Cocroft
Project Number: KMG06254
Project: KMG - Eachus 4 & 5-23

MW10R**12/8/2014 11:00:00AM**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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Origins Laboratory, Inc.
X412118-07 (Water)

BTEX by EPA 8260C

Benzene	ND	1.0	ug/L	1	4L11012	12/11/2014	12/14/2014
Toluene	ND	1.0	"	"	"	"	"
Ethylbenzene	ND	1.0	"	"	"	"	"
Xylenes, total	ND	1.0	"	"	"	"	"

Surrogate: 1,2-Dichloroethane-d4	108 %	87.3-113	"	"	"
Surrogate: Toluene-d8	98.4 %	90.9-108	"	"	"
Surrogate: 4-Bromofluorobenzene	103 %	88.6-111	"	"	"

Origins Laboratory, Inc.



The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

LT Environmental, Inc.
4600 West 60th Avenue
Arvada CO 80003

John Cocroft
Project Number: KMG06254
Project: KMG - Eachus 4 & 5-23

MW11R**12/8/2014 11:10:00AM**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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Origins Laboratory, Inc.
X412118-08 (Water)

BTEX by EPA 8260C

Benzene	ND	1.0	ug/L	1	4L11012	12/11/2014	12/14/2014	
Toluene	ND	1.0	"	"	"	"	"	
Ethylbenzene	ND	1.0	"	"	"	"	"	
Xylenes, total	ND	1.0	"	"	"	"	"	

Surrogate: 1,2-Dichloroethane-d4	109 %	87.3-113			"	"	"	
Surrogate: Toluene-d8	99.1 %	90.9-108			"	"	"	
Surrogate: 4-Bromofluorobenzene	101 %	88.6-111			"	"	"	

Origins Laboratory, Inc.



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LT Environmental, Inc.
4600 West 60th Avenue
Arvada CO 80003

John Cocroft
Project Number: KMG06254
Project: KMG - Eachus 4 & 5-23

MW12R**12/8/2014 11:20:00AM**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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Origins Laboratory, Inc.
X412118-09 (Water)

BTEX by EPA 8260C

Benzene	ND	1.0	ug/L	1	4L11012	12/11/2014	12/14/2014
Toluene	ND	1.0	"	"	"	"	"
Ethylbenzene	ND	1.0	"	"	"	"	"
Xylenes, total	ND	1.0	"	"	"	"	"

Surrogate: 1,2-Dichloroethane-d4	109 %	87.3-113	"	"	"
Surrogate: Toluene-d8	99.0 %	90.9-108	"	"	"
Surrogate: 4-Bromofluorobenzene	99.4 %	88.6-111	"	"	"

Origins Laboratory, Inc.



The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

LT Environmental, Inc.
4600 West 60th Avenue
Arvada CO 80003

John Cocroft
Project Number: KMG06254
Project: KMG - Eachus 4 & 5-23

MW14
12/8/2014 11:30:00AM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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Origins Laboratory, Inc.
X412118-10 (Water)

BTEX by EPA 8260C

Benzene	ND	1.0	ug/L	1	4L11012	12/11/2014	12/14/2014
Toluene	ND	1.0	"	"	"	"	"
Ethylbenzene	ND	1.0	"	"	"	"	"
Xylenes, total	ND	1.0	"	"	"	"	"

Surrogate: 1,2-Dichloroethane-d4	110 %	87.3-113			"	"	"
Surrogate: Toluene-d8	101 %	90.9-108			"	"	"
Surrogate: 4-Bromofluorobenzene	103 %	88.6-111			"	"	"

Origins Laboratory, Inc.



The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

LT Environmental, Inc.
4600 West 60th Avenue
Arvada CO 80003

John Cocroft
Project Number: KMG06254
Project: KMG - Eachus 4 & 5-23

MW16
12/8/2014 11:40:00AM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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Origins Laboratory, Inc.
X412118-11 (Water)

BTEX by EPA 8260C

Benzene	ND	1.0	ug/L	1	4L11012	12/11/2014	12/14/2014
Toluene	ND	1.0	"	"	"	"	"
Ethylbenzene	ND	1.0	"	"	"	"	"
Xylenes, total	ND	1.0	"	"	"	"	"

Surrogate: 1,2-Dichloroethane-d4	106 %	87.3-113			"	"	"
Surrogate: Toluene-d8	98.9 %	90.9-108			"	"	"
Surrogate: 4-Bromofluorobenzene	102 %	88.6-111			"	"	"

Origins Laboratory, Inc.



The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

LT Environmental, Inc.
4600 West 60th Avenue
Arvada CO 80003

John Cocroft
Project Number: KMG06254
Project: KMG - Eachus 4 & 5-23

Volatile Organic Compounds by GC/MS SW846 8260C - Quality Control
Origins Laboratory, Inc.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch 4L11012 - EPA 5030B (Water)

Blank (4L11012-BLK1)

Prepared: 12/11/2014 Analyzed: 12/14/2014

Benzene	ND	1.0	ug/L							
Toluene	ND	1.0	"							
Ethylbenzene	ND	1.0	"							
Xylenes, total	ND	1.0	"							
Surrogate: 1,2-Dichloroethane-d4	67		"	62.5		107	87.3-113			
Surrogate: Toluene-d8	63		"	62.5		100	90.9-108			
Surrogate: 4-Bromofluorobenzene	64		"	62.5		102	88.6-111			

Origins Laboratory, Inc.



The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Jen Pellegrini For Noelle Doyle Mathis, President



March 13, 2015

LT Environmental, Inc.

John Cocroft

4600 West 60th Avenue

Arvada

CO 80003

Project Name - KMG - Eachus 4 & 5-23

Project Number - KMG06254

Attached are your analytical results for KMG - Eachus 4 & 5-23 received by Origins Laboratory, Inc. March 06, 2015. This project is associated with Origins project number X503063-01.

The analytical results in the following report were analyzed under the guidelines of EPA Methods. These methods are identified as follows; "SW" are defined in SW-846, "EPA" are defined in 40CFR part 136 and "SM" are defined in the most current revision of Standard Methods For the Examination of Water and Wastewater.

The analytical results apply specifically to the samples and analyses specified per the attached Chain of Custody. As such, this report shall not be reproduced except in full, without the written approval of Origin's laboratory.

Unless otherwise noted, the analytical results for all soil samples are reported on a wet weight basis. All analytical analyses were performed under NELAP guidelines unless noted by a data qualifier.

Any holding time exceedances, deviations from the method specifications or deviations from Origins Laboratory's Standard Operating Procedures are outlined in the case narrative.

Thank you for selecting Origins for your analytical needs. Please contact us with any questions concerning this report, or if we can help with anything at all.

Origins Laboratory, Inc.
303.433.1322
o-squad@oelabinc.com



1725 Elk Place, Denver, CO 80211 | Phone: 303.433.1322 | Fax: 303.265.9645

LT Environmental, Inc.
4600 West 60th Avenue
Arvada CO 80003

John Cocroft
Project Number: KMG06254
Project: KMG - Eachus 4 & 5-23

CROSS REFERENCE REPORT

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
MW01	X503063-01	Water	March 5, 2015 10:30	03/06/2015 17:23
MW02R	X503063-02	Water	March 5, 2015 10:40	03/06/2015 17:23
MW04R	X503063-03	Water	March 5, 2015 10:50	03/06/2015 17:23
MW05R	X503063-04	Water	March 5, 2015 11:00	03/06/2015 17:23
MW08	X503063-05	Water	March 5, 2015 11:10	03/06/2015 17:23
MW09	X503063-06	Water	March 5, 2015 11:20	03/06/2015 17:23
MW10R	X503063-07	Water	March 5, 2015 11:30	03/06/2015 17:23
MW11R	X503063-08	Water	March 5, 2015 11:40	03/06/2015 17:23
MW12R	X503063-09	Water	March 5, 2015 11:50	03/06/2015 17:23
MW14	X503063-10	Water	March 5, 2015 12:00	03/06/2015 17:23

Origins Laboratory, Inc.



The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

LT Environmental, Inc.

4600 West 60th Avenue

Arvada CO 80003

John Cocroft

Project Number: KMG06254

Project: KMG - Eachus 4 & 5-23

CROSS REFERENCE REPORT

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
MW16	X503063-11	Water	March 5, 2015 12:10	03/06/2015 17:23

Origins Laboratory, Inc.



The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Jen Pellegrini For Noelle Doyle Mathis, President

LT Environmental, Inc.
4600 West 60th Avenue
Arvada CO 80003

John Cocroft
Project Number: KMG06254
Project: KMG - Eachus 4 & 5-23

ORIGINS
LABORATORY, INC

X503043

1725 Elk Place, Denver, CO 80211
Laboratory # - 303.433.1322

Client: LT Environmental, Inc. Project: KMG - Eachus 4 & 5-23		Project Manager: John Cocroft Project Number: KMG06254						
Number	Sample Identification	Matrix	Sample Date	Sample Time	Sampled By	Container	Qty	Analyses
01-001	MW01	Water	3/5/15	1030	PS	100.4mL Clear Vial Cool to 4° C	3	BTEX by EPA 8260C Filter sample
02-001	MW02R	Water		1040		100.4mL Clear Vial Cool to 4° C	3	BTEX by EPA 8260C Filter sample
03-001	MW04R	Water		1050		100.4mL Clear Vial Cool to 4° C	3	BTEX by EPA 8260C Filter sample
04-001	MW05R	Water		1100		100.4mL Clear Vial Cool to 4° C	3	BTEX by EPA 8260C Filter sample
05-001	MW08	Water		1110		100.4mL Clear Vial Cool to 4° C	3	BTEX by EPA 8260C Filter sample
06-001	MW09	Water		1120		100.4mL Clear Vial Cool to 4° C	3	BTEX by EPA 8260C Filter sample
07-001	MW10R	Water		1130		100.4mL Clear Vial Cool to 4° C	3	BTEX by EPA 8260C Filter sample
08-001	MW11R	Water		1140		100.4mL Clear Vial Cool to 4° C	3	BTEX by EPA 8260C Filter sample
09-001	MW12R	Water		1150		100.4mL Clear Vial Cool to 4° C	3	BTEX by EPA 8260C Filter sample
10-001	MW14	Water		1200		100.4mL Clear Vial Cool to 4° C	3	BTEX by EPA 8260C Filter sample
11-001	MW16	Water		1210		100.4mL Clear Vial Cool to 4° C	3	BTEX by EPA 8260C Filter sample

Relinquished By: *[Signature]* Date / Time: 3/6/15 1600
 Relinquished By: *[Signature]* Date / Time: 3/6/15 1227
 Received By: *[Signature]* Date / Time: 3/6/15 1420
 Received By: *[Signature]* Date / Time: 3/6/15 1227

Temperature on Receipt: 5.0
 Ice present? Yes ☐ No ☒
 Turn Around Time: Same Day ☐ 24-hr ☐ 72-hr ☐ Standard ☒

Origins Laboratory, Inc.

Jefe Pellegrini

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

LT Environmental, Inc.
4600 West 60th Avenue
Arvada CO 80003

John Cocroft
Project Number: KMG06254
Project: KMG - Eachus 4 & 5-23

Origins Laboratory

F-012207-01-R1
Effective Date: 01/09/12

Sample Receipt Checklist

Origins Work Order: XSO3043

Client: LTE

Client Project ID: KMG-Eachus 4 & 5-23

Checklist Completed by: Jen Pellegrini

Shipped Via: #1D
(UPS, FedEx, Hand Delivered, Pick-up, etc.)

Date/time completed: 3/6/15

Airbill #: N/A

Matrix(s) Received: (Check all that apply): Soil/Solid ☒ Water ☐ Other: ☐ (Describe)

Cooler Number/Temperature: 1 5.0 °C / / °C / / °C / / °C

Thermometer ID: T003

Requirement Description	Yes	No	N/A	Comments (if any)
If samples require cooling, was the temperature between 0°C to ≤ 6°C ⁽¹⁾ ?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Is there ice present (document if blue ice is used)	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Are custody seals present on cooler? (if so, document in comments if they are signed and dated, broken or intact)	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Are custody seals present on each sample container? (if so, document in comments if they are signed and dated, broken or intact)	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Were all samples received intact ⁽¹⁾ ?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Was adequate sample volume provided ⁽¹⁾ ?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Are short holding time analytes or samples with HTs due within 48 hours present ⁽¹⁾ ?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Is a chain-of-custody (COC) present and filled out completely ⁽¹⁾ ?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Does the COC agree with the number and type of sample bottles received ⁽¹⁾ ?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Do the sample IDs on the bottle labels match the COC ⁽¹⁾ ?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Is the COC properly relinquished by the client with date and time recorded ⁽¹⁾ ?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
For volatiles in water – is there headspace (> ¼ inch bubble) present? If yes, contact client and note in narrative.	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Are samples preserved that require preservation and was it checked ⁽¹⁾ ? (note ID of confirmation instrument used in comments) / (preservation is not confirmed for subcontracted analyses in order to insure sample integrity)/pH < 2 for samples preserved with HNO ₃ , HCl, H ₂ SO ₄ / (pH > 10 for samples preserved with NaAsO ₂ +NaOH, ZnAc+NaOH)	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Additional Comments (if any):				

⁽¹⁾If NO, then contact the client before proceeding with analysis and note date/time and person contacted as well as the corrective action to in the additional comments (above) and the case narrative.

Jen Pellegrini
Reviewed by (Project Manager)

3/10/15
Date/Time Reviewed

Origins Laboratory, Inc.

Jen Pellegrini

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LT Environmental, Inc.
4600 West 60th Avenue
Arvada CO 80003

John Cocroft
Project Number: KMG06254
Project: KMG - Eachus 4 & 5-23

MW01**3/5/2015 10:30:00AM**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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Origins Laboratory, Inc.
X503063-01 (Water)

BTEX by EPA 8260C

Benzene	ND	1.0	ug/L	1	5C10014	03/10/2015	03/11/2015	
Toluene	ND	1.0	"	"	"	"	"	
Ethylbenzene	1.0	1.0	"	"	"	"	"	
Xylenes, total	ND	1.0	"	"	"	"	"	
Surrogate: 1,2-Dichloroethane-d4	107 %	87.3-113			"	"	"	
Surrogate: Toluene-d8	95.2 %	90.9-108			"	"	"	
Surrogate: 4-Bromofluorobenzene	113 %	88.6-111			"	"	"	S-GC

Origins Laboratory, Inc.



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LT Environmental, Inc.
4600 West 60th Avenue
Arvada CO 80003

John Cocroft
Project Number: KMG06254
Project: KMG - Eachus 4 & 5-23

MW02R
3/5/2015 10:40:00AM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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Origins Laboratory, Inc.
X503063-02 (Water)

BTEX by EPA 8260C

Benzene	1.6	1.0	ug/L	1	5C10014	03/10/2015	03/11/2015	
Toluene	ND	1.0	"	"	"	"	"	
Ethylbenzene	ND	1.0	"	"	"	"	"	
Xylenes, total	ND	1.0	"	"	"	"	"	

Surrogate: 1,2-Dichloroethane-d4	106 %	87.3-113			"	"	"	
Surrogate: Toluene-d8	96.0 %	90.9-108			"	"	"	
Surrogate: 4-Bromofluorobenzene	112 %	88.6-111			"	"	" S-07	

Origins Laboratory, Inc.



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LT Environmental, Inc.
4600 West 60th Avenue
Arvada CO 80003

John Cocroft
Project Number: KMG06254
Project: KMG - Eachus 4 & 5-23

MW04R

3/5/2015 10:50:00AM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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Origins Laboratory, Inc.
X503063-03 (Water)

BTEX by EPA 8260C

Benzene	ND	1.0	ug/L	1	5C10014	03/10/2015	03/11/2015	
Toluene	ND	1.0	"	"	"	"	"	
Ethylbenzene	ND	1.0	"	"	"	"	"	
Xylenes, total	ND	1.0	"	"	"	"	"	
Surrogate: 1,2-Dichloroethane-d4	107 %	87.3-113			"	"	"	
Surrogate: Toluene-d8	95.7 %	90.9-108			"	"	"	
Surrogate: 4-Bromofluorobenzene	112 %	88.6-111			"	"	"	S-07

Origins Laboratory, Inc.



The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

LT Environmental, Inc.
4600 West 60th Avenue
Arvada CO 80003

John Cocroft
Project Number: KMG06254
Project: KMG - Eachus 4 & 5-23

MW05R**3/5/2015 11:00:00AM**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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Origins Laboratory, Inc.
X503063-04 (Water)

BTEX by EPA 8260C

Benzene	ND	1.0	ug/L	1	5C10014	03/10/2015	03/11/2015	
Toluene	ND	1.0	"	"	"	"	"	
Ethylbenzene	ND	1.0	"	"	"	"	"	
Xylenes, total	ND	1.0	"	"	"	"	"	

Surrogate: 1,2-Dichloroethane-d4	106 %	87.3-113			"	"	"	
Surrogate: Toluene-d8	96.8 %	90.9-108			"	"	"	
Surrogate: 4-Bromofluorobenzene	113 %	88.6-111			"	"	"	S-07

Origins Laboratory, Inc.



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LT Environmental, Inc.
4600 West 60th Avenue
Arvada CO 80003

John Cocroft
Project Number: KMG06254
Project: KMG - Eachus 4 & 5-23

MW08**3/5/2015 11:10:00AM**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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Origins Laboratory, Inc.
X503063-05 (Water)

BTEX by EPA 8260C

Benzene	ND	1.0	ug/L	1	5C10014	03/10/2015	03/11/2015	
Toluene	ND	1.0	"	"	"	"	"	
Ethylbenzene	ND	1.0	"	"	"	"	"	
Xylenes, total	ND	1.0	"	"	"	"	"	

Surrogate: 1,2-Dichloroethane-d4	106 %	87.3-113			"	"	"	
Surrogate: Toluene-d8	95.9 %	90.9-108			"	"	"	
Surrogate: 4-Bromofluorobenzene	113 %	88.6-111			"	"	"	S-07

Origins Laboratory, Inc.



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LT Environmental, Inc.
4600 West 60th Avenue
Arvada CO 80003

John Cocroft
Project Number: KMG06254
Project: KMG - Eachus 4 & 5-23

MW09

3/5/2015 11:20:00AM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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Origins Laboratory, Inc. X503063-06 (Water)

BTEX by EPA 8260C

Benzene	ND	1.0	ug/L	1	5C10014	03/10/2015	03/11/2015	
Toluene	ND	1.0	"	"	"	"	"	
Ethylbenzene	ND	1.0	"	"	"	"	"	
Xylenes, total	ND	1.0	"	"	"	"	"	

Surrogate: 1,2-Dichloroethane-d4	106 %	87.3-113			"	"	"	
Surrogate: Toluene-d8	96.0 %	90.9-108			"	"	"	
Surrogate: 4-Bromofluorobenzene	115 %	88.6-111			"	"	"	S-07

Origins Laboratory, Inc.



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LT Environmental, Inc.
4600 West 60th Avenue
Arvada CO 80003

John Cocroft
Project Number: KMG06254
Project: KMG - Eachus 4 & 5-23

MW10R**3/5/2015 11:30:00AM**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Notes
		Limit							

Origins Laboratory, Inc.
X503063-07 (Water)

BTEX by EPA 8260C

Benzene	ND	1.0	ug/L	1	5C10014	03/10/2015	03/11/2015	
Toluene	ND	1.0	"	"	"	"	"	
Ethylbenzene	ND	1.0	"	"	"	"	"	
Xylenes, total	ND	1.0	"	"	"	"	"	
Surrogate: 1,2-Dichloroethane-d4	106 %	87.3-113			"	"	"	
Surrogate: Toluene-d8	96.7 %	90.9-108			"	"	"	
Surrogate: 4-Bromofluorobenzene	112 %	88.6-111			"	"	"	S-07

Origins Laboratory, Inc.



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LT Environmental, Inc.
4600 West 60th Avenue
Arvada CO 80003

John Cocroft
Project Number: KMG06254
Project: KMG - Eachus 4 & 5-23

MW11R
3/5/2015 11:40:00AM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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Origins Laboratory, Inc.
X503063-08 (Water)

BTEX by EPA 8260C

Benzene	ND	1.0	ug/L	1	5C10014	03/10/2015	03/11/2015	
Toluene	ND	1.0	"	"	"	"	"	
Ethylbenzene	ND	1.0	"	"	"	"	"	
Xylenes, total	ND	1.0	"	"	"	"	"	
Surrogate: 1,2-Dichloroethane-d4	106 %	87.3-113			"	"	"	
Surrogate: Toluene-d8	96.5 %	90.9-108			"	"	"	
Surrogate: 4-Bromofluorobenzene	113 %	88.6-111			"	"	"	S-07

Origins Laboratory, Inc.



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LT Environmental, Inc.
4600 West 60th Avenue
Arvada CO 80003

John Cocroft
Project Number: KMG06254
Project: KMG - Eachus 4 & 5-23

MW12R

3/5/2015 11:50:00AM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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Origins Laboratory, Inc.
X503063-09 (Water)

BTEX by EPA 8260C

Benzene	ND	1.0	ug/L	1	5C10014	03/10/2015	03/11/2015	
Toluene	ND	1.0	"	"	"	"	"	
Ethylbenzene	ND	1.0	"	"	"	"	"	
Xylenes, total	ND	1.0	"	"	"	"	"	

Surrogate: 1,2-Dichloroethane-d4	106 %	87.3-113			"	"	"	
Surrogate: Toluene-d8	95.7 %	90.9-108			"	"	"	
Surrogate: 4-Bromofluorobenzene	112 %	88.6-111			"	"	"	S-07

Origins Laboratory, Inc.



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LT Environmental, Inc.
4600 West 60th Avenue
Arvada CO 80003

John Cocroft
Project Number: KMG06254
Project: KMG - Eachus 4 & 5-23

MW14
3/5/2015 12:00:00PM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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Origins Laboratory, Inc.
X503063-10 (Water)

BTEX by EPA 8260C

Benzene	ND	1.0	ug/L	1	5C10014	03/10/2015	03/11/2015	
Toluene	ND	1.0	"	"	"	"	"	
Ethylbenzene	ND	1.0	"	"	"	"	"	
Xylenes, total	ND	1.0	"	"	"	"	"	
Surrogate: 1,2-Dichloroethane-d4	107 %	87.3-113			"	"	"	
Surrogate: Toluene-d8	96.7 %	90.9-108			"	"	"	
Surrogate: 4-Bromofluorobenzene	113 %	88.6-111			"	"	"	S-07

Origins Laboratory, Inc.



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Jen Pellegrini For Noelle Doyle Mathis, President

LT Environmental, Inc.
4600 West 60th Avenue
Arvada CO 80003

John Cocroft
Project Number: KMG06254
Project: KMG - Eachus 4 & 5-23

MW16
3/5/2015 12:10:00PM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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Origins Laboratory, Inc.
X503063-11 (Water)

BTEX by EPA 8260C

Benzene	ND	1.0	ug/L	1	5C10014	03/10/2015	03/11/2015	
Toluene	ND	1.0	"	"	"	"	"	
Ethylbenzene	ND	1.0	"	"	"	"	"	
Xylenes, total	ND	1.0	"	"	"	"	"	

Surrogate: 1,2-Dichloroethane-d4	106 %	87.3-113			"	"	"	
Surrogate: Toluene-d8	95.1 %	90.9-108			"	"	"	
Surrogate: 4-Bromofluorobenzene	111 %	88.6-111			"	"	"	

Origins Laboratory, Inc.



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LT Environmental, Inc.
4600 West 60th Avenue
Arvada CO 80003

John Cocroft
Project Number: KMG06254
Project: KMG - Eachus 4 & 5-23

Volatile Organic Compounds by GC/MS SW846 8260C - Quality Control
Origins Laboratory, Inc.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch 5C10014 - EPA 5030B (Water)

Blank (5C10014-BLK1)

Prepared: 03/10/2015 Analyzed: 03/11/2015

Benzene	ND	1.0	ug/L							
Toluene	ND	1.0	"							
Ethylbenzene	ND	1.0	"							
Xylenes, total	ND	1.0	"							
Surrogate: 1,2-Dichloroethane-d4	66		"	62.5	106	87.3-113				
Surrogate: Toluene-d8	60		"	62.5	95.8	90.9-108				
Surrogate: 4-Bromofluorobenzene	71		"	62.5	113	88.6-111				S-07

Origins Laboratory, Inc.



The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Jen Pellegrini For Noelle Doyle Mathis, President

LT Environmental, Inc.
4600 West 60th Avenue
Arvada CO 80003

John Cocroft
Project Number: KMG06254
Project: KMG - Eachus 4 & 5-23

Volatile Organic Compounds by GC/MS SW846 8260C - Quality Control
Origins Laboratory, Inc.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
---------	--------	-----------------	-------	-------------	---------------	------	-------------	-----	-----------	-------

Batch 5C10014 - EPA 5030B (Water)

LCS (5C10014-BS1)

Prepared: 03/10/2015 Analyzed: 03/11/2015

Benzene	53.8	1.0	ug/L	50.0	108	75-126
Toluene	49.7	1.0	"	50.0	99.3	78.7-126
Ethylbenzene	48.9	1.0	"	50.0	97.9	80-130
m,p-Xylene	98.7	2.0	"	100	98.7	77.2-133
o-Xylene	50.2	1.0	"	50.0	100	77.9-126
Surrogate: 1,2-Dichloroethane-d4	62		"	62.5	99.6	87.3-113
Surrogate: Toluene-d8	59		"	62.5	94.9	90.9-108
Surrogate: 4-Bromofluorobenzene	69		"	62.5	111	88.6-111

Origins Laboratory, Inc.



The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Jen Pellegrini For Noelle Doyle Mathis, President

LT Environmental, Inc.
4600 West 60th Avenue
Arvada CO 80003

John Cocroft
Project Number: KMG06254
Project: KMG - Eachus 4 & 5-23

Volatile Organic Compounds by GC/MS SW846 8260C - Quality Control
Origins Laboratory, Inc.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch 5C10014 - EPA 5030B (Water)

Matrix Spike (5C10014-MS1)		Source: X503063-01			Prepared: 03/10/2015 Analyzed: 03/11/2015					
Benzene	45.8	1.0	ug/L	50.0	ND	91.7	74-130			
Toluene	43.0	1.0	"	50.0	ND	85.9	73-131			
Ethylbenzene	43.7	1.0	"	50.0	1.0	85.3	76-132			
m,p-Xylene	84.8	2.0	"	100	ND	84.8	69-139			
o-Xylene	42.6	1.0	"	50.0	ND	85.2	74-131			
Surrogate: 1,2-Dichloroethane-d4	62		"	62.5		99.3	87.3-113			
Surrogate: Toluene-d8	60		"	62.5		95.9	90.9-108			
Surrogate: 4-Bromofluorobenzene	70		"	62.5		112	88.6-111			S-GC

Origins Laboratory, Inc.



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LT Environmental, Inc.
4600 West 60th Avenue
Arvada CO 80003

John Cocroft
Project Number: KMG06254
Project: KMG - Eachus 4 & 5-23

Volatile Organic Compounds by GC/MS SW846 8260C - Quality Control
Origins Laboratory, Inc.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch 5C10014 - EPA 5030B (Water)

Matrix Spike Dup (5C10014-MSD1)		Source: X503063-01			Prepared: 03/10/2015 Analyzed: 03/11/2015					
Benzene	57.0	1.0	ug/L	50.0	ND	114	74-130	21.7	20	QM-07
Toluene	52.5	1.0	"	50.0	ND	105	73-131	19.9	20	
Ethylbenzene	52.9	1.0	"	50.0	1.0	104	76-132	19.0	20	
m,p-Xylene	105	2.0	"	100	ND	105	69-139	20.9	20	QM-07
o-Xylene	53.6	1.0	"	50.0	ND	107	74-131	23.0	20	QM-07
Surrogate: 1,2-Dichloroethane-d4	62		"	62.5		99.6	87.3-113			
Surrogate: Toluene-d8	60		"	62.5		95.4	90.9-108			
Surrogate: 4-Bromofluorobenzene	70		"	62.5		113	88.6-111			QM-07

Origins Laboratory, Inc.



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LT Environmental, Inc.
4600 West 60th Avenue
Arvada CO 80003

John Cocroft
Project Number: KMG06254
Project: KMG - Eachus 4 & 5-23

Notes and Definitions

- S-GC Surrogate recovery outside of control limits. The data was accepted based on valid recovery of the remaining surrogate.
- S-07 High surrogate in sample, however sample is non-detect. High surrogate indicates result values are biased high.
- QM-07 The spike recovery was outside acceptance limits for the MS and/or MSD. The batch was accepted based on acceptable LCS recovery.
- ND Analyte NOT DETECTED at or above the reporting limit
- RPD Relative Percent Difference
- All soil results are reported at a wet weight basis.

Origins Laboratory, Inc.



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