



January 17, 2013

Mr. Chuck Cornell
Shell Exploration and Production Company
4582 South Ulster Street Parkway, Suite 1400
Denver, Colorado 80237

**RE: Fourth Quarter 2012 Groundwater Monitoring Report
WT Durham #4 Flowline Release
Remediation #4990
Moffat County, Colorado**

Dear Mr. Cornell:

LT Environmental, Inc. (LTE) has been contracted by Shell Exploration and Production Company (SEPCO) to conduct quarterly groundwater monitoring activities and to evaluate geochemical indicators to assess the potential for monitored natural attenuation (MNA) at the WT Durham #4 Flowline Release (Site).

Site history and remediation activities were outlined in the Form 27 - Site Investigation and Remediation Workplan (Remediation #4990) submitted to the Colorado Oil and Gas Conservation Commission (COGCC) on June 17, 2010. The Site Location Map is provided as Figure 1.

QUARTERLY GROUNDWATER MONITORING ACTIVITIES

Depth to Groundwater Measurements

Depth to groundwater was measured in monitoring wells MW01 through MW11 on December 12, 2012, and recorded to calculate potentiometric surfaces and purge volumes. During the fourth quarter 2012 sampling event, the depths to static groundwater level ranged from 2.84 feet below top of casing (BTOC) in MW04 to 5.00 feet BTOC in MW10 (Table 1). MW03 was frozen and depth to water could not be measured.

Calculating the difference in the top of casing and depth to groundwater, LTE determined the groundwater elevation in each monitoring well and generated a groundwater elevation and contour map (Figure 2). Based on the groundwater elevation map, groundwater flow during this monitoring event was generally to the north-northeast, toward Waddle Creek.

Groundwater Sampling Procedures

Each monitoring well was purged of a minimum of three well casing volumes or until dry prior to collection of groundwater samples. Groundwater samples were collected from each monitoring well utilizing disposable 1.6-inch diameter polyethylene bailers. Groundwater samples were collected in laboratory-prepared sample bottles, placed on ice, and delivered under



chain-of-custody (COC) protocol to Origins Laboratory (Origins) in Denver, Colorado. Samples were analyzed for benzene, toluene, ethylbenzene, and total xylenes (BTEX) by United States Environmental Protection Agency (EPA) Method 8260C.

Additionally, monitoring wells MW02, MW06, and MW11 were sampled for geochemical indicators and analyzed for dissolved manganese and total iron by EPA Method 6010B and nitrate and sulfate by EPA Method 300.

The groundwater samples submitted for dissolved manganese analysis were collected by advancing disposable 3/16-inch diameter polyethylene tubing into groundwater within the 2-inch diameter polyvinyl chloride (PVC) well casing. A peristaltic pump was utilized to collect the groundwater samples. LTE filtered the manganese samples with a 0.45 micron cartridge-style filter prior to placement into the laboratory-prepared sample bottles.

Groundwater Analytical Results

The COGCC and the Colorado Department of Public Health and Environmental (CDPHE) Water Quality Control Commission (WQCC) have both established groundwater standards for BTEX of 5.0 micrograms per liter ($\mu\text{g/L}$), 560 $\mu\text{g/L}$, 700 $\mu\text{g/L}$, and 1,400 $\mu\text{g/L}$, respectively.

Ten groundwater samples were collected and submitted to Origins for BTEX analysis during the December 2012 groundwater monitoring event. Groundwater analytical results indicated benzene exceeded the COGCC standard in only one monitoring well (MW06) at a concentration of 6.4 $\mu\text{g/L}$. BTEX compounds were not detected above the laboratory method detection limits or were within compliance of COGCC standards in the nine remaining groundwater samples. Groundwater analytical results for the December 2012 monitoring event are depicted on Figure 3. Table 1 summarizes historical analytical data for all sampling events. The laboratory analytical report, laboratory quality assurance/quality control data, and COC documentation are attached.

MONITORED NATURAL ATTENUATION EVALUATION

LTE utilized groundwater quality parameters and geochemical indicators to determine if natural attenuation of petroleum hydrocarbon compounds is occurring at the Site and whether MNA remains an effective remedial method to achieve site cleanup goals.

Groundwater Quality Parameter Results

LTE personnel collected general water quality parameters during sampling activities to establish whether the appropriate site conditions existed for biodegradation of residual dissolved phase hydrocarbons. General water quality parameters included pH, temperature, conductivity, dissolved oxygen (DO), oxidation reduction potential (ORP), and total dissolved solids (TDS). General water quality parameters are summarized in Table 2.



Initial field screening results indicated pH readings are within a range for optimal biodegradation. Differences in temperature readings are attributable to seasonal groundwater fluctuations and ambient weather conditions.

The COGCC standard for TDS in groundwater should be less than 1.25 times the background concentration. The TDS concentrations observed in monitoring wells MW01 through MW11 ranged from 0.295 grams per liter (g/L) to 0.421 g/L. LTE believes the TDS concentrations observed at the Site are representative of background conditions.

In September of 2012, DO concentrations decreased significantly in monitoring wells MW01, MW05, MW06, and MW07, indicating anaerobic groundwater conditions had been established. These four monitoring wells are located in the interior of the original plume area and have historically registered the highest concentrations of dissolved phase hydrocarbon impact. However, during the most recent monitoring event in December of 2012, DO concentrations in these four monitoring wells rebounded primarily due to the increase in groundwater elevations. The current increase in DO concentrations indicate aerobic groundwater conditions currently exist onsite. These decrease and subsequent increase of DO concentrations indicate the interior of the plume is fluctuating between aerobic and anaerobic conditions. Even though the DO concentrations have fluctuated to some degree within the plume, the data indicates that oxygen is currently available and being utilized by microbes to degrade dissolved phase hydrocarbons within the plume.

Geochemical Indicators

In order to further evaluate secondary lines of evidence to detail subsurface biodegradation processes, LTE collected groundwater samples for geochemical indicators that included manganese, total iron (representative of ferrous iron), nitrate, and sulfate. In the absence or near absence of DO, microorganisms metabolize petroleum contaminants through the use of these alternate electron acceptors. General groundwater quality parameters indicate DO is available throughout the Site, establishing an aerobic environment. Geochemical data is summarized in Table 3.

As indicated in Table 3, monitoring wells MW02, MW06, and MW11 were sampled for these secondary electron acceptors in downgradient, in-plume, and upgradient locations, respectively. The data indicate that iron, manganese, and sulfate are available as electron acceptors.

The significant increase of ferrous iron in monitoring wells MW02, MW06, and MW11 in September of 2012, indicated the microbial reduction of iron as a result of anaerobic conditions at that time. However, during the most recent monitoring event in December of 2012, ferrous iron concentrations have decreased to their previous levels and DO has increased causing aerobic conditions to be reestablished and currently appears to be the major means of MNA.

Analytical results for nitrate indicate that there is no significant presence of nitrate upgradient, in-plume, or downgradient. Manganese and sulfate concentrations have remained constant throughout historical groundwater monitoring activities.



SUMMARY AND CONCLUSIONS

On December 12, 2012, LTE conducted the fourth quarterly groundwater monitoring event in 2012. Groundwater elevations increased in all wells from between 2.55 feet and 3.35 feet. Based on the groundwater elevation data, groundwater generally flows to the north-northeast toward Waddle Creek.

As indicated in Table 1, the benzene concentration in monitoring well MW06 is currently 6.4 µg/L, which exceeds the COGCC standard of 5 µg/L. Since the June 2012 monitoring event, the benzene concentration in monitoring well MW05 has decreased from 14.5 µg/L to 2.51 µg/L. BTEX concentrations in all other wells were observed to be below the COGCC Table 910-1 concentration levels.

LTE evaluated groundwater quality parameters and geochemical indicators to determine if biodegradation of dissolved phase hydrocarbon concentrations is occurring and whether MNA is an effective remedial method to achieve site cleanup goals. Based on general water quality data, the biodegradation of benzene in groundwater appears to be naturally occurring through both aerobic and anaerobic mechanisms; therefore MNA remains as the current remedial action occurring at the Site. LTE recommends continuing quarterly groundwater monitoring at the Site. The next sampling event is scheduled for March 2013.

Limitations

No investigation is infallible. Some uncertainty will always exist concerning the presence or absence of potential contaminants at a particular property, irrespective of the rigor of the investigation. Accordingly, LTE does not warrant that contaminants, other than those identified in this report, do not exist at the subject property or may not exist there in the future.

LTE believes that it has performed the services summarized in this report in a manner consistent with the level of care and skill ordinarily exercised by members of the environmental profession practicing at the same time and under similar conditions in the area of the project.

Sincerely,

LT ENVIRONMENTAL, INC.

A handwritten signature in black ink that reads "R. ZERNIS". The signature is stylized, with a large, looped "R" and the name "ZERNIS" written in a more straightforward, blocky font.

Ryan Zernis
Staff Geologist

A handwritten signature in black ink that reads "Rob Fishburn". The signature is highly stylized and cursive, with long, sweeping lines that extend to the right.

Rob Fishburn, P.G.
Senior Hydrogeologist



Attachments:

Figure 1- Site Location Map

Figure 2 - Groundwater Elevation Map

Figure 3 – Groundwater Analytical Results

Table 1 - Groundwater Analytical Results

Table 2 - General Water Quality Results

Table 3 - Geochemical Results

Attachment 1 - Laboratory Analytical Report

FIGURES



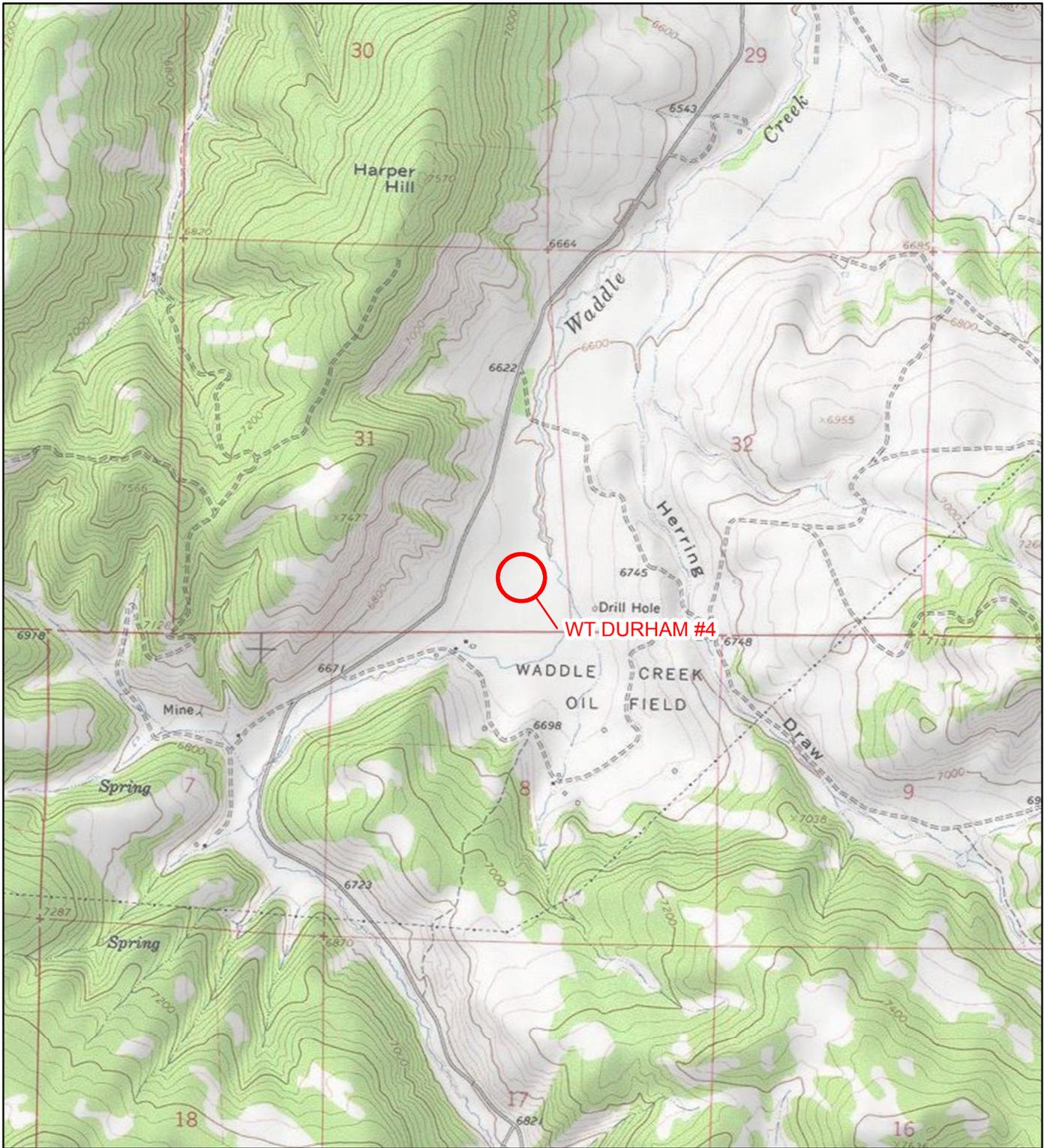


IMAGE COURTESY OF ESRI/BING MAPS

LEGEND

 SITE LOCATION

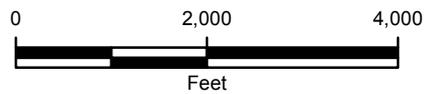


FIGURE 1
SITE LOCATION MAP
 WT DURHAM #4 FLOWLINE RELEASE
 SESE SEC 31 T5N R90W 6PM
 MOFFAT COUNTY, COLORADO
SHELL EXPLORATION AND PRODUCTION COMPANY





IMAGE COURTESY OF ESRI/BING MAPS

LEGEND

- MONITORING WELL WITH RELATIVE GROUNDWATER ELEVATION IN FEET
 - RELEASE
 - ESTIMATED GROUNDWATER FLOW DIRECTION
 - SECTION
 - RELATIVE GROUNDWATER ELEVATION CONTOUR
- CONTOUR INTERVAL = 0.5 FEET
 GROUNDWATER ELEVATIONS
 WERE MEASURED ON
 DECEMBER 12, 2012

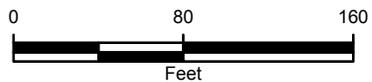


FIGURE 2
 GROUNDWATER ELEVATION MAP
 WT DURHAM #4 (API 05-081-06935)
 SESE SEC 31 T5N R90W 6PM
 MOFFAT COUNTY, COLORADO
 SHELL EXPLORATION AND PRODUCTION COMPANY



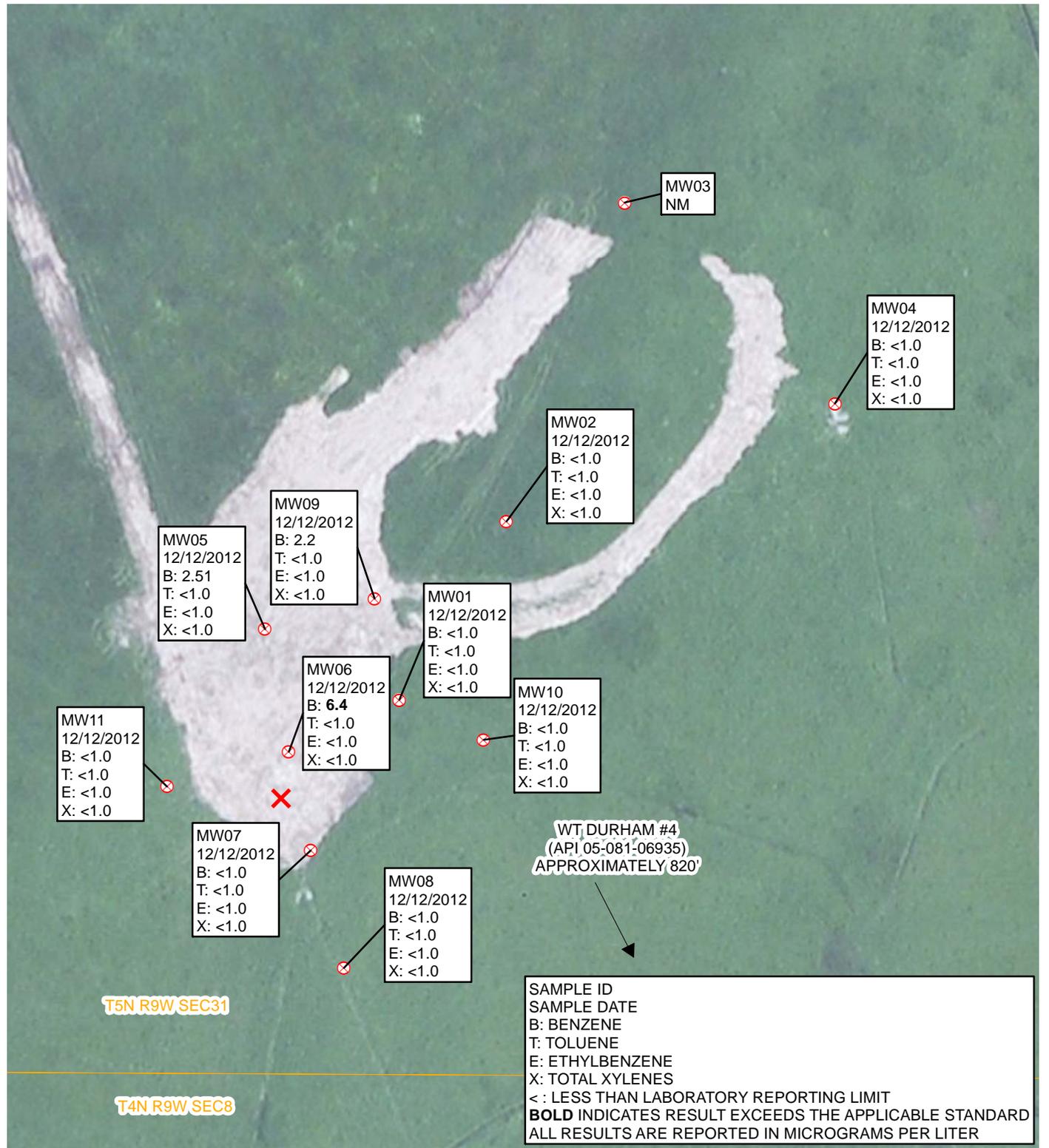


FIGURE 3
GROUNDWATER ANALYTICAL RESULTS
WT DURHAM #4 (API 05-081-06935)
SESE SEC 31 T5N R90W 6PM
MOFFAT COUNTY, COLORADO
SHELL EXPLORATION AND PRODUCTION COMPANY



TABLES



TABLE 1
GROUNDWATER ANALYTICAL RESULTS
WT DURHAM #4 FLOWLINE RELEASE
MOFFAT COUNTY, COLORADO
SHELL EXPLORATION AND PRODUCTION COMPANY

Well ID	Date	Depth to Water (ft btoc)	Benzene (µg/L)	Toluene (µg/L)	Ethylbenzene (µg/L)	Total Xylenes (µg/L)
MW01	5/4/10	3.52	3.1	<2	<2	<2
	7/14/10	4.21	9	<1	<1	<3
	9/16/10	9.15	10.1	<1	<1	<3
	12/28/10	NM	NM	NM	NM	NM
	2/15/11	NM	NM	NM	NM	NM
	5/3/11	2.25	<1	<1	<1	<3
	8/24/11	5.15	<1	<1	<1	<3
	11/23/11	NM	NM	NM	NM	NM
	3/29/12	3.72	<1.0	<1.0	<1.0	<1.0
	6/27/12	5.96	<1.0	<1.0	<1.0	<1.0
	9/19/12	7.43	<1.0	<1.0	<1.0	<1.0
12/12/12	4.70	<1.0	<1.0	<1.0	<1.0	
MW02	5/4/10	2.86	<2	<2	<2	<2
	7/14/10	3.65	<1	<1	<1	<3
	9/16/10	9.81	<1	<1	<1	<3
	12/28/10	NM	NM	NM	NM	NM
	2/15/11	NM	NM	NM	NM	NM
	5/3/11	3.00	<1	<1	<1	<3
	8/24/11	4.82	<1	<1	<1	<3
	11/23/11	NM	NM	NM	NM	NM
	3/29/12	2.97	<1.0	<1.0	<1.0	<1.0
	6/27/12	5.78	<1.0	<1.0	<1.0	<1.0
	9/19/12	6.89	<1.0	<1.0	<1.0	<1.0
12/12/12	3.65	<1.0	<1.0	<1.0	<1.0	
MW03	5/4/10	3.30	<2	2	<2	3.3
	7/14/10	3.66	<1	<1	<1	<3
	9/16/10	9.81	<1	<1	<1	<3
	12/28/10	NM	NM	NM	NM	NM
	2/15/11	NM	NM	NM	NM	NM
	5/3/11	3.05	<1	<1	<1	<3
	8/24/11	5.54	<1	<1	<1	<3
	11/23/11	NM	NM	NM	NM	NM
	3/29/12	3.37	<1.0	<1.0	<1.0	<1.0
	6/27/12	6.52	<1.0	<1.0	<1.0	<1.0
	9/19/12	8.70	<1.0	<1.0	<1.0	<1.0
12/12/12	NM	NM	NM	NM	NM	
MW04	5/4/10	2.69	<2	2.4	<2	<2
	7/14/10	3.16	1.12	1.71	<1	<3
	9/16/10	9.83	<1	<1	<1	<3
	12/28/10	NM	NM	NM	NM	NM
	2/15/11	NM	NM	NM	NM	NM
	5/3/11	2.97	<1	<1	<1	<3
	8/24/11	4.32	<1	1	<1	<3
	11/23/11	NM	NM	NM	NM	NM
	3/29/12	2.50	<1.0	<1.0	<1.0	<1.0
	6/27/12	4.59	<1.0	<1.0	<1.0	<1.0
	9/19/12	6.19	<1.0	<1.0	<1.0	<1.0
12/12/12	2.84	<1.0	<1.0	<1.0	<1.0	



TABLE 1
GROUNDWATER ANALYTICAL RESULTS
WT DURHAM #4 FLOWLINE RELEASE
MOFFAT COUNTY, COLORADO
SHELL EXPLORATION AND PRODUCTION COMPANY

Well ID	Date	Depth to Water (ft btoc)	Benzene (µg/L)	Toluene (µg/L)	Ethylbenzene (µg/L)	Total Xylenes (µg/L)
MW05	7/14/10	2.70	<1	<1	<1	<3
	9/16/10	10.01	<1	<1	<1	<3
	12/28/10	NM	NM	NM	NM	NM
	2/15/11	NM	NM	NM	NM	NM
	5/3/11	3.24	<1	<1	<1	<3
	8/24/11	4.09	26.1	<1	<1	<3
	11/23/11	NM	NM	NM	NM	NM
	3/29/12	2.54	22.2	<1.0	<1.0	<1.0
	6/27/12	5.23	30	<1.0	<1.0	<1.0
	9/19/12	6.01	14.5	<1.0	<1.0	<1.0
	12/12/12	3.00	2.51	<1.0	<1.0	<1.0
MW06	7/14/10	3.61	1,520	78.1	88.1	198.1
	9/16/10	9.96	354	<1	44.4	16.3
	12/28/10	NM	NM	NM	NM	NM
	2/15/11	NM	NM	NM	NM	NM
	5/3/11	2.88	651	<1	10.7	12.2
	8/24/11	4.71	475	1.5	1.6	3
	11/23/11	NM	NM	NM	NM	NM
	3/29/12	3.35	92.9	<1.0	<1.0	<1.0
	6/27/12	5.58	109	<1.0	7.49	12.4
	9/19/12	6.73	1.83	<1.0	<1.0	1.73
	12/12/12	3.87	6.4	<1.0	<1.0	<1.0
MW07	7/14/10	3.99	58.7	<1	1.52	8.16
	9/16/10	9.73	<1	<1	<1	<3
	12/28/10	NM	NM	NM	NM	NM
	2/15/11	NM	NM	NM	NM	NM
	5/3/11	2.97	280	<1	4.4	11.6
	8/24/11	4.89	<1	<1	<1	<3
	11/23/11	NM	NM	NM	NM	NM
	3/29/12	3.66	<1.0	<1.0	<1.0	<1.0
	6/27/12	5.71	<1.0	<1.0	<1.0	<1.0
	9/19/12	6.97	<1.0	<1.0	<1.0	<1.0
	12/12/12	4.25	<1.0	<1.0	<1.0	<1.0
MW08	9/16/10	10.13	<1	<1	<1	<3
	12/28/10	NM	NM	NM	NM	NM
	2/15/11	NM	NM	NM	NM	NM
	5/2/11	2.84	<1	<1	<1	<3
	8/24/11	5.00	<1	<1	<1	<3
	11/23/11	NM	NM	NM	NM	NM
	3/29/12	3.86	<1.0	<1.0	<1.0	<1.0
	6/27/12	5.70	<1.0	<1.0	<1.0	<1.0
	9/19/12	7.04	<1.0	<1.0	<1.0	<1.0
	12/12/12	4.22	<1.0	<1.0	<1.0	<1.0



TABLE 1
GROUNDWATER ANALYTICAL RESULTS
WT DURHAM #4 FLOWLINE RELEASE
MOFFAT COUNTY, COLORADO
SHELL EXPLORATION AND PRODUCTION COMPANY

Well ID	Date	Depth to Water (ft btoc)	Benzene (µg/L)	Toluene (µg/L)	Ethylbenzene (µg/L)	Total Xylenes (µg/L)
MW09	9/16/10	10.30	<1	<1	<1	<3
	12/28/10	NM	NM	NM	NM	NM
	2/15/11	NM	NM	NM	NM	NM
	5/3/11	3.10	<1	<1	<1	<3
	8/24/11	4.43	<1	<1	<1	<3
	11/23/11	NM	NM	NM	NM	NM
	3/29/12	2.90	2.03	<1.0	<1.0	<1.0
	6/27/12	5.60	1.88	<1.0	<1.0	<1.0
	9/19/12	6.68	3.81	<1.0	<1.0	<1.0
	12/12/12	3.60	2.20	<1.0	<1.0	<1.0
MW10	9/16/10	9.93	<1	<1	<1	<3
	12/28/10	NM	NM	NM	NM	NM
	2/15/11	NM	NM	NM	NM	NM
	5/3/11	3.22	<1	<1	<1	<3
	8/24/11	5.10	<1	<1	<1	<3
	11/23/11	NM	NM	NM	NM	NM
	3/29/12	3.70	<1.0	<1.0	<1.0	<1.0
	6/27/12	5.85	<1.0	<1.0	<1.0	<1.0
	9/19/12	7.55	<1.0	<1.0	<1.0	<1.0
	12/12/12	5.00	<1.0	<1.0	<1.0	<1.0
MW11	9/16/10	10.05	<1	<1	<1	<3
	12/28/10	NM	NM	NM	NM	NM
	2/15/11	NM	NM	NM	NM	NM
	5/3/11	3.07	<1	<1	<1	<3
	8/24/11	5.41	<1	<1	<1	<3
	11/23/11	NM	NM	NM	NM	NM
	3/29/12	3.91	<1.0	<1.0	<1.0	<1.0
	6/27/12	6.53	<1.0	<1.0	<1.0	<1.0
	9/19/12	7.40	<1.0	<1.0	<1.0	<1.0
	12/12/12	4.45	<1.0	<1.0	<1.0	<1.0
GW01	5/11/10	-	1,370	1,730	72.3	752
GW02	5/18/10	-	332	319	12.8	258
CDPHE WQCC Reg 41			5	560	700	1,400

NOTES:

ft btoc - feet below top of well casing

µg/L - micrograms per liter

< - indicates result is less than the stated laboratory method reporting limit

BOLD - indicates result exceeds the applicable standard

Benzene, toluene, ethylbenzene, and total xylenes analyzed by EPA Method 8260C

CDPHE WQCC Reg 41 - Colorado Department of Public Health and Environment-

Water Quality Control Commission Regulation 41 covering The Basic Standards
for Ground Water

NM - Not Monitored due to frozen groundwater



TABLE 2
GENERAL WATER QUALITY RESULTS
WT DURHAM #4 FLOWLINE RELEASE
MOFFAT COUNTY, COLORADO
SHELL EXPLORATION AND PRODUCTION COMPANY

Well ID	Date	pH	Temp (C°)	Conductivity (µ-S)	DO (mg/L)	ORP (mV)	TDS (g/L)
MW01	9/16/10	6.93	13.30	2,331	2.80	-49.6	1.515
	12/28/10	NM	NM	NM	NM	NM	NM
	2/15/11	NM	NM	NM	NM	NM	NM
	5/2/11	7.43	4.65	1,100	2.23	199.5	1.169
	8/24/11	6.73	13.40	3,724	2.02	228	3.243
	11/23/11	NM	NM	NM	NM	NM	NM
	3/28/12	7.35	2.58	2,403	2.17	-64.9	1.559
	6/27/12	7.32	10.13	1,553	1.27	-39.4	1.010
	9/19/12	7.24	12.21	1,111	0.85	-295.1	0.722
	12/12/12	7.93	6.37	386	2.31	59.2	0.389
MW02	9/16/10	7.17	12.48	2,126	2.04	-89.4	2.4
	12/28/10	NM	NM	NM	NM	NM	NM
	2/15/11	NM	NM	NM	NM	NM	NM
	5/3/11	7.27	5.05	1,396	3.37	198.6	1.190
	8/24/11	6.76	12.64	3,500	1.85	226.8	2.971
	11/23/11	NM	NM	NM	NM	NM	NM
	3/28/12	7.19	2.93	2,333	3.42	-59.4	1.517
	6/27/12	7.23	9.36	1,476	3.01	-60.5	0.960
	9/19/12	7.10	11.39	1,052	2.21	-195.0	0.648
	12/12/12	7.70	6.28	370	2.65	-21.2	0.373
MW03	9/16/10	6.42	13.88	3,341	2.41	-84.8	2.171
	12/28/10	NM	NM	NM	NM	NM	NM
	2/15/11	NM	NM	NM	NM	NM	NM
	5/2/11	7.35	4.80	1,251	3.01	199.3	1.324
	8/24/11	6.75	11.91	1,313	2.56	227.4	1.144
	11/23/11	NM	NM	NM	NM	NM	NM
	3/28/12	7.31	2.13	3,176	3.07	-54.1	2.067
	6/27/12	7.27	9.04	1,958	3.28	-78.9	1.274
	9/19/12	7.15	11.85	876	3.80	-72.1	0.881
	12/12/12	NM	NM	NM	NM	NM	NM
MW04	9/16/10	6.55	12.75	2,058	2.17	-75.5	1.338
	12/28/10	NM	NM	NM	NM	NM	NM
	2/15/11	NM	NM	NM	NM	NM	NM
	5/2/11	7.35	5.45	1,042	2.49	199.1	1.081
	8/24/11	6.86	12.11	932	6.86	227.2	0.805
	11/23/11	NM	NM	NM	NM	NM	NM
	3/28/12	7.36	3.76	1,886	2.48	-38.8	1.226
	6/27/12	7.40	9.67	1,311	3.36	-38.1	0.853
	9/19/12	7.30	12.57	958	3.29	-147.0	0.623
	12/12/12	7.87	6.91	316	2.94	18.3	0.314



TABLE 2
GENERAL WATER QUALITY RESULTS
WT DURHAM #4 FLOWLINE RELEASE
MOFFAT COUNTY, COLORADO
SHELL EXPLORATION AND PRODUCTION COMPANY

Well ID	Date	pH	Temp (C°)	Conductivity (µ-S)	DO (mg/L)	ORP (mV)	TDS (g/L)
MW05	9/16/10	6.56	15.70	2,581	1.56	-107.5	1.677
	12/28/10	NM	NM	NM	NM	NM	NM
	2/15/11	NM	NM	NM	NM	NM	NM
	5/2/11	7.17	5.25	1,371	2.64	199.1	1.430
	8/24/11	6.71	17.17	3,011	4.21	228.1	3.061
	11/23/11	NM	NM	NM	NM	NM	NM
	3/28/12	7.30	3.49	2,552	2.56	-81.9	1.659
	6/27/12	7.24	12.74	1,674	1.62	-96.4	1.088
	9/19/12	7.12	14.67	1,154	0.83	-241.9	0.750
	12/12/12	7.77	6.22	375	3.91	-73.1	0.381
MW06	9/16/10	7.15	16.79	2,711	1.38	-102.3	2.4
	12/28/10	NM	NM	NM	NM	NM	NM
	2/15/11	NM	NM	NM	NM	NM	NM
	5/3/11	7.19	5.88	1,436	2.47	199.0	1.213
	8/24/11	6.72	16.94	3,071	4.03	228.0	3.073
	11/23/11	NM	NM	NM	NM	NM	NM
	3/28/12	7.33	3.49	2,340	2.53	-70.1	1.519
	6/27/12	7.27	14.21	1,618	2.03	-79.3	1.051
	9/19/12	7.19	15.92	1,155	0.30	-275.6	0.751
	12/12/12	7.78	7.19	403	2.37	-69.0	0.396
MW07	9/16/10	6.42	13.22	2,456	1.34	-53.5	1.596
	12/28/10	NM	NM	NM	NM	NM	NM
	2/15/11	NM	NM	NM	NM	NM	NM
	5/2/11	7.30	4.81	1,134	2.72	199.4	1.210
	8/24/11	6.74	13.80	3,813	1.94	228.3	3.153
	11/23/11	NM	NM	NM	NM	NM	NM
	3/28/12	7.40	2.74	2,386	2.71	-26.8	1.551
	6/27/12	7.43	10.17	1,534	1.77	-5.8	0.998
	9/19/12	7.30	12.24	1,081	0.72	-259.1	0.702
	12/12/12	8.07	6.07	368	1.36	-11.5	0.375
MW08	9/16/10	6.53	13.28	1,916	2.40	6.9	1.246
	12/28/10	NM	NM	NM	NM	NM	NM
	2/15/11	NM	NM	NM	NM	NM	NM
	5/2/11	7.22	5.16	977	3.15	198.5	1.022
	8/24/11	6.78	13.35	3,158	2.02	228.6	2.638
	11/23/11	NM	NM	NM	NM	NM	NM
	3/28/12	7.48	3.11	2,027	3.05	4.4	1.318
	6/27/12	7.45	10.14	1,226	1.73	27.0	0.797
	9/19/12	7.30	11.94	908	2.58	-196.2	0.591
	12/12/12	8.02	6.92	298	2.69	31.7	0.295



TABLE 2
GENERAL WATER QUALITY RESULTS
WT DURHAM #4 FLOWLINE RELEASE
MOFFAT COUNTY, COLORADO
SHELL EXPLORATION AND PRODUCTION COMPANY

Well ID	Date	pH	Temp (C°)	Conductivity (µ-S)	DO (mg/L)	ORP (mV)	TDS (g/L)
MW09	9/16/10	6.50	14.55	2,566	3.26	-49.0	1.668
	12/28/10	NM	NM	NM	NM	NM	NM
	2/15/11	NM	NM	NM	NM	NM	NM
	5/2/11	7.14	4.88	1,361	2.97	200.4	1.437
	8/24/11	6.68	14.79	4,140	2.32	227.6	3.339
	11/23/11	NM	NM	NM	NM	NM	NM
	3/28/12	7.13	2.77	2,543	2.92	-37.8	1.653
	6/27/12	7.13	11.23	1,683	2.45	-67.8	1.092
	9/19/12	7.14	13.16	1,199	2.55	-177.5	0.780
12/12/12	7.74	6.24	416	2.65	-48.9	0.421	
MW10	9/16/10	6.56	12.85	2,017	1.90	38.6	1.311
	12/28/10	NM	NM	NM	NM	NM	NM
	2/15/11	NM	NM	NM	NM	NM	NM
	5/2/11	7.53	5.01	995	2.17	197.8	1.061
	8/24/11	6.73	13.48	3,485	2.92	228.1	2.908
	11/23/11	NM	NM	NM	NM	NM	NM
	3/28/12	7.43	2.71	2,176	2.51	-13.1	1.414
	6/27/12	7.38	10.06	1,337	2.32	-1.7	0.870
	9/19/12	7.13	11.93	970	1.40	-216	0.633
12/12/12	8.12	6.35	310	4.63	20	0.312	
MW11	9/16/10	6.99	13.29	2,488	2.2	7.3	1.618
	12/28/10	NM	NM	NM	NM	NM	NM
	2/15/11	NM	NM	NM	NM	NM	NM
	5/3/11	7.46	4.84	1,382	2.74	198.4	1.169
	8/24/11	6.72	14.46	3,313	2.23	229	3.262
	11/23/11	NM	NM	NM	NM	NM	NM
	3/28/12	7.42	2.77	2,215	2.86	11.5	1.440
	6/27/12	7.38	10.84	1,605	1.60	-43.3	1.044
	9/19/12	7.20	11.87	1,116	1.83	-200.5	0.725
12/12/12	7.96	6.21	354	2.34	-8.8	0.358	
CDPHE WQCC Reg 41	NA	NA	NA	NA	NA	NA	<1.25 x background

NOTES:

C° - degrees celcius

µ-S - micro siemens

DO - dissolved oxygen

mg/L - milligrams per liter

ORP - oxygen reduction potential

mV - milli volts

TDS - total dissolved solids

g/L - grams per liter

CDPHE WQCC Reg 41 - Colorado Department of Public Health and Environment - Water Quality Control Commission Regulation 41 covering The Basic Standards for Ground Water

NA - Not Applicable

NM - Not Monitored due to frozen groundwater



TABLE 3
GEOCHEMICAL RESULTS
WT DURHAM #4 FLOWLINE RELEASE
MOFFAT COUNTY, COLORADO
SHELL EXPLORATION AND PRODUCTION COMPANY

Well ID	Date	Manganese (µg/l)	Total Iron (µg/l)	Nitrate (mg/L)	Sulfate (mg/L)
MW02	9/16/10	356	3,310	<0.05	292
	12/28/10	NM	NM	NM	NM
	2/15/11	NM	NM	NM	NM
	5/3/11	360	2,190	<0.05	316
	8/24/11	409	1,070	<0.05	347
	11/23/11	NM	NM	NM	NM
	3/29/12	390	1,600	<0.23	400
	6/27/12	370	13,000	<0.23	340
	9/19/12	490	96,300	0.174	332
	12/12/12	458	1,220	0.3	388
MW06	9/16/10	829	3,560	<0.05	465
	12/28/10	NM	NM	NM	NM
	2/15/11	NM	NM	NM	NM
	5/3/11	942	644	<0.05	384
	8/24/11	926	1,590	0.185	411
	11/23/11	NM	NM	NM	NM
	3/29/12	840	2,500	<0.23	350
	6/27/12	840	2,100	<0.23	323
	9/19/12	786	175,000	0.18	349
	12/12/12	757	2,250	0.226	340
MW11	9/16/10	317	<200	0.119	376
	12/28/10	NM	NM	NM	NM
	2/15/11	NM	NM	NM	NM
	5/3/11	171	<200	<0.05	259
	8/24/11	277	<200	0.193	292
	11/23/11	NM	NM	NM	NM
	3/29/12	120	650	<0.23	290
	6/27/12	440	130	<0.23	371
	9/19/12	760	82,700	0.189	365
	12/12/12	127	337	0.246	318

NOTES:

µg/L - micrograms per liter

mg/L - milligrams per liter

< - indicates result is less than the stated laboratory method reporting limit

NM - Not Monitored due to frozen groundwater



ATTACHMENT 1
LABORATORY ANALYTICAL REPORT



December 31, 2012

LT Environmental, Inc.

Rob Fishburn

4600 West 60th Avenue

Arvada CO 80003

Project Name - WT Durham #4

Project Number - MS1007

Attached are you analytical results for WT Durham #4 received by Origins Laboratory, Inc. December 14, 2012. This project is associated with Origins project number X212097-01.

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

Rob Fishburn
Project Number: MS1007
Project: WT Durham #4

CROSS REFERENCE REPORT

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
MW01	X212097-01	Water	December 13, 2012 12:00	12/14/2012 14:37
MW02	x212097-02	Water	December 13, 2012 12:10	12/14/2012 14:37
MW04	X212097-03	Water	December 13, 2012 12:20	12/14/2012 14:37
MW05	X212097-04	Water	December 13, 2012 12:30	12/14/2012 14:37
MW06	x212097-05	Water	December 13, 2012 12:40	12/14/2012 14:37
MW07	X212097-06	Water	December 13, 2012 12:50	12/14/2012 14:37
MW08	X212097-07	Water	December 13, 2012 13:00	12/14/2012 14:37
MW09	X212097-08	Water	December 13, 2012 13:10	12/14/2012 14:37
MW10	X212097-09	Water	December 13, 2012 13:20	12/14/2012 14:37
MW11	x212097-10	Water	December 13, 2012 13:30	12/14/2012 14:37
Trip Blank	X212097-11	Water	December 13, 2012 0:00	12/14/2012 14:37

Origins Laboratory, Inc.



Noelle E Doyle, President

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

Rob Fishburn
 Project Number: MS1007
 Project: WT Durham #4

www.originslaboratory.com

page 1 of 2

X222097

Client: LT Environmental
 Address: 820 Megan Ave Unit B
 Durco 61650
 Telephone Number: 970-285-9185
 Email Address: rfishburn@ltenv.com

Project Manager: Rob Fishburn
 Project Name: WT Durham #4
 Project Number: MS 1007
 Samples Collected By: RZ/SS

Sample ID Description	Date Sampled	Time Sampled	# of Containers	Preservative				Matrix			Analysis				Sample Instructions				
				Unpreserved	HCl	HNO ₃	Other	Groundwater	Soil	Air Summa #	Other	BT/EX	Total Iron	Dissolved Manganese		Zinc	Sulfate		
MW 01	12-13-12	12:00	3	X	X			X				X	X	X					
MW 02		12:10	6	1	3	2		X				X	X	X					HNO ₃ only - field filtered
MW 04		12:20	3	X	X			X				X	X	X					
MW 05		12:30	3	X	X			X				X	X	X					
MW 06		12:40	6	1	3	2		X				X	X	X					HNO ₃ only - field filtered
MW 07		12:50	3	X	X			X				X	X	X					
MW 08		1:00	3	X	X			X				X	X	X					
MW 09		1:10	3	X	X			X				X	X	X					
MW 10		1:20	3	X	X			X				X	X	X					
MW 11		1:30	6	1	3	2		X				X	X	X					HNO ₃ only - field filtered
Relinquished By:	Date:	Time:	Received By:	Date:	Time:	Turnaround Time:				Date:	Time:				Same Day	24 Hr	48 Hr	72 Hr	Standard
Handwritten Signature	12/13/12	15:00	Fed ex	12-13-12	15:02	12-13-12	15:02					12-13-12	15:02		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
Fed ex	12-14-12	14:37	J.A.	12-14-12	14:37	12-14-12	14:37					12-14-12	14:37						

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

Origins Laboratory, Inc.

Noelle E Doyle, President

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

Rob Fishburn
 Project Number: MS1007
 Project: WT Durham #4

Origins Laboratory

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

Sample Receipt Checklist

Origins Work Order: X212097

Client: LTE

Client Project ID: WT Durham #4

Checklist Completed by: Jeff Smith

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

Date/Time completed: 12-11-12 14:37

Airbill #: _____

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

Cooler Number/Temperature: 1 / 5.1 °C _____ °C _____ °C _____ °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"/>			HCl, HNO ₃
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.

[Signature]
 Reviewed by (Project Manager)

12-21-12 136
 Date/Time Reviewed

Origins Laboratory, Inc.

[Signature]

Noelle E Doyle, President

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

Rob Fishburn
 Project Number: MS1007
 Project: WT Durham #4

MW01
 12/13/2012 12:00:00PM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
---------	--------	-----------------	-------	----------	-------	----------	----------	-------

Origins Laboratory, Inc.
 X212097-01 (Water)

BTEX by EPA 8260C

Benzene	ND	1.0	ug/L	1	2L19004	12/19/2012	12/19/2012	
Toluene	ND	1.0	"	"	"	"	"	
Ethylbenzene	ND	1.0	"	"	"	"	"	
Xylenes, total	ND	1.0	"	"	"	"	"	

Surrogate: 1,2-Dichloroethane-d4	101 %	70-130			"	"	"	
Surrogate: Toluene-d8	106 %	70-130			"	"	"	
Surrogate: 4-Bromofluorobenzene	103 %	70-130			"	"	"	

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 E Doyle, President

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

Rob Fishburn
 Project Number: MS1007
 Project: WT Durham #4

MW02
 12/13/2012 12:10:00PM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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XENCO
 x212097-02 (Water)

Anions by EPA 300

Nitrate as N	0.3	0.226	mg/L	1	903124	12/17/2012	12/17/2012	K
Sulfate	388	2	"	"	"	"	"	K

BTEX by EPA 8260C

Benzene	ND	1.0	ug/L	1	2L19004	12/19/2012	12/19/2012	
Toluene	ND	1.0	"	"	"	"	"	
Ethylbenzene	ND	1.0	"	"	"	"	"	
Xylenes, total	ND	1.0	"	"	"	"	"	

Surrogate: 1,2-Dichloroethane-d4	101 %	70-130			"	"	"	
Surrogate: Toluene-d8	106 %	70-130			"	"	"	
Surrogate: 4-Bromofluorobenzene	102 %	70-130			"	"	"	

Dissolved Metals per ICP by SW846 6010B

Manganese	0.458	0.02	mg/L	1	903485	12/20/2012	12/21/2012	
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Total Metals by EPA 6010B

Iron	1.22	0.2	mg/L	1	903559	12/21/2012	12/21/2012	
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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 E Doyle, President

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

Rob Fishburn
 Project Number: MS1007
 Project: WT Durham #4

MW04
 12/13/2012 12:20:00PM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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Origins Laboratory, Inc.
 X212097-03 (Water)

BTEX by EPA 8260C

Benzene	ND	1.0	ug/L	1	2L19004	12/19/2012	12/19/2012	
Toluene	ND	1.0	"	"	"	"	"	
Ethylbenzene	ND	1.0	"	"	"	"	"	
Xylenes, total	ND	1.0	"	"	"	"	"	
<i>Surrogate: 1,2-Dichloroethane-d4</i>	<i>101 %</i>	<i>70-130</i>			"	"	"	
<i>Surrogate: Toluene-d8</i>	<i>106 %</i>	<i>70-130</i>			"	"	"	
<i>Surrogate: 4-Bromofluorobenzene</i>	<i>103 %</i>	<i>70-130</i>			"	"	"	

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 E Doyle, President

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

Rob Fishburn
 Project Number: MS1007
 Project: WT Durham #4

MW05
 12/13/2012 12:30:00PM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
---------	--------	-----------------	-------	----------	-------	----------	----------	-------

Origins Laboratory, Inc.
 X212097-04 (Water)

BTEX by EPA 8260C

Benzene	2.51	1.0	ug/L	1	2L19004	12/19/2012	12/19/2012	
Toluene	ND	1.0	"	"	"	"	"	
Ethylbenzene	ND	1.0	"	"	"	"	"	
Xylenes, total	ND	1.0	"	"	"	"	"	

<i>Surrogate: 1,2-Dichloroethane-d4</i>	102 %	70-130			"	"	"	
<i>Surrogate: Toluene-d8</i>	106 %	70-130			"	"	"	
<i>Surrogate: 4-Bromofluorobenzene</i>	102 %	70-130			"	"	"	

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 E Doyle, President

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

Rob Fishburn
 Project Number: MS1007
 Project: WT Durham #4

MW06
 12/13/2012 12:40:00PM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
---------	--------	-----------------	-------	----------	-------	----------	----------	-------

XENCO
 x212097-05 (Water)

Anions by EPA 300

Nitrate as N	0.272	0.226	mg/L	1	903124	12/17/2012	12/17/2012	K
Sulfate	340	2	"	"	"	"	"	K

BTEX by EPA 8260C

Benzene	6.4	1.0	ug/L	1	2L19004	12/19/2012	12/19/2012	
Toluene	ND	1.0	"	"	"	"	"	
Ethylbenzene	ND	1.0	"	"	"	"	"	
Xylenes, total	ND	1.0	"	"	"	"	"	

Surrogate: 1,2-Dichloroethane-d4	101 %	70-130			"	"	"	
Surrogate: Toluene-d8	106 %	70-130			"	"	"	
Surrogate: 4-Bromofluorobenzene	103 %	70-130			"	"	"	

Dissolved Metals per ICP by SW846 6010B

Manganese	0.757	0.02	mg/L	1	903485	12/20/2012	12/21/2012	
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Total Metals by EPA 6010B

Iron	2.25	0.2	mg/L	1	903559	12/21/2012	12/21/2012	
------	------	-----	------	---	--------	------------	------------	--

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 E Doyle, President

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

Rob Fishburn
 Project Number: MS1007
 Project: WT Durham #4

MW07
 12/13/2012 12:50:00PM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
---------	--------	-----------------	-------	----------	-------	----------	----------	-------

Origins Laboratory, Inc.
 X212097-06 (Water)

BTEX by EPA 8260C

Benzene	ND	1.0	ug/L	1	2L19004	12/19/2012	12/19/2012	
Toluene	ND	1.0	"	"	"	"	"	
Ethylbenzene	ND	1.0	"	"	"	"	"	
Xylenes, total	ND	1.0	"	"	"	"	"	
<i>Surrogate: 1,2-Dichloroethane-d4</i>	102 %	70-130			"	"	"	
<i>Surrogate: Toluene-d8</i>	107 %	70-130			"	"	"	
<i>Surrogate: 4-Bromofluorobenzene</i>	104 %	70-130			"	"	"	

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 E Doyle, President

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

Rob Fishburn
 Project Number: MS1007
 Project: WT Durham #4

MW08

12/13/2012 1:00:00PM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
---------	--------	-----------------	-------	----------	-------	----------	----------	-------

Origins Laboratory, Inc.
 X212097-07 (Water)

BTEX by EPA 8260C

Benzene	ND	1.0	ug/L	1	2L19004	12/19/2012	12/19/2012	
Toluene	ND	1.0	"	"	"	"	"	
Ethylbenzene	ND	1.0	"	"	"	"	"	
Xylenes, total	ND	1.0	"	"	"	"	"	
<i>Surrogate: 1,2-Dichloroethane-d4</i>	102 %	70-130			"	"	"	
<i>Surrogate: Toluene-d8</i>	107 %	70-130			"	"	"	
<i>Surrogate: 4-Bromofluorobenzene</i>	102 %	70-130			"	"	"	

Origins Laboratory, Inc.



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

Rob Fishburn
 Project Number: MS1007
 Project: WT Durham #4

MW09

12/13/2012 1:10:00PM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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Origins Laboratory, Inc.
 X212097-08 (Water)

BTEX by EPA 8260C

Benzene	2.2	1.0	ug/L	1	2L19004	12/19/2012	12/19/2012	
Toluene	ND	1.0	"	"	"	"	"	
Ethylbenzene	ND	1.0	"	"	"	"	"	
Xylenes, total	ND	1.0	"	"	"	"	"	

<i>Surrogate: 1,2-Dichloroethane-d4</i>	102 %	70-130			"	"	"	
<i>Surrogate: Toluene-d8</i>	105 %	70-130			"	"	"	
<i>Surrogate: 4-Bromofluorobenzene</i>	103 %	70-130			"	"	"	

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

Rob Fishburn
 Project Number: MS1007
 Project: WT Durham #4

MW10

12/13/2012 1:20:00PM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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Origins Laboratory, Inc.
 X212097-09 (Water)

BTEX by EPA 8260C

Benzene	ND	1.0	ug/L	1	2L19004	12/19/2012	12/19/2012	
Toluene	ND	1.0	"	"	"	"	"	
Ethylbenzene	ND	1.0	"	"	"	"	"	
Xylenes, total	ND	1.0	"	"	"	"	"	

Surrogate: 1,2-Dichloroethane-d4	101 %	70-130			"	"	"	
Surrogate: Toluene-d8	106 %	70-130			"	"	"	
Surrogate: 4-Bromofluorobenzene	105 %	70-130			"	"	"	

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LT Environmental, Inc.
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Rob Fishburn
 Project Number: MS1007
 Project: WT Durham #4

MW11
 12/13/2012 1:30:00PM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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XENCO
 x212097-10 (Water)

Anions by EPA 300

Nitrate as N	0.246	0.226	mg/L	1	903124	12/17/2012	12/17/2012	K
Sulfate	318	2	"	"	"	"	"	K

BTEX by EPA 8260C

Benzene	ND	1.0	ug/L	1	2L19004	12/19/2012	12/19/2012	
Toluene	ND	1.0	"	"	"	"	"	
Ethylbenzene	ND	1.0	"	"	"	"	"	
Xylenes, total	ND	1.0	"	"	"	"	"	

Surrogate: 1,2-Dichloroethane-d4	101 %	70-130			"	"	"	
Surrogate: Toluene-d8	106 %	70-130			"	"	"	
Surrogate: 4-Bromofluorobenzene	103 %	70-130			"	"	"	

Dissolved Metals per ICP by SW846 6010B

Manganese	0.127	0.02	mg/L	1	903485	12/20/2012	12/21/2012	
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Total Metals by EPA 6010B

Iron	0.337	0.2	mg/L	1	903559	12/21/2012	12/21/2012	
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Rob Fishburn
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 Project: WT Durham #4

Trip Blank
12/13/2012 12:00:00AM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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Origins Laboratory, Inc.
X212097-11 (Water)

BTEX by EPA 8260C

Benzene	ND	1.0	ug/L	1	2L19004	12/19/2012	12/19/2012	
Toluene	ND	1.0	"	"	"	"	"	
Ethylbenzene	ND	1.0	"	"	"	"	"	
Xylenes, total	ND	1.0	"	"	"	"	"	
<i>Surrogate: 1,2-Dichloroethane-d4</i>	102 %	70-130			"	"	"	
<i>Surrogate: Toluene-d8</i>	107 %	70-130			"	"	"	
<i>Surrogate: 4-Bromofluorobenzene</i>	103 %	70-130			"	"	"	

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 Project: WT Durham #4

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 2L19004 - EPA 5030B (Water)

Blank (2L19004-BLK1)

Prepared: 12/19/2012 Analyzed: 12/19/2012

Benzene	ND	1.0	ug/L							
Toluene	ND	1.0	"							
Ethylbenzene	ND	1.0	"							
Xylenes, total	ND	1.0	"							
<i>Surrogate: 1,2-Dichloroethane-d4</i>	<i>62</i>		<i>"</i>	<i>62.5</i>	<i>99.2</i>		<i>70-130</i>			
<i>Surrogate: Toluene-d8</i>	<i>66</i>		<i>"</i>	<i>62.5</i>	<i>106</i>		<i>70-130</i>			
<i>Surrogate: 4-Bromofluorobenzene</i>	<i>64</i>		<i>"</i>	<i>62.5</i>	<i>102</i>		<i>70-130</i>			

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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 2L19004 - EPA 5030B (Water)

LCS (2L19004-BS1)

Prepared: 12/19/2012 Analyzed: 12/19/2012

Benzene	89.4	1.0	ug/L	100	89.4	70-130				
Toluene	99.0	1.0	"	100	99.0	70-130				
Ethylbenzene	101	1.0	"	100	101	70-130				
m,p-Xylene	204	2.0	"	200	102	70-130				
o-Xylene	98.3	1.0	"	100	98.3	70-130				
Surrogate: 1,2-Dichloroethane-d4	58		"	62.5	92.5	70-130				
Surrogate: Toluene-d8	67		"	62.5	108	70-130				
Surrogate: 4-Bromofluorobenzene	64		"	62.5	102	70-130				

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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 2L19004 - EPA 5030B (Water)

Matrix Spike (2L19004-MS1)	Source: X212097-01			Prepared: 12/19/2012 Analyzed: 12/19/2012						
Benzene	89.7	1.0	ug/L	100	ND	89.7	70-130			
Toluene	98.9	1.0	"	100	ND	98.9	70-130			
Ethylbenzene	101	1.0	"	100	ND	101	70-130			
m,p-Xylene	202	2.0	"	200	ND	101	70-130			
o-Xylene	97.3	1.0	"	100	ND	97.3	70-130			
Surrogate: 1,2-Dichloroethane-d4	58		"	62.5		93.1	70-130			
Surrogate: Toluene-d8	67		"	62.5		107	70-130			
Surrogate: 4-Bromofluorobenzene	64		"	62.5		103	70-130			

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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 2L19004 - EPA 5030B (Water)

Matrix Spike Dup (2L19004-MSD1)	Source: X212097-01			Prepared: 12/19/2012 Analyzed: 12/19/2012						
Benzene	89.1	1.0	ug/L	100	ND	89.1	70-130	0.660	20	
Toluene	98.8	1.0	"	100	ND	98.8	70-130	0.0405	20	
Ethylbenzene	99.9	1.0	"	100	ND	99.9	70-130	0.887	20	
m,p-Xylene	202	2.0	"	200	ND	101	70-130	0.0595	20	
o-Xylene	98.4	1.0	"	100	ND	98.4	70-130	1.14	20	
<i>Surrogate: 1,2-Dichloroethane-d4</i>	<i>58</i>		<i>"</i>	<i>62.5</i>		<i>92.8</i>	<i>70-130</i>			
<i>Surrogate: Toluene-d8</i>	<i>67</i>		<i>"</i>	<i>62.5</i>		<i>107</i>	<i>70-130</i>			
<i>Surrogate: 4-Bromofluorobenzene</i>	<i>64</i>		<i>"</i>	<i>62.5</i>		<i>103</i>	<i>70-130</i>			

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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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Anions by EPA 300 - Quality Control
XENCO

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch 903124 - E300P

MS (453723-001 S)		Source: 453723-001 S			Prepared: 12/17/2012 Analyzed: 12/17/2012					
Nitrate as N	3.8	0.226	mg/L	2.26	2.05	77	80-120		20	
Sulfate	66	2	"	50	20.5	91	80-120		20	
LCS (631396-1-BKS)		Source: 631396-1-BKS			Prepared: 12/17/2012 Analyzed: 12/17/2012					
Nitrate as N	2.13	0.226	mg/L	2.26	<0.00400	94	80-120		20	
Sulfate	49.3	2	"	50	<0.0460	99	80-120		20	
BLANK (631396-1-BLK)		Source: 631396-1-BLK			Prepared: 12/17/2012 Analyzed: 12/17/2012					
Sulfate	ND	2	mg/L	50			-		20	
LCSD (631396-1-BSD)		Source: 631396-1-BSD			Prepared: 12/17/2012 Analyzed: 12/17/2012					
Sulfate	49.1	2	mg/L	50	<0.0460	98	80-120	0	20	
Nitrate as N	2.13	0.226	"	2.26	<0.00400	94	80-120	0	20	

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Dissolved Metals per ICP by SW846 6010B - Quality Control
 XENCO

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 903485 - SW3010A										
MS (454279-001 S)			Source: 454279-001 S			Prepared: 12/20/2012 Analyzed: 12/21/2012				
Manganese	1.38	0.02	mg/L	1	0.458	92	75-125		20	
MSD (454279-001 SD)			Source: 454279-001 SD			Prepared: 12/20/2012 Analyzed: 12/21/2012				
Manganese	1.38	0.02	mg/L	1	0.458	92	75-125	0	20	
LCS (631547-1-BKS)			Source: 631547-1-BKS			Prepared: 12/20/2012 Analyzed: 12/20/2012				
Manganese	0.944	0.02	mg/L	1	<0.00291	94	75-125		20	
LCSD (631547-1-BSD)			Source: 631547-1-BSD			Prepared: 12/20/2012 Analyzed: 12/20/2012				
Manganese	0.907	0.02	mg/L	1	<0.00291	91	75-125	4	20	

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Total Metals by EPA 6010B - Quality Control
XENCO

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 903559 - SW3010A										
MS (454279-001 S)			Source: 454279-001 S			Prepared: 12/21/2012 Analyzed: 12/21/2012				
Iron	6.07	0.2	mg/L	5	1.22	97	75-125		20	
MSD (454279-001 SD)			Source: 454279-001 SD			Prepared: 12/21/2012 Analyzed: 12/21/2012				
Iron	6.16	0.2	mg/L	5	1.22	99	75-125	1	20	
LCS (631617-1-BKS)			Source: 631617-1-BKS			Prepared: 12/21/2012 Analyzed: 12/21/2012				
Iron	4.69	0.2	mg/L	5	<0.0188	94	75-125		20	
LCSD (631617-1-BSD)			Source: 631617-1-BSD			Prepared: 12/21/2012 Analyzed: 12/21/2012				
Iron	4.82	0.2	mg/L	5	<0.0188	96	75-125	3	20	

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Rob Fishburn
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Project: WT Durham #4

Notes and Definitions

- K Received and analyzed outside of method hold-time requirements
- ND Analyte NOT DETECTED at or above the reporting limit
- RPD Relative Percent Difference

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