



GROUNDWATER MONITORING REPORT SEPTEMBER 2014

MILLER SOUTH #1 SPREAD FIELD REMEDATION #7412

LT Environmental, Inc. (LTE), under the direction of Noble Energy, Inc. (Noble), conducted groundwater monitoring activities at the Miller South #1 Spread Field (Site). The legal description of the Site is the south half of the northwest quarter of Section 29, Township 5 North, Range 64 West, 6th Principal Meridian. The Site is located approximately 0.35 miles east of County Road 51 and 0.25 miles south of County Road 54 in Weld County, Colorado. The Site Location Map is included as Figure 1.

On March 8 and 9, 2012, LTE advanced a total of 16 soil borings (SB01 through SB16). Soil borings (SB01 through SB16) were completed as temporary monitoring wells to assess the potential extent of inorganic constituents in groundwater related to the release of calcium chloride-enriched water. Monitoring well SB09 was located up-gradient from the release area to obtain background concentrations. On September 10 and 11, 2012, a total of 17 monitoring wells (Background 01, Background 02, SB01R through SB08R, and SB17 through SB23) were installed to provide background concentrations of the inorganic constituents of concern (Background 01 and Background 02), replace the destroyed monitoring wells (SB01R through SB08R), and delineate the potential extent of groundwater impacts (SB17 through SB23). On January 8, 2013, monitoring well SB05R2 was installed to replace destroyed monitoring well SB05R. On April 1, 2013, three monitoring wells (SB19R through SB21R) were installed to replace those destroyed during the expansion of the landowner's irrigation pond. Soil boring SB09 was advanced to establish background conditions; however, it was located within the permitted spread field boundaries. Therefore, samples were collected from the Background 01 and Background 02 locations both up-gradient and outside of the permitted spread field and those results were used to calculate the Colorado Oil and Gas Conservation Commission (COGCC) Table 910-1 standard for chloride, sulfate, and total dissolved solids (TDS).

On March 4, 2014, Noble, LTE, and the COGCC (represented by Mr. Rick Allison) conducted a meeting to discuss the Site, specifically regarding the groundwater monitoring program and evaluation of site closure methodology. During the meeting, Noble and the COGCC agreed to the following:

- Conduct a groundwater monitoring event of existing monitoring wells and analyze for inorganic groundwater constituents and bromide;
- Analyze samples from the monitoring wells exhibiting the most elevated levels of chloride (SB04R and SB14R) for anions and cations; and
- Submit data in a monitoring report with consideration and recommendations toward the ongoing groundwater monitoring program and site closure.

Groundwater Monitoring Activities

On September 22, 2014, LTE, under the direction of Noble, were on site to conduct groundwater monitoring activities in 22 monitoring wells (SB01R through SB04R, SB05R2, SB06R through SB08R, SB10 through SB18, SB19R, SB20R, SB21R, SB22, and SB23). Due to the release of water from the nearby ponds, a portion of the site was flooded and samples could not be collected from monitoring wells SB01R, SB02R, SB03R, SB04R, SB05R2, SB17, and SB18. Due to being damaged or destroyed, samples could not be collected from monitoring wells SB08R, SB19R, and SB21R. Due to vegetative growth, monitoring well SB22 could not be located and therefore not sampled. Prior to purging, depth to groundwater was measured and recorded for calculating well-specific target purge volumes and relative groundwater elevations. Depth to groundwater ranged from 1.96 feet below top of casing (btoc) in monitoring well SB13 to 9.39 feet btoc in monitoring well SB20R. The pre-purging depth to groundwater measurements were likely influenced by the localized flooding at the Site and may not be indicative of the static groundwater level. Groundwater gradients vary at the Site, but generally flow east. Northwest gradients are likely influenced by local agricultural activities. The average gradient is approximately 0.013 feet per foot. Relative groundwater elevations are presented on Figure 2 and summarized in Table 1.

During this monitoring event, 11 groundwater samples (SB06R, SB07R, SB10 through SB16, SB20R, and SB23) were collected. All samples were submitted to Origins Laboratory, Inc. (Origins) of Denver, Colorado, for analysis of chloride, bromide, and sulfate by United States Environmental Protection Agency (EPA) Method 300.0 and TDS by Standard Method 2540C.

Surface Water Monitoring

On September 24, 2014, LTE, under the direction of Noble, collected 12 grab samples (SW01 through SW12) of the surface water that remained on the Site to determine the potential for impact to groundwater at the Site associated with the release of the water from the surface water pond. The samples were collected, placed on ice, then submitted with a completed chain of custody form to Origins for analysis of chloride, bromide, and sulfate by EPA Method 300.0 and TDS by Standard Method 2540C.

Groundwater Analytical Results

The COGCC Table 910-1 groundwater standards for chloride, sulfate, and TDS are 1.25 times the background concentrations from samples collected at monitoring wells Background 01 and Background 02. In order to help identify the potential release location, magnitude, or extent, as discussed in the March 4, 2014, meeting, groundwater data was analyzed to include evaluation of the chloride to bromide ratio (Cl^-/Br^-). The Cl^-/Br^- statistic may allow for identification of the potential calcium chloride release by normalizing the data to the background inorganic variability and allowing the release to be identified regardless of the natural variability of background chloride concentrations. A benchmark of 250 (unitless) can be used to compare potential anthropogenic sourced data versus naturally occurring concentrations. The Cl^-/Br^- results are presented on Figure 3 and summarized in Table 1.

An analysis of the data from one of the monitoring wells that has historically exhibited the most elevated levels of chloride, SB14, indicated that the concentrations of chloride and TDS generally correlated directly with the depth of groundwater for the affected shallow alluvial

profile. The data from the current monitoring event appears to contradict this; however, it is likely due to the unnatural influence of the pond release flooding the Site, driving the depth to groundwater measurements to appear shallower than the natural static groundwater elevation. Additionally, the flooded water may be diluting the subsurface chloride concentrations. As seen in data collected from monitoring well SB14, the concentrations of both chloride and TDS in the groundwater generally increase as the groundwater elevation rises, with the exception of the September 2014 monitoring event where groundwater elevations were unnaturally influenced. This indicated the groundwater is coming into contact with soil containing relatively higher concentrations of chloride and TDS at shallower depths. Current trends indicated the sulfate concentrations have not been affected by groundwater elevation and appear to be stable and decreasing. This conclusion supports the understanding that the inorganic groundwater impact is related to the documented calcium chloride fluid release. The aqueous concentrations of chloride, sulfate, and TDS in monitoring well SB14, relative to the relative groundwater elevations, are presented as Figures 4, 5, and 6, respectively. Laboratory groundwater analytical results for chloride, sulfate, and TDS are presented on Figures 7, 8, and 9, respectively. Laboratory groundwater analytical results are summarized in Table 1. The laboratory groundwater analytical report is included as Attachment 1.

Surface Water Analytical Results

The COGCC Table 910-1 standards for chloride, sulfate, and TDS are applicable to groundwater only; therefore, regarding the surface water samples, they were used for reference purposes only. The Cl^-/Br^- was also used for reference purposes only as described above. The surface water analytical results are presented on Figure 10 and summarized in Table 2. The laboratory surface water analytical report is included as Attachment 2.

Summary and Conclusions

As seen by the data collected and detailed in this report, groundwater impacts are generally confined to an area near the release. Monitoring locations at the extent of the investigation area indicated concentrations are generally stable or decreasing, indicating that the source of the impacts are continuing to be degraded through natural processes and the groundwater plume is in the decreasing phase of its life cycle. The inorganic impacts identified are not migrating and the plume does not present a risk to public health or the environment; therefore, monitored natural attenuation is an appropriate remedial method for the Site.

Due to plume stability, Noble proposes a reduction in the frequency and size of the monitoring program. We propose that monitoring wells SB04R, SB05R2, SB06R, SB07R, SB11, SB14, SB18, and SB23, which define the plume extent, be sampled for inorganics and bromide on a semi-annual basis with results summarized in an annual report. The next monitoring event is scheduled for March 2015.

FIGURES

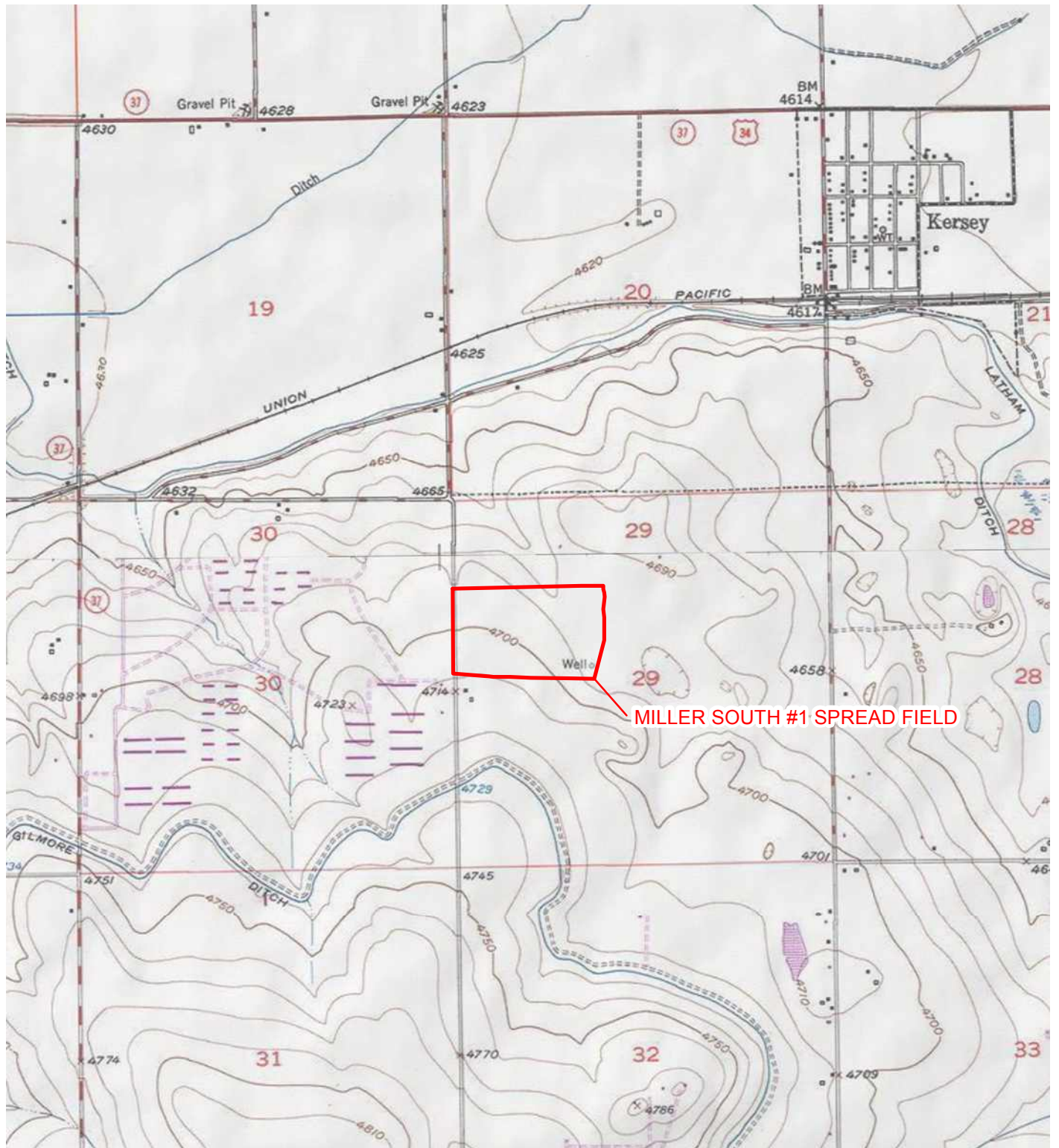


IMAGE COURTESY OF ESRI/USGS

LEGEND

SITE LOCATION

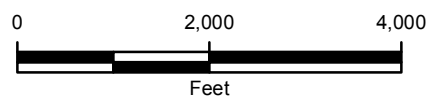
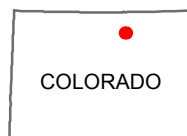
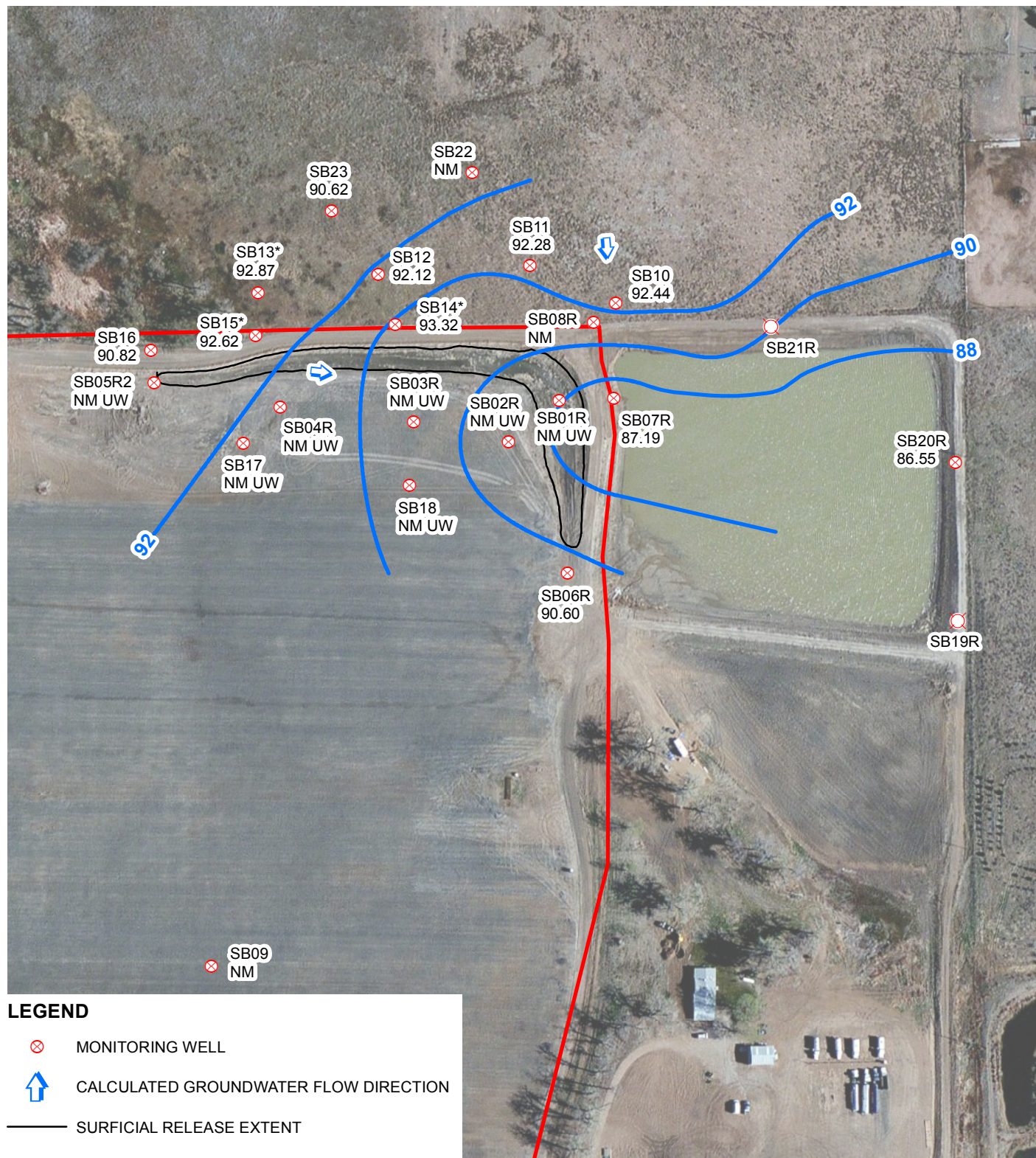


FIGURE 1
SITE LOCATION MAP
MILLER SOUTH #1 SPREAD FIELD
WELD COUNTY, COLORADO

NOBLE ENERGY, INC.





LEGEND

- MONITORING WELL
- CALCULATED GROUNDWATER FLOW DIRECTION
- SURFICIAL RELEASE EXTENT
- RELATIVE GROUNDWATER ELEVATION CONTOUR

CONTOUR INTERVAL = 2 FEET

GRADIENT = 0.013 FT/FT

- SPREAD FIELD BOUNDARY

*GROUNDWATER ELEVATIONS FROM MONITORING WELLS SB13, SB14 AND SB15 WERE NOT USED TO GENERATE CONTOURS.
NM: NOT MEASURED
UW: UNDER WATER

IMAGE COURTESY OF ESRI

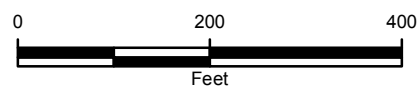
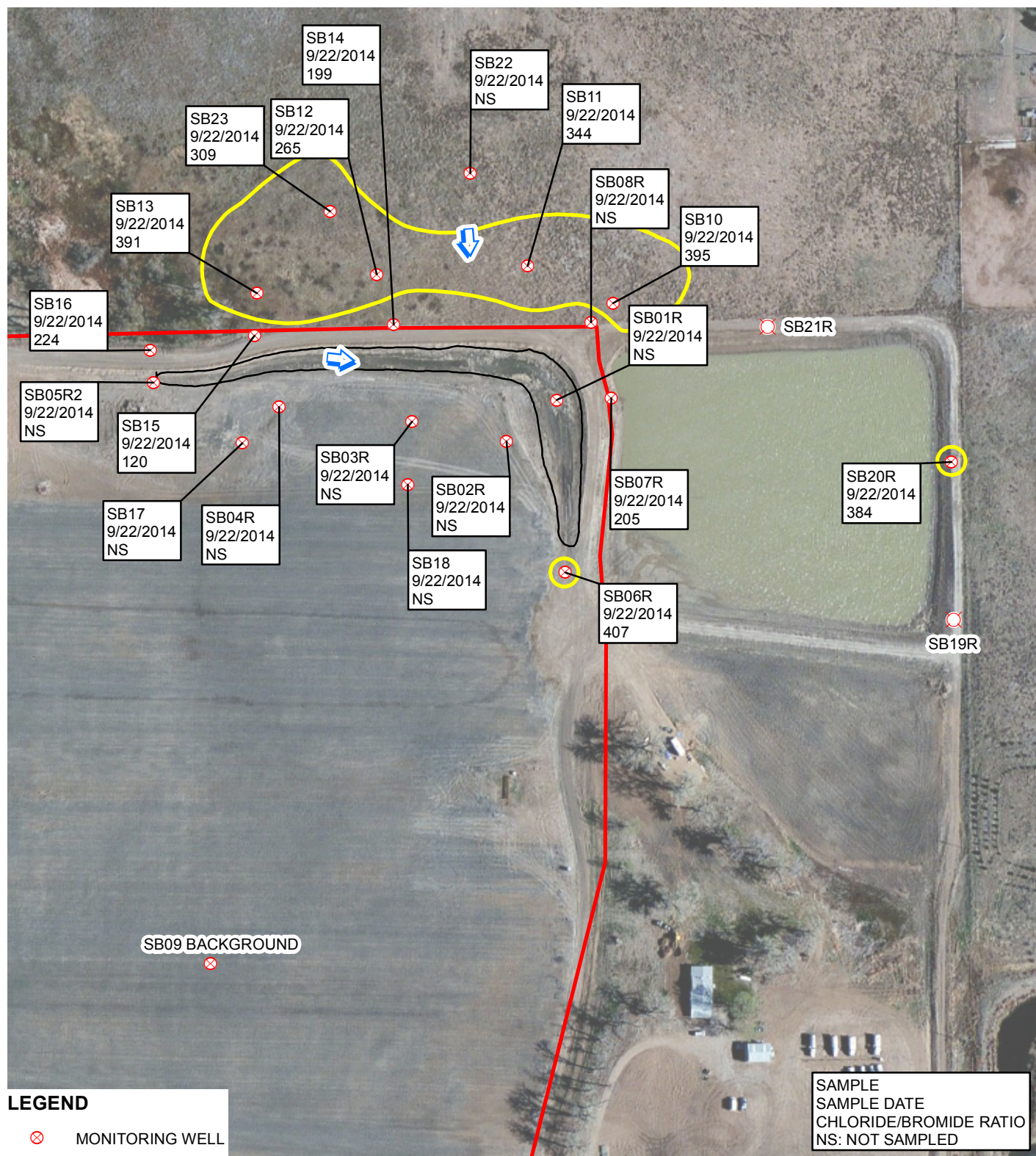


FIGURE 2
RELATIVE GROUNDWATER ELEVATION MAP
SEPTEMBER 22, 2014
MILLER SOUTH #1 SPREAD FIELD
WELD COUNTY, COLORADO
NOBLE ENERGY, INC.





LEGEND

- ⊗ MONITORING WELL
- ↑ CALCULATED GROUNDWATER FLOW DIRECTION
- ⊗ DESTROYED MONITORING WELL
- 250 CHLORIDE/BROMIDE RATIO ISOCONCENTRATION CONTOUR
- SURFICIAL RELEASE EXTENT
- SPREAD FIELD BOUNDARY

SAMPLE
SAMPLE DATE
CHLORIDE/BROMIDE RATIO
NS: NOT SAMPLED

IMAGE COURTESY OF ESRI

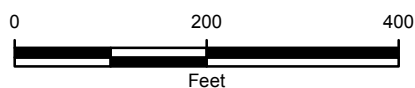
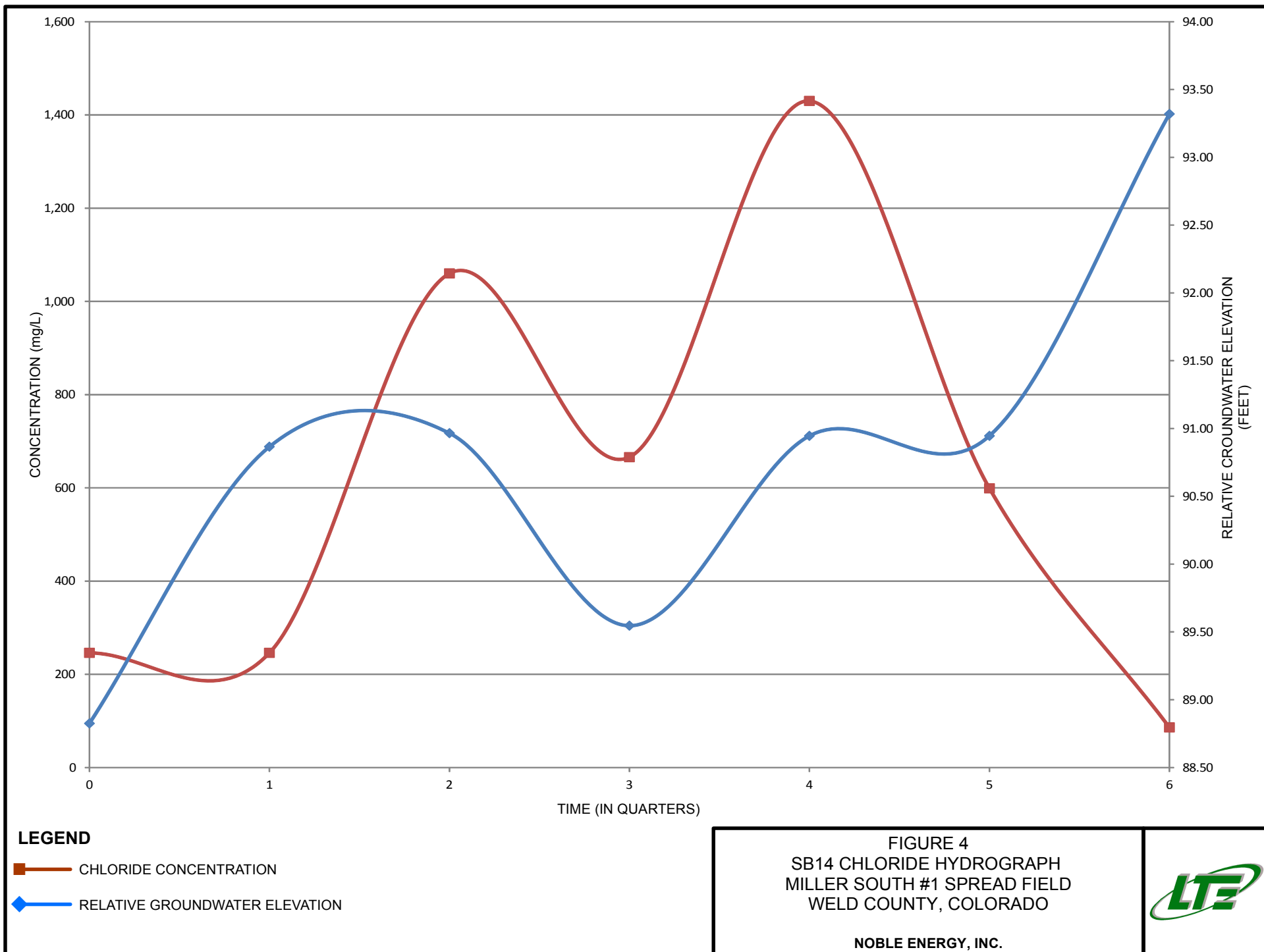
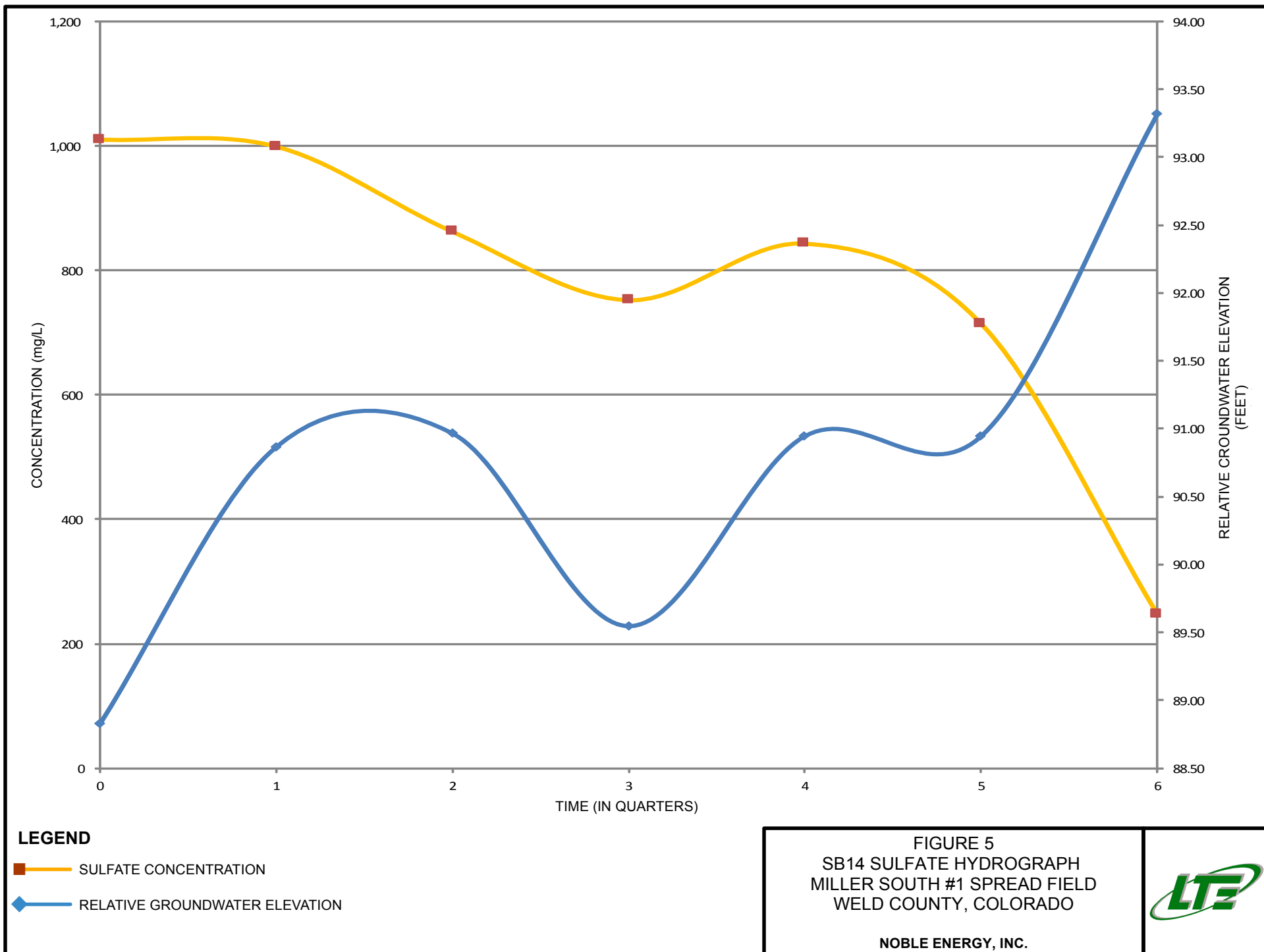


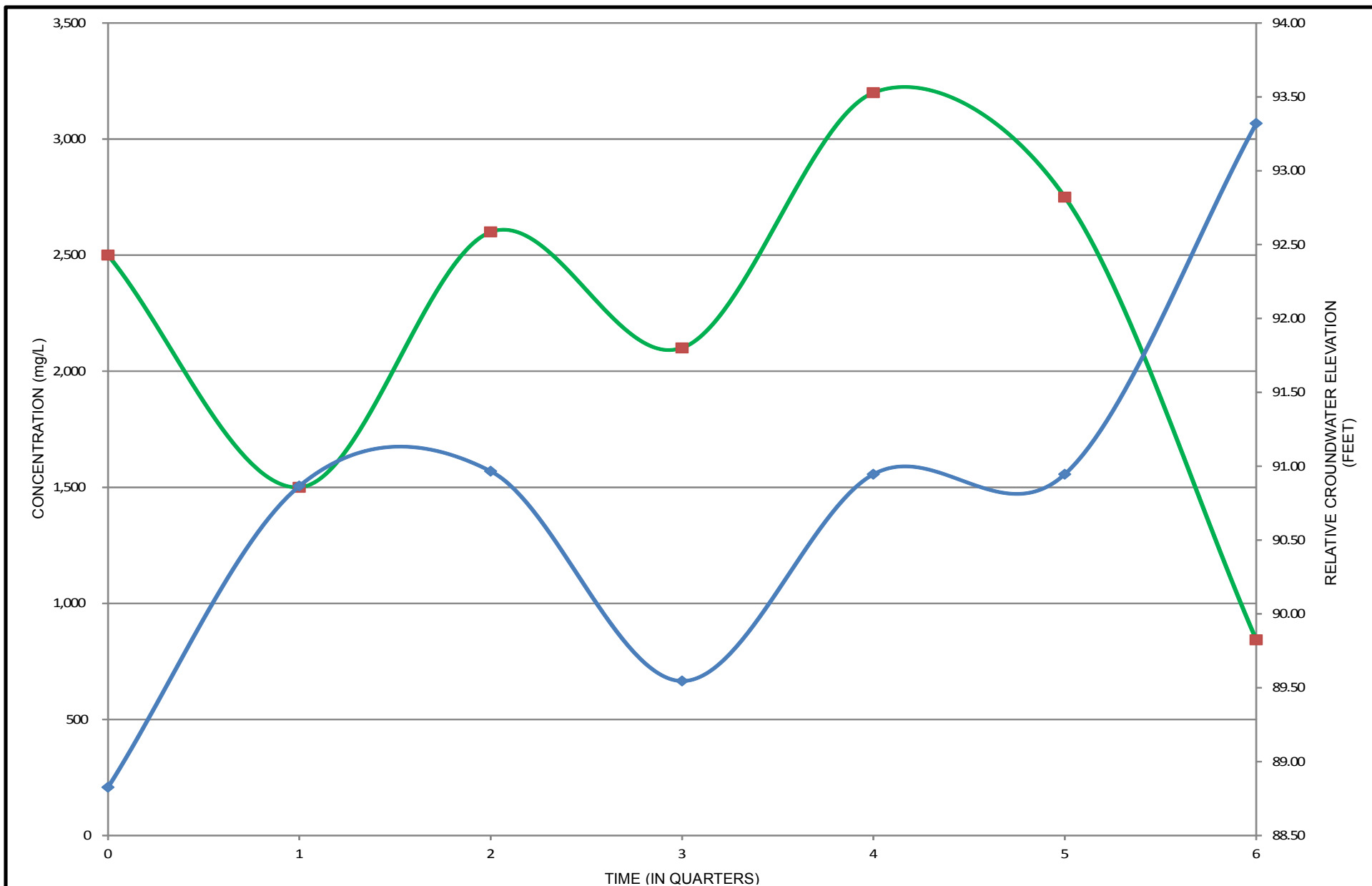
FIGURE 3
CHLORIDE/BROMIDE ANALYTICAL RESULTS
MILLER SOUTH #1 SPREAD FIELD
WELD COUNTY, COLORADO

NOBLE ENERGY, INC.









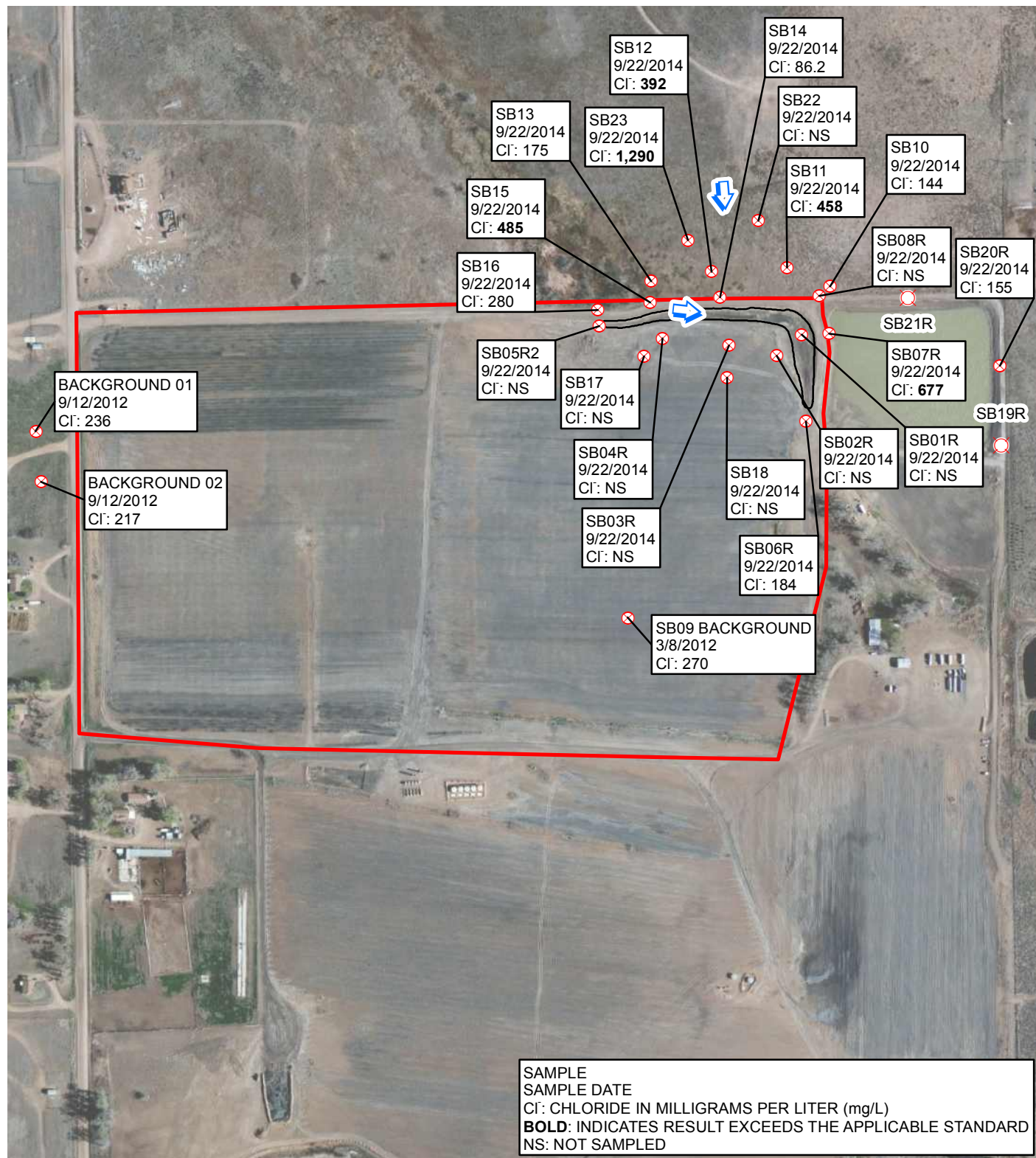
LEGEND

- TOTAL DISSOLVED SOLIDS
- ◆ RELATIVE GROUNDWATER ELEVATION

FIGURE 6
SB14 TOTAL DISSOLVED SOLIDS HYDROGRAPH
MILLER SOUTH #1 SPREAD FIELD
WELD COUNTY, COLORADO

NOBLE ENERGY, INC.





LEGEND

- MONITORING WELL
- CALCULATED GROUNDWATER FLOW DIRECTION
- DESTROYED MONITORING WELL
- SURFICIAL RELEASE EXTENT
- SPREAD FIELD BOUNDARY

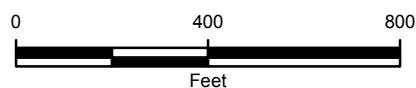


IMAGE COURTESY OF ESRI



FIGURE 7
CHLORIDE GROUNDWATER ANALYTICAL RESULTS
MILLER SOUTH #1 SPREAD FIELD
WELD COUNTY, COLORADO

NOBLE ENERGY, INC.



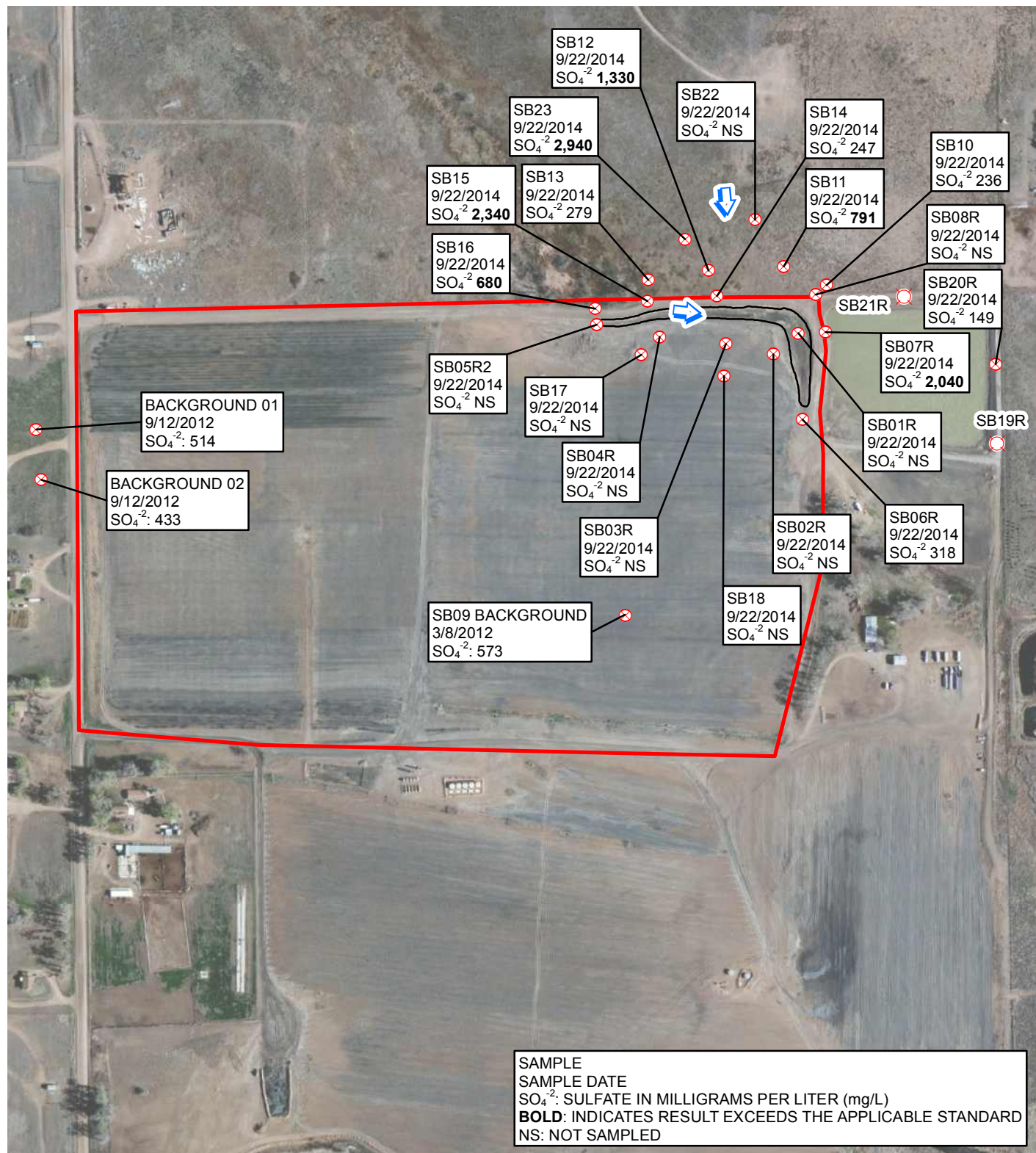


FIGURE 8
SULFATE GROUNDWATER ANALYTICAL RESULTS
MILLER SOUTH #1 SPREAD FIELD
WELD COUNTY, COLORADO

NOBLE ENERGY, INC.



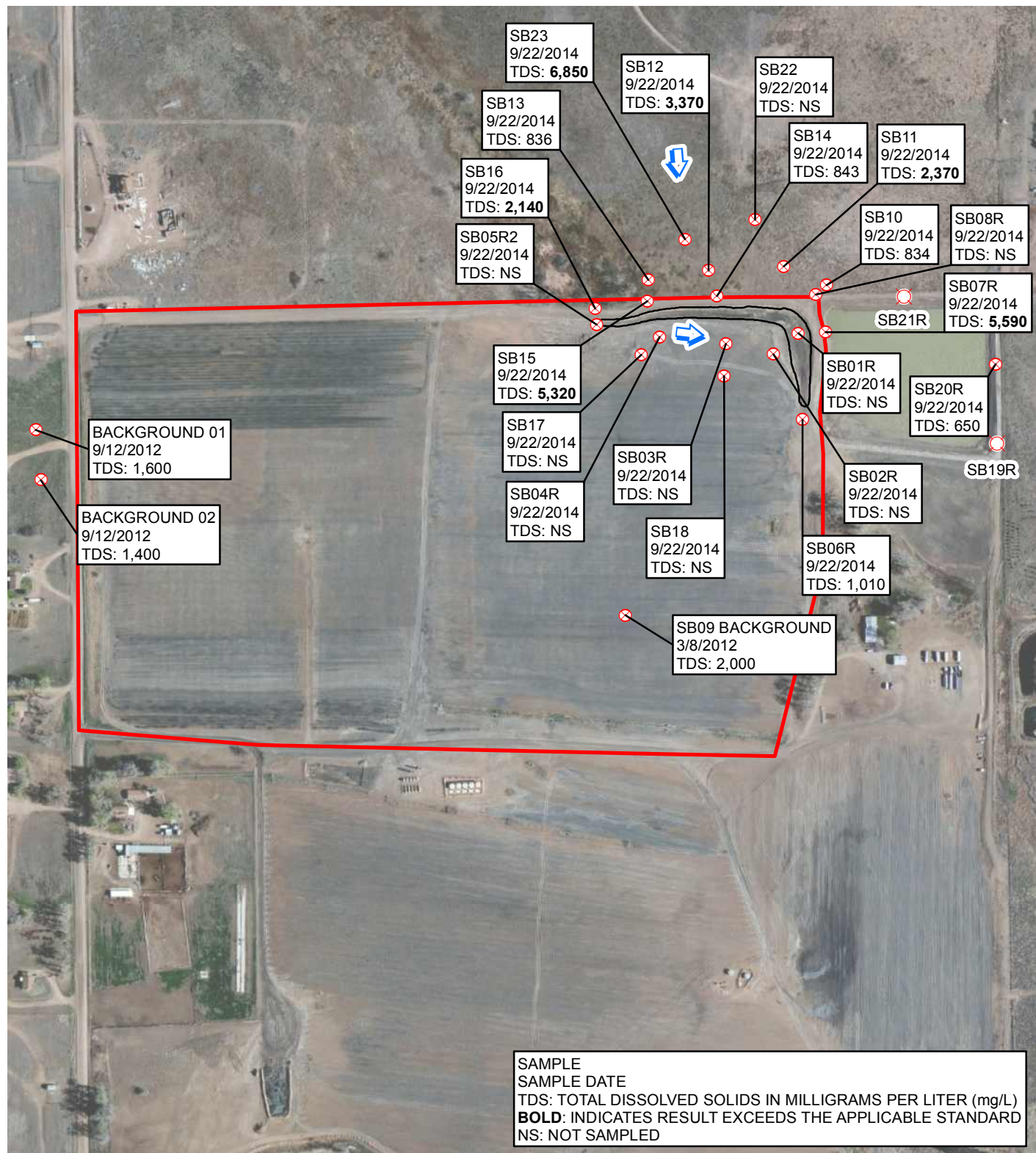
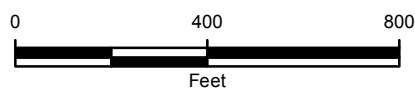


IMAGE COURTESY OF ESRI



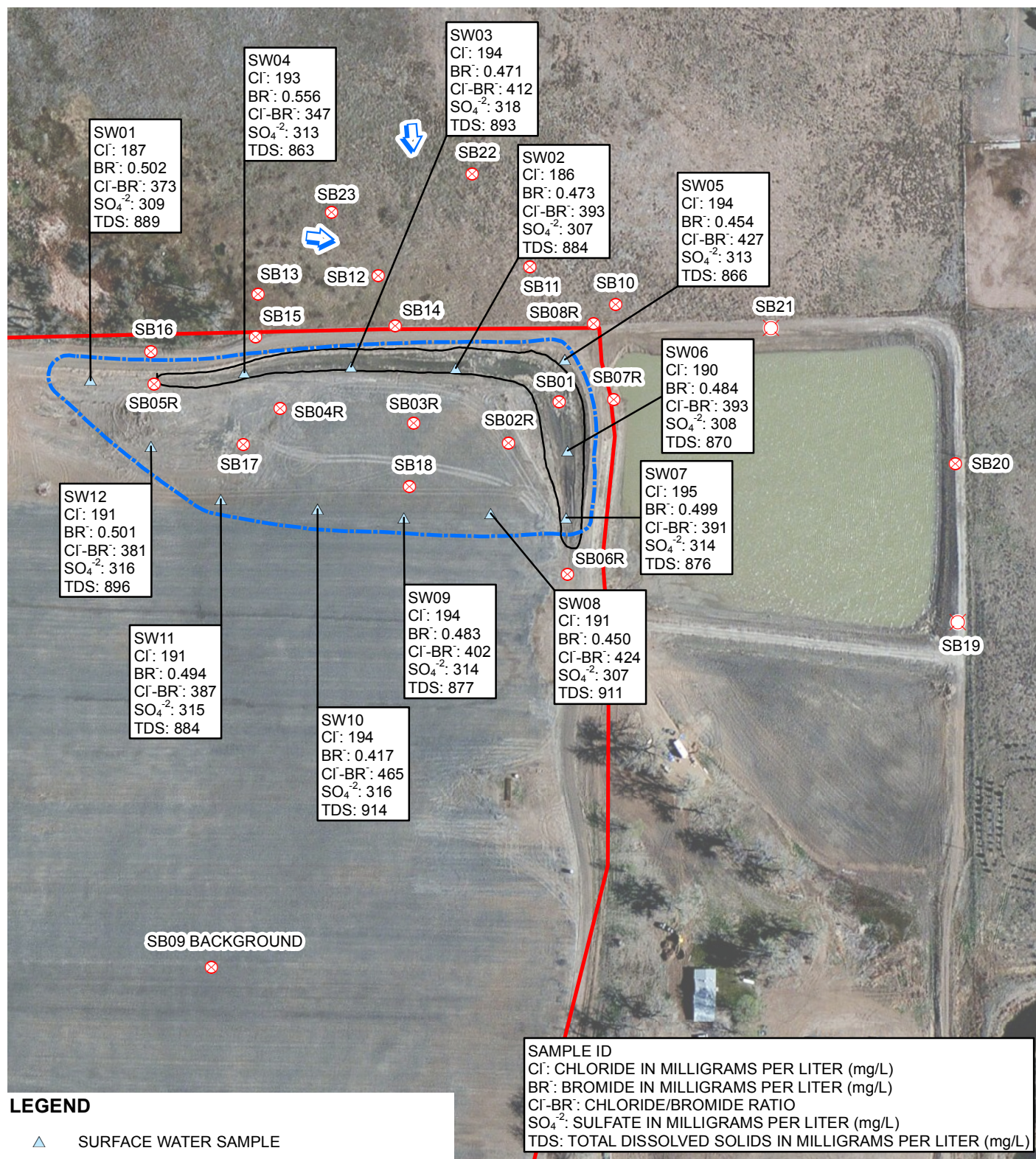


FIGURE 10
SURFACE WATER ANALYTICAL RESULTS
SEPTEMBER 24, 2014
MILLER SOUTH #1 SPREAD FIELD
WELD COUNTY, COLORADO
NOBLE ENERGY, INC.



TABLES

TABLE 1

GROUNDWATER ANALYTICAL RESULTS
MILLER SOUTH #1 SPREAD FIELD
WELD COUNTY, COLORADO
NOBLE ENERGY, INC.

Sample Location	Date Sampled	Depth to Water (feet btoc)	Relative Groundwater Elevation (feet)	Chloride (mg/L)	Bromide (mg/L)	Chloride/Bromide*	Sulfate (mg/L)	Total Dissolved Solids (mg/L)	Benzene (µg/L)	Toluene (µg/L)	Ethylbenzene (µg/L)	Total Xylenes (µg/L)
Background 01	9/12/2012	15.36	95.02	236	NA	NA	514	1,600	<1.0	<1.0	<1.0	<1.0
Background 02	9/12/2012	17.40	94.91	217	NA	NA	433	1,400	<1.0	<1.0	<1.0	<1.0
SB01	3/8/2012	3.30	NM	1,260	NA	NA	1,070	4,600	NA	NA	NA	NA
SB01R	9/11/2012	4.24	90.72	181	NA	NA	372	1,300	<1.0	<1.0	<1.0	<1.0
	1/8/2013	2.75	92.21	2,820	NA	NA	1,010	4,700	NA	NA	NA	NA
	4/1/2013	NM	NM	No Sample - Under Water								
	7/12/2013	2.57	92.39	1,360	NA	NA	448	2,800	NA	NA	NA	NA
	10/31/2013	NM	NM	No Sample - Under Water								
	11/5/2013	9.56	85.40	208	NA	NA	553	2,180	NA	NA	NA	NA
	3/31/2014	9.25	85.71	193	0.725	266	440	1,780	NA	NA	NA	NA
	9/22/2014	NM	NM	No Sample - Under Water								
SB02	3/8/2012	6.46	NM	220	NA	NA	584	1,700	NA	NA	NA	NA
SB02R	9/11/2012	8.03	91.30	214	NA	NA	300	1,100	<1.0	<1.0	<1.0	<1.0
	1/8/2013	6.72	92.61	241	NA	NA	366	830	NA	NA	NA	NA
	4/1/2013	7.18	92.15	241	NA	NA	378	880	NA	NA	NA	NA
	7/12/2013	6.49	92.84	196	NA	NA	365	900	NA	NA	NA	NA
	10/31/2013	5.60	93.73	203	NA	NA	392	980	NA	NA	NA	NA
	4/1/2014	6.25	93.08	192	0.741	259	425	1,380	NA	NA	NA	NA
	9/22/2014	NM	NM	No Sample - Under Water								
SB03	3/8/2012	6.22	NM	348	NA	NA	1,070	3,100	NA	NA	NA	NA
Monitoring well destroyed/removed												

TABLE 1 (Continued)

GROUNDWATER ANALYTICAL RESULTS
MILLER SOUTH #1 SPREAD FIELD
WELD COUNTY, COLORADO
NOBLE ENERGY, INC.

Sample Location	Date Sampled	Depth to Water (feet btoc)	Relative Groundwater Elevation (feet)	Chloride (mg/L)	Bromide (mg/L)	Chloride/Bromide*	Sulfate (mg/L)	Total Dissolved Solids (mg/L)	Benzene (µg/L)	Toluene (µg/L)	Ethylbenzene (µg/L)	Total Xylenes (µg/L)
SB03R	9/11/2012	7.50	90.33	278	NA	NA	646	2,300	<1.0	<1.0	<1.0	<1.0
	1/8/2013	5.90	91.93	252	NA	NA	741	1,500	NA	NA	NA	NA
	4/1/2013	6.15	91.68	223	NA	NA	611	1,400	NA	NA	NA	NA
	7/12/2013	6.45	91.38	202	NA	NA	463	1,300	NA	NA	NA	NA
	10/31/2013	6.14	91.69	348	NA	NA	1,310	2,500	NA	NA	NA	NA
	4/1/2014	6.30	91.53	275	1.37	201	1,030	2,930	NA	NA	NA	NA
	9/22/2014	NM	NM	No Sample - Under Water								
SB04	3/8/2012	7.08	NM	296	NA	NA	1,220	3,100	NA	NA	NA	NA
SB04R	9/11/2012	7.94	89.73	488	NA	NA	1,600	4,800	<1.0	<1.0	<1.0	<1.0
	1/8/2013	6.83	90.84	388	NA	NA	1,330	2,400	NA	NA	NA	NA
	4/1/2013	6.30	91.37	356	NA	NA	1,330	2,400	NA	NA	NA	NA
	7/12/2013	6.11	91.56	328	NA	NA	1,170	2,500	NA	NA	NA	NA
	10/31/2013	NM	NM	Monitoring well damaged - No Sample								
	11/5/2013	4.28	93.39	1,420	NA	NA	1,010	6,030	NA	NA	NA	NA
	3/31/2014	4.15	93.52	2,000	2.77	722	948	5,790	NA	NA	NA	NA
	9/22/2014	NM	NM	No Sample - Under Water								
SB05	3/8/2012	7.94	NM	208	NA	NA	896	2,400	NA	NA	NA	NA
SB05R	9/11/2012	6.51	88.62	291	NA	NA	1,060	3,000	<1.0	<1.0	<1.0	<1.0
				Monitoring well destroyed/removed								
SB05R2	1/8/2013	4.65	NM	6,170	NA	NA	1,570	10,000	NA	NA	NA	NA
	4/1/2013	6.55	90.37	1,630	NA	NA	2,790	4,800	NA	NA	NA	NA
	7/12/2013	7.95	88.97	489	NA	NA	862	2,100	NA	NA	NA	NA
	10/31/2013	6.70	90.22	436	NA	NA	1,650	2,800	NA	NA	NA	NA
	3/31/2014	6.68	90.24	853	3.60	237	1,830	4,500	NA	NA	NA	NA
	9/22/2014	NM	NM	No Sample - Under Water								

TABLE 1 (Continued)

GROUNDWATER ANALYTICAL RESULTS
MILLER SOUTH #1 SPREAD FIELD
WELD COUNTY, COLORADO
NOBLE ENERGY, INC.

Sample Location	Date Sampled	Depth to Water (feet btoc)	Relative Groundwater Elevation (feet)	Chloride (mg/L)	Bromide (mg/L)	Chloride/Bromide*	Sulfate (mg/L)	Total Dissolved Solids (mg/L)	Benzene (µg/L)	Toluene (µg/L)	Ethylbenzene (µg/L)	Total Xylenes (µg/L)
SB06	3/8/2012	7.82	NM	147	NA	NA	280	890	NA	NA	NA	NA
							Monitoring well destroyed/removed					
SB06R	9/11/2012	7.45	89.68	186	NA	NA	325	1,200	<1.0	<1.0	<1.0	<1.0
	1/8/2013	6.32	90.81	218	NA	NA	401	770	NA	NA	NA	NA
	4/1/2013	6.99	90.14	199	NA	NA	366	780	NA	NA	NA	NA
	7/12/2013	4.78	92.35	171	NA	NA	307	750	NA	NA	NA	NA
	10/31/2013	5.89	91.24	223	NA	NA	242	730	NA	NA	NA	NA
	4/1/2014	7.70	89.43	221	1.03	215	308	1,090	NA	NA	NA	NA
	9/22/2014	6.53	90.60	184	0.452	407	318	1,010	NA	NA	NA	NA
SB07	3/8/2012	6.93	NM	1,020	NA	NA	1,620	4,700	NA	NA	NA	NA
							Monitoring well destroyed/removed					
SB07R	9/11/2012	9.68	84.95	773	NA	NA	896	3,400	<1.0	<1.0	<1.0	<1.0
	1/8/2013	7.89	86.74	1,150	NA	NA	2,930	4,900	NA	NA	NA	NA
	4/1/2013	8.49	86.14	1,050	NA	NA	3,170	5,000	NA	NA	NA	NA
	7/12/2013	6.98	87.65	551	NA	NA	3,020	3,900	NA	NA	NA	NA
	10/31/2013	7.48	87.15	839	NA	NA	2,530	4,000	NA	NA	NA	NA
	4/1/2014	7.78	86.85	189	3.86	49	502	5,650	NA	NA	NA	NA
	9/22/2014	7.44	87.19	677	3.31	205	2,040	5,590	NA	NA	NA	NA
SB08	3/8/2012	9.73	NM	182	NA	NA	395	1,100	NA	NA	NA	NA
							Monitoring well destroyed/removed					
SB08R	9/11/2012	11.77	89.27	2,140	NA	NA	500	1,600	<1.0	<1.0	<1.0	<1.0
	1/8/2013	9.39	91.65	247	NA	NA	736	1,100	NA	NA	NA	NA
	4/1/2013	9.79	91.25	202	NA	NA	391	860	NA	NA	NA	NA
	7/12/2013	8.80	92.24	370	NA	NA	816	1,600	NA	NA	NA	NA
	10/31/2013	8.22	92.82	277	NA	NA	475	1,100	NA	NA	NA	NA
	4/1/2014	9.07	91.97	272	0.764	356	348	1,270	NA	NA	NA	NA
	9/22/2014	NM	NM				No Sample - Monitoring well damaged					

TABLE 1 (Continued)

GROUNDWATER ANALYTICAL RESULTS
MILLER SOUTH #1 SPREAD FIELD
WELD COUNTY, COLORADO
NOBLE ENERGY, INC.

Sample Location	Date Sampled	Depth to Water (feet btoc)	Relative Groundwater Elevation (feet)	Chloride (mg/L)	Bromide (mg/L)	Chloride/Bromide*	Sulfate (mg/L)	Total Dissolved Solids (mg/L)	Benzene (µg/L)	Toluene (µg/L)	Ethylbenzene (µg/L)	Total Xylenes (µg/L)
SB09 (background)	3/8/2012	8.09	NM	270	NA	NA	573	2,000	NA	NA	NA	NA
SB10	3/9/2012	9.64	NM	157	NA	NA	414	1,100	NA	NA	NA	NA
	9/12/2012	10.39	89.90	146	NA	NA	203	1,000	<1.0	<1.0	<1.0	<1.0
	1/8/2013	8.42	91.87	195	NA	NA	356	970	NA	NA	NA	NA
	4/1/2013	8.97	91.32	202	NA	NA	642	1,100	NA	NA	NA	NA
	7/12/2013	8.67	91.62	168	NA	NA	308	780	NA	NA	NA	NA
	10/31/2013	8.20	92.09	196	NA	NA	212	760	NA	NA	NA	NA
	4/1/2014	9.13	91.16	219	0.496	442	267	960	NA	NA	NA	NA
SB11	9/22/2014	7.85	92.44	144	0.365	395	236	834	NA	NA	NA	NA
	3/9/2012	8.58	NM	267	NA	NA	717	1,900	NA	NA	NA	NA
	9/12/2012	9.78	89.05	263	NA	NA	639	1,900	<1.0	<1.0	<1.0	<1.0
	1/8/2013	7.72	91.11	309	NA	NA	808	1,300	NA	NA	NA	NA
	4/1/2013	7.89	90.94	306	NA	NA	695	1,300	NA	NA	NA	NA
	7/12/2013	8.68	90.15	382	NA	NA	775	1,600	NA	NA	NA	NA
	10/31/2013	7.69	91.14	300	NA	NA	686	1,300	NA	NA	NA	NA
SB12	3/31/2014	7.90	90.93	272	0.796	342	593	1,780	NA	NA	NA	NA
	9/22/2014	6.55	92.28	458	1.33	344	791	2,370	NA	NA	NA	NA
	3/9/2012	6.16	NM	300	NA	NA	1,230	2,500	NA	NA	NA	NA
	9/12/2012	8.70	88.03	270	NA	NA	643	1,900	<1.0	<1.0	<1.0	<1.0
	1/8/2013	6.45	90.28	424	NA	NA	921	1,600	NA	NA	NA	NA
	4/1/2013	6.25	90.48	366	NA	NA	1,650	2,200	NA	NA	NA	NA
	4/4/2013	6.24	90.49	371	NA	NA	1,650	2,200	NA	NA	NA	NA
	7/12/2013	7.94	88.79	393	NA	NA	1,100	2,000	NA	NA	NA	NA
	10/31/2013	6.53	90.20	311	NA	NA	1,210	2,100	NA	NA	NA	NA
	3/31/2014	6.20	90.53	1,150	5.29	217	3,000	6,510	NA	NA	NA	NA
	9/22/2014	4.61	92.12	392	1.48	265	1,330	3,370	NA	NA	NA	NA

TABLE 1 (Continued)

GROUNDWATER ANALYTICAL RESULTS
MILLER SOUTH #1 SPREAD FIELD
WELD COUNTY, COLORADO
NOBLE ENERGY, INC.

Sample Location	Date Sampled	Depth to Water (feet btoc)	Relative Groundwater Elevation (feet)	Chloride (mg/L)	Bromide (mg/L)	Chloride/Bromide*	Sulfate (mg/L)	Total Dissolved Solids (mg/L)	Benzene (µg/L)	Toluene (µg/L)	Ethylbenzene (µg/L)	Total Xylenes (µg/L)
SB13	3/9/2012	5.61	NM	439	NA	NA	1,210	2,900	NA	NA	NA	NA
	9/12/2012	7.43	87.40	314	NA	NA	902	2,400	<1.0	<1.0	<1.0	<1.0
	1/8/2013	5.02	89.81	352	NA	NA	1,010	1,700	NA	NA	NA	NA
	4/1/2013	4.83	90.00	1,800	NA	NA	3,500	5,400	NA	NA	NA	NA
	7/12/2013	7.03	87.80	373	NA	NA	937	1,800	NA	NA	NA	NA
	10/31/2013	5.17	89.66	596	NA	NA	1,380	2,500	NA	NA	NA	NA
	3/31/2014	4.60	90.23	656	2.15	305	1,460	3,970	NA	NA	NA	NA
	9/22/2014	1.96	92.87	175	0.447	391	279	836	NA	NA	NA	NA
SB14	3/9/2012	6.15	NM	125	NA	NA	991	1,900	NA	NA	NA	NA
	9/12/2012	8.32	88.83	246	NA	NA	1,010	2,500	<1.0	<1.0	<1.0	<1.0
	1/8/2013	6.28	90.87	246	NA	NA	999	1,500	NA	NA	NA	NA
	4/1/2013	6.18	90.97	1,060	NA	NA	862	2,600	NA	NA	NA	NA
	7/12/2013	7.60	89.55	666	NA	NA	752	2,100	NA	NA	NA	NA
	10/31/2013	6.20	90.95	1,430	NA	NA	843	3,200	NA	NA	NA	NA
	3/31/2014	6.20	90.95	599	1.52	394	714	2,750	NA	NA	NA	NA
	9/22/2014	3.83	93.32	86.2	0.433	199	247	843	NA	NA	NA	NA
SB15	3/9/2012	10.97	NM					No Sample - Dry				
	9/12/2012	7.89	87.88	292	NA	NA	900	2,500	<1.0	<1.0	<1.0	<1.0
	1/8/2013	5.65	90.12	654	NA	NA	3,520	4,800	NA	NA	NA	NA
	4/1/2013	5.49	90.28	588	NA	NA	2,720	4,400	NA	NA	NA	NA
	7/12/2013	7.52	88.25	465	NA	NA	1,020	2,300	NA	NA	NA	NA
	10/31/2013	5.72	90.05	528	NA	NA	1,790	4,000	NA	NA	NA	NA
	4/1/2014	5.50	90.27					No sample - Insufficient water				
	9/22/2014	3.15	92.62	485	4.04	120	2,340	5,320	NA	NA	NA	NA

TABLE 1 (Continued)

GROUNDWATER ANALYTICAL RESULTS
MILLER SOUTH #1 SPREAD FIELD
WELD COUNTY, COLORADO
NOBLE ENERGY, INC.

Sample Location	Date Sampled	Depth to Water (feet btoc)	Relative Groundwater Elevation (feet)	Chloride (mg/L)	Bromide (mg/L)	Chloride/Bromide*	Sulfate (mg/L)	Total Dissolved Solids (mg/L)	Benzene (µg/L)	Toluene (µg/L)	Ethylbenzene (µg/L)	Total Xylenes (µg/L)
SB16	3/9/2012	7.36	NM	297	NA	NA	730	2,200	NA	NA	NA	NA
	9/12/2012	9.15	88.52	194	NA	NA	597	2,000	<1.0	<1.0	<1.0	<1.0
	1/8/2013	7.60	90.07	264	NA	NA	734	1,500	NA	NA	NA	NA
	4/4/2013	7.58	90.09	305	NA	NA	720	1,600	NA	NA	NA	NA
	7/12/2013	9.12	88.55	251	NA	NA	654	1,600	NA	NA	NA	NA
	10/31/2013	7.66	90.01	253	NA	NA	582	1,400	NA	NA	NA	NA
	3/31/2014	7.62	90.05	238	1.03	231	644	2,070	NA	NA	NA	NA
	9/22/2014	6.85	90.82	280	1.25	224	680	2,140	NA	NA	NA	NA
SB17	9/11/2012	5.55	90.14	237	NA	NA	584	2,100	<1.0	<1.0	<1.0	<1.0
	1/8/2013	4.33	91.36	262	NA	NA	621	1,400	NA	NA	NA	NA
	4/1/2013	4.29	91.40	253	NA	NA	635	1,500	NA	NA	NA	NA
	7/12/2013	5.24	90.45	281	NA	NA	986	2,100	NA	NA	NA	NA
	10/31/2013	4.33	91.36				Not Sampled					
	11/5/2013	4.33	91.36	250	NA	NA	873	2,510	NA	NA	NA	NA
	3/31/2014	4.45	91.24	262	1.19	220	903	2,480	NA	NA	NA	NA
	9/22/2014	NM	NM	No Sample - Under Water								
SB18	9/11/2012	7.75	90.85	290	NA	NA	920	3,000	<1.0	<1.0	<1.0	<1.0
	1/8/2013	6.50	92.10	313	NA	NA	866	1,800	NA	NA	NA	NA
	4/1/2013	6.73	91.87	284	NA	NA	772	1,800	NA	NA	NA	NA
	7/12/2013	7.11	91.49	265	NA	NA	714	2,000	NA	NA	NA	NA
	10/31/2013	6.27	92.33	330	NA	NA	699	1,900	NA	NA	NA	NA
	4/1/2014	6.95	91.65	282	0.979	288	623	2,260	NA	NA	NA	NA
	9/22/2014	NM	NM	No Sample - Under Water								
SB19	9/11/2012	8.56	91.77	196	NA	NA	317	1,300	<1.0	<1.0	<1.0	<1.0
	1/8/2013	6.85	93.48	390	NA	NA	831	1,600	NA	NA	NA	NA
Monitoring well destroyed/removed												

TABLE 1 (Continued)

GROUNDWATER ANALYTICAL RESULTS
MILLER SOUTH #1 SPREAD FIELD
WELD COUNTY, COLORADO
NOBLE ENERGY, INC.

Sample Location	Date Sampled	Depth to Water (feet btoc)	Relative Groundwater Elevation (feet)	Chloride (mg/L)	Bromide (mg/L)	Chloride/Bromide*	Sulfate (mg/L)	Total Dissolved Solids (mg/L)	Benzene (µg/L)	Toluene (µg/L)	Ethylbenzene (µg/L)	Total Xylenes (µg/L)
SB19R	4/1/2013	12.65	85.10	190	NA	NA	324	680	NA	NA	NA	NA
	7/12/2013	6.78	90.97	211	NA	NA	368	810	NA	NA	NA	NA
	10/31/2013	10.23	87.52	239	NA	NA	317	860	NA	NA	NA	NA
	4/1/2014	12.00	85.75	No sample - Insufficient water								
	9/22/2014	NM	NM	No sample - Monitoring well destroyed								
SB20	9/11/2012	10.33	89.50	183	NA	NA	180	1,000	<1.0	<1.0	<1.0	<1.0
	1/8/2013	9.40	90.43	209	NA	NA	329	710	NA	NA	NA	NA
SB20R	Monitoring well destroyed/removed											
	4/1/2013	11.23	84.71	234	NA	NA	301	750	NA	NA	NA	NA
	7/12/2013	7.56	88.38	234	NA	NA	342	880	NA	NA	NA	NA
	10/31/2013	8.69	87.25	244	NA	NA	283	700	NA	NA	NA	NA
	4/1/2014	11.42	84.52	No sample - Insufficient water								
SB21	9/11/2012	10.17	90.62	162	NA	NA	490	1,200	<1.0	<1.0	<1.0	<1.0
	1/8/2013	8.36	92.43	196	NA	NA	350	660	NA	NA	NA	NA
SB21R	4/1/2013	9.95	86.89	190	NA	NA	163	650	NA	NA	NA	NA
	7/12/2013	5.81	91.03	223	NA	NA	369	880	NA	NA	NA	NA
	10/31/2013	7.93	88.91	238	NA	NA	239	710	NA	NA	NA	NA
	4/1/2014	11.13	85.71	No sample - Insufficient water								
SB22	9/22/2014	NM	NM	No sample - Monitoring well destroyed								
	9/12/2012	11.14	87.53	355	NA	NA	815	2,200	<1.0	<1.0	<1.0	<1.0
	1/8/2013	9.14	89.53	378	NA	NA	884	1,400	NA	NA	NA	NA
	4/1/2013	9.06	89.61	337	NA	NA	815	1,500	NA	NA	NA	NA
	7/12/2013	10.08	88.59	359	NA	NA	808	1,700	NA	NA	NA	NA
	10/31/2013	9.42	89.25	416	NA	NA	897	1,700	NA	NA	NA	NA
	3/31/2014	8.90	89.77	380	1.22	311	874	2,330	NA	NA	NA	NA
	9/22/2014	NM	NM	No sample - Could not locate								

TABLE 1 (Continued)

GROUNDWATER ANALYTICAL RESULTS
MILLER SOUTH #1 SPREAD FIELD
WELD COUNTY, COLORADO
NOBLE ENERGY, INC.

Sample Location	Date Sampled	Depth to Water (feet btoc)	Relative Groundwater Elevation (feet)	Chloride (mg/L)	Bromide (mg/L)	Chloride/Bromide*	Sulfate (mg/L)	Total Dissolved Solids (mg/L)	Benzene (µg/L)	Toluene (µg/L)	Ethylbenzene (µg/L)	Total Xylenes (µg/L)
SB23	9/12/2012	11.25	86.21	212	NA	NA	515	1,500	<1.0	<1.0	<1.0	<1.0
	1/8/2013	8.26	89.20	268	NA	NA	712	1,100	NA	NA	NA	NA
	4/1/2013	7.95	89.51	354	NA	NA	1,100	1,600	NA	NA	NA	NA
	7/12/2013	9.65	87.81	368	NA	NA	1,120	1,900	NA	NA	NA	NA
	10/31/2013	8.61	88.85	237	NA	NA	607	1,400	NA	NA	NA	NA
	3/31/2014	7.72	89.74	604	2.38	254	1,830	3,950	NA	NA	NA	NA
	9/22/2014	6.84	90.62	1,290	4.18	309	2,940	6,850	NA	NA	NA	NA
COGCC Table 910-1 Standard				295	--	250*	642.5	2,000	5	560	700	1,400

NOTES:

btoc - below top of casing

COGCC - Colorado Oil and Gas Conservation Commission

mg/L - milligrams per liter

NA - not analyzed

NM- not measured

µg/L - micrograms per liter

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

-- - indicates there is no standard

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

Chloride, sulfate, and total dissolved solids standards are calculated based on 1.25 times background concentrations

Chloride, bromide, and sulfate analyzed by EPA Method 300.0

Total dissolved solids analyzed by Standard Method 2540C and EPA Method 160.1

BOLD indicates result exceeds the applicable standard

* - This value is not a regulatory limit and is included for reference purposes only. Unimpacted groundwater would not be expected to exhibit a ratio of chloride to bromide that exceeds this naturally occurring value.

TABLE 2

**SURFACE WATER ANALYTICAL RESULTS
MILLER SOUTH #1 SPREAD FIELD
WELD COUNTY, COLORADO
NOBLE ENERGY, INC.**

Sample ID	Date Sampled	Chloride (mg/L)	Bromide (mg/L)	Chloride/Bromide*	Sulfate (mg/L)	Total Dissolved Solids (mg/L)
SW01	9/24/2014	187	0.502	373	309	889
SW02	9/24/2014	186	0.473	393	307	884
SW03	9/24/2014	194	0.471	412	318	893
SW04	9/24/2014	193	0.556	347	313	863
SW05	9/24/2014	194	0.454	427	313	866
SW06	9/24/2014	190	0.484	393	308	870
SW07	9/24/2014	195	0.499	391	314	876
SW08	9/24/2014	191	0.450	424	307	911
SW09	9/24/2014	194	0.483	402	314	877
SW10	9/24/2014	194	0.417	465	316	914
SW11	9/24/2014	191	0.494	387	315	884
SW12	9/24/2014	191	0.501	381	316	896
COGCC Table 910-1 Standard*		295	--	250**	642.5	2,000

NOTES:

COGCC - Colorado Oil and Gas Conservation Commission

mg/L - milligrams per liter

-- - indicates there is no standard

Chloride, bromide, and sulfate analyzed by EPA Method 300.0

Total dissolved solids analyzed by Standard Method 2540C

Chloride, sulfate, and total dissolved solids standards are calculated based on 1.25 times background groundwater concentrations collected on September 12, 2012.

* - The COGCC Table 910-1 Standards apply to groundwater only. They are presented here for reference purposes only.

** - This value is not a regulatory limit and is included for reference purposes only. Unimpacted water would not be expected to exhibit a ratio of chloride to bromide that exceeds this naturally occurring estimated value.

ATTACHMENT 1
GROUNDWATER LABORATORY ANALYTICAL REPORT



October 02, 2014

LT Environmental, Inc.

Steve Kahn

4600 West 60th Avenue

Arvada CO 80003

Project Name - Noble - Miller #1 South

Project Number - 008312061

Attached are your analytical results for Noble - Miller #1 South received by Origins Laboratory, Inc. September 23, 2014. This project is associated with Origins project number X409245-01.

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

Steve Kahn
Project Number: 008312061
Project: Noble - Miller #1 South

CROSS REFERENCE REPORT

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
SB06R	X409245-01	Water	September 22, 2014 13:30	09/23/2014 17:00
SB07R	X409245-02	Water	September 22, 2014 13:40	09/23/2014 17:00
SB10	X409245-03	Water	September 22, 2014 14:00	09/23/2014 17:00
SB11	X409245-04	Water	September 22, 2014 14:10	09/23/2014 17:00
SB12	X409245-05	Water	September 22, 2014 14:20	09/23/2014 17:00
SB13	X409245-06	Water	September 22, 2014 14:30	09/23/2014 17:00
SB14	X409245-07	Water	September 22, 2014 14:40	09/23/2014 17:00
SB15	X409245-08	Water	September 22, 2014 14:50	09/23/2014 17:00
SB16	X409245-09	Water	September 22, 2014 15:00	09/23/2014 17:00
SB20R	X409245-10	Water	September 22, 2014 15:10	09/23/2014 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

Steve Kahn

Project Number: 008312061

Project: Noble - Miller #1 South

CROSS REFERENCE REPORT

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
SB23	X409245-11	Water	September 22, 2014 15:30	09/23/2014 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

Steve Kahn

Project Number: 008312061

Project: Noble - Miller #1 South

Origins Laboratory

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

Sample Receipt Checklist

Origins Work Order: X409245

Client: LT

Client Project ID: Noble - Miller #1 South

Checklist Completed by: Jeff Smith

Shipped Via: Pick up

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

Date/time completed: 7/23/12

Airbill #: NA

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

Cooler Number/Temperature: 1 12.8 °C 1 °C 1 °C (Describe)

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 (> 1/4 inch bubble) present? If yes, contact client and note in narrative.		<input checked="" type="checkbox"/>	<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 NaAcO ₂ +NaOH, ZnAc+NaOH)		<input checked="" type="checkbox"/>	<input checked="" 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.

Jeff Smith
Reviewed by (Project Manager)

7/24/12
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.

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

Steve Kahn
Project Number: 008312061
Project: Noble - Miller #1 South

SB06R

9/22/2014 1:30:00PM

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Notes
		Limit							

GEL Laboratories, LLC
X409245-01 (Water)

Anions by EPA300.0

Bromide	0.452	0.200	mg/L	1	1422297			09/26/2014	
Chloride	184	10.0	"	50	"	"	"	09/27/2014	
Sulfate	318	20.0	"	"	"	"	"	"	

TDS by SM2540C

Total Dissolved Solids	1010	14.3	mg/L	1	1422334	"		09/26/2014	
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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.

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

Steve Kahn
Project Number: 008312061
Project: Noble - Miller #1 South

SB07R

9/22/2014 1:40:00PM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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GEL Laboratories, LLC
X409245-02 (Water)

Anions by EPA300.0

Bromide	3.31	0.400	mg/L	2	1422297		09/27/2014	
Chloride	677	40.0	"	200	"	"	"	"
Sulfate	2040	80.0	"	"	"	"	"	"

TDS by SM2540C

Total Dissolved Solids	5590	14.3	mg/L	1	1422334	"	09/26/2014	
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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 Doyle Mathis, President

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

Steve Kahn
Project Number: 008312061
Project: Noble - Miller #1 South

SB10**9/22/2014 2:00:00PM**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Notes
		Limit							

GEL Laboratories, LLC
X409245-03 (Water)**Anions by EPA300.0**

Bromide	0.365	0.200	mg/L	1	1422297			09/26/2014	
Chloride	144	10.0	"	50	"	"	"	09/27/2014	
Sulfate	236	20.0	"	"	"	"	"	"	

TDS by SM2540C

Total Dissolved Solids	834	14.3	mg/L	1	1422334	"		09/26/2014	
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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.

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

Steve Kahn
Project Number: 008312061
Project: Noble - Miller #1 South

SB11**9/22/2014 2:10:00PM**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Notes
		Limit							

GEL Laboratories, LLC
X409245-04 (Water)**Anions by EPA300.0**

Bromide	1.33	0.200	mg/L	1	1422297			09/26/2014	
Chloride	458	20.0	"	100	"	"	"	09/27/2014	
Sulfate	791	40.0	"	"	"	"	"	"	

TDS by SM2540C

Total Dissolved Solids	2370	14.3	mg/L	1	1422334	"		09/26/2014	
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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 Doyle Mathis, President

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

Steve Kahn
Project Number: 008312061
Project: Noble - Miller #1 South

SB12**9/22/2014 2:20:00PM**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Notes
		Limit							

GEL Laboratories, LLC
X409245-05 (Water)**Anions by EPA300.0**

Bromide	1.48	0.200	mg/L	1	1422297			09/26/2014	
Chloride	392	40.0	"	200	"	"	"	09/27/2014	
Sulfate	1330	80.0	"	"	"	"	"	"	

TDS by SM2540C

Total Dissolved Solids	3370	14.3	mg/L	1	1422334	"		09/26/2014	
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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 Doyle Mathis, President

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

Steve Kahn
Project Number: 008312061
Project: Noble - Miller #1 South

SB13**9/22/2014 2:30:00PM**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Notes
		Limit							

GEL Laboratories, LLC
X409245-06 (Water)**Anions by EPA300.0**

Bromide	0.447	0.200	mg/L	1	1422297			09/26/2014	
Chloride	175	10.0	"	50	"	"	"	09/27/2014	
Sulfate	279	20.0	"	"	"	"	"	"	

TDS by SM2540C

Total Dissolved Solids	836	14.3	mg/L	1	1422334	"		09/26/2014	
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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.

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

Steve Kahn
Project Number: 008312061
Project: Noble - Miller #1 South

SB14**9/22/2014 2:40:00PM**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Notes
		Limit							

GEL Laboratories, LLC
X409245-07 (Water)**Anions by EPA300.0**

Bromide	0.433	0.200	mg/L	1	1422297			09/26/2014	
Chloride	86.2	4.00	"	20	"	"	"	09/27/2014	
Sulfate	247	8.00	"	"	"	"	"	"	

TDS by SM2540C

Total Dissolved Solids	843	14.3	mg/L	1	1422334	"		09/26/2014	
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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.

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

Steve Kahn
Project Number: 008312061
Project: Noble - Miller #1 South

SB15**9/22/2014 2:50:00PM**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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GEL Laboratories, LLC
X409245-08 (Water)**Anions by EPA300.0**

Bromide	4.04	1.00	mg/L	5	1422297		09/27/2014	
Chloride	485	40.0	"	200	"	"	"	"
Sulfate	2340	80.0	"	"	"	"	"	"

TDS by SM2540C

Total Dissolved Solids	5320	14.3	mg/L	1	1422334	"	09/26/2014	
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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.

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

Steve Kahn
Project Number: 008312061
Project: Noble - Miller #1 South

SB16**9/22/2014 3:00:00PM**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Notes
		Limit							

GEL Laboratories, LLC
X409245-09 (Water)**Anions by EPA300.0**

Bromide	1.25	0.200	mg/L	1	1422297			09/26/2014	
Chloride	280	10.0	"	50	"	"	"	09/27/2014	
Sulfate	680	20.0	"	"	"	"	"	"	

TDS by SM2540C

Total Dissolved Solids	2140	14.3	mg/L	1	1422334	"		09/26/2014	
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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.

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

Steve Kahn
Project Number: 008312061
Project: Noble - Miller #1 South

SB20R

9/22/2014 3:10:00PM

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Notes
		Limit							

GEL Laboratories, LLC
X409245-10 (Water)

Anions by EPA300.0

Bromide	0.404	0.200	mg/L	1	1422297			09/26/2014	
Chloride	155	5.00	"	25	"	"	"	09/27/2014	
Sulfate	149	10.0	"	"	"	"	"	"	

TDS by SM2540C

Total Dissolved Solids	650	14.3	mg/L	1	1422334	"		09/26/2014	
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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 Doyle Mathis, President

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

Steve Kahn
Project Number: 008312061
Project: Noble - Miller #1 South

SB23**9/22/2014 3:30:00PM**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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GEL Laboratories, LLC
X409245-11 (Water)**Anions by EPA300.0**

Bromide	4.18	0.400	mg/L	2	1422297		09/27/2014	
Chloride	1290	50.0	"	250	"	"	09/28/2014	
Sulfate	2940	100	"	"	"	"	"	

TDS by SM2540C

Total Dissolved Solids	6850	14.3	mg/L	1	1422334	"	09/26/2014	
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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 Doyle Mathis, President

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

Steve Kahn
Project Number: 008312061
Project: Noble - Miller #1 South

Anions by EPA300.0 - Quality Control

GEL Laboratories, LLC

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 1422297 -										
BLANK (1203175357-BLK)					Prepared: Analyzed: 09/26/2014					
Chloride	ND	0.200	mg/L				-			U
Sulfate	ND	0.400	"				-			U
Bromide	ND	0.200	"				-			U
LCS (1203175358-BKS)					Prepared: Analyzed: 09/26/2014					
Bromide	1.25	0.200	mg/L	1.25		100	90-110			
Chloride	4.67	0.200	"	5.00		93.4	90-110			
Sulfate	9.53	0.400	"	10.0		95.3	90-110			
DUP (1203175359 D)					Source: X409245-11		Prepared: Analyzed: 09/28/2014			
Sulfate	2950	100	mg/L		2940		0-20	0.132	20	
Bromide	4.25	0.400	"		4.18		0-20	1.68	20	
Chloride	1280	50.0	"		1290		0-20	0.306	20	
DUP (1203175360 D)					Source: 357449001		Prepared: Analyzed: 09/26/2014			
Chloride	6.86	0.200	mg/L		6.88		0-20	0.399	20	
Sulfate	14.2	0.400	"		14.5		0-20	1.66	20	
Bromide	0.149	0.200	"		0.137		0-20	8.49	20	J
PS (1203175361 S)					Source: X409245-11		Prepared: Analyzed: 09/27/2014			
Bromide	6.69	0.400	mg/L	1.25		101	90-110			
Chloride	2620	50.0	"	5.00		107	90-110			
Sulfate	5610	100	"	10.0		107	90-110			
PS (1203175362 S)					Source: 357449001		Prepared: Analyzed: 09/26/2014			
Bromide	1.43	0.200	mg/L	1.25		103	90-110			
Chloride	12.3	0.200	"	5.00		108	90-110			
Sulfate	25.1	0.400	"	10.0		107	90-110			

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

Steve Kahn
Project Number: 008312061
Project: Noble - Miller #1 South

TDS by SM2540C - Quality Control
GEL Laboratories, LLC

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 1422334 -										
BLANK (1203175420-BLK)					Prepared: Analyzed: 09/26/2014					
Total Dissolved Solids	ND	14.3	mg/L				-			U
LCS (1203175421-BKS)					Prepared: Analyzed: 09/26/2014					
Total Dissolved Solids	293	14.3	mg/L	300		97.6	95-105			

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

Steve Kahn
Project Number: 008312061
Project: Noble - Miller #1 South

Notes and Definitions

- U Result not detected above the detection limit
- J Greater than the detection limit but less than the reporting limit
- 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

ATTACHMENT 2
SURFACE WATER LABORATORY ANALYTICAL REPORT



October 03, 2014

LT Environmental, Inc.

Charles Greeson

4600 West 60th Avenue

Arvada

CO 80003

Project Name - Noble - Miller #1 South CACL

Project Number - [none]

Attached are your analytical results for Noble - Miller #1 South CACL received by Origins Laboratory, Inc. September 24, 2014. This project is associated with Origins project number X409253-01.

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

Charles Greeson
Project Number: [none]
Project: Noble - Miller #1 South CACL

CROSS REFERENCE REPORT

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
SW01	X409253-01	Water	September 24, 2014 10:10	09/24/2014 15:20
SW02	X409253-02	Water	September 24, 2014 10:15	09/24/2014 15:20
SW03	X409253-03	Water	September 24, 2014 10:20	09/24/2014 15:20
SW04	X409253-04	Water	September 24, 2014 10:25	09/24/2014 15:20
SW05	X409253-05	Water	September 24, 2014 10:30	09/24/2014 15:20
SW06	X409253-06	Water	September 24, 2014 10:35	09/24/2014 15:20
SW07	X409253-07	Water	September 24, 2014 10:40	09/24/2014 15:20
SW08	X409253-08	Water	September 24, 2014 10:45	09/24/2014 15:20
SW09	X409253-09	Water	September 24, 2014 10:50	09/24/2014 15:20
SW10	X409253-10	Water	September 24, 2014 10:55	09/24/2014 15:20

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

Charles Greeson
Project Number: [none]
Project: Noble - Miller #1 South CACL

CROSS REFERENCE REPORT

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
SW11	X409253-11	Water	September 24, 2014 11:00	09/24/2014 15:20
SW12	X409253-12	Water	September 24, 2014 11:05	09/24/2014 15:20

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

Charles Greeson
Project Number: [none]
Project: Noble - Miller #1 South CACL

ORIGINS

LABORATORY, INC

www.originslaboratory.com

X409253

page 1 of 2

Client: CTE
Address: _____
Telephone Number: _____
Project Manager/Send Report To: Charles Greeson
Email Address: Miller #1 South CACL 0003
Project Name/Number: CGreeson@Ltenv.com
Samples Collected By: Jayson Grogan/1501

1725 Elk Place | Denver, CO 80211 | Phone: 303.433.1222 | Fax: 303.255.9645

Sample ID Description	Date Sampled	Time Sampled	# of Containers	Preservative					Matrix			Analysis/Method	Sample Instructions	
				Unpreserved	HCl	HNO ₃	Other	Groundwater	Soil	Air Summary	Other			
S0001	9/12/14	1010	2	X				X				XXX	1	Turnaround Time: Same Day <input type="checkbox"/> 24 Hr <input type="checkbox"/> 48 Hr <input type="checkbox"/> 72 Hr <input type="checkbox"/> Standard <input checked="" type="checkbox"/> <u>17.8</u>
S0002		1015	1										2	
S0003		1020	1										3	
S0004		1025	1										4	
S0005		1030	1										5	
S0006		1035	1										6	
S0007		1040	1										7	
S0008		1045	1										8	
S0009		1050	1										9	
S0010		1055	1										10	
Relinquished By: <u>[Signature]</u>	Date: 9/16/14	Time: 1520		Received By: <u>[Signature]</u>	Date: 9/16/14	Time: 1530		Turnaround Time: Same Day <input type="checkbox"/> 24 Hr <input type="checkbox"/> 48 Hr <input type="checkbox"/> 72 Hr <input checked="" type="checkbox"/> Standard <input type="checkbox"/> <u>17.8</u>						
Relinquished By:	Date:	Time:		Received By:	Date:	Time:								

Comments:

Date Results Needed:

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

Charles Greeson
Project Number: [none]
Project: Noble - Miller #1 South CACL

Origins Laboratory

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

Sample Receipt Checklist

Origins Work Order: X409253

Client: LTE

Client Project ID: Miller #1 South CACL

Checklist Completed by: John Smith

Shipped Via: HLX

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

Date/Time completed: 7/24/14 1539

Airbill #: NA

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

Cooler Number/Temperature: 1 119.8 °C 1 °C 1 °C (Describe) °C

Thermometer ID: 72002

Requirement Description	Yes	No	N/A	Comments (if any)
If samples require cooling, was the temperature between 0°C to ≤ 5°C ⁽¹⁾ ?		X		Sample Spilled Day
Is there ice present (document if blue ice is used)?	X			Method
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 analytes 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 (> ½ 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 confirmation instrument used in comments) / (preservation is not confirmed for subcontracted analyses in order to ensure 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)			X	
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: John Smith (Project Manager)

9-25-14 0931
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.

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

Charles Greeson
Project Number: [none]
Project: Noble - Miller #1 South CACL

SW01

9/24/2014 10:10:00AM

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Notes
		Limit							

GEL Laboratories, LLC
X409253-01 (Water)

Anions by EPA300.0

Bromide	0.502	0.200	mg/L	1	1422703			09/28/2014	
Chloride	187	10.0	"	50	"	"	"	10/01/2014	
Sulfate	309	20.0	"	"	"	"	"	"	

TDS by SM2540C

Total Dissolved Solids	889	14.3	mg/L	1	1422770	"		09/29/2014	
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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.

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

Charles Greeson
Project Number: [none]
Project: Noble - Miller #1 South CACL

SW02

9/24/2014 10:15:00AM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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GEL Laboratories, LLC
X409253-02 (Water)

Anions by EPA300.0

Bromide	0.473	0.200	mg/L	1	1422703		09/28/2014	
Chloride	186	10.0	"	50	"	"	10/01/2014	
Sulfate	307	20.0	"	"	"	"	"	

TDS by SM2540C

Total Dissolved Solids	884	14.3	mg/L	1	1422770	"	09/29/2014	
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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 Doyle Mathis, President

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

Charles Greeson
Project Number: [none]
Project: Noble - Miller #1 South CACL

SW03

9/24/2014 10:20:00AM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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GEL Laboratories, LLC
X409253-03 (Water)

Anions by EPA300.0

Bromide	0.471	0.200	mg/L	1	1422703		09/28/2014	
Chloride	194	10.0	"	50	"	"	10/01/2014	
Sulfate	318	20.0	"	"	"	"	"	

TDS by SM2540C

Total Dissolved Solids	893	14.3	mg/L	1	1422770	"	09/29/2014	
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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.

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

Charles Greeson
Project Number: [none]
Project: Noble - Miller #1 South CACL

SW04

9/24/2014 10:25:00AM

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Notes
		Limit							

GEL Laboratories, LLC
X409253-04 (Water)

Anions by EPA300.0

Bromide	0.556	0.200	mg/L	1	1422703			09/28/2014	
Chloride	193	10.0	"	50	"	"	"	10/01/2014	
Sulfate	313	20.0	"	"	"	"	"	"	

TDS by SM2540C

Total Dissolved Solids	863	14.3	mg/L	1	1422770	"		09/29/2014	
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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.

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

Charles Greeson
Project Number: [none]
Project: Noble - Miller #1 South CACL

SW05

9/24/2014 10:30:00AM

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Notes
		Limit							

GEL Laboratories, LLC
X409253-05 (Water)

Anions by EPA300.0

Bromide	0.454	0.200	mg/L	1	1422703			09/28/2014	
Chloride	194	10.0	"	50	"	"	"	10/01/2014	
Sulfate	313	20.0	"	"	"	"	"	"	

TDS by SM2540C

Total Dissolved Solids	866	14.3	mg/L	1	1422770	"		09/29/2014	
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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.

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

Charles Greeson
Project Number: [none]
Project: Noble - Miller #1 South CACL

SW06

9/24/2014 10:35:00AM

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Notes
		Limit							

GEL Laboratories, LLC
X409253-06 (Water)

Anions by EPA300.0

Bromide	0.484	0.200	mg/L	1	1422703			09/28/2014	
Chloride	190	10.0	"	50	"	"	"	10/01/2014	
Sulfate	308	20.0	"	"	"	"	"	"	

TDS by SM2540C

Total Dissolved Solids	870	14.3	mg/L	1	1422770	"		09/29/2014	
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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.

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

Charles Greeson
Project Number: [none]
Project: Noble - Miller #1 South CACL

SW07

9/24/2014 10:40:00AM

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Notes
		Limit							

GEL Laboratories, LLC
X409253-07 (Water)

Anions by EPA300.0

Bromide	0.499	0.200	mg/L	1	1422703			09/28/2014	
Chloride	195	10.0	"	50	"	"	"	10/02/2014	
Sulfate	314	20.0	"	"	"	"	"	"	

TDS by SM2540C

Total Dissolved Solids	876	14.3	mg/L	1	1422770	"		09/29/2014	
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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.

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

Charles Greeson
Project Number: [none]
Project: Noble - Miller #1 South CACL

SW08

9/24/2014 10:45:00AM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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GEL Laboratories, LLC
X409253-08 (Water)

Anions by EPA300.0

Bromide	0.450	0.200	mg/L	1	1422703		09/28/2014	
Chloride	191	10.0	"	50	"	"	10/02/2014	
Sulfate	307	20.0	"	"	"	"	"	

TDS by SM2540C

Total Dissolved Solids	911	14.3	mg/L	1	1422770	"	09/29/2014	
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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.

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

Charles Greeson
Project Number: [none]
Project: Noble - Miller #1 South CACL

SW09

9/24/2014 10:50:00AM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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GEL Laboratories, LLC
X409253-09 (Water)

Anions by EPA300.0

Bromide	0.483	0.200	mg/L	1	1422703		09/28/2014	
Chloride	194	10.0	"	50	"	"	10/02/2014	
Sulfate	314	20.0	"	"	"	"	"	

TDS by SM2540C

Total Dissolved Solids	877	14.3	mg/L	1	1422770	"	09/29/2014	
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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 Doyle Mathis, President

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

Charles Greeson
Project Number: [none]
Project: Noble - Miller #1 South CACL

SW10

9/24/2014 10:55:00AM

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Notes
		Limit							

GEL Laboratories, LLC
X409253-10 (Water)

Anions by EPA300.0

Bromide	0.417	0.200	mg/L	1	1422703			09/28/2014	
Chloride	194	10.0	"	50	"	"	"	10/02/2014	
Sulfate	316	20.0	"	"	"	"	"	"	

TDS by SM2540C

Total Dissolved Solids	914	14.3	mg/L	1	1422770	"		09/29/2014	
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LT Environmental, Inc.
4600 West 60th Avenue
Arvada CO 80003

Charles Greeson
Project Number: [none]
Project: Noble - Miller #1 South CACL

SW11

9/24/2014 11:00:00AM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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GEL Laboratories, LLC
X409253-11 (Water)

Anions by EPA300.0

Bromide	0.494	0.200	mg/L	1	1422703		09/28/2014	
Chloride	191	10.0	"	50	"	"	10/02/2014	
Sulfate	315	20.0	"	"	"	"	"	

TDS by SM2540C

Total Dissolved Solids	884	14.3	mg/L	1	1422770	"	09/29/2014	
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LT Environmental, Inc.
4600 West 60th Avenue
Arvada CO 80003

Charles Greeson
Project Number: [none]
Project: Noble - Miller #1 South CACL

SW12

9/24/2014 11:05:00AM

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Notes
		Limit							

GEL Laboratories, LLC
X409253-12 (Water)

Anions by EPA300.0

Bromide	0.501	0.200	mg/L	1	1422703			09/28/2014	
Chloride	191	10.0	"	50	"	"	"	10/02/2014	
Sulfate	316	20.0	"	"	"	"	"	"	

TDS by SM2540C

Total Dissolved Solids	896	14.3	mg/L	1	1422770	"		09/29/2014	
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LT Environmental, Inc.
4600 West 60th Avenue
Arvada CO 80003

Charles Greeson
Project Number: [none]
Project: Noble - Miller #1 South CACL

Anions by EPA300.0 - Quality Control GEL Laboratories, LLC

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 1422703 -										
BLANK (1203176247-BLK)					Prepared: Analyzed: 10/01/2014					
Chloride	ND	0.200	mg/L				-			U
Sulfate	ND	0.400	"				-			U
Bromide	ND	0.200	"				-			U
LCS (1203176248-BKS)					Prepared: Analyzed: 09/28/2014					
Bromide	1.28	0.200	mg/L	1.25		102	90-110			
Chloride	4.60	0.200	"	5.00		92.1	90-110			
Sulfate	9.44	0.400	"	10.0		94.4	90-110			
DUP (1203176249 D)					Source: X409253-01		Prepared: Analyzed: 10/01/2014			
Sulfate	309	20.0	mg/L		309		0-20	0.120	20	
Bromide	0.494	0.200	"		0.502		0-20	1.47	20	
Chloride	186	10.0	"		187		0-20	0.166	20	
DUP (1203176250 D)					Source: X409253-02		Prepared: Analyzed: 10/01/2014			
Chloride	186	10.0	mg/L		186		0-20	0.341	20	
Sulfate	307	20.0	"		307		0-20	0.124	20	
Bromide	0.512	0.200	"		0.473		0-20	7.86	20	
PS (1203176251 S)					Source: X409253-01		Prepared: Analyzed: 09/28/2014			
Bromide	1.74	0.200	mg/L	1.25		98.8	90-110			
Chloride	449	10.0	"	5.00		105	90-110			
Sulfate	814	20.0	"	10.0		101	90-110			
PS (1203176252 S)					Source: X409253-02		Prepared: Analyzed: 09/28/2014			
Bromide	1.78	0.200	mg/L	1.25		104	90-110			
Chloride	448	10.0	"	5.00		105	90-110			
Sulfate	811	20.0	"	10.0		101	90-110			

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

Charles Greeson
Project Number: [none]
Project: Noble - Miller #1 South CACL

TDS by SM2540C - Quality Control
GEL Laboratories, LLC

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch 1422770 -

DUP (1203176414 D)

Source: X409253-05

Prepared: Analyzed: 09/29/2014

Total Dissolved Solids	870	14.3	mg/L		866		0-10	0.494	10	
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Noelle Doyle Mathis, President

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

Charles Greeson
Project Number: [none]
Project: Noble - Miller #1 South CACL

Notes and Definitions

U Result not detected above the detection limit

ND Analyte NOT DETECTED at or above the reporting limit

RPD Relative Percent Difference

All soil results are reported at a wet weight basis.

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