804 Grand Ave.
Platteville, CO 80651

Tel: 970.785.5000
After Hours: 303.939.8585
Fax: 970.785.5099
www.nobleenergyinc.com

North America Division

noble energy

May 12, 2009

Mr. Robert Chesson
Department Of Natural Resources
Oil & Gas Conservation Commission
1120 Lincoln St., Suite 801
Denver CO 80203-2136

RE: Remediation Summary Report
Collins 14-20
API 05-001-06650
Sec. 20, T1S R65W
Adams County, Colorado

Dear Mr. Chesson:

Please find attached the remediation summary report for the above referenced site. This report details Phase II of the remediation program conducted at the site, including injection activities. Please contact the NEI environmental department at (970) 785-5000 if you have any questions or require additional information.

Sincerely,

Mikel Cox
Environmental Coordinator

Marty Faraguna
Environmental Specialist

Attachments

REMEDIAL ACTION SUMMARY AND GROUNDWATER SAMPLING REPORT

COLLINS 14-20 TANK BATTERY
ADAMS COUNTY, COLORADO
NOBLE ENERGY, INC.

MAY 2009

noble energy

REMEDIAL ACTION SUMMARY AND GROUNDWATER SAMPLING REPORT

COLLINS 14-20 TANK BATTERY
ADAMS COUNTY, COLORADO

MAY 2009

Prepared for:

NOBLE ENERGY, INC.
804 Grand Avenue
Platteville, Colorado 80651
(970) 785-5000

Prepared By:

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

TABLE OF CONTENTS

Page

TABLE OF CONTENTS (CONTINUED)

LIST OF FIGURES

LIST OF TABLES

LIST OF APPENDICES

EXECUTIVE SUMMARY

Noble Energy, Inc. (Noble) retained LT Environmental, Inc. (LTE) to conduct environmental services at the Collins 14-20 Tank Battery (Site). The battery is located approximately 1,300 feet northeast of the intersection of Harvest Mile Road and East 136 Avenue in Adams County, Colorado (Figure 1). Activities completed by LTE and described in this report include Phase II of the remediation program and post-remediation performance monitoring. Historical releases from the dump lines were identified in September 2008 during a Phase II Site Assessment conducted prior to a potential property divestment. Initial activities conducted by LTE included a site assessment to identify the extent and magnitude of the hydrocarbon impacts.

Following completion of site assessment activities, the data was evaluated and a remediation program was developed. The remediation program included two phases. Phase I of the program included source removal via excavation. Phase II of the remediation program, as described in this report, includes an in-situ groundwater injection program designed to remediate the remaining groundwater impact.

This report summarizes the implementation of the injection program, monitoring well installation, and groundwater sample collection and analysis. Preceding reports submitted to Noble on October 2008 and December 2008 included the *Environmental Site Assessment Results* and *Remediation Summary Report*, respectively.

From October 27, 2009 through January 30, 2009, LTE personnel were onsite to direct injection activities. These activities included the design and installation of a carbon slurry injection program. This program was designed to reduce petroleum hydrocarbon impact through biologically mediated sulfate reduction mechanisms. Injection activities were performed by Alpine Field Services of Golden, Colorado (Alpine). Injection activities included installation of 7,500 pounds of a carbon slurry product in the groundwater plume.

Following injection activities, four additional monitoring wells were installed by Alpine (SB-11 through SB-14) to evaluate groundwater quality in the areas downgradient, upgradient, and within the identified groundwater plume. The first post-injection sampling event was conducted on February 27, 2009. Six monitoring wells were sampled during this sampling event. Groundwater analytical results indicate a significant reduction of benzene concentrations in the groundwater plume. Only one monitoring well exhibited a benzene concentration above the regulatory standard (monitoring well SB-14 at 17.9 micrograms per liter following the injection). Continued groundwater monitoring will be conducted to evaluate groundwater quality in this area. It is expected that the continued degradation of petroleum hydrocarbons in groundwater by the carbon slurry, coupled with natural attenuation processes, will cause the benzene concentration at SB-14 to decrease over time.

LTE, on behalf of Noble, will conduct quarterly monitoring with the goal of observing four consecutive quarters of analytical data in compliance with regulatory standards. When this goal is achieved, a No Further Action request will be submitted to the Colorado Oil and Gas Conservation Commission.

SECTION 1.0

INTRODUCTION

Noble Energy, Inc. (Noble) retained LT Environmental, Inc. (LTE) to implement soil and groundwater remediation actions and to conduct post remediation performance groundwater monitoring at the Collins 14-20 Tank Battery (Site) in Adams County, Colorado (Figure 1).

1.1 SITE LOCATION AND DESCRIPTION

The Site is located approximately 1,300 feet northeast of the intersection of Harvest Mile Road and East 136th Avenue in Adams County, Colorado (Figure 1). The surrounding area consists of agricultural and residential property. The legal description of the Site is the southwest ¼ of the southwest ¼ of Section 20, Township 1 South, Range 65 West of the Sixth Principal Meridian, in Adams County, Colorado.

Soils identified at the Site were predominantly clayey, fine-grained sand that extended from the ground surface to depths ranging from approximately 5 feet below ground surface (bgs) to 10 feet bgs. Beneath the clayey sand was weathered, fine-grained, clayey sandstone extending to a total depth of 25 feet bgs. Depth to groundwater ranged from 17 feet bgs to 20 feet bgs. Estimated groundwater flow direction is northeast.

The Site is located at an elevation of approximately 5,173 feet above mean sea level. Surface topography in the area is modified for farming purposes, and there is a residential property approximately 2,000 feet to the southwest.

1.2 PURPOSE AND SCOPE

The purpose of the work conducted at the Site was to bring the groundwater at the Site into compliance with Colorado Oil and Gas Conservation Commission (COGCC) Table 910 Regulations.

The scope of work performed at the Site discussed in this report includes the design, permitting, and implementation of a carbon slurry injection program to treat impacted soil and groundwater. Following injection activities, four monitoring wells were installed for post-remediation performance monitoring of the groundwater. Groundwater samples were collected following completion of the injection program.

SECTION 2.0

REMEDIATION PROGRAM

Upon completion of Phase I of the remediation program, which removed soil impacts from the Site, Phase II of the program was implemented as described in this report. A summary of source removal activities conducted in Phase I of the program was presented in the *Remediation Summary Report* (December 2008). Phase II of the remediation program, which included the groundwater remediation program, was based on Site conditions, including the groundwater elevation, vertical distribution of contaminants identified in the site assessment, lateral extent of contaminants, geologic conditions, and physical/chemical properties of the contaminants. The selected remediation technology is a bioremediation program that includes the injection of a carbon based slurry into the impacted aquifer. The following sections describe the remediation program.

From October 27, 2009 to January 30, 2009, LTE personnel were onsite to oversee the injection of the carbon slurry remediation product. Injections were placed in the subsurface encompassing the groundwater plume in order to remediate petroleum hydrocarbon impact in soil and groundwater.

Prior to injection, the groundwater plume covered approximately 12,900 square feet (ft^2), and extended from approximately 15 feet to 25 feet below ground surface (bgs). The groundwater impact extends from the Collins 14-20 Tank Battery to the northeast (downgradient). The extent of the groundwater plume was divided into two sections as shown on Figure 2, and the injection plan was designed to address the specific conditions encountered in each section.

2.1 CARBON SLURRY INJECTATE DESCRIPTION

The carbon slurry product is comprised of an activated carbon product innoculated with bacteria and placed in a water based matrix that contains nutrients and sulfate, designed to enhance microbial activity and result in hydrocarbon degradation. The injectate is prepared by mixing the carbon product and cultured bacteria with clean, potable water. The carbon slurry is designed for in-situ treatment of petroleum hydrocarbons under either aerobic or anaerobic conditions. The initial electron acceptor utilized by the microbes for the reduction/oxidation reactions which degrade the hydrocarbons is oxygen. Oxygen is dissolved in the groundwater and is also present in the potable water used to create the slurry. Once oxygen has been utilized and depleted, the primary mechanism for anaerobic degradation of the hydrocarbons is sulfate reduction, with the sulfate operating as the terminal electron acceptor. The carbon slurry has the following approximate composition:

Ingredient	Composition
Carbon product	7.1 weight percent (wt %)
Micro-nutrients	0.35 wt %
Gypsum	1.8 wt %
Water	90.75 wt %
Bacteria	6.4×10^7 colony forming units per gram of carbon

The carbon slurry is injected under pressure into the soil which causes flow outward from the injection point through the pores in the granular soil matrix.

Once installed, the carbon slurry rapidly reduces contaminant concentrations in soil and groundwater because the polar hydrocarbon molecules are removed from these media via adsorption by the carbon product and are co-located with bacteria, nutrients, and electron acceptors in the carbon product pore network. As a result, initial hydrocarbon contaminant concentrations within the carbon matrix are substantially higher than that which existed in the soil or groundwater prior to injection. Rates of degradation within the carbon matrix are significantly faster than rates commonly observed using conventional in-situ bioremediation technology due to this concentration effect. As adsorbed contaminants are degraded, active sites within the carbon become available to adsorb residual contaminant, and the cycle is repeated until the microcosm runs out of electron donors, i.e. petroleum hydrocarbons. At the same time, gypsum present in the formulation provides a continuous source of sulfate (electron acceptor) to support the degradation process.

The radius of influence of the injectate at the Site is approximately 10 feet to 15 feet. Within this treated area, total dissolved solids, conductivity, sulfate, ammonia, and nitrate will likely exceed background levels initially. As the clean-up progresses, these parameters are expected to slowly return to background levels. A low, but persistent level of sulfate is expected for a period of approximately two or three years due to the injection of gypsum. The solubility of gypsum is low, therefore, the average groundwater sulfate concentration is not expected to exceed the State groundwater standard of 250 milligram (mg/L). The gypsum product used in the formulation is principally marketed to the agricultural industry for use as a soil conditioner and plant-growth stimulant.

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

2.2 INJECTION DESIGN

Based on the assessment data, LTE prepared a grid layout for the proposed injection points. As shown in Figure 2, injections were installed in a triangular grid pattern, on ten feet centers. The objective of the injection program was to create a three-dimensional network of material interlaced throughout the affected subsurface soils, such that it is unlikely that a significant volume of contaminants will move through the installation without contacting the carbon product.

Injection points were located on ten feet centers in an alternating grid, and injection was conducted at alternating multiple depths. This provides overlap in the subsurface both vertically and laterally, and creates seams of material that interlace.

The plume was divided into two treatment areas designated as Area A and Area B (Figure 2). LTE modeled subsurface carbon and sulfate loadings based on the radial influence of the injection areas, site-specific lithologic conditions, vertical distribution, and area-specific benzene concentrations. The final design loadings represent the amount of carbon and sulfate necessary to reduce existing benzene concentrations to below the regulatory standard. Table 1 summarizes the injection plan by area, including the number of injection points, number of injection horizons (shots) per injection point, and pounds of the carbon product per injection.

Treatment Area A encompasses approximately 5,950 ft^2 and included 60 injection points symmetrically distributed in a triangular grid pattern. A total of 1,800 pounds of the carbon product was injected throughout Treatment Area A. Injection loadings were 10 pounds of the carbon product per injection interval. Injection intervals were alternated between 17 feet, 19 feet, and 21 feet bgs, and 18 feet, 20 feet, and 22 feet bgs to ensure the injectate was properly distributed.

Treatment Area B encompasses approximately 6,400 ft^2 and included 76 injection points symmetrically distributed in a triangular grid pattern. A total of 5,700 pounds of the carbon product was injected throughout Treatment Area B. Injection loadings were 25 pounds of the carbon product per injection interval. Injection intervals in each area were alternated between 17 feet, 19 feet, and 21 feet bgs, and 18 feet, 20 feet, and 22 feet bgs to ensure the injectate was properly distributed.

2.3 PERMITTING

Following completion of the design, but prior to initiation of onsite injections, permitting was completed with the United States Environmental Protection Agency (USEPA) Underground Injection Control (UIC) Office in Denver, Colorado. On December 8, 2008, the USEPA granted a Rule Authorization for completion of the proposed remediation program. The Rule Authorization documentation is included as Appendix A.

2.4 WATER SOURCE

Water is the carrier fluid for the carbon slurry injectate. LTE utilized a 12,000 gallon water tank rented from Beco Equipment Company. Potable water was provided by McDonald Farms, and transported to the Site daily by Northern Plains Transport, Inc.

2.5 INJECTION PROCEDURE

Injection was conducted by Alpine Field Services of Golden, Colorado (Alpine) from October 27, 2009 to January 30, 2009. Alpine performed mechanical mixing of the slurry and delivery control in a specially designed trailer before the slurry was sent to a pumping truck. The dense lithology identified at the Site required a delivery rate and pressure that exceeded the capabilities of typical pump equipment. Therefore, Alpine subcontracted Well Improvement Company, Inc. (WIC) to provide high pressure pumping equipment. WIC operates a diesel powered, piston pump that is capable of pumping approximately 300 gallons per minute, while maintaining pressures up to 2,000 pounds per square inch. The slurry delivered from the Alpine mixing

trailer entered the WIC pump, where it was pressurized and pumped through 2.25 inch probe rods fitted with a specially designed injection tip. Two direct push drilling rigs were utilized to install the injection point boreholes, at times simultaneously. Photographs of injection activities are provided in Appendix B.

To begin the injection process, a pre-determined volume of water is transferred into the slurry-mixing tank, a measured amount of carbon product is slowly added to the tank, and the mixer is started. Next, a sufficient amount of cultured bacteria is added so that a targeted slurry concentration with petrophilic microbes is obtained. Mixing is continued for approximately ten minutes when the slurry is first prepared, so that the carbon and bacteria become completely mixed before injection.

A small diameter (1.25-inch outer diameter) push rod is driven to the targeted depth, and an injection head is threaded securely onto the rod. Once the slurry is mixed, the pump is engaged, the injection head valve is opened, and the discharge line is pressured up. Pressure is allowed to build in the borehole until the pore pressure is overcome and injectate begins to flow out into the subsurface soils. The injectate propagates outward from the point of the injection as additional slurry is pumped into the injection rod. The pump is subsequently disengaged, and the injection-head valve is closed. A fresh batch of slurry is then prepared, a new injection rod is installed, and the process is repeated.

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

To prevent migration of impacted groundwater, the treatment program involves injection in the plume perimeter areas first, followed by the central areas. Thus, the area with the highest levels of impact is surrounded with the carbon slurry before conducting the central injections. Photographs of the carbon slurry injection are presented in Appendix B.

SECTION 3.0

POST-REMEDIATION WELL INSTALLATION AND GROUNDWATER MONITORING

3.1 ADDITIONAL MONITORING WELL INSTALLATION

Following completion of remedial activities, LTE personnel were onsite February 12, 2009 and February 26, 2009 to install four additional monitoring wells (SB-11, SB-12, SB-13 and SB-14) downgradient, and within the injection area to aid in post-injection performance monitoring (Figure 3).

The soil borings were installed by Alpine and logged by an LTE geologist. The geologist inspected the soil for the presence or absence of petroleum hydrocarbon odor and/or staining. The soils were characterized by visually inspecting the soil samples collected in clear, acetate, four-foot long sample liners and screened using a photo-ionization detector (PID) to monitor the soil headspace for the presence of volatile organic vapors.

The wells were constructed of 1-inch diameter polyvinyl chloride (PVC) casing extending from the surface stickups to depths ranging between 25 feet and 30 feet bgs. The lower 10 feet of each temporary well consisted of 0.010-inch factory slotted PVC well screen. Silica sand (size 10x20) was placed from the bottom of each well to approximately 2 feet above the well screen to act as filter pack for the temporary groundwater wells. Bentonite chips were placed from the top of the silica sand to the ground surface and hydrated at each boring to provide a seal against surface contamination and precipitation run-off.

Monitoring wells SB-11, and SB-12 were advanced to a total depth of 25 feet bgs, and completed as temporary monitoring wells, with 10 feet of slotted screen. Monitoring wells SB-13 and SB-14 were advanced to a total depth of 30 feet bgs, and completed as temporary monitoring wells, with 10 feet of slotted screen. Soil borehole lithologic logs are included in Appendix C.

No evidence of petroleum hydrocarbon impacts was observed during the installation of the monitoring wells. Traces of the carbon remediation product were seen at 18 feet to 20 feet bgs in SB-11. No soil or groundwater samples were collected during drilling activities. A post-injection groundwater monitoring event, conducted on February 27, 2009, included the four new monitoring wells.

3.2 POST-REMEDIATION SAMPLING PROCEDURES

LTE personnel were onsite February 27, 2009 to sample the six monitoring wells. Groundwater level measurements were collected at the monitoring wells and these data were used to calculate purge volumes. Relative groundwater elevations in the monitoring wells ranged from 19.71 feet in monitoring well SB-14 to 22.71 feet in monitoring well SB-08 (Figure 3).

The new monitoring wells were developed by purging approximately 10 casing volumes using a peristaltic pump. Once the well had been purged, the well was allowed to recharge for at least 12 hours before a groundwater sample was collected. The pre-existing wells were purged of three

casing volumes prior to sample collection. Samples were collected from monitoring wells SB-08, SB-09, SB-11, SB-12, SB-13 and SB-14.

Groundwater samples were collected in three, non-preserved, laboratory prepared 40-milliliter vials. The groundwater samples were placed on ice and delivered with a completed COC form to Origins Laboratory, Inc. (Origins). The groundwater samples were submitted for benzene, toluene, ethylbenzene, and total xylenes (BTEX) analyses by EPA Method 8260B.

3.3 GROUNDWATER ANALYTICAL RESULTS

The Colorado Department of Public Health and Environmental (CDPHE) Water Quality Control Commission (WQCC) has established Regulation 41 - The Basic Standards for Groundwater (WQCC Reg 41) for BTEX of 5.0 micrograms per liter (ug/L), 560 ug/L, 700 ug/L, and 1,400 ug/L, respectively.

Groundwater analytical results indicate that benzene and total xylenes concentrations exceeded WQCC Reg 41 standards at monitoring well SB14, which exhibited concentrations of 17.9 ug/L benzene and 2,335 µg/L total xylenes. Toluene and ethylbenzene were detected at concentrations below WQCC Reg 41 standards. Monitoring well SB13 also exhibited BTEX concentrations below WQCC Reg 41 standards, but above laboratory method detection limits.

Monitoring wells SB13, and SB14 were installed within the impacted groundwater plume identified during site assessment activities. As seen in the *Environmental Site Assessment Results* (October 2008), groundwater quality within the impacted groundwater plume was characterized by environmental site assessment wells SB02 and SB04 (Figure 3). On September 26, 2008, monitoring well SB02 exhibited a benzene concentration of 1,640 ug/L, and SB04 exhibited a benzene concentration of 272 ug/L. Following sampling of the post-remediation performance groundwater quality wells (Figure 4), only SB14 exhibited a benzene concentration out of compliance with the WQCC Reg 41 standard. Monitoring well SB13 exhibited a benzene concentration above the laboratory detection limit, although it was in compliance with the WQCC Reg 41 standard.

These results demonstrate the effectiveness of the remediation program. It is expected that the remaining groundwater impact will dissipate due to the continued bioremediation activity promoted by the introduction of the carbon product, which is co-located with bacteria, nutrients, and electron acceptors in the carbon product pore network.

Groundwater analytical results are summarized in Table 2. Laboratory analytical reports are included as Appendix D.

SECTION 4.0

SUMMARY AND CONCLUSIONS

Historical activities at the Site included the identification of soil impacts, site assessment activities performed by LTE to delineate soil and groundwater impacts, and completion of Phase I of the remediation program (source removal activities).

During the period of October 27, 2009 through January 30, 2009, LTE conducted Phase II of the remediation program at the Site. Using the analytical results from the prior site assessment activities, an injection plan was created for in-situ remediation the groundwater impact. The Site was divided into two areas in which discreet amounts of carbon slurry were injected into the subsurface to adsorb and biologically degrade the benzene in groundwater. A total of 7,500 pounds of a carbon remediation product were mixed with 15 gallons of bacteria concentrate and potable water, and then injected into the ground at depths ranging from 15 feet bgs to 25 feet bgs.

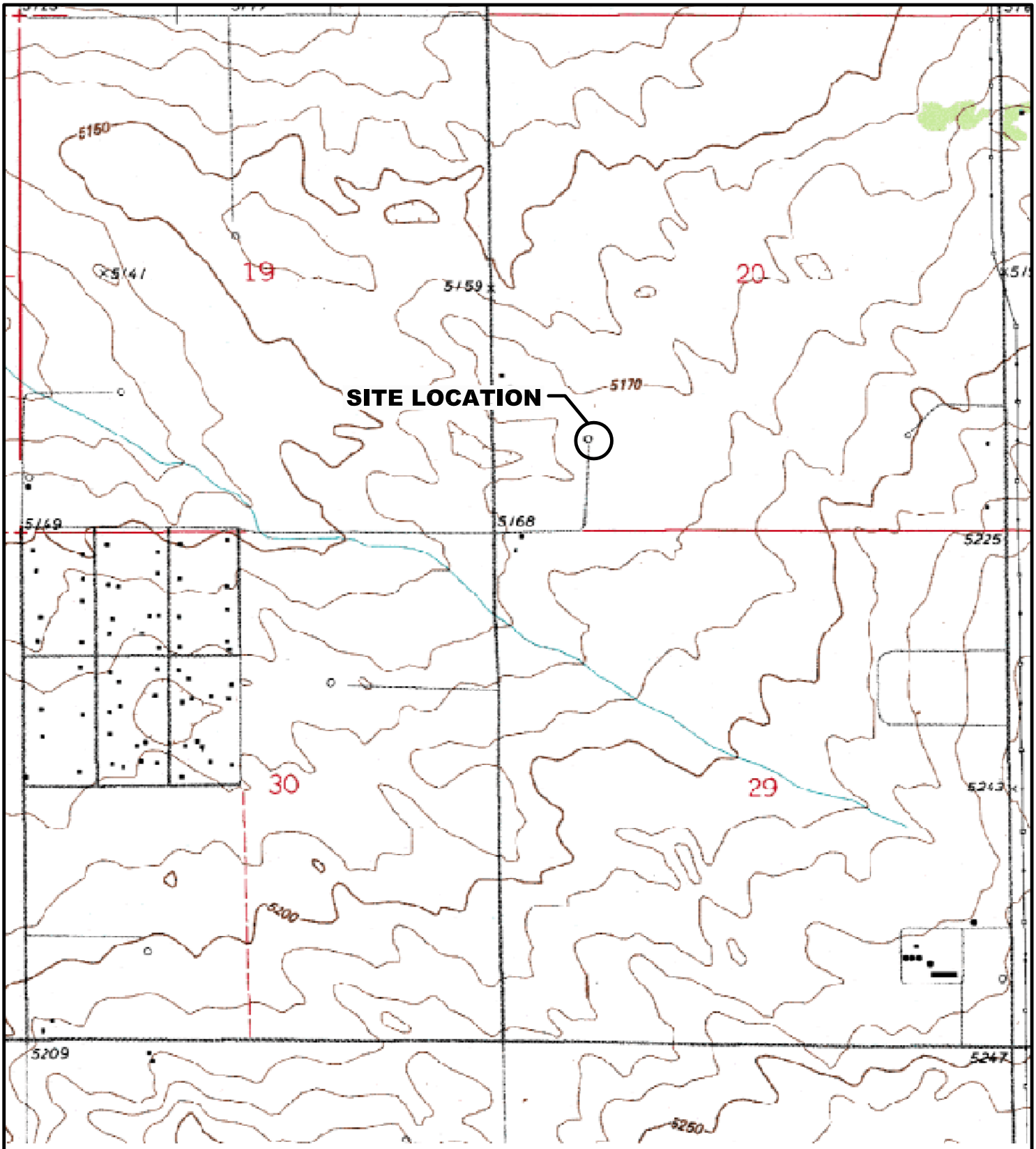
After injection activities were completed, Alpine installed four monitoring wells to aid in performance monitoring at the Site on February 12, 2009 and February 26, 2009. The monitoring wells were installed both upgradient and downgradient of the groundwater impact delineated during the site assessment. Two additional wells were also installed in the middle of the injected area to monitor the performance of the remediation program.

Following well installation, LTE personnel were onsite on February 27, 2009 to conduct groundwater sampling. Sampled wells included wells with historical benzene detections and wells that delineated the edge of the groundwater benzene plume. Analytical results from this groundwater sampling event indicate a significant decrease in benzene concentrations and a dramatic reduction of the areal extent of the groundwater plume.

Results from the post remediation sampling indicate only one monitoring well (SB-14) with both benzene and total xylenes concentrations above the regulatory standards, at 17.9 ug/L, and 2,335 ug/L, respectively. It is expected that the continued degradation of petroleum hydrocarbons in groundwater by the carbon slurry, coupled with natural attenuation processes, will result in a decrease in the benzene and total xylenes concentrations in SB-14. Groundwater analytical results are summarized in Table 2.

LTE, on behalf of Noble, will continue quarterly monitoring with a goal of observing four consecutive quarters of groundwater analytical results below regulatory standards. Once this goal is achieved, a No Further Action request will be submitted to the COGCC. The next quarterly sampling event is scheduled for June 2009.

FIGURES



LEGEND

○ SITE LOCATION

0 375 750 1500
FEET

SOURCE: TOPOZONE.COM
USGS 7.5' QUADRANGLE
(NAD27)

FIGURE 1
SITE LOCATION MAP
COLLINS 14-20
ADAMS COUNTY, COLORADO
NOBLE ENERGY, INC.

NEP083501_SL 10/08

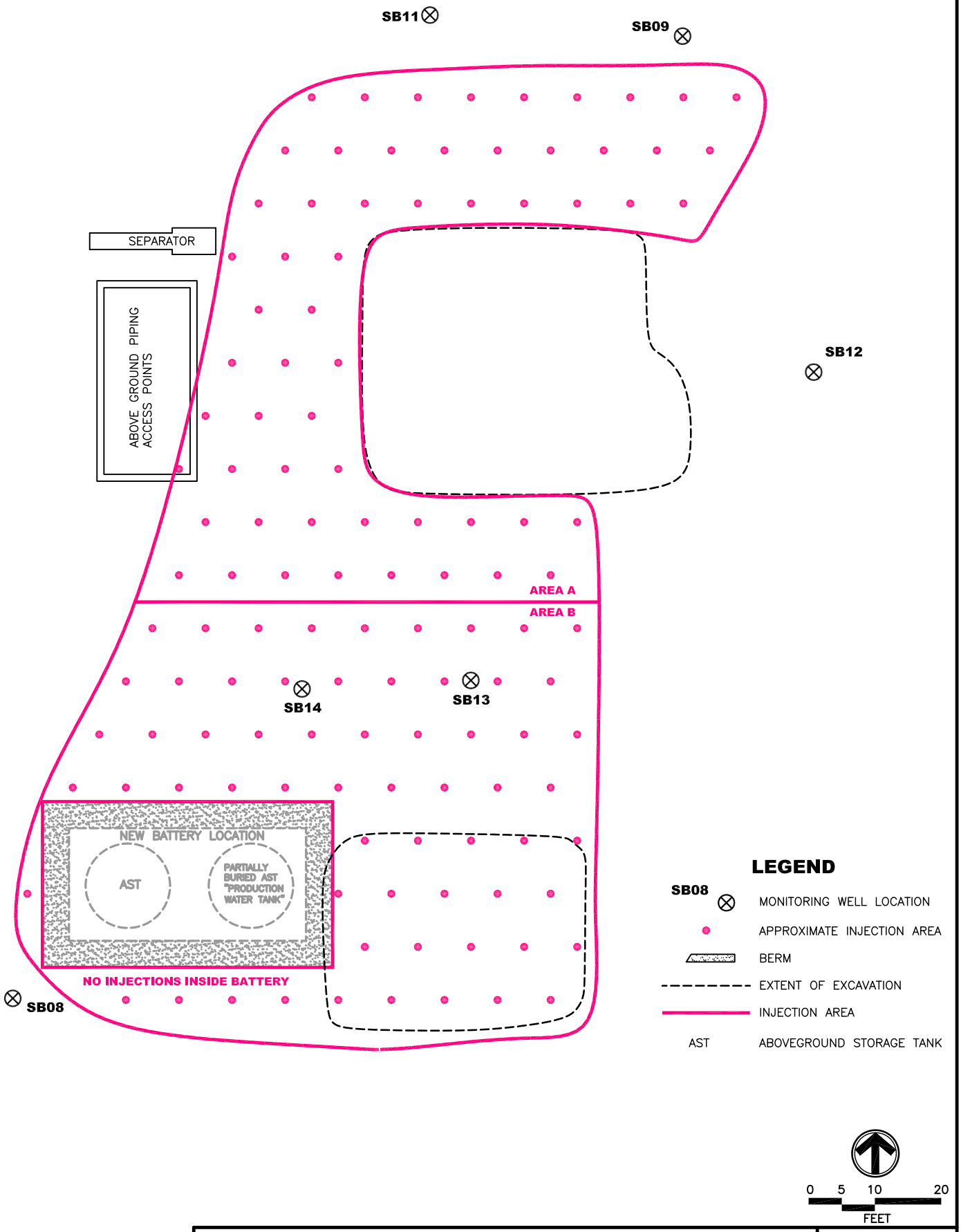


FIGURE 2
INJECTION POINTS AND MONITORING WELL LOCATION MAP
COLLINS 14–20
ADAMS COUNTY, COLORADO
NOBLE ENERGY, INC.

NEP083501 10/08

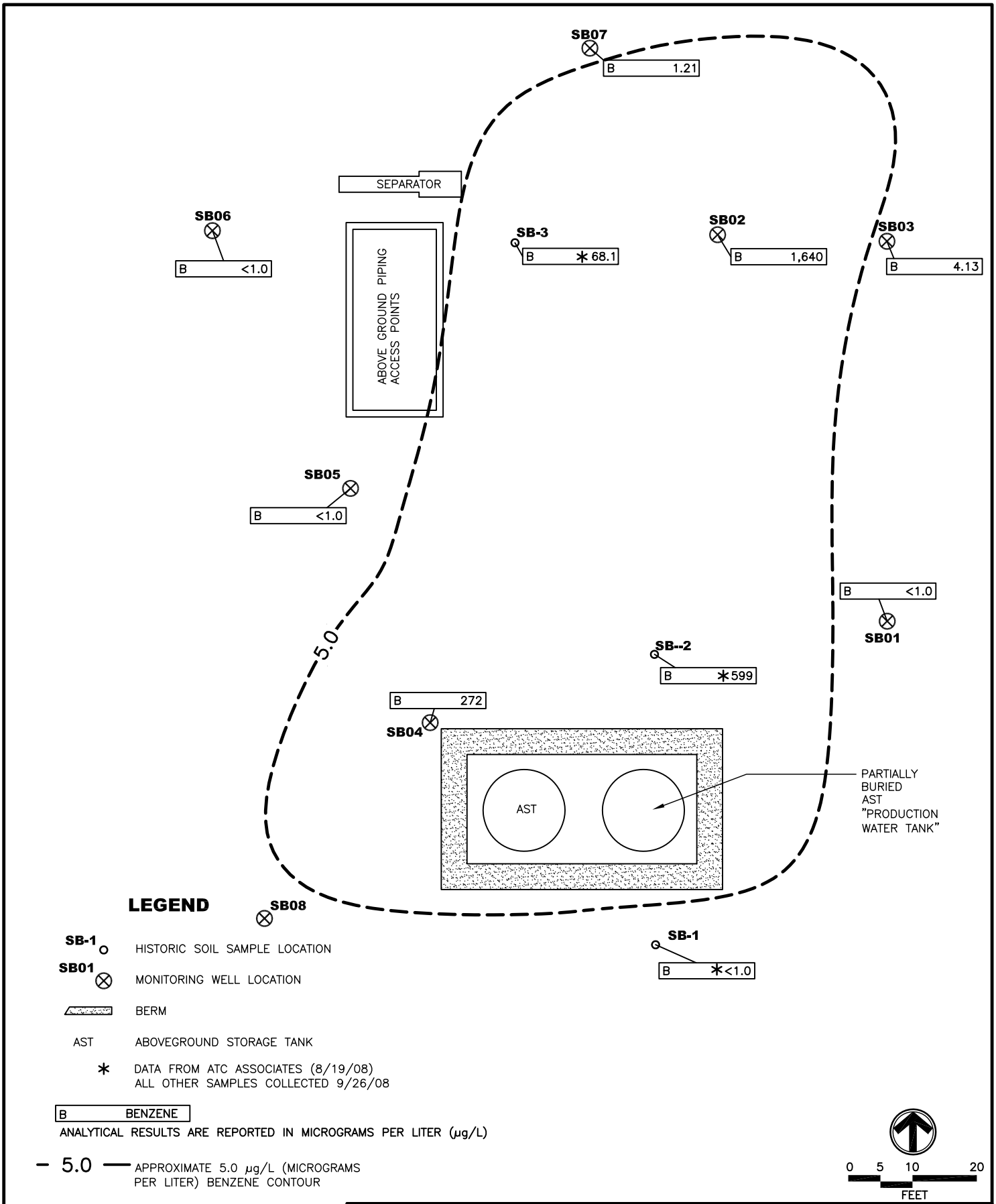


FIGURE 3
PRE-REMEDIATION BENZENE IN GROUNDWATER
COLLINS 14-20
ADAMS COUNTY, COLORADO
NOBLE ENERGY, INC.

NEP083501 10/08

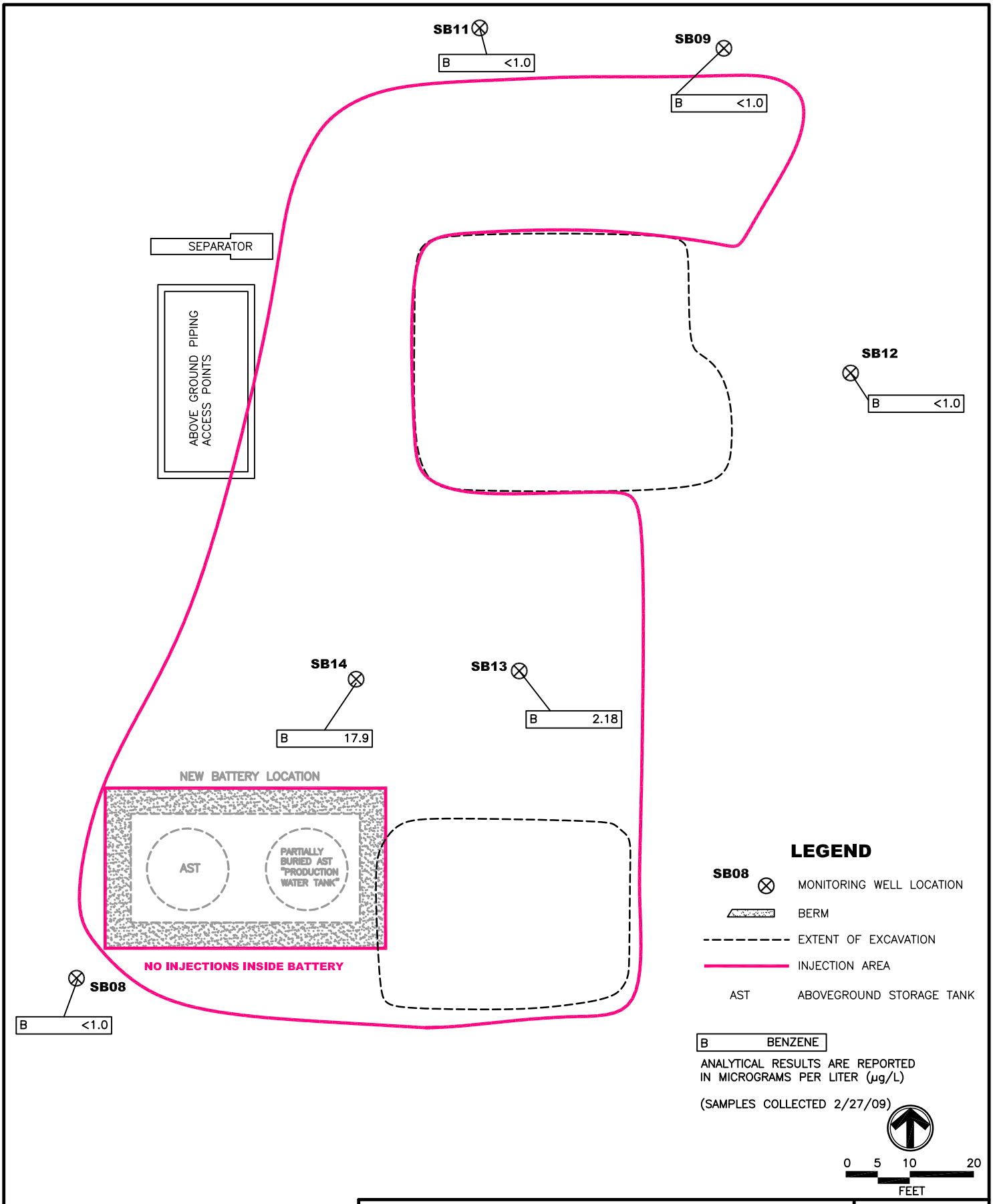


FIGURE 4
POST–REMEDIATION BENZENE IN GROUNDWATER
COLLINS 14–20
ADAMS COUNTY, COLORADO
NOBLE ENERGY, INC.

NEP083501 10/08

TABLES

TABLE 1

INJECTION PLAN
COLLINS 14-20 TANK BATTERY
ADAMS COUNTY, COLORADO
NOBLE ENERGY, INC.

Area	Width (feet)	Length (feet)	Number of injection ponts	Shots per point	Pounds of injectate per shot	Total pounds of injectate per point	Total pounds of injectate per area
A	70	85	60	3	10	30	1,800
B	80	80	76	3	25	75	5,700
Totals:			**136**				**7,500**

TABLE 2

GROUNDWATER ANALYTICAL DATA
COLLINS 14-20 TANK BATTERY
WELD COUNTY, COLORADO
NOBLE ENERGY, INC.

MONITORING WELL	DATE	DEPTH TO WATER (feet btoc)	BENZENE (ug/L)	TOLUENE (ug/L)	ETHYLBENZENE (ug/L)	TOTAL XYLENES (ug/L)
SB08	10/29/2008	22.56	<1.0	<1.0	<1.0	<3.0
	2/17/2009	22.49	<1.0	<1.0	<1.0	<3.0
	2/27/2009	22.71	<1.0	<1.0	<1.0	<3.0
SB09	11/5/2008	19.65	<1.0	<1.0	<1.0	<3.0
	2/17/2009	21.95	<1.0	<1.0	<1.0	<3.0
	2/27/2009	22.04	<1.0	<1.0	<1.0	<3.0
SB11	2/17/2009	20.70	<1.0	<1.0	<1.0	<3.0
	2/27/2009	21.07	<1.0	<1.0	<1.0	<3.0
SB12	2/17/2009	20.45	<1.0	<1.0	1.32	<3.0
	2/27/2009	20.78	<1.0	<1.0	<1.0	<3.0
SB13	2/27/2009	21.27	2.18	16.3	182	1,037
SB14	2/27/2009	19.71	**17.9**	486	240	**2,335**
CDPHE WQCC Reg 41			**5.0**	**560**	**700**	**1,400**

NOTES:

btoc - below top of casing

ug/L - micrograms per liter

< indicates result is less than the stated laboratory method detection limit

Bold indicates concentration exceeds the CGWQS

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

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

APPENDIX A

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

RULE AUTHORIZATION

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 8
1595 WYNKOOP STREET
DENVER, CO 80202-1129
http://www.epa.gov/region8

DEC 0 8 2008

Ref: 8P-W-GW

Mike Cox
Noble Energy, Inc.
804 Grand Avenue
Platteville, CO 80651

RE: CLASS V UIC PROGRAM
Rule Authorization: Aquifer Remediation Well
Collins 14-20 Tank Battery
Harvest Mile Road & East 136th Avenue
Adams City, CO
EPA File #CO50000 - 08284

Dear Mike Cox:

The U.S. Environmental Protection Agency's (EPA's) Underground Injection Control (UIC) Program staff has reviewed the application that was submitted by you or on your behalf for the Class V aquifer remediation injection well(s) at the above referenced location. Based on our understanding of the proposed program and limited potential for groundwater contamination, we have determined that a permit is not necessary at this time. Therefore, your aquifer remediation injection well(s) is currently "authorized by rule" in accordance with Title 40 Code of Federal Regulations (40 CFR) Sections 144.24 and 144.84(a). This authorization is based on information provided in your application and is valid for:

injections of BOS 200 into 98 temporary Geoprobe wells, all within the boundaries of the benzene plume in accordance with your approved Corrective Action Plan,

and is limited to the location(s) indicated in the application that we received on December 1, 2008.

All injection wells are regulated under the UIC Program in accordance with 40 CFR Parts 144 and 146, which have been promulgated under Part C of the Safe Drinking Water Act, 42 United States Code Sections 1421 through 1428. Your Class V injection well(s) is subject to periodic compliance inspections, which may include sampling and analysis of your fluids. Finally, be aware that under 40 CFR Sections144.12(c), (d), and (e), the EPA can require you to apply for a permit or close your injection well(s) under certain circumstances.

Please notify us if the potential for groundwater contamination increases. If you intend to change the proposed plan, please notify us in advance. Any changes in operating methods or any other conditions that may adversely impact groundwater MUST be approved in advance by the EPA. Failure to comply with the above requirements will result in violations of UIC regulations and possible enforcement actions and penalties.

Please be advised that this rule authorization pertains solely to the UIC Program and does NOT relieve you from satisfying any other federal, state, or local regulations that may apply.

Please complete and return the self-addressed, stamped postcard included with this letter. Please contact Howard Urband at 1-800-227-8917, extension 312-6135 or (303) 312-6135, if you have any questions or need more information. More information on the EPA Region 8 Class V program can also be found online at: http://www.epa.gov/region8/water/uic/r8cvprog.html.

Sincerely,

Steven J. Pratt, PE, CAPM (inactive)
Director, Groundwater Program

Enclosure: Self-addressed, Stamped Postcard (please return with signature and date)

cc: Mr. Bob Chesson
Colorado Oil and Gas Commission
1120 Lincoln Street, Suite 801
Denver, CO 80203

APPENDIX B

SITE PHOTOGRAPHS

Collins 14-20 Tank Battery

Photograph 1: Injection water storage tank.

Photograph 2: Carbon slurry mixing equipment.

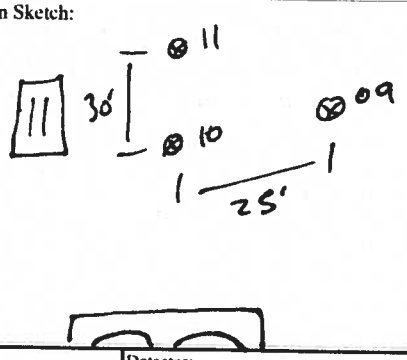
Photograph 3: Direct push rigs installing injection points.

Photograph 4: Injection activities along the tank battery.

APPENDIX C

BOREHOLE LITHOLOGIC LOGS

Well Location Sketch:



Compliance · Engineering · Remediation

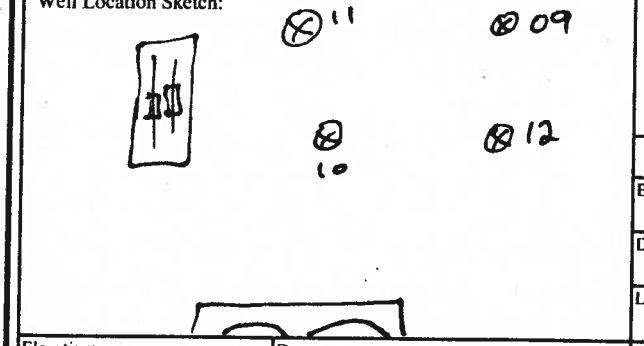
LT Environmental, Inc.
4600 W. 60th Avenue
Arvada, Colorado 80003

BORING LOG/MONITORING WELL COMPLETION DIAGRAM

Boring/Well Number: SB11	Project: Collins 14-20
Date: 2/12/2009	Project Number: NEP0835.05
Logged By: TED	Drilled By: Alpine Field Services
Elevation:	Detector: MiniRAE 2000
Drilling Method: Direct Push	Sampling Method: Continuous
Gravel Pack: CSSI 10x20	Seal: Bentonite Chips
Grout: NA	
Casing Type: Sch 40 PVC	Diameter: 1" Length: 20'
Hole Diameter: 2"	Depth to Liquid: NA
Screen Type: Sch 40 PVC	Slot: 0.01
Diameter: 1" Length: 10'	Total Depth: 25'
	Depth to Water: 18'

Penetration Resistance	Moisture Content	Vapor (ppm)	Staining	Sample #	Depth (ft. bgs.)	Sample Run	Recovery	Soil/Rock Type	Lithology/Remarks	Well Completion Diagram
	Moist	0	No		0–2			SM	Sand, fine to med. grained well graded, silty, lt. brown some gravel	
		0			2–4					
		0			4–6					
		0			6–8					
		0.1			8–10					
		0			10–12			SC	Sand, f.–med grained well graded, clayey, lt. brown	
		0			12–14			SM	Sand, f.–m. grained, silty well graded, lt. brown	
		0			14–16			SC	Sand, fine grained, poorly graded clayey, lt. grey	
	M	0			16–18			SM	Sand, fine grained, poorly graded silty, lt. grey	
	Wet	0			18–20			SW	Sand, fine grained, poorly graded ~~silty~~ lt. brown	
		0			20–22			SWS	sand, fine–med. grained lt. brown, bedrock	
		0			22–24					
	W				24–26					
					26–28				TD - 25'	
					28–30					
					30–32					
					32–34					
					34–36					
					36–38					
					38–40					

Well Location Sketch:



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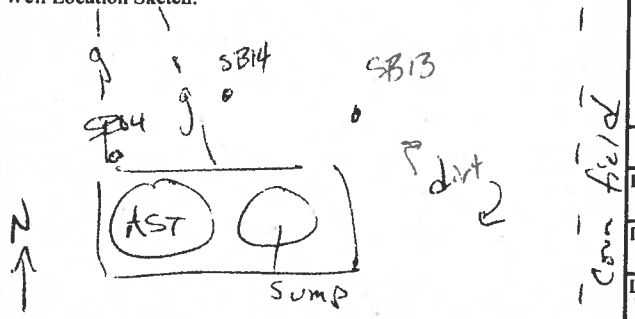
BORING LOG/MONITORING WELL COMPLETION DIAGRAM

Boring/Well Number: SB12	Project: Collins 14-20
Date: 2/12/2009	Project Number: NEP0835.05
Logged By: TED	Drilled By: Alpine Field Services
Elevation:	Detector: MiniRAE 2000
Drilling Method: Direct Push	Sampling Method: Continuous
Gravel Pack: CSSI 10x20	Seal: Bentonite Chips
Grout: NA	
Casing Type: Sch 40 PVC	Diameter: 1" Length: 20'
Hole Diameter: 2"	Depth to Liquid: NA
Screen Type: Sch 40 PVC	Slot: 0.01
Diameter: 1" Length: 10'	Total Depth: 25'
	Depth to Water: 18'

Penetration Resistance	Moisture Content	Vapor (ppm)	Staining	Sample #	Depth (ft. bgs.)	Sample Run	Recovery	Soil/Rock Type	Lithology/Remarks	Well Completion Diagram
					0					
	Moist	0.0	No		2			SC	Sand, fine to med. grained clayey, lt. brown	
					4					
		0.0			6			SW	Sand, f.-med grained well graded, lt. brown	
					8			SC	Sand, f.-m. grained clayey, lt. grey	
					10			SM	Sand, f.-m. grained silty, dark grey/yellow	
		0.0			12					
					14					
					16					
	M				18			SW	Sand, fine to med. grained Well graded, lt. brown	
	Wet	0.0			20					
					22			SWS	Sand, f.-med grained bedrock, lt. brown	
					24					
					26				TD-25'	
					28					
					30					
					32					
					34					
					36					
					38					
					40					

Well Location Sketch:



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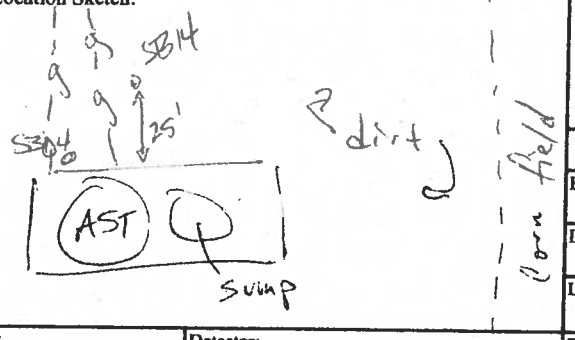
BORING LOG/MONITORING WELL COMPLETION DIAGRAM

Boring/Well Number: SB13	Project: Collins 14-20
Date: 2/26/2009	Project Number: NEP0835.05
Logged By: DRM	Drilled By: Alpine Field Services
Elevation:	Detector: MiniRAE 2000
Drilling Method: Direct Push	Sampling Method: Continuous
Gravel Pack: CSSI 10x20 16'-27'	Seal: Bentonite Chips 0-16'
Grout: N.A	
Casing Type: Sch 40 PVC	Diameter: 1" Length: 17'+3' stick up
Hole Diameter: 2"	Depth to Liquid: NA
Screen Type: Sch 40 PVC	Slot: 0.01 Diameter: 1" Length: 10'
Total Depth: 30'/27' well set	Depth to Water: 22'

Penetration Resistance	Moisture Content	Vapor (ppm)	Staining	Sample #	Depth (ft. bgs.)	Sample Run	Recovery	Soil/Rock Type	Lithology/Remarks	Well Completion Diagram
					0					
	d-m	0.0	No	1035	2	x		SM	Sand, fg, silty, brown, dry-moist, no odor or staining.	
		0.3			4					
	m	0.8		1042	6					
		1.2			8	x		SC	Sand, fg-mg, clayey, grayish-brown, moist, no odor or staining	
		0.0		1050	10			SP	Sand, fg, trace silt, brown w/ slight rust staining throughout moist, no odor	
		0.2			12	x				
	mm	0.1		1100	14					
		0.0	~~Carbon~~ No		16			SP	lense silt, med-moist, no odor	
	mm-vm	0.0		1110	18	x			4" platty sand lense	
	w	0.3	Carbon staining		20				2" Carbon slurry stringer	
		0.3	No	1120	22			SP	med moist - very moist	
		4.2	Yes		24	x			wet w/ slight carbon staining	
	m		No		26					
					28				greenish-grey staining from 28-29' bgs, slight odor	
					30			CL	clay, brown, med. moist, no odor very stiff	
					32				Total depth drilled = 30' bgs	
					34					
					36					
					38					
					40					

Well Location Sketch:



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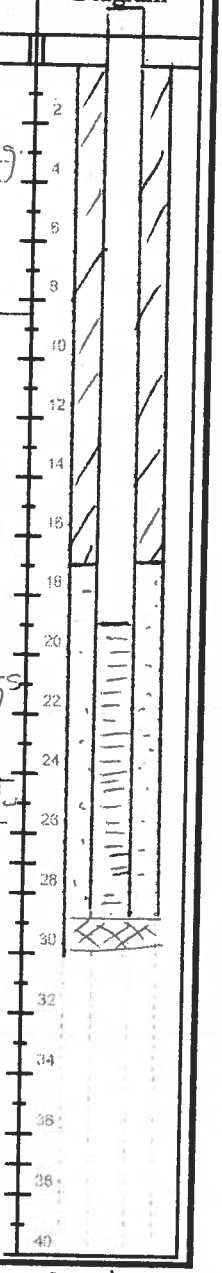
Arvada, Colorado 80003

BORING LOG/MONITORING WELL COMPLETION DIAGRAM

Boring/Well Number: SB14		Project: Collins 14-20	
Date: 2/26/2009		Project Number: NEP0835.05	
Logged By: DRM		Drilled By: Alpine Field Services	
Elevation:	Detector: MiniRAE 2000	Drilling Method: Direct Push	Sampling Method: Continuous
Gravel Pack: CSSI 10x20 17'-29'		Seal: Bentonite Chips 0-17'	Grout: NA
Casing Type: Sch 40 PVC		Diameter: 1" Length: 19'+2.5' Stick up	Hole Diameter: 2" / Depth to Liquid: N.A
Screen Type: Sch 40 PVC	Slot: 0.01	Diameter: 1" Length: 10'	Total Depth: 30' / 29' Well Set / Depth to Water: 22'

Penetration Resistance	Moisture Content	Vapor (ppm)	Staining	Sample #	Depth (ft. bgs.)	Sample Run	Recovery	Soil/Rock Type	Lithology/Remarks
	d-m	0.0	No	0847	0 2				
		0.0			4	X		SM	Sand, fg, silty, light brown, dry - moist, no odor or staining.
		0.2		0850	6			SM	SAA, lense of rusty colored soil from 8'-8.5' bgs
	m	0.0			8	X			
		0.1		0856	10			SP	Sand, fg, brown, moist, no odor or staining
		0.1			12	X			
	w	0.0		0905	14				
	Vim		Carbon		16	X		SP	SAA
		0.0	No		18				-17-17.5' bgs: Carbon slurry observed.
		0.0		0910	20				
	m	0.0			22	X		SP	fg-mg, very moist @ ~22' bgs
	w	6.3	Yes	0925	24				
			No		26			CL	Clay, grayish-brown, moist, no odor
		1.2			28	X		SP	Sand, fg-mg, brown w/ staining (gray) from 26'-27' bgs. very wet, slight odor
					30				Total Depth drilled = 30' bgs
					32				
					34				
					36				
					38				
					40				

Well Completion Diagram



APPENDIX D

LABORATORY ANALYTICAL REPORTS

4640 Pecos Street | Unit C | Denver, Colorado 80211
303.433.1322 Phone 303.265.9645 Fax

March 04, 2009

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

Brian Dodek
Project Number: NEP0835.01
Project: Noble - Collins 14-20 5A

Attached are the analytical results for Noble - Collins 14-20 5A received by Origins Laboratory, Inc. 2/27/2009 3:47:00PM. Please let us know if you have any questions, or if we can help with anything at all.

Laboratory Manager

Noelle E Doyle

The analytical results in the following report were analyzed under the guidlines of EPA Methods specified in SW-846. The analytical results apply specifically to the samples and analyses specified per the attached Chain of Custody. This laboratory report is intended solely for the above addressee and it is only to be used and or reproduced in its entireity.

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303.433.1322 | Laboratory
303.265.9645 | Fax

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

Brian Dodek

Project Number: NEP0835.01
Project: Noble - Collins 14-20 5A

CROSS REFERENCE REPORT

Sample ID	Laboratory ID	Matrix	Sampled	Date Received
SB08	X902107-01	Water	2/27/2009 11:15:00AM	02/27/2009 15:47
SB09	X902107-02	Water	2/27/2009 11:20:00AM	02/27/2009 15:47
SB11	X902107-03	Water	2/27/2009 11:30:00AM	02/27/2009 15:47
SB12	X902107-04	Water	2/27/2009 11:35:00AM	02/27/2009 15:47
SB13	X902107-05	Water	2/27/2009 11:40:00AM	02/27/2009 15:47
SB14	X902107-06	Water	2/27/2009 11:45:00AM	02/27/2009 15:47

Origins Laboratory, Inc.

Noelle E Doyle, Laboratory Manager

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303.265.9645 | Fax

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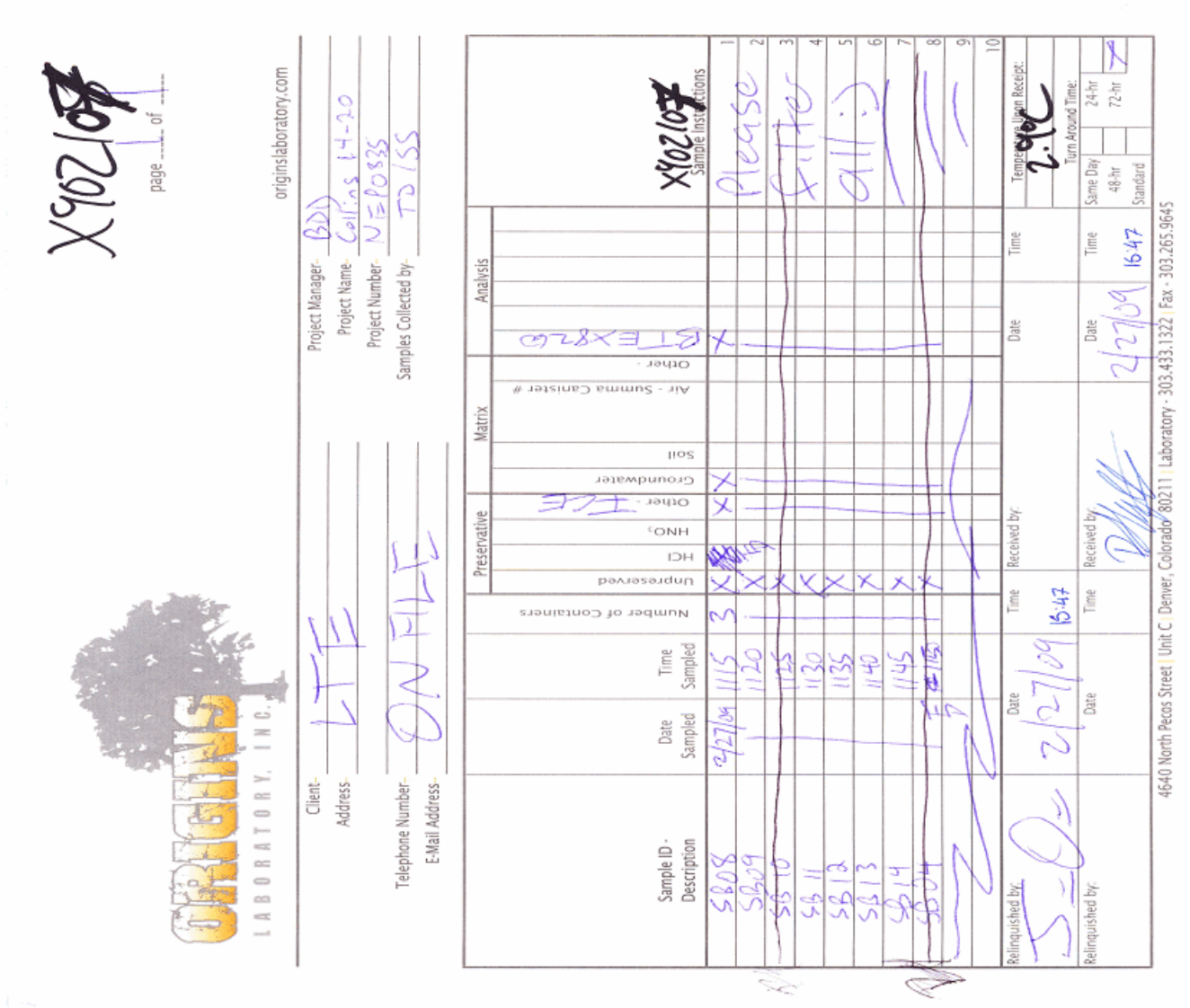
Brian Dodek

Project Number: NEP0835.01
Project: Noble - Collins 14-20 5A



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Arvada CO 80003

Brian Dodek

Project Number: NEP0835.01
Project: Noble - Collins 14-20 5A

SB08

X902107-01 (Water)

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
Origins Laboratory, Inc.								
BTEX by EPA 8260B								
Benzene	ND	0.00100	mg/L	1	9C02001	03/02/2009	03/03/2009	
Toluene	ND	0.00100	"	"	"	"	"	
Ethylbenzene	ND	0.00100	"	"	"	"	"	
o-Xylene	ND	0.00100	"	"	"	"	"	
m,p-Xylene	ND	0.00200	"	"	"	"	"	
Surrogate: 1,2-Dichloroethane-d4	*126 %*	*70.3-123*			"	"	"	*S-GC*
Surrogate: Toluene-d8	*91.3 %*	*75.9-123*			"	"	"	
Surrogate: 4-Bromofluorobenzene	*90.4 %*	*83-123*			"	"	"	

Origins Laboratory, Inc.

Noelle E Doyle, Laboratory Manager

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Brian Dodek

Project Number: NEP0835.01
Project: Noble - Collins 14-20 5A

SB09

X902107-02 (Water)

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
Origins Laboratory, Inc.								
BTEX by EPA 8260B								
Benzene	ND	0.00100	mg/L	1	9C02001	03/02/2009	03/03/2009	
Toluene	ND	0.00100	"	"	"	"	"	
Ethylbenzene	ND	0.00100	"	"	"	"	"	
o-Xylene	ND	0.00100	"	"	"	"	"	
m,p-Xylene	ND	0.00200	"	"	"	"	"	
Surrogate: 1,2-Dichloroethane-d4	*130 %*	*70.3-123*			"	"	"	*S-GC*
Surrogate: Toluene-d8	*90.3 %*	*75.9-123*			"	"	"	
Surrogate: 4-Bromofluorobenzene	*94.7 %*	*83-123*			"	"	"	

Origins Laboratory, Inc.

Noelle E Doyle, Laboratory Manager

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Brian Dodek

Project Number: NEP0835.01
Project: Noble - Collins 14-20 5A

SB11

X902107-03 (Water)

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
Origins Laboratory, Inc.								
BTEX by EPA 8260B								
Benzene	ND	0.00100	mg/L	1	9C02001	03/02/2009	03/03/2009	
Toluene	ND	0.00100	"	"	"	"	"	
Ethylbenzene	ND	0.00100	"	"	"	"	"	
o-Xylene	ND	0.00100	"	"	"	"	"	
m,p-Xylene	ND	0.00200	"	"	"	"	"	
Surrogate: 1,2-Dichloroethane-d4	*131 %*	*70.3-123*			"	"	"	*S-GC*
Surrogate: Toluene-d8	*89.0 %*	*75.9-123*			"	"	"	
Surrogate: 4-Bromofluorobenzene	*91.5 %*	*83-123*			"	"	"	

Origins Laboratory, Inc.

Noelle E Doyle, Laboratory Manager

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Brian Dodek

Project Number: NEP0835.01
Project: Noble - Collins 14-20 5A

SB12

X902107-04 (Water)

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
Origins Laboratory, Inc.								
BTEX by EPA 8260B								
Benzene	ND	0.00100	mg/L	1	9C02001	03/02/2009	03/03/2009	
Toluene	ND	0.00100	"	"	"	"	"	
Ethylbenzene	ND	0.00100	"	"	"	"	"	
o-Xylene	ND	0.00100	"	"	"	"	"	
m,p-Xylene	ND	0.00200	"	"	"	"	"	
Surrogate: 1,2-Dichloroethane-d4	*127 %*	*70.3-123*			"	"	"	*S-GC*
Surrogate: Toluene-d8	*87.2 %*	*75.9-123*			"	"	"	
Surrogate: 4-Bromofluorobenzene	*91.2 %*	*83-123*			"	"	"	

Origins Laboratory, Inc.

Noelle E Doyle, Laboratory Manager

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Arvada CO 80003

Brian Dodek

Project Number: NEP0835.01
Project: Noble - Collins 14-20 5A

SB13

X902107-05 (Water)

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
Origins Laboratory, Inc.								
BTEX by EPA 8260B								
Benzene	**0.00218**	0.00100	mg/L	1	9C02001	03/02/2009	03/03/2009	
Toluene	**0.0163**	0.00100	"	"	"	"	"	
Ethylbenzene	**0.182**	0.00100	"	"	"	"	"	
o-Xylene	**0.106**	0.00100	"	"	"	"	"	
m,p-Xylene	**0.931**	0.0200	"	10	"	"	03/03/2009	
Surrogate: 1,2-Dichloroethane-d4	*133 %*	*70.3-123*			"	"	*03/03/2009 GC*	
Surrogate: Toluene-d8	*90.1 %*	*75.9-123*			"	"	"	
Surrogate: 4-Bromofluorobenzene	*108 %*	*83-123*			"	"	"	

Origins Laboratory, Inc.

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Brian Dodek

Project Number: NEP0835.01
Project: Noble - Collins 14-20 5A

SB14

X902107-06 (Water)

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
Origins Laboratory, Inc.								
BTEX by EPA 8260B								
Benzene	**0.0179**	0.00100	mg/L	1	9C02001	03/02/2009	03/03/2009	
Toluene	**0.486**	0.0200	"	20	"	"	03/03/2009	
Ethylbenzene	**0.240**	0.0200	"	"	"	"	"	
o-Xylene	**0.425**	0.0200	"	"	"	"	"	
m,p-Xylene	**1.91**	0.0400	"	"	"	"	"	
Surrogate: 1,2-Dichloroethane-d4	*122 %*	*70.3-123*			"	"	*03/03/2009*	
Surrogate: Toluene-d8	*88.0 %*	*75.9-123*			"	"	"	
Surrogate: 4-Bromofluorobenzene	*101 %*	*83-123*			"	"	"	

Origins Laboratory, Inc.

Noelle E Doyle, Laboratory Manager

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Arvada CO 80003

Brian Dodek
Project Number: NEP0835.01
Project: Noble - Collins 14-20 5A

Volatile Organic Compounds by EPA Method 8260B - Quality Control

Origins Laboratory, Inc.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 9C02001 - EPA 5030B										
Blank (9C02001-BLK1)						Prepared: 03/02/2009 Analyzed: 03/02/2009				
Benzene	ND	0.001	mg/L							
Toluene	ND	0.001	"							
Ethylbenzene	ND	0.001	"							
o-Xylene	ND	0.001	"							
m,p-Xylene	ND	0.002	"							
Surrogate: 1,2-Dichloroethane-d4	*66.1*		*ug/L*	*62.5*		*106*	*70.3-123*			
Surrogate: Toluene-d8	*62.3*		*"*	*62.5*		*99.6*	*75.9-123*			
Surrogate: 4-Bromofluorobenzene	*64.5*		*"*	*62.5*		*103*	*83-123*			
Blank (9C02001-BLK2)						Prepared: 03/02/2009 Analyzed: 03/02/2009				
Benzene	ND	0.001	mg/L							
Toluene	ND	0.001	"							
Ethylbenzene	ND	0.001	"							
o-Xylene	ND	0.001	"							
m,p-Xylene	ND	0.002	"							
Surrogate: 1,2-Dichloroethane-d4	*64.7*		*ug/L*	*62.5*		*104*	*70.3-123*			
Surrogate: Toluene-d8	*65.2*		*"*	*62.5*		*104*	*75.9-123*			
Surrogate: 4-Bromofluorobenzene	*63.9*		*"*	*62.5*		*102*	*83-123*			
LCS (9C02001-BS1)						Prepared: 03/02/2009 Analyzed: 03/02/2009				
Benzene	0.04	0.001	mg/L	0.0500		70.2	64.2-124			
Toluene	0.05	0.001	"	0.0500		92.7	63.9-119			
Surrogate: 1,2-Dichloroethane-d4	*65.0*		*ug/L*	*62.5*		*104*	*70.3-123*			
Surrogate: Toluene-d8	*64.4*		*"*	*62.5*		*103*	*75.9-123*			
Surrogate: 4-Bromofluorobenzene	*60.9*		*"*	*62.5*		*97.4*	*83-123*			
LCS (9C02001-BS2)						Prepared: 03/02/2009 Analyzed: 03/02/2009				
Benzene	0.06	0.001	mg/L	0.0500		119	64.2-124			
Toluene	0.05	0.001	"	0.0500		105	63.9-119			

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Denver, Colorado 80211
303.433.1322 | Laboratory
303.265.9645 | Fax

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

Brian Dodek
Project Number: NEP0835.01
Project: Noble - Collins 14-20 5A

Volatile Organic Compounds by EPA Method 8260B - Quality Control

Origins Laboratory, Inc.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 9C02001 - EPA 5030B										
LCS (9C02001-BS2)						Prepared: 03/02/2009 Analyzed: 03/02/2009				
Surrogate: 1,2-Dichloroethane-d4	*64.5*		*ug/L*	*62.5*		*103*	*70.3-123*			
Surrogate: Toluene-d8	*63.2*		*"*	*62.5*		*101*	*75.9-123*			
Surrogate: 4-Bromofluorobenzene	*63.0*		*"*	*62.5*		*101*	*83-123*			
Matrix Spike (9C02001-MS1)		**Source: X902106-02**				Prepared: 03/02/2009 Analyzed: 03/02/2009				
Benzene	0.07	0.001	mg/L	0.0500	ND	132	64.2-124			QM-07
Toluene	0.06	0.001	"	0.0500	0.0005	114	63.9-119			
Surrogate: 1,2-Dichloroethane-d4	*64.6*		*ug/L*	*62.5*		*103*	*70.3-123*			
Surrogate: Toluene-d8	*61.1*		*"*	*62.5*		*97.7*	*75.9-123*			
Surrogate: 4-Bromofluorobenzene	*64.4*		*"*	*62.5*		*103*	*83-123*			
Matrix Spike (9C02001-MS2)		**Source: X902106-03**				Prepared: 03/02/2009 Analyzed: 03/02/2009				
Benzene	0.06	0.001	mg/L	0.0500	ND	121	64.2-124			
Toluene	0.05	0.001	"	0.0500	0.0004	99.1	63.9-119			
Surrogate: 1,2-Dichloroethane-d4	*68.5*		*ug/L*	*62.5*		*110*	*70.3-123*			
Surrogate: Toluene-d8	*59.6*		*"*	*62.5*		*95.4*	*75.9-123*			
Surrogate: 4-Bromofluorobenzene	*67.1*		*"*	*62.5*		*107*	*83-123*			
Matrix Spike Dup (9C02001-MSD1)		**Source: X902106-02**				Prepared: 03/02/2009 Analyzed: 03/02/2009				
Benzene	0.06	0.001	mg/L	0.0500	ND	117	64.2-124	12.2	25	
Toluene	0.05	0.001	"	0.0500	0.0005	95.9	63.9-119	17.2	25	
Surrogate: 1,2-Dichloroethane-d4	*65.0*		*ug/L*	*62.5*		*104*	*70.3-123*			
Surrogate: Toluene-d8	*58.9*		*"*	*62.5*		*94.2*	*75.9-123*			
Surrogate: 4-Bromofluorobenzene	*60.7*		*"*	*62.5*		*97.1*	*83-123*			
Matrix Spike Dup (9C02001-MSD2)		**Source: X902106-03**				Prepared: 03/02/2009 Analyzed: 03/02/2009				
Benzene	0.06	0.001	mg/L	0.0500	ND	120	64.2-124	0.316	25	
Toluene	0.05	0.001	"	0.0500	0.0004	97.7	63.9-119	1.39	25	
Surrogate: 1,2-Dichloroethane-d4	*69.5*		*ug/L*	*62.5*		*111*	*70.3-123*			

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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, Laboratory Manager

4640 Pecos Street | Unit C
Denver, Colorado 80211
303.433.1322 | Laboratory
303.265.9645 | Fax

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

Brian Dodek
Project Number: NEP0835.01
Project: Noble - Collins 14-20 5A

Volatile Organic Compounds by EPA Method 8260B - Quality Control

Origins Laboratory, Inc.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 9C02001 - EPA 5030B										
Matrix Spike Dup (9C02001-MSD2)		**Source: X902106-03**			Prepared: 03/02/2009 Analyzed: 03/02/2009					
Surrogate: Toluene-d8	*57.5*		*ug/L*	*62.5*		*92.0*	*75.9-123*			
Surrogate: 4-Bromofluorobenzene	*64.8*		*"*	*62.5*		*104*	*83-123*			

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Notes and Definitions

S-GC	Surrogate recovery outside of control limits. The data was accepted based on valid recovery of the remaining surrogate.
QM-07	The spike recovery was outside acceptance limits for the MS and/or MSD. The batch was accepted based on acceptable LCS recovery.
ND	Analyte NOT DETECTED at or above the reporting limit
RPD	Relative Percent Difference

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Noelle E Doyle, Laboratory Manager