APPLIED ENGINEERING, INC.
1161 Wayzata Blvd E., Ste #60
WAYZATA, MINNESOTA 55391
FAX # 952-939-0178
PH # 952-939-9095

May 31, 2017

Larry Rogers
AVP Energy LLC
7229 S. 85th E. Ave., Ste 400
Tulsa, OK 74133
sent via email: LRogers@LMROil.com

RE: Remedial Investigation Report; Richfield Sinclair, 7733 Portland Avenue South, Richfield, MN; AE# 6G28; MPCA Leak# 20238.

Larry,

Attached is a completed MPCA Remedial Investigation Report. In summary, Applied Engineering was at the referenced location to oversee the installation of Geoprobe soil borings and to perform related environmental work.

The results of our investigation are contained in the attached report along with our conclusions. Based on the results, we recommend no further action and MPCA file closure. However, our recommendation is subject to review by the MPCA.

Please call me if you'd like to discuss this further, 952-939-9095.

Thomas A. Greene

Applied Engineering, Inc.
Thomas A. Greene, P.E.

Atch: Report

cc: Andrew Eddy, MPCA Project Manager, sent via andrew.eddy@state.mn.us
Wayne Kewitsch, Richfield Fire Chief, sent via wkewitsch@richfieldmn.gov

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MPCA INVESTIGATION REPORT

Location:

Former Richfield Sinclair
7733 Portland Avenue South
Richfield, MN 55423

for

AVP Energy LLC
7229 S. 85th E. Ave., Ste 400
Tulsa, OK 74133

Applied Engineering Proj #6G28
MPCA Site Leak #20238

May 31, 2017

Minnesota Pollution Control Agency

Investigation Report Form

Guidance Document 4-06

Complete this form to document site investigation activities, including Limited Site Investigations (LSIs) and Remedial Investigations (RIs). Do not revise or delete any text or questions from this report form. Include any additional information that is important for making a site management decision. If only an LSI is necessary, some questions do not need to be answered and have been identified in the form. Highlighted text contains instructions and references to related guidance documents for that section or question. Refer to Minnesota Pollution Control Agency (MPCA) Guidance Document 1-01 *Petroleum Remediation Program General Policy* for the overall site investigation objectives and to other MPCA guidance documents for details on investigation requirements and methods.

MPCA Site ID: Leak# 20238 Date: May 31, 2017

Responsible Party Information

Name: AVP Energy LLC Phone #: 801-918-8125

Mailing Address: 7229 S. 85th E. Ave., Ste 400

City: Tulsa, OK Zip Code: 74133

Contact for Responsible Party: Larry Rogers Phone #: 801-918-8125

Leak Site Information

Leak Site Name: Former Richfield Sinclair Phone #: N/A

Leak Site Address: 7733 Portland Avenue S

City: Richfield Zip Code: 55423 County: Hennepin

Environmental Professional Information

By signing this document, I/we acknowledge that we are submitting this document on behalf of and as agents of the responsible person or volunteer for this leak site. I/we acknowledge that if information in this document is inaccurate or incomplete, it will delay the completion of remediation and may harm the environment and may result in a reduction in Petrofund reimbursement. In addition, I/we acknowledge on behalf of the responsible person or volunteer for this leak site that if this document is determined to contain a false material statement, representation, or certification, or if it omits material information, the responsible person or volunteer may be found to be in violation of Minn. Stat. § 115.075 (2007) or Minn. R. 7000.0300 (Duty of Candor), and that the responsible person or volunteer may be liable for civil penalties.

MPCA staff are instructed to reject unsigned reports and reports that have been altered.

Name and Title of Report Author(s)	Signature	Date Signed
Tim Musson, Proj Engineer		May 31, 2017

Name and Title of Report Reviewer(s)	Signature	Date Signed
Thomas Greene, Proj Manager		May 31, 2017

Name(s) of Field Technician(s): Tim Musson, Thomas Greene
Company and Mailing Address:

Applied Engineering, Inc.
1161 Wayzata Blvd E., Ste #60
Wayzata, MN 55391

Project Manager E-mail Address: tom@appliedengineeringusa.com
Phone: 952-939-9095
Fax: 952-939-0178

Emergency and High Priority Sites

A. Is an existing drinking water well impacted or likely to be impacted within a two-year travel time? ☐ *Yes* ☒ *No*

B. Is a hydrogeologically sensitive aquifer impacted that is tapped by water wells that are within 500 feet from the release source? **If *YES***, explain below. ☐ *Yes* ☒ *No*

C. Has the public water supply risk assessment concluded that the site is a high priority site with respect to a public water supply well (see Guidance Document 4-18 *Public Water Supply Risk Assessment at Petroleum Remediation Sites*)? ☐ *Yes* ☒ *No*

D. Is there an existing surface water impact as indicated by 1) a petroleum sheen on the surface water or 2) a petroleum sheen or volatile organic compounds in the part per million range observed in a ground water sample collected close to the surface water? ☐ *Yes* ☒ *No*

E. Has free product been detected at the site? **If *YES***, attach Guidance Document 2-03 *Free Product Recovery Report Worksheet* in Section 6. ☐ *Yes* ☒ *No*

F. Are there any existing field-detectable vapor impacts (photoionization detector, explosimeter, odors, etc.) to a receptor? ☐ *Yes* ☒ *No*

G. Did the vapor intrusion assessment detect contaminants in excess of acute intrusion screening values (see Guidance Document 4-01a *Vapor Intrusion Assessments Performed during Site Investigations*)? ☐ *Yes* ☒ *No*

If you answered ***YES*** to any of questions A through G above, describe below the actions taken to date to reduce or eliminate the risk posed by the release.

Section 1: Site Assessment

Site and Release Information

Complete Guidance Document 1-03a *Spatial Data Reporting Form*, Guidance Document 2-05 *Release Information Worksheet* if 3-02 *General Excavation Report Worksheet* was not completed, and include in Section 6.

1.1 Describe the land use and pertinent geographic features (e.g., topographic changes, surface waters, etc.) within 1,000 feet of the site. Illustrate these features using the Site Location Map,

aerial photographs, and Sanborn Fire Insurance Maps™ for the various time periods they are available in Section 4.

The land use within 1,000 feet of the site is a mixture of residential, commercial, interstate highway, and parklands. The area is generally level and there are no visible bodies of surface water. The Minnesota Department of Natural Resources (DNR) MN Topo depicts a general downward slope from north to south. The site is located between 840 feet to 846 feet above mean sea level.

1.2 Briefly describe the history of the site and any past site investigation work that may have been completed. If a Phase I or Phase II report has been prepared for this site, include a copy in Section 6.

A Draft Phase II Investigation Report dated 9/1/2016 was completed by Carlson McCain. According to their report, the site has been a retail gasoline station since 1962. The storage tanks facilitating these fueling operations were removed in 1990 and replaced with new tanks. Further information regarding tanks is shown in Table 1. During the time of tank removal / install, groundwater contamination was documented and reported to the MPCA – subsequently MPCA leak# 2572 was opened. The file was closed by the MPCA in September, 1992.

The results of the Phase II investigation detected DRO and GRO at SB-4, located between two hydraulic lifts inside the former service building. Laboratory groundwater detected concentrations for the DRO and GRO were 52,000 ppb and 666 ppb, respectively. A sub-slab soil gas sample, SS-1, was collected inside the building. All detected concentrations were below their respective 33x intrusion screening values (ISVs). The Phase II Investigation concluded that a new release to groundwater has occurred since 1992. In response, MPCA issued leak number 20238 and required additional investigation.

On December 8, 2016, Geoprobe soil borings were accomplished to conduct our MPCA limited site assessment.

This investigation report incorporates the results of both the Phase II Investigation accomplished by Carlson McCain, Inc. and the limited site investigation accomplished by Applied Engineering, Inc.

1.3 List other potential petroleum sources within 500 feet of the site and identify them on the Potential Receptor Map in Section 4.

The table below identifies potential petroleum sources within 500 feet of the site.

Site Name	Site Address	MPCA Leak	Status	ID*
Sinclair Retail	Subject	Leak 2572	Closed – Sept 1992 (included CAD Monitoring)	Subject
AVP Energy	Subject	Tank 1480	Active	Subject

107				
Elson Brothers Inc	7730 Portland Ave S	Leak 4800	Closed – Feb 1995	4
Elson Brothers Inc	7730 Portland Ave S	Tank 3176	Active	4
Richfield Health Care	7727 Portland Ave S	Tank 1885	Active	3
Gasport Amoco	7801 Portland Ave S	Leak 11122	Closed – April 2004	11

*Listed ID number corresponds to number on Potential Receptor Map

1.4 Describe the status of the tank system(s) including current and former tanks, piping, and dispensers. Summarize the status and characteristics of all past and present tanks in Table 1 and identify all components on a Site Map.

The MPCA database lists ten underground storage tanks associated with the property. Seven of these tanks, ranging in capacity from 560 to 6,000-gallons were removed from the property in 1990. These tanks were replaced with the three current 10,000-gallon gasoline tanks.

1.5 Briefly describe the known or suspected source(s) of the release and how it was discovered.

Carlson McCain, Inc. reported to the Minnesota State Duty Officer that during their September, 2016 Phase II investigation, contamination was discovered in a groundwater sample collected from a boring beneath the two hydraulic lifts. Detected DRO concentrations were 52,800 ppb. In response, the MPCA issued a leak site number to investigate the contamination.

1.6 When did the release occur (if known)? Unknown

1.7 What was the volume and type(s) of petroleum product released (if known)?
Unknown gallons Released product type(s): Unknown

When a tank has been excavated, refer to Guidance Documents 3-01 *Excavation of Petroleum Contaminated Soil and Tank Removal Sampling* and 3-02 *General Excavation Report Worksheet* for reporting requirements. If a tank has been excavated or if contaminated soil was removed for off-site treatment prior to this investigation, include Guidance Document 3-02 in Section 6.

1.8 Was soil excavated for off-site treatment? ☒ *Yes** ☐ *No*
* Soil was removed as part of the previous release investigation for leak #2572 based on the MPCA database (leak file closed in 1992)

Date(s) soil was excavated: 07/30/1990 Total volume removed: 269 cubic yards
Volume of total soil removed that was petroleum saturated: Unknown cubic yards

Soil treatment method:
☐ Land treatment
☐ Thermal treatment
☐ Composting/Biopiling
☐ Other ( )

Name and location of treatment facility: Unknown

If you checked "Other", describe how the soil was treated and attach applicable documentation at the end of the reporting form.

Site-Specific Geology and Hydrogeology

1.9 Discuss the soil borings drilled and provide rationale for their locations. Include boring logs in Section 6. Boring logs must include all the information required in Guidance Document 4-01 *Soil and Ground Water Assessments Performed during Site Investigations*.

Phase II Investigation:

Borings SB-1 through SB-4 were installed in or near locations best addressed by the recognized environmental conditions in the Phase I ESA. Specifically:

Boring SB-1 was installed at the current tank basin to define potential petroleum contamination at this location.

Boring SB-2 was installed to define potential contamination associated with a potential off-site source as addressed in the Phase II report.

Boring SB-3 was installed near the current dispenser islands to define potential contamination at this location. This boring also serves to assess the horizontal extent of contamination southwest of the lifts.

Boring SB-4 was installed inside the building, between the two hydraulic lifts. The purpose was to assess any potential petroleum contamination at this location, mainly attributed to leaking lifts.

LSI - Additional Investigation:

Borings GP-1 through GP-3 were installed around the hydraulic lift in order to determine the extent of groundwater contamination. Specifically:

Boring GP-1 was installed to assess the horizontal extent of contamination northwest of the lifts.

Boring GP-2 was installed to assess the horizontal extent of contamination northeast of the lifts.

Boring GP-3 was installed to assess the horizontal extent of contamination southeast of the lifts (down-gradient groundwater flow direction). GP-3 was also installed to define site stratigraphy.

As described under the Phase II investigation above, data from boring SB-3 was used to assess the horizontal extent of contamination southwest of the lifts.

Air-1 was installed to assess potential vapors adjacent to the on-site building

Air-2 was installed to assess potential vapors in the direction of the apartment building on the northern adjoining property.

1.10 Indicate the locations and depths of soil samples submitted for grain size analysis.

Samples were submitted for grain size analysis from boring GP-3 at depths of 26, 30, and 34 feet deep, the intervals considered most representative of estimated groundwater fluctuation.

1.11 Discuss in detail the site geology based on soil boring data, grain size analyses, cross sections, geologic logs of nearby water wells, and available published information. Include detailed descriptions of more porous lenses or stringers within tighter soil types.

Based on the previous report and this LSI investigation, the site lithology appears to be primarily fine-to-medium sands (poorly graded) and silty sands. The groundwater table was encountered between 28 and 32.1 feet during the Phase II and this LSI.

According to the Hennepin County Geologic Atlas, the soil in the area is of "Terrace deposits consisting of sand, gravelly sand, and loamy sand; overlain by thin deposits of silt, loam, or organic sediment". The depth to bedrock is depicted from 201 to 250 feet deep.

The following well information was identified on the Minnesota Department of Health Well and Boring Report database:

Two wells are listed for the address 616 78th Street East, the adjoining property to the east:

Domestic Well #222919 indicates "Drift" to a depth of 235 feet, underlain by the Shakopee formation. This well log contained very limited information.

Commercial Well #206262 shows sand and gravel to a depth of 64 feet, underlain by clay to 127 feet. A sand-gravel layer was again noted from 127 feet to 235 feet, which is underlain by the Shakopee formation.

The grain size analysis for the samples collected from 26 feet deep is classified as poorly graded sand; from 30 feet as poorly graded sand; and from 34 feet as silty sand.

The above sources of geologic information appear generally consistent with one another.

1.12 Discuss in detail the local and regional hydrogeology based geologic logs of nearby water wells and available published information.

According to the Hennepin County Geologic Atlas, the elevation of the regional groundwater table is approximately 820 feet. The surface elevation of the site (average) is approximately 843 feet, thus, the depth to groundwater is calculated to be approximately 23 feet below ground surface. This is generally consistent with field measurements collected during this Limited Site Investigation where the depth to groundwater is measured to be approximately 30 feet deep.

1.13 Discuss site ground water flow direction using soil boring data, monitoring well data if collected, plume geometry, and available published information.

According to the Hennepin County Geologic Atlas, the regional groundwater flow is to the southeast, toward the Minnesota River.

Groundwater measurements collected at the site during the Phase II and LSI ranged between approximately 28 feet to 32 feet deep. Based on the three boring survey measurements accomplished by Applied Engineering and interpolated LiDAR topographic data, an "order of magnitude" groundwater plume gradient was calculated using the EPA On-line tool for gradient calculation. The results indicate a flow direction of 155 degrees, or south-southeast, generally consistent with the direction indicated by the Hennepin County Geologic Atlas. However, the on-site gradient magnitude was calculated to be 0.01177 compared to an "across the region" calculation being 0.00173, a one order of magnitude difference. Thus, the on-site measurements appear to contain too much error to be valid.

1.14 Describe any evidence of a fluctuating water table or a seasonal high water table (e.g., mottling, saturated soil color or gleyed soils, monitoring well observations). Also, from other sources of information describe the range of natural water table fluctuations in the area.

No mottling, gleyed soils, or other indicators of water table fluctuation were observed in the soil boring samples.

No other sources of information are identified and readily available that indicate the range of natural water table fluctuations in the area. The DNR's Cooperative Groundwater Monitoring web site was checked, however there were no "Water Table" locations identified nearby.

Extent and Magnitude of Soil Contamination

1.15 Were soil borings conducted in or adjacent to the following source areas?

Dispensers	☒ *yes*	☐ *no*	☐ *not present*	Piping	☒ *yes*	☐ *no*	☐ *not present*
Transfer areas	☐ *yes*	☐ *no*	☒ *not present*	Remote fill pipes	☐ *yes*	☐ *no*	☒ *not present*
UST basins	☒ *yes*	☐ *no*	☐ *not present*	Valves	☐ *yes*	☐ *no*	☒ *not present*
AST basins	☐ *yes*	☐ *no*	☒ *not present*	Known spill areas	☐ *yes*	☐ *no*	☒ *not present*

*Borings conducted at some, but not all dispensers, piping runs, and tank basins

1.16 Horizontal Definition: Based on requirements described in Guidance Document 4-01, were a sufficient number of soil borings completed to define the horizontal extent of soil contamination in all directions? ☒ *Yes** ☐ *No*

* Due to utility impediments, a soil boring could not be completed near the southwest corner of the building. However, data for this area was available from the Phase II investigation.

1.17 Vertical Definition: Based on requirements described in Guidance Document 4-01, were all soil borings completed to the required depth? ☐ *Yes* ☒ *No**

*Refusal was encountered in GP-1 at 31.5 feet. The groundwater level measurement at this location is 31.10 feet.

1.18 Site Stratigraphy: Based on requirements described in Guidance Document 4-01, was the stratigraphy boring completed to the required depth? ☒ *Yes* ☐ *No*

If you answered ***NO*** to any of the four previous questions, explain why the borings were not conducted in the required locations or to the required depths. See Guidance Document 4-01 *Soil and Ground Water Assessments Performed during Site Investigations* regarding exceptions and MPCA approval for depth of drilling.

1.19 Describe the vertical and horizontal extent and magnitude of soil contamination based on field observations, soil headspace measurements (Table 2), and soil analytical results (Tables 3 and 4). If non-petroleum contaminants are present, discuss the possible sources of these compounds. Provide a map and two cross sections that illustrate both soil headspace and laboratory analytical results in Section 4. Include laboratory analytical reports and soil sampling methodology in Section 6.

Soil boring SB-4 was the "worst case" boring installed near the two lifts during the Phase II investigation by Carlson McCain, Inc. DRO-impacted groundwater was detected in that boring; however, no petroleum-impacted soil was detected by the laboratory in that boring.

Applied Engineering's LSI follow-up field analysis and laboratory analysis in the outlying borings were all non-detect, except for soil boring GP-1 to the northwest. In that boring, DRO soil concentrations of 13.9 ppm were detected just beneath the groundwater.

That detection was in an area identified by Carlson McCain as the "Former Tank Basin", therefore it is likely the DRO detection was residual contamination from the former tanks, and presumably not contamination associated with the lifts.

1.20 Is contaminated soil in contact with ground water? ☒ *Yes* ☐ *No*

The 13.9 ppm concentration of DRO in GP-1 is located beneath the groundwater table.

If *YES*, or if ground water contamination appears likely, then complete the **Aquifer Determination** section below.

If *NO*, complete question 1.21.

1.21 a) What is the distance separating the deepest contamination from the surface of the water table?
feet

b) Was this distance measured during site activities, referenced from geologic information, or estimated based on professional opinion during a site visit?

c) In your judgment, is there a sufficient distance separating the petroleum contaminated soil from the underlying aquifer to prevent contamination of the aquifer? ☐ *Yes* ☐ *No*

Please explain in detail. In your explanation, consider the site-specific geology, the data in this section, and the nature of the petroleum release (i.e., volume, age, released product type).

If *YES*, the **Aquifer Determination** is not necessary as part of the LSI.

If *NO*, complete the **Aquifer Determination** section below.

1.22 Is contaminated surface soil (0-2 feet) present at the site? ☐ *Yes* ☒ *No*

If *YES*, delineate the extent of contaminated surface soil, identify the extent(s) of contaminated surface soil on a Site Map, and propose a corrective action in Section 3 to mitigate the impacts. If borings were used to define the extent, complete Table 5. See Guidance Document 3-01 *Excavation of Petroleum Contaminated Soil and Tank Removal Sampling* for more information regarding contaminated surface soil identification, delineation, and excavation.

Aquifer Determination

Complete this section if ground water has been contaminated or may become contaminated based on questions 1.20 and 1.21. Aquifer determination is made during the LSI. It is based upon the stratigraphy and a hydraulic conductivity measurement calculated from grain size analyses. The site stratigraphy gives the context within which the hydraulic conductivity measurement can be interpreted. Please refer to Guidance Document 4-01 *Soil and Ground Water Assessments Performed during Site Investigations* for methods and requirements. Provide the results of grain size analyses, calculations, and other information used for the determination of hydraulic conductivity in Section 6. Determine the aquifer thickness (b) from geologic logs of soil borings, water well logs, and available published information.

1.23 Calculate an average hydraulic conductivity value (K). K = K = 28.35 to 0.2835 ft/day

Indicate the calculation method (e.g. Hazen, Masch and Denny, Kozeny-Carmen, etc.).

Based on grain sizes falling outside of the Hazen parameters (D60/D10 is >5, or the range of D10 particles is outside of 0.1-3.0 mm), the use of the Hazen is not appropriate and instead, tabulated values were used to determine hydraulic conductivity (K).

The value K was obtained from Principle of Foundation Engineering, 5E, Das, 2004. The value listed refers to fine sand, silty sand.

1.24 Calculate a range for aquifer transmissivity (T) using the equation T = Kb, where b is the thickness of the aquifer.
T_{High} = 2,750 ft^2/day
T_{Low} = 27.50 ft^2/day

If the transmissivity of a contaminated hydrogeologic unit is greater than 50 ft^2/day, it is considered an aquifer for the purpose of the Petroleum Remediation Program. If the hydrogeologic unit meets the definition of an aquifer, then monitoring wells are required if any of the following conditions are met: 1) ground water is impacted at or above Minnesota Department of Health (MDH) Health Risk Limits (HRLs) or 1,000 µg/L GRO or DRO; 2) ground water is impacted below the HRLs but levels are likely to reach the HRLs; or 3) there is an insufficient distance separating the petroleum contaminated soil (or an impacted non-aquifer) from an underlying aquifer. If monitoring wells were installed complete the **Aquifer Characterization** section below as part of an RI.

Aquifer Characterization

1.25 Discuss the drilling and installation of monitoring wells including the rationale for their locations. Summarize their construction in Table 9. Attach boring logs, well construction diagrams, and well logs in Section 6.

Monitoring wells were not installed as part of the LSI; however, the Phase II Investigation depicts monitoring wells that were formerly located on the site; also, the well search identified eight sealed monitoring wells at the site address. Well logs indicate they were installed in November, 1990 and January, 1991.

1.26 Is there a clean or nearly clean (below HRLs) downgradient monitoring well located along the longitudinal axis of the contaminant plume (approximately 20 degrees plus or minus the axis)? SB-1, GP-3 ☒ *Yes* ☐ *No*

1.27 Is there a worst case well completed through the source area(s) of the release? SB-4 ☒ *Yes* ☐ *No*

If you answered ***NO*** to any of the above two questions, please explain why a well was not completed in the required location.

1.28 Provide an estimate of the longitudinal length of the dissolved contaminant 40 feet

plume:

1. 29 Calculate ground water flow velocity (based on Darcy's Law) using the average hydraulic conductivity (K), average horizontal hydraulic gradient (dh/dl), and effective porosity (n). Provide documentation and show calculations in Section 6.

Hydraulic conductivity (K) = 28.35 to 0.2835 ft/day
(Method if different than that used in 1.23:)
Porosity (n) = 0.13 method/reference McWorter and Sunada (1977)
Average horizontal gradient (dh/dl) = 0.00173 (unitless)
Calculated ground water velocity (v) = 0.00377 ft/day to 0.377 ft/day

1.30 Using the calculated ground water flow velocity from question 1.29, is there a receptor(s) located within a five-year travel time from the source area? ☐ *Yes* ☒ *No*

If *YES*, describe the location and type of receptor(s).

1.31 Were any deep monitoring wells completed at the site? ☐ *Yes* ☒ *No*

Deep monitoring wells were not installed as part of this investigation. It is unknown whether deep wells were installed on the site during the previous MPCA investigation.

If *YES*, list them and indicate their depths:

Contact the MPCA project hydrologist before installing a deep monitoring well. A deep monitoring well **may** be necessary if: 1) contamination exists more than 10 feet below the water table or 2) the impacted aquifer is a drinking water aquifer or is hydraulically connected to the aquifer(s) presently used by a water supply well located within 500 feet of the release source.

If contamination is present at depth in the aquifer or in deeper aquifers, additional deep wells may be required. Provide the following information if deep wells were installed:

Vertical gradient (dv/dl)
Inferred ground water flow direction

Provide the following information for the deep aquifer unit if it appears to be hydrogeologically distinct from the upper unit.

Porosity (n):
Hydraulic conductivity (K) ft/day

Submit this RI report after completing a minimum of *two quarterly sampling events*. Quarterly ground water monitoring and sampling should continue until MPCA response is received.

Extent and Magnitude of Ground Water Contamination

1.32 Describe the extent and magnitude of ground water contamination based on the analytical results of samples collected as part of an LSI (Tables 6, 7, and 8) and, if applicable, monitoring well samples collected as part of an RI (Tables 10, 11, and 12). Provide Site Maps that illustrate both the laboratory analytical results and, if applicable, ground water gradients in Section 4.

The extent of groundwater contamination appears to be limited to SB-4. All other groundwater sample results from outlying borings were non-detect for petroleum contamination.

1.33 If non-petroleum contaminants are present, discuss the possible sources of these compounds.

1.34 Provide a discussion on QA/QC, including information on the samples collected and laboratory analyses performed. Include laboratory analytical reports and ground water sampling methodology in Section 6.

The samples were collected following prescribed MPCA guidelines as described in Appendix G. There were no known deviations to the prescribed guidelines between sample collection and relinquishment to the laboratory.

Based on review of the laboratory reports, fixed base laboratory control samples (LCS) and lab control samples duplicate (LCSD) results in general appear to adequately meet method criteria, i.e., process extraction was ideal, neither biased high nor low.

1.35 Laboratory certification number:

Pace Analytical, MN Certification # 027-053-137

Evaluation of Natural Attenuation

Refer to the Guidance Document 4-03 *Assessment of Natural Attenuation at Petroleum Release Sites.*
Note: Evaluation of natural attenuation is not required unless requested by MPCA staff.

1.36 Discuss the results of the natural attenuation assessment (Table 13). Specifically, compare the concentrations of the inorganic parameters inside and outside the plume and whether the data indicate natural biodegradation is occurring at the site.

1.37 If active remediation is anticipated, discuss reasons why natural attenuation (including biodegradation) can not adequately remediate the contaminants to acceptable risk levels.

Extent and Recovery of Free Product

If free product is encountered during the investigation, include Guidance Document 2-03 *Free Product Recovery Report Worksheet* in Section 6. See Guidance Document 2-02 *Free Product: Evaluation and Recovery* for additional information.

1.38 If free product was encountered during the site investigation, describe the work completed to delineate the extent of the free product zone and what efforts were or are being completed to recover it. Tabulate the volume of product recovered in Table 14. Illustrate the estimated horizontal extent of the free product zone on a Site Map in Section 4.

Section 2: Risk Assessment

Well Receptors

List all properties located within 500 feet of the site in Table 15. Identify all properties listed in Table 15 on the Potential Receptor Map in Section 4.

List all wells located within 500 feet of the site and any municipal or industrial wells within ½ mile in Table 16. All water wells within 500 feet of the release source must be listed even if construction information was not obtained or available. Include all available water supply well logs obtained from Minnesota Geological Survey, MDH, drillers, or county well management authorities, and any other well construction documentation in Section 6. Identify all wells listed in Table 16 on the Well Receptor Survey Map in Section 4.

2.1 Were all property owners within 500 feet of the site successfully contacted to determine if water wells are present? ☒ *Yes* ☐ *No*

All addresses within 500 feet of the site were mailed letters requesting a response if a water well is present at the address. Non-responses and non-deliverable returned letters are assumed verification that no wells are on-site.

If *NO*, please explain.

2.2 Discuss any physical limitation to the inspection of properties within the 500-foot survey radius.

The physical inspection was limited to what was readily visible on the properties from the public street and cannot account for wells blocked by structures, vegetation, or other obstructions on the property. The survey relies more on city water billing records, the county well index, and mailed requests to fulfill the survey requirements.

2.3 Discuss the results of the ground water receptor survey. Comment on the risks to water supply wells identified within 500 feet from the site as well as the risk posed by or to any municipal or

industrial wells found within ½ mile. Specifically indicate whether identified water supply wells use the impacted aquifer. (Note: an impacted aquifer separated from another aquifer by a clay lens may not be considered a separate aquifer).

Two wells (one commercial (206202), one domestic (222919)) are identified as "Active" in the MDH Minnesota Well Index on the adjoining property to the east, within 500 feet of the release area. The owner of the property was contacted regarding the two wells. He said the wells are not being used for drinking or any other use. The owner was not aware the wells existed on his property.

Assuming worst-case, that the wells are somehow in use, the risk appears not to be significant as both are documented to be 245 feet deep, in the Prairie Du Chien aquifer, beneath a clay layer and significantly deeper than the impacted groundwater.

Additionally, one "active" commercial well (204968) is identified approximately 0.3 miles east-southeast of the release at 815 78th St E. It appears to be in the same aquifer as the release. The name of the well is "Stadium Bowl", the name of a bowling alley at the that address. The bowling alley appears on an aerial photo in 1979, but is gone in the next photo dated 1991. According to the city of Bloomington water billing department, the current building at that address is a "Denny's" restaurant, and it has three billing water meters: domestic water, irrigation water, and fire suppression water. Therefore, it's likely this well is unused / abandoned / sealed. Even if the well might be used by some unknown entity, based on the non-detect groundwater concentrations in the down-gradient boring and the distance separating the well from the release area, the risk to this well would appear not to be significant.

2.4 If water samples were collected from nearby water wells, discuss the analytical results below and tabulate them in Tables 11 and 12.

2.5 Is municipal water available in the area? ☒ *Yes* ☐ *No*

2.6 Based on the public water supply risk assessment, is the site located in a Source Water Assessment Area or Drinking Water Supply Management Area (see Guidance Document 4-18 *Public Water Supply Risk Assessment at Petroleum Remediation Sites*)? ☒ *Yes* ☐ *No*

If *YES*, provide the name of the area and include the required documentation in Section 6.

Bloomington and Richfield OPCJ

2.7 Are there any plans for ground water development in the impacted aquifer within ½ mile of the site or one mile downgradient of the site if the aquifer is fractured? ☐ *Yes* ☒ *No*

Provide the name, title and telephone number of the person that was contacted for this information.

Name: Russ Lupkes Title: Utility Superintendent Tel: (612) 861-9164

Surface Water Receptors

2.8 Are there any surface waters or wetlands located within ¼ mile of the site? ☐ *Yes* ☒ *No*

If *YES*, list them along with their distance and direction from the site in Table 17.

Also, list below any potential pathways such as ditches, drain tiles, storm sewers, etc., that may lead to the identified surface water features.

2.9 If surface water is present downgradient of the site, is there a clean downgradient soil boring or monitoring well located between the site and the surface water? ☐ *Yes* ☐ *No* ☒ *NA*

If *YES*, identify the clean downgradient boring or well, distance to the surface water feature, and discuss the contamination risk potential.

If *NO*, and ground water from a downgradient boring or well is contaminated, we assume that contamination discharges to the surface water. Therefore, provide the following information:

Name of receiving water:	
Plume width, (W):	feet
Plume thickness, (H):	feet
Hydraulic conductivity, (K):	gal/day/ft^2
Horizontal gradient, (dh/dl):	(unitless)
Discharge, (Q) = H*W*K*(dh/dl)/1440	gal/min

Utilities and Subsurface Structures

2.10 Compare the relationship between the distribution of contaminant phases (soil, ground water, vapor, and non-aqueous phase liquid) to the location of all underground utility lines, utility service lines, and nearby basements and sumps. Include all identified utilities in Table 18. Show all utilities, utility service lines, and other subsurface structures on applicable cross sections in Section 4.

UTILITY LOCATIONS

The water service and sewer service enter the building on the west and south sides respectively. A natural gas utility enters the building at the southwest corner.

A water main, sanitary sewer, and storm sewer are located along Portland Avenue. These utilities are located approximately 75 feet to 100 feet west of SB-4.

CONTAMINANT DISTRIBUTION

The detected petroleum at SB-4 appears to be limited to that boring area. Groundwater sampling shows that the "plume" appears stable as the downgradient groundwater sample at GP-3, approximately 45 feet southeast of SB-4, did not show any petroleum contamination.

Residual contamination is potentially present in the area of the former tanks and boring GP-1, located northwest of the hydraulic lifts. The soil sample collected from this location had a DRO concentration of 13.9 ppm. This soil sample was collected beneath the groundwater table at 31.5 feet deep. No contamination was found in the groundwater sample collected from the boring.

IN SUMMARY

Based on the proximity of the utility services, apparent age of the release, natural sandy and silty sand beneath the groundwater table and sandy soils, and the absence of an elevated or perched groundwater table - the underground utilities and utility trenches would not appear to be significant vapor pathways.

2.11 Is there any evidence that free product or contaminated ground water may be traveling off site within the utility corridors? ☐ *Yes* ☒ *No*

If *YES*, a utility backfill investigation is required (refer to Guidance Document 4-01). Discuss the investigation rationale and results.

2.12 Is there a history of field-detectable vapor impacts in the vicinity of the site? ☐ *Yes* ☒ *No*

If *YES*, describe:

Conduct a vapor survey if the vapor receptor survey and risk evaluation indicate a risk of vapor impact or an infiltration risk from contaminated ground water or free product to utilities or subsurface structures. See Guidance Document 4-02 *Potential Receptor Surveys and Risk Evaluation Procedures at Petroleum Release Sites*. Identify all vapor monitoring locations on the Vapor Survey Map by labeling each monitoring location with a number that corresponds to vapor monitoring locations listed in Table 19. Vapor monitoring methods, including instruments used, must be discussed in Section 6.

2.13 Provide a detailed description of each vapor monitoring location and indicate if vapors were detected.

NA

Vapor Intrusion Receptors

When vapor intrusion receptors are present, a preliminary vapor intrusion risk assessment must be completed (see Guidance Document 4-01a *Vapor Intrusion Assessments Performed during Site Investigations*). If completed, include the Vapor Intrusion Assessment Map in Section 4 that identifies all vapor intrusion samples and receptors at and within the 100-foot preliminary assessment area.

2.14 Was a preliminary vapor intrusion risk assessment completed? ☒ *Yes* ☐ *No*

If *NO*, explain why.

2.15 Do any of the soil gas samples from locations near inhabited buildings exceed the ISVs by ten times (10X) for petroleum related compounds? ☐ *Yes* ☒ *No*

If you answered ***YES***, is additional characterization of the vapor intrusion pathway needed for these buildings (e.g. sub-slab soil gas, an indoor building survey, or indoor air sampling)? **If *YES***, complete question 3.4. **If *NO***, explain why. ☐ *Yes* ☐ *No*

2.16 Have sufficient data been collected to propose a Conceptual Corrective Action Design for buildings that are likely to be impacted by petroleum vapors? ☐ *Yes* ☐ *No*

N/A

If *YES*, describe your justification for corrective action.

2.17 Based on the horizontal extent of impacted ground water or free product from the release, is additional soil gas sampling required beyond the 100-foot preliminary assessment area near inhabited buildings? ☐ *Yes* ☒ *No*

If *YES*, describe your proposal for additional vapor intrusion sampling.

If *NO*, explain why.

In consideration of the diminished concentrations detected in the two borings, the migration of vapors in the soil at this site appears to be limited and therefore the horizontal extent of the vapor migration appears to be adequately defined by those borings already installed.

2.18 Were recommended field sampling procedures and laboratory QA/QC from Guidance Document 4-01a followed? ☒ *Yes* ☐ *No*

If *NO*, explain why and discuss implications on data quality.

Site Conceptual Model Discussion

2.19 Provide a detailed site conceptual model (SCM). The SCM should integrate site-specific geology, hydrogeology, and the contaminant distribution with respect to identified exposure pathways (well receptors, surface water receptors, utilities and subsurface receptors, and vapor intrusion receptors). For additional information on SCM development, see Guidance Document 1-01 *Petroleum Remediation Program General Policy*.

The site geology is generally characterized as poorly graded sands with silty sands with a depth to groundwater of approximately 30 feet below ground surface. Local sources depict the regional groundwater flow to the southeast, toward the Minnesota River.

The general horizontal and vertical extent of the identified release is as follows:

The release appears to be horizontally limited to the groundwater beneath SB-4, as surrounding groundwater samples do not show signs of contamination. No soil contamination was documented from headspace or analytical samples collected at SB-4; thus, the release appears to be limited to the groundwater only, at a depth of approximately 30 feet deep.

"Worst-case" / source boring SB-4 is located down-gradient and approximately 26 feet southeast from the former tank / release source area (investigated under MPCA leak number 2572; file closure in 1992). The detection may have been due to petroleum from the former tank area migrating in the southeast direction toward the lifts.

Well Receptors were identified within 500 feet and ½ mile of the release. Identified well receptors within 500 feet include domestic well 222919 and commercial well 206262. Groundwater samples collected between the release area and these two wells, did not show signs of petroleum contamination. These well receptors appear to not be at risk of being impacted by the release. Identified receptors between 500 feet and ½ mile include commercial well 204968 as discussed in previous section 2.3. Based on that discussion along with the limited size of the estimated release area and groundwater velocity calculations, the risk to commercial well 204968 does not appear significant.

Surface Water Receptors were not identified.

Underground utilities were identified. Identified utilities and subsurface receptors include service for sanitary sewer, water, and natural gas. Identified utilities also include a sanitary sewer main, water main, and storm sewer. Based on the lateral distance and general upgradient direction (with respect to groundwater flow) and vertical separation from the groundwater table – these utilities appear to not be at risk of being impacted by the release.

Two vapor intrusion receptors were identified within 100 feet of the release. These receptors include the site building and the apartment building on the adjacent property to the north. Laboratory analysis of the soil gas sample collected near the on-site building did not detect any petroleum concentrations exceeding the 33x industrial intrusion screening value (ISV).

Laboratory analysis of the soil gas sample collected along the northern property boundary closest to the apartment building, did not detect any petroleum concentrations exceeding the 33x residential ISV. Therefore, these vapor intrusion receptors appear not to be at risk of being impacted by the release.

2.20 Discuss any other site concerns not included in the above discussion

Presumably, the former release investigation conducted for MPCA leak # 2572 also addressed the various receptors identified in this report and are consistent with our findings.

Section 3: Site Management Decision

The site management decision should be based on the Program's objectives described in Guidance Document 1-01 *Petroleum Remediation Program General Policy*.

3.1 Recommendation for site:

- ☒ site closure
- ☐ additional ground water monitoring
- ☐ additional field-detectable vapor monitoring
- ☐ additional soil gas/vapor intrusion investigation
- ☐ corrective action

3.2 If closure is recommended, summarize significant investigative events and describe how site-specific exposure pathways identified in question 2.19 have been adequately addressed.

Four soil borings and one soil gas sample were accomplished in the Phase II accomplished by Carlson McCain, Inc; additionally, this LSI included three Geoprobe soil borings and two soil gas borings. The data from both investigations were used to assess the release area near the hydraulic lifts.

This investigation has shown that the release area is very limited. Outlying groundwater samples and soil samples in connection with the presumed release do not show signs of contamination. The 13.9 ppm DRO concentration was detected in the former tank basin, which has presumably already been investigated and file closed by the MPCA. Therefore, it is our recommendation for no further investigation.

All soil gas vapor intrusion levels are below their corresponding Industrial / Residential ISV ranges.

3.3 If additional ground water or field-detectable vapor monitoring is recommended, indicate the proposed monitoring locations, sampling frequency, and target analytes. Conduct quarterly ground water monitoring and sampling until the MPCA responds to this report.

N/A

3.4 If additional vapor intrusion investigation is recommended, provide details of proposed activities such as completing an indoor building survey, sub-slab vapor sampling, indoor air sampling, or locations for additional soil gas sampling.

N/A

3.5 If corrective action is recommended, provide a conceptual approach by completing Guidance Document 4-19 *Conceptual Corrective Action Design Worksheet* and include in Section 6. See Guidance Document 4-10 *Elements of the Corrective Action Design* for more information on the corrective action design process and other requirements. (Note: MPCA staff will review this report at a higher-than-normal priority to determine if corrective action is required.)

N/A

Section 4: Figures

Attach the following figures in order of discussion in the text. All figures must include a north arrow, scale, and legend. Approximate scales are not acceptable.

☒ Site Location Map using a U.S. Geological Survey 7.5 minute quadrangle map.

☐ Aerial photos and Sanborn Fire Insurance Maps™ (if available) of the immediate area.

☒ One or more Site Maps showing:
- Structures
- Locations and depths of on-site buried utilities
- All past and present petroleum storage tanks, piping, dispensers, and transfer areas
- Extent of soil excavation
- Boring and well locations (including any drinking water wells on site)
- Horizontal extent of soil contamination
- Extent of contaminated surface soil
- Horizontal extent of ground water contamination
- Horizontal extent of NAPL
- Location of end points for all geologic cross sections
- Potential pathways that lead to surface water features within ¼ mile of the site

Distinguish sequential elements of investigations by dates, symbols, etc. in the key.

☒ At least two (2) geologic cross sections depicting stratigraphy, soil headspace results, laboratory analytical results, water table elevation, and underground utilities.

☐ Ground water gradient contour maps (for sites with monitoring wells) for each gauging event.

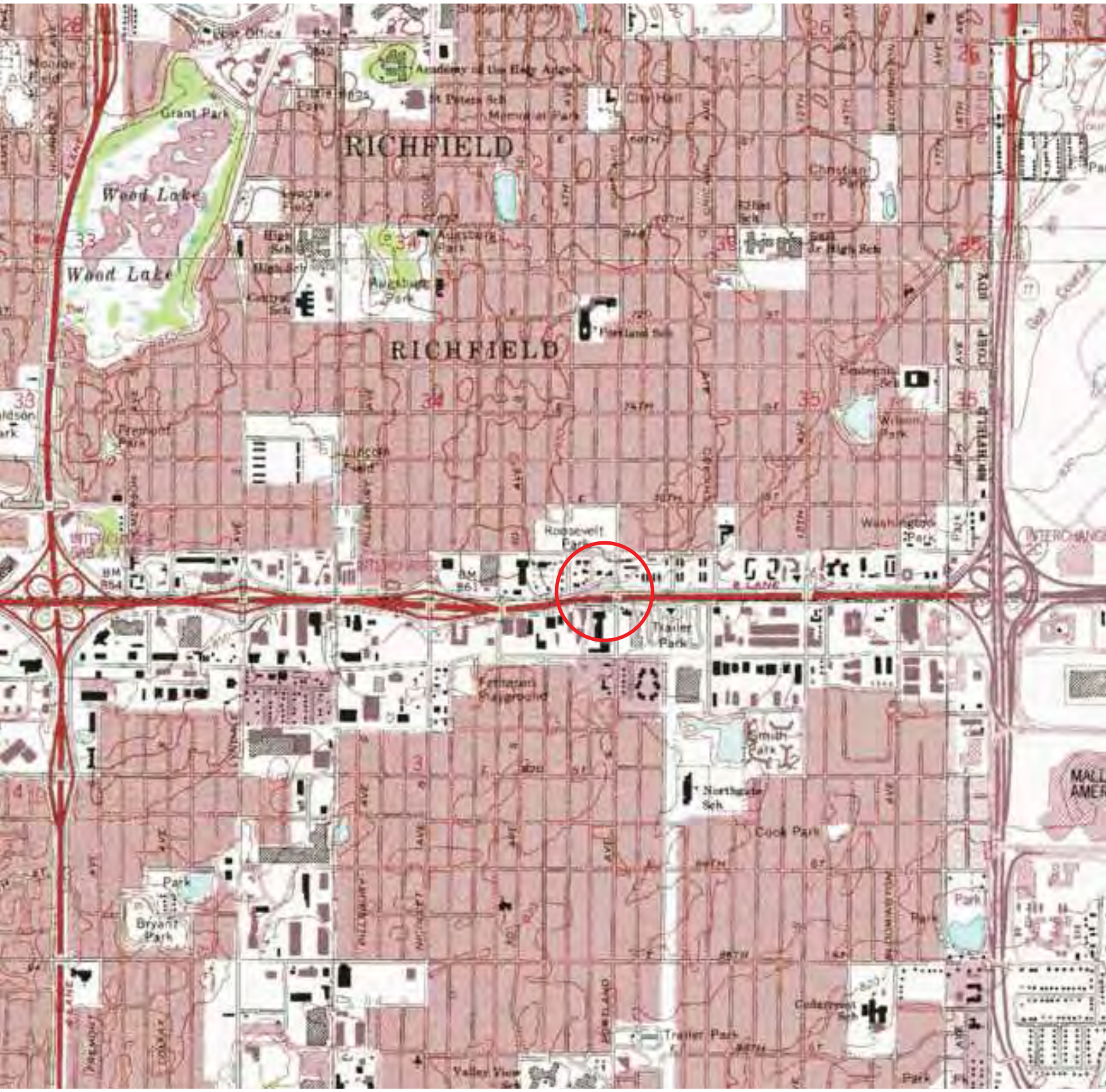
☒ Potential Receptor Map (scale 1 inch = 50 to 100 feet), centered on the release area, showing property boundaries and roads, and potential receptors such as buildings, water wells, underground utilities (distinguish between water, storm sewer, and sanitary sewer), surface waters, ditches, and any other pertinent items within 500 feet of the release source.

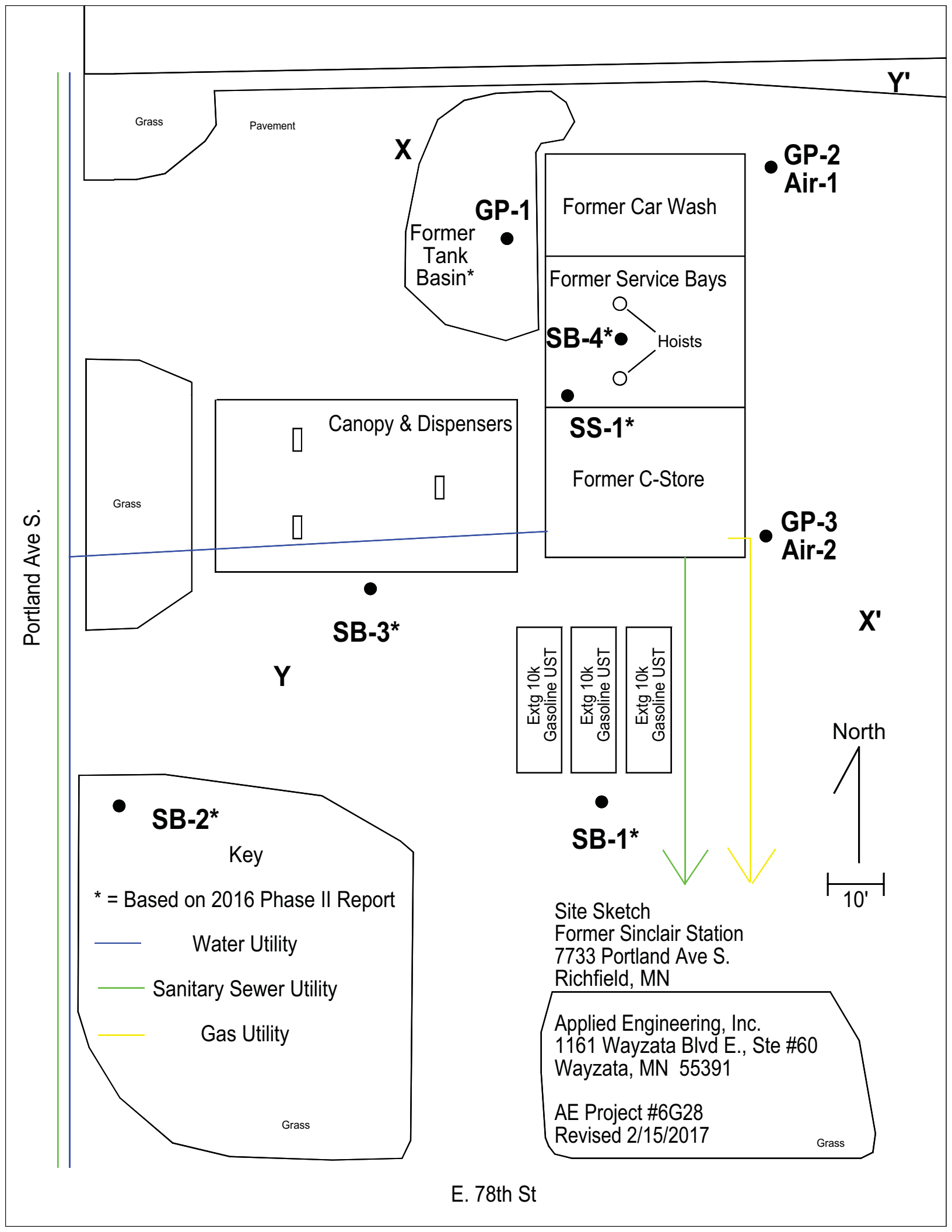
☒ Well Receptor Survey Map showing ½-mile radius, 500-foot radius, water supply wells, and other potential sources of contamination on a U.S. Geological Survey 7.5 minute quadrangle map.

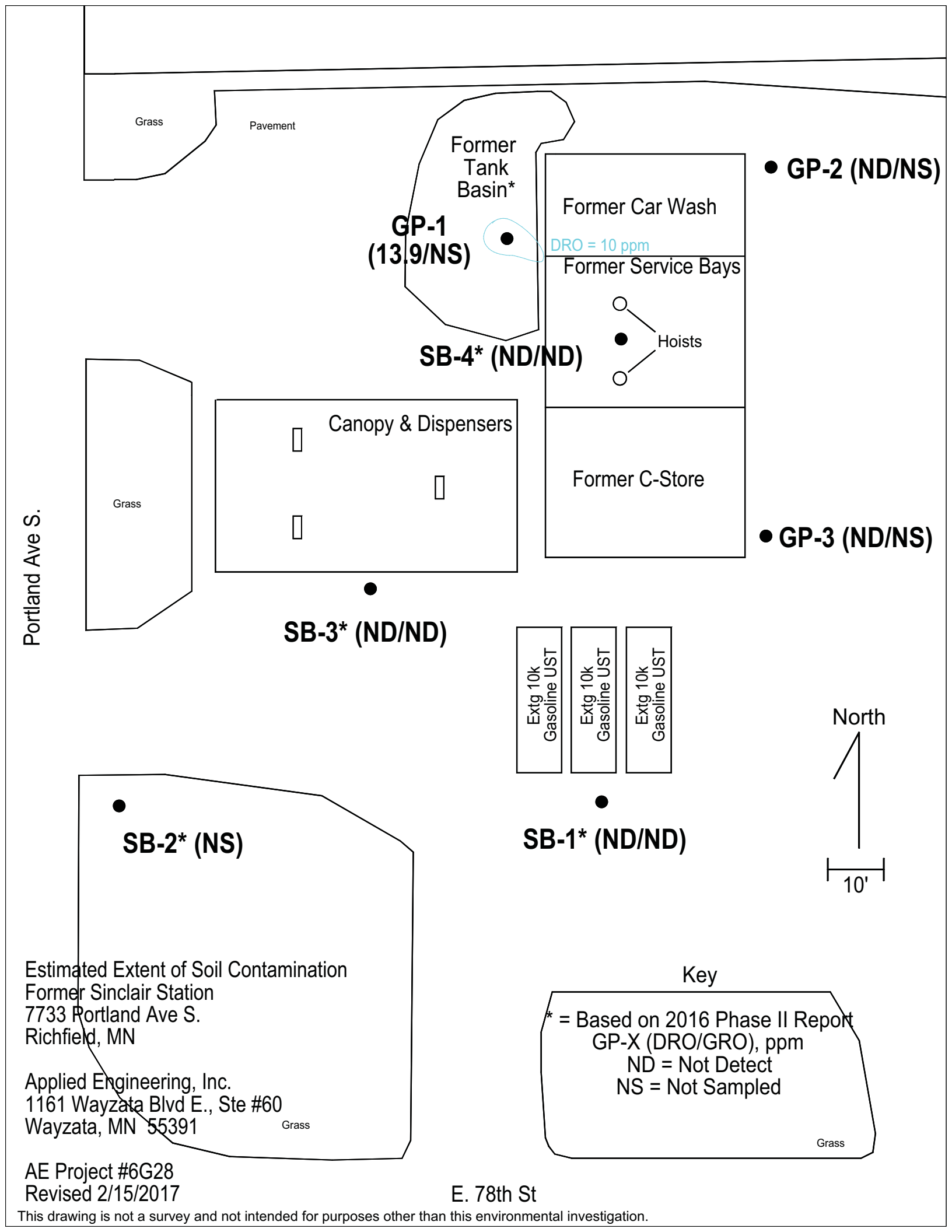
☐ Vapor Survey Map showing utilities and buildings with basements and monitoring locations within 500 feet (if a survey was required). If the survey area has been expanded beyond 500 feet, adjust the map to encompass the entire surveyed area.

☒ Vapor Intrusion Assessment Map showing all vapor intrusion samples and receptors at and within the 100-foot preliminary assessment area. If the assessment area has been expanded beyond 100 feet, adjust the map to encompass the entire assessment area.

Site Location Map



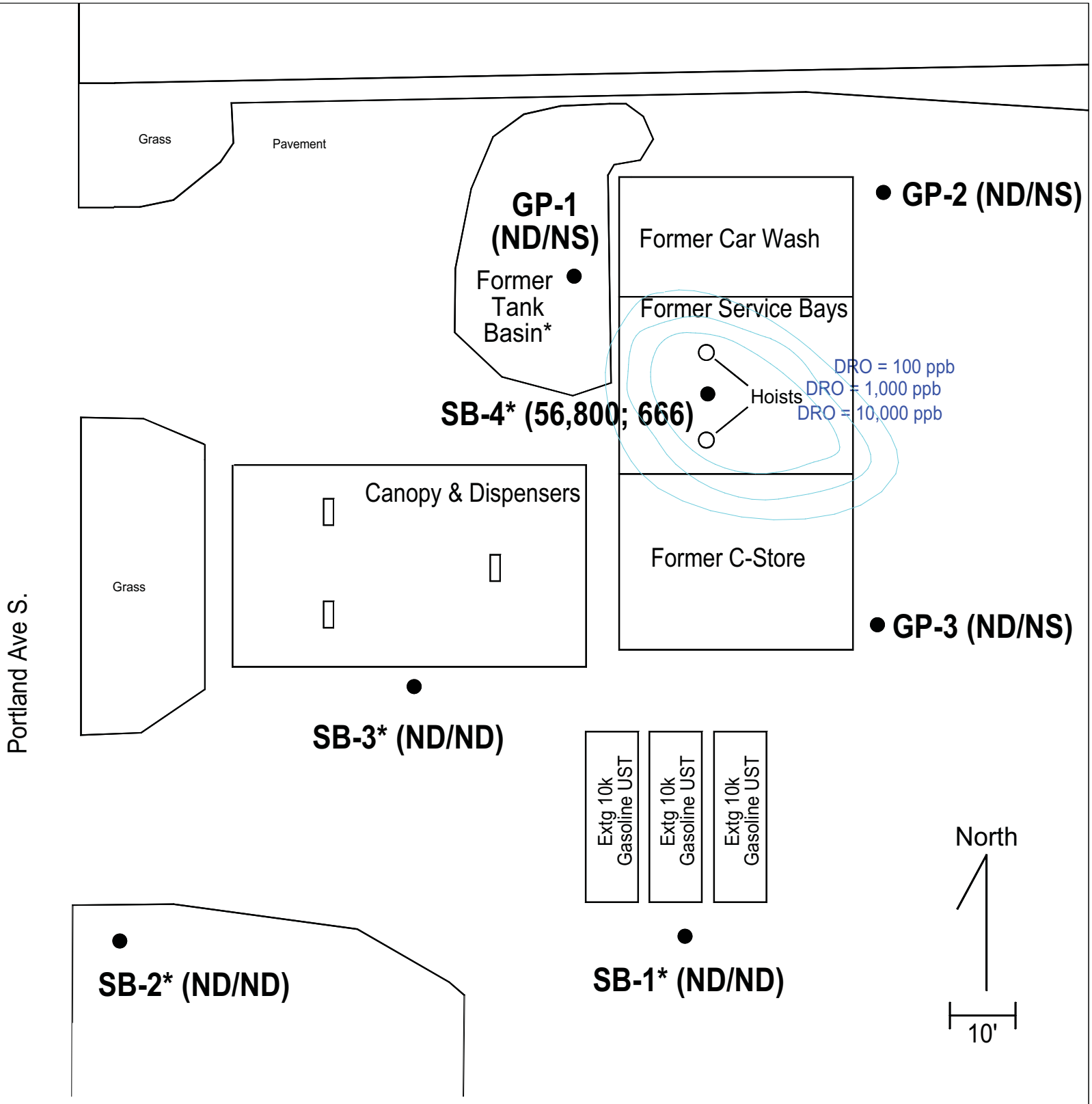

Y'
Grass
Pavement
X
GP-1
Former Tank Basin*
GP-2
Air-1
Former Car Wash
Former Service Bays
Hoists
SB-4*
SS-1*
Former C-Store
Canopy & Dispensers
Grass
GP-3
Air-2
X'
SB-3*
Y
Extg 10k Gasoline UST
Extg 10k Gasoline UST
Extg 10k Gasoline UST
North
10'
SB-1*
SB-2*
Key
* = Based on 2016 Phase II Report
Water Utility
Sanitary Sewer Utility
Gas Utility
Grass
Site Sketch
Former Sinclair Station
7733 Portland Ave S.
Richfield, MN
Applied Engineering, Inc.
1161 Wayzata Blvd E., Ste #60
Wayzata, MN 55391
AE Project #6G28
Revised 2/15/2017
Grass
Portland Ave S.
E. 78th St



Estimated Extent of Soil Contamination
Former Sinclair Station
7733 Portland Ave S.
Richfield, MN

Applied Engineering, Inc.
1161 Wayzata Blvd E., Ste #60
Wayzata, MN 55391

AE Project #6G28
Revised 2/15/2017



Estimated Extent of Groundwater Contamination
Former Sinclair Station
7733 Portland Ave S.
Richfield, MN

Applied Engineering, Inc.
1161 Wayzata Blvd E., Ste #60
Wayzata, MN 55391

AE Project #6G28
Revised 2/19/2017

Key

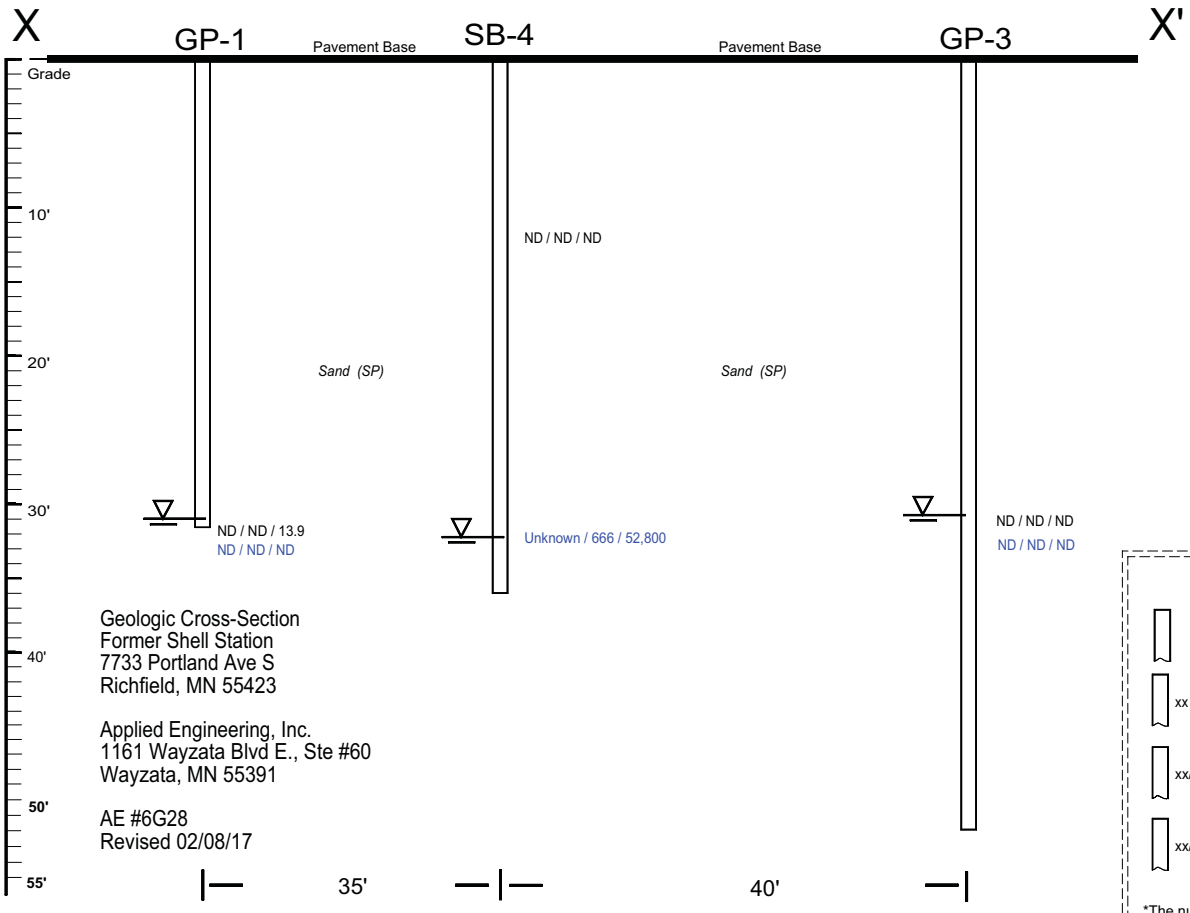
* = Based on 2016 Phase II Report
GP-X (DRO/GRO), ppb
ND=Not Detected
NS = Not Sampled

Grass

E. 78th St

This drawing is not a survey and not intended for purposes other than this environmental investigation.

Geologic Cross-Section X - X'



Geologic Cross-Section
Former Shell Station
7733 Portland Ave S
Richfield, MN 55423

Applied Engineering, Inc.
1161 Wayzata Blvd E., Ste #60
Wayzata, MN 55391

AE #6G28
Revised 02/08/17

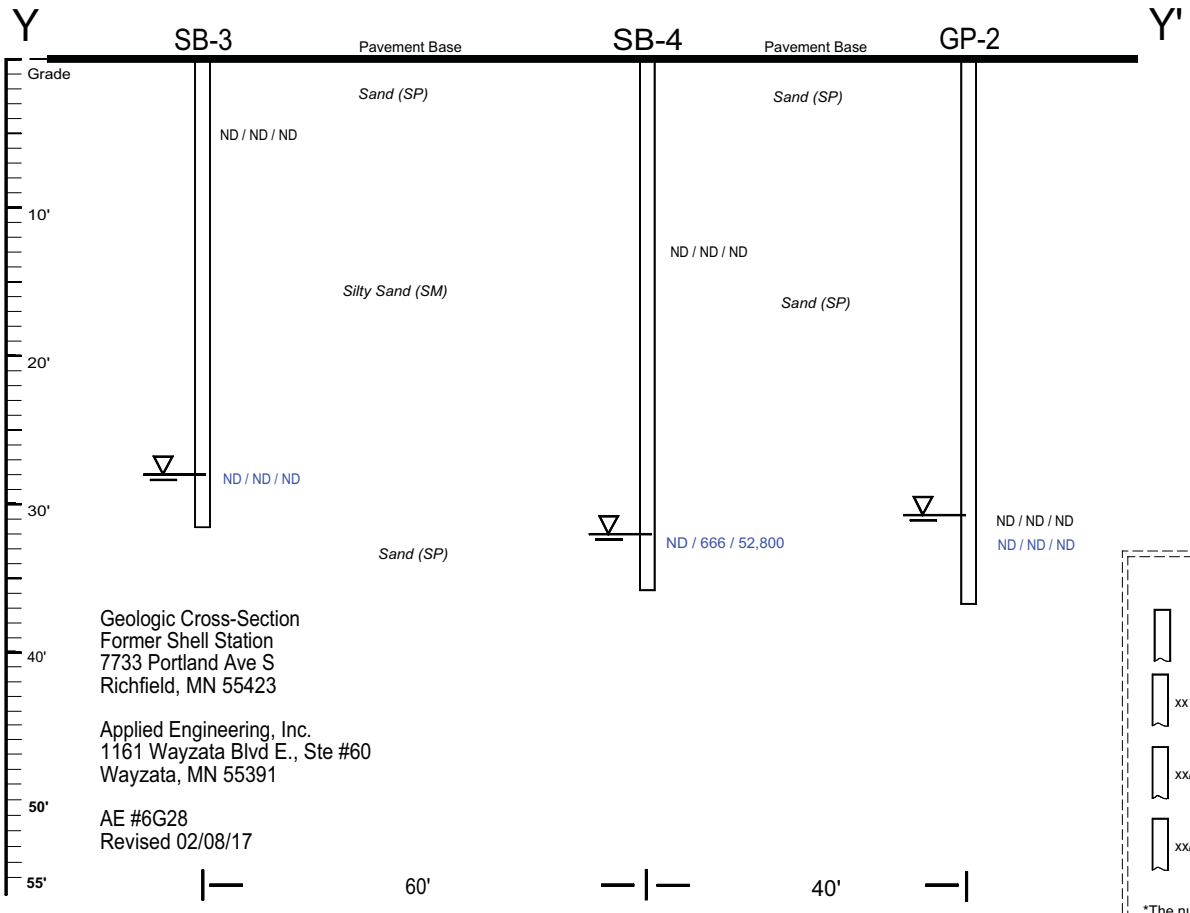
Legend

- Soil Boring
- xx — Analytical Results: PID Headspace (ppm) *
- xx/xx — Analytical Results (Soil): PID Headspace / GRO / DRO (ppm/ppm/ppm) *
- xx/xx — Analytical Results (Groundwater): PID Headspace / GRO / DRO (ppb/ppb/ppb) *

*The numerous non-detect results are not annotated

ND = Not Detected

Geologic Cross-Section Y - Y'



Geologic Cross-Section
Former Shell Station
7733 Portland Ave S
Richfield, MN 55423

Applied Engineering, Inc.
1161 Wayzata Blvd E., Ste #60
Wayzata, MN 55391

AE #6G28
Revised 02/08/17

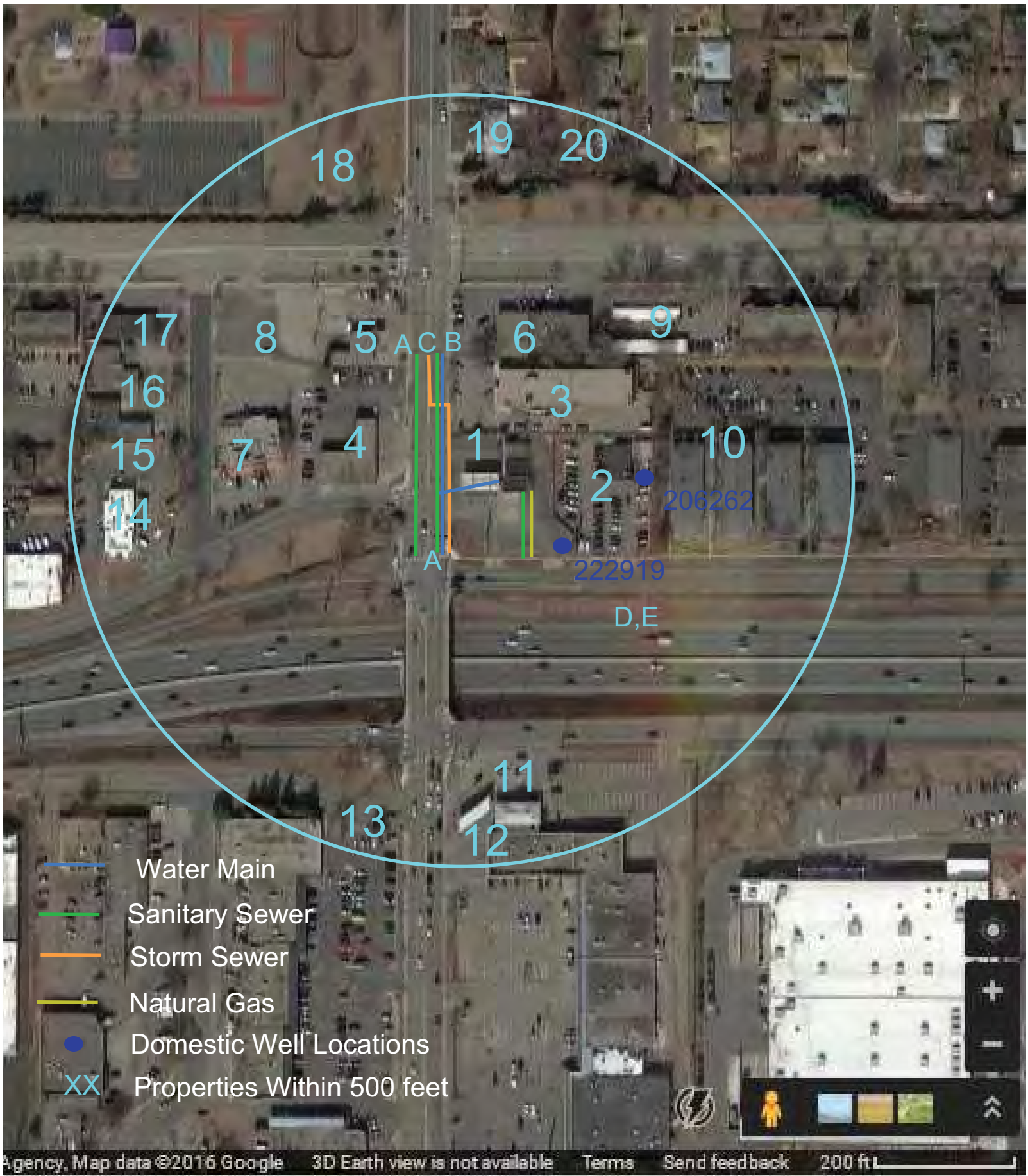
Legend

- Soil Boring
- xx — Analytical Results: PID Headspace (ppm) *
- xx/xx — Analytical Results (Soil): PID Headspace / GRO / DRO (ppm/ppm/ppm) *
- xx/xx — Analytical Results (Groundwater): PID Headspace / GRO / DRO (ppb/ppb/ppb) *

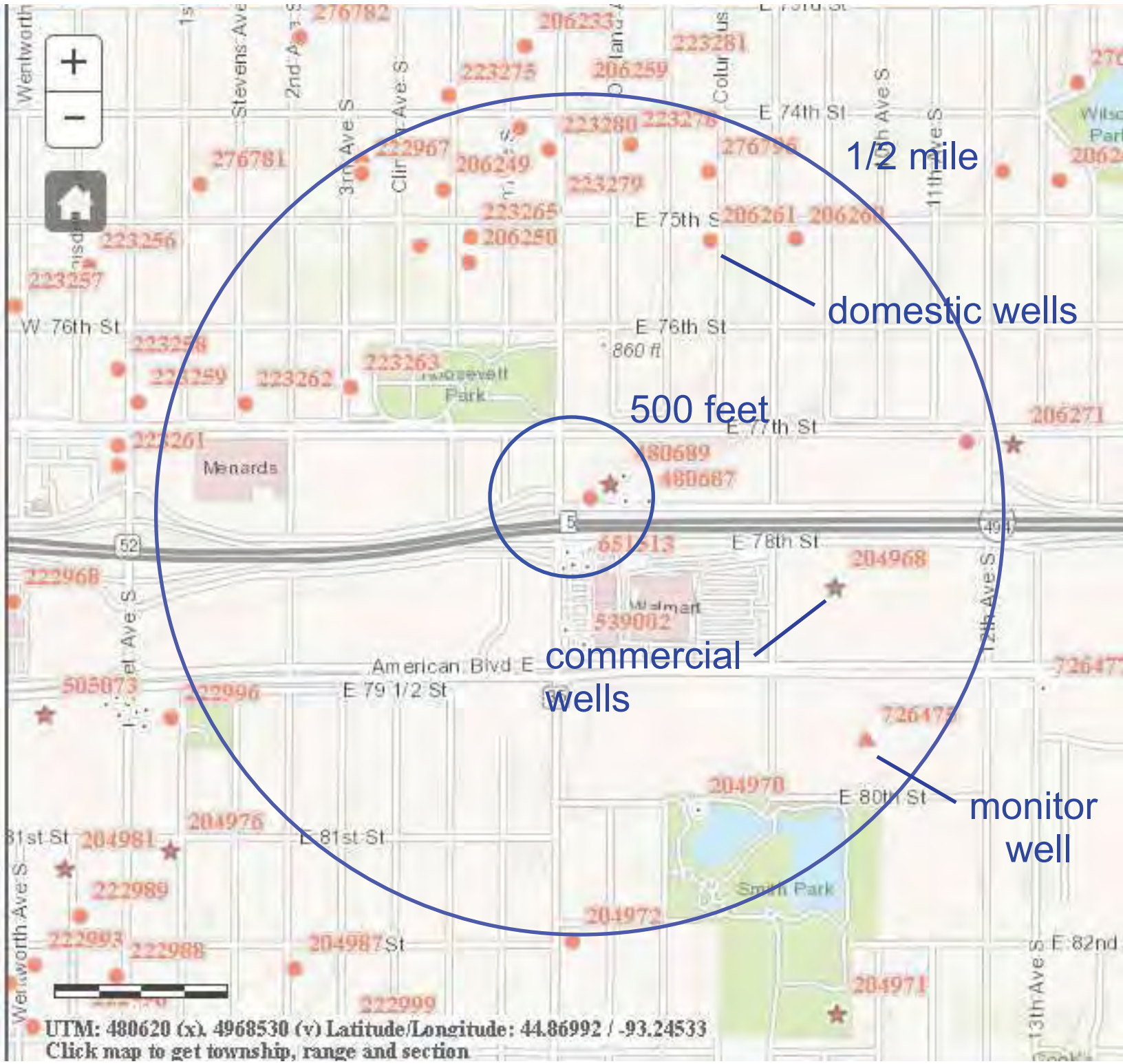
*The numerous non-detect results are not annotated

ND = Not Detected

Potential Receptor Map (500 foot radius)



Well Receptor Map
(500 foot and 1/2 mile radii)



Vapor Intrusion Assessment Map
(100' Radius)

Section 5: Tables

Table 1
Tank Information

Tank #	Tank Material[1]	UST or AST	Capacity (gallons)	Contents (product type)	Year Installed	Tank Status[2]	Tank Condition
1	S	UST	6,000	Gasoline	1973	Removed (unknown)	NA
2	S	UST	4,000	Gasoline	1962	Removed (unknown)	NA
3	S	UST	4,000	Gasoline	1962	Removed (unknown)	NA
4	S	UST	4,000	Gasoline	1962	Removed (unknown)	NA
5	S	UST	4,000	Gasoline	1962	Removed (unknown)	NA
6	S	UST	1,000	Fuel Oil	1962	Removed (unknown)	NA
7	S	UST	560	Used or Waste Oil	1962	Removed (unknown)	NA
8	F	UST	10,000	Gasoline	1990	Active	In-place
9	F	UST	10,000	Gasoline	1990	Active	In-place
10	F	UST	10,000	Gasoline	1990	Active	In-place

[1] "F" for fiberglass or "S" for Steel
[2] Indicate: removed (date), abandoned in place (date), or currently in use.
Add additional rows as needed.
Notes:

Table 2
Results of Soil Headspace Screening

Depth (ft)	Soil Boring ID									
	GP-1	GP-2	GP-3	4	5	6	7	8	9	10
0-2	ND	ND	ND							
2-4	ND	ND	ND							
4-6	ND	ND	ND							
6-8	ND	ND	ND							
8-10	ND	ND	ND							
10-12	ND	ND	ND							
12-14	ND	ND	ND							
14-16	ND	ND	ND							
16-18	ND	ND	ND							
18-20	ND	ND	ND							
20-22	ND	ND	ND							
22-24	ND	ND	ND							
24-26	ND	ND	ND							
26-28	ND	ND	ND							
28-30	ND	ND	ND							
30-32	ND	ND	ND							
32-34		ND	ND							
34-36		ND	ND							
36-38		ND	ND							
38-40			ND							
40-42			ND							
42-44			ND							
44-46			ND							
46-48			ND							
48-50			ND							
50-52			ND							

List instruments used and discuss field methods and procedures in Section 6. Add additional rows as needed, and copy the entire table if more columns are needed.

Table 3
Analytical Results of Soil Samples[1]

Boring ID	Sampled Depth (ft)	Date Sampled	Benzene	Toluene	Ethyl-benzene	Xylenes	MTBE	GRO	DRO	Lab Type[2]
SB-1	12	9/13/16	<0.116	<0.116	<0.116	<0.174	<0.116	<11.6	<7.19	fixed
SB-3	5	9/13/16	<0.109	<0.109	<0.109	<0.164	<0.109	<10.9	<6.87	fixed
SB-4	12	9/13/16	<0.101	<0.101	<0.101	<0.151	<0.101	<10.1	<6.45	fixed
1X	31.5	12/08/16	<0.0225	<0.0564	<0.0564	<0.169	<0.0564	NA*	**13..9**	fixed
2X	37	12/08/16	<0.0338	<0.0845	<0.0845	<0.253	<0.0845	NA*	<11.4	fixed
3X	52	12/08/16	<0.0251	<0.0627	<0.0627	<0.188	<0.0627	NA*	<10.8	fixed

[1] Report results in mg/kg. Use less than symbols to show detection limit.
[2] Indicate "mobile" or "fixed" in the lab type column.
Add additional rows as needed.
Notes: SB= Phase II borings

Table 4
Other Contaminants Detected in Soils (Petroleum or Non-petroleum Derived)[1]

Boring ID	Sampled Depth (ft)	Date Sampled								Lab Type[2]

[1] Report results in mg/kg. Use less than symbols to show detection limit.
[2] Indicate "mobile" or "fixed" in the lab type column.
Indicate other contaminants (either petroleum or non-petroleum derived) detected in soil collected from borings. Add additional rows as needed, and copy the entire table if more columns are needed.
Notes:

Table 5
Contaminated Surface Soil Results

Sample ID	Headspace 10 ppm or Greater[1] (Y/N)	Petroleum Saturated (Y/N)

[1] As measured with a photoionization detector (PID).
Add additional rows as needed.
Notes:

Table 6
Water Level Measurements and Depths of Water Samples Collected from Borings

	Soil Boring									
	SB-1	**SB-2**	**SB-3**	**SB-4**		**GP-1**	**GP-2**	**GP-3**		
Static Water Level Depth[1] (ft)	29.5	31.7	28.0	32.1		31.10	30.75	30.75		
Sampled Depth (ft)	Unknown	Unknown	Unknown	Unknown		31.10	30.75	30.75		
Sampling Method[2]	Ball Check	Ball Check	Ball Check	Ball Check		Ball Check	Ball Check	Ball Check		

[1] Describe the methods used to measure water levels in borings in Section 6.
[2] Refer to Guidance Document 4-05 for acceptable ground water sampling methods.
Notes: SB= Phase II borings

Table 7
Analytical Results of Water Samples Collected from Borings[1]

Boring ID	Date Sampled	Benzene	Toluene	Ethyl-benzene	Xylenes	MTBE	GRO	DRO	Lab Type[2]
SB-1W	09/13/16	<0.5	<1.0	<1.0	<3.0	<1.0	<100	<125	fixed
SB-2W	09/13/16	<0.5	<1.0	<1.0	<3.0	<1.0	<100	<105	fixed
SB-3W	09/13/16	<0.5	<1.0	<1.0	<3.0	<1.0	<100	<105	fixed
SB-4W	09/13/16	<0.5	<1.0	<1.0	<3.0	<1.0	**666**	**52,800**	fixed
1W	12/08/16	<1.0	<1.0	<1.0	<3.0	<1.0	NA*	<120	fixed
2W	12/08/16	<1.0	<1.0	<1.0	<3.0	<1.0	NA*	<120	fixed
3W	12/08/16	<1.0	<1.0	<1.0	<3.0	<1.0	NA*	<120	fixed
DUP	12/08/16	<1.0	<1.0	<1.0	<3.0	<1.0	NA*	NA*	fixed
Trip Blank									
Equip. Blank									
Lab Blank									
HRL[3]		3	200	50	300	70	NL	NL	

[1] Report results in µg/L. Use less than symbols to show detection limit.
[2] Indicate "mobile" or "fixed" in the lab type column.
[3] See http://www.health.state.mn.us/divs/eh/groundwater/hrltable.html for list of current HRLs.
Add additional rows as needed.
Notes: SB= Phase II borings

Table 8
Other Contaminants Detected in Water Samples Collected from Borings (Petroleum or Non-Petroleum Derived)[1]

Boring ID	Date Sampled	n-Butyl-benzene	p-Isopropyl-toluene	sec-Butyl-benzene	tert-Butyl-benzene			Lab Type[2]
SB-1W	09/13/16	<1.0	<1.0	<1.0	<1.0			fixed
SB-2W	09/13/16	<1.0	<1.0	<1.0	<1.0			fixed
SB-3W	09/13/16	<1.0	<1.0	<1.0	<1.0			fixed
SB-4W	09/13/16	**9.6**	**2.72**	**23.3**	**3.62**			fixed
Trip Blank								
Equip. Blank								
Lab Blank								
HRL[3]		NE	NE	NE	NE			

[1] Report results in µg/L. Use less than symbols to show detection limit.
[2] Indicate "mobile" or "fixed" in the lab type column.
[3] See http://www.health.state.mn.us/divs/eh/groundwater/hrltable.html for list of current HRLs.
Indicate other contaminants (either petroleum or non-petroleum derived) detected in water samples collected from soil borings and temporary wells. Add additional rows as needed, and copy the entire table if more columns are needed.
Notes: SB = Phase II borings, NE = Not Established

Table 9
Monitoring Well Completion Information[1]

Well Number	MDH Unique Well Number	Date Installed	Surface Elevation	Top of Casing Elevation	Bottom of Well Elevation	Screen Interval (Elev. - Elev.)	Total Well Depth from Surface (ft)

[1] Include well construction diagrams and MDH well logs in Section 6.
Add additional rows as needed.
Notes: (location and elevation of benchmark)

Table 10
Water Level Measurements in Wells[1]

Well Number	Date Sampled	Depth to Water from Top of Riser	Product Thickness	Depth to Water Below Grade	Relative Groundwater Elevation	Water Level Above Screen (Y/N)

[1] Describe the methods used to measure water levels in Section 6.
Add additional rows as needed.
Notes:

Table 11
Analytical Results of Water Samples Collected from Wells[1]

Well Number	Date Sampled	Benzene	Toluene	Ethyl-benzene	Xylenes	MTBE	GRO	DRO	Lab Type[2]
MW-1									
MW-2									
Trip Blank									
Equip. Blank									
Lab Blank									
HRL[3]									

[1] Report results in µg/L. Use less than symbols to show detection limit.
[2] Indicate “mobile” or “fixed” in the lab type column.
[3] See http://www.health.state.mn.us/divs/eh/groundwater/hrltable.html for list of current HRLs.
Add additional rows as needed.
Notes:

Table 12
Other Contaminants Detected in Water Samples
Collected from Wells (Petroleum or Non-petroleum Derived)[1]

Well Number	Date Sampled								Lab Type[2]
MW-1									
MW-2									
MW-3									
MW-4									
Trip Blank									
Equip. Blank									
Lab Blank									
HRL[3]									

[1] Report results in µg/L. Use less than symbols to show detection limit.
[2] Indicate "mobile" or "fixed" in the lab type column.
[3] See http://www.health.state.mn.us/divs/eh/groundwater/hrltable.html for list of current HRLs.
Indicate other contaminants (either petroleum or non-petroleum derived) detected in water samples collected from wells. Add additional rows as needed, and copy the entire table if more columns are needed.
Notes:

Table 13
Natural Attenuation Parameters

Well Number	Sample Date	Temp. °C	pH	Dissolved Oxygen (mg/L)	Nitrate (mg/L)	(Fe II) (mg/L)	(H_2S, HS^-) (mg/L)
MW-1							
MW-2							
MW-3							
MW-4							

Describe the methods and procedures used in Section 6. Add additional rows as needed
Notes:

Table 14
Free Product Recovery

Recovery Location ID	Recovery Date	Pre-Recovery Measurements				Recovery Method	Event Recovery[3]		Cumulative Recovery[4]		Comments
		Depth to FP[1] (ft)	Depth to GW[2] (ft)	FP Thickness (ft)	FP Volume (gal)		FP (gal)	GW (gal)	FP (gal)	GW (gal)	
MW-1											
MW-2											
MW-3											
MW-4											

[1] FP = Free Product
[2] GW = Ground Water
[3] Volume recovered during individual recovery event for that location.
[4] Cumulative volume recovered at each recovery location (i.e., keep a running total for each recovery point).
Describe the methods and procedures used in Section 6. Add additional rows as needed.
Notes:

Table 15
Properties Located within 500 feet of the Release Source

Prop ID[1]	Property Address	Distance From Site (ft)	Water Supply Well			Public Water Supply		Base-ment (Y/N)	Sump (Y/N)	Possible Petroleum Sources (Y/N)	Comments (including property use)
			Well Present (Y/N)	How Determined [2]	Well Use[3]	Utilized (Y/N)	Confirmed by City (Y/N)				
1	7733 Portland Ave S (Site)	See Map	N	*	NO	Y	Y	N	Unknown	N	Commercial
2	616 78th St E	See Map	Y	Owner conversation	NO	Y	Y	N	Unknown	N	Commercial
3	7727 Portland Ave S	See Map	N	*	NO	Y	Y	N	Unknown	Yes	Commercial
4	7730 Portland Ave S	See Map	N	*	NO	Y	Y	N	Unknown	Yes	Commercial
5	7700 Portland Ave S	See Map	N	*	NO	Y	Y	N	Unknown	N	Commercial
6	7701 Portland Ave S	See Map	N	*	NO	Y	Y	N	Unknown	N	Commercial
7	500 78th St E	See Map	N	*	NO	Y	Y	N	Unknown	N	Commercial
8	7701 5th Ave S	See Map	N	*	NO	Y	Y	N	Unknown	N	Commercial
9	631 77th St E	See Map	N	*	NO	Y	Y	N	Unknown	N	Commercial
10	620 78th St E	See Map	N	*	NO	Y	Y	N	Unknown	N	Commercial
11	7801 Portland Ave S	See Map	N	*	NO	Y	Y	N	Unknown	Yes	Commercial
12	7817 Portland Ave S	See Map	N	*	NO	Y	Y	N	Unknown	N	Commercial
13	7810 Portland Ave S	See Map	N	*	NO	Y	Y	N	Unknown	N	Commercial
14	7744 5th Ave S	See Map	N	*	NO	Y	Y	N	Unknown	N	Commercial
15	7714 5th Ave S	See Map	N	*	NO	Y	Y	N	Unknown	N	Commercial
16	7708 5th Ave S	See Map	N	*	NO	Y	Y	N	Unknown	N	Commercial
17	415 77th St E	See Map	N	*	NO	Y	Y	N	Unknown	N	Commercial
18	7644 4th Ave S	See Map	N	*	NO	Y	Y	N	Unknown	N	Commercial
19	7625 Portland Ave S	See Map	N	*	NO	Y	Y	Y	Unknown	N	Residential
20	7632 Oakland Ave S	See Map	N	*	NO	Y	Y	Y	Unknown	N	Residential

[1] Property IDs should correspond to labeled properties in the Potential Receptor Map.
[2] For example, visual observation, personal contact, telephone, returned postcard, assumed (i.e., no postcard returned).
[3] For example, domestic, industrial, municipal, livestock, lawn/gardening, irrigation.
Add additional rows as needed.
Notes: * indicates that no letter was returned (Letter instructed no need to return unless well existed; therefore, assume no well exists at this address)
** Well use not specified; therefore, it is assumed the well is used for drinking purposes and city water is not used.

Table 16
Water Supply Wells Located within 500 feet of the
Release Source and Municipal or Industrial Wells within ½ mile

Property ID[1]	MDH Unique Well Number	Ground Elevation	Total Depth (ft)	Base of Casing (ft)	Static Elevation (ft)	Aquifer	Use	Owner	Distance and Direction from Source (ft)
2	222919	838	245	NL	NL	Intermediate	Domestic	NL	100 feet SE
2	206262	840	47	43	12	Quat Water	Commercial	Cobb Inc	125 feet E
204968	204968	830	47	43	12	Quat Water	Commercial	Stadium Bowl 27	0.3 mile SE

[1] Property IDs should correspond to properties listed in Table 15 and labeled properties in the Potential Receptor Map if known or applicable. Add additional rows as needed.

Notes: * indicates that no letter was returned (Letter instructed no need to return unless well existed; therefore, assume no well exists at this address)

Table 17
Surface Water Receptor Information

Map ID[1]	Name and Type[2]	Distance and Direction from Plume Edge (ft)	Clean Boring/Well Between?[3] (Y or N)

[1] Map ID should correspond to a surface water feature ID on the Potential Receptor Map.
[2] Type includes, but is not limited to, lake, retention pond, infiltration pond, ditch, intermittent stream, river, creek, rain garden, etc.
[3] If the surface water feature is upgradient or cross-gradient from the site, indicate so with "NA" for not applicable.
Add additional rows as needed.
Notes:

Table 18
Utility Receptor Information

Utility ID[1]	Description	Construction Material	Depth to Top of Structure	Diameter	Flow Direction (for liquids)	Year Installed	Backfill Material	Distance to Water Table
A	*Sanitary sewer main*	*Cement / Clay*	*8-10*	*9 in*	*south*	*1960's*	*unknown*	*Approximately 20 feet above water table*
B	*Water main*	*Cast Iron*	*6-7*	*6 in*	*forced*	*1960's*	*unknown*	*Approximately 23 feet above water table*
C	*Storm sewer*	*Concrete*	*unknown*	*unknown*	*south*	*1960's*	*unknown*	*Most likely above water table*
D	*Sanitary service to site*	*Cement / Clay*	*unknown*	*unknown*	*east*	*1960's*	*unknown*	*Most likely above water table*
E	*Water service to site*	*Copper*	*unknown*	*2 in*	*east*	*1960's*	*unknown*	*Most likely above water table*
3								
4								
5								
6								
7								
8								
9								
10								

[1] ID should correspond to an identified utility line on the Potential Receptor Map.
Add more rows as needed.
Notes:

Utility ID[1]	Name, title, and telephone number for public entity contacted to obtain information or other source of information
A,B,C,D,E	Russ Lupkes, Utility Superintendent (612) 861-9164

[1] IDs should correspond to the same IDs in the above table.
Add more rows as needed.
Notes:

Table 19
Vapor Survey Results

Location ID[1]	Description[2]	Monitoring Date	PID Reading (ppm)	Percent of the LEL[3]

[1] Location IDs must match labeled locations on the Vapor Survey Map.
[2] Provide a brief description of the monitoring point (e.g., sump, basement corner, sanitary sewer manhole, storm sewer basin, etc.).
[3] LEL = Lower Explosive Limit.
Add additional rows as needed.
Notes:

Table 20
Results of Soil Gas Sampling for Vapor Intrusion Screening[1]

Sample ID[2]	Air-1		Air-2		SS-1					
Date	12/8/16		12/8/16		9/13/16					
Depth (feet)	10		5		Sub-slab on-site Bldg (five detections) *					
PID (ppm)	ND		ND		Unk					
COMPOUNDS	Result	Report Limit	Result	Report Limit	Result	Report Limit	Result	Report Limit	Residential 33x Intrusion Screening Value[3]	Industrial 33x Intrusion Screening Value[3]
Acetone	113	3.8	125	3.8	836				1,023,000	2,871,000
Benzene	27.8	0.51	6.3	0.51					150	429
2-Butanone (MEK)	<4.7	4.7	17.6	4.7					165,000	33,000
Carbon disulfide	13.7	0.99	8.3	0.99					23,100	19,800
Cyclohexane	11.6	1.1	11.7	1.1					198,000	NL
Ethanol	16.5	1.5	25.1	1.5	542				495,000	594,000
Ethylbenzene	2.6	1.4	2.0	1.4					140	420
n-Heptane	22.2	3.3	9.3	3.3					NA	NA
n-Hexane	32.1	1.1	68.5	1.1	135				66,000	198,000
Isopropyl alcohol					229				660,000	1,980,000
Methylene Chloride	19.2	5.5	534	5.5					660	1,980
2-Propanol	<3.9	3.9	5.7	3.9					231,000	660,000
Propylene	272	1.4	121	1.4					99,000	264,000
1,1,2,2-Tetrachloroethane	<1.1	1.1	3.0	1.1					7	33
Tetrachloroethene	1.6	1.1	12.4	1.1	702				110	1,100
Tetrahydrofuran	<0.94	0.94	8.0	0.94					NA	NA
Toluene	25.3	1.2	11.5	1.2					165,000	330,000
Trichlorofluoromethane	<1.8	1.8	2.0	1.8					23,100	66,000
Vinyl acetate	5.7	1.1	<1.1	1.1					6,600	19,800
m&p-Xylene	<2.8	2.8	4.0	2.8					3,300	10,000

[1] Report results in µg/m^3.
[2] Sample IDs should correspond to labeled locations on the Vapor Intrusion Assessment Map.
[3] The Intrusion Screening Values can be found in Guidance Document 4-01a *Vapor Intrusion Assessments Performed during Site Investigations*.
Add additional rows as needed, and copy the entire table if more columns are needed.
Notes: * Data transcribed from Table 4, Carlson McCain Phase II Draft Report

Section 6: Appendices

Attach all required or applicable appendices in the following order. Indicate those appendices that are included in this report by marking the check box. All reproduced data must be legible. Reports missing required documentation are subject to rejection.

☐	*Appendix A*	Guidance Document 3-02 *General Excavation Report Worksheet.*
☒	*Appendix B*	Guidance Document 1-03a *Spatial Data Reporting Form*.
☒	*Appendix C*	Guidance Document 2-05 *Release Information Worksheet*.
☒	*Appendix D*	Copies of applicable Phase I and Phase II reports or supplemental sampling information such as aboveground storage tank (AST) upgrading and decommissioning sampling.
☒	*Appendix E*	Geologic Logs of Soil Borings, Including Construction Diagrams of Temporary and Permanent Wells, and Copies of the Minnesota Department of Health Well Record.
☒	*Appendix F*	Laboratory Analytical Reports for Soil, Soil Gas/Sub-slab Vapor/Indoor Air/Ambient Air, and Ground Water. Include laboratory QA/QC data, Chromatograms, and laboratory certification number.
☒	*Appendix G*	Methodologies and Procedures, Including Field Screening of Soil, Other Field Analyses, Soil Boring, Soil Sampling, Soil Gas/Sub-Slab/Indoor air/Ambient Air Sampling, Vapor Monitoring, Well Installation, and Water Sampling.
☐	*Appendix H*	Field or sampling data sheets (sampling forms, field crew notes, etc.).
☒	*Appendix I*	Grain Size Analysis, Hydraulic Conductivity Measurements, and Other Calculations.
☐	*Appendix J*	Guidance Document 2-03 *Free Product Recovery Report Worksheet.*
☒	*Appendix K*	Copies of Water Supply Well Logs with Legible Unique Numbers.
☒	*Appendix L*	Results of the Public Water Supply Risk Assessment. If the site is within a designated source water protection area, include a copy of the MDH Source Water Assessment and a map from the MPCA Petroleum Remediation Program Maps Online website.
☐	*Appendix M*	Guidance Document 4-19 *Conceptual Corrective Action Design Worksheet*.

Appendix B

Guidance Document 1-03a, Spatial Data Reporting Form

Guidance Document c-prp4-06: September 2008
Petroleum Remediation Program
Minnesota Pollution Control Agency

Petroleum Remediation Program
Minnesota Pollution Control Agency
http://www.pca.state.mn.us/programs/lust_p.html

Spatial Data Reporting Form

Guidance Document 1-03a
(For complete instructions, see Guidance Document 1-03.)

Part 1. Background

Has a site location data point been submitted for this site (circle/highlight)? YES or NO
If yes, you do not need to complete Part 2 of this form but should complete Part 3 if there are additional site features to report. This form can be submitted electronically if desired (e.g., as an e-mail attachment to the project manager).

MPCA Site ID: LEAK00020238
Site Name: Richfield Sinclair
Data Collection Date: 2/16/17
Name of Person Who Collected Data: Tim Musson
Organization Name: Applied Engineering, Inc.
Organization Type: Environmental Consulting and Engineering Firm

Part 2. Site Location (use one of the three spatial data reporting formats provided)

Point Description: Property Center
Collection Method: Google Maps
Datum (circle/highlight): **WGS84** NAD83

1) Longitude (dd mm ss.ss):	Latitude (dd mm ss.ss):
2) Longitude (dd.dddddd): -93.267697	Latitude (dd.dddddd): 44.862863
3) UTM - X (Easting):	UTM - Y (Northing):
UTM Zone:	

Part 3. Other Site Features

N/A

Appendix C

Guidance Document 2-05, Release Information Worksheet

Appendix C: Guidance Document 2-05 *Release Information Worksheet.*

Minnesota Pollution Control Agency

Release Information Worksheet

Guidance Document 2-05
Petroleum Remediation Program

The Release Information Worksheet is necessary in order to meet the Public Record Provision of the Energy Policy Act of 2005. Complete the worksheet below to document tank and release information. This form may be included as an appendix in Guidance Document 4-06 or 4-08, or it may be submitted independently. Please type or print clearly. Do not revise or delete text or questions from this form.

A. General information

Site name/city: Richfield Sinclair / Richfield

MPCA Site ID#: LEAK00020238

B. Tank material (check all that apply):

☒ Steel ☒ Fiberglass

C. Piping material (check all that apply):

☒ Steel ☐ Fiberglass ☐ Flexible plastic ☐ Copper ☐ Other (specify):

D. Identify the known or suspected source(s) of the release or contamination encountered (check all that apply):

☐ Piping ☐ Tank ☐ Dispenser ☐ Submersible turbine pump ☐ Delivery problem

☒ Other (specify): Potential leaks associated with the former shop operations, most notably the lift hydraulics

E. Identify the cause of the release (tank and/or piping) (check all that apply):

☐ Overfill ☐ Mechanical or physical damage ☐ Install problem ☐ Corrosion ☐ Spill ☒ Unknown

☐ Other (specify):

F. Identify how the release was detected (check all that apply):

☐ Removal ☐ Line leak detection ☐ Tank leak detection ☐ Visual/Olfactory ☒ Site assessment

☒ Other (specify): Assessment via Phase II Investigation

G. Has the site ever stored E85 in any former or current tank? ☐ Yes ☒ No

H. Has the site ever stored leaded gasoline in any former or current tank? ☒ Yes ☐ No

Appendix D

Phase II Report

ENVIRONMENTAL • ENGINEERING • LAND SURVEYING

September 1, 2016

DRAFT

Mr. Michael Collins
Northeast Bank
77 Broadway Street NE
Minneapolis, MN 55413

Mr. George Hark
Main Street Property Management
675 Stinson Boulevard
Minneapolis, MN 55413

Re: Phase II Investigation
Sinclair Gas Station
7733 Portland Avenue South
Richfield, Minnesota
Project No.: 6349-00

Dear Mr. Collins and Mr. Hark,

The purpose of this letter is to present the results of a Phase II Investigation conducted at the above referenced property (the Property). The scope of work for this project was completed by Carlson McCain, Inc. according to our proposal dated September 6, 2016, which was based on historical work conducted at since the early 1990's, and a Phase I Environmental Site Assessment (ESA) completed by Carlson McCain, Inc., dated August 31, 2016. The Phase I ESA identified several Recognized Environmental Conditions (RECs), including the potential for residual petroleum impacts to soil and groundwater in the areas of the former and current UST basins, the on-site automotive garage, and off–site sources. Figure 1 shows the Property location.

To evaluate the environmental risks, four direct push soil borings were advanced using a track mounted rig, and one temporary sub-slab vapor sampling point was installed and a vapor sample was collected. Soil and groundwater samples were also collected to determine current site conditions. This letter report discusses the results of the investigation.

Environmental History

The following Recognized Environmental Conditions (RECs) were identified during the previously completed Phase I Environmental Site Assessment:

- The Property has operated as a gasoline station since 1962 and had tanks removed and replaced in 1990. According to the tank records, there are listed citations and inconclusive tank testing information for the new tank system.
- The Property is listed as a reported leaksite (Leak ID#2572) that has been investigated and closed by the MPCA.
- The former hydraulic lifts located in the service garage do not appear to have been properly removed and sealed. Older subsurface hydraulic lifts have the potential to leak hydraulic fluids.

- The Elsen Brothers site is located in a hydraulically up-gradient position to the Property with a documented release of petroleum to groundwater. Vapor concerns have also not been addressed.
- Two drycleaners are located immediately to the south and have documented releases of chlorinated solvents in soil and groundwater.
- The substantial amount of staining observed in the building is considered a REC for the Property.

Field Investigation Summary

The Phase II Investigation field work was conducted on September 13, 2016 and entailed advancing four direct push soil borings for the collection of soil and groundwater samples, and one vapor sampling point for the collection of a sub-slab vapor sample. Soil boring SB-1 was advanced south of the current UST basin, south of the Site building. Soil boring SB-2 was advanced near the western property boundary to evaluate potential off-site sources. Soil boring SB-3 was advanced adjacent to and south of the existing dispenser islands. Soil boring SB-4 was advanced within the Site garage, between the two hydraulic hoists. A sub slab vapor point (SS-1) was also advanced in the southern portion of the garage concrete floor near the convenience store portion of the building to address potential vapor concerns. Figure 2 shows boring and sub-slab vapor point locations on the Property.

Soil Borings

Soil boring advancement was completed by Range Environmental Drilling Company, a licensed and registered well contractor in the State of Minnesota and in accordance with MDH Well Construction Code (Minnesota Rules 4725). Field screening, soil logging and sample collection were conducted by a Carlson McCain field geologist.

Prior to starting intrusive work, public underground utilities were cleared through the Gopher One-Call State System and a private utilities locator. Borings were advanced by direct push technology. This method utilizes a small drill rig which employs a hydraulically-powered probe that utilizes static force and percussion to advance sampling tools into the subsurface for the collection of soil and groundwater samples. Soil samples were collected continuously using a 1.5-inch inside diameter (ID) by 5-foot long stainless steel "Macro-Core® Sampler". Soil samples were manually and visually classified according to methods outlined in the American Society for Testing and Materials (ASTM) D2488 and entered onto a boring log. Soil cuttings were thin spread on-site. Boring locations are shown on the attached Figure 2 and boring logs are included as Appendix A.

To determine if contamination was present in soil, visual and olfactory observations, as well as vapor monitoring using a photoionization detector (PID) equipped with a 10.6 eV lamp, were conducted. Organic vapors were monitored in soils using Minnesota Pollution Control Agency (MPCA) bag headspace methods. Soils were placed into a polyethylene bag, which was then sealed. The sample was shaken, placed in a warm environment to allow organic vapors to develop and the highest reading observed within the first five seconds after insertion of the PID into the bag was then recorded on the boring log. Prior to the start of work, the PID was calibrated using an isobutylene standard.

Prior to drilling, between boreholes and prior to demobilization, drilling equipment was decontaminated to minimize the potential for any cross-contamination. While drilling, all soil sampling equipment (i.e. Macrocore Sampler) was thoroughly decontaminated between sampling intervals using an Alconox® wash, followed by a tap water rinse.

Upon completion, each direct push borehole was sealed by backfilling with granular bentonite, which was placed and hydrated in 2-foot lifts. Each borehole was then located for future reference with GPS-based survey equipment.

Soil Sampling

At the discretion of the field geologist and based on field screening and visual/olfactory characteristics, one soil sample was collected from each borehole at depths which corresponded with evidence of contamination from depths likely associated with previous underground apparatus (such as tanks, dispensers and hoists), were located in areas susceptible to surface soil contamination via run-off and/or spillage or from the terminus of the soil boring. The following details the sampling procedures used as part of this field investigation.

To minimize the potential for cross-contamination of soil samples, a clean and dry sheet of relatively inert plastic was placed on a clean working surface. If materials used in the sampling process were set down, they were placed on a clean portion of the plastic sheet. A clean pair of nitrile gloves was used at the onset of sampling activities at each new sampling point. Sampling personnel kept their hands as clean as practical and replaced gloves, as necessary. Furthermore, sampling personnel took care not to touch the inside of sampling containers, inside of bottle caps or the rim of sample containers. Care was also taken so as to minimize the potential for airborne contamination of samples during collection.

When sample containers were not pre-preserved, the preservative was added (if required) as soon as the sample had been placed into the sampling container. After the label had been affixed to each container, samples were then placed on ice and maintained at a temperature of 4°C. If preservatives were added to the jars or bottles before shipment to the field, care was taken not to overfill the containers.

As each sample was collected, an adhesive label was affixed to each sampling container. Each sample container was uniquely numbered and labeled using indelible ink. At a minimum, the information on the label included the analytical parameter(s), preservative(s), sampling personnel, date and time of sample collection, sample type (grab or composite) and the project name. The label was then directly affixed to the appropriate sample container.

A chain of custody (COC) accompanied each cooler containing samples that were to be submitted to the laboratory for chemical analysis. The COC was filled out progressively, as samples from each sampling point were collected. The completed COC was then placed into a sealed polyethylene bag. Field personnel were then required to sign, time and date the COC prior to relinquishing custody to the laboratory. One copy of the COC was retained by field personnel and the remaining copies were submitted to the laboratory. Until the samples had been relinquished to the courier or laboratory, custody was the responsibility of the field sampler.

Upon receipt of each cooler at the laboratory, the time of arrival was noted and the COC was signed by the person accepting the shipment. The laboratory sample custodian then checked the cooler temperature using the temperature blank, inventoried the samples and checked them against the COC. The COC was then signed by the sample custodian and samples became the responsibility of the laboratory.
Prior to being placed in a cooler, all glass containers were protected using bubble wrap. In addition, absorbent material was placed in the bottom of each cooler to minimize breakage. Ice was used to cool the samples. The COC was then placed on top of the samples and ice. If necessary, care was also taken so as to tape the drainage hole at the bottom of the cooler, in order to prevent leakage of melt water.

Groundwater Sampling

Groundwater samples collected from boreholes were obtained through a temporary 1-inch ID by 5-foot long polyvinyl chloride (PVC) screen attached to a PVC riser. Samples were collected using a manually operated check valve system in conjunction with disposable high density polyethylene (HDPE) tubing. Groundwater was purged until it was relatively sediment free and appeared to have low turbidity, at which time groundwater samples were collected. Sample handling procedures were conducted in the same manner as described above for soils. Purge water was discharged to the ground surface, away from each boring. Groundwater samples were collected and analyzed from SB-1 through SB-4.

Soil vapor Sampling

One soil vapor sample was collected from a borehole advanced through the concrete slab in the southern portion of the garage, adjacent to the convenience store building with a hammer drill. Before inserting a temporary, Cox-Colvin™, brass vapor sampling pin with polyethylene tubing into the hole, the hole was field screened for VOCs with a PID. The sub-slab vapor sample was collected by attaching the top end of the tubing to a Summa® Canister, which was instrumented with a flow regulator gauge. The gauge had a flow rate of 200 milliliters per minute, as per MPCA sampling guidelines. The initial and final vacuum gauge readings were recorded to identify when the canister was full. Soil vapor sampling was conducted in accordance with MPCA Document c-rem 3-01 "*Vapor Intrusion Technical Support Document*".

The summa canister was carefully labeled with the name of the sampler, date, time, and initial/final vacuum gauge readings. This information was also recorded on a COC form. The canister was then placed in a box, fitted with bubble wrap and delivered to a certified laboratory in accordance with COC procedures.

Laboratory Analysis

Three soil samples, four groundwater samples and one sub-slab vapor sample were collected and submitted to TestAmerica, Inc. (TestAmerica) for chemical analysis. TestAmerica is certified in the State of Minnesota and all samples were prepared and analyzed in accordance with MDH and/or Environmental Protection Agency (EPA) methods and procedures.

Samples collected from the soil borings were analyzed for diesel range organics (DRO), gasoline range organics (GRO), and volatile organic compounds (VOCs). The sub-slab vapor sample was submitted for method TO-15 analysis for VOCs in vapor.

Regulatory Thresholds/Screening Criteria

Soil

Analytical results for soil were compared to various screening limits developed by the MPCA. Soil Reference Values (SRVs) represent the concentration of a contaminant in soil, below which normal dermal contact, inhalation, and/or ingestion does not present a human health risk. Soil Leaching Values (SLVs) represent the concentration of a contaminant in soil above which it is able to leach into groundwater at levels in excess of drinking water standards. Soil analytical results were compared to Tier 1 SLVs, Tier 1 Residential SRVs, and Tier 2 Industrial SRVs. DRO results in soil were compared to the MPCA's "Best Management Practices (BMP) for the Off-Site Reuse of Unregulated Fill" (February 2012), which defines unregulated soil as soil that meets all of the following criteria:

- Free from solid waste, debris, asbestos-containing material (ACM), visual staining, and chemical odor;
- Organic vapors less than 10 parts per million (ppm), as measured by a PID;
- For petroleum-impacted soil, less than 100 mg/kg DRO and GRO; and,
- For contaminants detected in soil, less than the MPCA's Residential SRVs and Tier 1 SLVs

In addition, MPCA Petroleum Remediation Program Guidance Document 3-01 was consulted for cleanup standards relating to petroleum contamination of surficial soil. This Guidance Document indicates that corrective action is necessary at sites where contaminated surface soil exists. Contaminated surface soil poses an unacceptable risk because of the potential for dermal contact, ingestion and for contaminated runoff to surface waters. Surface soil, as defined for this policy, is the uppermost two feet of soil (0-2 feet), that is not covered by an impervious surface.

Groundwater

Groundwater analytical results were compared to Health Risk Limits (HRLs) or Health Based Values (HBVs) established by the MDH for drinking water. In the absence of a HRL for DRO or GRO, a screening limit of 1,000 milligrams per liter (mg/L) was used, as outlined in the MPCA Petroleum Remediation Program (PRP) Guidance Document 4.01 (September 2008).

Soil Vapor

The MPCA, in cooperation with the MDH, developed compound-specific inhalation risk screening values, referred to as Intrusion Screening Values (ISVs), for VOCs commonly evaluated during vapor investigations. The ISVs were developed using information from the MDH, the EPA IRIS database and other current toxicity data sources. The majority of the compounds have chronic ISVs that are based on lifetime chronic exposure. Some compounds also have acute ISVs that indicate the potential for adverse health effects from short term exposure to higher concentrations.

The ISVs were used for evaluating risks posed by VOCs identified in indoor air when those compounds are present due to vapor intrusion. Based on MPCA information, a site with representative soil gas

sampling results less than 10 times the ISVs is not considered to pose a risk to receptors and no additional action is generally necessary.

Summary of Results

The four soil borings (SB-1 through SB-4) which were advanced on the Property ranged in depth from 34 to 36 feet below ground surface (bgs). Soil borings generally encountered about 0.8 feet of asphalt and class V base, underlain by approximately four feet of brown sandy fill. Fill was typically underlain by several feet of native, brown, fine grained silty sand. In soil borings SB-1 and SB-3 a brown loose gravelly sand was encountered at approximately 29 feet bgs, which extended to the terminus of the boring. Groundwater in temporary wells stabilized between 28 to 31.7 feet bgs.

With the exception of petroleum odors and dark color noted in the groundwater collected from SB-4, there was no other field evidence of contamination. PID readings remained within background levels in soil borings. A summary of PID screening results is provided as Table 1.

Soil Results

Three soil samples were collected from soil borings and submitted for laboratory analysis of GRO, DRO, and VOCs. Results are summarized in Table 2 and included in Appendix B. Concentrations of VOCs, DRO and GRO were not reported above laboratory detection limits in soil samples collected at the Site.

Groundwater Results

Sample SB-4W was the only groundwater sample to report analytes above their reporting limits (Table 3). Four VOCs were detected above reporting limits in SB-4W (n-butylbenzene, p-iopropyltoluene, sec-butylbenzene and tert-butlybenzene). However, none of these constituents have a Minnesota Department of Health (MDH) established Health Risk Limit (HRL). DRO was detected at a concentration of 52,800 micrograms per liter (ug/L) in sample SB-4W exceeded its MPCA Petroleum Remediation Program (PRP) screening limit of 1,000 ug/L. GRO was also detected at a concentration of 666 ug/L in sample SB-4W, however it was below the MPCA PRP screening limit. All other analytes were under their screening limits and/or reporting limits. The full laboratory report is included in Appendix B.

Sub-Slab Vapor Results

Results of the soil vapor analysis identified five VOCs (acetone, ethanol, n-hexane, isopropyl alcohol and tetrachloroethene). Sub-slab vapor results are summarized in Table 4 and the full laboratory report is included in Appendix B. Tetrachloroethene was reported in soil vapor at a concentration of 702 micrograms per cubic meter ($\mu g/m^3$), which exceeds 10 times the Industrial ISV. With the exception of tetrachloroethene, none of the other analytes exceeded 10 times the Industrial ISV, which is the threshold needed for further action.

Conclusions and Recommendations

The environmental concerns identified above have been evaluated through field screening and the collection of three soil samples, four groundwater samples and one sub-slab vapor sample.

- Soil encountered during the investigation was generally sandy fill, and poorly graded sand outwash. Groundwater was encountered at approximately 28 to 32 feet bgs;
- Elevated PID readings were not encountered in samples field screened during drilling. However petroleum odors were observed in the groundwater sample collected from the soil boring SB-4 within the garage located at the Property;
- Groundwater sample SB-4W was the only sample with analytes detected exceeding their respective reporting limits. Low-level VOCs were detected in SB-4W, however they currently do not have established screening limits (MDH HRLs). DRO in SB-4W exceeded its MPCA PRP screening limit. GRO was also reported in SB-4W, however it did not exceed its MPCA PRP screening limit;
- The sub-slab vapor sample SS-1 detected five analytes. Tetrachloroethene concentrations exceeded 10 times its ISV (33µg/m^3). None of the remaining analytes these detected exceeded 10 times their ISVs;

Based on field evidence and laboratory results of this Phase II Investigation, Carlson McCain believes that additional investigation at the Site is warranted as it appears that a new release to groundwater has occurred since 1992 when the last groundwater quality samples were obtained. As previously discussed, a release notification (Report # 161299) was made on September 23, 2016. Impacts to groundwater and soil vapor were identified and should be further delineated at the Property. Further investigation at the Property can be completed through a non-standard Limited Site Investigation to further delineate groundwater and/or soil vapor impacts. Carlson McCain will prepare a Request For Proposal so as to solicit competitive bids to complete this investigation, as well as prepare a bid to complete this work at the Property.

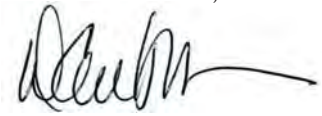
We also recommend that the hydraulic lifts be further investigated or ideally removed to determine if impacts to soil and/or groundwater are related to the lifts.

Closing

If you have any questions or if you would like to discuss this project, please feel free to contact us at (763) 489-7900.

Sincerely,

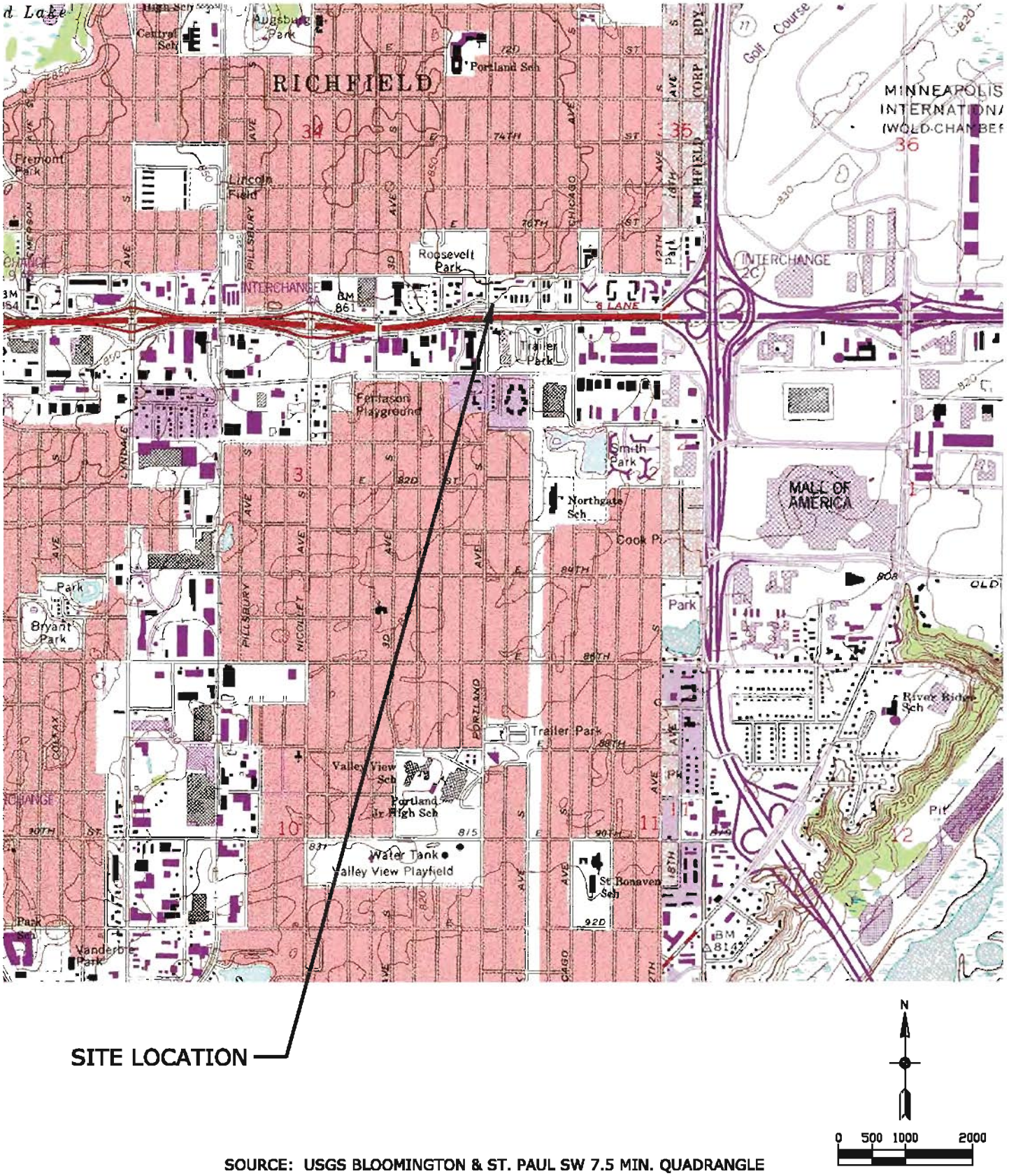
Carlson McCain, Inc.



Wade A. Carlson, P.G.
President/Senior Project Manager

Jeff Neisse
Staff Hydrogeologist

Figures

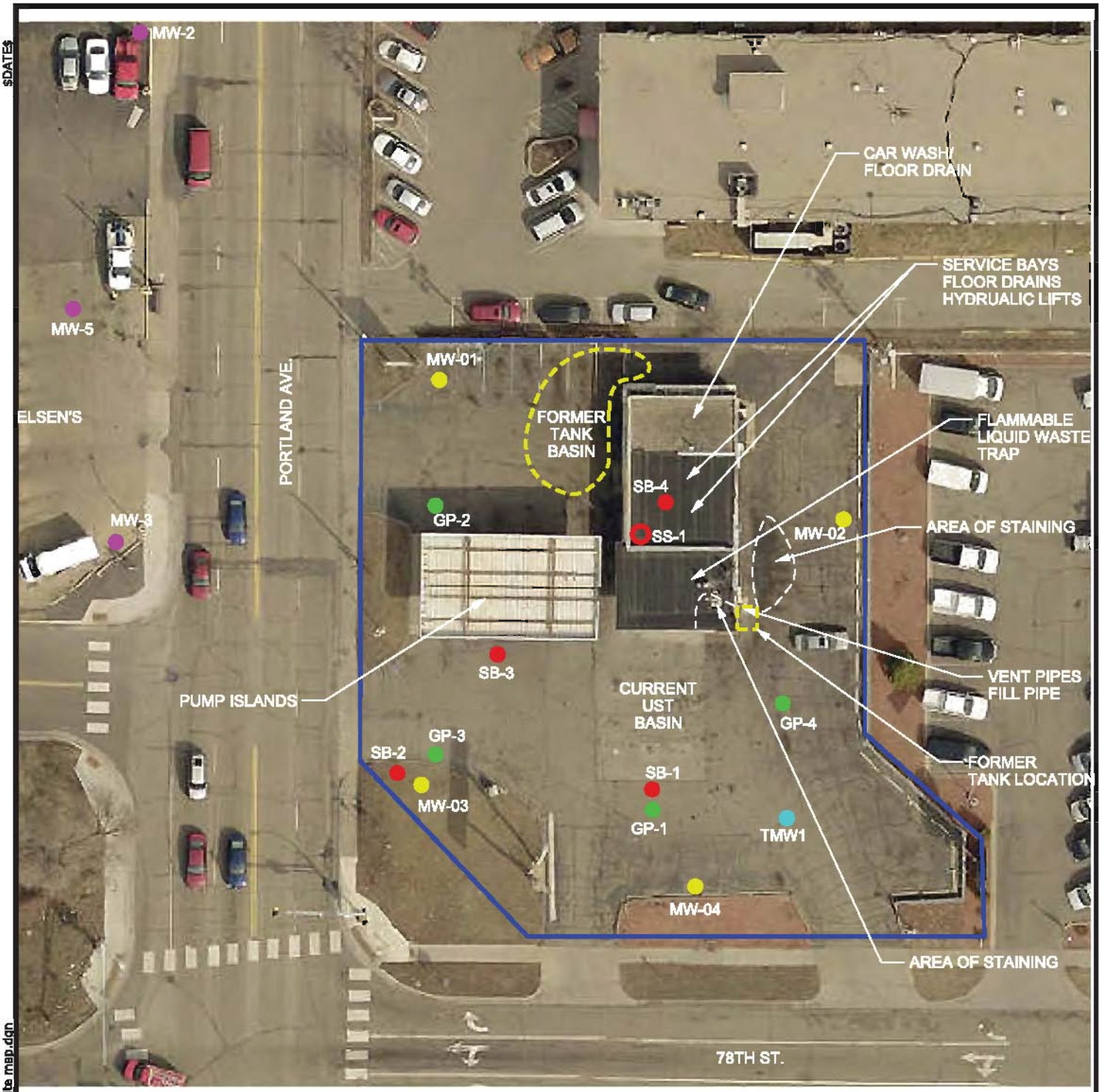


SOURCE: USGS BLOOMINGTON & ST. PAUL SW 7.5 MIN. QUADRANGLE

Carlson McCain
ENVIRONMENTAL·ENGINEERING·SURVEYING

PHASE II INVESTIGATION
Richfield Sinclair
7733 Portland Avenue South
Richfield, Minnesota

FIGURE 1
SITE LOCATION MAP



- 2016 PHASE II SAMPLE LOCATIONS
- 2016 SUB SLAB SOIL VAPOR SAMPLE
- 2010 GROUNDWATER SAMPLE LOCATION
- 2010 SOIL SAMPLE LOCATION
- FORMER ON-SITE MONITORING WELLS (ENECOTECH 1991)
- FORMER ADJACENT MONITORING WELLS
- FORMER TANK BASINS/LIMITS OF EXCAVATIONS

N

0 10 20 40

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PHASE II INVESTIGATION
Richfield Sinclair
7733 Portland Avenue South
Richfield, Minnesota

FIGURE 2
SITE MAP

$DATE$
F:\Jobs\6341 - 6360\6349 - Sinclair Richfield Phase I\Phase II site map.dgn

TABLES

TABLE 1
SUMMARY OF PID SCREENING RESULTS
Richfield Sinclair Property
Carlson McCain Project No. 6349-00

Sample Depth (feet)	Current UST Basin[(1)]	Current Dispenser Area[(1)]	Garage Area (Hoists)[(1)]
	SB-1	SB-3	SB-4
0-2.5	0.1	0.0	0.1
2.5-5	0.2	0.0	0.1
5-7.5	0.0	0.1	0.1
7.5-10	0.1	0.0	0.0
10-12.5	1.1	0.0	0.4
12.5-15	1.9	0.1	0.4
15-17.5	1.0	0.0	0.0
17.5-20	1.0	0.0	0.0
20-22.5	1.0	0.1	0.0
22.5-25	1.1	0.1	0.0
25-27.5	0.6	0.1	0.0
27.5-30	0.4	0.0	0.0
30-32.5	0.6	0.0	0.0
32.5-35	0.6	0.0	0.0
35-36	1.1	--	0.0

Notes:
-- = Not sampled
(1) = Results recorded in parts per million (ppm)
PID = Photoionization Detector
UST = Underground Storage Tank

TABLE 2
SUMMARY OF COMMON PETROLEUM CONSTITUENTS IN SOIL
Richfield Sinclair Property
Carlson McCain Project No. 6349-00

Compound/Parameter	CAS No.	SB-1 (12)	SB-3 (5)	SB-4 (12)	MN-MPCA_Tier1 Residential SRVs 2009	MN-MPCA_Tier2 Industrial SRVs 2009	MN-MPCA SLVs 2013
		09/13/2016	09/13/2016	09/13/2016			
Volatiles (mg/Kg)							
Benzene	71-43-2	<0.116	<0.109	<0.101	6	10	0.02
Ethylbenzene	100-41-4	<0.116	<0.109	<0.101	200	200	1
Toluene	108-88-3	<0.116	<0.109	<0.101	107	305	2.5
Xylenes, Total	1330-20-7	<0.174	<0.164	<0.151	45	130	5.4
GC Volatiles (mg/Kg)							
Wisconsin GRO	STL01887	<11.6	<10.9	<10.1	NE	NE	NE
GC Semivolatiles (mg/Kg)							
Diesel Range Organics (DRO)	STL00143	<7.19	<6.87	<6.45	NE	NE	NE

Notes:
< = Less than reporting limit
mg/kg = milligrams per kilogram or parts per million
MPCA = Minnesota Pollution Control Agency
NE = Not established
RES = Residential
SLV = Soil Leahing Value
SRV = Soil Reference Value

TABLE 3
ANALYTES DETECTED IN GROUNDWATER SAMPLES
Richfiled Sinclair Property
Carlson McCain Project No. 6349-00

Compound/Parameter	CAS No.	SB-1 W	SB-2W	SB-3W	SB-4W	Trip Blank	MDH HRL
		09/13/2016	09/13/2016	09/13/2016	09/13/2016	09/13/2016	
Volatiles (ug/L)							
n-Butylbenzene	104-51-8	<1.00	<1.00	<1.00	**9.6**	<1.00	NE
p-Isopropyltoluene	99-87-6	<1.00	<1.00	<1.00	**2.72**	<1.00	NE
sec-Butylbenzene	135-98-8	<1.00	<1.00	<1.00	**23.3**	<1.00	NE
tert-Butylbenzene	98-06-6	<1.00	<1.00	<1.00	**3.62**	<1.00	NE
GC Volatiles (ug/L)							
Wisconsin GRO	STL01887	<100	<100	<100	**666**	<100	1000[(1)]
GC Semivolatiles (ug/L)							
Diesel Range Organics (DRO)	STL00143	<125	<105	<105	**52800***	NS	1000[(1)]

Notes:
< = Less than the reporting limit
* = RPD of the LCS or LCSD exceeds the control limits.
[(1)] In the absence of a HRL for DRO, the MPCA PRP action limit of 1,000 µg/l was used for screening purposes
Bold = detected concentration
MDH HRL = Minnesota Department of Health, Health Risk Limit
micrograms per liter (µg/L) is roughly equivalent to parts per billion (ppb)
mg/L = milligrams per liter or parts per million (ppm)
NE = Not Established
NS = Not Sampled

TABLE 4
ANAYLTES DETECTED IN SOIL VAPOR SAMPLES
Richfield Sinclair Property
Carlson McCain Project No. 6349-00

Compound/Parameter	CAS No.	Sample SS-1 9/13/2016	Industrial Intrusion Screening Value (ISV) µg/m3	10X Industrial ISV µg/m3	100X Industrial ISV µg/m3
Volatile Organic Compounds(1) (ug/m3)					
Acetone	67-64-1	836	87,000	870,000	8,700,000
Ethanol	64-17-5	542	42,000	420,000	4,200,000
Isopropyl alcohol	67-63-0	229	20,000	200,000	2,000,000
n-Hexane	110-54-3	135	6,000	60,000	600,000
Tetrachloroethene	127-18-4	**702**	33	330	3,300

Notes:

(1) = Minnesota Gas List for soil vapor method TO-15

BOLD = Result exceeded ISV

ISV = Intrusion Screening Value

NE = Not established

µg/m^3 = Micrograms per cubic meter

APPENDIX A

BORING NUMBER SB-1

CLIENT Richfield Sinclair
PROJECT NAME Phase II Investigation
PROJECT NUMBER 6349-00
PROJECT LOCATION Richfield, Minnesota
DATE STARTED 9/13/16 **COMPLETED** 9/13/16
GROUND ELEVATION _____ **HOLE SIZE** 2 inch
DRILLING CONTRACTOR Range Environmental Drilling
GROUND WATER LEVELS:
DRILLING METHOD Direct Push
▽ **AT TIME OF DRILLING** 29.5 ft
LOGGED BY J. Neisse **CHECKED BY** W. Carlson
AT END OF DRILLING ---
NOTES South of tank basin.
AFTER DRILLING ---

FORMATION	DEPTH (ft)	SAMPLE TYPE NUMBER	RECOVERY %	U.S.C.S.	GRAPHIC LOG	MATERIAL DESCRIPTION	TIME	PID (ppm)
	0					0.3 ASPHALT.		
FILL		MAC 1	80	SP-SM		0.8 Class V. Brown (7.5YR 4/3) loose coarse SAND with some gravel, subangular, poorly graded, moist, FILL.	10:06	0.1
						3.6 Brown (7.5YR 3/3) loose fine-grained SILTY SAND, subrounded, poorly graded, moist, OUTWASH.	10:06	0.2
	5	MAC 2	80				10:12	0.0
	10						10:12	0.1
		MAC 3	100				10:17	1.1
	15						10:17	1.9
OUTWASH		MAC 4	80	SM		More silt from 17.8' to 18.2' bgs.	10:26	1.0
	20						10:26	1.0
		MAC 5	100				10:40	1.0
	25						10:40	1.1
		MAC 6	100				11:13	0.6
	30					▽ 29.6		

(Continued Next Page)

BORING NUMBER SB-1

CLIENT Richfield Sinclair **PROJECT NAME** Phase II Investigation

PROJECT NUMBER 6349-00 **PROJECT LOCATION** Richfield, Minnesota

FORMATION	DEPTH (ft)	SAMPLE TYPE NUMBER	RECOVERY %	U.S.C.S.	GRAPHIC LOG	MATERIAL DESCRIPTION	TIME	PID (ppm)
	30							
OUTWASH *(continued)*		MAC 7	100	GP GP		Brown (7.5YR 4/3) loose gravelly SAND, angular, moderately graded, moist to wet, OUTWASH. *(continued)*	11:13	0.6
						33.7		
	35	MAC 8	100	GP		Brown (7.5YR 4/3) loose gravelly SAND, angular, moderately graded, large pieces of limestone, moist to wet, OUTWASH.	11:27	0.6
						36.0	11:40	0.0
						Soil sample collected from 12' bgs. Groundwater sample collected. End of boring at 36.0 feet.		

BORING NUMBER SB-2

CLIENT Richfield Sinclair
PROJECT NAME Phase II Investigation
PROJECT NUMBER 6349-00
PROJECT LOCATION Richfield, Minnesota
DATE STARTED 9/13/16 **COMPLETED** 9/13/16
GROUND ELEVATION _____ **HOLE SIZE** 2 inch
DRILLING CONTRACTOR Range Environmental Drilling
GROUND WATER LEVELS:
DRILLING METHOD Direct Push
▽ **AT TIME OF DRILLING** 31.7 ft
LOGGED BY J. Neisse **CHECKED BY** W. Carlson
AT END OF DRILLING ---
NOTES Southwest corner of Property.
AFTER DRILLING ---

FORMATION	DEPTH (ft)	SAMPLE TYPE NUMBER	RECOVERY %	GRAPHIC LOG	MATERIAL DESCRIPTION
	0				Blind drill to 35' bgs. to collect water sample.
	5				
	10				
	15	MAC	100		
	20				
	25				
	30				

(Continued Next Page)

BORING NUMBER SB-2

CLIENT Richfield Sinclair **PROJECT NAME** Phase II Investigation

PROJECT NUMBER 6349-00 **PROJECT LOCATION** Richfield, Minnesota

FORMATION	DEPTH (ft)	SAMPLE TYPE NUMBER	RECOVERY %	GRAPHIC LOG	MATERIAL DESCRIPTION
	30				Blind drill to 35' bgs. to collect water sample. *(continued)*
					▽
	35				35.0
					Collect groundwater sample.
					End of boring at 35.0 feet.

BORING NUMBER SB-3

Carlson McCain

CLIENT Richfield Sinclair
PROJECT NAME Phase II Investigation
PROJECT NUMBER 6349-00
PROJECT LOCATION Richfield, Minnesota
DATE STARTED 9/13/16 **COMPLETED** 9/13/16
GROUND ELEVATION _____ **HOLE SIZE** 2 inch
DRILLING CONTRACTOR Range Environmental Drilling
GROUND WATER LEVELS:
DRILLING METHOD Direct Push
▽ **AT TIME OF DRILLING** 28.0 ft
LOGGED BY J. Neisse **CHECKED BY** W. Carlson
AT END OF DRILLING ---
NOTES South off dispenser spill pad.
AFTER DRILLING ---

FORMATION	DEPTH (ft)	SAMPLE TYPE NUMBER	RECOVERY %	U.S.C.S.	GRAPHIC LOG	MATERIAL DESCRIPTION	TIME	PID (ppm)
	0					0.3 ASPHALT.		
				GP		0.7 Class V.		
FILL						1.5 Peagravel.		
		MAC 1	60	SP-SM		Brown (7.5YR 4/3) loose medium to coarse SAND with some gravel, subangular, poorly graded, moist, FILL.	12:03	0.0
						4.1		
OUTWASH	5					Brown (7.5YR 3/3) loose fine-grained SILTY SAND, subrounded, poorly graded, moist, OUTWASH.	12:03	0.0
		MAC 2	60				13:00	0.1
	10						13:00	0.0
		MAC 3	80				13:10	0.0
	15						13:10	0.1
		MAC 4	80	SM		More silt from 17.4' to 18.2' bgs.	13:18	0.0
	20						13:18	0.0
		MAC 5	80				13:24	0.1
	25						13:24	0.1
		MAC 6	80			▽	13:34	0.1
						28.9		
	30			GP		Brown (7.5YR 4/3) loose gravelly SAND, angular, moderately graded, moist to wet, OUTWASH.		

(Continued Next Page)

BORING NUMBER SB-3

CLIENT Richfield Sinclair **PROJECT NAME** Phase II Investigation

PROJECT NUMBER 6349-00 **PROJECT LOCATION** Richfield, Minnesota

FORMATION	DEPTH (ft)	SAMPLE TYPE NUMBER	RECOVERY %	U.S.C.S.	GRAPHIC LOG	MATERIAL DESCRIPTION	TIME	PID (ppm)
	30							
OUTWASH		MAC 7	100	GP		Brown (7.5YR 4/3) loose gravelly SAND, angular, moderately graded, moist to wet, OUTWASH. *(continued)*	13:34	0.0
							13:40	0.0
						34.0	13:40	0.0
						Soil sample collected from 5' bgs. Groundwater sample collected. End of boring at 34.0 feet.		

BORING NUMBER SB-4

Carlson McCain

CLIENT Richfield Sinclair
PROJECT NAME Phase II Investigation
PROJECT NUMBER 6349-00
PROJECT LOCATION Richfield, Minnesota
DATE STARTED 9/13/16 **COMPLETED** 9/13/16
GROUND ELEVATION _____ **HOLE SIZE** 2 inch
DRILLING CONTRACTOR Range Environmental Drilling
GROUND WATER LEVELS:
DRILLING METHOD Direct Push
▽ **AT TIME OF DRILLING** 32.1 ft
LOGGED BY J. Neisse **CHECKED BY** W. Carlson
AT END OF DRILLING ---
NOTES Inside garage between hoists.
AFTER DRILLING ---

FORMATION	DEPTH (ft)	SAMPLE TYPE NUMBER	RECOVERY %	U.S.C.S.	GRAPHIC LOG	MATERIAL DESCRIPTION	TIME	PID (ppm)
	0					0.5 CONCRETE.		
OUTWASH		MAC 1	80	SP-SM		Brown (7.5YR 4/3) loose fine-grained SAND some silt, subrounded, poorly graded, moist, OUTWASH.	15:05	0.1
	5						15:05	0.1
		MAC 2	80				15:11	0.1
	10						15:11	0.0
		MAC 3	80				15:15	0.4
	15						15:15	0.4
		MAC 4	100			Same as above with silt from 16.8' to 17.6' bgs.	15:21	0.0
	20						15:21	0.0
		MAC 5	80				15:29	0.0
	25						15:29	0.0
		MAC 6	80				15:33	0.0
	30							

(Continued Next Page)

BORING NUMBER SB-4

CLIENT Richfield Sinclair **PROJECT NAME** Phase II Investigation

PROJECT NUMBER 6349-00 **PROJECT LOCATION** Richfield, Minnesota

FORMATION	DEPTH (ft)	SAMPLE TYPE NUMBER	RECOVERY %	U.S.C.S.	GRAPHIC LOG	MATERIAL DESCRIPTION	TIME	PID (ppm)
	30							
OUTWASH *(continued)*		MAC 7	100	SP-SM		Brown (7.5YR 4/3) loose fine-grained SAND some silt, subrounded, poorly graded, moist, OUTWASH. *(continued)*	15:33 15:39	0.0 0.0
	35	MAC 8	100				15:39	0.0
						36.0		
						Soil sample collected from 12' bgs. Groundwater sample collected-petroleum odor in groundwater. End of boring at 36.0 feet.		

APPENDIX B

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

ANALYTICAL REPORT

TestAmerica Laboratories, Inc.
TestAmerica Cedar Falls
704 Enterprise Drive
Cedar Falls, IA 50613
Tel: (319)277-2401

TestAmerica Job ID: 310-89278-1
TestAmerica Sample Delivery Group: 6349-00
Client Project/Site: Richfield Sinclair Phase II

For:
Carlson McCain, Inc.
3890 Pheasant Ridge Drive NE, #100
Blaine, Minnesota 55449

Attn: Wade Carlson

Authorized for release by:
9/21/2016 2:08:34 PM

Derrick Klinkenberg, Project Manager I
(319)277-2401
derrick.klinkenberg@testamericainc.com

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

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

Table of Contents

Job ID: 310-89278-1

Laboratory: TestAmerica Cedar Falls

Narrative

Job Narrative
310-89278-1

Comments
No additional comments.

Receipt
The samples were received on 9/14/2016 9:00 AM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperature of the cooler at receipt was 3.1º C.

GC/MS VOA
Method(s) 8260B: The continuing calibration verification (CCV) analyzed in batch 310-141233 was outside the method criteria for the following analyte: 1,2,4-Trichlorobenzene (-23.2 %D). A LCS standard was analyzed with the affected samples and found to be acceptable using CCV criteria.

Method(s) 8260B: The continuing calibration verification (CCV) associated with batch 310-141521 recovered above the upper control limit for Carbon Tetrachloride(24.5%D), 3-Chloro-1-propene(69.1%D), Dichlorobromomethane(23.4%D), Benzene(22.1%D), 1,1-Dichloropropene(21.5%D), cis-1,2-Dichloroethene(22.0%D), 1,1-Dichloroethene(22.2%D), 1,1,1-Trichloroethane(20.4%D), 1,1,2-Trichloro-1,2,2-trifluoroethane(28.6%D), Bromoform(24.5%D), 1,2-Dichloropropane(21.0%D), trans-1,2-Dichloroethene(20.6%D), and 1,1-Dichloroethane(22.6%D). The samples associated with this CCV were non-detects for the affected analytes; therefore, the data have been reported. The following sample is impacted: (CCV 310-141521/3).

Method(s) 8260B: The continuing calibration verification (CCV) associated with batch 310-141521 recovered above the upper control limit for Vinyl chloride(21.0%D). The samples associated with this CCV were non-detects for the affected analytes; therefore, the data have been reported.

Method(s) 8260B: The initial calibration verification (ICV) result for batch 310-141521 was above the upper control limit for Bromoform(35.5%). Sample results were non-detects, and have been reported as qualified data.

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

GC Semi VOA
Method(s) WI-DRO: The laboratory control sample (LCS) and the laboratory control sample duplicate (LCSD) for preparation batch 310-141319 and analytical batch 310-141440 recovered outside control limits for the following analytes: Diesel Range Organics (DRO). These analytes were biased low in the LCS and all associated samples have been rerun for confirmation; therefore, the data have been reported.

Method(s) WI-DRO: The laboratory control sample (LCS) and / or laboratory control sample duplicate (LCSD) for preparation batch 310-141319 and analytical batch 310-141544 recovered outside control limits for the following analytes: Diesel Range Organics (DRO). These analytes were biased low in the LCS and all associated samples have been rerun for confirmation; therefore, the data have been reported.

Method(s) WI-DRO: The %RPD of the laboratory control sample (LCS) and laboratory control standard duplicate (LCSD) for preparation batch 310-141319 recovered outside control limits for the following analytes: Diesel Range Organics (DRO).

Method(s) WI-DRO: Significant peaks, readily distinguished from background, were detected in the following sample before the analytical window defined by the first component eluting in the Diesel Range Organics (DRO) mix (i.e., n-Decane): SB-3W (310-89278-4).

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

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

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

Job ID: 310-89278-1 (Continued)

Laboratory: TestAmerica Cedar Falls (Continued)

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

Sample Summary

Client: Carlson McCain, Inc.
Project/Site: Richfield Sinclair Phase II

TestAmerica Job ID: 310-89278-1
SDG: 6349-00

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
310-89278-1	SB-1 W	Ground Water	09/13/16 11:45	09/14/16 09:00
310-89278-2	SB-1 (12)	Solid	09/13/16 12:07	09/14/16 09:00
310-89278-3	SB-2W	Ground Water	09/13/16 12:53	09/14/16 09:00
310-89278-4	SB-3W	Ground Water	09/13/16 14:44	09/14/16 09:00
310-89278-5	SB-3 (5)	Solid	09/13/16 14:52	09/14/16 09:00
310-89278-6	SB-4W	Ground Water	09/13/16 15:49	09/14/16 09:00
310-89278-7	SB-4 (12)	Solid	09/13/16 15:54	09/14/16 09:00
310-89278-8	MeOH Blank	Solid	09/13/16 00:00	09/14/16 09:00
310-89278-9	Trip Blank	Water	09/13/16 00:00	09/14/16 09:00

Detection Summary

Client: Carlson McCain, Inc.
Project/Site: Richfield Sinclair Phase II

TestAmerica Job ID: 310-89278-1
SDG: 6349-00

Client Sample ID: SB-1 W — Lab Sample ID: 310-89278-1

No Detections.

Client Sample ID: SB-1 (12) — Lab Sample ID: 310-89278-2

No Detections.

Client Sample ID: SB-2W — Lab Sample ID: 310-89278-3

No Detections.

Client Sample ID: SB-3W — Lab Sample ID: 310-89278-4

No Detections.

Client Sample ID: SB-3 (5) — Lab Sample ID: 310-89278-5

No Detections.

Client Sample ID: SB-4W — Lab Sample ID: 310-89278-6

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
n-Butylbenzene	9.60		1.00		ug/L	1		8260B	Total/NA
sec-Butylbenzene	23.3		1.00		ug/L	1		8260B	Total/NA
tert-Butylbenzene	3.62		1.00		ug/L	1		8260B	Total/NA
p-Isopropyltoluene	2.72		1.00		ug/L	1		8260B	Total/NA
Wisconsin GRO	666		100		ug/L	1		WI-GRO	Total/NA
Diesel Range Organics (DRO)	52800	*	538		ug/L	5		WI-DRO	Total/NA

Client Sample ID: SB-4 (12) — Lab Sample ID: 310-89278-7

No Detections.

Client Sample ID: MeOH Blank — Lab Sample ID: 310-89278-8

No Detections.

Client Sample ID: Trip Blank — Lab Sample ID: 310-89278-9

No Detections.

This Detection Summary does not include radiochemical test results.

Client: Carlson McCain, Inc.
Project/Site: Richfield Sinclair Phase II

TestAmerica Job ID: 310-89278-1
SDG: 6349-00

Client Sample ID: SB-1 W
Date Collected: 09/13/16 11:45
Date Received: 09/14/16 09:00

Lab Sample ID: 310-89278-1
Matrix: Ground Water

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acetone	<10.0		10.0		ug/L			09/15/16 11:25	1
Allyl chloride	<2.00		2.00		ug/L			09/15/16 11:25	1
Benzene	<0.500		0.500		ug/L			09/15/16 11:25	1
Bromobenzene	<1.00		1.00		ug/L			09/15/16 11:25	1
Bromochloromethane	<5.00		5.00		ug/L			09/15/16 11:25	1
Bromodichloromethane	<1.00		1.00		ug/L			09/15/16 11:25	1
Bromoform	<5.00		5.00		ug/L			09/15/16 11:25	1
Bromomethane	<4.00		4.00		ug/L			09/15/16 11:25	1
2-Butanone (MEK)	<10.0		10.0		ug/L			09/15/16 11:25	1
n-Butylbenzene	<1.00		1.00		ug/L			09/15/16 11:25	1
sec-Butylbenzene	<1.00		1.00		ug/L			09/15/16 11:25	1
tert-Butylbenzene	<1.00		1.00		ug/L			09/15/16 11:25	1
Carbon tetrachloride	<2.00		2.00		ug/L			09/15/16 11:25	1
Chlorobenzene	<1.00		1.00		ug/L			09/15/16 11:25	1
Chlorodibromomethane	<5.00		5.00		ug/L			09/15/16 11:25	1
Dichlorofluoromethane	<1.00		1.00		ug/L			09/15/16 11:25	1
Chloroethane	<4.00		4.00		ug/L			09/15/16 11:25	1
Chloroform	<1.00		1.00		ug/L			09/15/16 11:25	1
Chloromethane	<3.00		3.00		ug/L			09/15/16 11:25	1
4-Chlorotoluene	<1.00		1.00		ug/L			09/15/16 11:25	1
2-Chlorotoluene	<1.00		1.00		ug/L			09/15/16 11:25	1
1,2-Dibromo-3-Chloropropane	<5.00		5.00		ug/L			09/15/16 11:25	1
1,2-Dibromoethane (EDB)	<1.00		1.00		ug/L			09/15/16 11:25	1
1,2-Dichlorobenzene	<1.00		1.00		ug/L			09/15/16 11:25	1
1,3-Dichlorobenzene	<1.00		1.00		ug/L			09/15/16 11:25	1
1,4-Dichlorobenzene	<1.00		1.00		ug/L			09/15/16 11:25	1
Dichlorodifluoromethane	<3.00		3.00		ug/L			09/15/16 11:25	1
1,2-Dichloroethane	<1.00		1.00		ug/L			09/15/16 11:25	1
1,1-Dichloroethane	<1.00		1.00		ug/L			09/15/16 11:25	1
1,1-Dichloroethene	<2.00		2.00		ug/L			09/15/16 11:25	1
cis-1,2-Dichloroethene	<1.00		1.00		ug/L			09/15/16 11:25	1
trans-1,2-Dichloroethene	<1.00		1.00		ug/L			09/15/16 11:25	1
1,2-Dichloropropane	<1.00		1.00		ug/L			09/15/16 11:25	1
1,3-Dichloropropane	<1.00		1.00		ug/L			09/15/16 11:25	1
2,2-Dichloropropane	<4.00		4.00		ug/L			09/15/16 11:25	1
1,1-Dichloropropene	<1.00		1.00		ug/L			09/15/16 11:25	1
cis-1,3-Dichloropropene	<5.00		5.00		ug/L			09/15/16 11:25	1
trans-1,3-Dichloropropene	<5.00		5.00		ug/L			09/15/16 11:25	1
Diethyl ether	<2.00		2.00		ug/L			09/15/16 11:25	1
Ethylbenzene	<1.00		1.00		ug/L			09/15/16 11:25	1
Hexachlorobutadiene	<5.00		5.00		ug/L			09/15/16 11:25	1
Isopropylbenzene	<1.00		1.00		ug/L			09/15/16 11:25	1
p-Isopropyltoluene	<1.00		1.00		ug/L			09/15/16 11:25	1
4-Methyl-2-pentanone (MIBK)	<10.0		10.0		ug/L			09/15/16 11:25	1
Methylene Chloride	<5.00		5.00		ug/L			09/15/16 11:25	1
Methyl tert-butyl ether	<1.00		1.00		ug/L			09/15/16 11:25	1
Naphthalene	<5.00		5.00		ug/L			09/15/16 11:25	1
N-Propylbenzene	<1.00		1.00		ug/L			09/15/16 11:25	1
Styrene	<1.00		1.00		ug/L			09/15/16 11:25	1

Client Sample ID: SB-1 W
Date Collected: 09/13/16 11:45
Date Received: 09/14/16 09:00

Lab Sample ID: 310-89278-1
Matrix: Ground Water

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1,2-Tetrachloroethane	<1.00		1.00		ug/L			09/15/16 11:25	1
1,1,2,2-Tetrachloroethane	<1.00		1.00		ug/L			09/15/16 11:25	1
Tetrachloroethene	<1.00		1.00		ug/L			09/15/16 11:25	1
Tetrahydrofuran	<10.0		10.0		ug/L			09/15/16 11:25	1
Toluene	<1.00		1.00		ug/L			09/15/16 11:25	1
1,2,3-Trichlorobenzene	<5.00		5.00		ug/L			09/15/16 11:25	1
1,2,4-Trichlorobenzene	<5.00		5.00		ug/L			09/15/16 11:25	1
1,1,1-Trichloroethane	<1.00		1.00		ug/L			09/15/16 11:25	1
1,1,2-Trichloroethane	<1.00		1.00		ug/L			09/15/16 11:25	1
Trichloroethene	<1.00		1.00		ug/L			09/15/16 11:25	1
Trichlorofluoromethane	<4.00		4.00		ug/L			09/15/16 11:25	1
1,2,3-Trichloropropane	<1.00		1.00		ug/L			09/15/16 11:25	1
1,1,2-Trichlorotrifluoroethane	<2.00		2.00		ug/L			09/15/16 11:25	1
1,2,4-Trimethylbenzene	<1.00		1.00		ug/L			09/15/16 11:25	1
1,3,5-Trimethylbenzene	<1.00		1.00		ug/L			09/15/16 11:25	1
Vinyl chloride	<1.00		1.00		ug/L			09/15/16 11:25	1
Xylenes, Total	<3.00		3.00		ug/L			09/15/16 11:25	1
Dibromomethane	<1.00		1.00		ug/L			09/15/16 11:25	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*111*		*80 - 120*		*09/15/16 11:25*	*1*
Dibromofluoromethane (Surr)	*104*		*80 - 120*		*09/15/16 11:25*	*1*
Toluene-d8 (Surr)	*98*		*80 - 120*		*09/15/16 11:25*	*1*

Method: WI-GRO - Wisconsin - Gasoline Range Organics (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Wisconsin GRO	<100		100		ug/L			09/16/16 23:31	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*98*		*80 - 120*		*09/16/16 23:31*	*1*

Method: WI-DRO - Wisconsin - Diesel Range Organics (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Diesel Range Organics (DRO)	<125	*	125		ug/L		09/14/16 16:10	09/15/16 13:48	1

Client Sample ID: SB-1 (12)

Date Collected: 09/13/16 12:07
Date Received: 09/14/16 09:00

Lab Sample ID: 310-89278-2

Matrix: Solid
Percent Solids: 83.0

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acetone	<0.579		0.579		mg/Kg	☼	09/16/16 06:44	09/16/16 14:59	1
Allyl chloride	<0.116		0.116		mg/Kg	☼	09/16/16 06:44	09/16/16 14:59	1
Benzene	<0.116		0.116		mg/Kg	☼	09/16/16 06:44	09/16/16 14:59	1
Bromobenzene	<0.116		0.116		mg/Kg	☼	09/16/16 06:44	09/16/16 14:59	1
Bromochloromethane	<0.116		0.116		mg/Kg	☼	09/16/16 06:44	09/16/16 14:59	1
Bromodichloromethane	<0.116		0.116		mg/Kg	☼	09/16/16 06:44	09/16/16 14:59	1
Bromoform	<0.116	^	0.116		mg/Kg	☼	09/16/16 06:44	09/16/16 14:59	1
Bromomethane	<0.579		0.579		mg/Kg	☼	09/16/16 06:44	09/16/16 14:59	1
2-Butanone (MEK)	<0.290		0.290		mg/Kg	☼	09/16/16 06:44	09/16/16 14:59	1
n-Butylbenzene	<0.116		0.116		mg/Kg	☼	09/16/16 06:44	09/16/16 14:59	1
sec-Butylbenzene	<0.116		0.116		mg/Kg	☼	09/16/16 06:44	09/16/16 14:59	1
tert-Butylbenzene	<0.116		0.116		mg/Kg	☼	09/16/16 06:44	09/16/16 14:59	1
Carbon tetrachloride	<0.116		0.116		mg/Kg	☼	09/16/16 06:44	09/16/16 14:59	1
Chlorobenzene	<0.116		0.116		mg/Kg	☼	09/16/16 06:44	09/16/16 14:59	1
Chlorodibromomethane	<0.116		0.116		mg/Kg	☼	09/16/16 06:44	09/16/16 14:59	1
Dichlorofluoromethane	<0.116		0.116		mg/Kg	☼	09/16/16 06:44	09/16/16 14:59	1
Chloroethane	<0.116		0.116		mg/Kg	☼	09/16/16 06:44	09/16/16 14:59	1
Chloroform	<0.116		0.116		mg/Kg	☼	09/16/16 06:44	09/16/16 14:59	1
Chloromethane	<0.290		0.290		mg/Kg	☼	09/16/16 06:44	09/16/16 14:59	1
4-Chlorotoluene	<0.116		0.116		mg/Kg	☼	09/16/16 06:44	09/16/16 14:59	1
2-Chlorotoluene	<0.116		0.116		mg/Kg	☼	09/16/16 06:44	09/16/16 14:59	1
1,2-Dibromo-3-Chloropropane	<0.116		0.116		mg/Kg	☼	09/16/16 06:44	09/16/16 14:59	1
1,2-Dibromoethane (EDB)	<0.116		0.116		mg/Kg	☼	09/16/16 06:44	09/16/16 14:59	1
1,2-Dichlorobenzene	<0.116		0.116		mg/Kg	☼	09/16/16 06:44	09/16/16 14:59	1
1,3-Dichlorobenzene	<0.116		0.116		mg/Kg	☼	09/16/16 06:44	09/16/16 14:59	1
1,4-Dichlorobenzene	<0.116		0.116		mg/Kg	☼	09/16/16 06:44	09/16/16 14:59	1
Dichlorodifluoromethane	<0.116		0.116		mg/Kg	☼	09/16/16 06:44	09/16/16 14:59	1
1,2-Dichloroethane	<0.116		0.116		mg/Kg	☼	09/16/16 06:44	09/16/16 14:59	1
1,1-Dichloroethane	<0.116		0.116		mg/Kg	☼	09/16/16 06:44	09/16/16 14:59	1
1,1-Dichloroethene	<0.116		0.116		mg/Kg	☼	09/16/16 06:44	09/16/16 14:59	1
cis-1,2-Dichloroethene	<0.116		0.116		mg/Kg	☼	09/16/16 06:44	09/16/16 14:59	1
trans-1,2-Dichloroethene	<0.116		0.116		mg/Kg	☼	09/16/16 06:44	09/16/16 14:59	1
1,2-Dichloropropane	<0.116		0.116		mg/Kg	☼	09/16/16 06:44	09/16/16 14:59	1
1,3-Dichloropropane	<0.116		0.116		mg/Kg	☼	09/16/16 06:44	09/16/16 14:59	1
2,2-Dichloropropane	<0.116		0.116		mg/Kg	☼	09/16/16 06:44	09/16/16 14:59	1
1,1-Dichloropropene	<0.116		0.116		mg/Kg	☼	09/16/16 06:44	09/16/16 14:59	1
cis-1,3-Dichloropropene	<0.116		0.116		mg/Kg	☼	09/16/16 06:44	09/16/16 14:59	1
trans-1,3-Dichloropropene	<0.116		0.116		mg/Kg	☼	09/16/16 06:44	09/16/16 14:59	1
Diethyl ether	<0.116		0.116		mg/Kg	☼	09/16/16 06:44	09/16/16 14:59	1
Ethylbenzene	<0.116		0.116		mg/Kg	☼	09/16/16 06:44	09/16/16 14:59	1
Hexachlorobutadiene	<0.116		0.116		mg/Kg	☼	09/16/16 06:44	09/16/16 14:59	1
Isopropylbenzene	<0.116		0.116		mg/Kg	☼	09/16/16 06:44	09/16/16 14:59	1
p-Isopropyltoluene	<0.116		0.116		mg/Kg	☼	09/16/16 06:44	09/16/16 14:59	1
4-Methyl-2-pentanone (MIBK)	<0.116		0.116		mg/Kg	☼	09/16/16 06:44	09/16/16 14:59	1
Methylene Chloride	<0.290		0.290		mg/Kg	☼	09/16/16 06:44	09/16/16 14:59	1
Methyl tert-butyl ether	<0.116		0.116		mg/Kg	☼	09/16/16 06:44	09/16/16 14:59	1
Naphthalene	<0.290		0.290		mg/Kg	☼	09/16/16 06:44	09/16/16 14:59	1
N-Propylbenzene	<0.116		0.116		mg/Kg	☼	09/16/16 06:44	09/16/16 14:59	1
Styrene	<0.116		0.116		mg/Kg	☼	09/16/16 06:44	09/16/16 14:59	1

Client Sample ID: SB-1 (12)
Date Collected: 09/13/16 12:07
Date Received: 09/14/16 09:00

Lab Sample ID: 310-89278-2
Matrix: Solid
Percent Solids: 83.0

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1,2-Tetrachloroethane	<0.116		0.116		mg/Kg	☼	09/16/16 06:44	09/16/16 14:59	1
1,1,2,2-Tetrachloroethane	<0.116		0.116		mg/Kg	☼	09/16/16 06:44	09/16/16 14:59	1
Tetrachloroethene	<0.116		0.116		mg/Kg	☼	09/16/16 06:44	09/16/16 14:59	1
Tetrahydrofuran	<0.116		0.116		mg/Kg	☼	09/16/16 06:44	09/16/16 14:59	1
Toluene	<0.116		0.116		mg/Kg	☼	09/16/16 06:44	09/16/16 14:59	1
1,2,3-Trichlorobenzene	<0.116		0.116		mg/Kg	☼	09/16/16 06:44	09/16/16 14:59	1
1,2,4-Trichlorobenzene	<0.116		0.116		mg/Kg	☼	09/16/16 06:44	09/16/16 14:59	1
1,1,1-Trichloroethane	<0.116		0.116		mg/Kg	☼	09/16/16 06:44	09/16/16 14:59	1
1,1,2-Trichloroethane	<0.116		0.116		mg/Kg	☼	09/16/16 06:44	09/16/16 14:59	1
Trichloroethene	<0.116		0.116		mg/Kg	☼	09/16/16 06:44	09/16/16 14:59	1
Trichlorofluoromethane	<0.116		0.116		mg/Kg	☼	09/16/16 06:44	09/16/16 14:59	1
1,2,3-Trichloropropane	<0.116		0.116		mg/Kg	☼	09/16/16 06:44	09/16/16 14:59	1
1,1,2-Trichlorotrifluoroethane	<0.116		0.116		mg/Kg	☼	09/16/16 06:44	09/16/16 14:59	1
1,2,4-Trimethylbenzene	<0.116		0.116		mg/Kg	☼	09/16/16 06:44	09/16/16 14:59	1
1,3,5-Trimethylbenzene	<0.116		0.116		mg/Kg	☼	09/16/16 06:44	09/16/16 14:59	1
Vinyl chloride	<0.116		0.116		mg/Kg	☼	09/16/16 06:44	09/16/16 14:59	1
Xylenes, Total	<0.174		0.174		mg/Kg	☼	09/16/16 06:44	09/16/16 14:59	1
Dibromomethane	<0.116		0.116		mg/Kg	☼	09/16/16 06:44	09/16/16 14:59	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*104*		*70 - 135*	*09/16/16 06:44*	*09/16/16 14:59*	*1*
Dibromofluoromethane (Surr)	*100*		*80 - 120*	*09/16/16 06:44*	*09/16/16 14:59*	*1*
Toluene-d8 (Surr)	*91*		*80 - 120*	*09/16/16 06:44*	*09/16/16 14:59*	*1*

Method: WI-GRO - Wisconsin - Gasoline Range Organics (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Wisconsin GRO	<11.6		11.6		mg/Kg	☼	09/15/16 09:56	09/15/16 22:00	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*94*		*80 - 120*	*09/15/16 09:56*	*09/15/16 22:00*	*1*

Method: WI-DRO - Wisconsin - Diesel Range Organics (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Diesel Range Organics (DRO)	<7.19		7.19		mg/Kg	☼	09/14/16 14:36	09/15/16 21:17	1

Client: Carlson McCain, Inc.
Project/Site: Richfield Sinclair Phase II

TestAmerica Job ID: 310-89278-1
SDG: 6349-00

Client Sample ID: SB-2W
Date Collected: 09/13/16 12:53
Date Received: 09/14/16 09:00

Lab Sample ID: 310-89278-3
Matrix: Ground Water

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acetone	<10.0		10.0		ug/L			09/15/16 11:49	1
Allyl chloride	<2.00		2.00		ug/L			09/15/16 11:49	1
Benzene	<0.500		0.500		ug/L			09/15/16 11:49	1
Bromobenzene	<1.00		1.00		ug/L			09/15/16 11:49	1
Bromochloromethane	<5.00		5.00		ug/L			09/15/16 11:49	1
Bromodichloromethane	<1.00		1.00		ug/L			09/15/16 11:49	1
Bromoform	<5.00		5.00		ug/L			09/15/16 11:49	1
Bromomethane	<4.00		4.00		ug/L			09/15/16 11:49	1
2-Butanone (MEK)	<10.0		10.0		ug/L			09/15/16 11:49	1
n-Butylbenzene	<1.00		1.00		ug/L			09/15/16 11:49	1
sec-Butylbenzene	<1.00		1.00		ug/L			09/15/16 11:49	1
tert-Butylbenzene	<1.00		1.00		ug/L			09/15/16 11:49	1
Carbon tetrachloride	<2.00		2.00		ug/L			09/15/16 11:49	1
Chlorobenzene	<1.00		1.00		ug/L			09/15/16 11:49	1
Chlorodibromomethane	<5.00		5.00		ug/L			09/15/16 11:49	1
Dichlorofluoromethane	<1.00		1.00		ug/L			09/15/16 11:49	1
Chloroethane	<4.00		4.00		ug/L			09/15/16 11:49	1
Chloroform	<1.00		1.00		ug/L			09/15/16 11:49	1
Chloromethane	<3.00		3.00		ug/L			09/15/16 11:49	1
4-Chlorotoluene	<1.00		1.00		ug/L			09/15/16 11:49	1
2-Chlorotoluene	<1.00		1.00		ug/L			09/15/16 11:49	1
1,2-Dibromo-3-Chloropropane	<5.00		5.00		ug/L			09/15/16 11:49	1
1,2-Dibromoethane (EDB)	<1.00		1.00		ug/L			09/15/16 11:49	1
1,2-Dichlorobenzene	<1.00		1.00		ug/L			09/15/16 11:49	1
1,3-Dichlorobenzene	<1.00		1.00		ug/L			09/15/16 11:49	1
1,4-Dichlorobenzene	<1.00		1.00		ug/L			09/15/16 11:49	1
Dichlorodifluoromethane	<3.00		3.00		ug/L			09/15/16 11:49	1
1,2-Dichloroethane	<1.00		1.00		ug/L			09/15/16 11:49	1
1,1-Dichloroethane	<1.00		1.00		ug/L			09/15/16 11:49	1
1,1-Dichloroethene	<2.00		2.00		ug/L			09/15/16 11:49	1
cis-1,2-Dichloroethene	<1.00		1.00		ug/L			09/15/16 11:49	1
trans-1,2-Dichloroethene	<1.00		1.00		ug/L			09/15/16 11:49	1
1,2-Dichloropropane	<1.00		1.00		ug/L			09/15/16 11:49	1
1,3-Dichloropropane	<1.00		1.00		ug/L			09/15/16 11:49	1
2,2-Dichloropropane	<4.00		4.00		ug/L			09/15/16 11:49	1
1,1-Dichloropropene	<1.00		1.00		ug/L			09/15/16 11:49	1
cis-1,3-Dichloropropene	<5.00		5.00		ug/L			09/15/16 11:49	1
trans-1,3-Dichloropropene	<5.00		5.00		ug/L			09/15/16 11:49	1
Diethyl ether	<2.00		2.00		ug/L			09/15/16 11:49	1
Ethylbenzene	<1.00		1.00		ug/L			09/15/16 11:49	1
Hexachlorobutadiene	<5.00		5.00		ug/L			09/15/16 11:49	1
Isopropylbenzene	<1.00		1.00		ug/L			09/15/16 11:49	1
p-Isopropyltoluene	<1.00		1.00		ug/L			09/15/16 11:49	1
4-Methyl-2-pentanone (MIBK)	<10.0		10.0		ug/L			09/15/16 11:49	1
Methylene Chloride	<5.00		5.00		ug/L			09/15/16 11:49	1
Methyl tert-butyl ether	<1.00		1.00		ug/L			09/15/16 11:49	1
Naphthalene	<5.00		5.00		ug/L			09/15/16 11:49	1
N-Propylbenzene	<1.00		1.00		ug/L			09/15/16 11:49	1
Styrene	<1.00		1.00		ug/L			09/15/16 11:49	1

Client Sample ID: SB-2W
Date Collected: 09/13/16 12:53
Date Received: 09/14/16 09:00

Lab Sample ID: 310-89278-3
Matrix: Ground Water

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1,2-Tetrachloroethane	<1.00		1.00		ug/L			09/15/16 11:49	1
1,1,2,2-Tetrachloroethane	<1.00		1.00		ug/L			09/15/16 11:49	1
Tetrachloroethene	<1.00		1.00		ug/L			09/15/16 11:49	1
Tetrahydrofuran	<10.0		10.0		ug/L			09/15/16 11:49	1
Toluene	<1.00		1.00		ug/L			09/15/16 11:49	1
1,2,3-Trichlorobenzene	<5.00		5.00		ug/L			09/15/16 11:49	1
1,2,4-Trichlorobenzene	<5.00		5.00		ug/L			09/15/16 11:49	1
1,1,1-Trichloroethane	<1.00		1.00		ug/L			09/15/16 11:49	1
1,1,2-Trichloroethane	<1.00		1.00		ug/L			09/15/16 11:49	1
Trichloroethene	<1.00		1.00		ug/L			09/15/16 11:49	1
Trichlorofluoromethane	<4.00		4.00		ug/L			09/15/16 11:49	1
1,2,3-Trichloropropane	<1.00		1.00		ug/L			09/15/16 11:49	1
1,1,2-Trichlorotrifluoroethane	<2.00		2.00		ug/L			09/15/16 11:49	1
1,2,4-Trimethylbenzene	<1.00		1.00		ug/L			09/15/16 11:49	1
1,3,5-Trimethylbenzene	<1.00		1.00		ug/L			09/15/16 11:49	1
Vinyl chloride	<1.00		1.00		ug/L			09/15/16 11:49	1
Xylenes, Total	<3.00		3.00		ug/L			09/15/16 11:49	1
Dibromomethane	<1.00		1.00		ug/L			09/15/16 11:49	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*103*		*80 - 120*		*09/15/16 11:49*	*1*
Dibromofluoromethane (Surr)	*101*		*80 - 120*		*09/15/16 11:49*	*1*
Toluene-d8 (Surr)	*97*		*80 - 120*		*09/15/16 11:49*	*1*

Method: WI-GRO - Wisconsin - Gasoline Range Organics (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Wisconsin GRO	<100		100		ug/L			09/16/16 23:02	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*100*		*80 - 120*		*09/16/16 23:02*	*1*

Method: WI-DRO - Wisconsin - Diesel Range Organics (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Diesel Range Organics (DRO)	<105	*	105		ug/L		09/14/16 16:10	09/15/16 14:25	1

Client: Carlson McCain, Inc.
Project/Site: Richfield Sinclair Phase II

TestAmerica Job ID: 310-89278-1
SDG: 6349-00

Client Sample ID: SB-3W
Date Collected: 09/13/16 14:44
Date Received: 09/14/16 09:00

Lab Sample ID: 310-89278-4
Matrix: Ground Water

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acetone	<10.0		10.0		ug/L			09/15/16 12:12	1
Allyl chloride	<2.00		2.00		ug/L			09/15/16 12:12	1
Benzene	<0.500		0.500		ug/L			09/15/16 12:12	1
Bromobenzene	<1.00		1.00		ug/L			09/15/16 12:12	1
Bromochloromethane	<5.00		5.00		ug/L			09/15/16 12:12	1
Bromodichloromethane	<1.00		1.00		ug/L			09/15/16 12:12	1
Bromoform	<5.00		5.00		ug/L			09/15/16 12:12	1
Bromomethane	<4.00		4.00		ug/L			09/15/16 12:12	1
2-Butanone (MEK)	<10.0		10.0		ug/L			09/15/16 12:12	1
n-Butylbenzene	<1.00		1.00		ug/L			09/15/16 12:12	1
sec-Butylbenzene	<1.00		1.00		ug/L			09/15/16 12:12	1
tert-Butylbenzene	<1.00		1.00		ug/L			09/15/16 12:12	1
Carbon tetrachloride	<2.00		2.00		ug/L			09/15/16 12:12	1
Chlorobenzene	<1.00		1.00		ug/L			09/15/16 12:12	1
Chlorodibromomethane	<5.00		5.00		ug/L			09/15/16 12:12	1
Dichlorofluoromethane	<1.00		1.00		ug/L			09/15/16 12:12	1
Chloroethane	<4.00		4.00		ug/L			09/15/16 12:12	1
Chloroform	<1.00		1.00		ug/L			09/15/16 12:12	1
Chloromethane	<3.00		3.00		ug/L			09/15/16 12:12	1
4-Chlorotoluene	<1.00		1.00		ug/L			09/15/16 12:12	1
2-Chlorotoluene	<1.00		1.00		ug/L			09/15/16 12:12	1
1,2-Dibromo-3-Chloropropane	<5.00		5.00		ug/L			09/15/16 12:12	1
1,2-Dibromoethane (EDB)	<1.00		1.00		ug/L			09/15/16 12:12	1
1,2-Dichlorobenzene	<1.00		1.00		ug/L			09/15/16 12:12	1
1,3-Dichlorobenzene	<1.00		1.00		ug/L			09/15/16 12:12	1
1,4-Dichlorobenzene	<1.00		1.00		ug/L			09/15/16 12:12	1
Dichlorodifluoromethane	<3.00		3.00		ug/L			09/15/16 12:12	1
1,2-Dichloroethane	<1.00		1.00		ug/L			09/15/16 12:12	1
1,1-Dichloroethane	<1.00		1.00		ug/L			09/15/16 12:12	1
1,1-Dichloroethene	<2.00		2.00		ug/L			09/15/16 12:12	1
cis-1,2-Dichloroethene	<1.00		1.00		ug/L			09/15/16 12:12	1
trans-1,2-Dichloroethene	<1.00		1.00		ug/L			09/15/16 12:12	1
1,2-Dichloropropane	<1.00		1.00		ug/L			09/15/16 12:12	1
1,3-Dichloropropane	<1.00		1.00		ug/L			09/15/16 12:12	1
2,2-Dichloropropane	<4.00		4.00		ug/L			09/15/16 12:12	1
1,1-Dichloropropene	<1.00		1.00		ug/L			09/15/16 12:12	1
cis-1,3-Dichloropropene	<5.00		5.00		ug/L			09/15/16 12:12	1
trans-1,3-Dichloropropene	<5.00		5.00		ug/L			09/15/16 12:12	1
Diethyl ether	<2.00		2.00		ug/L			09/15/16 12:12	1
Ethylbenzene	<1.00		1.00		ug/L			09/15/16 12:12	1
Hexachlorobutadiene	<5.00		5.00		ug/L			09/15/16 12:12	1
Isopropylbenzene	<1.00		1.00		ug/L			09/15/16 12:12	1
p-Isopropyltoluene	<1.00		1.00		ug/L			09/15/16 12:12	1
4-Methyl-2-pentanone (MIBK)	<10.0		10.0		ug/L			09/15/16 12:12	1
Methylene Chloride	<5.00		5.00		ug/L			09/15/16 12:12	1
Methyl tert-butyl ether	<1.00		1.00		ug/L			09/15/16 12:12	1
Naphthalene	<5.00		5.00		ug/L			09/15/16 12:12	1
N-Propylbenzene	<1.00		1.00		ug/L			09/15/16 12:12	1
Styrene	<1.00		1.00		ug/L			09/15/16 12:12	1

Client: Carlson McCain, Inc.
Project/Site: Richfield Sinclair Phase II

TestAmerica Job ID: 310-89278-1
SDG: 6349-00

Client Sample ID: SB-3W
Date Collected: 09/13/16 14:44
Date Received: 09/14/16 09:00

Lab Sample ID: 310-89278-4
Matrix: Ground Water

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1,2-Tetrachloroethane	<1.00		1.00		ug/L			09/15/16 12:12	1
1,1,2,2-Tetrachloroethane	<1.00		1.00		ug/L			09/15/16 12:12	1
Tetrachloroethene	<1.00		1.00		ug/L			09/15/16 12:12	1
Tetrahydrofuran	<10.0		10.0		ug/L			09/15/16 12:12	1
Toluene	<1.00		1.00		ug/L			09/15/16 12:12	1
1,2,3-Trichlorobenzene	<5.00		5.00		ug/L			09/15/16 12:12	1
1,2,4-Trichlorobenzene	<5.00		5.00		ug/L			09/15/16 12:12	1
1,1,1-Trichloroethane	<1.00		1.00		ug/L			09/15/16 12:12	1
1,1,2-Trichloroethane	<1.00		1.00		ug/L			09/15/16 12:12	1
Trichloroethene	<1.00		1.00		ug/L			09/15/16 12:12	1
Trichlorofluoromethane	<4.00		4.00		ug/L			09/15/16 12:12	1
1,2,3-Trichloropropane	<1.00		1.00		ug/L			09/15/16 12:12	1
1,1,2-Trichlorotrifluoroethane	<2.00		2.00		ug/L			09/15/16 12:12	1
1,2,4-Trimethylbenzene	<1.00		1.00		ug/L			09/15/16 12:12	1
1,3,5-Trimethylbenzene	<1.00		1.00		ug/L			09/15/16 12:12	1
Vinyl chloride	<1.00		1.00		ug/L			09/15/16 12:12	1
Xylenes, Total	<3.00		3.00		ug/L			09/15/16 12:12	1
Dibromomethane	<1.00		1.00		ug/L			09/15/16 12:12	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*104*		*80 - 120*		*09/15/16 12:12*	*1*
Dibromofluoromethane (Surr)	*103*		*80 - 120*		*09/15/16 12:12*	*1*
Toluene-d8 (Surr)	*99*		*80 - 120*		*09/15/16 12:12*	*1*

Method: WI-GRO - Wisconsin - Gasoline Range Organics (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Wisconsin GRO	<100		100		ug/L			09/16/16 22:33	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*100*		*80 - 120*		*09/16/16 22:33*	*1*

Method: WI-DRO - Wisconsin - Diesel Range Organics (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Diesel Range Organics (DRO)	<105	*	105		ug/L		09/14/16 16:10	09/15/16 15:03	1

Client Sample ID: SB-3 (5)

Date Collected: 09/13/16 14:52
Date Received: 09/14/16 09:00

Lab Sample ID: 310-89278-5

Matrix: Solid
Percent Solids: 86.8

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acetone	<0.547		0.547		mg/Kg	☼	09/16/16 06:44	09/16/16 15:23	1
Allyl chloride	<0.109		0.109		mg/Kg	☼	09/16/16 06:44	09/16/16 15:23	1
Benzene	<0.109		0.109		mg/Kg	☼	09/16/16 06:44	09/16/16 15:23	1
Bromobenzene	<0.109		0.109		mg/Kg	☼	09/16/16 06:44	09/16/16 15:23	1
Bromochloromethane	<0.109		0.109		mg/Kg	☼	09/16/16 06:44	09/16/16 15:23	1
Bromodichloromethane	<0.109		0.109		mg/Kg	☼	09/16/16 06:44	09/16/16 15:23	1
Bromoform	<0.109	^	0.109		mg/Kg	☼	09/16/16 06:44	09/16/16 15:23	1
Bromomethane	<0.547		0.547		mg/Kg	☼	09/16/16 06:44	09/16/16 15:23	1
2-Butanone (MEK)	<0.273		0.273		mg/Kg	☼	09/16/16 06:44	09/16/16 15:23	1
n-Butylbenzene	<0.109		0.109		mg/Kg	☼	09/16/16 06:44	09/16/16 15:23	1
sec-Butylbenzene	<0.109		0.109		mg/Kg	☼	09/16/16 06:44	09/16/16 15:23	1
tert-Butylbenzene	<0.109		0.109		mg/Kg	☼	09/16/16 06:44	09/16/16 15:23	1
Carbon tetrachloride	<0.109		0.109		mg/Kg	☼	09/16/16 06:44	09/16/16 15:23	1
Chlorobenzene	<0.109		0.109		mg/Kg	☼	09/16/16 06:44	09/16/16 15:23	1
Chlorodibromomethane	<0.109		0.109		mg/Kg	☼	09/16/16 06:44	09/16/16 15:23	1
Dichlorofluoromethane	<0.109		0.109		mg/Kg	☼	09/16/16 06:44	09/16/16 15:23	1
Chloroethane	<0.109		0.109		mg/Kg	☼	09/16/16 06:44	09/16/16 15:23	1
Chloroform	<0.109		0.109		mg/Kg	☼	09/16/16 06:44	09/16/16 15:23	1
Chloromethane	<0.273		0.273		mg/Kg	☼	09/16/16 06:44	09/16/16 15:23	1
4-Chlorotoluene	<0.109		0.109		mg/Kg	☼	09/16/16 06:44	09/16/16 15:23	1
2-Chlorotoluene	<0.109		0.109		mg/Kg	☼	09/16/16 06:44	09/16/16 15:23	1
1,2-Dibromo-3-Chloropropane	<0.109		0.109		mg/Kg	☼	09/16/16 06:44	09/16/16 15:23	1
1,2-Dibromoethane (EDB)	<0.109		0.109		mg/Kg	☼	09/16/16 06:44	09/16/16 15:23	1
1,2-Dichlorobenzene	<0.109		0.109		mg/Kg	☼	09/16/16 06:44	09/16/16 15:23	1
1,3-Dichlorobenzene	<0.109		0.109		mg/Kg	☼	09/16/16 06:44	09/16/16 15:23	1
1,4-Dichlorobenzene	<0.109		0.109		mg/Kg	☼	09/16/16 06:44	09/16/16 15:23	1
Dichlorodifluoromethane	<0.109		0.109		mg/Kg	☼	09/16/16 06:44	09/16/16 15:23	1
1,2-Dichloroethane	<0.109		0.109		mg/Kg	☼	09/16/16 06:44	09/16/16 15:23	1
1,1-Dichloroethane	<0.109		0.109		mg/Kg	☼	09/16/16 06:44	09/16/16 15:23	1
1,1-Dichloroethene	<0.109		0.109		mg/Kg	☼	09/16/16 06:44	09/16/16 15:23	1
cis-1,2-Dichloroethene	<0.109		0.109		mg/Kg	☼	09/16/16 06:44	09/16/16 15:23	1
trans-1,2-Dichloroethene	<0.109		0.109		mg/Kg	☼	09/16/16 06:44	09/16/16 15:23	1
1,2-Dichloropropane	<0.109		0.109		mg/Kg	☼	09/16/16 06:44	09/16/16 15:23	1
1,3-Dichloropropane	<0.109		0.109		mg/Kg	☼	09/16/16 06:44	09/16/16 15:23	1
2,2-Dichloropropane	<0.109		0.109		mg/Kg	☼	09/16/16 06:44	09/16/16 15:23	1
1,1-Dichloropropene	<0.109		0.109		mg/Kg	☼	09/16/16 06:44	09/16/16 15:23	1
cis-1,3-Dichloropropene	<0.109		0.109		mg/Kg	☼	09/16/16 06:44	09/16/16 15:23	1
trans-1,3-Dichloropropene	<0.109		0.109		mg/Kg	☼	09/16/16 06:44	09/16/16 15:23	1
Diethyl ether	<0.109		0.109		mg/Kg	☼	09/16/16 06:44	09/16/16 15:23	1
Ethylbenzene	<0.109		0.109		mg/Kg	☼	09/16/16 06:44	09/16/16 15:23	1
Hexachlorobutadiene	<0.109		0.109		mg/Kg	☼	09/16/16 06:44	09/16/16 15:23	1
Isopropylbenzene	<0.109		0.109		mg/Kg	☼	09/16/16 06:44	09/16/16 15:23	1
p-Isopropyltoluene	<0.109		0.109		mg/Kg	☼	09/16/16 06:44	09/16/16 15:23	1
4-Methyl-2-pentanone (MIBK)	<0.109		0.109		mg/Kg	☼	09/16/16 06:44	09/16/16 15:23	1
Methylene Chloride	<0.273		0.273		mg/Kg	☼	09/16/16 06:44	09/16/16 15:23	1
Methyl tert-butyl ether	<0.109		0.109		mg/Kg	☼	09/16/16 06:44	09/16/16 15:23	1
Naphthalene	<0.273		0.273		mg/Kg	☼	09/16/16 06:44	09/16/16 15:23	1
N-Propylbenzene	<0.109		0.109		mg/Kg	☼	09/16/16 06:44	09/16/16 15:23	1
Styrene	<0.109		0.109		mg/Kg	☼	09/16/16 06:44	09/16/16 15:23	1

Client Sample ID: SB-3 (5)
Date Collected: 09/13/16 14:52
Date Received: 09/14/16 09:00

Lab Sample ID: 310-89278-5
Matrix: Solid
Percent Solids: 86.8

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1,2-Tetrachloroethane	<0.109		0.109		mg/Kg	☼	09/16/16 06:44	09/16/16 15:23	1
1,1,2,2-Tetrachloroethane	<0.109		0.109		mg/Kg	☼	09/16/16 06:44	09/16/16 15:23	1
Tetrachloroethene	<0.109		0.109		mg/Kg	☼	09/16/16 06:44	09/16/16 15:23	1
Tetrahydrofuran	<0.109		0.109		mg/Kg	☼	09/16/16 06:44	09/16/16 15:23	1
Toluene	<0.109		0.109		mg/Kg	☼	09/16/16 06:44	09/16/16 15:23	1
1,2,3-Trichlorobenzene	<0.109		0.109		mg/Kg	☼	09/16/16 06:44	09/16/16 15:23	1
1,2,4-Trichlorobenzene	<0.109		0.109		mg/Kg	☼	09/16/16 06:44	09/16/16 15:23	1
1,1,1-Trichloroethane	<0.109		0.109		mg/Kg	☼	09/16/16 06:44	09/16/16 15:23	1
1,1,2-Trichloroethane	<0.109		0.109		mg/Kg	☼	09/16/16 06:44	09/16/16 15:23	1
Trichloroethene	<0.109		0.109		mg/Kg	☼	09/16/16 06:44	09/16/16 15:23	1
Trichlorofluoromethane	<0.109		0.109		mg/Kg	☼	09/16/16 06:44	09/16/16 15:23	1
1,2,3-Trichloropropane	<0.109		0.109		mg/Kg	☼	09/16/16 06:44	09/16/16 15:23	1
1,1,2-Trichlorotrifluoroethane	<0.109		0.109		mg/Kg	☼	09/16/16 06:44	09/16/16 15:23	1
1,2,4-Trimethylbenzene	<0.109		0.109		mg/Kg	☼	09/16/16 06:44	09/16/16 15:23	1
1,3,5-Trimethylbenzene	<0.109		0.109		mg/Kg	☼	09/16/16 06:44	09/16/16 15:23	1
Vinyl chloride	<0.109		0.109		mg/Kg	☼	09/16/16 06:44	09/16/16 15:23	1
Xylenes, Total	<0.164		0.164		mg/Kg	☼	09/16/16 06:44	09/16/16 15:23	1
Dibromomethane	<0.109		0.109		mg/Kg	☼	09/16/16 06:44	09/16/16 15:23	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*101*		*70 - 135*	*09/16/16 06:44*	*09/16/16 15:23*	*1*
Dibromofluoromethane (Surr)	*99*		*80 - 120*	*09/16/16 06:44*	*09/16/16 15:23*	*1*
Toluene-d8 (Surr)	*92*		*80 - 120*	*09/16/16 06:44*	*09/16/16 15:23*	*1*

Method: WI-GRO - Wisconsin - Gasoline Range Organics (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Wisconsin GRO	<10.9		10.9		mg/Kg	☼	09/15/16 09:56	09/15/16 22:29	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*96*		*80 - 120*	*09/15/16 09:56*	*09/15/16 22:29*	*1*

Method: WI-DRO - Wisconsin - Diesel Range Organics (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Diesel Range Organics (DRO)	<6.87		6.87		mg/Kg	☼	09/14/16 14:36	09/15/16 21:54	1

Client: Carlson McCain, Inc.
Project/Site: Richfield Sinclair Phase II

TestAmerica Job ID: 310-89278-1
SDG: 6349-00

Client Sample ID: SB-4W
Date Collected: 09/13/16 15:49
Date Received: 09/14/16 09:00

Lab Sample ID: 310-89278-6
Matrix: Ground Water

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acetone	<10.0		10.0		ug/L			09/15/16 12:36	1
Allyl chloride	<2.00		2.00		ug/L			09/15/16 12:36	1
Benzene	<0.500		0.500		ug/L			09/15/16 12:36	1
Bromobenzene	<1.00		1.00		ug/L			09/15/16 12:36	1
Bromochloromethane	<5.00		5.00		ug/L			09/15/16 12:36	1
Bromodichloromethane	<1.00		1.00		ug/L			09/15/16 12:36	1
Bromoform	<5.00		5.00		ug/L			09/15/16 12:36	1
Bromomethane	<4.00		4.00		ug/L			09/15/16 12:36	1
2-Butanone (MEK)	<10.0		10.0		ug/L			09/15/16 12:36	1
n-Butylbenzene	**9.60**		1.00		ug/L			09/15/16 12:36	1
sec-Butylbenzene	**23.3**		1.00		ug/L			09/15/16 12:36	1
tert-Butylbenzene	**3.62**		1.00		ug/L			09/15/16 12:36	1
Carbon tetrachloride	<2.00		2.00		ug/L			09/15/16 12:36	1
Chlorobenzene	<1.00		1.00		ug/L			09/15/16 12:36	1
Chlorodibromomethane	<5.00		5.00		ug/L			09/15/16 12:36	1
Dichlorofluoromethane	<1.00		1.00		ug/L			09/15/16 12:36	1
Chloroethane	<4.00		4.00		ug/L			09/15/16 12:36	1
Chloroform	<1.00		1.00		ug/L			09/15/16 12:36	1
Chloromethane	<3.00		3.00		ug/L			09/15/16 12:36	1
4-Chlorotoluene	<1.00		1.00		ug/L			09/15/16 12:36	1
2-Chlorotoluene	<1.00		1.00		ug/L			09/15/16 12:36	1
1,2-Dibromo-3-Chloropropane	<5.00		5.00		ug/L			09/15/16 12:36	1
1,2-Dibromoethane (EDB)	<1.00		1.00		ug/L			09/15/16 12:36	1
1,2-Dichlorobenzene	<1.00		1.00		ug/L			09/15/16 12:36	1
1,3-Dichlorobenzene	<1.00		1.00		ug/L			09/15/16 12:36	1
1,4-Dichlorobenzene	<1.00		1.00		ug/L			09/15/16 12:36	1
Dichlorodifluoromethane	<3.00		3.00		ug/L			09/15/16 12:36	1
1,2-Dichloroethane	<1.00		1.00		ug/L			09/15/16 12:36	1
1,1-Dichloroethane	<1.00		1.00		ug/L			09/15/16 12:36	1
1,1-Dichloroethene	<2.00		2.00		ug/L			09/15/16 12:36	1
cis-1,2-Dichloroethene	<1.00		1.00		ug/L			09/15/16 12:36	1
trans-1,2-Dichloroethene	<1.00		1.00		ug/L			09/15/16 12:36	1
1,2-Dichloropropane	<1.00		1.00		ug/L			09/15/16 12:36	1
1,3-Dichloropropane	<1.00		1.00		ug/L			09/15/16 12:36	1
2,2-Dichloropropane	<4.00		4.00		ug/L			09/15/16 12:36	1
1,1-Dichloropropene	<1.00		1.00		ug/L			09/15/16 12:36	1
cis-1,3-Dichloropropene	<5.00		5.00		ug/L			09/15/16 12:36	1
trans-1,3-Dichloropropene	<5.00		5.00		ug/L			09/15/16 12:36	1
Diethyl ether	<2.00		2.00		ug/L			09/15/16 12:36	1
Ethylbenzene	<1.00		1.00		ug/L			09/15/16 12:36	1
Hexachlorobutadiene	<5.00		5.00		ug/L			09/15/16 12:36	1
Isopropylbenzene	<1.00		1.00		ug/L			09/15/16 12:36	1
p-Isopropyltoluene	**2.72**		1.00		ug/L			09/15/16 12:36	1
4-Methyl-2-pentanone (MIBK)	<10.0		10.0		ug/L			09/15/16 12:36	1
Methylene Chloride	<5.00		5.00		ug/L			09/15/16 12:36	1
Methyl tert-butyl ether	<1.00		1.00		ug/L			09/15/16 12:36	1
Naphthalene	<5.00		5.00		ug/L			09/15/16 12:36	1
N-Propylbenzene	<1.00		1.00		ug/L			09/15/16 12:36	1
Styrene	<1.00		1.00		ug/L			09/15/16 12:36	1

Client Sample ID: SB-4W
Date Collected: 09/13/16 15:49
Date Received: 09/14/16 09:00

Lab Sample ID: 310-89278-6
Matrix: Ground Water

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1,2-Tetrachloroethane	<1.00		1.00		ug/L			09/15/16 12:36	1
1,1,2,2-Tetrachloroethane	<1.00		1.00		ug/L			09/15/16 12:36	1
Tetrachloroethene	<1.00		1.00		ug/L			09/15/16 12:36	1
Tetrahydrofuran	<10.0		10.0		ug/L			09/15/16 12:36	1
Toluene	<1.00		1.00		ug/L			09/15/16 12:36	1
1,2,3-Trichlorobenzene	<5.00		5.00		ug/L			09/15/16 12:36	1
1,2,4-Trichlorobenzene	<5.00		5.00		ug/L			09/15/16 12:36	1
1,1,1-Trichloroethane	<1.00		1.00		ug/L			09/15/16 12:36	1
1,1,2-Trichloroethane	<1.00		1.00		ug/L			09/15/16 12:36	1
Trichloroethene	<1.00		1.00		ug/L			09/15/16 12:36	1
Trichlorofluoromethane	<4.00		4.00		ug/L			09/15/16 12:36	1
1,2,3-Trichloropropane	<1.00		1.00		ug/L			09/15/16 12:36	1
1,1,2-Trichlorotrifluoroethane	<2.00		2.00		ug/L			09/15/16 12:36	1
1,2,4-Trimethylbenzene	<1.00		1.00		ug/L			09/15/16 12:36	1
1,3,5-Trimethylbenzene	<1.00		1.00		ug/L			09/15/16 12:36	1
Vinyl chloride	<1.00		1.00		ug/L			09/15/16 12:36	1
Xylenes, Total	<3.00		3.00		ug/L			09/15/16 12:36	1
Dibromomethane	<1.00		1.00		ug/L			09/15/16 12:36	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*86*		*80 - 120*		*09/15/16 12:36*	*1*
Dibromofluoromethane (Surr)	*102*		*80 - 120*		*09/15/16 12:36*	*1*
Toluene-d8 (Surr)	*97*		*80 - 120*		*09/15/16 12:36*	*1*

Method: WI-GRO - Wisconsin - Gasoline Range Organics (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Wisconsin GRO	**666**		100		ug/L			09/20/16 04:05	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*101*		*80 - 120*		*09/20/16 04:05*	*1*

Method: WI-DRO - Wisconsin - Diesel Range Organics (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Diesel Range Organics (DRO)	**52800**	*	538		ug/L		09/14/16 16:10	09/17/16 04:04	5

Client Sample ID: SB-4 (12)
Date Collected: 09/13/16 15:54
Date Received: 09/14/16 09:00

Lab Sample ID: 310-89278-7
Matrix: Solid
Percent Solids: 92.8

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acetone	<0.504		0.504		mg/Kg	☼	09/16/16 06:44	09/16/16 15:48	1
Allyl chloride	<0.101		0.101		mg/Kg	☼	09/16/16 06:44	09/16/16 15:48	1
Benzene	<0.101		0.101		mg/Kg	☼	09/16/16 06:44	09/16/16 15:48	1
Bromobenzene	<0.101		0.101		mg/Kg	☼	09/16/16 06:44	09/16/16 15:48	1
Bromochloromethane	<0.101		0.101		mg/Kg	☼	09/16/16 06:44	09/16/16 15:48	1
Bromodichloromethane	<0.101		0.101		mg/Kg	☼	09/16/16 06:44	09/16/16 15:48	1
Bromoform	<0.101	^	0.101		mg/Kg	☼	09/16/16 06:44	09/16/16 15:48	1
Bromomethane	<0.504		0.504		mg/Kg	☼	09/16/16 06:44	09/16/16 15:48	1
2-Butanone (MEK)	<0.252		0.252		mg/Kg	☼	09/16/16 06:44	09/16/16 15:48	1
n-Butylbenzene	<0.101		0.101		mg/Kg	☼	09/16/16 06:44	09/16/16 15:48	1
sec-Butylbenzene	<0.101		0.101		mg/Kg	☼	09/16/16 06:44	09/16/16 15:48	1
tert-Butylbenzene	<0.101		0.101		mg/Kg	☼	09/16/16 06:44	09/16/16 15:48	1
Carbon tetrachloride	<0.101		0.101		mg/Kg	☼	09/16/16 06:44	09/16/16 15:48	1
Chlorobenzene	<0.101		0.101		mg/Kg	☼	09/16/16 06:44	09/16/16 15:48	1
Chlorodibromomethane	<0.101		0.101		mg/Kg	☼	09/16/16 06:44	09/16/16 15:48	1
Dichlorofluoromethane	<0.101		0.101		mg/Kg	☼	09/16/16 06:44	09/16/16 15:48	1
Chloroethane	<0.101		0.101		mg/Kg	☼	09/16/16 06:44	09/16/16 15:48	1
Chloroform	<0.101		0.101		mg/Kg	☼	09/16/16 06:44	09/16/16 15:48	1
Chloromethane	<0.252		0.252		mg/Kg	☼	09/16/16 06:44	09/16/16 15:48	1
4-Chlorotoluene	<0.101		0.101		mg/Kg	☼	09/16/16 06:44	09/16/16 15:48	1
2-Chlorotoluene	<0.101		0.101		mg/Kg	☼	09/16/16 06:44	09/16/16 15:48	1
1,2-Dibromo-3-Chloropropane	<0.101		0.101		mg/Kg	☼	09/16/16 06:44	09/16/16 15:48	1
1,2-Dibromoethane (EDB)	<0.101		0.101		mg/Kg	☼	09/16/16 06:44	09/16/16 15:48	1
1,2-Dichlorobenzene	<0.101		0.101		mg/Kg	☼	09/16/16 06:44	09/16/16 15:48	1
1,3-Dichlorobenzene	<0.101		0.101		mg/Kg	☼	09/16/16 06:44	09/16/16 15:48	1
1,4-Dichlorobenzene	<0.101		0.101		mg/Kg	☼	09/16/16 06:44	09/16/16 15:48	1
Dichlorodifluoromethane	<0.101		0.101		mg/Kg	☼	09/16/16 06:44	09/16/16 15:48	1
1,2-Dichloroethane	<0.101		0.101		mg/Kg	☼	09/16/16 06:44	09/16/16 15:48	1
1,1-Dichloroethane	<0.101		0.101		mg/Kg	☼	09/16/16 06:44	09/16/16 15:48	1
1,1-Dichloroethene	<0.101		0.101		mg/Kg	☼	09/16/16 06:44	09/16/16 15:48	1
cis-1,2-Dichloroethene	<0.101		0.101		mg/Kg	☼	09/16/16 06:44	09/16/16 15:48	1
trans-1,2-Dichloroethene	<0.101		0.101		mg/Kg	☼	09/16/16 06:44	09/16/16 15:48	1
1,2-Dichloropropane	<0.101		0.101		mg/Kg	☼	09/16/16 06:44	09/16/16 15:48	1
1,3-Dichloropropane	<0.101		0.101		mg/Kg	☼	09/16/16 06:44	09/16/16 15:48	1
2,2-Dichloropropane	<0.101		0.101		mg/Kg	☼	09/16/16 06:44	09/16/16 15:48	1
1,1-Dichloropropene	<0.101		0.101		mg/Kg	☼	09/16/16 06:44	09/16/16 15:48	1
cis-1,3-Dichloropropene	<0.101		0.101		mg/Kg	☼	09/16/16 06:44	09/16/16 15:48	1
trans-1,3-Dichloropropene	<0.101		0.101		mg/Kg	☼	09/16/16 06:44	09/16/16 15:48	1
Diethyl ether	<0.101		0.101		mg/Kg	☼	09/16/16 06:44	09/16/16 15:48	1
Ethylbenzene	<0.101		0.101		mg/Kg	☼	09/16/16 06:44	09/16/16 15:48	1
Hexachlorobutadiene	<0.101		0.101		mg/Kg	☼	09/16/16 06:44	09/16/16 15:48	1
Isopropylbenzene	<0.101		0.101		mg/Kg	☼	09/16/16 06:44	09/16/16 15:48	1
p-Isopropyltoluene	<0.101		0.101		mg/Kg	☼	09/16/16 06:44	09/16/16 15:48	1
4-Methyl-2-pentanone (MIBK)	<0.101		0.101		mg/Kg	☼	09/16/16 06:44	09/16/16 15:48	1
Methylene Chloride	<0.252		0.252		mg/Kg	☼	09/16/16 06:44	09/16/16 15:48	1
Methyl tert-butyl ether	<0.101		0.101		mg/Kg	☼	09/16/16 06:44	09/16/16 15:48	1
Naphthalene	<0.252		0.252		mg/Kg	☼	09/16/16 06:44	09/16/16 15:48	1
N-Propylbenzene	<0.101		0.101		mg/Kg	☼	09/16/16 06:44	09/16/16 15:48	1
Styrene	<0.101		0.101		mg/Kg	☼	09/16/16 06:44	09/16/16 15:48	1

Client Sample ID: SB-4 (12)
Date Collected: 09/13/16 15:54
Date Received: 09/14/16 09:00

Lab Sample ID: 310-89278-7
Matrix: Solid
Percent Solids: 92.8

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1,2-Tetrachloroethane	<0.101		0.101		mg/Kg	☼	09/16/16 06:44	09/16/16 15:48	1
1,1,2,2-Tetrachloroethane	<0.101		0.101		mg/Kg	☼	09/16/16 06:44	09/16/16 15:48	1
Tetrachloroethene	<0.101		0.101		mg/Kg	☼	09/16/16 06:44	09/16/16 15:48	1
Tetrahydrofuran	<0.101		0.101		mg/Kg	☼	09/16/16 06:44	09/16/16 15:48	1
Toluene	<0.101		0.101		mg/Kg	☼	09/16/16 06:44	09/16/16 15:48	1
1,2,3-Trichlorobenzene	<0.101		0.101		mg/Kg	☼	09/16/16 06:44	09/16/16 15:48	1
1,2,4-Trichlorobenzene	<0.101		0.101		mg/Kg	☼	09/16/16 06:44	09/16/16 15:48	1
1,1,1-Trichloroethane	<0.101		0.101		mg/Kg	☼	09/16/16 06:44	09/16/16 15:48	1
1,1,2-Trichloroethane	<0.101		0.101		mg/Kg	☼	09/16/16 06:44	09/16/16 15:48	1
Trichloroethene	<0.101		0.101		mg/Kg	☼	09/16/16 06:44	09/16/16 15:48	1
Trichlorofluoromethane	<0.101		0.101		mg/Kg	☼	09/16/16 06:44	09/16/16 15:48	1
1,2,3-Trichloropropane	<0.101		0.101		mg/Kg	☼	09/16/16 06:44	09/16/16 15:48	1
1,1,2-Trichlorotrifluoroethane	<0.101		0.101		mg/Kg	☼	09/16/16 06:44	09/16/16 15:48	1
1,2,4-Trimethylbenzene	<0.101		0.101		mg/Kg	☼	09/16/16 06:44	09/16/16 15:48	1
1,3,5-Trimethylbenzene	<0.101		0.101		mg/Kg	☼	09/16/16 06:44	09/16/16 15:48	1
Vinyl chloride	<0.101		0.101		mg/Kg	☼	09/16/16 06:44	09/16/16 15:48	1
Xylenes, Total	<0.151		0.151		mg/Kg	☼	09/16/16 06:44	09/16/16 15:48	1
Dibromomethane	<0.101		0.101		mg/Kg	☼	09/16/16 06:44	09/16/16 15:48	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*100*		*70 - 135*	*09/16/16 06:44*	*09/16/16 15:48*	*1*
Dibromofluoromethane (Surr)	*100*		*80 - 120*	*09/16/16 06:44*	*09/16/16 15:48*	*1*
Toluene-d8 (Surr)	*91*		*80 - 120*	*09/16/16 06:44*	*09/16/16 15:48*	*1*

Method: WI-GRO - Wisconsin - Gasoline Range Organics (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Wisconsin GRO	<10.1		10.1		mg/Kg	☼	09/15/16 09:56	09/15/16 22:58	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*94*		*80 - 120*	*09/15/16 09:56*	*09/15/16 22:58*	*1*

Method: WI-DRO - Wisconsin - Diesel Range Organics (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Diesel Range Organics (DRO)	<6.45		6.45		mg/Kg	☼	09/14/16 14:36	09/15/16 22:31	1

Client: Carlson McCain, Inc.
Project/Site: Richfield Sinclair Phase II

TestAmerica Job ID: 310-89278-1
SDG: 6349-00

Client Sample ID: MeOH Blank

Date Collected: 09/13/16 00:00
Date Received: 09/14/16 09:00

Lab Sample ID: 310-89278-8

Matrix: Solid

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acetone	<0.500		0.500		mg/Kg		09/16/16 06:44	09/16/16 16:12	1
Allyl chloride	<0.100		0.100		mg/Kg		09/16/16 06:44	09/16/16 16:12	1
Benzene	<0.100		0.100		mg/Kg		09/16/16 06:44	09/16/16 16:12	1
Bromobenzene	<0.100		0.100		mg/Kg		09/16/16 06:44	09/16/16 16:12	1
Bromochloromethane	<0.100		0.100		mg/Kg		09/16/16 06:44	09/16/16 16:12	1
Bromodichloromethane	<0.100		0.100		mg/Kg		09/16/16 06:44	09/16/16 16:12	1
Bromoform	<0.100	^	0.100		mg/Kg		09/16/16 06:44	09/16/16 16:12	1
Bromomethane	<0.500		0.500		mg/Kg		09/16/16 06:44	09/16/16 16:12	1
2-Butanone (MEK)	<0.250		0.250		mg/Kg		09/16/16 06:44	09/16/16 16:12	1
n-Butylbenzene	<0.100		0.100		mg/Kg		09/16/16 06:44	09/16/16 16:12	1
sec-Butylbenzene	<0.100		0.100		mg/Kg		09/16/16 06:44	09/16/16 16:12	1
tert-Butylbenzene	<0.100		0.100		mg/Kg		09/16/16 06:44	09/16/16 16:12	1
Carbon tetrachloride	<0.100		0.100		mg/Kg		09/16/16 06:44	09/16/16 16:12	1
Chlorobenzene	<0.100		0.100		mg/Kg		09/16/16 06:44	09/16/16 16:12	1
Chlorodibromomethane	<0.100		0.100		mg/Kg		09/16/16 06:44	09/16/16 16:12	1
Dichlorofluoromethane	<0.100		0.100		mg/Kg		09/16/16 06:44	09/16/16 16:12	1
Chloroethane	<0.100		0.100		mg/Kg		09/16/16 06:44	09/16/16 16:12	1
Chloroform	<0.100		0.100		mg/Kg		09/16/16 06:44	09/16/16 16:12	1
Chloromethane	<0.250		0.250		mg/Kg		09/16/16 06:44	09/16/16 16:12	1
4-Chlorotoluene	<0.100		0.100		mg/Kg		09/16/16 06:44	09/16/16 16:12	1
2-Chlorotoluene	<0.100		0.100		mg/Kg		09/16/16 06:44	09/16/16 16:12	1
1,2-Dibromo-3-Chloropropane	<0.100		0.100		mg/Kg		09/16/16 06:44	09/16/16 16:12	1
1,2-Dibromoethane (EDB)	<0.100		0.100		mg/Kg		09/16/16 06:44	09/16/16 16:12	1
1,2-Dichlorobenzene	<0.100		0.100		mg/Kg		09/16/16 06:44	09/16/16 16:12	1
1,3-Dichlorobenzene	<0.100		0.100		mg/Kg		09/16/16 06:44	09/16/16 16:12	1
1,4-Dichlorobenzene	<0.100		0.100		mg/Kg		09/16/16 06:44	09/16/16 16:12	1
Dichlorodifluoromethane	<0.100		0.100		mg/Kg		09/16/16 06:44	09/16/16 16:12	1
1,2-Dichloroethane	<0.100		0.100		mg/Kg		09/16/16 06:44	09/16/16 16:12	1
1,1-Dichloroethane	<0.100		0.100		mg/Kg		09/16/16 06:44	09/16/16 16:12	1
1,1-Dichloroethene	<0.100		0.100		mg/Kg		09/16/16 06:44	09/16/16 16:12	1
cis-1,2-Dichloroethene	<0.100		0.100		mg/Kg		09/16/16 06:44	09/16/16 16:12	1
trans-1,2-Dichloroethene	<0.100		0.100		mg/Kg		09/16/16 06:44	09/16/16 16:12	1
1,2-Dichloropropane	<0.100		0.100		mg/Kg		09/16/16 06:44	09/16/16 16:12	1
1,3-Dichloropropane	<0.100		0.100		mg/Kg		09/16/16 06:44	09/16/16 16:12	1
2,2-Dichloropropane	<0.100		0.100		mg/Kg		09/16/16 06:44	09/16/16 16:12	1
1,1-Dichloropropene	<0.100		0.100		mg/Kg		09/16/16 06:44	09/16/16 16:12	1
cis-1,3-Dichloropropene	<0.100		0.100		mg/Kg		09/16/16 06:44	09/16/16 16:12	1
trans-1,3-Dichloropropene	<0.100		0.100		mg/Kg		09/16/16 06:44	09/16/16 16:12	1
Diethyl ether	<0.100		0.100		mg/Kg		09/16/16 06:44	09/16/16 16:12	1
Ethylbenzene	<0.100		0.100		mg/Kg		09/16/16 06:44	09/16/16 16:12	1
Hexachlorobutadiene	<0.100		0.100		mg/Kg		09/16/16 06:44	09/16/16 16:12	1
Isopropylbenzene	<0.100		0.100		mg/Kg		09/16/16 06:44	09/16/16 16:12	1
p-Isopropyltoluene	<0.100		0.100		mg/Kg		09/16/16 06:44	09/16/16 16:12	1
4-Methyl-2-pentanone (MIBK)	<0.100		0.100		mg/Kg		09/16/16 06:44	09/16/16 16:12	1
Methylene Chloride	<0.250		0.250		mg/Kg		09/16/16 06:44	09/16/16 16:12	1
Methyl tert-butyl ether	<0.100		0.100		mg/Kg		09/16/16 06:44	09/16/16 16:12	1
Naphthalene	<0.250		0.250		mg/Kg		09/16/16 06:44	09/16/16 16:12	1
N-Propylbenzene	<0.100		0.100		mg/Kg		09/16/16 06:44	09/16/16 16:12	1
Styrene	<0.100		0.100		mg/Kg		09/16/16 06:44	09/16/16 16:12	1

Client Sample ID: MeOH Blank
Date Collected: 09/13/16 00:00
Date Received: 09/14/16 09:00

Lab Sample ID: 310-89278-8
Matrix: Solid

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1,2-Tetrachloroethane	<0.100		0.100		mg/Kg		09/16/16 06:44	09/16/16 16:12	1
1,1,2,2-Tetrachloroethane	<0.100		0.100		mg/Kg		09/16/16 06:44	09/16/16 16:12	1
Tetrachloroethene	<0.100		0.100		mg/Kg		09/16/16 06:44	09/16/16 16:12	1
Tetrahydrofuran	<0.100		0.100		mg/Kg		09/16/16 06:44	09/16/16 16:12	1
Toluene	<0.100		0.100		mg/Kg		09/16/16 06:44	09/16/16 16:12	1
1,2,3-Trichlorobenzene	<0.100		0.100		mg/Kg		09/16/16 06:44	09/16/16 16:12	1
1,2,4-Trichlorobenzene	<0.100		0.100		mg/Kg		09/16/16 06:44	09/16/16 16:12	1
1,1,1-Trichloroethane	<0.100		0.100		mg/Kg		09/16/16 06:44	09/16/16 16:12	1
1,1,2-Trichloroethane	<0.100		0.100		mg/Kg		09/16/16 06:44	09/16/16 16:12	1
Trichloroethene	<0.100		0.100		mg/Kg		09/16/16 06:44	09/16/16 16:12	1
Trichlorofluoromethane	<0.100		0.100		mg/Kg		09/16/16 06:44	09/16/16 16:12	1
1,2,3-Trichloropropane	<0.100		0.100		mg/Kg		09/16/16 06:44	09/16/16 16:12	1
1,1,2-Trichlorotrifluoroethane	<0.100		0.100		mg/Kg		09/16/16 06:44	09/16/16 16:12	1
1,2,4-Trimethylbenzene	<0.100		0.100		mg/Kg		09/16/16 06:44	09/16/16 16:12	1
1,3,5-Trimethylbenzene	<0.100		0.100		mg/Kg		09/16/16 06:44	09/16/16 16:12	1
Vinyl chloride	<0.100		0.100		mg/Kg		09/16/16 06:44	09/16/16 16:12	1
Xylenes, Total	<0.150		0.150		mg/Kg		09/16/16 06:44	09/16/16 16:12	1
Dibromomethane	<0.100		0.100		mg/Kg		09/16/16 06:44	09/16/16 16:12	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*101*		*70 - 135*	*09/16/16 06:44*	*09/16/16 16:12*	*1*
Dibromofluoromethane (Surr)	*98*		*80 - 120*	*09/16/16 06:44*	*09/16/16 16:12*	*1*
Toluene-d8 (Surr)	*91*		*80 - 120*	*09/16/16 06:44*	*09/16/16 16:12*	*1*

Method: WI-GRO - Wisconsin - Gasoline Range Organics (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Wisconsin GRO	<10.0		10.0		mg/Kg		09/15/16 09:56	09/16/16 00:24	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*95*		*80 - 120*	*09/15/16 09:56*	*09/16/16 00:24*	*1*

Client: Carlson McCain, Inc.
Project/Site: Richfield Sinclair Phase II

TestAmerica Job ID: 310-89278-1
SDG: 6349-00

Client Sample ID: Trip Blank
Date Collected: 09/13/16 00:00
Date Received: 09/14/16 09:00

Lab Sample ID: 310-89278-9
Matrix: Water

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acetone	<10.0		10.0		ug/L			09/15/16 08:02	1
Allyl chloride	<2.00		2.00		ug/L			09/15/16 08:02	1
Benzene	<0.500		0.500		ug/L			09/15/16 08:02	1
Bromobenzene	<1.00		1.00		ug/L			09/15/16 08:02	1
Bromochloromethane	<5.00		5.00		ug/L			09/15/16 08:02	1
Bromodichloromethane	<1.00		1.00		ug/L			09/15/16 08:02	1
Bromoform	<5.00		5.00		ug/L			09/15/16 08:02	1
Bromomethane	<4.00		4.00		ug/L			09/15/16 08:02	1
2-Butanone (MEK)	<10.0		10.0		ug/L			09/15/16 08:02	1
n-Butylbenzene	<1.00		1.00		ug/L			09/15/16 08:02	1
sec-Butylbenzene	<1.00		1.00		ug/L			09/15/16 08:02	1
tert-Butylbenzene	<1.00		1.00		ug/L			09/15/16 08:02	1
Carbon tetrachloride	<2.00		2.00		ug/L			09/15/16 08:02	1
Chlorobenzene	<1.00		1.00		ug/L			09/15/16 08:02	1
Chlorodibromomethane	<5.00		5.00		ug/L			09/15/16 08:02	1
Dichlorofluoromethane	<1.00		1.00		ug/L			09/15/16 08:02	1
Chloroethane	<4.00		4.00		ug/L			09/15/16 08:02	1
Chloroform	<1.00		1.00		ug/L			09/15/16 08:02	1
Chloromethane	<3.00		3.00		ug/L			09/15/16 08:02	1
4-Chlorotoluene	<1.00		1.00		ug/L			09/15/16 08:02	1
2-Chlorotoluene	<1.00		1.00		ug/L			09/15/16 08:02	1
1,2-Dibromo-3-Chloropropane	<5.00		5.00		ug/L			09/15/16 08:02	1
1,2-Dibromoethane (EDB)	<1.00		1.00		ug/L			09/15/16 08:02	1
1,2-Dichlorobenzene	<1.00		1.00		ug/L			09/15/16 08:02	1
1,3-Dichlorobenzene	<1.00		1.00		ug/L			09/15/16 08:02	1
1,4-Dichlorobenzene	<1.00		1.00		ug/L			09/15/16 08:02	1
Dichlorodifluoromethane	<3.00		3.00		ug/L			09/15/16 08:02	1
1,2-Dichloroethane	<1.00		1.00		ug/L			09/15/16 08:02	1
1,1-Dichloroethane	<1.00		1.00		ug/L			09/15/16 08:02	1
1,1-Dichloroethene	<2.00		2.00		ug/L			09/15/16 08:02	1
cis-1,2-Dichloroethene	<1.00		1.00		ug/L			09/15/16 08:02	1
trans-1,2-Dichloroethene	<1.00		1.00		ug/L			09/15/16 08:02	1
1,2-Dichloropropane	<1.00		1.00		ug/L			09/15/16 08:02	1
1,3-Dichloropropane	<1.00		1.00		ug/L			09/15/16 08:02	1
2,2-Dichloropropane	<4.00		4.00		ug/L			09/15/16 08:02	1
1,1-Dichloropropene	<1.00		1.00		ug/L			09/15/16 08:02	1
cis-1,3-Dichloropropene	<5.00		5.00		ug/L			09/15/16 08:02	1
trans-1,3-Dichloropropene	<5.00		5.00		ug/L			09/15/16 08:02	1
Diethyl ether	<2.00		2.00		ug/L			09/15/16 08:02	1
Ethylbenzene	<1.00		1.00		ug/L			09/15/16 08:02	1
Hexachlorobutadiene	<5.00		5.00		ug/L			09/15/16 08:02	1
Isopropylbenzene	<1.00		1.00		ug/L			09/15/16 08:02	1
p-Isopropyltoluene	<1.00		1.00		ug/L			09/15/16 08:02	1
4-Methyl-2-pentanone (MIBK)	<10.0		10.0		ug/L			09/15/16 08:02	1
Methylene Chloride	<5.00		5.00		ug/L			09/15/16 08:02	1
Methyl tert-butyl ether	<1.00		1.00		ug/L			09/15/16 08:02	1
Naphthalene	<5.00		5.00		ug/L			09/15/16 08:02	1
N-Propylbenzene	<1.00		1.00		ug/L			09/15/16 08:02	1
Styrene	<1.00		1.00		ug/L			09/15/16 08:02	1

Client: Carlson McCain, Inc.
Project/Site: Richfield Sinclair Phase II

TestAmerica Job ID: 310-89278-1
SDG: 6349-00

Client Sample ID: Trip Blank
Date Collected: 09/13/16 00:00
Date Received: 09/14/16 09:00

Lab Sample ID: 310-89278-9
Matrix: Water

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1,2-Tetrachloroethane	<1.00		1.00		ug/L			09/15/16 08:02	1
1,1,2,2-Tetrachloroethane	<1.00		1.00		ug/L			09/15/16 08:02	1
Tetrachloroethene	<1.00		1.00		ug/L			09/15/16 08:02	1
Tetrahydrofuran	<10.0		10.0		ug/L			09/15/16 08:02	1
Toluene	<1.00		1.00		ug/L			09/15/16 08:02	1
1,2,3-Trichlorobenzene	<5.00		5.00		ug/L			09/15/16 08:02	1
1,2,4-Trichlorobenzene	<5.00		5.00		ug/L			09/15/16 08:02	1
1,1,1-Trichloroethane	<1.00		1.00		ug/L			09/15/16 08:02	1
1,1,2-Trichloroethane	<1.00		1.00		ug/L			09/15/16 08:02	1
Trichloroethene	<1.00		1.00		ug/L			09/15/16 08:02	1
Trichlorofluoromethane	<4.00		4.00		ug/L			09/15/16 08:02	1
1,2,3-Trichloropropane	<1.00		1.00		ug/L			09/15/16 08:02	1
1,1,2-Trichlorotrifluoroethane	<2.00		2.00		ug/L			09/15/16 08:02	1
1,2,4-Trimethylbenzene	<1.00		1.00		ug/L			09/15/16 08:02	1
1,3,5-Trimethylbenzene	<1.00		1.00		ug/L			09/15/16 08:02	1
Vinyl chloride	<1.00		1.00		ug/L			09/15/16 08:02	1
Xylenes, Total	<3.00		3.00		ug/L			09/15/16 08:02	1
Dibromomethane	<1.00		1.00		ug/L			09/15/16 08:02	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*96*		*80 - 120*		*09/15/16 08:02*	*1*
Dibromofluoromethane (Surr)	*100*		*80 - 120*		*09/15/16 08:02*	*1*
Toluene-d8 (Surr)	*97*		*80 - 120*		*09/15/16 08:02*	*1*

Method: WI-GRO - Wisconsin - Gasoline Range Organics (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	<2.00		2.00		ug/L			09/17/16 04:20	1
Toluene	<2.00		2.00		ug/L			09/17/16 04:20	1
Ethylbenzene	<2.00		2.00		ug/L			09/17/16 04:20	1
Xylenes, Total	<6.00		6.00		ug/L			09/17/16 04:20	1
Methyl tert-butyl ether	<2.00		2.00		ug/L			09/17/16 04:20	1
Wisconsin GRO	<100		100		ug/L			09/17/16 04:20	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*92*		*80 - 120*		*09/17/16 04:20*	*1*

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
F1	MS and/or MSD Recovery is outside acceptance limits.
^	ICV,CCV,ICB,CCB, ISA, ISB, CRI, CRA, DLCK or MRL standard: Instrument related QC is outside acceptance limits.

GC Semi VOA

Qualifier	Qualifier Description
*	LCS or LCSD is outside acceptance limits.
*	RPD of the LCS and LCSD exceeds the control limits

Glossary

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

Surrogate Summary

Client: Carlson McCain, Inc.
Project/Site: Richfield Sinclair Phase II

TestAmerica Job ID: 310-89278-1
SDG: 6349-00

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

Matrix: Ground Water — **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)		
		BFB	DBFM	TOL
Lab Sample ID	Client Sample ID	(80-120)	(80-120)	(80-120)
310-89278-1	SB-1 W	111	104	98
310-89278-3	SB-2W	103	101	97
310-89278-4	SB-3W	104	103	99
310-89278-6	SB-4W	86	102	97

Surrogate Legend

BFB = 4-Bromofluorobenzene (Surr)
DBFM = Dibromofluoromethane (Surr)
TOL = Toluene-d8 (Surr)

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

Matrix: Solid — **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)		
		BFB	DBFM	TOL
Lab Sample ID	Client Sample ID	(70-135)	(80-120)	(80-120)
310-89114-A-1-C MS	Matrix Spike	102	102	94
310-89114-A-1-D MSD	Matrix Spike Duplicate	101	105	93
310-89278-2	SB-1 (12)	104	100	91
310-89278-5	SB-3 (5)	101	99	92
310-89278-7	SB-4 (12)	100	100	91
310-89278-8	MeOH Blank	101	98	91
LCS 310-141519/2-A	Lab Control Sample	102	102	94
MB 310-141519/1-A	Method Blank	101	99	91

Surrogate Legend

BFB = 4-Bromofluorobenzene (Surr)
DBFM = Dibromofluoromethane (Surr)
TOL = Toluene-d8 (Surr)

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

Matrix: Water — **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)		
		BFB	DBFM	TOL
Lab Sample ID	Client Sample ID	(80-120)	(80-120)	(80-120)
310-89278-9	Trip Blank	96	100	97
310-89241-AF-1 MS	Matrix Spike	99	102	101
310-89241-AF-1 MSD	Matrix Spike Duplicate	101	103	100
LCS 310-141185/5	Lab Control Sample	99	101	100
LCS 310-141185/6	Lab Control Sample	103	101	95
LCS 310-141233/5	Lab Control Sample	97	104	99
LCS 310-141233/6	Lab Control Sample	98	102	96
MB 310-141185/7	Method Blank	109	104	98
MB 310-141233/7	Method Blank	98	104	96

Surrogate Legend

BFB = 4-Bromofluorobenzene (Surr)
DBFM = Dibromofluoromethane (Surr)
TOL = Toluene-d8 (Surr)

Surrogate Summary

Client: Carlson McCain, Inc.
Project/Site: Richfield Sinclair Phase II

TestAmerica Job ID: 310-89278-1
SDG: 6349-00

Method: WI-GRO - Wisconsin - Gasoline Range Organics (GC)

Matrix: Ground Water — **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)
Lab Sample ID	Client Sample ID	BFB (80-120)
310-89278-1	SB-1 W	98
310-89278-3	SB-2W	100
310-89278-4	SB-3W	100
310-89278-6	SB-4W	101

Surrogate Legend

BFB = 4-Bromofluorobenzene (Surr)

Method: WI-GRO - Wisconsin - Gasoline Range Organics (GC)

Matrix: Solid — **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)
Lab Sample ID	Client Sample ID	BFB (80-120)
310-89278-2	SB-1 (12)	94
310-89278-5	SB-3 (5)	96
310-89278-7	SB-4 (12)	94
310-89278-8	MeOH Blank	95
LCS 310-141412/2-A	Lab Control Sample	102
LCSD 310-141412/25-A	Lab Control Sample Dup	98
MB 310-141412/1-A	Method Blank	96

Surrogate Legend

BFB = 4-Bromofluorobenzene (Surr)

Method: WI-GRO - Wisconsin - Gasoline Range Organics (GC)

Matrix: Water — **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)
Lab Sample ID	Client Sample ID	BFB (80-120)
310-89278-9	Trip Blank	92
LCS 310-141639/5	Lab Control Sample	101
LCS 310-141809/4	Lab Control Sample	102
LCSD 310-141639/29	Lab Control Sample Dup	98
LCSD 310-141809/28	Lab Control Sample Dup	104
MB 310-141639/4	Method Blank	100
MB 310-141809/3	Method Blank	97

Surrogate Legend

BFB = 4-Bromofluorobenzene (Surr)

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

Lab Sample ID: MB 310-141185/7
Matrix: Water
Analysis Batch: 141185

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acetone	<10.0		10.0		ug/L			09/15/16 07:54	1
Allyl chloride	<2.00		2.00		ug/L			09/15/16 07:54	1
Benzene	<0.500		0.500		ug/L			09/15/16 07:54	1
Bromobenzene	<1.00		1.00		ug/L			09/15/16 07:54	1
Bromochloromethane	<5.00		5.00		ug/L			09/15/16 07:54	1
Bromodichloromethane	<1.00		1.00		ug/L			09/15/16 07:54	1
Bromoform	<5.00		5.00		ug/L			09/15/16 07:54	1
Bromomethane	<4.00		4.00		ug/L			09/15/16 07:54	1
2-Butanone (MEK)	<10.0		10.0		ug/L			09/15/16 07:54	1
n-Butylbenzene	<1.00		1.00		ug/L			09/15/16 07:54	1
sec-Butylbenzene	<1.00		1.00		ug/L			09/15/16 07:54	1
tert-Butylbenzene	<1.00		1.00		ug/L			09/15/16 07:54	1
Carbon tetrachloride	<2.00		2.00		ug/L			09/15/16 07:54	1
Chlorobenzene	<1.00		1.00		ug/L			09/15/16 07:54	1
Chlorodibromomethane	<5.00		5.00		ug/L			09/15/16 07:54	1
Dichlorofluoromethane	<1.00		1.00		ug/L			09/15/16 07:54	1
Chloroethane	<4.00		4.00		ug/L			09/15/16 07:54	1
Chloroform	<1.00		1.00		ug/L			09/15/16 07:54	1
Chloromethane	<3.00		3.00		ug/L			09/15/16 07:54	1
4-Chlorotoluene	<1.00		1.00		ug/L			09/15/16 07:54	1
2-Chlorotoluene	<1.00		1.00		ug/L			09/15/16 07:54	1
1,2-Dibromo-3-Chloropropane	<5.00		5.00		ug/L			09/15/16 07:54	1
1,2-Dibromoethane (EDB)	<1.00		1.00		ug/L			09/15/16 07:54	1
1,2-Dichlorobenzene	<1.00		1.00		ug/L			09/15/16 07:54	1
1,3-Dichlorobenzene	<1.00		1.00		ug/L			09/15/16 07:54	1
1,4-Dichlorobenzene	<1.00		1.00		ug/L			09/15/16 07:54	1
Dichlorodifluoromethane	<3.00		3.00		ug/L			09/15/16 07:54	1
1,2-Dichloroethane	<1.00		1.00		ug/L			09/15/16 07:54	1
1,1-Dichloroethane	<1.00		1.00		ug/L			09/15/16 07:54	1
1,1-Dichloroethene	<2.00		2.00		ug/L			09/15/16 07:54	1
cis-1,2-Dichloroethene	<1.00		1.00		ug/L			09/15/16 07:54	1
trans-1,2-Dichloroethene	<1.00		1.00		ug/L			09/15/16 07:54	1
1,2-Dichloropropane	<1.00		1.00		ug/L			09/15/16 07:54	1
1,3-Dichloropropane	<1.00		1.00		ug/L			09/15/16 07:54	1
2,2-Dichloropropane	<4.00		4.00		ug/L			09/15/16 07:54	1
1,1-Dichloropropene	<1.00		1.00		ug/L			09/15/16 07:54	1
cis-1,3-Dichloropropene	<5.00		5.00		ug/L			09/15/16 07:54	1
trans-1,3-Dichloropropene	<5.00		5.00		ug/L			09/15/16 07:54	1
Diethyl ether	<2.00		2.00		ug/L			09/15/16 07:54	1
Ethylbenzene	<1.00		1.00		ug/L			09/15/16 07:54	1
Hexachlorobutadiene	<5.00		5.00		ug/L			09/15/16 07:54	1
Isopropylbenzene	<1.00		1.00		ug/L			09/15/16 07:54	1
p-Isopropyltoluene	<1.00		1.00		ug/L			09/15/16 07:54	1
4-Methyl-2-pentanone (MIBK)	<10.0		10.0		ug/L			09/15/16 07:54	1
Methylene Chloride	<5.00		5.00		ug/L			09/15/16 07:54	1
Methyl tert-butyl ether	<1.00		1.00		ug/L			09/15/16 07:54	1
Naphthalene	<5.00		5.00		ug/L			09/15/16 07:54	1
N-Propylbenzene	<1.00		1.00		ug/L			09/15/16 07:54	1

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

Lab Sample ID: MB 310-141185/7
Matrix: Water
Analysis Batch: 141185

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Styrene	<1.00		1.00		ug/L			09/15/16 07:54	1
1,1,1,2-Tetrachloroethane	<1.00		1.00		ug/L			09/15/16 07:54	1
1,1,2,2-Tetrachloroethane	<1.00		1.00		ug/L			09/15/16 07:54	1
Tetrachloroethene	<1.00		1.00		ug/L			09/15/16 07:54	1
Tetrahydrofuran	<10.0		10.0		ug/L			09/15/16 07:54	1
Toluene	<1.00		1.00		ug/L			09/15/16 07:54	1
1,2,3-Trichlorobenzene	<5.00		5.00		ug/L			09/15/16 07:54	1
1,2,4-Trichlorobenzene	<5.00		5.00		ug/L			09/15/16 07:54	1
1,1,1-Trichloroethane	<1.00		1.00		ug/L			09/15/16 07:54	1
1,1,2-Trichloroethane	<1.00		1.00		ug/L			09/15/16 07:54	1
Trichloroethene	<1.00		1.00		ug/L			09/15/16 07:54	1
Trichlorofluoromethane	<4.00		4.00		ug/L			09/15/16 07:54	1
1,2,3-Trichloropropane	<1.00		1.00		ug/L			09/15/16 07:54	1
1,1,2-Trichlorotrifluoroethane	<2.00		2.00		ug/L			09/15/16 07:54	1
1,2,4-Trimethylbenzene	<1.00		1.00		ug/L			09/15/16 07:54	1
1,3,5-Trimethylbenzene	<1.00		1.00		ug/L			09/15/16 07:54	1
Vinyl chloride	<1.00		1.00		ug/L			09/15/16 07:54	1
Xylenes, Total	<3.00		3.00		ug/L			09/15/16 07:54	1
Dibromomethane	<1.00		1.00		ug/L			09/15/16 07:54	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*109*		*80 - 120*		*09/15/16 07:54*	*1*
Dibromofluoromethane (Surr)	*104*		*80 - 120*		*09/15/16 07:54*	*1*
Toluene-d8 (Surr)	*98*		*80 - 120*		*09/15/16 07:54*	*1*

Lab Sample ID: LCS 310-141185/5
Matrix: Water
Analysis Batch: 141185

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Acetone	40.0	45.17		ug/L		113	55 - 150
Allyl chloride	20.0	19.17		ug/L		96	60 - 145
Benzene	20.0	19.94		ug/L		100	70 - 125
Bromobenzene	20.0	18.69		ug/L		93	70 - 120
Bromochloromethane	20.0	21.40		ug/L		107	65 - 145
Bromodichloromethane	20.0	18.93		ug/L		95	65 - 125
Bromoform	20.0	17.61		ug/L		88	45 - 120
2-Butanone (MEK)	40.0	38.51		ug/L		96	60 - 135
n-Butylbenzene	20.0	17.33		ug/L		87	60 - 135
sec-Butylbenzene	20.0	17.45		ug/L		87	70 - 125
tert-Butylbenzene	20.0	17.55		ug/L		88	70 - 125
Carbon tetrachloride	20.0	19.69		ug/L		98	60 - 135
Chlorobenzene	20.0	19.74		ug/L		99	70 - 125
Chlorodibromomethane	20.0	18.31		ug/L		92	65 - 125
Chloroform	20.0	18.60		ug/L		93	70 - 130
4-Chlorotoluene	20.0	18.52		ug/L		93	70 - 120
2-Chlorotoluene	20.0	19.00		ug/L		95	70 - 120
1,2-Dibromo-3-Chloropropane	20.0	18.00		ug/L		90	40 - 135

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

Lab Sample ID: LCS 310-141185/5
Matrix: Water
Analysis Batch: 141185

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
1,2-Dibromoethane (EDB)	20.0	20.02		ug/L		100	75 - 125
1,2-Dichlorobenzene	20.0	18.34		ug/L		92	70 - 120
1,3-Dichlorobenzene	20.0	19.66		ug/L		98	70 - 125
1,4-Dichlorobenzene	20.0	18.57		ug/L		93	70 - 125
1,2-Dichloroethane	20.0	18.90		ug/L		95	70 - 130
1,1-Dichloroethane	20.0	19.98		ug/L		100	70 - 130
1,1-Dichloroethene	20.0	19.91		ug/L		100	65 - 140
cis-1,2-Dichloroethene	20.0	19.39		ug/L		97	70 - 130
trans-1,2-Dichloroethene	20.0	20.46		ug/L		102	65 - 135
1,2-Dichloropropane	20.0	20.50		ug/L		102	70 - 125
1,3-Dichloropropane	20.0	19.53		ug/L		98	75 - 125
2,2-Dichloropropane	20.0	20.27		ug/L		101	55 - 140
1,1-Dichloropropene	20.0	18.74		ug/L		94	70 - 130
cis-1,3-Dichloropropene	20.0	18.46		ug/L		92	60 - 130
trans-1,3-Dichloropropene	20.0	18.91		ug/L		95	65 - 120
Diethyl ether	20.0	20.09		ug/L		100	65 - 130
Ethylbenzene	20.0	19.26		ug/L		96	70 - 125
Hexachlorobutadiene	20.0	20.79		ug/L		104	60 - 125
Isopropylbenzene	20.0	17.05		ug/L		85	75 - 125
p-Isopropyltoluene	20.0	18.46		ug/L		92	70 - 125
4-Methyl-2-pentanone (MIBK)	40.0	39.00		ug/L		97	60 - 140
Methylene Chloride	20.0	19.35		ug/L		97	50 - 140
Methyl tert-butyl ether	20.0	19.73		ug/L		99	70 - 125
Naphthalene	20.0	16.51		ug/L		83	45 - 130
N-Propylbenzene	20.0	18.62		ug/L		93	75 - 125
Styrene	20.0	19.69		ug/L		98	70 - 120
1,1,1,2-Tetrachloroethane	20.0	19.82		ug/L		99	70 - 120
1,1,2,2-Tetrachloroethane	20.0	18.15		ug/L		91	65 - 125
Tetrachloroethene	20.0	21.35		ug/L		107	55 - 150
Tetrahydrofuran	40.0	40.24		ug/L		101	60 - 130
Toluene	20.0	20.24		ug/L		101	75 - 125
1,2,3-Trichlorobenzene	20.0	17.82		ug/L		89	60 - 125
1,2,4-Trichlorobenzene	20.0	18.43		ug/L		92	60 - 125
1,1,1-Trichloroethane	20.0	20.24		ug/L		101	70 - 130
1,1,2-Trichloroethane	20.0	19.89		ug/L		99	70 - 130
Trichloroethene	20.0	20.38		ug/L		102	70 - 130
1,2,3-Trichloropropane	20.0	19.52		ug/L		98	65 - 130
1,1,2-Trichlorotrifluoroethane	20.0	21.10		ug/L		105	55 - 150
1,2,4-Trimethylbenzene	20.0	18.56		ug/L		93	70 - 125
1,3,5-Trimethylbenzene	20.0	18.21		ug/L		91	75 - 125
Xylenes, Total	40.0	37.98		ug/L		95	75 - 120
Dibromomethane	20.0	19.57		ug/L		98	75 - 130

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*99*		*80 - 120*
Dibromofluoromethane (Surr)	*101*		*80 - 120*
Toluene-d8 (Surr)	*100*		*80 - 120*

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

Lab Sample ID: LCS 310-141185/6
Matrix: Water
Analysis Batch: 141185

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Bromomethane	20.0	14.00		ug/L		70	35 - 130
Dichlorofluoromethane	20.0	18.43		ug/L		92	60 - 140
Chloroethane	20.0	17.16		ug/L		86	55 - 140
Chloromethane	20.0	18.26		ug/L		91	40 - 135
Dichlorodifluoromethane	20.0	18.37		ug/L		92	35 - 130
Trichlorofluoromethane	20.0	18.39		ug/L		92	50 - 145
Vinyl chloride	20.0	18.13		ug/L		91	50 - 145

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*103*		*80 - 120*
Dibromofluoromethane (Surr)	*101*		*80 - 120*
Toluene-d8 (Surr)	*95*		*80 - 120*

Lab Sample ID: 310-89241-AF-1 MS
Matrix: Water
Analysis Batch: 141185

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Acetone	63.1		40.0	109.2		ug/L		115	50 - 150
Allyl chloride	<2.00		20.0	21.03		ug/L		105	45 - 145
Benzene	<0.500		20.0	21.12		ug/L		106	50 - 135
Bromobenzene	<1.00		20.0	19.47		ug/L		97	50 - 140
Bromochloromethane	<5.00		20.0	22.04		ug/L		110	50 - 145
Bromodichloromethane	3.27		20.0	23.15		ug/L		99	50 - 130
Bromoform	<5.00		20.0	18.32		ug/L		92	35 - 125
2-Butanone (MEK)	<10.0		40.0	53.25		ug/L		113	50 - 145
n-Butylbenzene	<1.00		20.0	18.63		ug/L		93	35 - 135
sec-Butylbenzene	<1.00		20.0	18.07		ug/L		90	40 - 125
tert-Butylbenzene	<1.00		20.0	18.85		ug/L		94	45 - 130
Carbon tetrachloride	<2.00		20.0	20.74		ug/L		104	45 - 135
Chlorobenzene	<1.00		20.0	21.54		ug/L		108	50 - 135
Chlorodibromomethane	<5.00		20.0	19.23		ug/L		96	45 - 130
Chloroform	13.2		20.0	31.70		ug/L		92	50 - 130
4-Chlorotoluene	<1.00		20.0	19.49		ug/L		97	45 - 130
2-Chlorotoluene	<1.00		20.0	19.33		ug/L		97	45 - 130
1,2-Dibromo-3-Chloropropane	<5.00		20.0	21.59		ug/L		108	40 - 135
1,2-Dibromoethane (EDB)	<1.00		20.0	20.43		ug/L		102	50 - 140
1,2-Dichlorobenzene	<1.00		20.0	18.89		ug/L		94	45 - 135
1,3-Dichlorobenzene	<1.00		20.0	19.88		ug/L		99	45 - 140
1,4-Dichlorobenzene	<1.00		20.0	19.27		ug/L		96	45 - 135
1,2-Dichloroethane	<1.00		20.0	19.72		ug/L		99	60 - 130
1,1-Dichloroethane	<1.00		20.0	21.00		ug/L		105	45 - 140
1,1-Dichloroethene	<2.00		20.0	20.58		ug/L		103	45 - 140
cis-1,2-Dichloroethene	<1.00		20.0	20.35		ug/L		102	50 - 135
trans-1,2-Dichloroethene	<1.00		20.0	22.20		ug/L		111	45 - 135
1,2-Dichloropropane	<1.00		20.0	21.14		ug/L		106	55 - 135
1,3-Dichloropropane	<1.00		20.0	20.34		ug/L		102	55 - 135
2,2-Dichloropropane	<4.00		20.0	20.08		ug/L		100	40 - 140

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

Lab Sample ID: 310-89241-AF-1 MS
Matrix: Water
Analysis Batch: 141185

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
1,1-Dichloropropene	<1.00		20.0	18.82		ug/L		94	50 - 130
cis-1,3-Dichloropropene	<5.00		20.0	17.47		ug/L		87	50 - 130
trans-1,3-Dichloropropene	<5.00		20.0	16.86		ug/L		84	45 - 125
Diethyl ether	<2.00		20.0	19.89		ug/L		99	45 - 140
Ethylbenzene	<1.00		20.0	19.77		ug/L		99	45 - 125
Hexachlorobutadiene	<5.00		20.0	20.04		ug/L		100	35 - 130
Isopropylbenzene	<1.00		20.0	18.68		ug/L		93	45 - 125
p-Isopropyltoluene	<1.00		20.0	19.17		ug/L		96	45 - 125
4-Methyl-2-pentanone (MIBK)	<10.0		40.0	44.35		ug/L		111	45 - 140
Methylene Chloride	<5.00		20.0	19.03		ug/L		95	45 - 140
Methyl tert-butyl ether	<1.00		20.0	20.77		ug/L		104	55 - 130
Naphthalene	<5.00		20.0	17.04		ug/L		85	40 - 135
N-Propylbenzene	<1.00		20.0	19.72		ug/L		99	45 - 125
Styrene	<1.00		20.0	20.38		ug/L		102	45 - 130
1,1,1,2-Tetrachloroethane	<1.00		20.0	20.63		ug/L		103	50 - 130
1,1,2,2-Tetrachloroethane	<1.00		20.0	22.03		ug/L		110	45 - 140
Tetrachloroethene	<1.00		20.0	21.61		ug/L		108	35 - 150
Tetrahydrofuran	21.7		40.0	62.81		ug/L		103	45 - 140
Toluene	<1.00		20.0	21.16		ug/L		106	45 - 130
1,2,3-Trichlorobenzene	<5.00		20.0	16.59		ug/L		83	45 - 140
1,2,4-Trichlorobenzene	<5.00		20.0	17.30		ug/L		86	40 - 135
1,1,1-Trichloroethane	<1.00		20.0	21.90		ug/L		110	50 - 130
1,1,2-Trichloroethane	<1.00		20.0	20.02		ug/L		100	50 - 145
Trichloroethene	<1.00		20.0	20.86		ug/L		104	50 - 130
1,2,3-Trichloropropane	<1.00		20.0	22.19		ug/L		111	45 - 140
1,1,2-Trichlorotrifluoroethane	<2.00		20.0	20.55		ug/L		103	40 - 150
1,2,4-Trimethylbenzene	<1.00		20.0	18.61		ug/L		93	45 - 130
1,3,5-Trimethylbenzene	<1.00		20.0	18.72		ug/L		94	10 - 125
Xylenes, Total	<3.00		40.0	40.58		ug/L		101	45 - 130
Dibromomethane	<1.00		20.0	20.64		ug/L		103	55 - 140

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*99*		*80 - 120*
Dibromofluoromethane (Surr)	*102*		*80 - 120*
Toluene-d8 (Surr)	*101*		*80 - 120*

Lab Sample ID: 310-89241-AF-1 MSD
Matrix: Water
Analysis Batch: 141185

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Acetone	63.1		40.0	100.7		ug/L		94	50 - 150	8	30
Allyl chloride	<2.00		20.0	19.06		ug/L		95	45 - 145	10	35
Benzene	<0.500		20.0	18.57		ug/L		93	50 - 135	13	15
Bromobenzene	<1.00		20.0	17.73		ug/L		89	50 - 140	9	15
Bromochloromethane	<5.00		20.0	20.74		ug/L		104	50 - 145	6	20
Bromodichloromethane	3.27		20.0	20.15		ug/L		84	50 - 130	14	15
Bromoform	<5.00		20.0	16.48		ug/L		82	35 - 125	11	20

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

Lab Sample ID: 310-89241-AF-1 MSD
Matrix: Water
Analysis Batch: 141185

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
2-Butanone (MEK)	<10.0		40.0	49.40		ug/L		104	50 - 145	7	35
n-Butylbenzene	<1.00		20.0	18.51		ug/L		93	35 - 135	1	25
sec-Butylbenzene	<1.00		20.0	17.58		ug/L		88	40 - 125	3	25
tert-Butylbenzene	<1.00		20.0	17.46		ug/L		87	45 - 130	8	25
Carbon tetrachloride	<2.00		20.0	18.02		ug/L		90	45 - 135	14	20
Chlorobenzene	<1.00		20.0	18.91		ug/L		95	50 - 135	13	20
Chlorodibromomethane	<5.00		20.0	17.03		ug/L		85	45 - 130	12	15
Chloroform	13.2		20.0	29.16		ug/L		80	50 - 130	8	15
4-Chlorotoluene	<1.00		20.0	17.79		ug/L		89	45 - 130	9	20
2-Chlorotoluene	<1.00		20.0	17.63		ug/L		88	45 - 130	9	20
1,2-Dibromo-3-Chloropropane	<5.00		20.0	20.46		ug/L		102	40 - 135	5	35
1,2-Dibromoethane (EDB)	<1.00		20.0	18.52		ug/L		93	50 - 140	10	15
1,2-Dichlorobenzene	<1.00		20.0	18.52		ug/L		93	45 - 135	2	15
1,3-Dichlorobenzene	<1.00		20.0	18.07		ug/L		90	45 - 140	10	20
1,4-Dichlorobenzene	<1.00		20.0	18.81		ug/L		94	45 - 135	2	20
1,2-Dichloroethane	<1.00		20.0	17.34		ug/L		87	60 - 130	13	15
1,1-Dichloroethane	<1.00		20.0	18.66		ug/L		93	45 - 140	12	15
1,1-Dichloroethene	<2.00		20.0	19.31		ug/L		97	45 - 140	6	20
cis-1,2-Dichloroethene	<1.00		20.0	18.78		ug/L		94	50 - 135	8	15
trans-1,2-Dichloroethene	<1.00		20.0	19.76		ug/L		99	45 - 135	12	20
1,2-Dichloropropane	<1.00		20.0	18.91		ug/L		95	55 - 135	11	15
1,3-Dichloropropane	<1.00		20.0	18.20		ug/L		91	55 - 135	11	20
2,2-Dichloropropane	<4.00		20.0	17.71		ug/L		89	40 - 140	13	20
1,1-Dichloropropene	<1.00		20.0	17.03		ug/L		85	50 - 130	10	20
cis-1,3-Dichloropropene	<5.00		20.0	16.00		ug/L		80	50 - 130	9	15
trans-1,3-Dichloropropene	<5.00		20.0	15.99		ug/L		80	45 - 125	5	20
Diethyl ether	<2.00		20.0	18.77		ug/L		94	45 - 140	6	15
Ethylbenzene	<1.00		20.0	17.91		ug/L		90	45 - 125	10	20
Hexachlorobutadiene	<5.00		20.0	20.01		ug/L		100	35 - 130	0	35
Isopropylbenzene	<1.00		20.0	16.84		ug/L		84	45 - 125	10	20
p-Isopropyltoluene	<1.00		20.0	19.10		ug/L		95	45 - 125	0	20
4-Methyl-2-pentanone (MIBK)	<10.0		40.0	39.91		ug/L		100	45 - 140	11	25
Methylene Chloride	<5.00		20.0	18.28		ug/L		91	45 - 140	4	15
Methyl tert-butyl ether	<1.00		20.0	18.16		ug/L		91	55 - 130	13	15
Naphthalene	<5.00		20.0	15.77		ug/L		79	40 - 135	8	25
N-Propylbenzene	<1.00		20.0	17.68		ug/L		88	45 - 125	11	20
Styrene	<1.00		20.0	18.06		ug/L		90	45 - 130	12	20
1,1,1,2-Tetrachloroethane	<1.00		20.0	18.02		ug/L		90	50 - 130	13	15
1,1,2,2-Tetrachloroethane	<1.00		20.0	19.52		ug/L		98	45 - 140	12	20
Tetrachloroethene	<1.00		20.0	18.97		ug/L		95	35 - 150	13	20
Tetrahydrofuran	21.7		40.0	67.62		ug/L		115	45 - 140	7	35
Toluene	<1.00		20.0	19.20		ug/L		96	45 - 130	10	15
1,2,3-Trichlorobenzene	<5.00		20.0	16.76		ug/L		84	45 - 140	1	25
1,2,4-Trichlorobenzene	<5.00		20.0	16.24		ug/L		81	40 - 135	6	25
1,1,1-Trichloroethane	<1.00		20.0	19.09		ug/L		95	50 - 130	14	15
1,1,2-Trichloroethane	<1.00		20.0	18.31		ug/L		92	50 - 145	9	20
Trichloroethene	<1.00		20.0	18.69		ug/L		93	50 - 130	11	15
1,2,3-Trichloropropane	<1.00		20.0	19.28		ug/L		96	45 - 140	14	25

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

Lab Sample ID: 310-89241-AF-1 MSD
Matrix: Water
Analysis Batch: 141185

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
1,1,2-Trichlorotrifluoroethane	<2.00		20.0	17.75		ug/L		89	40 - 150	15	25
1,2,4-Trimethylbenzene	<1.00		20.0	17.12		ug/L		86	45 - 130	8	20
1,3,5-Trimethylbenzene	<1.00		20.0	17.55		ug/L		88	10 - 125	6	35
Xylenes, Total	<3.00		40.0	36.43		ug/L		91	45 - 130	11	20
Dibromomethane	<1.00		20.0	19.14		ug/L		96	55 - 140	8	20

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*101*		*80 - 120*
Dibromofluoromethane (Surr)	*103*		*80 - 120*
Toluene-d8 (Surr)	*100*		*80 - 120*

Lab Sample ID: MB 310-141233/7
Matrix: Water
Analysis Batch: 141233

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acetone	<10.0		10.0		ug/L			09/15/16 07:41	1
Allyl chloride	<2.00		2.00		ug/L			09/15/16 07:41	1
Benzene	<0.500		0.500		ug/L			09/15/16 07:41	1
Bromobenzene	<1.00		1.00		ug/L			09/15/16 07:41	1
Bromochloromethane	<5.00		5.00		ug/L			09/15/16 07:41	1
Bromodichloromethane	<1.00		1.00		ug/L			09/15/16 07:41	1
Bromoform	<5.00		5.00		ug/L			09/15/16 07:41	1
Bromomethane	<4.00		4.00		ug/L			09/15/16 07:41	1
2-Butanone (MEK)	<10.0		10.0		ug/L			09/15/16 07:41	1
n-Butylbenzene	<1.00		1.00		ug/L			09/15/16 07:41	1
sec-Butylbenzene	<1.00		1.00		ug/L			09/15/16 07:41	1
tert-Butylbenzene	<1.00		1.00		ug/L			09/15/16 07:41	1
Carbon tetrachloride	<2.00		2.00		ug/L			09/15/16 07:41	1
Chlorobenzene	<1.00		1.00		ug/L			09/15/16 07:41	1
Chlorodibromomethane	<5.00		5.00		ug/L			09/15/16 07:41	1
Dichlorofluoromethane	<1.00		1.00		ug/L			09/15/16 07:41	1
Chloroethane	<4.00		4.00		ug/L			09/15/16 07:41	1
Chloroform	<1.00		1.00		ug/L			09/15/16 07:41	1
Chloromethane	<3.00		3.00		ug/L			09/15/16 07:41	1
4-Chlorotoluene	<1.00		1.00		ug/L			09/15/16 07:41	1
2-Chlorotoluene	<1.00		1.00		ug/L			09/15/16 07:41	1
1,2-Dibromo-3-Chloropropane	<5.00		5.00		ug/L			09/15/16 07:41	1
1,2-Dibromoethane (EDB)	<1.00		1.00		ug/L			09/15/16 07:41	1
1,2-Dichlorobenzene	<1.00		1.00		ug/L			09/15/16 07:41	1
1,3-Dichlorobenzene	<1.00		1.00		ug/L			09/15/16 07:41	1
1,4-Dichlorobenzene	<1.00		1.00		ug/L			09/15/16 07:41	1
Dichlorodifluoromethane	<3.00		3.00		ug/L			09/15/16 07:41	1
1,2-Dichloroethane	<1.00		1.00		ug/L			09/15/16 07:41	1
1,1-Dichloroethane	<1.00		1.00		ug/L			09/15/16 07:41	1
1,1-Dichloroethene	<2.00		2.00		ug/L			09/15/16 07:41	1
cis-1,2-Dichloroethene	<1.00		1.00		ug/L			09/15/16 07:41	1
trans-1,2-Dichloroethene	<1.00		1.00		ug/L			09/15/16 07:41	1

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

Lab Sample ID: MB 310-141233/7
Matrix: Water
Analysis Batch: 141233

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,2-Dichloropropane	<1.00		1.00		ug/L			09/15/16 07:41	1
1,3-Dichloropropane	<1.00		1.00		ug/L			09/15/16 07:41	1
2,2-Dichloropropane	<4.00		4.00		ug/L			09/15/16 07:41	1
1,1-Dichloropropene	<1.00		1.00		ug/L			09/15/16 07:41	1
cis-1,3-Dichloropropene	<5.00		5.00		ug/L			09/15/16 07:41	1
trans-1,3-Dichloropropene	<5.00		5.00		ug/L			09/15/16 07:41	1
Diethyl ether	<2.00		2.00		ug/L			09/15/16 07:41	1
Ethylbenzene	<1.00		1.00		ug/L			09/15/16 07:41	1
Hexachlorobutadiene	<5.00		5.00		ug/L			09/15/16 07:41	1
Isopropylbenzene	<1.00		1.00		ug/L			09/15/16 07:41	1
p-Isopropyltoluene	<1.00		1.00		ug/L			09/15/16 07:41	1
4-Methyl-2-pentanone (MIBK)	<10.0		10.0		ug/L			09/15/16 07:41	1
Methylene Chloride	<5.00		5.00		ug/L			09/15/16 07:41	1
Methyl tert-butyl ether	<1.00		1.00		ug/L			09/15/16 07:41	1
Naphthalene	<5.00		5.00		ug/L			09/15/16 07:41	1
N-Propylbenzene	<1.00		1.00		ug/L			09/15/16 07:41	1
Styrene	<1.00		1.00		ug/L			09/15/16 07:41	1
1,1,1,2-Tetrachloroethane	<1.00		1.00		ug/L			09/15/16 07:41	1
1,1,2,2-Tetrachloroethane	<1.00		1.00		ug/L			09/15/16 07:41	1
Tetrachloroethene	<1.00		1.00		ug/L			09/15/16 07:41	1
Tetrahydrofuran	<10.0		10.0		ug/L			09/15/16 07:41	1
Toluene	<1.00		1.00		ug/L			09/15/16 07:41	1
1,2,3-Trichlorobenzene	<5.00		5.00		ug/L			09/15/16 07:41	1
1,2,4-Trichlorobenzene	<5.00		5.00		ug/L			09/15/16 07:41	1
1,1,1-Trichloroethane	<1.00		1.00		ug/L			09/15/16 07:41	1
1,1,2-Trichloroethane	<1.00		1.00		ug/L			09/15/16 07:41	1
Trichloroethene	<1.00		1.00		ug/L			09/15/16 07:41	1
Trichlorofluoromethane	<4.00		4.00		ug/L			09/15/16 07:41	1
1,2,3-Trichloropropane	<1.00		1.00		ug/L			09/15/16 07:41	1
1,1,2-Trichlorotrifluoroethane	<2.00		2.00		ug/L			09/15/16 07:41	1
1,2,4-Trimethylbenzene	<1.00		1.00		ug/L			09/15/16 07:41	1
1,3,5-Trimethylbenzene	<1.00		1.00		ug/L			09/15/16 07:41	1
Vinyl chloride	<1.00		1.00		ug/L			09/15/16 07:41	1
Xylenes, Total	<3.00		3.00		ug/L			09/15/16 07:41	1
Dibromomethane	<1.00		1.00		ug/L			09/15/16 07:41	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*98*		*80 - 120*		*09/15/16 07:41*	*1*
Dibromofluoromethane (Surr)	*104*		*80 - 120*		*09/15/16 07:41*	*1*
Toluene-d8 (Surr)	*96*		*80 - 120*		*09/15/16 07:41*	*1*

Lab Sample ID: LCS 310-141233/5
Matrix: Water
Analysis Batch: 141233

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Acetone	40.0	45.38		ug/L		113	55 - 150
Allyl chloride	20.0	19.45		ug/L		97	60 - 145

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

Lab Sample ID: LCS 310-141233/5
Matrix: Water
Analysis Batch: 141233

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Benzene	20.0	19.23		ug/L		96	70 - 125
Bromobenzene	20.0	18.33		ug/L		92	70 - 120
Bromochloromethane	20.0	20.05		ug/L		100	65 - 145
Bromodichloromethane	20.0	18.14		ug/L		91	65 - 125
Bromoform	20.0	16.53		ug/L		83	45 - 120
2-Butanone (MEK)	40.0	38.02		ug/L		95	60 - 135
n-Butylbenzene	20.0	19.10		ug/L		95	60 - 135
sec-Butylbenzene	20.0	19.70		ug/L		98	70 - 125
tert-Butylbenzene	20.0	19.41		ug/L		97	70 - 125
Carbon tetrachloride	20.0	19.76		ug/L		99	60 - 135
Chlorobenzene	20.0	18.19		ug/L		91	70 - 125
Chlorodibromomethane	20.0	17.61		ug/L		88	65 - 125
Chloroform	20.0	19.47		ug/L		97	70 - 130
4-Chlorotoluene	20.0	19.31		ug/L		97	70 - 120
2-Chlorotoluene	20.0	19.24		ug/L		96	70 - 120
1,2-Dibromo-3-Chloropropane	20.0	16.87		ug/L		84	40 - 135
1,2-Dibromoethane (EDB)	20.0	18.30		ug/L		91	75 - 125
1,2-Dichlorobenzene	20.0	18.30		ug/L		92	70 - 120
1,3-Dichlorobenzene	20.0	18.90		ug/L		94	70 - 125
1,4-Dichlorobenzene	20.0	18.55		ug/L		93	70 - 125
1,2-Dichloroethane	20.0	18.58		ug/L		93	70 - 130
1,1-Dichloroethane	20.0	19.56		ug/L		98	70 - 130
1,1-Dichloroethene	20.0	19.82		ug/L		99	65 - 140
cis-1,2-Dichloroethene	20.0	19.02		ug/L		95	70 - 130
trans-1,2-Dichloroethene	20.0	19.68		ug/L		98	65 - 135
1,2-Dichloropropane	20.0	18.35		ug/L		92	70 - 125
1,3-Dichloropropane	20.0	18.45		ug/L		92	75 - 125
2,2-Dichloropropane	20.0	19.43		ug/L		97	55 - 140
1,1-Dichloropropene	20.0	19.38		ug/L		97	70 - 130
cis-1,3-Dichloropropene	20.0	18.10		ug/L		90	60 - 130
trans-1,3-Dichloropropene	20.0	16.82		ug/L		84	65 - 120
Diethyl ether	20.0	19.82		ug/L		99	65 - 130
Ethylbenzene	20.0	18.72		ug/L		94	70 - 125
Hexachlorobutadiene	20.0	18.25		ug/L		91	60 - 125
Isopropylbenzene	20.0	18.53		ug/L		93	75 - 125
p-Isopropyltoluene	20.0	19.67		ug/L		98	70 - 125
4-Methyl-2-pentanone (MIBK)	40.0	34.67		ug/L		87	60 - 140
Methylene Chloride	20.0	19.38		ug/L		97	50 - 140
Methyl tert-butyl ether	20.0	17.92		ug/L		90	70 - 125
Naphthalene	20.0	15.53		ug/L		78	45 - 130
N-Propylbenzene	20.0	19.15		ug/L		96	75 - 125
Styrene	20.0	18.62		ug/L		93	70 - 120
1,1,1,2-Tetrachloroethane	20.0	18.06		ug/L		90	70 - 120
1,1,2,2-Tetrachloroethane	20.0	17.84		ug/L		89	65 - 125
Tetrachloroethene	20.0	19.68		ug/L		98	55 - 150
Tetrahydrofuran	40.0	33.85		ug/L		85	60 - 130
Toluene	20.0	18.95		ug/L		95	75 - 125
1,2,3-Trichlorobenzene	20.0	16.59		ug/L		83	60 - 125

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

Lab Sample ID: LCS 310-141233/5
Matrix: Water
Analysis Batch: 141233

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
1,2,4-Trichlorobenzene	20.0	16.77		ug/L		84	60 - 125
1,1,1-Trichloroethane	20.0	19.64		ug/L		98	70 - 130
1,1,2-Trichloroethane	20.0	18.55		ug/L		93	70 - 130
Trichloroethene	20.0	18.71		ug/L		94	70 - 130
1,2,3-Trichloropropane	20.0	17.98		ug/L		90	65 - 130
1,1,2-Trichlorotrifluoroethane	20.0	21.25		ug/L		106	55 - 150
1,2,4-Trimethylbenzene	20.0	19.95		ug/L		100	70 - 125
1,3,5-Trimethylbenzene	20.0	19.75		ug/L		99	75 - 125
Xylenes, Total	40.0	37.24		ug/L		93	75 - 120
Dibromomethane	20.0	18.45		ug/L		92	75 - 130

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*97*		*80 - 120*
Dibromofluoromethane (Surr)	*104*		*80 - 120*
Toluene-d8 (Surr)	*99*		*80 - 120*

Lab Sample ID: LCS 310-141233/6
Matrix: Water
Analysis Batch: 141233

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Bromomethane	20.0	13.53		ug/L		68	35 - 130
Dichlorofluoromethane	20.0	18.38		ug/L		92	60 - 140
Chloroethane	20.0	18.87		ug/L		94	55 - 140
Chloromethane	20.0	18.47		ug/L		92	40 - 135
Dichlorodifluoromethane	20.0	19.14		ug/L		96	35 - 130
Trichlorofluoromethane	20.0	19.03		ug/L		95	50 - 145
Vinyl chloride	20.0	18.86		ug/L		94	50 - 145

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*98*		*80 - 120*
Dibromofluoromethane (Surr)	*102*		*80 - 120*
Toluene-d8 (Surr)	*96*		*80 - 120*

Lab Sample ID: MB 310-141519/1-A
Matrix: Solid
Analysis Batch: 141521

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 141519

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acetone	<0.500		0.500		mg/Kg		09/16/16 06:44	09/16/16 08:07	1
Allyl chloride	<0.100		0.100		mg/Kg		09/16/16 06:44	09/16/16 08:07	1
Benzene	<0.100		0.100		mg/Kg		09/16/16 06:44	09/16/16 08:07	1
Bromobenzene	<0.100		0.100		mg/Kg		09/16/16 06:44	09/16/16 08:07	1
Bromochloromethane	<0.100		0.100		mg/Kg		09/16/16 06:44	09/16/16 08:07	1
Bromodichloromethane	<0.100		0.100		mg/Kg		09/16/16 06:44	09/16/16 08:07	1
Bromoform	<0.100	^	0.100		mg/Kg		09/16/16 06:44	09/16/16 08:07	1
Bromomethane	<0.500		0.500		mg/Kg		09/16/16 06:44	09/16/16 08:07	1
2-Butanone (MEK)	<0.250		0.250		mg/Kg		09/16/16 06:44	09/16/16 08:07	1

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

Lab Sample ID: MB 310-141519/1-A
Matrix: Solid
Analysis Batch: 141521

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 141519

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
n-Butylbenzene	<0.100		0.100		mg/Kg		09/16/16 06:44	09/16/16 08:07	1
sec-Butylbenzene	<0.100		0.100		mg/Kg		09/16/16 06:44	09/16/16 08:07	1
tert-Butylbenzene	<0.100		0.100		mg/Kg		09/16/16 06:44	09/16/16 08:07	1
Carbon tetrachloride	<0.100		0.100		mg/Kg		09/16/16 06:44	09/16/16 08:07	1
Chlorobenzene	<0.100		0.100		mg/Kg		09/16/16 06:44	09/16/16 08:07	1
Chlorodibromomethane	<0.100		0.100		mg/Kg		09/16/16 06:44	09/16/16 08:07	1
Dichlorofluoromethane	<0.100		0.100		mg/Kg		09/16/16 06:44	09/16/16 08:07	1
Chloroethane	<0.100		0.100		mg/Kg		09/16/16 06:44	09/16/16 08:07	1
Chloroform	<0.100		0.100		mg/Kg		09/16/16 06:44	09/16/16 08:07	1
Chloromethane	<0.250		0.250		mg/Kg		09/16/16 06:44	09/16/16 08:07	1
4-Chlorotoluene	<0.100		0.100		mg/Kg		09/16/16 06:44	09/16/16 08:07	1
2-Chlorotoluene	<0.100		0.100		mg/Kg		09/16/16 06:44	09/16/16 08:07	1
1,2-Dibromo-3-Chloropropane	<0.100		0.100		mg/Kg		09/16/16 06:44	09/16/16 08:07	1
1,2-Dibromoethane (EDB)	<0.100		0.100		mg/Kg		09/16/16 06:44	09/16/16 08:07	1
1,2-Dichlorobenzene	<0.100		0.100		mg/Kg		09/16/16 06:44	09/16/16 08:07	1
1,3-Dichlorobenzene	<0.100		0.100		mg/Kg		09/16/16 06:44	09/16/16 08:07	1
1,4-Dichlorobenzene	<0.100		0.100		mg/Kg		09/16/16 06:44	09/16/16 08:07	1
Dichlorodifluoromethane	<0.100		0.100		mg/Kg		09/16/16 06:44	09/16/16 08:07	1
1,2-Dichloroethane	<0.100		0.100		mg/Kg		09/16/16 06:44	09/16/16 08:07	1
1,1-Dichloroethane	<0.100		0.100		mg/Kg		09/16/16 06:44	09/16/16 08:07	1
1,1-Dichloroethene	<0.100		0.100		mg/Kg		09/16/16 06:44	09/16/16 08:07	1
cis-1,2-Dichloroethene	<0.100		0.100		mg/Kg		09/16/16 06:44	09/16/16 08:07	1
trans-1,2-Dichloroethene	<0.100		0.100		mg/Kg		09/16/16 06:44	09/16/16 08:07	1
1,2-Dichloropropane	<0.100		0.100		mg/Kg		09/16/16 06:44	09/16/16 08:07	1
1,3-Dichloropropane	<0.100		0.100		mg/Kg		09/16/16 06:44	09/16/16 08:07	1
2,2-Dichloropropane	<0.100		0.100		mg/Kg		09/16/16 06:44	09/16/16 08:07	1
1,1-Dichloropropene	<0.100		0.100		mg/Kg		09/16/16 06:44	09/16/16 08:07	1
cis-1,3-Dichloropropene	<0.100		0.100		mg/Kg		09/16/16 06:44	09/16/16 08:07	1
trans-1,3-Dichloropropene	<0.100		0.100		mg/Kg		09/16/16 06:44	09/16/16 08:07	1
Diethyl ether	<0.100		0.100		mg/Kg		09/16/16 06:44	09/16/16 08:07	1
Ethylbenzene	<0.100		0.100		mg/Kg		09/16/16 06:44	09/16/16 08:07	1
Hexachlorobutadiene	<0.100		0.100		mg/Kg		09/16/16 06:44	09/16/16 08:07	1
Isopropylbenzene	<0.100		0.100		mg/Kg		09/16/16 06:44	09/16/16 08:07	1
p-Isopropyltoluene	<0.100		0.100		mg/Kg		09/16/16 06:44	09/16/16 08:07	1
4-Methyl-2-pentanone (MIBK)	<0.100		0.100		mg/Kg		09/16/16 06:44	09/16/16 08:07	1
Methylene Chloride	<0.250		0.250		mg/Kg		09/16/16 06:44	09/16/16 08:07	1
Methyl tert-butyl ether	<0.100		0.100		mg/Kg		09/16/16 06:44	09/16/16 08:07	1
Naphthalene	<0.250		0.250		mg/Kg		09/16/16 06:44	09/16/16 08:07	1
N-Propylbenzene	<0.100		0.100		mg/Kg		09/16/16 06:44	09/16/16 08:07	1
Styrene	<0.100		0.100		mg/Kg		09/16/16 06:44	09/16/16 08:07	1
1,1,1,2-Tetrachloroethane	<0.100		0.100		mg/Kg		09/16/16 06:44	09/16/16 08:07	1
1,1,2,2-Tetrachloroethane	<0.100		0.100		mg/Kg		09/16/16 06:44	09/16/16 08:07	1
Tetrachloroethene	<0.100		0.100		mg/Kg		09/16/16 06:44	09/16/16 08:07	1
Tetrahydrofuran	<0.100		0.100		mg/Kg		09/16/16 06:44	09/16/16 08:07	1
Toluene	<0.100		0.100		mg/Kg		09/16/16 06:44	09/16/16 08:07	1
1,2,3-Trichlorobenzene	<0.100		0.100		mg/Kg		09/16/16 06:44	09/16/16 08:07	1
1,2,4-Trichlorobenzene	<0.100		0.100		mg/Kg		09/16/16 06:44	09/16/16 08:07	1
1,1,1-Trichloroethane	<0.100		0.100		mg/Kg		09/16/16 06:44	09/16/16 08:07	1

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

Lab Sample ID: MB 310-141519/1-A
Matrix: Solid
Analysis Batch: 141521

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 141519

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,2-Trichloroethane	<0.100		0.100		mg/Kg		09/16/16 06:44	09/16/16 08:07	1
Trichloroethene	<0.100		0.100		mg/Kg		09/16/16 06:44	09/16/16 08:07	1
Trichlorofluoromethane	<0.100		0.100		mg/Kg		09/16/16 06:44	09/16/16 08:07	1
1,2,3-Trichloropropane	<0.100		0.100		mg/Kg		09/16/16 06:44	09/16/16 08:07	1
1,1,2-Trichlorotrifluoroethane	<0.100		0.100		mg/Kg		09/16/16 06:44	09/16/16 08:07	1
1,2,4-Trimethylbenzene	<0.100		0.100		mg/Kg		09/16/16 06:44	09/16/16 08:07	1
1,3,5-Trimethylbenzene	<0.100		0.100		mg/Kg		09/16/16 06:44	09/16/16 08:07	1
Vinyl chloride	<0.100		0.100		mg/Kg		09/16/16 06:44	09/16/16 08:07	1
Xylenes, Total	<0.150		0.150		mg/Kg		09/16/16 06:44	09/16/16 08:07	1
Dibromomethane	<0.100		0.100		mg/Kg		09/16/16 06:44	09/16/16 08:07	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*101*		*70 - 135*	*09/16/16 06:44*	*09/16/16 08:07*	*1*
Dibromofluoromethane (Surr)	*99*		*80 - 120*	*09/16/16 06:44*	*09/16/16 08:07*	*1*
Toluene-d8 (Surr)	*91*		*80 - 120*	*09/16/16 06:44*	*09/16/16 08:07*	*1*

Lab Sample ID: LCS 310-141519/2-A
Matrix: Solid
Analysis Batch: 141521

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 141519

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Acetone	1.93	2.199		mg/Kg		114	70 - 150
Allyl chloride	0.965	1.355		mg/Kg		140	65 - 150
Benzene	0.965	1.048		mg/Kg		109	65 - 145
Bromobenzene	0.965	0.9151		mg/Kg		95	65 - 135
Bromochloromethane	0.965	1.022		mg/Kg		106	65 - 150
Bromodichloromethane	0.965	1.009		mg/Kg		105	55 - 150
Bromoform	0.965	0.9723	^	mg/Kg		101	55 - 135
2-Butanone (MEK)	1.93	1.790		mg/Kg		93	55 - 150
n-Butylbenzene	0.965	0.8778		mg/Kg		91	65 - 135
sec-Butylbenzene	0.965	0.8858		mg/Kg		92	65 - 130
tert-Butylbenzene	0.965	0.8782		mg/Kg		91	65 - 135
Carbon tetrachloride	0.965	1.023		mg/Kg		106	60 - 145
Chlorobenzene	0.965	0.9319		mg/Kg		97	70 - 135
Chlorodibromomethane	0.965	0.8977		mg/Kg		93	55 - 135
Chloroform	0.965	0.9836		mg/Kg		102	65 - 145
4-Chlorotoluene	0.965	0.8759		mg/Kg		91	70 - 130
2-Chlorotoluene	0.965	0.8623		mg/Kg		89	70 - 130
1,2-Dibromo-3-Chloropropane	0.965	0.8301		mg/Kg		86	45 - 140
1,2-Dibromoethane (EDB)	0.965	0.8967		mg/Kg		93	65 - 140
1,2-Dichlorobenzene	0.965	0.8589		mg/Kg		89	65 - 135
1,3-Dichlorobenzene	0.965	0.8626		mg/Kg		89	65 - 135
1,4-Dichlorobenzene	0.965	0.8659		mg/Kg		90	65 - 135
1,2-Dichloroethane	0.965	0.9907		mg/Kg		103	60 - 150
1,1-Dichloroethane	0.965	1.049		mg/Kg		109	65 - 150
1,1-Dichloroethene	0.965	1.006		mg/Kg		104	65 - 145
cis-1,2-Dichloroethene	0.965	1.043		mg/Kg		108	65 - 145
trans-1,2-Dichloroethene	0.965	1.022		mg/Kg		106	65 - 145

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

Lab Sample ID: LCS 310-141519/2-A
Matrix: Solid
Analysis Batch: 141521

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 141519

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
1,2-Dichloropropane	0.965	1.016		mg/Kg		105	65 - 150
1,3-Dichloropropane	0.965	0.9210		mg/Kg		95	65 - 140
2,2-Dichloropropane	0.965	1.138		mg/Kg		118	65 - 150
1,1-Dichloropropene	0.965	1.012		mg/Kg		105	70 - 140
cis-1,3-Dichloropropene	0.965	0.9300		mg/Kg		96	65 - 140
trans-1,3-Dichloropropene	0.965	0.9265		mg/Kg		96	65 - 140
Diethyl ether	0.965	0.9948		mg/Kg		103	60 - 150
Ethylbenzene	0.965	0.9676		mg/Kg		100	70 - 135
Hexachlorobutadiene	0.965	0.9270		mg/Kg		96	50 - 145
Isopropylbenzene	0.965	0.9411		mg/Kg		98	70 - 135
p-Isopropyltoluene	0.965	0.8815		mg/Kg		91	65 - 135
4-Methyl-2-pentanone (MIBK)	1.93	1.690		mg/Kg		88	50 - 145
Methylene Chloride	0.965	1.090		mg/Kg		113	55 - 150
Methyl tert-butyl ether	0.965	0.9843		mg/Kg		102	65 - 150
Naphthalene	0.965	0.8326		mg/Kg		86	50 - 145
N-Propylbenzene	0.965	0.9258		mg/Kg		96	70 - 135
Styrene	0.965	0.9309		mg/Kg		96	70 - 135
1,1,1,2-Tetrachloroethane	0.965	0.9230		mg/Kg		96	65 - 130
1,1,2,2-Tetrachloroethane	0.965	0.8848		mg/Kg		92	60 - 140
Tetrachloroethene	0.965	0.9500		mg/Kg		98	65 - 140
Tetrahydrofuran	1.93	1.822		mg/Kg		94	55 - 150
Toluene	0.965	0.9514		mg/Kg		99	70 - 135
1,2,3-Trichlorobenzene	0.965	0.8685		mg/Kg		90	55 - 140
1,2,4-Trichlorobenzene	0.965	0.8618		mg/Kg		89	50 - 140
1,1,1-Trichloroethane	0.965	1.017		mg/Kg		105	65 - 145
1,1,2-Trichloroethane	0.965	0.9272		mg/Kg		96	65 - 140
Trichloroethene	0.965	1.011		mg/Kg		105	65 - 145
1,2,3-Trichloropropane	0.965	0.8688		mg/Kg		90	60 - 140
1,1,2-Trichlorotrifluoroethane	0.965	1.022		mg/Kg		106	60 - 150
1,2,4-Trimethylbenzene	0.965	0.8949		mg/Kg		93	65 - 130
1,3,5-Trimethylbenzene	0.965	0.9030		mg/Kg		94	70 - 130
Xylenes, Total	1.93	1.890		mg/Kg		98	70 - 135
Dibromomethane	0.965	0.9901		mg/Kg		103	65 - 150

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*102*		*70 - 135*
Dibromofluoromethane (Surr)	*102*		*80 - 120*
Toluene-d8 (Surr)	*94*		*80 - 120*

Lab Sample ID: 310-89114-A-1-C MS
Matrix: Solid
Analysis Batch: 141521

Client Sample ID: Matrix Spike
Prep Type: Total/NA
Prep Batch: 141519

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Acetone	<0.546		2.15	2.423		mg/Kg	☼	113	70 - 150
Allyl chloride	<0.109		1.07	1.594		mg/Kg	☼	148	65 - 150
Benzene	<0.109		1.07	1.232		mg/Kg	☼	115	65 - 145
Bromobenzene	<0.109		1.07	1.089		mg/Kg	☼	101	65 - 135

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

Lab Sample ID: 310-89114-A-1-C MS
Matrix: Solid
Analysis Batch: 141521

Client Sample ID: Matrix Spike
Prep Type: Total/NA
Prep Batch: 141519

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Bromochloromethane	<0.109		1.07	1.203		mg/Kg	☼	112	65 - 150
Bromodichloromethane	<0.109	F1	1.07	1.195	F1	mg/Kg	☼	111	55 - 105
Bromoform	<0.109	^	1.07	1.120	^	mg/Kg	☼	104	55 - 135
2-Butanone (MEK)	<0.273		2.15	2.227		mg/Kg	☼	104	55 - 150
n-Butylbenzene	<0.109		1.07	1.035		mg/Kg	☼	96	65 - 135
sec-Butylbenzene	<0.109		1.07	1.054		mg/Kg	☼	98	65 - 130
tert-Butylbenzene	<0.109		1.07	1.065		mg/Kg	☼	99	65 - 135
Carbon tetrachloride	<0.109		1.07	1.195		mg/Kg	☼	111	60 - 145
Chlorobenzene	<0.109		1.07	1.096		mg/Kg	☼	102	70 - 135
Chlorodibromomethane	<0.109		1.07	1.067		mg/Kg	☼	99	55 - 135
Chloroform	<0.109		1.07	1.166		mg/Kg	☼	109	65 - 145
4-Chlorotoluene	<0.109		1.07	1.035		mg/Kg	☼	96	70 - 130
2-Chlorotoluene	<0.109		1.07	1.041		mg/Kg	☼	97	70 - 130
1,2-Dibromo-3-Chloropropane	<0.109		1.07	1.031		mg/Kg	☼	96	45 - 140
1,2-Dibromoethane (EDB)	<0.109		1.07	1.083		mg/Kg	☼	101	65 - 140
1,2-Dichlorobenzene	<0.109		1.07	1.045		mg/Kg	☼	97	65 - 135
1,3-Dichlorobenzene	<0.109		1.07	1.039		mg/Kg	☼	97	65 - 135
1,4-Dichlorobenzene	<0.109		1.07	1.036		mg/Kg	☼	96	65 - 135
1,2-Dichloroethane	<0.109		1.07	1.195		mg/Kg	☼	111	60 - 150
1,1-Dichloroethane	<0.109		1.07	1.224		mg/Kg	☼	114	65 - 150
1,1-Dichloroethene	<0.109		1.07	1.191		mg/Kg	☼	111	65 - 145
cis-1,2-Dichloroethene	<0.109		1.07	1.219		mg/Kg	☼	113	65 - 145
trans-1,2-Dichloroethene	<0.109		1.07	1.168		mg/Kg	☼	109	65 - 145
1,2-Dichloropropane	<0.109		1.07	1.198		mg/Kg	☼	111	65 - 150
1,3-Dichloropropane	<0.109		1.07	1.090		mg/Kg	☼	101	65 - 140
2,2-Dichloropropane	<0.109		1.07	1.145		mg/Kg	☼	107	65 - 150
1,1-Dichloropropene	<0.109		1.07	1.184		mg/Kg	☼	110	70 - 140
cis-1,3-Dichloropropene	<0.109		1.07	1.065		mg/Kg	☼	99	65 - 140
trans-1,3-Dichloropropene	<0.109		1.07	1.057		mg/Kg	☼	98	65 - 140
Diethyl ether	<0.109		1.07	1.194		mg/Kg	☼	111	60 - 150
Ethylbenzene	<0.109		1.07	1.131		mg/Kg	☼	105	70 - 135
Hexachlorobutadiene	<0.109		1.07	1.051		mg/Kg	☼	98	50 - 145
Isopropylbenzene	<0.109		1.07	1.111		mg/Kg	☼	103	70 - 135
p-Isopropyltoluene	<0.109		1.07	1.047		mg/Kg	☼	97	65 - 135
4-Methyl-2-pentanone (MIBK)	<0.109		2.15	2.143		mg/Kg	☼	100	50 - 145
Methylene Chloride	<0.273		1.07	1.381		mg/Kg	☼	115	55 - 150
Methyl tert-butyl ether	<0.109		1.07	1.192		mg/Kg	☼	111	65 - 150
Naphthalene	<0.273		1.07	1.014		mg/Kg	☼	91	50 - 145
N-Propylbenzene	<0.109		1.07	1.099		mg/Kg	☼	102	70 - 135
Styrene	<0.109		1.07	1.105		mg/Kg	☼	103	70 - 135
1,1,1,2-Tetrachloroethane	<0.109		1.07	1.099		mg/Kg	☼	102	65 - 130
1,1,2,2-Tetrachloroethane	<0.109		1.07	1.045		mg/Kg	☼	97	60 - 140
Tetrachloroethene	<0.109		1.07	1.086		mg/Kg	☼	101	65 - 140
Tetrahydrofuran	<0.109		2.15	2.366		mg/Kg	☼	110	55 - 150
Toluene	<0.109		1.07	1.115		mg/Kg	☼	104	70 - 135
1,2,3-Trichlorobenzene	<0.109		1.07	1.024		mg/Kg	☼	95	55 - 140
1,2,4-Trichlorobenzene	<0.109		1.07	1.038		mg/Kg	☼	97	50 - 140
1,1,1-Trichloroethane	<0.109		1.07	1.179		mg/Kg	☼	110	65 - 145

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

Lab Sample ID: 310-89114-A-1-C MS
Matrix: Solid
Analysis Batch: 141521

Client Sample ID: Matrix Spike
Prep Type: Total/NA
Prep Batch: 141519

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
1,1,2-Trichloroethane	<0.109		1.07	1.063		mg/Kg	☼	99	65 - 140
Trichloroethene	<0.109		1.07	1.185		mg/Kg	☼	110	65 - 145
1,2,3-Trichloropropane	<0.109		1.07	1.069		mg/Kg	☼	99	60 - 140
1,1,2-Trichlorotrifluoroethane	<0.109		1.07	1.103		mg/Kg	☼	103	60 - 150
1,2,4-Trimethylbenzene	<0.109		1.07	1.036		mg/Kg	☼	96	65 - 130
1,3,5-Trimethylbenzene	<0.109		1.07	1.069		mg/Kg	☼	99	70 - 130
Xylenes, Total	<0.164		2.15	2.196		mg/Kg	☼	102	70 - 135
Dibromomethane	<0.109		1.07	1.196		mg/Kg	☼	111	65 - 150

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*102*		*70 - 135*
Dibromofluoromethane (Surr)	*102*		*80 - 120*
Toluene-d8 (Surr)	*94*		*80 - 120*

Lab Sample ID: 310-89114-A-1-D MSD
Matrix: Solid
Analysis Batch: 141521

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA
Prep Batch: 141519

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Acetone	<0.546		2.10	2.171		mg/Kg	☼	103	70 - 150	11	40
Allyl chloride	<0.109		1.05	1.403		mg/Kg	☼	133	65 - 150	13	35
Benzene	<0.109		1.05	1.170		mg/Kg	☼	111	65 - 145	5	15
Bromobenzene	<0.109		1.05	1.028		mg/Kg	☼	98	65 - 135	6	20
Bromochloromethane	<0.109		1.05	1.131		mg/Kg	☼	108	65 - 150	6	20
Bromodichloromethane	<0.109	F1	1.05	1.124	F1	mg/Kg	☼	107	55 - 105	6	20
Bromoform	<0.109	^	1.05	1.121	^	mg/Kg	☼	107	55 - 135	0	25
2-Butanone (MEK)	<0.273		2.10	2.091		mg/Kg	☼	99	55 - 150	6	30
n-Butylbenzene	<0.109		1.05	0.9508		mg/Kg	☼	90	65 - 135	9	20
sec-Butylbenzene	<0.109		1.05	0.9939		mg/Kg	☼	95	65 - 130	6	20
tert-Butylbenzene	<0.109		1.05	1.002		mg/Kg	☼	95	65 - 135	6	20
Carbon tetrachloride	<0.109		1.05	1.151		mg/Kg	☼	109	60 - 145	4	30
Chlorobenzene	<0.109		1.05	1.040		mg/Kg	☼	99	70 - 135	5	15
Chlorodibromomethane	<0.109		1.05	1.005		mg/Kg	☼	96	55 - 135	6	20
Chloroform	<0.109		1.05	1.114		mg/Kg	☼	106	65 - 145	5	20
4-Chlorotoluene	<0.109		1.05	0.9877		mg/Kg	☼	94	70 - 130	5	20
2-Chlorotoluene	<0.109		1.05	0.9782		mg/Kg	☼	93	70 - 130	6	15
1,2-Dibromo-3-Chloropropane	<0.109		1.05	0.9642		mg/Kg	☼	92	45 - 140	7	40
1,2-Dibromoethane (EDB)	<0.109		1.05	1.023		mg/Kg	☼	97	65 - 140	6	20
1,2-Dichlorobenzene	<0.109		1.05	0.9679		mg/Kg	☼	92	65 - 135	8	20
1,3-Dichlorobenzene	<0.109		1.05	0.9688		mg/Kg	☼	92	65 - 135	7	20
1,4-Dichlorobenzene	<0.109		1.05	0.9757		mg/Kg	☼	93	65 - 135	6	20
1,2-Dichloroethane	<0.109		1.05	1.132		mg/Kg	☼	108	60 - 150	5	20
1,1-Dichloroethane	<0.109		1.05	1.164		mg/Kg	☼	111	65 - 150	5	20
1,1-Dichloroethene	<0.109		1.05	1.150		mg/Kg	☼	109	65 - 145	4	20
cis-1,2-Dichloroethene	<0.109		1.05	1.166		mg/Kg	☼	111	65 - 145	4	20
trans-1,2-Dichloroethene	<0.109		1.05	1.137		mg/Kg	☼	108	65 - 145	3	20
1,2-Dichloropropane	<0.109		1.05	1.152		mg/Kg	☼	110	65 - 150	4	15
1,3-Dichloropropane	<0.109		1.05	1.036		mg/Kg	☼	99	65 - 140	5	20

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

Lab Sample ID: 310-89114-A-1-D MSD
Matrix: Solid
Analysis Batch: 141521

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA
Prep Batch: 141519

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
2,2-Dichloropropane	<0.109		1.05	1.106		mg/Kg	☼	105	65 - 150	3	20
1,1-Dichloropropene	<0.109		1.05	1.138		mg/Kg	☼	108	70 - 140	4	20
cis-1,3-Dichloropropene	<0.109		1.05	1.028		mg/Kg	☼	98	65 - 140	4	20
trans-1,3-Dichloropropene	<0.109		1.05	0.9963		mg/Kg	☼	95	65 - 140	6	20
Diethyl ether	<0.109		1.05	1.115		mg/Kg	☼	106	60 - 150	7	25
Ethylbenzene	<0.109		1.05	1.064		mg/Kg	☼	101	70 - 135	6	20
Hexachlorobutadiene	<0.109		1.05	0.9789		mg/Kg	☼	93	50 - 145	7	25
Isopropylbenzene	<0.109		1.05	1.064		mg/Kg	☼	101	70 - 135	4	20
p-Isopropyltoluene	<0.109		1.05	0.9769		mg/Kg	☼	93	65 - 135	7	20
4-Methyl-2-pentanone (MIBK)	<0.109		2.10	1.977		mg/Kg	☼	94	50 - 145	8	40
Methylene Chloride	<0.273		1.05	1.216		mg/Kg	☼	102	55 - 150	13	25
Methyl tert-butyl ether	<0.109		1.05	1.133		mg/Kg	☼	108	65 - 150	5	20
Naphthalene	<0.273		1.05	0.9602		mg/Kg	☼	88	50 - 145	5	30
N-Propylbenzene	<0.109		1.05	1.053		mg/Kg	☼	100	70 - 135	4	20
Styrene	<0.109		1.05	1.053		mg/Kg	☼	100	70 - 135	5	20
1,1,1,2-Tetrachloroethane	<0.109		1.05	1.020		mg/Kg	☼	97	65 - 130	7	20
1,1,2,2-Tetrachloroethane	<0.109		1.05	1.021		mg/Kg	☼	97	60 - 140	2	25
Tetrachloroethene	<0.109		1.05	1.031		mg/Kg	☼	98	65 - 140	5	25
Tetrahydrofuran	<0.109		2.10	2.236		mg/Kg	☼	106	55 - 150	6	30
Toluene	<0.109		1.05	1.041		mg/Kg	☼	99	70 - 135	7	20
1,2,3-Trichlorobenzene	<0.109		1.05	0.9645		mg/Kg	☼	92	55 - 140	6	25
1,2,4-Trichlorobenzene	<0.109		1.05	0.9516		mg/Kg	☼	91	50 - 140	9	25
1,1,1-Trichloroethane	<0.109		1.05	1.146		mg/Kg	☼	109	65 - 145	3	20
1,1,2-Trichloroethane	<0.109		1.05	1.034		mg/Kg	☼	98	65 - 140	3	20
Trichloroethene	<0.109		1.05	1.154		mg/Kg	☼	110	65 - 145	3	20
1,2,3-Trichloropropane	<0.109		1.05	1.022		mg/Kg	☼	97	60 - 140	4	30
1,1,2-Trichlorotrifluoroethane	<0.109		1.05	1.176		mg/Kg	☼	112	60 - 150	6	40
1,2,4-Trimethylbenzene	<0.109		1.05	0.9915		mg/Kg	☼	94	65 - 130	4	20
1,3,5-Trimethylbenzene	<0.109		1.05	0.9915		mg/Kg	☼	94	70 - 130	8	20
Xylenes, Total	<0.164		2.10	2.073		mg/Kg	☼	99	70 - 135	6	20
Dibromomethane	<0.109		1.05	1.132		mg/Kg	☼	108	65 - 150	6	25

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*101*		*70 - 135*
Dibromofluoromethane (Surr)	*105*		*80 - 120*
Toluene-d8 (Surr)	*93*		*80 - 120*

Method: WI-GRO - Wisconsin - Gasoline Range Organics (GC)

Lab Sample ID: MB 310-141412/1-A
Matrix: Solid
Analysis Batch: 141393

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 141412

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Wisconsin GRO	<9.75		9.75		mg/Kg		09/15/16 09:56	09/15/16 11:46	1

Method: WI-GRO - Wisconsin - Gasoline Range Organics (GC) (Continued)

Lab Sample ID: MB 310-141412/1-A
Matrix: Solid
Analysis Batch: 141393

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 141412

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	96		80 - 120	09/15/16 09:56	09/15/16 11:46	1

Lab Sample ID: LCS 310-141412/2-A
Matrix: Solid
Analysis Batch: 141393

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 141412

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Wisconsin GRO	37.5	35.74		mg/Kg		95	80 - 120

Surrogate	LCS %Recovery	LCS Qualifier	Limits
4-Bromofluorobenzene (Surr)	102		80 - 120

Lab Sample ID: LCSD 310-141412/25-A
Matrix: Solid
Analysis Batch: 141393

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 141412

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Wisconsin GRO	38.7	39.13		mg/Kg		101	80 - 120	9	20

Surrogate	LCSD %Recovery	LCSD Qualifier	Limits
4-Bromofluorobenzene (Surr)	98		80 - 120

Lab Sample ID: MB 310-141639/4
Matrix: Water
Analysis Batch: 141639

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	<2.00		2.00		ug/L			09/16/16 17:15	1
Toluene	<2.00		2.00		ug/L			09/16/16 17:15	1
Ethylbenzene	<2.00		2.00		ug/L			09/16/16 17:15	1
Xylenes, Total	<6.00		6.00		ug/L			09/16/16 17:15	1
Methyl tert-butyl ether	<2.00		2.00		ug/L			09/16/16 17:15	1
Wisconsin GRO	<100		100		ug/L			09/16/16 17:15	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	100		80 - 120		09/16/16 17:15	1

Lab Sample ID: LCS 310-141639/5
Matrix: Water
Analysis Batch: 141639

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Benzene	80.0	79.02		ug/L		99	80 - 120
Toluene	80.0	77.56		ug/L		97	80 - 120
Ethylbenzene	80.0	73.84		ug/L		92	80 - 120
Xylenes, Total	240	224.3		ug/L		93	80 - 120
Methyl tert-butyl ether	80.0	81.83		ug/L		102	80 - 120

Method: WI-GRO - Wisconsin - Gasoline Range Organics (GC) (Continued)

Lab Sample ID: LCS 310-141639/5
Matrix: Water
Analysis Batch: 141639

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
Wisconsin GRO			800	793.5		ug/L		99	80 - 120		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*101*		*80 - 120*

Lab Sample ID: LCSD 310-141639/29
Matrix: Water
Analysis Batch: 141639

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Benzene			80.0	78.25		ug/L		98	80 - 120	1	20
Toluene			80.0	74.76		ug/L		93	80 - 120	4	20
Ethylbenzene			80.0	72.51		ug/L		91	80 - 120	2	20
Xylenes, Total			240	219.9		ug/L		92	80 - 120	2	20
Methyl tert-butyl ether			80.0	79.24		ug/L		99	80 - 120	3	20
Wisconsin GRO			800	731.9		ug/L		91	80 - 120	8	20

Surrogate	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*98*		*80 - 120*

Lab Sample ID: MB 310-141809/3
Matrix: Water
Analysis Batch: 141809

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Wisconsin GRO	<100		100		ug/L			09/20/16 02:38	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*97*		*80 - 120*		*09/20/16 02:38*	*1*

Lab Sample ID: LCS 310-141809/4
Matrix: Water
Analysis Batch: 141809

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
Wisconsin GRO			800	803.8		ug/L		100	80 - 120		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*102*		*80 - 120*

Lab Sample ID: LCSD 310-141809/28
Matrix: Water
Analysis Batch: 141809

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Wisconsin GRO			800	808.3		ug/L		101	80 - 120	1	20

Method: WI-GRO - Wisconsin - Gasoline Range Organics (GC) (Continued)

Lab Sample ID: LCSD 310-141809/28
Matrix: Water
Analysis Batch: 141809

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA

Surrogate	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*104*		*80 - 120*

Method: WI-DRO - Wisconsin - Diesel Range Organics (GC)

Lab Sample ID: MB 310-141284/1-A
Matrix: Solid
Analysis Batch: 141440

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 141284

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Diesel Range Organics (DRO)	<6.84		6.84		mg/Kg		09/14/16 13:16	09/15/16 17:32	1

Lab Sample ID: LCS 310-141284/2-A
Matrix: Solid
Analysis Batch: 141440

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 141284

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Diesel Range Organics (DRO)	96.7	73.78		mg/Kg		76	70 - 120

Lab Sample ID: LCSD 310-141284/3-A
Matrix: Solid
Analysis Batch: 141440

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 141284

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Diesel Range Organics (DRO)	97.8	70.98		mg/Kg		73	70 - 120	4	20

Lab Sample ID: MB 310-141319/1-A
Matrix: Water
Analysis Batch: 141440

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 141319

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Diesel Range Organics (DRO)	<100		100		ug/L		09/14/16 16:10	09/15/16 12:32	1

Lab Sample ID: MB 310-141319/1-A
Matrix: Water
Analysis Batch: 141544

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 141319

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Diesel Range Organics (DRO)	<100		100		ug/L		09/14/16 16:10	09/17/16 00:57	1

Lab Sample ID: LCS 310-141319/2-A
Matrix: Water
Analysis Batch: 141440

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 141319

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Diesel Range Organics (DRO)	2500	1570	*	ug/L		63	75 - 115

Method: WI-DRO - Wisconsin - Diesel Range Organics (GC) (Continued)

Lab Sample ID: LCS 310-141319/2-A
Matrix: Water
Analysis Batch: 141544

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 141319

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
Diesel Range Organics (DRO)			2500	1263	*	ug/L		51	75 - 115		

Lab Sample ID: LCSD 310-141319/3-A
Matrix: Water
Analysis Batch: 141440

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 141319

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Diesel Range Organics (DRO)			2500	1259	*	ug/L		50	75 - 115	22	20

Lab Sample ID: LCSD 310-141319/3-A
Matrix: Water
Analysis Batch: 141544

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 141319

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Diesel Range Organics (DRO)			2500	958.8	*	ug/L		38	75 - 115	27	20

GC/MS VOA

Analysis Batch: 141185

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-89278-1	SB-1 W	Total/NA	Ground Water	8260B	
310-89278-3	SB-2W	Total/NA	Ground Water	8260B	
310-89278-4	SB-3W	Total/NA	Ground Water	8260B	
310-89278-6	SB-4W	Total/NA	Ground Water	8260B	
MB 310-141185/7	Method Blank	Total/NA	Water	8260B	
LCS 310-141185/5	Lab Control Sample	Total/NA	Water	8260B	
LCS 310-141185/6	Lab Control Sample	Total/NA	Water	8260B	
310-89241-AF-1 MS	Matrix Spike	Total/NA	Water	8260B	
310-89241-AF-1 MSD	Matrix Spike Duplicate	Total/NA	Water	8260B	

Analysis Batch: 141233

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-89278-9	Trip Blank	Total/NA	Water	8260B	
MB 310-141233/7	Method Blank	Total/NA	Water	8260B	
LCS 310-141233/5	Lab Control Sample	Total/NA	Water	8260B	
LCS 310-141233/6	Lab Control Sample	Total/NA	Water	8260B	

Prep Batch: 141519

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-89278-2	SB-1 (12)	Total/NA	Solid	5035	
310-89278-5	SB-3 (5)	Total/NA	Solid	5035	
310-89278-7	SB-4 (12)	Total/NA	Solid	5035	
310-89278-8	MeOH Blank	Total/NA	Solid	5035	
MB 310-141519/1-A	Method Blank	Total/NA	Solid	5035	
LCS 310-141519/2-A	Lab Control Sample	Total/NA	Solid	5035	
310-89114-A-1-C MS	Matrix Spike	Total/NA	Solid	5035	
310-89114-A-1-D MSD	Matrix Spike Duplicate	Total/NA	Solid	5035	

Analysis Batch: 141521

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-89278-2	SB-1 (12)	Total/NA	Solid	8260B	141519
310-89278-5	SB-3 (5)	Total/NA	Solid	8260B	141519
310-89278-7	SB-4 (12)	Total/NA	Solid	8260B	141519
310-89278-8	MeOH Blank	Total/NA	Solid	8260B	141519
MB 310-141519/1-A	Method Blank	Total/NA	Solid	8260B	141519
LCS 310-141519/2-A	Lab Control Sample	Total/NA	Solid	8260B	141519
310-89114-A-1-C MS	Matrix Spike	Total/NA	Solid	8260B	141519
310-89114-A-1-D MSD	Matrix Spike Duplicate	Total/NA	Solid	8260B	141519

GC VOA

Analysis Batch: 141393

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-89278-2	SB-1 (12)	Total/NA	Solid	WI-GRO	141412
310-89278-5	SB-3 (5)	Total/NA	Solid	WI-GRO	141412
310-89278-7	SB-4 (12)	Total/NA	Solid	WI-GRO	141412
310-89278-8	MeOH Blank	Total/NA	Solid	WI-GRO	141412
MB 310-141412/1-A	Method Blank	Total/NA	Solid	WI-GRO	141412
LCS 310-141412/2-A	Lab Control Sample	Total/NA	Solid	WI-GRO	141412
LCSD 310-141412/25-A	Lab Control Sample Dup	Total/NA	Solid	WI-GRO	141412

GC VOA (Continued)

Prep Batch: 141412

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-89278-2	SB-1 (12)	Total/NA	Solid	WI GRO	
310-89278-5	SB-3 (5)	Total/NA	Solid	WI GRO	
310-89278-7	SB-4 (12)	Total/NA	Solid	WI GRO	
310-89278-8	MeOH Blank	Total/NA	Solid	WI GRO	
MB 310-141412/1-A	Method Blank	Total/NA	Solid	5035	
LCS 310-141412/2-A	Lab Control Sample	Total/NA	Solid	5035	
LCSD 310-141412/25-A	Lab Control Sample Dup	Total/NA	Solid	5035	

Analysis Batch: 141639

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-89278-1	SB-1 W	Total/NA	Ground Water	WI-GRO	
310-89278-3	SB-2W	Total/NA	Ground Water	WI-GRO	
310-89278-4	SB-3W	Total/NA	Ground Water	WI-GRO	
310-89278-9	Trip Blank	Total/NA	Water	WI-GRO	
MB 310-141639/4	Method Blank	Total/NA	Water	WI-GRO	
LCS 310-141639/5	Lab Control Sample	Total/NA	Water	WI-GRO	
LCSD 310-141639/29	Lab Control Sample Dup	Total/NA	Water	WI-GRO	

Analysis Batch: 141809

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-89278-6	SB-4W	Total/NA	Ground Water	WI-GRO	
MB 310-141809/3	Method Blank	Total/NA	Water	WI-GRO	
LCS 310-141809/4	Lab Control Sample	Total/NA	Water	WI-GRO	
LCSD 310-141809/28	Lab Control Sample Dup	Total/NA	Water	WI-GRO	

GC Semi VOA

Prep Batch: 141284

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-89278-2	SB-1 (12)	Total/NA	Solid	3550B	
310-89278-5	SB-3 (5)	Total/NA	Solid	3550B	
310-89278-7	SB-4 (12)	Total/NA	Solid	3550B	
MB 310-141284/1-A	Method Blank	Total/NA	Solid	3550B	
LCS 310-141284/2-A	Lab Control Sample	Total/NA	Solid	3550B	
LCSD 310-141284/3-A	Lab Control Sample Dup	Total/NA	Solid	3550B	

Prep Batch: 141319

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-89278-1	SB-1 W	Total/NA	Ground Water	3510C	
310-89278-3	SB-2W	Total/NA	Ground Water	3510C	
310-89278-4	SB-3W	Total/NA	Ground Water	3510C	
310-89278-6	SB-4W	Total/NA	Ground Water	3510C	
MB 310-141319/1-A	Method Blank	Total/NA	Water	3510C	
LCS 310-141319/2-A	Lab Control Sample	Total/NA	Water	3510C	
LCSD 310-141319/3-A	Lab Control Sample Dup	Total/NA	Water	3510C	

Analysis Batch: 141440

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-89278-1	SB-1 W	Total/NA	Ground Water	WI-DRO	141319
310-89278-2	SB-1 (12)	Total/NA	Solid	WI-DRO	141284

GC Semi VOA (Continued)

Analysis Batch: 141440 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-89278-3	SB-2W	Total/NA	Ground Water	WI-DRO	141319
310-89278-4	SB-3W	Total/NA	Ground Water	WI-DRO	141319
310-89278-5	SB-3 (5)	Total/NA	Solid	WI-DRO	141284
310-89278-7	SB-4 (12)	Total/NA	Solid	WI-DRO	141284
MB 310-141284/1-A	Method Blank	Total/NA	Solid	WI-DRO	141284
MB 310-141319/1-A	Method Blank	Total/NA	Water	WI-DRO	141319
LCS 310-141284/2-A	Lab Control Sample	Total/NA	Solid	WI-DRO	141284
LCS 310-141319/2-A	Lab Control Sample	Total/NA	Water	WI-DRO	141319
LCSD 310-141284/3-A	Lab Control Sample Dup	Total/NA	Solid	WI-DRO	141284
LCSD 310-141319/3-A	Lab Control Sample Dup	Total/NA	Water	WI-DRO	141319

Analysis Batch: 141544

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-89278-6	SB-4W	Total/NA	Ground Water	WI-DRO	141319
MB 310-141319/1-A	Method Blank	Total/NA	Water	WI-DRO	141319
LCS 310-141319/2-A	Lab Control Sample	Total/NA	Water	WI-DRO	141319
LCSD 310-141319/3-A	Lab Control Sample Dup	Total/NA	Water	WI-DRO	141319

Lab Chronicle

Client: Carlson McCain, Inc.
Project/Site: Richfield Sinclair Phase II

TestAmerica Job ID: 310-89278-1
SDG: 6349-00

Client Sample ID: SB-1 W

Date Collected: 09/13/16 11:45
Date Received: 09/14/16 09:00

Lab Sample ID: 310-89278-1

Matrix: Ground Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	141185	09/15/16 11:25	SJN	TAL CF
Total/NA	Analysis	WI-GRO		1	141639	09/16/16 23:31	CMM	TAL CF
Total/NA	Prep	3510C			141319	09/14/16 16:10	HTM	TAL CF
Total/NA	Analysis	WI-DRO		1	141440	09/15/16 13:48	LLS	TAL CF

Client Sample ID: SB-1 (12)

Date Collected: 09/13/16 12:07
Date Received: 09/14/16 09:00

Lab Sample ID: 310-89278-2

Matrix: Solid
Percent Solids: 83.0

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	5035			141519	09/16/16 06:44	TCH	TAL CF
Total/NA	Analysis	8260B		1	141521	09/16/16 14:59	TCH	TAL CF
Total/NA	Prep	WI GRO			141412	09/15/16 09:56	CMM	TAL CF
Total/NA	Analysis	WI-GRO		1	141393	09/15/16 22:00	CMM	TAL CF
Total/NA	Prep	3550B			141284	09/14/16 14:36	AJM	TAL CF
Total/NA	Analysis	WI-DRO		1	141440	09/15/16 21:17	LLS	TAL CF

Client Sample ID: SB-2W

Date Collected: 09/13/16 12:53
Date Received: 09/14/16 09:00

Lab Sample ID: 310-89278-3

Matrix: Ground Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	141185	09/15/16 11:49	SJN	TAL CF
Total/NA	Analysis	WI-GRO		1	141639	09/16/16 23:02	CMM	TAL CF
Total/NA	Prep	3510C			141319	09/14/16 16:10	HTM	TAL CF
Total/NA	Analysis	WI-DRO		1	141440	09/15/16 14:25	LLS	TAL CF

Client Sample ID: SB-3W

Date Collected: 09/13/16 14:44
Date Received: 09/14/16 09:00

Lab Sample ID: 310-89278-4

Matrix: Ground Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	141185	09/15/16 12:12	SJN	TAL CF
Total/NA	Analysis	WI-GRO		1	141639	09/16/16 22:33	CMM	TAL CF
Total/NA	Prep	3510C			141319	09/14/16 16:10	HTM	TAL CF
Total/NA	Analysis	WI-DRO		1	141440	09/15/16 15:03	LLS	TAL CF

Client Sample ID: SB-3 (5)

Date Collected: 09/13/16 14:52
Date Received: 09/14/16 09:00

Lab Sample ID: 310-89278-5

Matrix: Solid
Percent Solids: 86.8

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	5035			141519	09/16/16 06:44	TCH	TAL CF
Total/NA	Analysis	8260B		1	141521	09/16/16 15:23	TCH	TAL CF
Total/NA	Prep	WI GRO			141412	09/15/16 09:56	CMM	TAL CF
Total/NA	Analysis	WI-GRO		1	141393	09/15/16 22:29	CMM	TAL CF
Total/NA	Prep	3550B			141284	09/14/16 14:36	AJM	TAL CF
Total/NA	Analysis	WI-DRO		1	141440	09/15/16 21:54	LLS	TAL CF

Client Sample ID: SB-4W

Date Collected: 09/13/16 15:49
Date Received: 09/14/16 09:00

Lab Sample ID: 310-89278-6

Matrix: Ground Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	141185	09/15/16 12:36	SJN	TAL CF
Total/NA	Analysis	WI-GRO		1	141809	09/20/16 04:05	CMM	TAL CF
Total/NA	Prep	3510C			141319	09/14/16 16:10	HTM	TAL CF
Total/NA	Analysis	WI-DRO		5	141544	09/17/16 04:04	LLS	TAL CF

Client Sample ID: SB-4 (12)

Date Collected: 09/13/16 15:54
Date Received: 09/14/16 09:00

Lab Sample ID: 310-89278-7

Matrix: Solid
Percent Solids: 92.8

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	5035			141519	09/16/16 06:44	TCH	TAL CF
Total/NA	Analysis	8260B		1	141521	09/16/16 15:48	TCH	TAL CF
Total/NA	Prep	WI GRO			141412	09/15/16 09:56	CMM	TAL CF
Total/NA	Analysis	WI-GRO		1	141393	09/15/16 22:58	CMM	TAL CF
Total/NA	Prep	3550B			141284	09/14/16 14:36	AJM	TAL CF
Total/NA	Analysis	WI-DRO		1	141440	09/15/16 22:31	LLS	TAL CF

Client Sample ID: MeOH Blank

Date Collected: 09/13/16 00:00
Date Received: 09/14/16 09:00

Lab Sample ID: 310-89278-8

Matrix: Solid

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	5035			141519	09/16/16 06:44	TCH	TAL CF
Total/NA	Analysis	8260B		1	141521	09/16/16 16:12	TCH	TAL CF
Total/NA	Prep	WI GRO			141412	09/15/16 09:56	CMM	TAL CF
Total/NA	Analysis	WI-GRO		1	141393	09/16/16 00:24	CMM	TAL CF

Client Sample ID: Trip Blank

Date Collected: 09/13/16 00:00
Date Received: 09/14/16 09:00

Lab Sample ID: 310-89278-9

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	141233	09/15/16 08:02	SJN	TAL CF
Total/NA	Analysis	WI-GRO		1	141639	09/17/16 04:20	CMM	TAL CF

Laboratory References:

TAL CF = TestAmerica Cedar Falls, 704 Enterprise Drive, Cedar Falls, IA 50613, TEL (319)277-2401

Certification Summary

Client: Carlson McCain, Inc.
Project/Site: Richfield Sinclair Phase II

TestAmerica Job ID: 310-89278-1
SDG: 6349-00

Laboratory: TestAmerica Cedar Falls

Unless otherwise noted, all analytes for this laboratory were covered under each certification below.

Authority	Program	EPA Region	Certification ID	Expiration Date
Minnesota	NELAP	5	019-999-319	12-31-16

The following analytes are included in this report, but certification is not offered by the governing authority:

Analysis Method	Prep Method	Matrix	Analyte
8260B		Ground Water	Dichlorofluoromethane
8260B		Water	Dichlorofluoromethane
8260B	5035	Solid	Dichlorofluoromethane

Method Summary

Client: Carlson McCain, Inc.
Project/Site: Richfield Sinclair Phase II

TestAmerica Job ID: 310-89278-1
SDG: 6349-00

Method	Method Description	Protocol	Laboratory
8260B	Volatile Organic Compounds (GC/MS)	SW846	TAL CF
WI-GRO	Wisconsin - Gasoline Range Organics (GC)	WI-GRO	TAL CF
WI-DRO	Wisconsin - Diesel Range Organics (GC)	WI-DRO	TAL CF

Protocol References:

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.
WI-DRO = "Modified DRO: Method For Determining Diesel Range Organics", Wisconsin DNR, Publ-SW-141, September, 1995.
WI-GRO = "Modified GRO: Method For Determining Gasoline Range Organics", Wisconsin DNR, Publ-SW-140, September, 1995.

Laboratory References:

TAL CF = TestAmerica Cedar Falls, 704 Enterprise Drive, Cedar Falls, IA 50613, TEL (319)277-2401

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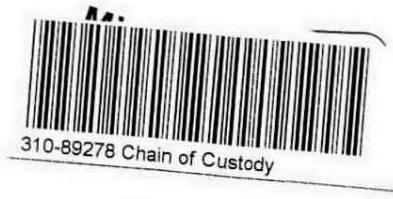

Cooler/Sample Receipt and Temperature Log Fo...

Client Information

Client: CARLSON McCAIN

City/State: BLAINE MN | Project: 6349-00 RICHFIELD SINCLAIR

Receipt Information

Date/Time Received: 9/14/16 0900 | Received By: BM

Delivery Type: ☑ UPS ☐ FedEx ☐ FedEx Ground ☐ US Mail ☐ Spee-Dee
☐ TA Courier ☐ TA Field Services ☐ Client Drop-off ☐ Other: _____

Condition of Cooler/Containers

Sample(s) received in Cooler? ☑ Yes ☐ No *If yes:* Cooler ID: MPLS

Multiple Coolers? ☐ Yes ☑ No *If yes:* Cooler # ____ of ____

Cooler Custody Seals Present? ☐ Yes ☐ No *If yes:* Cooler custody seals intact? ☐ Yes ☐ No

Sample Custody Seals Present? ☐ Yes ☐ No *If yes:* Sample custody seals intact? ☐ Yes ☐ No

Trip Blank Present? ☐ Yes ☐ No *If yes:* Which VOA samples are in cooler? ↓

SB-1W, SB-2W, SB3W, SB4W, TB

Temperature Record

Coolant: ☑ Wet ice ☐ Blue ice ☐ Dry ice ☐ Other: _____ ☐ NONE

Temperature Blank? ☑ Yes ☐ No ID & Bottle Type:

NOTE: If yes, use temp blank for measurement. If no, specify sample ID(s) and bottle type used to take measurement.

Thermometer ID: H | Correction Factor (°C): -0-

Uncorrected Temp (°C): 3.1 | Corrected Temp (°C):

Exceptions Noted

1) If temperature exceeds criteria, was sample(s) received same day of sampling? ☐ Yes ☐ No
   a) *If yes:* Is there evidence that the chilling process began? ☐ Yes ☐ No

2) If temperature is <0°C, are there obvious signs that the integrity of sample containers is compromised? (e.g., bulging septa, broken/cracked bottles?) ☐ Yes ☐ No

NOTE: If yes, contact PM before proceeding. If no, proceed with login

Additional Comments

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Cedar Falls Division
704 Enterprise Drive
Cedar Falls, IA 50613

Phone 319-277-2401 or 800-750-2401
Fax 319-277-2425

To assist us in using the proper analytical methods, is this work being conducted for regulatory purposes?
Compliance Monitoring _____

Client Name: Carlson McCain Client #: _____
Address: 3890 Pheasant Ridge Dr NE
City/State/Zip Code: Blaine MN 55449
Project Manager: WADE CARLSON
Email Address: WCARLSON@CARLSONMCCAIN.COM
Telephone Number: 763-489-7900 Fax: _____
Sampler Name: (Print Name) JEFF NEESSE
Sampler Signature:

Project Name: Richfield Sinclair Phase II
Project #: 6349-00
Site/Location ID: Richfield State: MN
Report To: WADE
Invoice To: AP
Quote #: _____ PO#: _____

TAT
X Standard
___ Rush (surcharges may apply)
Date Needed: 5 day turn
Fax Results: Y (N)
Email Results: (Y) N

SAMPLE ID	Date Sampled	Time Sampled	G = Grab, C = Composite	Field Filtered	Matrix: SL - Sludge, DW - Drinking Water, GW - Groundwater, S - Soil/Solid, WW - Wastewater, Specify, Other	Preservation & # of Containers: HNO_3	HCl	NaOH	H_2SO_4	Methanol	None	Other (Specify)	Analyze For: MRO	GRO	VOCs	Drywt								QC Deliverables: ___ None, ___ Level 2 (Batch QC), ___ Level 3, ___ Level 4, Other: _____ REMARKS
SB-1W	9/13/16	1145	G	N	GW		X						X	X	X								
SB-1 (12)	9/13/16	1207	G	N	S					X	X		X	X	X	X							
SB-2W	9/13/16	1253	G	N	GW		X						X	X	X								
SB-3W	9/13/16	1444	G	N	GW		X						X	X	X								
SB-3 (5)	9/13/16	1452	G	N	S					X	X		X	X	X	X							
SB-4W	9/13/16	1549	G	N	GW		X						X	X	X								
SB-4 (12)	9/13/16	1554	G	N	S					X	X		X	X	X	X							
MEOH Blank														X	X								
Trip Blank														X	X								

Special Instructions:

LABORATORY COMMENTS:

	Date	Time		Date	Time
Relinquished By:	9/13/16	1600	Received By:	9-13-16	1600
Relinquished By:	9-13-16	1900	Received By:	9.14.16	900
Relinquished By:			Received By:		

TAL-0033 (0708)

Page _____ of _____

Rutten, Barb

From: Jill Keefe [jkeefe@carlsonmccain.com]
Sent: Thursday, September 08, 2016 2:38 PM
To: Becker, Gary; Rutten, Barb
Cc: Jeff Neisse
Subject: bottle order 6349-00

Hi Gary,
I need to order bottles for a project Richfield Sinclair (6349-00) that we have going next week. Can you please deliver the bottle order to the Blaine office by noon on Monday? I will need the following:

5 DRO Soil
5 DRO water
5 GRO soil
5 GRO water
5 VOC water
5 VOC soil and
✓ One summa canister for vapors

SOIL
✓ DRO
✓ GRO
✓ VOC

WATER
✓ DRO
✓ GRO
✓ VOC

Thanks!

Jill Keefe
Staff Hydrogeologist

Carlson McCain, Inc.
3890 Pheasant Ridge Drive | Blaine, MN 55449
Cell 763-458-8339 | Fax 952-898-2787
www.carlsonmccain.com

✓ TRIP BLANKS INCLUDED:
1 - MEOH
3 - HCL

TR
9-9-16

9/8/2016

Login Sample Receipt Checklist

Client: Carlson McCain, Inc.

Job Number: 310-89278-1
SDG Number: 6349-00

Login Number: 89278
List Number: 1
Creator: Worthy, Ashley L

List Source: TestAmerica Cedar Falls

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

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ANALYTICAL REPORT

TestAmerica Laboratories, Inc.
TestAmerica Burlington
30 Community Drive
Suite 11
South Burlington, VT 05403
Tel: (802)660-1990

TestAmerica Job ID: 200-35280-1
TestAmerica Sample Delivery Group: 200-35280-1
Client Project/Site: Richfield Sinclair Ph II

For:
Carlson McCain, Inc.
3890 Pheasant Ridge Drive NE, #100
Blaine, Minnesota 55449

Attn: Wade Carlson

Authorized for release by:
9/22/2016 2:52:08 PM

Kathryn Kelly, Project Manager I
(802)660-1990
kathryn.kelly@testamericainc.com

Table of Contents

Qualifiers

Air - GC/MS VOA TICs

Qualifier	Qualifier Description
J	Indicates an Estimated Value for TICs
N	Presumptive evidence of material.
T	Result is a tentatively identified compound (TIC) and an estimated value.

Glossary

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

Job ID: 200-35280-1

Laboratory: TestAmerica Burlington

Narrative

CASE NARRATIVE

Client: Carlson McCain, Inc.

Project: Richfield Sinclair Ph II

Report Number: 200-35280-1

With the exceptions noted as flags or footnotes, standard analytical protocols were followed in the analysis of the samples and no problems were encountered or anomalies observed. In addition all laboratory quality control samples were within established control limits, with any exceptions noted below. Each sample was analyzed to achieve the lowest possible reporting limit within the constraints of the method. In some cases, due to interference or analytes present at high concentrations, samples were diluted. For diluted samples, the reporting limits are adjusted relative to the dilution required.

Calculations are performed before rounding to avoid round-off errors in calculated results.

All holding times were met and proper preservation noted for the methods performed on these samples, unless otherwise detailed in the individual sections below.

RECEIPT
The sample was received on 09/15/2016; the samples arrived in good condition.

VOLATILE ORGANIC COMPOUNDS
Sample SS-1 was analyzed for Volatile Organic Compounds in accordance with EPA Method TO-15. The sample was analyzed on 09/19/2016.

Sample SS-1[16.7X] required dilution prior to analysis. The reporting limits have been adjusted accordingly.

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

Detection Summary

Client: Carlson McCain, Inc.
Project/Site: Richfield Sinclair Ph II

TestAmerica Job ID: 200-35280-1
SDG: 200-35280-1

Client Sample ID: SS-1 — Lab Sample ID: 200-35280-1

Analyte	Result	Qualifier	RL		Unit	Dil Fac	D	Method	Prep Type
Ethanol	542		157		ug/m3	16.7		TO-15	Total/NA
Acetone	836		198		ug/m3	16.7		TO-15	Total/NA
Isopropyl alcohol	229		205		ug/m3	16.7		TO-15	Total/NA
n-Hexane	135		11.8		ug/m3	16.7		TO-15	Total/NA
Tetrachloroethene	702		22.7		ug/m3	16.7		TO-15	Total/NA

This Detection Summary does not include radiochemical test results.

Client: Carlson McCain, Inc.
Project/Site: Richfield Sinclair Ph II

TestAmerica Job ID: 200-35280-1
SDG: 200-35280-1

Client Sample ID: SS-1
Date Collected: 09/13/16 10:00
Date Received: 09/15/16 10:30
Sample Container: Summa Canister 6L

Lab Sample ID: 200-35280-1
Matrix: Air

Method: TO-15 - Volatile Organic Compounds in Ambient Air

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Propylene	<144		144		ug/m3			09/19/16 21:35	16.7
Dichlorodifluoromethane	<41.3		41.3		ug/m3			09/19/16 21:35	16.7
1,2-Dichlorotetrafluoroethane	<23.3		23.3		ug/m3			09/19/16 21:35	16.7
Chloromethane	<17.2		17.2		ug/m3			09/19/16 21:35	16.7
Vinyl chloride	<8.54		8.54		ug/m3			09/19/16 21:35	16.7
1,3-Butadiene	<7.39		7.39		ug/m3			09/19/16 21:35	16.7
Bromomethane	<13.0		13.0		ug/m3			09/19/16 21:35	16.7
Chloroethane	<22.0		22.0		ug/m3			09/19/16 21:35	16.7
Trichlorofluoromethane	<18.8		18.8		ug/m3			09/19/16 21:35	16.7
Ethanol	**542**		157		ug/m3			09/19/16 21:35	16.7
Freon TF	<25.6		25.6		ug/m3			09/19/16 21:35	16.7
1,1-Dichloroethene	<13.2		13.2		ug/m3			09/19/16 21:35	16.7
Acetone	**836**		198		ug/m3			09/19/16 21:35	16.7
Isopropyl alcohol	**229**		205		ug/m3			09/19/16 21:35	16.7
Carbon disulfide	<26.0		26.0		ug/m3			09/19/16 21:35	16.7
Methylene Chloride	<29.0		29.0		ug/m3			09/19/16 21:35	16.7
Methyl tert-butyl ether	<12.0		12.0		ug/m3			09/19/16 21:35	16.7
trans-1,2-Dichloroethene	<13.2		13.2		ug/m3			09/19/16 21:35	16.7
n-Hexane	**135**		11.8		ug/m3			09/19/16 21:35	16.7
1,1-Dichloroethane	<13.5		13.5		ug/m3			09/19/16 21:35	16.7
Vinyl acetate	<294		294		ug/m3			09/19/16 21:35	16.7
Ethyl acetate	<301		301		ug/m3			09/19/16 21:35	16.7
Methyl Ethyl Ketone	<24.6		24.6		ug/m3			09/19/16 21:35	16.7
cis-1,2-Dichloroethene	<13.2		13.2		ug/m3			09/19/16 21:35	16.7
Chloroform	<16.3		16.3		ug/m3			09/19/16 21:35	16.7
Tetrahydrofuran	<246		246		ug/m3			09/19/16 21:35	16.7
1,1,1-Trichloroethane	<18.2		18.2		ug/m3			09/19/16 21:35	16.7
Cyclohexane	<11.5		11.5		ug/m3			09/19/16 21:35	16.7
Carbon tetrachloride	<21.0		21.0		ug/m3			09/19/16 21:35	16.7
Benzene	<10.7		10.7		ug/m3			09/19/16 21:35	16.7
1,2-Dichloroethane	<13.5		13.5		ug/m3			09/19/16 21:35	16.7
n-Heptane	<13.7		13.7		ug/m3			09/19/16 21:35	16.7
Trichloroethene	<17.9		17.9		ug/m3			09/19/16 21:35	16.7
1,2-Dichloropropane	<15.4		15.4		ug/m3			09/19/16 21:35	16.7
Bromodichloromethane	<22.4		22.4		ug/m3			09/19/16 21:35	16.7
cis-1,3-Dichloropropene	<15.2		15.2		ug/m3			09/19/16 21:35	16.7
Methyl isobutyl ketone	<34.2		34.2		ug/m3			09/19/16 21:35	16.7
Toluene	<12.6		12.6		ug/m3			09/19/16 21:35	16.7
trans-1,3-Dichloropropene	<15.2		15.2		ug/m3			09/19/16 21:35	16.7
1,1,2-Trichloroethane	<18.2		18.2		ug/m3			09/19/16 21:35	16.7
Tetrachloroethene	**702**		22.7		ug/m3			09/19/16 21:35	16.7
Methyl Butyl Ketone (2-Hexanone)	<34.2		34.2		ug/m3			09/19/16 21:35	16.7
1,2-Dibromoethane	<25.7		25.7		ug/m3			09/19/16 21:35	16.7
Chlorobenzene	<15.4		15.4		ug/m3			09/19/16 21:35	16.7
Ethylbenzene	<14.5		14.5		ug/m3			09/19/16 21:35	16.7
m,p-Xylene	<36.3		36.3		ug/m3			09/19/16 21:35	16.7
Xylene, o-	<14.5		14.5		ug/m3			09/19/16 21:35	16.7
Styrene	<14.2		14.2		ug/m3			09/19/16 21:35	16.7

Client: Carlson McCain, Inc.
Project/Site: Richfield Sinclair Ph II

TestAmerica Job ID: 200-35280-1
SDG: 200-35280-1

Client Sample ID: SS-1
Date Collected: 09/13/16 10:00
Date Received: 09/15/16 10:30
Sample Container: Summa Canister 6L

Lab Sample ID: 200-35280-1
Matrix: Air

Method: TO-15 - Volatile Organic Compounds in Ambient Air (Continued)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Bromoform	<34.5		34.5		ug/m3			09/19/16 21:35	16.7
1,1,2,2-Tetrachloroethane	<22.9		22.9		ug/m3			09/19/16 21:35	16.7
4-Ethyltoluene	<16.4		16.4		ug/m3			09/19/16 21:35	16.7
1,3,5-Trimethylbenzene	<16.4		16.4		ug/m3			09/19/16 21:35	16.7
1,2,4-Trimethylbenzene	<16.4		16.4		ug/m3			09/19/16 21:35	16.7
1,3-Dichlorobenzene	<20.1		20.1		ug/m3			09/19/16 21:35	16.7
1,4-Dichlorobenzene	<20.1		20.1		ug/m3			09/19/16 21:35	16.7
Benzyl chloride	<17.3		17.3		ug/m3			09/19/16 21:35	16.7
1,2-Dichlorobenzene	<20.1		20.1		ug/m3			09/19/16 21:35	16.7
1,2,4-Trichlorobenzene	<62.0		62.0		ug/m3			09/19/16 21:35	16.7
Hexachlorobutadiene	<35.6		35.6		ug/m3			09/19/16 21:35	16.7
Naphthalene	<43.8		43.8		ug/m3			09/19/16 21:35	16.7
Dibromochloromethane	<28.5		28.5		ug/m3			09/19/16 21:35	16.7

Tentatively Identified Compound	*Est. Result*	*Qualifier*	*Unit*	*D*	*RT*	*CAS No.*	*Prepared*	*Analyzed*	*Dil Fac*
Unknown	*33.4*	*T J*	*ppb v/v*		*5.27*			*09/19/16 21:35*	*16.7*
Unknown	*48.7*	*T J*	*ppb v/v*		*6.26*			*09/19/16 21:35*	*16.7*
Unknown	*19.9*	*T J*	*ppb v/v*		*6.72*			*09/19/16 21:35*	*16.7*
1-Butanol	*37.3*	*T J N*	*ppb v/v*		*14.61*	*71-36-3*		*09/19/16 21:35*	*16.7*
Cyclotrisiloxane, hexamethyl-	*47.7*	*T J N*	*ppb v/v*		*17.56*	*541-05-9*		*09/19/16 21:35*	*16.7*

Method: TO-15 - Volatile Organic Compounds in Ambient Air

Lab Sample ID: MB 200-109233/6
Matrix: Air
Analysis Batch: 109233

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Propylene	<8.61		8.61		ug/m3			09/19/16 14:38	1
Dichlorodifluoromethane	<2.47		2.47		ug/m3			09/19/16 14:38	1
1,2-Dichlorotetrafluoroethane	<1.40		1.40		ug/m3			09/19/16 14:38	1
Chloromethane	<1.03		1.03		ug/m3			09/19/16 14:38	1
Vinyl chloride	<0.511		0.511		ug/m3			09/19/16 14:38	1
1,3-Butadiene	<0.442		0.442		ug/m3			09/19/16 14:38	1
Bromomethane	<0.777		0.777		ug/m3			09/19/16 14:38	1
Chloroethane	<1.32		1.32		ug/m3			09/19/16 14:38	1
Trichlorofluoromethane	<1.12		1.12		ug/m3			09/19/16 14:38	1
Ethanol	<9.42		9.42		ug/m3			09/19/16 14:38	1
Freon TF	<1.53		1.53		ug/m3			09/19/16 14:38	1
1,1-Dichloroethene	<0.793		0.793		ug/m3			09/19/16 14:38	1
Acetone	<11.9		11.9		ug/m3			09/19/16 14:38	1
Isopropyl alcohol	<12.3		12.3		ug/m3			09/19/16 14:38	1
Carbon disulfide	<1.56		1.56		ug/m3			09/19/16 14:38	1
Methylene Chloride	<1.74		1.74		ug/m3			09/19/16 14:38	1
Methyl tert-butyl ether	<0.721		0.721		ug/m3			09/19/16 14:38	1
trans-1,2-Dichloroethene	<0.793		0.793		ug/m3			09/19/16 14:38	1
n-Hexane	<0.705		0.705		ug/m3			09/19/16 14:38	1
1,1-Dichloroethane	<0.809		0.809		ug/m3			09/19/16 14:38	1
Vinyl acetate	<17.6		17.6		ug/m3			09/19/16 14:38	1
Ethyl acetate	<18.0		18.0		ug/m3			09/19/16 14:38	1
Methyl Ethyl Ketone	<1.47		1.47		ug/m3			09/19/16 14:38	1
cis-1,2-Dichloroethene	<0.793		0.793		ug/m3			09/19/16 14:38	1
Chloroform	<0.977		0.977		ug/m3			09/19/16 14:38	1
Tetrahydrofuran	<14.7		14.7		ug/m3			09/19/16 14:38	1
1,1,1-Trichloroethane	<1.09		1.09		ug/m3			09/19/16 14:38	1
Cyclohexane	<0.688		0.688		ug/m3			09/19/16 14:38	1
Carbon tetrachloride	<1.26		1.26		ug/m3			09/19/16 14:38	1
Benzene	<0.639		0.639		ug/m3			09/19/16 14:38	1
1,2-Dichloroethane	<0.809		0.809		ug/m3			09/19/16 14:38	1
n-Heptane	<0.820		0.820		ug/m3			09/19/16 14:38	1
Trichloroethene	<1.07		1.07		ug/m3			09/19/16 14:38	1
1,2-Dichloropropane	<0.924		0.924		ug/m3			09/19/16 14:38	1
Bromodichloromethane	<1.34		1.34		ug/m3			09/19/16 14:38	1
cis-1,3-Dichloropropene	<0.908		0.908		ug/m3			09/19/16 14:38	1
Methyl isobutyl ketone	<2.05		2.05		ug/m3			09/19/16 14:38	1
Toluene	<0.754		0.754		ug/m3			09/19/16 14:38	1
trans-1,3-Dichloropropene	<0.908		0.908		ug/m3			09/19/16 14:38	1
1,1,2-Trichloroethane	<1.09		1.09		ug/m3			09/19/16 14:38	1
Tetrachloroethene	<1.36		1.36		ug/m3			09/19/16 14:38	1
Methyl Butyl Ketone (2-Hexanone)	<2.05		2.05		ug/m3			09/19/16 14:38	1
1,2-Dibromoethane	<1.54		1.54		ug/m3			09/19/16 14:38	1
Chlorobenzene	<0.921		0.921		ug/m3			09/19/16 14:38	1
Ethylbenzene	<0.868		0.868		ug/m3			09/19/16 14:38	1
m,p-Xylene	<2.17		2.17		ug/m3			09/19/16 14:38	1
Xylene, o-	<0.868		0.868		ug/m3			09/19/16 14:38	1
Styrene	<0.852		0.852		ug/m3			09/19/16 14:38	1

Method: TO-15 - Volatile Organic Compounds in Ambient Air (Continued)

Lab Sample ID: MB 200-109233/6
Matrix: Air
Analysis Batch: 109233

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Bromoform	<2.07		2.07		ug/m3			09/19/16 14:38	1
1,1,2,2-Tetrachloroethane	<1.37		1.37		ug/m3			09/19/16 14:38	1
4-Ethyltoluene	<0.983		0.983		ug/m3			09/19/16 14:38	1
1,3,5-Trimethylbenzene	<0.983		0.983		ug/m3			09/19/16 14:38	1
1,2,4-Trimethylbenzene	<0.983		0.983		ug/m3			09/19/16 14:38	1
1,3-Dichlorobenzene	<1.20		1.20		ug/m3			09/19/16 14:38	1
1,4-Dichlorobenzene	<1.20		1.20		ug/m3			09/19/16 14:38	1
Benzyl chloride	<1.04		1.04		ug/m3			09/19/16 14:38	1
1,2-Dichlorobenzene	<1.20		1.20		ug/m3			09/19/16 14:38	1
1,2,4-Trichlorobenzene	<3.71		3.71		ug/m3			09/19/16 14:38	1
Hexachlorobutadiene	<2.13		2.13		ug/m3			09/19/16 14:38	1
Naphthalene	<2.62		2.62		ug/m3			09/19/16 14:38	1
Dibromochloromethane	<1.70		1.70		ug/m3			09/19/16 14:38	1

Tentatively Identified Compound	*Est. Result*	*MB Qualifier*	*Unit*	*D*	*RT*	*CAS No.*	*Prepared*	*Analyzed*	*Dil Fac*
Tentatively Identified Compound	*None*		*ppb v/v*					*09/19/16 14:38*	*1*

Lab Sample ID: LCS 200-109233/5
Matrix: Air
Analysis Batch: 109233

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Propylene	17.2	19.71		ug/m3		115	58 - 129
Dichlorodifluoromethane	49.4	49.25		ug/m3		100	68 - 128
1,2-Dichlorotetrafluoroethane	69.9	83.35		ug/m3		119	78 - 138
Chloromethane	20.6	23.88		ug/m3		116	57 - 126
Vinyl chloride	25.6	28.72		ug/m3		112	62 - 125
1,3-Butadiene	22.1	22.53		ug/m3		102	59 - 125
Bromomethane	38.8	39.83		ug/m3		103	68 - 128
Chloroethane	26.4	27.58		ug/m3		105	65 - 125
Trichlorofluoromethane	56.2	50.20		ug/m3		89	67 - 127
Ethanol	28.3	23.06		ug/m3		82	28 - 168
Freon TF	76.6	71.19		ug/m3		93	68 - 128
1,1-Dichloroethene	39.6	36.54		ug/m3		92	67 - 127
Acetone	23.7	20.30		ug/m3		85	64 - 136
Isopropyl alcohol	24.6	18.35		ug/m3		75	55 - 124
Carbon disulfide	31.1	32.14		ug/m3		103	81 - 141
Methylene Chloride	34.7	29.61		ug/m3		85	62 - 122
Methyl tert-butyl ether	36.0	30.46		ug/m3		84	67 - 127
trans-1,2-Dichloroethene	39.6	36.27		ug/m3		91	72 - 132
n-Hexane	35.2	31.15		ug/m3		88	71 - 131
1,1-Dichloroethane	40.5	36.08		ug/m3		89	66 - 126
Vinyl acetate	35.2	28.16		ug/m3		80	62 - 130
Ethyl acetate	36.0	34.22		ug/m3		95	75 - 135
Methyl Ethyl Ketone	29.5	24.98		ug/m3		85	62 - 122
cis-1,2-Dichloroethene	39.6	34.79		ug/m3		88	67 - 127
Chloroform	48.8	43.32		ug/m3		89	69 - 129
Tetrahydrofuran	29.5	25.58		ug/m3		87	61 - 136

Method: TO-15 - Volatile Organic Compounds in Ambient Air (Continued)

Lab Sample ID: LCS 200-109233/5
Matrix: Air
Analysis Batch: 109233

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
1,1,1-Trichloroethane	54.6	50.78		ug/m3		93	70 - 130
Cyclohexane	34.4	32.16		ug/m3		93	69 - 129
Carbon tetrachloride	62.9	63.56		ug/m3		101	62 - 143
Benzene	31.9	29.01		ug/m3		91	67 - 127
1,2-Dichloroethane	40.5	37.07		ug/m3		92	67 - 132
n-Heptane	41.0	34.97		ug/m3		85	62 - 130
Trichloroethene	53.7	51.08		ug/m3		95	68 - 128
1,2-Dichloropropane	46.2	42.02		ug/m3		91	67 - 127
Bromodichloromethane	67.0	60.81		ug/m3		91	69 - 129
cis-1,3-Dichloropropene	45.4	42.00		ug/m3		93	70 - 130
Methyl isobutyl ketone	41.0	33.93		ug/m3		83	62 - 130
Toluene	37.7	34.92		ug/m3		93	67 - 127
trans-1,3-Dichloropropene	45.4	41.48		ug/m3		91	69 - 129
1,1,2-Trichloroethane	54.6	51.92		ug/m3		95	69 - 129
Tetrachloroethene	67.8	71.22		ug/m3		105	70 - 130
Methyl Butyl Ketone (2-Hexanone)	41.0	35.38		ug/m3		86	61 - 127
1,2-Dibromoethane	76.8	74.67		ug/m3		97	70 - 130
Chlorobenzene	46.0	45.17		ug/m3		98	68 - 128
Ethylbenzene	43.4	40.16		ug/m3		93	68 - 128
m,p-Xylene	86.8	82.02		ug/m3		94	68 - 128
Xylene, o-	43.4	40.35		ug/m3		93	67 - 127
Styrene	42.6	39.21		ug/m3		92	68 - 128
Bromoform	103	88.06		ug/m3		85	34 - 170
1,1,2,2-Tetrachloroethane	68.6	65.12		ug/m3		95	69 - 129
4-Ethyltoluene	49.2	47.39		ug/m3		96	69 - 129
1,3,5-Trimethylbenzene	49.2	45.56		ug/m3		93	65 - 125
1,2,4-Trimethylbenzene	49.2	45.14		ug/m3		92	65 - 125
1,3-Dichlorobenzene	60.1	58.61		ug/m3		98	67 - 127
1,4-Dichlorobenzene	60.1	57.88		ug/m3		96	66 - 126
Benzyl chloride	51.8	40.49		ug/m3		78	54 - 135
1,2-Dichlorobenzene	60.1	57.83		ug/m3		96	67 - 127
1,2,4-Trichlorobenzene	74.2	60.44		ug/m3		81	59 - 126
Hexachlorobutadiene	107	95.88		ug/m3		90	62 - 130
Naphthalene	52.4	32.80		ug/m3		63	50 - 121
Dibromochloromethane	85.2	79.23		ug/m3		93	66 - 130

Lab Sample ID: 200-35280-1 DU
Matrix: Air
Analysis Batch: 109233

Client Sample ID: SS-1
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
Propylene	<144		<144		ug/m3		NC	25
Dichlorodifluoromethane	<41.3		<41.3		ug/m3		NC	25
1,2-Dichlorotetrafluoroethane	<23.3		<23.3		ug/m3		NC	25
Chloromethane	<17.2		<17.2		ug/m3		NC	25
Vinyl chloride	<8.54		<8.54		ug/m3		NC	25
1,3-Butadiene	<7.39		<7.39		ug/m3		NC	25
Bromomethane	<13.0		<13.0		ug/m3		NC	25

Method: TO-15 - Volatile Organic Compounds in Ambient Air (Continued)

Lab Sample ID: 200-35280-1 DU
Matrix: Air
Analysis Batch: 109233

Client Sample ID: SS-1
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier		DU Result	DU Qualifier	Unit	D			RPD	RPD Limit
Chloroethane	<22.0			<22.0		ug/m3				NC	25
Trichlorofluoromethane	<18.8			<18.8		ug/m3				NC	25
Ethanol	542			545.4		ug/m3				0.6	25
Freon TF	<25.6			<25.6		ug/m3				NC	25
1,1-Dichloroethene	<13.2			<13.2		ug/m3				NC	25
Acetone	836			826.7		ug/m3				1	25
Isopropyl alcohol	229			224.9		ug/m3				2	25
Carbon disulfide	<26.0			<26.0		ug/m3				NC	25
Methylene Chloride	<29.0			<29.0		ug/m3				NC	25
Methyl tert-butyl ether	<12.0			<12.0		ug/m3				NC	25
trans-1,2-Dichloroethene	<13.2			<13.2		ug/m3				NC	25
n-Hexane	135			133.3		ug/m3				1	25
1,1-Dichloroethane	<13.5			<13.5		ug/m3				NC	25
Vinyl acetate	<294			<294		ug/m3				NC	25
Ethyl acetate	<301			<301		ug/m3				NC	25
Methyl Ethyl Ketone	<24.6			<24.6		ug/m3				NC	25
cis-1,2-Dichloroethene	<13.2			<13.2		ug/m3				NC	25
Chloroform	<16.3			<16.3		ug/m3				NC	25
Tetrahydrofuran	<246			<246		ug/m3				NC	25
1,1,1-Trichloroethane	<18.2			<18.2		ug/m3				NC	25
Cyclohexane	<11.5			<11.5		ug/m3				NC	25
Carbon tetrachloride	<21.0			<21.0		ug/m3				NC	25
Benzene	<10.7			<10.7		ug/m3				NC	25
1,2-Dichloroethane	<13.5			<13.5		ug/m3				NC	25
n-Heptane	<13.7			<13.7		ug/m3				NC	25
Trichloroethene	<17.9			<17.9		ug/m3				NC	25
1,2-Dichloropropane	<15.4			<15.4		ug/m3				NC	25
Bromodichloromethane	<22.4			<22.4		ug/m3				NC	25
cis-1,3-Dichloropropene	<15.2			<15.2		ug/m3				NC	25
Methyl isobutyl ketone	<34.2			<34.2		ug/m3				NC	25
Toluene	<12.6			<12.6		ug/m3				NC	25
trans-1,3-Dichloropropene	<15.2			<15.2		ug/m3				NC	25
1,1,2-Trichloroethane	<18.2			<18.2		ug/m3				NC	25
Tetrachloroethene	702			661.6		ug/m3				6	25
Methyl Butyl Ketone (2-Hexanone)	<34.2			<34.2		ug/m3				NC	25
1,2-Dibromoethane	<25.7			<25.7		ug/m3				NC	25
Chlorobenzene	<15.4			<15.4		ug/m3				NC	25
Ethylbenzene	<14.5			<14.5		ug/m3				NC	25
m,p-Xylene	<36.3			<36.3		ug/m3				NC	25
Xylene, o-	<14.5			<14.5		ug/m3				NC	25
Styrene	<14.2			<14.2		ug/m3				NC	25
Bromoform	<34.5			<34.5		ug/m3				NC	25
1,1,2,2-Tetrachloroethane	<22.9			<22.9		ug/m3				NC	25
4-Ethyltoluene	<16.4			<16.4		ug/m3				NC	25
1,3,5-Trimethylbenzene	<16.4			<16.4		ug/m3				NC	25
1,2,4-Trimethylbenzene	<16.4			<16.4		ug/m3				NC	25
1,3-Dichlorobenzene	<20.1			<20.1		ug/m3				NC	25

Client: Carlson McCain, Inc.
Project/Site: Richfield Sinclair Ph II

TestAmerica Job ID: 200-35280-1
SDG: 200-35280-1

Method: TO-15 - Volatile Organic Compounds in Ambient Air (Continued)

Lab Sample ID: 200-35280-1 DU
Matrix: Air
Analysis Batch: 109233

Client Sample ID: SS-1
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier		DU Result	DU Qualifier	Unit	D			RPD	RPD Limit
1,4-Dichlorobenzene	<20.1			<20.1		ug/m3				NC	25
Benzyl chloride	<17.3			<17.3		ug/m3				NC	25
1,2-Dichlorobenzene	<20.1			<20.1		ug/m3				NC	25
1,2,4-Trichlorobenzene	<62.0			<62.0		ug/m3				NC	25
Hexachlorobutadiene	<35.6			<35.6		ug/m3				NC	25
Naphthalene	<43.8			<43.8		ug/m3				NC	25
Dibromochloromethane	<28.5			<28.5		ug/m3				NC	25

Air - GC/MS VOA

Analysis Batch: 109233

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
200-35280-1	SS-1	Total/NA	Air	TO-15	
MB 200-109233/6	Method Blank	Total/NA	Air	TO-15	
LCS 200-109233/5	Lab Control Sample	Total/NA	Air	TO-15	
200-35280-1 DU	SS-1	Total/NA	Air	TO-15	

Lab Chronicle

Client: Carlson McCain, Inc.
Project/Site: Richfield Sinclair Ph II

TestAmerica Job ID: 200-35280-1
SDG: 200-35280-1

Client Sample ID: SS-1
Date Collected: 09/13/16 10:00
Date Received: 09/15/16 10:30

Lab Sample ID: 200-35280-1
Matrix: Air

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	TO-15		16.7	109233	09/19/16 21:35	WRD	TAL BUR

Laboratory References:

TAL BUR = TestAmerica Burlington, 30 Community Drive, Suite 11, South Burlington, VT 05403, TEL (802)660-1990

Certification Summary

Client: Carlson McCain, Inc.
Project/Site: Richfield Sinclair Ph II

TestAmerica Job ID: 200-35280-1
SDG: 200-35280-1

Laboratory: TestAmerica Burlington

Unless otherwise noted, all analytes for this laboratory were covered under each certification below.

Authority	Program	EPA Region	Certification ID	Expiration Date
Minnesota	NELAP	5	050-999-436	12-31-16

The following analytes are included in this report, but are not certified under this certification:

Analysis Method	Prep Method	Matrix	Analyte
TO-15		Air	Vinyl acetate

Method Summary

Client: Carlson McCain, Inc.
Project/Site: Richfield Sinclair Ph II

TestAmerica Job ID: 200-35280-1
SDG: 200-35280-1

Method	Method Description	Protocol	Laboratory
TO-15	Volatile Organic Compounds in Ambient Air	EPA	TAL BUR

Protocol References:

EPA = US Environmental Protection Agency

Laboratory References:

TAL BUR = TestAmerica Burlington, 30 Community Drive, Suite 11, South Burlington, VT 05403, TEL (802)660-1990

Sample Summary

Client: Carlson McCain, Inc.
Project/Site: Richfield Sinclair Ph II

TestAmerica Job ID: 200-35280-1
SDG: 200-35280-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
200-35280-1	SS-1	Air	09/13/16 10:00	09/15/16 10:30

TestAmerica Burlington
30 Community Drive
Suite 11
South Burlington, VT 05403
phone 802-660-1990 fax 802-660-1919

Canister Samples Chain of Custody Record

TestAmerica Analytical Testing Corp. assumes no liability with respect to the collection and shipment of these samples.

Client Contact Information	Project Manager: WADE CARLSON	Samples Collected By: JMW	1 of 1 COCs
Company: Carlson McLain	Phone:		
Address: 3290 Pheasant Ridge Dr NE	Email: WCARLSON@CARLSONMCLAIN.COM		
City/State/Zip Blaine MN 55449			
Phone: 763-489-7900	Site Contact:		
FAX:	TA Contact:		
Project Name: Richfield Sinclair Ph II	**Analysis Turnaround Time**		
Site:	Standard (Specify)		
PO #	Rush (Specify)		

Sample Identification	Sample Date(s)	Time Start	Time Stop	Canister Vacuum In Field, "Hg (Start)	Canister Vacuum In Field, "Hg (Stop)	Flow Controller ID	Canister ID	TO-15	MA-APH	EPA 3C	EPA 25C	ASTM D-1946	Other (Please specify in notes section)	Sample Volume	Indoor Air	Ambient Air	Soil Gas	Landfill Gas	Other (Please specify in notes section)
SS-1	9/13/16		1000					X											

Temperature (Fahrenheit)			
	Interior	Ambient	
Start			
Stop			

Pressure (inches of Hg)			
	Interior	Ambient	
Start			
Stop			

200-35280 Chain of Custody

Special Instructions/QC Requirements & Comments:

Samples Shipped by:	Date/Time: 9/13/16 1600	Samples Received by:	9-13-16 1610
Samples Relinquished by:	Date/Time: 9-13-16 1900	Received by:	9/15/16 1030
Relinquished by:	Date/Time:	Received by:	

Lab Use Only Shipper Name: Opened by: Condition:

ORIGIN ID:BTVA (952) 922-2777
BARB RUTTEN
TESTAMERICA LABORATORIES, INC.
7600 WEST 27TH ST
UNIT 236
ST. LOUIS PARK, MN 55426
UNITED STATES US

SHIP DATE: 08SEP16
ACTWGT: 5.0 LB MAN
CAD: 0008890364/CAFE2915
DIMS: 20x20x14 IN

BILL SENDER

TO SAMPLE MANAGEMENT
TEST AMERICA BURLINGTON
30 COMMUNITY DRIVE
SUITE 11
SOUTH BURLINGTON VT 05403
(802) 923-1068
RMA: S200-16789

REF: S200-16789

FedEx Express

FedEx.
TRK# 0221 7022 6553 6238

THU - 15 SEP 10:30A
PRIORITY OVERNIGHT

NC BTVA

05403
VT-US
BTV

Login Sample Receipt Checklist

Client: Carlson McCain, Inc.

Job Number: 200-35280-1
SDG Number: 200-35280-1

Login Number: 35280
List Number: 1
Creator: Lavigne III, Scott M

List Source: TestAmerica Burlington

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

Pre-Shipment Clean Canister Certification Report

Canister Cleaning & Pre-Shipment Leak Test

System ID	# Cycles	Cleaning Date	Technician	Canister Size	Certification Type:
Top Rack	50	8/6/2016	MLT	1L (6L)	(Batch) Individual

Port	Can ID	Initial[1] ("Hg)	Final ("Hg)	Adj. Initial[2] ("Hg)	Diff.[3]	Initial Reading Gauge:	Initial Reading Date:	Initial Reading Time:	Initial Reading Tech:	Initial Reading BP:	Initial Reading Temp:	Final Reading Gauge:	Final Reading Date:	Final Reading Time:	Final Reading Tech:	Final Reading BP:	Final Reading Temp:
1	3283	-29.7	-29	-29.7	-0.2	G9	8/8/2016	900	MLT	29.5	22		8/17/16	1421	ME	29.5	22
2	5980		-29		-0.2												
3	5904		-29		-0.2												
4	3341		-29.8		-0.1												
5	2862		-29		-0.2												
6	**5044**		-29.8		-0.1												
7	**3514**	-29.7	-29.8	-29.7	-0.1		8/10/16	1300		29.5	22	69	8/11/16	1215	ME	29.5	22
8	3267	-29.7	-29.6	-29.6	0.0		8/18/16	900		29.5	22		8/17/16	1420			
9	5717		-29.5		+0.1		8/17/16	1600					8/18/16	1700		29.4	
10	3282		-29		-0.2												
11	5692		-29		-0.2												
12	4907		-29.8		-0.1												

[1] Batch Certification: The reading is taken on the "batch" canister and this value is used as the initial pressure for all canisters in the batch.

[2] Adjusted Initial Pressure = Initial Pressure + (Initial BP - Final BP).

[3] Difference = Final Pressure - Adjusted Initial Pressure . Acceptance Criteria: (1) The difference must be less than or equal to + 0.5. (2) Pressure readings must be at least 24 hours apart.

If time frame was not met, the PM must authorize shipment of canister **PM Authorization Signature:** **Date:**

Clean Canister Certification Analysis & Authorization of Release to Inventory

Test Method: (TO15 Routine) TO15 LL NJDEP-LL TO15

Can ID	Date	Sequence	Analyst	Inventory Level 1	2	3	4	Limited	Secondary Review: Review Date	Rev
3514	8/09/16	21231	PAD		XXXXX				8/10/16	ANJ

Inventory Level 1: Individual Canister Certification (TO15LL 0.01).

Inventory Level 2: Individual or Batch Certification (TO15 0.04 ppbv).

Inventory Level 3: Individual or Batch Certification (TO15 0.2 ppbv).

Inventory Level 4: Individual or Batch Certification (TO15LLNJ 0.08 ppbv).

Inventory Level Limited: Canisters may only be used for certain projects.

Comments:

FORM I
AIR - GC/MS VOA ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Burlington Job No.: 200-34725-1

SDG No.:

Client Sample ID: 3514 Lab Sample ID: 200-34725-7

Matrix: Air Lab File ID: 21231_20.D

Analysis Method: TO-15 Date Collected: 08/06/2016 00:00

Sample wt/vol: 1000(mL) Date Analyzed: 08/09/2016 02:16

Soil Aliquot Vol: Dilution Factor: 0.2

Soil Extract Vol.: GC Column: RTX-624 ID: 0.32(mm)

% Moisture: Level: (low/med) Low

Analysis Batch No.: 107883 Units: ppb v/v

CAS NO.	COMPOUND NAME	RESULT	Q	RL	RL
115-07-1	Propylene	1.0	U	1.0	1.0
75-71-8	Dichlorodifluoromethane	0.10	U	0.10	0.10
75-45-6	Freon 22	0.10	U	0.10	0.10
76-14-2	1,2-Dichlorotetrafluoroethane	0.040	U	0.040	0.040
74-87-3	Chloromethane	0.10	U	0.10	0.10
106-97-8	n-Butane	0.10	U	0.10	0.10
75-01-4	Vinyl chloride	0.040	U	0.040	0.040
106-99-0	1,3-Butadiene	0.040	U	0.040	0.040
74-83-9	Bromomethane	0.040	U	0.040	0.040
75-00-3	Chloroethane	0.10	U	0.10	0.10
593-60-2	Bromoethene(Vinyl Bromide)	0.040	U	0.040	0.040
75-69-4	Trichlorofluoromethane	0.040	U	0.040	0.040
64-17-5	Ethanol	1.0	U	1.0	1.0
76-13-1	Freon TF	0.040	U	0.040	0.040
75-35-4	1,1-Dichloroethene	0.040	U	0.040	0.040
67-64-1	Acetone	1.0	U	1.0	1.0
67-63-0	Isopropyl alcohol	1.0	U	1.0	1.0
75-15-0	Carbon disulfide	0.10	U	0.10	0.10
107-05-1	3-Chloropropene	0.10	U	0.10	0.10
75-09-2	Methylene Chloride	0.10	U	0.10	0.10
75-65-0	tert-Butyl alcohol	1.0	U	1.0	1.0
1634-04-4	Methyl tert-butyl ether	0.040	U	0.040	0.040
156-60-5	trans-1,2-Dichloroethene	0.040	U	0.040	0.040
110-54-3	n-Hexane	0.040	U	0.040	0.040
75-34-3	1,1-Dichloroethane	0.040	U	0.040	0.040
108-05-4	Vinyl acetate	1.0	U	1.0	1.0
141-78-6	Ethyl acetate	1.0	U	1.0	1.0
78-93-3	Methyl Ethyl Ketone	0.10	U	0.10	0.10
156-59-2	cis-1,2-Dichloroethene	0.040	U	0.040	0.040
540-59-0	1,2-Dichloroethene, Total	0.080	U	0.080	0.080
67-66-3	Chloroform	0.040	U	0.040	0.040
109-99-9	Tetrahydrofuran	1.0	U	1.0	1.0
71-55-6	1,1,1-Trichloroethane	0.040	U	0.040	0.040
110-82-7	Cyclohexane	0.040	U	0.040	0.040
56-23-5	Carbon tetrachloride	0.040	U	0.040	0.040
540-84-1	2,2,4-Trimethylpentane	0.040	U	0.040	0.040

FORM I
AIR - GC/MS VOA ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Burlington Job No.: 200-34725-1

SDG No.:

Client Sample ID: 3514 Lab Sample ID: 200-34725-7

Matrix: Air Lab File ID: 21231_20.D

Analysis Method: TO-15 Date Collected: 08/06/2016 00:00

Sample wt/vol: 1000(mL) Date Analyzed: 08/09/2016 02:16

Soil Aliquot Vol: Dilution Factor: 0.2

Soil Extract Vol.: GC Column: RTX-624 ID: 0.32(mm)

% Moisture: Level: (low/med) Low

Analysis Batch No.: 107883 Units: ppb v/v

CAS NO.	COMPOUND NAME	RESULT	Q	RL	RL
71-43-2	Benzene	0.040	U	0.040	0.040
107-06-2	1,2-Dichloroethane	0.040	U	0.040	0.040
142-82-5	n-Heptane	0.040	U	0.040	0.040
79-01-6	Trichloroethene	0.040	U	0.040	0.040
80-62-6	Methyl methacrylate	0.10	U	0.10	0.10
78-87-5	1,2-Dichloropropane	0.040	U	0.040	0.040
123-91-1	1,4-Dioxane	1.0	U	1.0	1.0
75-27-4	Bromodichloromethane	0.040	U	0.040	0.040
10061-01-5	cis-1,3-Dichloropropene	0.040	U	0.040	0.040
108-10-1	methyl isobutyl ketone	0.10	U	0.10	0.10
108-88-3	Toluene	0.040	U	0.040	0.040
10061-02-6	trans-1,3-Dichloropropene	0.040	U	0.040	0.040
79-00-5	1,1,2-Trichloroethane	0.040	U	0.040	0.040
127-18-4	Tetrachloroethene	0.040	U	0.040	0.040
591-78-6	Methyl Butyl Ketone (2-Hexanone)	0.10	U	0.10	0.10
124-48-1	Dibromochloromethane	0.040	U	0.040	0.040
106-93-4	1,2-Dibromoethane	0.040	U	0.040	0.040
108-90-7	Chlorobenzene	0.040	U	0.040	0.040
100-41-4	Ethylbenzene	0.040	U	0.040	0.040
179601-23-1	m,p-Xylene	0.10	U	0.10	0.10
95-47-6	Xylene, o-	0.040	U	0.040	0.040
1330-20-7	Xylene (total)	0.14	U	0.14	0.14
100-42-5	Styrene	0.040	U	0.040	0.040
75-25-2	Bromoform	0.040	U	0.040	0.040
98-82-8	Cumene	0.040	U	0.040	0.040
79-34-5	1,1,2,2-Tetrachloroethane	0.040	U	0.040	0.040
103-65-1	n-Propylbenzene	0.040	U	0.040	0.040
622-96-8	4-Ethyltoluene	0.040	U	0.040	0.040
108-67-8	1,3,5-Trimethylbenzene	0.040	U	0.040	0.040
95-49-8	2-Chlorotoluene	0.040	U	0.040	0.040
98-06-6	tert-Butylbenzene	0.040	U	0.040	0.040
95-63-6	1,2,4-Trimethylbenzene	0.040	U	0.040	0.040
135-98-8	sec-Butylbenzene	0.040	U	0.040	0.040
99-87-6	4-Isopropyltoluene	0.040	U	0.040	0.040
541-73-1	1,3-Dichlorobenzene	0.040	U	0.040	0.040
106-46-7	1,4-Dichlorobenzene	0.040	U	0.040	0.040

FORM I
AIR - GC/MS VOA ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Burlington Job No.: 200-34725-1

SDG No.:

Client Sample ID: 3514 Lab Sample ID: 200-34725-7

Matrix: Air Lab File ID: 21231_20.D

Analysis Method: TO-15 Date Collected: 08/06/2016 00:00

Sample wt/vol: 1000(mL) Date Analyzed: 08/09/2016 02:16

Soil Aliquot Vol: Dilution Factor: 0.2

Soil Extract Vol.: GC Column: RTX-624 ID: 0.32(mm)

% Moisture: Level: (low/med) Low

Analysis Batch No.: 107883 Units: ppb v/v

CAS NO.	COMPOUND NAME	RESULT	Q	RL	RL
100-44-7	Benzyl chloride	0.040	U	0.040	0.040
104-51-8	n-Butylbenzene	0.040	U	0.040	0.040
95-50-1	1,2-Dichlorobenzene	0.040	U	0.040	0.040
120-82-1	1,2,4-Trichlorobenzene	0.10	U	0.10	0.10
87-68-3	Hexachlorobutadiene	0.040	U	0.040	0.040
91-20-3	Naphthalene	0.10	U	0.10	0.10

TestAmerica Burlington
Target Compound Quantitation Report

Data File: \\ChromNA\Burlington\ChromData\CHC.i\20160808-21231.b\21231_20.D
Lims ID: 200-34725-A-7 Lab Sample ID: 200-34725-7
Client ID: 3514
Sample Type: Client
Inject. Date: 09-Aug-2016 02:16:30 ALS Bottle#: 21 Worklist Smp#: 20
Purge Vol: 200.000 mL Dil. Factor: 0.2000
Sample Info: 200-0021231-020
Misc. Info.: 34725-07
Operator ID: pad Instrument ID: CHC.i

Method: \\ChromNA\Burlington\ChromData\CHC.i\20160808-21231.b\TO15_MasterMethod_(v1)_CHC.i.m
Limit Group: AI_TO15_ICAL
Last Update: 09-Aug-2016 10:20:44 Calib Date: 30-Jun-2016 22:11:30
Integrator: RTE ID Type: Deconvolution ID
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Burlington\ChromData\CHC.i\20160630-20687.b\20687_10.D

Column 1 : RTX-624 (0.32 mm) Det: MS SCAN
Process Host: XAWRK007

First Level Reviewer: daiglep Date: 09-Aug-2016 09:57:11

Compound	Sig	RT (min.)	Adj RT (min.)	Dlt RT (min.)	Q	Response	OnCol Amt ppb v/v	Flags
1 Propene	41		2.983				ND	
2 Dichlorodifluoromethane	85		3.053				ND	
3 Chlorodifluoromethane	51		3.106				ND	
4 1,2-Dichloro-1,1,2,2-tetra	85		3.319				ND	
5 Chloromethane	50	3.464	3.458	0.006	6	723	0.0392	
6 Butane	43		3.661				ND	
7 Vinyl chloride	62		3.704				ND	
8 Butadiene	54		3.784				ND	
10 Bromomethane	94		4.472				ND	
11 Chloroethane	64		4.718				ND	
13 Vinyl bromide	106		5.118				ND	
14 Trichlorofluoromethane	101		5.219				ND	
17 Ethanol	45		5.828				ND	
20 1,1,2-Trichloro-1,2,2-trif	101		6.335				ND	
21 1,1-Dichloroethene	96		6.367				ND	
22 Acetone	43		6.612				ND	
23 Carbon disulfide	76		6.746				ND	
24 Isopropyl alcohol	45		6.933				ND	
25 3-Chloro-1-propene	41		7.173				ND	
27 Methylene Chloride	49		7.477				ND	
28 2-Methyl-2-propanol	59		7.722				ND	
29 Methyl tert-butyl ether	73		7.883				ND	
31 trans-1,2-Dichloroethene	61		7.920				ND	
33 Hexane	57		8.320				ND	
34 1,1-Dichloroethane	63		8.811				ND	
35 Vinyl acetate	43		8.897				ND	
37 cis-1,2-Dichloroethene	96		9.937				ND	
38 2-Butanone (MEK)	72		9.991				ND	
39 Ethyl acetate	88		10.044				ND	
S 30 1,2-Dichloroethene, Total	61		10.200				ND	
* 40 Chlorobromomethane	128	10.407	10.412	-0.005	89	238512	10.0	

	Compound	Sig	RT (min.)	Adj RT (min.)	Dlt RT (min.)	Q	Response	OnCol Amt ppb v/v	Flags
	41 Tetrahydrofuran	42		10.412				ND	
	42 Chloroform	83		10.551				ND	
	43 Cyclohexane	84		10.786				ND	
	44 1,1,1-Trichloroethane	97		10.818				ND	
	45 Carbon tetrachloride	117		11.069				ND	
	46 Isooctane	57		11.517				ND	
	47 Benzene	78		11.538				ND	
	48 1,2-Dichloroethane	62		11.730				ND	
	49 n-Heptane	43		11.923				ND	
*	50 1,4-Difluorobenzene	114	12.408	12.408	0.000	98	1349186	10.0	
	53 Trichloroethene	95		12.873				ND	
	54 1,2-Dichloropropane	63		13.438				ND	
	55 Methyl methacrylate	69		13.625				ND	
	56 1,4-Dioxane	88		13.673				ND	
	57 Dibromomethane	174		13.705				ND	
	58 Dichlorobromomethane	83		14.015				ND	
	60 cis-1,3-Dichloropropene	75		14.959				ND	
	61 4-Methyl-2-pentanone (MIBK	43		15.247				ND	
	65 Toluene	92		15.546				ND	
	66 trans-1,3-Dichloropropene	75		16.160				ND	
	67 1,1,2-Trichloroethane	83		16.534				ND	
	68 Tetrachloroethene	166		16.630				ND	
	69 2-Hexanone	43		16.982				ND	
	71 Chlorodibromomethane	129		17.291				ND	
	72 Ethylene Dibromide	107		17.553				ND	
*	74 Chlorobenzene-d5	117	18.450	18.455	-0.005	98	1284387	10.0	
	75 Chlorobenzene	112		18.514				ND	
	76 Ethylbenzene	91		18.663				ND	
	78 m-Xylene & p-Xylene	106		18.914				ND	
	79 o-Xylene	106		19.757				ND	
	80 Styrene	104		19.810				ND	
S	73 Xylenes, Total	106		20.100				ND	
	81 Bromoform	173		20.232				ND	
	82 Isopropylbenzene	105		20.446				ND	
	84 1,1,2,2-Tetrachloroethane	83		21.107				ND	
	85 N-Propylbenzene	91		21.166				ND	
	88 4-Ethyltoluene	105		21.358				ND	
	89 2-Chlorotoluene	91		21.369				ND	
	90 1,3,5-Trimethylbenzene	105		21.465				ND	
	92 tert-Butylbenzene	119		21.956				ND	
	93 1,2,4-Trimethylbenzene	105		22.052				ND	
	94 sec-Butylbenzene	105		22.281				ND	
	95 4-Isopropyltoluene	119		22.484				ND	
	96 1,3-Dichlorobenzene	146		22.511				ND	
	97 1,4-Dichlorobenzene	146		22.650				ND	
	98 Benzyl chloride	91		22.842				ND	
	100 n-Butylbenzene	91		23.050				ND	
	101 1,2-Dichlorobenzene	146		23.173				ND	
	103 1,2,4-Trichlorobenzene	180		25.628				ND	
	104 Hexachlorobutadiene	225		25.809				ND	
	105 Naphthalene	128		26.097				ND	

Reagents:

ATTO15CISs_00010 Amount Added: 20.00 Units: mL Run Reagent

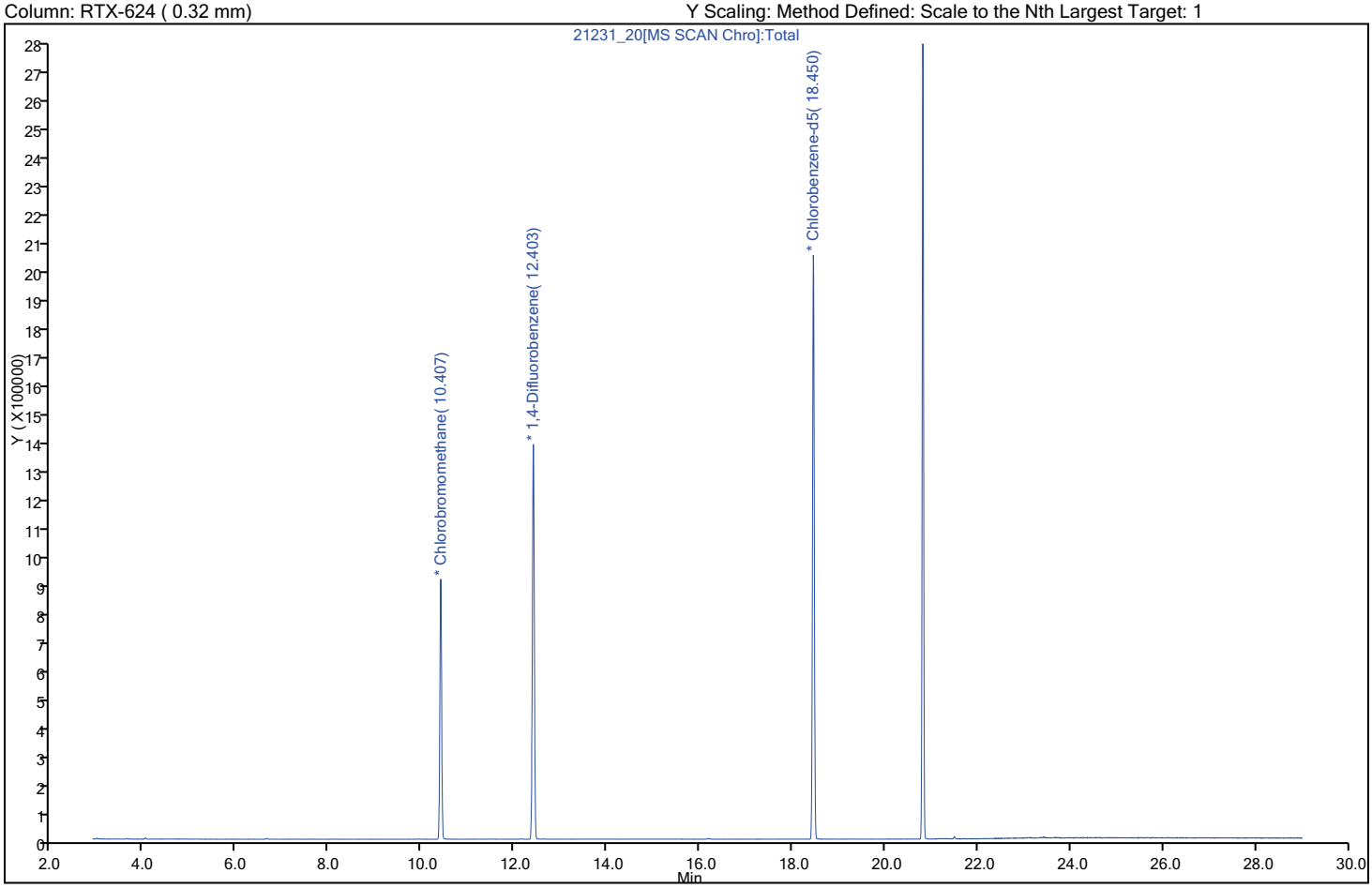
Report Date: 09-Aug-2016 10:21:50 Chrom Revision: 2.2 04-Mar-2016 14:36:24

TestAmerica Burlington

Data File: \\ChromNA\Burlington\ChromData\CHC.i\20160808-21231.b\21231_20.D

Injection Date:	09-Aug-2016 02:16:30	Instrument ID:	CHC.i	Operator ID:	pad
Lims ID:	200-34725-A-7	Lab Sample ID:	200-34725-7	Worklist Smp#:	20
Client ID:	3514				
Purge Vol:	200.000 mL	Dil. Factor:	0.2000	ALS Bottle#:	21
Method:	TO15_MasterMethod_(v1)_CHC.i	Limit Group:	AI_TO15_ICAL		

Column: RTX-624 (0.32 mm) Y Scaling: Method Defined: Scale to the Nth Largest Target: 1



Appendix E

Geologic Logs of Soil Borings
Construction Diagrams of Temporary and Permanent Wells
Copies of the Minnesota Department of Health Well Record

BORING LOG

Boring # GP-1

AE Project # 6G28	Site Name: Richfield Sinclair	Boring Date: 12/08/16
Surface Elevation (ft): ~843.9	Site Address:7733 Portland Ave S	Drilling Co: Nova
Temperature (deg. F): 25	Richfield, MN 55423	Drill Rig Model: Geoprobe 5410
Sheet 1 of 1	Drilling Method: Push Probe	Drill Crew Chief: Eric Halpaus

Depth (ft)	Water Level	Description of Material/Comments	Color	Moisture Content (dry/damp/saturated	HNU Level (ppm)	Lab Sample Number
1		Poorly-graded Sand (SP)	Brown	Damp		
2		" " " "	"	"	ND	
3		" " " "	"	"		
4		" " " "	"	"	ND	
5		" " " "	"	"		
6		" " " "	"	"	ND	
7		" " " "	"	"		
8		" " " "	"	"	ND	
9		" " " "	"	"		
10		" " " "	"	"	ND	
11		" " " "	"	"		
12		" " " "	"	"	ND	
13		" " " "	"	"		
14		" " " "	"	"	ND	
15		" " " "	"	"		
16		" " " "	"	"	ND	
17		" " " "	"	"		
18		" " " "	"	"	ND	
19		" " " "	"	"		
20		" " " "	"	"	ND	
21		" " " "	"	"		
22		" " " "	"	"	ND	
23		" " " "	"	"		
24		" " " "	"	"	ND	
25		" " " "	"	"		
26		" " " "	"	"	ND	
27		" " " "	"	"		
28		" " " "	"	"	ND	
29		" " " "	"	"		
30		" " " "	"	"	ND	
31	▼	" " " "	"	"		
31.5		" " " " Refusal	"	"	ND	1X

Applied Engineering, Inc.
1161 Wayzata Blvd E. #60
Wayzata, MN 55391
(952)939-9095

LOG-6G28; 02/17

(Use add'l sheet if necessary)

End of Boring Depth: 31.5 feet

Boring Abandonment Method: Bentonite

Measured Water Level Depth: 31.10

Surface Patch Type: Neat Cementl

Preparer Name: T. Musson

Comments:

Surface elevation per MnTOPO LiDAR; conflicts w/surveyed elevation, not shown

"ND" indicates not detected

BORING LOG

Boring # GP-2

AE Project # 6G28	Site Name: Richfield Sinclair	Boring Date: 12/08/16
Surface Elevation (ft): ~843.0	Site Address:7733 Portland Ave S	Drilling Co: Nova
Temperature (deg. F): 25	Richfield, MN 55423	Drill Rig Model: Geoprobe 5410
Sheet 1 of 1	Drilling Method: Push Probe	Drill Crew Chief: Eric Halpaus

Depth (ft)	Water Level	Description of Material/Comments	Color	Moisture Content (dry/damp/saturated)	HNU Level (ppm)	Lab Sample Number
1		Poorly-graded Sand (SP)	Brown	Damp		
2		" " " "	"	"	ND	
3		" " " "	"	"		
4		" " " "	"	"	ND	
5		" " " "	"	"		
6		" " " "	"	"	ND	
7		" " " "	"	"		
8		" " " "	"	"	ND	
9		" " " "	"	"		
10		" " " "	"	"	ND	
11		" " " "	"	"		
12		" " " "	"	"	ND	
13		" " " "	"	"		
14		" " " "	"	"	ND	
15		" " " "	"	"		
16		" " " "	"	"	ND	
17		" " " "	"	"		
18		" " " "	"	"	ND	
19		" " " "	"	"		
20		" " " "	"	"	ND	
21		" " " "	"	"		
22		" " " "	"	"	ND	
23		" " " "	"	"		
24		" " " "	"	"	ND	
25		" " " "	"	"		
26		" " " "	"	"	ND	
27		" " " "	"	"		
28		" " " "	"	"	ND	
29		" " " "	"	"		
30	▼	" " " "	"	"	ND	
31		" " " "	"	"		
32		" " " "	"	"	ND	
33		" " " "	"	"		
34		" " " "	"	"	ND	
35		" " " "	"	Saturated		
36		" " " "	"	"	ND	
37		" " " "	"	"	ND	2X

(Use add'l sheet if necessary)

End of Boring Depth: 37 feet

Boring Abandonment Method: Bentonite

Measured Water Level Depth: 30.75 feet

Surface Patch Type: Neat Cement

Preparer Name: T. Musson

Comments:

Surface elevation per MnTOPO LiDAR; conflicts w/surveyed elevation, not shown

"ND" indicates not detected

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Wayzata, MN 55391
(952)939-9095

BORING LOG

Boring # GP-3

AE Project # 6G28	Site Name: Richfield Sinclair	Boring Date: 12/08/16
Surface Elevation (ft): ~842.3	Site Address:7733 Portland Ave S	Drilling Co: Nova
Temperature (deg. F): 25	Richfield, MN 55423	Drill Rig Model: Geoprobe 5410
Sheet 1 of 1	Drilling Method: Push Probe	Drill Crew Chief: Eric Halpaus

Depth (ft)	Water Level	Description of Material/Comments	Color	Moisture Content (dry/damp/saturated)	HNU Level (ppm)	Lab Sample Number
1		Poorly-graded Sand (SP)	Brown	Damp		
2		" " " "	"	"	ND	
3		" " " "	"	"		
4		" " " "	"	"	ND	
5		" " " "	"	"		
6		" " " "	"	"	ND	
7		" " " "	"	"		
8		" " " "	"	"	ND	
9		Silty Sand (SM)	Dark Brown	"		
10		" " "	" "	"	ND	
11		" " "	" "	"		
12		" " "	" "	"	ND	
13		Poorly-graded Sand (SP)	Brown	"		
14		" " " "	"	"	ND	
15		" " " "	"	"		
16		" " " "	"	"	ND	
17		" " " "	"	"		
18		" " " "	"	"	ND	
19		" " " "	"	"		
20		" " " "	"	"	ND	
21		" " " "	"	"		
22		" " " "	"	"	ND	
23		" " " "	"	"		
24		" " " "	"	"	ND	
25		" " " "	"	"		
26		" " " "	"	"	ND	GS-1
27		" " " "	"	"		
28		" " " "	"	"	ND	
29		" " " "	"	"		
30	▼	" " " "	"	"	ND	GS-2
31		" " " "	"	"		
32		" " " "	"	"	ND	
33		" " " "	"	Saturated		
34		" " " "	"	"	ND	GS-3
35		" " " "	"	"		
36		" " " "	"	"	ND	
37		" " " "	"	"		
38		" " " "	"	"	ND	
39		" " " "	"	"		
40		" " " "	"	"	ND	
41		" " " "	"	"		
42		" " " "	"	"	ND	
43		" " " "	"	"		
44		" " " "	"	"	ND	
45		" " " "	"	"		
46		" " " "	"	"	ND	
47		" " " "	"	"		
48		" " " "	"	"	ND	
49		No Sample - Pushed Discrete Sampler	"	"		
50		" " " " "	"	"		
51		Poorly-graded Sand (SP)	"	"		
52		" " " "	"	"	ND	3X

APPLIED ENGINEERING

Applied Engineering, Inc.
1161 Wayzata Blvd E. #60
Wayzata, MN 55391
(952)939-9095

(Use add'l sheet if necessary)

End of Boring Depth: 52 feet

Boring Abandonment Method: Bentonite

Measured Water Level Depth: 30.75 feet

Surface Patch Type: Neat Cement

Preparer Name: T. Musson

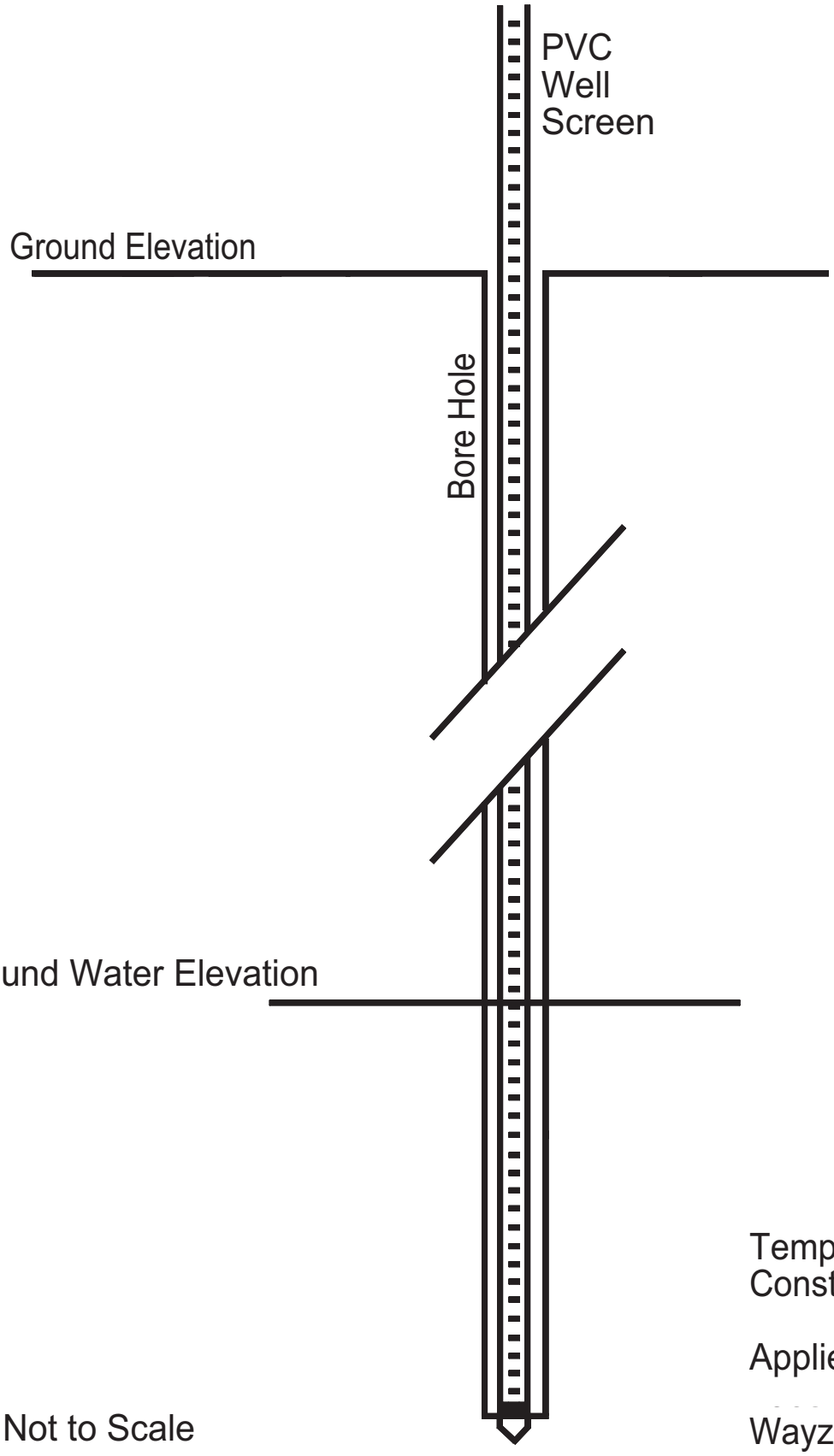
Comments:

Surface elevation per MnTOPO LiDAR; conflicts w/surveyed elevation, not shown

"ND" indicates not detected

Construction Diagram
Temporary Wells

Slotted PVC



Temporary Well
Construction Diagram

Applied Engineering, Inc.

Wayzata, MN 55391

Drawing Not to Scale

MINNESOTA DEPARTMENT OF HEALTH
WELL AND BORING SEALING RECORD
Minnesota Statutes, Chapter 103I

Minnesota Well and Boring Sealing No / Minnesota Unique Well No. or W-series No. (Leave blank if not known): H 343824

WELL OR BORING LOCATION

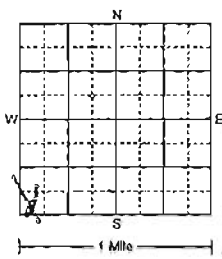
County Name: Hennepin

Township Name	Township No.	Range No.	Section No.	Fraction (sm → lg.)
Richfield	28	24	35	SW SW SW

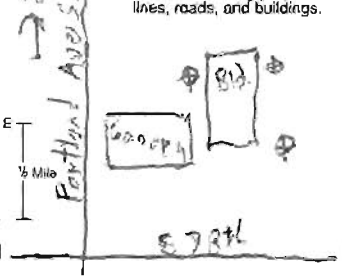
GPS LOCATION – decimal degrees (to four decimal places)
Latitude _____ Longitude _____

Numerical Street Address or Fire Number and City of Well or Boring Location: 7733 Portland Ave S Richfield

Show exact location of well or boring in section grid with "X."



Sketch map of well or boring location, showing property lines, roads, and buildings.



PROPERTY OWNER'S NAME/COMPANY NAME: Main St Property Management LLC

Property owner's mailing address if different than well location address indicated above:
605 Stinson Blvd.
Minneapolis, MN 55413

WELL OWNER'S NAME/COMPANY NAME: AVP Energy LLC

Well owner's mailing address if different than property owner's address indicated above:
7229 S 85th E. Ave
Ste 400
Tulsa, OK 74133

GEOLOGICAL MATERIAL	COLOR	HARDNESS OR FORMATION	FROM	TO
If not known, indicate estimated formation log from nearby well or boring.				
Sand F-M	Brn	Loose	0	15
Sand F-M	Brn	Med	15	24
Sand F-M	Brn	Med	24	30
Sand F-M	Brn	Loose	30	37

REMARKS, SOURCE OF DATA, DIFFICULTIES IN SEALING

MINN. DEPT. OF HEALTH COPY H 343824

Date Sealed: 12/8/16
Date Well or Boring Constructed: 12/8/16

Depth Before Sealing: 37 ft. Original Depth: 37 ft.

AQUIFER(S): ☑ Single Aquifer ☐ Multiaquifer

STATIC WATER LEVEL: ☐ Measured ☑ Estimated Date Measured _____

WELL/BORING: ☐ Water-Supply Well ☐ Monit. Well ☐ Env. Bore Hole ☑ Other Boring 31 ft. ☑ below ☐ above land surface

CASING TYPE(S): ☐ Steel ☑ Plastic ☐ Tile ☐ Other _____

WELLHEAD COMPLETION

Outside: ☐ Well House ☐ At Grade ☐ Pitless Adapter/Unit ☐ Buried ☐ Well Pit ☑ Other TEMPORARY

Inside: ☐ Basement Offset ☐ Well Pit ☐ Buried ☐ Other _____

CASING(S)

Diameter	Depth	Set in oversize hole?	Annular space initially grouted?
1 in. from 0	to 27 ft.	☑ Yes ☐ No	☐ Yes ☑ No ☐ Unknown
_____ in. from _____	to _____ ft.	☐ Yes ☐ No	☐ Yes ☐ No ☐ Unknown
_____ in. from _____	to _____ ft.	☐ Yes ☐ No	☐ Yes ☐ No ☐ Unknown

SCREEN/OPEN HOLE: Screen from 27 to 37 ft. Open Hole from _____ to _____ ft.

OBSTRUCTIONS: ☐ Rods/Drop Pipe ☐ Check Valve(s) ☐ Debris ☐ Fill ☑ No Obstruction

Type of Obstructions (Describe) _____

Obstructions removed? ☐ Yes ☐ No Describe _____

PUMP: Type _____ ☐ Removed ☑ Not Present ☐ Other _____

METHOD USED TO SEAL ANNULAR SPACE BETWEEN 2 CASINGS, OR CASING AND BORE HOLE:

☐ No Annular Space Exists ☐ Annular Space Grouted with Tremie Pipe ☐ Casing Perforation/Removal

_____ in. from _____ to _____ ft. ☐ Perforated ☐ Removed

_____ in. from _____ to _____ ft. ☐ Perforated ☐ Removed

Type of Perforator: _____

VARIANCE: Was a variance granted from the MDH for this well? ☐ Yes ☑ No TN# _____

GROUTING MATERIAL(S) (One bag of cement = 94 lbs., one bag of bentonite = 50 lbs.)

Grouting Material: Bentonite	from _____	to _____ ft.	_____ yards	_____ bags
Slurry	from 37	to 2 ft.	_____ yards	12 bags
Bentonite chips	from 2	to 0 ft.	_____ yards	3/10 bags

OTHER WELLS AND BORINGS: Other unsealed and unused well or boring on property? ☐ Yes ☑ No How many? _____

LICENSED OR REGISTERED CONTRACTOR CERTIFICATION

This well or boring was sealed in accordance with Minnesota Rules, Chapter 4725. The information contained in this report is true to the best of my knowledge.

NOVA Consulting — 2447
Licensee Business Name — *License or Registration No.*

_____ — 2306 — 12/15/16
Certified Representative Signature — *Certified Rep. No.* — *Date*

Eric Helpap
Name of Person Sealing Well or Boring

HE-01434-14 ID# 53159 5/13

Appendix F

Laboratory Analytical Reports for Soil
Soil Gas Air, and Ground Water
Laboratory QA/QC data
Chromatograms
Laboratory certification number

Pace Analytical Services, LLC
1700 Elm Street - Suite 200
Minneapolis, MN 55414
(612)607-1700

December 23, 2016

Mr. Thomas Greene
Applied Engineering, Inc.
1161 Wayzata Blvd E., Ste #60
Wayzata, MN 55391

RE: Project: 6G28 Richfield Sinclair
Pace Project No.: 10372832

Dear Mr. Greene:
Enclosed are the analytical results for sample(s) received by the laboratory on December 09, 2016. The results relate only to the samples included in this report. Results reported herein conform to the most current, applicable TNI/NELAC standards and the laboratory's Quality Assurance Manual, where applicable, unless otherwise noted in the body of the report.

If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Diane J. Anderson
diane.anderson@pacelabs.com
Project Manager

Enclosures

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1700 Elm Street - Suite 200
Minneapolis, MN 55414
(612)607-1700

CERTIFICATIONS

Project: 6G28 Richfield Sinclair
Pace Project No.: 10372832

Minnesota Certification IDs

1700 Elm Street SE Suite 200, Minneapolis, MN 55414
525 N 8th Street, Salina, KS 67401
Alaska Certification UST-107
A2LA Certification #: 2926.01
Alaska Certification #: UST-078
Alaska Certification #MN00064
Alabama Certification #40770
Arizona Certification #: AZ-0014
Arkansas Certification #: 88-0680
California Certification #: 01155CA
Colorado Certification #Pace
Connecticut Certification #: PH-0256
EPA Region 8 Certification #: 8TMS-L
Florida/NELAP Certification #: E87605
Guam Certification #:14-008r
Georgia Certification #: 959
Georgia EPD #: Pace
Idaho Certification #: MN00064
Hawaii Certification #MN00064
Illinois Certification #: 200011
Indiana Certification#C-MN-01
Iowa Certification #: 368
Kansas Certification #: E-10167
Kentucky Dept of Envi. Protection - DW #90062
Kentucky Dept of Envi. Protection - WW #:90062
Louisiana DEQ Certification #: 3086
Louisiana DHH #: LA140001
Maine Certification #: 2013011
Maryland Certification #: 322
Michigan DEPH Certification #: 9909
Minnesota Certification #: 027-053-137
Mississippi Certification #: Pace
Montana Certification #: MT0092
Nevada Certification #: MN_00064
Nebraska Certification #: Pace
New Jersey Certification #: MN-002
New York Certification #: 11647
North Carolina Certification #: 530
North Carolina State Public Health #: 27700
North Dakota Certification #: R-036
Ohio EPA #: 4150
Ohio VAP Certification #: CL101
Oklahoma Certification #: 9507
Oregon Certification #: MN200001
Oregon Certification #: MN300001
Pennsylvania Certification #: 68-00563
Puerto Rico Certification
Saipan (CNMI) #:MP0003
South Carolina #:74003001
Texas Certification #: T104704192
Tennessee Certification #: 02818
Utah Certification #: MN000642013-4
Virginia DGS Certification #: 251
Virginia/VELAP Certification #: Pace
Washington Certification #: C486
West Virginia Certification #: 382
West Virginia DHHR #:9952C
Wisconsin Certification #: 999407970

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1700 Elm Street - Suite 200
Minneapolis, MN 55414
(612)607-1700

SAMPLE SUMMARY

Project: 6G28 Richfield Sinclair
Pace Project No.: 10372832

Lab ID	Sample ID	Matrix	Date Collected	Date Received
10372832001	**1X**	Solid	12/08/16 10:00	12/09/16 17:08
10372832002	**2X**	Solid	12/08/16 12:36	12/09/16 17:08
10372832003	**3X**	Solid	12/08/16 14:30	12/09/16 17:08
10372832005	**1W**	Water	12/08/16 10:15	12/09/16 17:08
10372832006	**2W**	Water	12/08/16 12:45	12/09/16 17:08
10372832007	**3W**	Water	12/08/16 14:45	12/09/16 17:08
10372832008	**DUP**	Water	12/08/16 00:00	12/09/16 17:08
10372832010	**GS-1**	Solid	12/08/16 10:00	12/09/16 17:08
10372832011	**GS-2**	Solid	12/08/16 12:30	12/09/16 17:08
10372832012	**GS-3**	Solid	12/08/16 14:30	12/09/16 17:08

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1700 Elm Street - Suite 200
Minneapolis, MN 55414
(612)607-1700

SAMPLE ANALYTE COUNT

Project: 6G28 Richfield Sinclair
Pace Project No.: 10372832

Lab ID	Sample ID	Method	Analysts	Analytes Reported
10372832001	**1X**	WI MOD DRO	MT	2
		ASTM D2974	JDL	1
		EPA 8260B	MRB	8
10372832002	**2X**	WI MOD DRO	MT	2
		ASTM D2974	JDL	1
		EPA 8260B	MRB	8
10372832003	**3X**	WI MOD DRO	MT	2
		ASTM D2974	JDL	1
		EPA 8260B	MRB	8
10372832005	**1W**	WI MOD DRO	JRH	2
		EPA 8260B	EMC	70
10372832006	**2W**	WI MOD DRO	JRH	2
		EPA 8260B	EMC	70
10372832007	**3W**	WI MOD DRO	JRH	2
		EPA 8260B	EMC	70
10372832008	**DUP**	EPA 8260B	EMC	70

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1700 Elm Street - Suite 200
Minneapolis, MN 55414
(612)607-1700

ANALYTICAL RESULTS

Project: 6G28 Richfield Sinclair
Pace Project No.: 10372832

Sample: 1X **Lab ID: 10372832001** Collected: 12/08/16 10:00 Received: 12/09/16 17:08 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
WIDRO GCS	Analytical Method: WI MOD DRO Preparation Method: WI MOD DRO							
WDRO C10-C28	**13.9**	mg/kg	10.5	1	12/13/16 14:09	12/14/16 17:48		
Surrogates								
n-Triacontane (S)	85	%.	50-150	1	12/13/16 14:09	12/14/16 17:48	638-68-6	
Dry Weight	Analytical Method: ASTM D2974							
Percent Moisture	**5.9**	%	0.10	1		12/22/16 12:14		
8260B MSV UST	Analytical Method: EPA 8260B Preparation Method: EPA 5035/5030B							
Benzene	ND	ug/kg	22.5	1	12/19/16 13:28	12/20/16 17:20	71-43-2	
Ethylbenzene	ND	ug/kg	56.4	1	12/19/16 13:28	12/20/16 17:20	100-41-4	
Methyl-tert-butyl ether	ND	ug/kg	56.4	1	12/19/16 13:28	12/20/16 17:20	1634-04-4	
Toluene	ND	ug/kg	56.4	1	12/19/16 13:28	12/20/16 17:20	108-88-3	
Xylene (Total)	ND	ug/kg	169	1	12/19/16 13:28	12/20/16 17:20	1330-20-7	
Surrogates								
1,2-Dichloroethane-d4 (S)	106	%.	75-129	1	12/19/16 13:28	12/20/16 17:20	17060-07-0	
Toluene-d8 (S)	100	%.	75-125	1	12/19/16 13:28	12/20/16 17:20	2037-26-5	
4-Bromofluorobenzene (S)	100	%.	75-125	1	12/19/16 13:28	12/20/16 17:20	460-00-4	

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
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(612)607-1700

ANALYTICAL RESULTS

Project: 6G28 Richfield Sinclair
Pace Project No.: 10372832

Sample: 2X **Lab ID: 10372832002** Collected: 12/08/16 12:36 Received: 12/09/16 17:08 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
WIDRO GCS	Analytical Method: WI MOD DRO Preparation Method: WI MOD DRO							
WDRO C10-C28	ND	mg/kg	11.4	1	12/13/16 14:09	12/14/16 17:27		
Surrogates								
n-Triacontane (S)	87	%.	50-150	1	12/13/16 14:09	12/14/16 17:27	638-68-6	
Dry Weight	Analytical Method: ASTM D2974							
Percent Moisture	**11.8**	%	0.10	1		12/22/16 12:15		
8260B MSV UST	Analytical Method: EPA 8260B Preparation Method: EPA 5035/5030B							
Benzene	ND	ug/kg	33.8	1	12/19/16 13:28	12/20/16 17:38	71-43-2	
Ethylbenzene	ND	ug/kg	84.5	1	12/19/16 13:28	12/20/16 17:38	100-41-4	
Methyl-tert-butyl ether	ND	ug/kg	84.5	1	12/19/16 13:28	12/20/16 17:38	1634-04-4	
Toluene	ND	ug/kg	84.5	1	12/19/16 13:28	12/20/16 17:38	108-88-3	
Xylene (Total)	ND	ug/kg	253	1	12/19/16 13:28	12/20/16 17:38	1330-20-7	
Surrogates								
1,2-Dichloroethane-d4 (S)	109	%.	75-129	1	12/19/16 13:28	12/20/16 17:38	17060-07-0	
Toluene-d8 (S)	102	%.	75-125	1	12/19/16 13:28	12/20/16 17:38	2037-26-5	
4-Bromofluorobenzene (S)	102	%.	75-125	1	12/19/16 13:28	12/20/16 17:38	460-00-4	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: 6G28 Richfield Sinclair
Pace Project No.: 10372832

Sample: 3X **Lab ID: 10372832003** Collected: 12/08/16 14:30 Received: 12/09/16 17:08 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
WIDRO GCS	Analytical Method: WI MOD DRO Preparation Method: WI MOD DRO							
WDRO C10-C28	ND	mg/kg	10.8	1	12/13/16 14:09	12/14/16 18:15		
Surrogates								
n-Triacontane (S)	83	%.	50-150	1	12/13/16 14:09	12/14/16 18:15	638-68-6	
Dry Weight	Analytical Method: ASTM D2974							
Percent Moisture	**16.6**	%	0.10	1		12/22/16 12:15		
8260B MSV UST	Analytical Method: EPA 8260B Preparation Method: EPA 5035/5030B							
Benzene	ND	ug/kg	25.1	1	12/19/16 13:28	12/20/16 17:56	71-43-2	
Ethylbenzene	ND	ug/kg	62.7	1	12/19/16 13:28	12/20/16 17:56	100-41-4	
Methyl-tert-butyl ether	ND	ug/kg	62.7	1	12/19/16 13:28	12/20/16 17:56	1634-04-4	
Toluene	ND	ug/kg	62.7	1	12/19/16 13:28	12/20/16 17:56	108-88-3	
Xylene (Total)	ND	ug/kg	188	1	12/19/16 13:28	12/20/16 17:56	1330-20-7	
Surrogates								
1,2-Dichloroethane-d4 (S)	107	%.	75-129	1	12/19/16 13:28	12/20/16 17:56	17060-07-0	
Toluene-d8 (S)	101	%.	75-125	1	12/19/16 13:28	12/20/16 17:56	2037-26-5	
4-Bromofluorobenzene (S)	99	%.	75-125	1	12/19/16 13:28	12/20/16 17:56	460-00-4	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: 6G28 Richfield Sinclair
Pace Project No.: 10372832

Sample: 1W **Lab ID: 10372832005** Collected: 12/08/16 10:15 Received: 12/09/16 17:08 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
WIDRO LV GCS	Analytical Method: WI MOD DRO Preparation Method: WI MOD DRO							
WDRO C10-C28	ND	mg/L	0.12	1	12/13/16 16:35	12/16/16 11:37		
Surrogates								
n-Triacontane (S)	89	%.	50-150	1	12/13/16 16:35	12/16/16 11:37	638-68-6	P4
8260B VOC	Analytical Method: EPA 8260B							
Acetone	ND	ug/L	20.0	1		12/13/16 22:41	67-64-1	
Allyl chloride	ND	ug/L	4.0	1		12/13/16 22:41	107-05-1	
Benzene	ND	ug/L	1.0	1		12/13/16 22:41	71-43-2	
Bromobenzene	ND	ug/L	1.0	1		12/13/16 22:41	108-86-1	
Bromochloromethane	ND	ug/L	1.0	1		12/13/16 22:41	74-97-5	
Bromodichloromethane	ND	ug/L	1.0	1		12/13/16 22:41	75-27-4	
Bromoform	ND	ug/L	4.0	1		12/13/16 22:41	75-25-2	
Bromomethane	ND	ug/L	4.0	1		12/13/16 22:41	74-83-9	
2-Butanone (MEK)	ND	ug/L	5.0	1		12/13/16 22:41	78-93-3	
n-Butylbenzene	ND	ug/L	1.0	1		12/13/16 22:41	104-51-8	
sec-Butylbenzene	ND	ug/L	1.0	1		12/13/16 22:41	135-98-8	
tert-Butylbenzene	ND	ug/L	1.0	1		12/13/16 22:41	98-06-6	
Carbon tetrachloride	ND	ug/L	1.0	1		12/13/16 22:41	56-23-5	
Chlorobenzene	ND	ug/L	1.0	1		12/13/16 22:41	108-90-7	
Chloroethane	ND	ug/L	1.0	1		12/13/16 22:41	75-00-3	
Chloroform	ND	ug/L	1.0	1		12/13/16 22:41	67-66-3	
Chloromethane	ND	ug/L	4.0	1		12/13/16 22:41	74-87-3	
2-Chlorotoluene	ND	ug/L	1.0	1		12/13/16 22:41	95-49-8	
4-Chlorotoluene	ND	ug/L	1.0	1		12/13/16 22:41	106-43-4	
1,2-Dibromo-3-chloropropane	ND	ug/L	4.0	1		12/13/16 22:41	96-12-8	
Dibromochloromethane	ND	ug/L	1.0	1		12/13/16 22:41	124-48-1	
1,2-Dibromoethane (EDB)	ND	ug/L	1.0	1		12/13/16 22:41	106-93-4	
Dibromomethane	ND	ug/L	4.0	1		12/13/16 22:41	74-95-3	
1,2-Dichlorobenzene	ND	ug/L	1.0	1		12/13/16 22:41	95-50-1	
1,3-Dichlorobenzene	ND	ug/L	1.0	1		12/13/16 22:41	541-73-1	
1,4-Dichlorobenzene	ND	ug/L	1.0	1		12/13/16 22:41	106-46-7	
Dichlorodifluoromethane	ND	ug/L	1.0	1		12/13/16 22:41	75-71-8	
1,1-Dichloroethane	ND	ug/L	1.0	1		12/13/16 22:41	75-34-3	
1,2-Dichloroethane	ND	ug/L	1.0	1		12/13/16 22:41	107-06-2	
1,1-Dichloroethene	ND	ug/L	1.0	1		12/13/16 22:41	75-35-4	
cis-1,2-Dichloroethene	ND	ug/L	1.0	1		12/13/16 22:41	156-59-2	
trans-1,2-Dichloroethene	ND	ug/L	1.0	1		12/13/16 22:41	156-60-5	
Dichlorofluoromethane	ND	ug/L	1.0	1		12/13/16 22:41	75-43-4	
1,2-Dichloropropane	ND	ug/L	4.0	1		12/13/16 22:41	78-87-5	
1,3-Dichloropropane	ND	ug/L	1.0	1		12/13/16 22:41	142-28-9	
2,2-Dichloropropane	ND	ug/L	4.0	1		12/13/16 22:41	594-20-7	
1,1-Dichloropropene	ND	ug/L	1.0	1		12/13/16 22:41	563-58-6	
cis-1,3-Dichloropropene	ND	ug/L	4.0	1		12/13/16 22:41	10061-01-5	
trans-1,3-Dichloropropene	ND	ug/L	4.0	1		12/13/16 22:41	10061-02-6	
Diethyl ether (Ethyl ether)	ND	ug/L	4.0	1		12/13/16 22:41	60-29-7	
Ethylbenzene	ND	ug/L	1.0	1		12/13/16 22:41	100-41-4	
Hexachloro-1,3-butadiene	ND	ug/L	1.0	1		12/13/16 22:41	87-68-3	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: 6G28 Richfield Sinclair
Pace Project No.: 10372832

Sample: 1W **Lab ID: 10372832005** Collected: 12/08/16 10:15 Received: 12/09/16 17:08 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260B VOC	Analytical Method: EPA 8260B							
Isopropylbenzene (Cumene)	ND	ug/L	1.0	1		12/13/16 22:41	98-82-8	
p-Isopropyltoluene	ND	ug/L	1.0	1		12/13/16 22:41	99-87-6	
Methylene Chloride	ND	ug/L	4.0	1		12/13/16 22:41	75-09-2	
4-Methyl-2-pentanone (MIBK)	ND	ug/L	5.0	1		12/13/16 22:41	108-10-1	
Methyl-tert-butyl ether	ND	ug/L	1.0	1		12/13/16 22:41	1634-04-4	
Naphthalene	ND	ug/L	4.0	1		12/13/16 22:41	91-20-3	
n-Propylbenzene	ND	ug/L	1.0	1		12/13/16 22:41	103-65-1	
Styrene	ND	ug/L	1.0	1		12/13/16 22:41	100-42-5	
1,1,1,2-Tetrachloroethane	ND	ug/L	1.0	1		12/13/16 22:41	630-20-6	
1,1,2,2-Tetrachloroethane	ND	ug/L	1.0	1		12/13/16 22:41	79-34-5	
Tetrachloroethene	ND	ug/L	1.0	1		12/13/16 22:41	127-18-4	
Tetrahydrofuran	ND	ug/L	10.0	1		12/13/16 22:41	109-99-9	
Toluene	ND	ug/L	1.0	1		12/13/16 22:41	108-88-3	
1,2,3-Trichlorobenzene	ND	ug/L	1.0	1		12/13/16 22:41	87-61-6	
1,2,4-Trichlorobenzene	ND	ug/L	1.0	1		12/13/16 22:41	120-82-1	
1,1,1-Trichloroethane	ND	ug/L	1.0	1		12/13/16 22:41	71-55-6	
1,1,2-Trichloroethane	ND	ug/L	1.0	1		12/13/16 22:41	79-00-5	
Trichloroethene	ND	ug/L	0.40	1		12/13/16 22:41	79-01-6	
Trichlorofluoromethane	ND	ug/L	1.0	1		12/13/16 22:41	75-69-4	
1,2,3-Trichloropropane	ND	ug/L	4.0	1		12/13/16 22:41	96-18-4	
1,1,2-Trichlorotrifluoroethane	ND	ug/L	1.0	1		12/13/16 22:41	76-13-1	
1,2,4-Trimethylbenzene	ND	ug/L	1.0	1		12/13/16 22:41	95-63-6	
1,3,5-Trimethylbenzene	ND	ug/L	1.0	1		12/13/16 22:41	108-67-8	
Vinyl chloride	ND	ug/L	0.20	1		12/13/16 22:41	75-01-4	
Xylene (Total)	ND	ug/L	3.0	1		12/13/16 22:41	1330-20-7	
Surrogates								
1,2-Dichloroethane-d4 (S)	116	%.	75-125	1		12/13/16 22:41	17060-07-0	
Toluene-d8 (S)	97	%.	75-125	1		12/13/16 22:41	2037-26-5	
4-Bromofluorobenzene (S)	103	%.	75-125	1		12/13/16 22:41	460-00-4	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: 6G28 Richfield Sinclair
Pace Project No.: 10372832

Sample: 2W **Lab ID: 10372832006** Collected: 12/08/16 12:45 Received: 12/09/16 17:08 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
WIDRO LV GCS	Analytical Method: WI MOD DRO Preparation Method: WI MOD DRO							
WDRO C10-C28	ND	mg/L	0.12	1	12/13/16 16:35	12/16/16 11:45		
Surrogates								
n-Triacontane (S)	76	%.	50-150	1	12/13/16 16:35	12/16/16 11:45	638-68-6	P4
8260B VOC	Analytical Method: EPA 8260B							
Acetone	ND	ug/L	20.0	1		12/14/16 17:10	67-64-1	
Allyl chloride	ND	ug/L	4.0	1		12/14/16 17:10	107-05-1	
Benzene	ND	ug/L	1.0	1		12/14/16 17:10	71-43-2	
Bromobenzene	ND	ug/L	1.0	1		12/14/16 17:10	108-86-1	
Bromochloromethane	ND	ug/L	1.0	1		12/14/16 17:10	74-97-5	
Bromodichloromethane	ND	ug/L	1.0	1		12/14/16 17:10	75-27-4	
Bromoform	ND	ug/L	4.0	1		12/14/16 17:10	75-25-2	
Bromomethane	ND	ug/L	4.0	1		12/14/16 17:10	74-83-9	
2-Butanone (MEK)	ND	ug/L	5.0	1		12/14/16 17:10	78-93-3	
n-Butylbenzene	ND	ug/L	1.0	1		12/14/16 17:10	104-51-8	
sec-Butylbenzene	ND	ug/L	1.0	1		12/14/16 17:10	135-98-8	
tert-Butylbenzene	ND	ug/L	1.0	1		12/14/16 17:10	98-06-6	
Carbon tetrachloride	ND	ug/L	1.0	1		12/14/16 17:10	56-23-5	
Chlorobenzene	ND	ug/L	1.0	1		12/14/16 17:10	108-90-7	
Chloroethane	ND	ug/L	1.0	1		12/14/16 17:10	75-00-3	
Chloroform	ND	ug/L	1.0	1		12/14/16 17:10	67-66-3	
Chloromethane	ND	ug/L	4.0	1		12/14/16 17:10	74-87-3	
2-Chlorotoluene	ND	ug/L	1.0	1		12/14/16 17:10	95-49-8	
4-Chlorotoluene	ND	ug/L	1.0	1		12/14/16 17:10	106-43-4	
1,2-Dibromo-3-chloropropane	ND	ug/L	4.0	1		12/14/16 17:10	96-12-8	
Dibromochloromethane	ND	ug/L	1.0	1		12/14/16 17:10	124-48-1	
1,2-Dibromoethane (EDB)	ND	ug/L	1.0	1		12/14/16 17:10	106-93-4	
Dibromomethane	ND	ug/L	4.0	1		12/14/16 17:10	74-95-3	
1,2-Dichlorobenzene	ND	ug/L	1.0	1		12/14/16 17:10	95-50-1	
1,3-Dichlorobenzene	ND	ug/L	1.0	1		12/14/16 17:10	541-73-1	
1,4-Dichlorobenzene	ND	ug/L	1.0	1		12/14/16 17:10	106-46-7	
Dichlorodifluoromethane	ND	ug/L	1.0	1		12/14/16 17:10	75-71-8	
1,1-Dichloroethane	ND	ug/L	1.0	1		12/14/16 17:10	75-34-3	
1,2-Dichloroethane	ND	ug/L	1.0	1		12/14/16 17:10	107-06-2	
1,1-Dichloroethene	ND	ug/L	1.0	1		12/14/16 17:10	75-35-4	
cis-1,2-Dichloroethene	ND	ug/L	1.0	1		12/14/16 17:10	156-59-2	
trans-1,2-Dichloroethene	ND	ug/L	1.0	1		12/14/16 17:10	156-60-5	
Dichlorofluoromethane	ND	ug/L	1.0	1		12/14/16 17:10	75-43-4	
1,2-Dichloropropane	ND	ug/L	4.0	1		12/14/16 17:10	78-87-5	
1,3-Dichloropropane	ND	ug/L	1.0	1		12/14/16 17:10	142-28-9	
2,2-Dichloropropane	ND	ug/L	4.0	1		12/14/16 17:10	594-20-7	
1,1-Dichloropropene	ND	ug/L	1.0	1		12/14/16 17:10	563-58-6	
cis-1,3-Dichloropropene	ND	ug/L	4.0	1		12/14/16 17:10	10061-01-5	
trans-1,3-Dichloropropene	ND	ug/L	4.0	1		12/14/16 17:10	10061-02-6	
Diethyl ether (Ethyl ether)	ND	ug/L	4.0	1		12/14/16 17:10	60-29-7	
Ethylbenzene	ND	ug/L	1.0	1		12/14/16 17:10	100-41-4	
Hexachloro-1,3-butadiene	ND	ug/L	1.0	1		12/14/16 17:10	87-68-3	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: 6G28 Richfield Sinclair
Pace Project No.: 10372832

Sample: 2W **Lab ID: 10372832006** Collected: 12/08/16 12:45 Received: 12/09/16 17:08 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260B VOC	Analytical Method: EPA 8260B							
Isopropylbenzene (Cumene)	ND	ug/L	1.0	1		12/14/16 17:10	98-82-8	
p-Isopropyltoluene	ND	ug/L	1.0	1		12/14/16 17:10	99-87-6	
Methylene Chloride	ND	ug/L	4.0	1		12/14/16 17:10	75-09-2	
4-Methyl-2-pentanone (MIBK)	ND	ug/L	5.0	1		12/14/16 17:10	108-10-1	
Methyl-tert-butyl ether	ND	ug/L	1.0	1		12/14/16 17:10	1634-04-4	
Naphthalene	ND	ug/L	4.0	1		12/14/16 17:10	91-20-3	
n-Propylbenzene	ND	ug/L	1.0	1		12/14/16 17:10	103-65-1	
Styrene	ND	ug/L	1.0	1		12/14/16 17:10	100-42-5	
1,1,1,2-Tetrachloroethane	ND	ug/L	1.0	1		12/14/16 17:10	630-20-6	
1,1,2,2-Tetrachloroethane	ND	ug/L	1.0	1		12/14/16 17:10	79-34-5	
Tetrachloroethene	ND	ug/L	1.0	1		12/14/16 17:10	127-18-4	
Tetrahydrofuran	ND	ug/L	10.0	1		12/14/16 17:10	109-99-9	
Toluene	ND	ug/L	1.0	1		12/14/16 17:10	108-88-3	
1,2,3-Trichlorobenzene	ND	ug/L	1.0	1		12/14/16 17:10	87-61-6	
1,2,4-Trichlorobenzene	ND	ug/L	1.0	1		12/14/16 17:10	120-82-1	
1,1,1-Trichloroethane	ND	ug/L	1.0	1		12/14/16 17:10	71-55-6	
1,1,2-Trichloroethane	ND	ug/L	1.0	1		12/14/16 17:10	79-00-5	
Trichloroethene	ND	ug/L	0.40	1		12/14/16 17:10	79-01-6	
Trichlorofluoromethane	ND	ug/L	1.0	1		12/14/16 17:10	75-69-4	
1,2,3-Trichloropropane	ND	ug/L	4.0	1		12/14/16 17:10	96-18-4	
1,1,2-Trichlorotrifluoroethane	ND	ug/L	1.0	1		12/14/16 17:10	76-13-1	
1,2,4-Trimethylbenzene	ND	ug/L	1.0	1		12/14/16 17:10	95-63-6	
1,3,5-Trimethylbenzene	ND	ug/L	1.0	1		12/14/16 17:10	108-67-8	
Vinyl chloride	ND	ug/L	0.20	1		12/14/16 17:10	75-01-4	
Xylene (Total)	ND	ug/L	3.0	1		12/14/16 17:10	1330-20-7	
Surrogates								
1,2-Dichloroethane-d4 (S)	112	%.	75-125	1		12/14/16 17:10	17060-07-0	
Toluene-d8 (S)	99	%.	75-125	1		12/14/16 17:10	2037-26-5	
4-Bromofluorobenzene (S)	100	%.	75-125	1		12/14/16 17:10	460-00-4	

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1700 Elm Street - Suite 200
Minneapolis, MN 55414
(612)607-1700

ANALYTICAL RESULTS

Project: 6G28 Richfield Sinclair
Pace Project No.: 10372832

Sample: 3W **Lab ID: 10372832007** Collected: 12/08/16 14:45 Received: 12/09/16 17:08 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
WIDRO LV GCS	Analytical Method: WI MOD DRO Preparation Method: WI MOD DRO							
WDRO C10-C28	ND	mg/L	0.12	1	12/13/16 16:35	12/16/16 11:53		
Surrogates								
n-Triacontane (S)	98	%.	50-150	1	12/13/16 16:35	12/16/16 11:53	638-68-6	P4
8260B VOC	Analytical Method: EPA 8260B							
Acetone	ND	ug/L	20.0	1		12/14/16 17:25	67-64-1	
Allyl chloride	ND	ug/L	4.0	1		12/14/16 17:25	107-05-1	
Benzene	ND	ug/L	1.0	1		12/14/16 17:25	71-43-2	
Bromobenzene	ND	ug/L	1.0	1		12/14/16 17:25	108-86-1	
Bromochloromethane	ND	ug/L	1.0	1		12/14/16 17:25	74-97-5	
Bromodichloromethane	ND	ug/L	1.0	1		12/14/16 17:25	75-27-4	
Bromoform	ND	ug/L	4.0	1		12/14/16 17:25	75-25-2	
Bromomethane	ND	ug/L	4.0	1		12/14/16 17:25	74-83-9	
2-Butanone (MEK)	ND	ug/L	5.0	1		12/14/16 17:25	78-93-3	
n-Butylbenzene	ND	ug/L	1.0	1		12/14/16 17:25	104-51-8	
sec-Butylbenzene	ND	ug/L	1.0	1		12/14/16 17:25	135-98-8	
tert-Butylbenzene	ND	ug/L	1.0	1		12/14/16 17:25	98-06-6	
Carbon tetrachloride	ND	ug/L	1.0	1		12/14/16 17:25	56-23-5	
Chlorobenzene	ND	ug/L	1.0	1		12/14/16 17:25	108-90-7	
Chloroethane	ND	ug/L	1.0	1		12/14/16 17:25	75-00-3	
Chloroform	ND	ug/L	1.0	1		12/14/16 17:25	67-66-3	
Chloromethane	ND	ug/L	4.0	1		12/14/16 17:25	74-87-3	
2-Chlorotoluene	ND	ug/L	1.0	1		12/14/16 17:25	95-49-8	
4-Chlorotoluene	ND	ug/L	1.0	1		12/14/16 17:25	106-43-4	
1,2-Dibromo-3-chloropropane	ND	ug/L	4.0	1		12/14/16 17:25	96-12-8	
Dibromochloromethane	ND	ug/L	1.0	1		12/14/16 17:25	124-48-1	
1,2-Dibromoethane (EDB)	ND	ug/L	1.0	1		12/14/16 17:25	106-93-4	
Dibromomethane	ND	ug/L	4.0	1		12/14/16 17:25	74-95-3	
1,2-Dichlorobenzene	ND	ug/L	1.0	1		12/14/16 17:25	95-50-1	
1,3-Dichlorobenzene	ND	ug/L	1.0	1		12/14/16 17:25	541-73-1	
1,4-Dichlorobenzene	ND	ug/L	1.0	1		12/14/16 17:25	106-46-7	
Dichlorodifluoromethane	ND	ug/L	1.0	1		12/14/16 17:25	75-71-8	
1,1-Dichloroethane	ND	ug/L	1.0	1		12/14/16 17:25	75-34-3	
1,2-Dichloroethane	ND	ug/L	1.0	1		12/14/16 17:25	107-06-2	
1,1-Dichloroethene	ND	ug/L	1.0	1		12/14/16 17:25	75-35-4	
cis-1,2-Dichloroethene	ND	ug/L	1.0	1		12/14/16 17:25	156-59-2	
trans-1,2-Dichloroethene	ND	ug/L	1.0	1		12/14/16 17:25	156-60-5	
Dichlorofluoromethane	ND	ug/L	1.0	1		12/14/16 17:25	75-43-4	
1,2-Dichloropropane	ND	ug/L	4.0	1		12/14/16 17:25	78-87-5	
1,3-Dichloropropane	ND	ug/L	1.0	1		12/14/16 17:25	142-28-9	
2,2-Dichloropropane	ND	ug/L	4.0	1		12/14/16 17:25	594-20-7	
1,1-Dichloropropene	ND	ug/L	1.0	1		12/14/16 17:25	563-58-6	
cis-1,3-Dichloropropene	ND	ug/L	4.0	1		12/14/16 17:25	10061-01-5	
trans-1,3-Dichloropropene	ND	ug/L	4.0	1		12/14/16 17:25	10061-02-6	
Diethyl ether (Ethyl ether)	ND	ug/L	4.0	1		12/14/16 17:25	60-29-7	
Ethylbenzene	ND	ug/L	1.0	1		12/14/16 17:25	100-41-4	
Hexachloro-1,3-butadiene	ND	ug/L	1.0	1		12/14/16 17:25	87-68-3	

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1700 Elm Street - Suite 200
Minneapolis, MN 55414
(612)607-1700

ANALYTICAL RESULTS

Project: 6G28 Richfield Sinclair
Pace Project No.: 10372832

Sample: 3W **Lab ID: 10372832007** Collected: 12/08/16 14:45 Received: 12/09/16 17:08 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260B VOC	Analytical Method: EPA 8260B							
Isopropylbenzene (Cumene)	ND	ug/L	1.0	1		12/14/16 17:25	98-82-8	
p-Isopropyltoluene	ND	ug/L	1.0	1		12/14/16 17:25	99-87-6	
Methylene Chloride	ND	ug/L	4.0	1		12/14/16 17:25	75-09-2	
4-Methyl-2-pentanone (MIBK)	ND	ug/L	5.0	1		12/14/16 17:25	108-10-1	
Methyl-tert-butyl ether	ND	ug/L	1.0	1		12/14/16 17:25	1634-04-4	
Naphthalene	ND	ug/L	4.0	1		12/14/16 17:25	91-20-3	
n-Propylbenzene	ND	ug/L	1.0	1		12/14/16 17:25	103-65-1	
Styrene	ND	ug/L	1.0	1		12/14/16 17:25	100-42-5	
1,1,1,2-Tetrachloroethane	ND	ug/L	1.0	1		12/14/16 17:25	630-20-6	
1,1,2,2-Tetrachloroethane	ND	ug/L	1.0	1		12/14/16 17:25	79-34-5	
Tetrachloroethene	ND	ug/L	1.0	1		12/14/16 17:25	127-18-4	
Tetrahydrofuran	ND	ug/L	10.0	1		12/14/16 17:25	109-99-9	
Toluene	ND	ug/L	1.0	1		12/14/16 17:25	108-88-3	
1,2,3-Trichlorobenzene	ND	ug/L	1.0	1		12/14/16 17:25	87-61-6	
1,2,4-Trichlorobenzene	ND	ug/L	1.0	1		12/14/16 17:25	120-82-1	
1,1,1-Trichloroethane	ND	ug/L	1.0	1		12/14/16 17:25	71-55-6	
1,1,2-Trichloroethane	ND	ug/L	1.0	1		12/14/16 17:25	79-00-5	
Trichloroethene	ND	ug/L	0.40	1		12/14/16 17:25	79-01-6	
Trichlorofluoromethane	ND	ug/L	1.0	1		12/14/16 17:25	75-69-4	
1,2,3-Trichloropropane	ND	ug/L	4.0	1		12/14/16 17:25	96-18-4	
1,1,2-Trichlorotrifluoroethane	ND	ug/L	1.0	1		12/14/16 17:25	76-13-1	
1,2,4-Trimethylbenzene	ND	ug/L	1.0	1		12/14/16 17:25	95-63-6	
1,3,5-Trimethylbenzene	ND	ug/L	1.0	1		12/14/16 17:25	108-67-8	
Vinyl chloride	ND	ug/L	0.20	1		12/14/16 17:25	75-01-4	
Xylene (Total)	ND	ug/L	3.0	1		12/14/16 17:25	1330-20-7	
Surrogates								
1,2-Dichloroethane-d4 (S)	115	%.	75-125	1		12/14/16 17:25	17060-07-0	
Toluene-d8 (S)	102	%.	75-125	1		12/14/16 17:25	2037-26-5	
4-Bromofluorobenzene (S)	100	%.	75-125	1		12/14/16 17:25	460-00-4	

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1700 Elm Street - Suite 200
Minneapolis, MN 55414
(612)607-1700

ANALYTICAL RESULTS

Project: 6G28 Richfield Sinclair
Pace Project No.: 10372832

Sample: DUP **Lab ID: 10372832008** Collected: 12/08/16 00:00 Received: 12/09/16 17:08 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260B VOC	Analytical Method: EPA 8260B							
Acetone	ND	ug/L	20.0	1		12/14/16 17:41	67-64-1	
Allyl chloride	ND	ug/L	4.0	1		12/14/16 17:41	107-05-1	
Benzene	ND	ug/L	1.0	1		12/14/16 17:41	71-43-2	
Bromobenzene	ND	ug/L	1.0	1		12/14/16 17:41	108-86-1	
Bromochloromethane	ND	ug/L	1.0	1		12/14/16 17:41	74-97-5	
Bromodichloromethane	ND	ug/L	1.0	1		12/14/16 17:41	75-27-4	
Bromoform	ND	ug/L	4.0	1		12/14/16 17:41	75-25-2	
Bromomethane	ND	ug/L	4.0	1		12/14/16 17:41	74-83-9	
2-Butanone (MEK)	ND	ug/L	5.0	1		12/14/16 17:41	78-93-3	
n-Butylbenzene	ND	ug/L	1.0	1		12/14/16 17:41	104-51-8	
sec-Butylbenzene	ND	ug/L	1.0	1		12/14/16 17:41	135-98-8	
tert-Butylbenzene	ND	ug/L	1.0	1		12/14/16 17:41	98-06-6	
Carbon tetrachloride	ND	ug/L	1.0	1		12/14/16 17:41	56-23-5	
Chlorobenzene	ND	ug/L	1.0	1		12/14/16 17:41	108-90-7	
Chloroethane	ND	ug/L	1.0	1		12/14/16 17:41	75-00-3	
Chloroform	ND	ug/L	1.0	1		12/14/16 17:41	67-66-3	
Chloromethane	ND	ug/L	4.0	1		12/14/16 17:41	74-87-3	
2-Chlorotoluene	ND	ug/L	1.0	1		12/14/16 17:41	95-49-8	
4-Chlorotoluene	ND	ug/L	1.0	1		12/14/16 17:41	106-43-4	
1,2-Dibromo-3-chloropropane	ND	ug/L	4.0	1		12/14/16 17:41	96-12-8	
Dibromochloromethane	ND	ug/L	1.0	1		12/14/16 17:41	124-48-1	
1,2-Dibromoethane (EDB)	ND	ug/L	1.0	1		12/14/16 17:41	106-93-4	
Dibromomethane	ND	ug/L	4.0	1		12/14/16 17:41	74-95-3	
1,2-Dichlorobenzene	ND	ug/L	1.0	1		12/14/16 17:41	95-50-1	
1,3-Dichlorobenzene	ND	ug/L	1.0	1		12/14/16 17:41	541-73-1	
1,4-Dichlorobenzene	ND	ug/L	1.0	1		12/14/16 17:41	106-46-7	
Dichlorodifluoromethane	ND	ug/L	1.0	1		12/14/16 17:41	75-71-8	
1,1-Dichloroethane	ND	ug/L	1.0	1		12/14/16 17:41	75-34-3	
1,2-Dichloroethane	ND	ug/L	1.0	1		12/14/16 17:41	107-06-2	
1,1-Dichloroethene	ND	ug/L	1.0	1		12/14/16 17:41	75-35-4	
cis-1,2-Dichloroethene	ND	ug/L	1.0	1		12/14/16 17:41	156-59-2	
trans-1,2-Dichloroethene	ND	ug/L	1.0	1		12/14/16 17:41	156-60-5	
Dichlorofluoromethane	ND	ug/L	1.0	1		12/14/16 17:41	75-43-4	
1,2-Dichloropropane	ND	ug/L	4.0	1		12/14/16 17:41	78-87-5	
1,3-Dichloropropane	ND	ug/L	1.0	1		12/14/16 17:41	142-28-9	
2,2-Dichloropropane	ND	ug/L	4.0	1		12/14/16 17:41	594-20-7	
1,1-Dichloropropene	ND	ug/L	1.0	1		12/14/16 17:41	563-58-6	
cis-1,3-Dichloropropene	ND	ug/L	4.0	1		12/14/16 17:41	10061-01-5	
trans-1,3-Dichloropropene	ND	ug/L	4.0	1		12/14/16 17:41	10061-02-6	
Diethyl ether (Ethyl ether)	ND	ug/L	4.0	1		12/14/16 17:41	60-29-7	
Ethylbenzene	ND	ug/L	1.0	1		12/14/16 17:41	100-41-4	
Hexachloro-1,3-butadiene	ND	ug/L	1.0	1		12/14/16 17:41	87-68-3	
Isopropylbenzene (Cumene)	ND	ug/L	1.0	1		12/14/16 17:41	98-82-8	
p-Isopropyltoluene	ND	ug/L	1.0	1		12/14/16 17:41	99-87-6	
Methylene Chloride	ND	ug/L	4.0	1		12/14/16 17:41	75-09-2	
4-Methyl-2-pentanone (MIBK)	ND	ug/L	5.0	1		12/14/16 17:41	108-10-1	
Methyl-tert-butyl ether	ND	ug/L	1.0	1		12/14/16 17:41	1634-04-4	

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1700 Elm Street - Suite 200
Minneapolis, MN 55414
(612)607-1700

ANALYTICAL RESULTS

Project: 6G28 Richfield Sinclair
Pace Project No.: 10372832

Sample: DUP **Lab ID: 10372832008** Collected: 12/08/16 00:00 Received: 12/09/16 17:08 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260B VOC	Analytical Method: EPA 8260B							
Naphthalene	ND	ug/L	4.0	1		12/14/16 17:41	91-20-3	
n-Propylbenzene	ND	ug/L	1.0	1		12/14/16 17:41	103-65-1	
Styrene	ND	ug/L	1.0	1		12/14/16 17:41	100-42-5	
1,1,1,2-Tetrachloroethane	ND	ug/L	1.0	1		12/14/16 17:41	630-20-6	
1,1,2,2-Tetrachloroethane	ND	ug/L	1.0	1		12/14/16 17:41	79-34-5	
Tetrachloroethene	ND	ug/L	1.0	1		12/14/16 17:41	127-18-4	
Tetrahydrofuran	ND	ug/L	10.0	1		12/14/16 17:41	109-99-9	
Toluene	ND	ug/L	1.0	1		12/14/16 17:41	108-88-3	
1,2,3-Trichlorobenzene	ND	ug/L	1.0	1		12/14/16 17:41	87-61-6	
1,2,4-Trichlorobenzene	ND	ug/L	1.0	1		12/14/16 17:41	120-82-1	
1,1,1-Trichloroethane	ND	ug/L	1.0	1		12/14/16 17:41	71-55-6	
1,1,2-Trichloroethane	ND	ug/L	1.0	1		12/14/16 17:41	79-00-5	
Trichloroethene	ND	ug/L	0.40	1		12/14/16 17:41	79-01-6	
Trichlorofluoromethane	ND	ug/L	1.0	1		12/14/16 17:41	75-69-4	
1,2,3-Trichloropropane	ND	ug/L	4.0	1		12/14/16 17:41	96-18-4	
1,1,2-Trichlorotrifluoroethane	ND	ug/L	1.0	1		12/14/16 17:41	76-13-1	
1,2,4-Trimethylbenzene	ND	ug/L	1.0	1		12/14/16 17:41	95-63-6	
1,3,5-Trimethylbenzene	ND	ug/L	1.0	1		12/14/16 17:41	108-67-8	
Vinyl chloride	ND	ug/L	0.20	1		12/14/16 17:41	75-01-4	
Xylene (Total)	ND	ug/L	3.0	1		12/14/16 17:41	1330-20-7	
Surrogates								
1,2-Dichloroethane-d4 (S)	115	%.	75-125	1		12/14/16 17:41	17060-07-0	
Toluene-d8 (S)	102	%.	75-125	1		12/14/16 17:41	2037-26-5	
4-Bromofluorobenzene (S)	100	%.	75-125	1		12/14/16 17:41	460-00-4	

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1700 Elm Street - Suite 200
Minneapolis, MN 55414
(612)607-1700

QUALITY CONTROL DATA

Project: 6G28 Richfield Sinclair
Pace Project No.: 10372832

QC Batch: 452996 Analysis Method: ASTM D2974
QC Batch Method: ASTM D2974 Analysis Description: Dry Weight/Percent Moisture
Associated Lab Samples: 10372832001, 10372832002, 10372832003

SAMPLE DUPLICATE: 2479942

Parameter	Units	10372659002 Result	Dup Result	RPD	Max RPD	Qualifiers
Percent Moisture	%	12.2	12.0	2	30	

SAMPLE DUPLICATE: 2479943

Parameter	Units	10373068005 Result	Dup Result	RPD	Max RPD	Qualifiers
Percent Moisture	%	17.5	16.9	4	30	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1700 Elm Street - Suite 200
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QUALITY CONTROL DATA

Project: 6G28 Richfield Sinclair
Pace Project No.: 10372832

QC Batch: 452349 Analysis Method: EPA 8260B
QC Batch Method: EPA 5035/5030B Analysis Description: 8260B MSV UST
Associated Lab Samples: 10372832001, 10372832002, 10372832003

METHOD BLANK: 2476445 Matrix: Solid
Associated Lab Samples: 10372832001, 10372832002, 10372832003

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Benzene	ug/kg	ND	20.0	12/20/16 15:34	
Ethylbenzene	ug/kg	ND	50.0	12/20/16 15:34	
Methyl-tert-butyl ether	ug/kg	ND	50.0	12/20/16 15:34	
Toluene	ug/kg	ND	50.0	12/20/16 15:34	
Xylene (Total)	ug/kg	ND	150	12/20/16 15:34	
1,2-Dichloroethane-d4 (S)	%.	106	75-129	12/20/16 15:34	
4-Bromofluorobenzene (S)	%.	98	75-125	12/20/16 15:34	
Toluene-d8 (S)	%.	100	75-125	12/20/16 15:34	

LABORATORY CONTROL SAMPLE & LCSD: 2476446 2476707

Parameter	Units	Spike Conc.	LCS Result	LCSD Result	LCS % Rec	LCSD % Rec	% Rec Limits	RPD	Max RPD	Qualifiers
Benzene	ug/kg	1000	927	989	93	99	64-125	7	20	
Ethylbenzene	ug/kg	1000	956	1020	96	102	70-129	6	20	
Methyl-tert-butyl ether	ug/kg	1000	943	983	94	98	61-125	4	20	
Toluene	ug/kg	1000	910	982	91	98	69-125	8	20	
Xylene (Total)	ug/kg	3000	2740	2960	91	99	73-128	7	20	
1,2-Dichloroethane-d4 (S)	%.				105	107	75-129			
4-Bromofluorobenzene (S)	%.				97	98	75-125			
Toluene-d8 (S)	%.				101	103	75-125			

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2476447 2476448

Parameter	Units	10373644012 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Benzene	ug/kg	ND	1040	980	1190	1030	114	105	41-134	15	30	
Ethylbenzene	ug/kg	ND	1040	980	1220	1070	118	109	56-141	14	30	
Methyl-tert-butyl ether	ug/kg	73.6	1040	980	1290	1180	117	112	53-133	9	30	
Toluene	ug/kg	ND	1040	980	1180	1010	114	103	55-134	16	30	
Xylene (Total)	ug/kg	ND	3120	2940	3530	3090	113	105	56-137	13	30	
1,2-Dichloroethane-d4 (S)	%.						107	108	75-129			
4-Bromofluorobenzene (S)	%.						97	99	75-125			
Toluene-d8 (S)	%.						104	102	75-125			

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
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(612)607-1700

QUALITY CONTROL DATA

Project: 6G28 Richfield Sinclair
Pace Project No.: 10372832

QC Batch: 451599
QC Batch Method: EPA 8260B
Analysis Method: EPA 8260B
Analysis Description: 8260B MSV 465 W
Associated Lab Samples: 10372832005

METHOD BLANK: 2472670
Matrix: Water
Associated Lab Samples: 10372832005

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
1,1,1,2-Tetrachloroethane	ug/L	ND	1.0	12/13/16 16:32	
1,1,1-Trichloroethane	ug/L	ND	1.0	12/13/16 16:32	
1,1,2,2-Tetrachloroethane	ug/L	ND	1.0	12/13/16 16:32	
1,1,2-Trichloroethane	ug/L	ND	1.0	12/13/16 16:32	
1,1,2-Trichlorotrifluoroethane	ug/L	ND	1.0	12/13/16 16:32	
1,1-Dichloroethane	ug/L	ND	1.0	12/13/16 16:32	
1,1-Dichloroethene	ug/L	ND	1.0	12/13/16 16:32	
1,1-Dichloropropene	ug/L	ND	1.0	12/13/16 16:32	
1,2,3-Trichlorobenzene	ug/L	ND	1.0	12/13/16 16:32	
1,2,3-Trichloropropane	ug/L	ND	4.0	12/13/16 16:32	
1,2,4-Trichlorobenzene	ug/L	ND	1.0	12/13/16 16:32	
1,2,4-Trimethylbenzene	ug/L	ND	1.0	12/13/16 16:32	
1,2-Dibromo-3-chloropropane	ug/L	ND	4.0	12/13/16 16:32	
1,2-Dibromoethane (EDB)	ug/L	ND	1.0	12/13/16 16:32	
1,2-Dichlorobenzene	ug/L	ND	1.0	12/13/16 16:32	
1,2-Dichloroethane	ug/L	ND	1.0	12/13/16 16:32	
1,2-Dichloropropane	ug/L	ND	4.0	12/13/16 16:32	
1,3,5-Trimethylbenzene	ug/L	ND	1.0	12/13/16 16:32	
1,3-Dichlorobenzene	ug/L	ND	1.0	12/13/16 16:32	
1,3-Dichloropropane	ug/L	ND	1.0	12/13/16 16:32	
1,4-Dichlorobenzene	ug/L	ND	1.0	12/13/16 16:32	
2,2-Dichloropropane	ug/L	ND	4.0	12/13/16 16:32	
2-Butanone (MEK)	ug/L	ND	5.0	12/13/16 16:32	
2-Chlorotoluene	ug/L	ND	1.0	12/13/16 16:32	
4-Chlorotoluene	ug/L	ND	1.0	12/13/16 16:32	
4-Methyl-2-pentanone (MIBK)	ug/L	ND	5.0	12/13/16 16:32	
Acetone	ug/L	ND	20.0	12/13/16 16:32	
Allyl chloride	ug/L	ND	4.0	12/13/16 16:32	
Benzene	ug/L	ND	1.0	12/13/16 16:32	
Bromobenzene	ug/L	ND	1.0	12/13/16 16:32	
Bromochloromethane	ug/L	ND	1.0	12/13/16 16:32	
Bromodichloromethane	ug/L	ND	1.0	12/13/16 16:32	
Bromoform	ug/L	ND	4.0	12/13/16 16:32	
Bromomethane	ug/L	ND	4.0	12/13/16 16:32	
Carbon tetrachloride	ug/L	ND	1.0	12/13/16 16:32	
Chlorobenzene	ug/L	ND	1.0	12/13/16 16:32	
Chloroethane	ug/L	ND	1.0	12/13/16 16:32	
Chloroform	ug/L	ND	1.0	12/13/16 16:32	
Chloromethane	ug/L	ND	4.0	12/13/16 16:32	
cis-1,2-Dichloroethene	ug/L	ND	1.0	12/13/16 16:32	
cis-1,3-Dichloropropene	ug/L	ND	4.0	12/13/16 16:32	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1700 Elm Street - Suite 200
Minneapolis, MN 55414
(612)607-1700

QUALITY CONTROL DATA

Project: 6G28 Richfield Sinclair
Pace Project No.: 10372832

METHOD BLANK: 2472670 Matrix: Water
Associated Lab Samples: 10372832005

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Dibromochloromethane	ug/L	ND	1.0	12/13/16 16:32	
Dibromomethane	ug/L	ND	4.0	12/13/16 16:32	
Dichlorodifluoromethane	ug/L	ND	1.0	12/13/16 16:32	
Dichlorofluoromethane	ug/L	ND	1.0	12/13/16 16:32	
Diethyl ether (Ethyl ether)	ug/L	ND	4.0	12/13/16 16:32	
Ethylbenzene	ug/L	ND	1.0	12/13/16 16:32	
Hexachloro-1,3-butadiene	ug/L	ND	1.0	12/13/16 16:32	
Isopropylbenzene (Cumene)	ug/L	ND	1.0	12/13/16 16:32	
Methyl-tert-butyl ether	ug/L	ND	1.0	12/13/16 16:32	
Methylene Chloride	ug/L	ND	4.0	12/13/16 16:32	
n-Butylbenzene	ug/L	ND	1.0	12/13/16 16:32	
n-Propylbenzene	ug/L	ND	1.0	12/13/16 16:32	
Naphthalene	ug/L	ND	4.0	12/13/16 16:32	
p-Isopropyltoluene	ug/L	ND	1.0	12/13/16 16:32	
sec-Butylbenzene	ug/L	ND	1.0	12/13/16 16:32	
Styrene	ug/L	ND	1.0	12/13/16 16:32	
tert-Butylbenzene	ug/L	ND	1.0	12/13/16 16:32	
Tetrachloroethene	ug/L	ND	1.0	12/13/16 16:32	
Tetrahydrofuran	ug/L	ND	10.0	12/13/16 16:32	
Toluene	ug/L	ND	1.0	12/13/16 16:32	
trans-1,2-Dichloroethene	ug/L	ND	1.0	12/13/16 16:32	
trans-1,3-Dichloropropene	ug/L	ND	4.0	12/13/16 16:32	
Trichloroethene	ug/L	ND	0.40	12/13/16 16:32	
Trichlorofluoromethane	ug/L	ND	1.0	12/13/16 16:32	
Vinyl chloride	ug/L	ND	0.20	12/13/16 16:32	
Xylene (Total)	ug/L	ND	3.0	12/13/16 16:32	
1,2-Dichloroethane-d4 (S)	%.	109	75-125	12/13/16 16:32	
4-Bromofluorobenzene (S)	%.	100	75-125	12/13/16 16:32	
Toluene-d8 (S)	%.	97	75-125	12/13/16 16:32	

LABORATORY CONTROL SAMPLE: 2472671

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
1,1,1,2-Tetrachloroethane	ug/L	20	19.5	97	75-125	
1,1,1-Trichloroethane	ug/L	20	20.3	102	73-125	
1,1,2,2-Tetrachloroethane	ug/L	20	18.8	94	75-128	
1,1,2-Trichloroethane	ug/L	20	20.2	101	75-129	
1,1,2-Trichlorotrifluoroethane	ug/L	20	17.9	89	69-125	
1,1-Dichloroethane	ug/L	20	19.3	97	75-131	
1,1-Dichloroethene	ug/L	20	18.5	93	72-125	
1,1-Dichloropropene	ug/L	20	20.0	100	74-125	
1,2,3-Trichlorobenzene	ug/L	20	14.9	75	68-127	
1,2,3-Trichloropropane	ug/L	20	19.2	96	75-125	
1,2,4-Trichlorobenzene	ug/L	20	16.3	82	70-125	

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REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1700 Elm Street - Suite 200
Minneapolis, MN 55414
(612)607-1700

QUALITY CONTROL DATA

Project: 6G28 Richfield Sinclair
Pace Project No.: 10372832

LABORATORY CONTROL SAMPLE: 2472671

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
1,2,4-Trimethylbenzene	ug/L	20	18.9	94	75-130	
1,2-Dibromo-3-chloropropane	ug/L	50	40.8	82	74-125	
1,2-Dibromoethane (EDB)	ug/L	20	20.3	101	75-125	
1,2-Dichlorobenzene	ug/L	20	17.8	89	75-125	
1,2-Dichloroethane	ug/L	20	20.8	104	72-129	
1,2-Dichloropropane	ug/L	20	18.6	93	71-129	
1,3,5-Trimethylbenzene	ug/L	20	18.5	92	75-127	
1,3-Dichlorobenzene	ug/L	20	17.8	89	75-125	
1,3-Dichloropropane	ug/L	20	20.3	101	75-125	
1,4-Dichlorobenzene	ug/L	20	17.8	89	75-125	
2,2-Dichloropropane	ug/L	20	20.5	102	71-125	
2-Butanone (MEK)	ug/L	100	98.9	99	58-150	
2-Chlorotoluene	ug/L	20	18.5	92	75-125	
4-Chlorotoluene	ug/L	20	18.7	93	75-130	
4-Methyl-2-pentanone (MIBK)	ug/L	100	102	102	72-140	
Acetone	ug/L	100	99.9	100	69-137	
Allyl chloride	ug/L	20	18.4	92	68-132	
Benzene	ug/L	20	19.8	99	75-125	
Bromobenzene	ug/L	20	17.7	89	75-125	
Bromochloromethane	ug/L	20	19.5	97	75-125	
Bromodichloromethane	ug/L	20	20.8	104	69-128	
Bromoform	ug/L	20	18.0	90	75-125	
Bromomethane	ug/L	20	13.3	67	30-150	
Carbon tetrachloride	ug/L	20	19.9	100	74-125	
Chlorobenzene	ug/L	20	18.7	93	75-125	
Chloroethane	ug/L	20	19.5	97	60-150	
Chloroform	ug/L	20	19.8	99	75-126	
Chloromethane	ug/L	20	16.5	83	46-150	
cis-1,2-Dichloroethene	ug/L	20	17.9	90	75-126	
cis-1,3-Dichloropropene	ug/L	20	19.5	97	75-125	
Dibromochloromethane	ug/L	20	20.2	101	75-125	
Dibromomethane	ug/L	20	19.0	95	72-127	
Dichlorodifluoromethane	ug/L	20	24.0	120	58-135	
Dichlorofluoromethane	ug/L	20	19.2	96	68-149	
Diethyl ether (Ethyl ether)	ug/L	20	18.9	95	66-144	
Ethylbenzene	ug/L	20	19.3	97	75-125	
Hexachloro-1,3-butadiene	ug/L	20	16.0	80	73-125	
Isopropylbenzene (Cumene)	ug/L	20	19.2	96	69-140	
Methyl-tert-butyl ether	ug/L	20	19.8	99	75-126	
Methylene Chloride	ug/L	20	19.8	99	71-130	
n-Butylbenzene	ug/L	20	19.5	97	71-129	
n-Propylbenzene	ug/L	20	18.6	93	71-133	
Naphthalene	ug/L	20	14.7	73	59-137	
p-Isopropyltoluene	ug/L	20	18.7	93	74-127	
sec-Butylbenzene	ug/L	20	18.7	94	66-140	
Styrene	ug/L	20	19.1	95	75-125	
tert-Butylbenzene	ug/L	20	18.0	90	73-129	

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REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1700 Elm Street - Suite 200
Minneapolis, MN 55414
(612)607-1700

QUALITY CONTROL DATA

Project: 6G28 Richfield Sinclair
Pace Project No.: 10372832

LABORATORY CONTROL SAMPLE: 2472671

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Tetrachloroethene	ug/L	20	18.9	95	75-125	
Tetrahydrofuran	ug/L	200	198	99	71-129	
Toluene	ug/L	20	18.8	94	75-125	
trans-1,2-Dichloroethene	ug/L	20	19.1	96	75-125	
trans-1,3-Dichloropropene	ug/L	20	22.0	110	75-125	
Trichloroethene	ug/L	20	18.1	91	75-125	
Trichlorofluoromethane	ug/L	20	20.1	101	74-128	
Vinyl chloride	ug/L	20	22.8	114	71-131	
Xylene (Total)	ug/L	60	58.1	97	75-125	
1,2-Dichloroethane-d4 (S)	%.			115	75-125	
4-Bromofluorobenzene (S)	%.			99	75-125	
Toluene-d8 (S)	%.			102	75-125	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2472689 2472690

Parameter	Units	10372992047 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
1,1,1,2-Tetrachloroethane	ug/L	ND	20	20	20.5	22.4	103	112	75-125	9	30	
1,1,1-Trichloroethane	ug/L	ND	20	20	24.1	26.6	121	133	71-144	10	30	
1,1,2,2-Tetrachloroethane	ug/L	ND	20	20	19.0	20.4	95	102	75-131	7	30	
1,1,2-Trichloroethane	ug/L	ND	20	20	21.5	22.9	107	114	75-125	6	30	
1,1,2-Trichlorotrifluoroethane	ug/L	ND	20	20	23.4	25.0	117	125	75-150	7	30	
1,1-Dichloroethane	ug/L	ND	20	20	22.9	24.5	114	122	64-150	7	30	
1,1-Dichloroethene	ug/L	ND	20	20	21.7	24.0	108	120	68-150	10	30	
1,1-Dichloropropene	ug/L	ND	20	20	23.3	25.1	116	126	68-145	8	30	
1,2,3-Trichlorobenzene	ug/L	ND	20	20	13.2	15.9	66	80	57-142	19	30	
1,2,3-Trichloropropane	ug/L	ND	20	20	19.8	21.8	99	109	75-125	10	30	
1,2,4-Trichlorobenzene	ug/L	ND	20	20	15.0	17.9	75	90	60-135	17	30	
1,2,4-Trimethylbenzene	ug/L	ND	20	20	19.7	21.9	99	110	67-148	11	30	
1,2-Dibromo-3-chloropropane	ug/L	ND	50	50	38.5	43.0	77	86	32-137	11	30	
1,2-Dibromoethane (EDB)	ug/L	ND	20	20	21.0	23.8	105	119	75-125	13	30	
1,2-Dichlorobenzene	ug/L	ND	20	20	18.0	20.1	90	101	75-125	11	30	
1,2-Dichloroethane	ug/L	ND	20	20	22.3	24.1	112	121	62-138	8	30	
1,2-Dichloropropane	ug/L	ND	20	20	19.7	21.6	98	108	62-144	9	30	
1,3,5-Trimethylbenzene	ug/L	ND	20	20	19.6	22.2	98	111	67-148	12	30	
1,3-Dichlorobenzene	ug/L	ND	20	20	18.6	20.3	93	101	74-131	9	30	
1,3-Dichloropropane	ug/L	ND	20	20	21.0	23.0	105	115	75-127	9	30	
1,4-Dichlorobenzene	ug/L	ND	20	20	18.5	20.8	93	104	74-126	12	30	
2,2-Dichloropropane	ug/L	ND	20	20	23.6	24.9	118	125	56-146	6	30	
2-Butanone (MEK)	ug/L	ND	100	100	98.2	108	98	108	47-150	10	30	
2-Chlorotoluene	ug/L	ND	20	20	20.2	22.4	101	112	74-137	10	30	
4-Chlorotoluene	ug/L	ND	20	20	19.3	21.1	97	105	72-138	9	30	
4-Methyl-2-pentanone (MIBK)	ug/L	ND	100	100	102	114	102	114	60-147	11	30	
Acetone	ug/L	ND	100	100	107	117	106	116	61-150	9	30	

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REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1700 Elm Street - Suite 200
Minneapolis, MN 55414
(612)607-1700

QUALITY CONTROL DATA

Project: 6G28 Richfield Sinclair
Pace Project No.: 10372832

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2472689 2472690

Parameter	Units	10372992047 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Allyl chloride	ug/L	ND	20	20	21.6	23.2	108	116	53-150	7	30	
Benzene	ug/L	ND	20	20	22.0	23.8	110	119	52-147	8	30	
Bromobenzene	ug/L	ND	20	20	18.7	20.5	93	102	75-129	9	30	
Bromochloromethane	ug/L	ND	20	20	21.5	23.1	107	115	72-128	7	30	
Bromodichloromethane	ug/L	ND	20	20	21.2	23.5	106	117	65-137	10	30	
Bromoform	ug/L	ND	20	20	18.7	21.0	93	105	59-133	12	30	
Bromomethane	ug/L	ND	20	20	15.7	19.4	79	97	30-150	21	30	
Carbon tetrachloride	ug/L	ND	20	20	23.7	25.3	118	127	73-144	7	30	
Chlorobenzene	ug/L	ND	20	20	20.1	22.7	100	113	75-126	12	30	
Chloroethane	ug/L	ND	20	20	20.8	22.6	104	113	55-150	8	30	
Chloroform	ug/L	ND	20	20	22.4	24.1	112	121	66-143	8	30	
Chloromethane	ug/L	ND	20	20	17.1	18.6	86	93	42-150	8	30	
cis-1,2-Dichloroethene	ug/L	ND	20	20	20.5	21.5	102	108	65-143	5	30	
cis-1,3-Dichloropropene	ug/L	ND	20	20	20.1	21.8	100	109	75-125	8	30	
Dibromochloromethane	ug/L	ND	20	20	20.9	23.1	105	116	75-125	10	30	
Dibromomethane	ug/L	ND	20	20	19.7	21.5	99	107	66-133	8	30	
Dichlorodifluoromethane	ug/L	ND	20	20	25.3	29.0	127	145	74-150	13	30	
Dichlorofluoromethane	ug/L	ND	20	20	21.1	22.6	105	113	68-150	7	30	
Diethyl ether (Ethyl ether)	ug/L	ND	20	20	20.2	22.3	101	112	57-148	10	30	
Ethylbenzene	ug/L	ND	20	20	20.9	23.2	105	116	67-149	10	30	
Hexachloro-1,3-butadiene	ug/L	ND	20	20	14.5	17.3	73	86	65-143	17	30	
Isopropylbenzene (Cumene)	ug/L	ND	20	20	21.4	23.9	107	120	64-150	11	30	
Methyl-tert-butyl ether	ug/L	ND	20	20	21.3	23.2	106	116	71-130	9	30	
Methylene Chloride	ug/L	ND	20	20	20.3	22.1	102	110	67-137	8	30	
n-Butylbenzene	ug/L	ND	20	20	19.8	22.8	99	114	70-138	14	30	
n-Propylbenzene	ug/L	ND	20	20	20.6	22.6	103	113	70-148	9	30	
Naphthalene	ug/L	ND	20	20	13.5	16.5	67	82	39-150	20	30	
p-Isopropyltoluene	ug/L	ND	20	20	20.6	23.0	103	115	74-138	11	30	
sec-Butylbenzene	ug/L	ND	20	20	20.1	22.2	101	111	64-150	10	30	
Styrene	ug/L	ND	20	20	20.5	23.1	102	116	75-132	12	30	
tert-Butylbenzene	ug/L	ND	20	20	19.7	21.6	98	108	75-138	9	30	
Tetrachloroethene	ug/L	ND	20	20	22.3	24.6	112	123	73-136	10	30	
Tetrahydrofuran	ug/L	ND	200	200	228	246	114	123	68-142	7	30	
Toluene	ug/L	ND	20	20	20.3	22.5	101	112	69-139	10	30	
trans-1,2-Dichloroethene	ug/L	ND	20	20	22.5	24.4	112	122	75-135	8	30	
trans-1,3-Dichloropropene	ug/L	ND	20	20	21.8	24.9	109	125	66-136	13	30	
Trichloroethene	ug/L	ND	20	20	20.0	21.8	100	109	74-135	8	30	
Trichlorofluoromethane	ug/L	ND	20	20	22.4	24.6	112	123	75-150	9	30	
Vinyl chloride	ug/L	ND	20	20	24.0	26.9	120	134	69-150	12	30	
Xylene (Total)	ug/L	ND	60	60	63.4	69.5	106	116	70-147	9	30	
1,2-Dichloroethane-d4 (S)	%.						116	114	75-125			
4-Bromofluorobenzene (S)	%.						99	98	75-125			
Toluene-d8 (S)	%.						101	103	75-125			

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REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1700 Elm Street - Suite 200
Minneapolis, MN 55414
(612)607-1700

QUALITY CONTROL DATA

Project: 6G28 Richfield Sinclair
Pace Project No.: 10372832

QC Batch: 451734 Analysis Method: EPA 8260B
QC Batch Method: EPA 8260B Analysis Description: 8260B MSV 465 W
Associated Lab Samples: 10372832006, 10372832007, 10372832008

METHOD BLANK: 2473423 Matrix: Water
Associated Lab Samples: 10372832006, 10372832007, 10372832008

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
1,1,1,2-Tetrachloroethane	ug/L	ND	1.0	12/14/16 12:17	
1,1,1-Trichloroethane	ug/L	ND	1.0	12/14/16 12:17	
1,1,2,2-Tetrachloroethane	ug/L	ND	1.0	12/14/16 12:17	
1,1,2-Trichloroethane	ug/L	ND	1.0	12/14/16 12:17	
1,1,2-Trichlorotrifluoroethane	ug/L	ND	1.0	12/14/16 12:17	
1,1-Dichloroethane	ug/L	ND	1.0	12/14/16 12:17	
1,1-Dichloroethene	ug/L	ND	1.0	12/14/16 12:17	
1,1-Dichloropropene	ug/L	ND	1.0	12/14/16 12:17	
1,2,3-Trichlorobenzene	ug/L	ND	1.0	12/14/16 12:17	
1,2,3-Trichloropropane	ug/L	ND	4.0	12/14/16 12:17	
1,2,4-Trichlorobenzene	ug/L	ND	1.0	12/14/16 12:17	
1,2,4-Trimethylbenzene	ug/L	ND	1.0	12/14/16 12:17	
1,2-Dibromo-3-chloropropane	ug/L	ND	4.0	12/14/16 12:17	
1,2-Dibromoethane (EDB)	ug/L	ND	1.0	12/14/16 12:17	
1,2-Dichlorobenzene	ug/L	ND	1.0	12/14/16 12:17	
1,2-Dichloroethane	ug/L	ND	1.0	12/14/16 12:17	
1,2-Dichloropropane	ug/L	ND	4.0	12/14/16 12:17	
1,3,5-Trimethylbenzene	ug/L	ND	1.0	12/14/16 12:17	
1,3-Dichlorobenzene	ug/L	ND	1.0	12/14/16 12:17	
1,3-Dichloropropane	ug/L	ND	1.0	12/14/16 12:17	
1,4-Dichlorobenzene	ug/L	ND	1.0	12/14/16 12:17	
2,2-Dichloropropane	ug/L	ND	4.0	12/14/16 12:17	
2-Butanone (MEK)	ug/L	ND	5.0	12/14/16 12:17	
2-Chlorotoluene	ug/L	ND	1.0	12/14/16 12:17	
4-Chlorotoluene	ug/L	ND	1.0	12/14/16 12:17	
4-Methyl-2-pentanone (MIBK)	ug/L	ND	5.0	12/14/16 12:17	
Acetone	ug/L	ND	20.0	12/14/16 12:17	
Allyl chloride	ug/L	ND	4.0	12/14/16 12:17	
Benzene	ug/L	ND	1.0	12/14/16 12:17	
Bromobenzene	ug/L	ND	1.0	12/14/16 12:17	
Bromochloromethane	ug/L	ND	1.0	12/14/16 12:17	
Bromodichloromethane	ug/L	ND	1.0	12/14/16 12:17	
Bromoform	ug/L	ND	4.0	12/14/16 12:17	
Bromomethane	ug/L	ND	4.0	12/14/16 12:17	
Carbon tetrachloride	ug/L	ND	1.0	12/14/16 12:17	
Chlorobenzene	ug/L	ND	1.0	12/14/16 12:17	
Chloroethane	ug/L	ND	1.0	12/14/16 12:17	
Chloroform	ug/L	ND	1.0	12/14/16 12:17	
Chloromethane	ug/L	ND	4.0	12/14/16 12:17	
cis-1,2-Dichloroethene	ug/L	ND	1.0	12/14/16 12:17	
cis-1,3-Dichloropropene	ug/L	ND	4.0	12/14/16 12:17	

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REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1700 Elm Street - Suite 200
Minneapolis, MN 55414
(612)607-1700

QUALITY CONTROL DATA

Project: 6G28 Richfield Sinclair
Pace Project No.: 10372832

METHOD BLANK: 2473423 Matrix: Water
Associated Lab Samples: 10372832006, 10372832007, 10372832008

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Dibromochloromethane	ug/L	ND	1.0	12/14/16 12:17	
Dibromomethane	ug/L	ND	4.0	12/14/16 12:17	
Dichlorodifluoromethane	ug/L	ND	1.0	12/14/16 12:17	
Dichlorofluoromethane	ug/L	ND	1.0	12/14/16 12:17	
Diethyl ether (Ethyl ether)	ug/L	ND	4.0	12/14/16 12:17	
Ethylbenzene	ug/L	ND	1.0	12/14/16 12:17	
Hexachloro-1,3-butadiene	ug/L	ND	1.0	12/14/16 12:17	
Isopropylbenzene (Cumene)	ug/L	ND	1.0	12/14/16 12:17	
Methyl-tert-butyl ether	ug/L	ND	1.0	12/14/16 12:17	
Methylene Chloride	ug/L	ND	4.0	12/14/16 12:17	
n-Butylbenzene	ug/L	ND	1.0	12/14/16 12:17	
n-Propylbenzene	ug/L	ND	1.0	12/14/16 12:17	
Naphthalene	ug/L	ND	4.0	12/14/16 12:17	
p-Isopropyltoluene	ug/L	ND	1.0	12/14/16 12:17	
sec-Butylbenzene	ug/L	ND	1.0	12/14/16 12:17	
Styrene	ug/L	ND	1.0	12/14/16 12:17	
tert-Butylbenzene	ug/L	ND	1.0	12/14/16 12:17	
Tetrachloroethene	ug/L	ND	1.0	12/14/16 12:17	
Tetrahydrofuran	ug/L	ND	10.0	12/14/16 12:17	
Toluene	ug/L	ND	1.0	12/14/16 12:17	
trans-1,2-Dichloroethene	ug/L	ND	1.0	12/14/16 12:17	
trans-1,3-Dichloropropene	ug/L	ND	4.0	12/14/16 12:17	
Trichloroethene	ug/L	ND	0.40	12/14/16 12:17	
Trichlorofluoromethane	ug/L	ND	1.0	12/14/16 12:17	
Vinyl chloride	ug/L	ND	0.20	12/14/16 12:17	
Xylene (Total)	ug/L	ND	3.0	12/14/16 12:17	
1,2-Dichloroethane-d4 (S)	%.	112	75-125	12/14/16 12:17	
4-Bromofluorobenzene (S)	%.	101	75-125	12/14/16 12:17	
Toluene-d8 (S)	%.	97	75-125	12/14/16 12:17	

LABORATORY CONTROL SAMPLE: 2473424

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
1,1,1,2-Tetrachloroethane	ug/L	20	20.9	104	75-125	
1,1,1-Trichloroethane	ug/L	20	22.7	113	73-125	
1,1,2,2-Tetrachloroethane	ug/L	20	19.0	95	75-128	
1,1,2-Trichloroethane	ug/L	20	21.7	108	75-129	
1,1,2-Trichlorotrifluoroethane	ug/L	20	22.0	110	69-125	
1,1-Dichloroethane	ug/L	20	21.1	106	75-131	
1,1-Dichloroethene	ug/L	20	20.1	100	72-125	
1,1-Dichloropropene	ug/L	20	22.4	112	74-125	
1,2,3-Trichlorobenzene	ug/L	20	15.0	75	68-127	
1,2,3-Trichloropropane	ug/L	20	20.5	102	75-125	
1,2,4-Trichlorobenzene	ug/L	20	17.1	86	70-125	

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REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1700 Elm Street - Suite 200
Minneapolis, MN 55414
(612)607-1700

QUALITY CONTROL DATA

Project: 6G28 Richfield Sinclair
Pace Project No.: 10372832

LABORATORY CONTROL SAMPLE: 2473424

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
1,2,4-Trimethylbenzene	ug/L	20	19.8	99	75-130	
1,2-Dibromo-3-chloropropane	ug/L	50	40.4	81	74-125	
1,2-Dibromoethane (EDB)	ug/L	20	21.3	106	75-125	
1,2-Dichlorobenzene	ug/L	20	18.5	92	75-125	
1,2-Dichloroethane	ug/L	20	22.0	110	72-129	
1,2-Dichloropropane	ug/L	20	19.8	99	71-129	
1,3,5-Trimethylbenzene	ug/L	20	19.4	97	75-127	
1,3-Dichlorobenzene	ug/L	20	18.9	95	75-125	
1,3-Dichloropropane	ug/L	20	21.5	107	75-125	
1,4-Dichlorobenzene	ug/L	20	18.7	94	75-125	
2,2-Dichloropropane	ug/L	20	21.8	109	71-125	
2-Butanone (MEK)	ug/L	100	103	103	58-150	
2-Chlorotoluene	ug/L	20	19.4	97	75-125	
4-Chlorotoluene	ug/L	20	19.4	97	75-130	
4-Methyl-2-pentanone (MIBK)	ug/L	100	109	109	72-140	
Acetone	ug/L	100	102	102	69-137	
Allyl chloride	ug/L	20	19.5	98	68-132	
Benzene	ug/L	20	21.2	106	75-125	
Bromobenzene	ug/L	20	18.9	95	75-125	
Bromochloromethane	ug/L	20	21.0	105	75-125	
Bromodichloromethane	ug/L	20	21.9	109	69-128	
Bromoform	ug/L	20	18.9	94	75-125	
Bromomethane	ug/L	20	17.1	85	30-150	
Carbon tetrachloride	ug/L	20	22.3	112	74-125	
Chlorobenzene	ug/L	20	20.1	101	75-125	
Chloroethane	ug/L	20	17.4	87	60-150	
Chloroform	ug/L	20	21.6	108	75-126	
Chloromethane	ug/L	20	14.6	73	46-150	
cis-1,2-Dichloroethene	ug/L	20	18.9	95	75-126	
cis-1,3-Dichloropropene	ug/L	20	20.9	104	75-125	
Dibromochloromethane	ug/L	20	20.9	104	75-125	
Dibromomethane	ug/L	20	20.0	100	72-127	
Dichlorodifluoromethane	ug/L	20	20.1	100	58-135	
Dichlorofluoromethane	ug/L	20	17.0	85	68-149	
Diethyl ether (Ethyl ether)	ug/L	20	19.7	99	66-144	
Ethylbenzene	ug/L	20	20.7	103	75-125	
Hexachloro-1,3-butadiene	ug/L	20	16.4	82	73-125	
Isopropylbenzene (Cumene)	ug/L	20	20.7	104	69-140	
Methyl-tert-butyl ether	ug/L	20	20.4	102	75-126	
Methylene Chloride	ug/L	20	20.9	104	71-130	
n-Butylbenzene	ug/L	20	20.3	101	71-129	
n-Propylbenzene	ug/L	20	19.7	99	71-133	
Naphthalene	ug/L	20	15.0	75	59-137	
p-Isopropyltoluene	ug/L	20	19.5	97	74-127	
sec-Butylbenzene	ug/L	20	19.6	98	66-140	
Styrene	ug/L	20	20.4	102	75-125	
tert-Butylbenzene	ug/L	20	19.1	96	73-129	

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REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1700 Elm Street - Suite 200
Minneapolis, MN 55414
(612)607-1700

QUALITY CONTROL DATA

Project: 6G28 Richfield Sinclair
Pace Project No.: 10372832

LABORATORY CONTROL SAMPLE: 2473424

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Tetrachloroethene	ug/L	20	21.1	106	75-125	
Tetrahydrofuran	ug/L	200	218	109	71-129	
Toluene	ug/L	20	20.4	102	75-125	
trans-1,2-Dichloroethene	ug/L	20	20.8	104	75-125	
trans-1,3-Dichloropropene	ug/L	20	23.3	116	75-125	
Trichloroethene	ug/L	20	20.0	100	75-125	
Trichlorofluoromethane	ug/L	20	16.8	84	74-128	
Vinyl chloride	ug/L	20	19.3	96	71-131	
Xylene (Total)	ug/L	60	61.5	102	75-125	
1,2-Dichloroethane-d4 (S)	%.			114	75-125	
4-Bromofluorobenzene (S)	%.			99	75-125	
Toluene-d8 (S)	%.			100	75-125	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2473425 2473426

Parameter	Units	10373100001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
1,1,1,2-Tetrachloroethane	ug/L	ND	20	20	19.4	21.6	97	108	75-125	11	30	
1,1,1-Trichloroethane	ug/L	ND	20	20	21.9	23.1	110	116	71-144	5	30	
1,1,2,2-Tetrachloroethane	ug/L	ND	20	20	18.8	20.8	94	104	75-131	10	30	
1,1,2-Trichloroethane	ug/L	ND	20	20	20.1	22.8	100	114	75-125	13	30	
1,1,2-Trichlorotrifluoroethane	ug/L	ND	20	20	21.9	23.8	110	119	75-150	8	30	
1,1-Dichloroethane	ug/L	ND	20	20	20.1	21.9	100	109	64-150	8	30	
1,1-Dichloroethene	ug/L	ND	20	20	20.4	21.8	102	109	68-150	7	30	
1,1-Dichloropropene	ug/L	ND	20	20	22.0	23.3	110	117	68-145	6	30	
1,2,3-Trichlorobenzene	ug/L	ND	20	20	14.3	17.4	71	87	57-142	20	30	
1,2,3-Trichloropropane	ug/L	ND	20	20	19.7	21.5	98	108	75-125	9	30	
1,2,4-Trichlorobenzene	ug/L	ND	20	20	15.5	18.7	77	94	60-135	19	30	
1,2,4-Trimethylbenzene	ug/L	ND	20	20	19.4	21.5	97	107	67-148	10	30	
1,2-Dibromo-3-chloropropane	ug/L	ND	50	50	38.0	44.2	76	88	32-137	15	30	
1,2-Dibromoethane (EDB)	ug/L	ND	20	20	19.6	22.3	98	111	75-125	13	30	
1,2-Dichlorobenzene	ug/L	ND	20	20	17.9	20.0	89	100	75-125	11	30	
1,2-Dichloroethane	ug/L	ND	20	20	20.1	23.3	101	116	62-138	14	30	
1,2-Dichloropropane	ug/L	ND	20	20	18.0	20.6	90	103	62-144	13	30	
1,3,5-Trimethylbenzene	ug/L	ND	20	20	19.6	21.5	98	107	67-148	9	30	
1,3-Dichlorobenzene	ug/L	ND	20	20	18.2	20.6	91	103	74-131	12	30	
1,3-Dichloropropane	ug/L	ND	20	20	20.3	22.6	102	113	75-127	10	30	
1,4-Dichlorobenzene	ug/L	ND	20	20	18.2	20.5	91	102	74-126	12	30	
2,2-Dichloropropane	ug/L	ND	20	20	19.8	21.4	99	107	56-146	8	30	
2-Butanone (MEK)	ug/L	ND	100	100	95.3	104	95	104	47-150	8	30	
2-Chlorotoluene	ug/L	ND	20	20	19.3	21.4	97	107	74-137	10	30	
4-Chlorotoluene	ug/L	ND	20	20	19.1	21.2	96	106	72-138	10	30	
4-Methyl-2-pentanone (MIBK)	ug/L	ND	100	100	100	113	100	113	60-147	12	30	
Acetone	ug/L	ND	100	100	91.3	100	91	100	61-150	9	30	

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REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1700 Elm Street - Suite 200
Minneapolis, MN 55414
(612)607-1700

QUALITY CONTROL DATA

Project: 6G28 Richfield Sinclair
Pace Project No.: 10372832

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2473425 2473426

Parameter	Units	10373100001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Allyl chloride	ug/L	ND	20	20	18.4	20.1	92	101	53-150	9	30	
Benzene	ug/L	ND	20	20	20.2	21.5	101	107	52-147	6	30	
Bromobenzene	ug/L	ND	20	20	17.9	20.1	89	101	75-129	12	30	
Bromochloromethane	ug/L	ND	20	20	19.2	20.9	96	104	72-128	8	30	
Bromodichloromethane	ug/L	ND	20	20	20.2	21.7	101	108	65-137	7	30	
Bromoform	ug/L	ND	20	20	17.3	19.2	86	96	59-133	11	30	
Bromomethane	ug/L	ND	20	20	17.5	19.4	87	97	30-150	11	30	
Carbon tetrachloride	ug/L	ND	20	20	21.7	23.3	109	116	73-144	7	30	
Chlorobenzene	ug/L	ND	20	20	19.3	21.4	97	107	75-126	10	30	
Chloroethane	ug/L	ND	20	20	20.0	21.2	100	106	55-150	6	30	
Chloroform	ug/L	ND	20	20	20.2	21.6	101	108	66-143	7	30	
Chloromethane	ug/L	ND	20	20	14.9	18.8	74	94	42-150	23	30	
cis-1,2-Dichloroethene	ug/L	ND	20	20	17.7	19.2	88	96	65-143	8	30	
cis-1,3-Dichloropropene	ug/L	ND	20	20	18.6	20.5	93	102	75-125	10	30	
Dibromochloromethane	ug/L	ND	20	20	19.2	21.9	96	109	75-125	13	30	
Dibromomethane	ug/L	ND	20	20	18.1	20.2	91	101	66-133	10	30	
Dichlorodifluoromethane	ug/L	ND	20	20	25.8	28.4	129	142	74-150	9	30	
Dichlorofluoromethane	ug/L	ND	20	20	19.3	20.3	96	101	68-150	5	30	
Diethyl ether (Ethyl ether)	ug/L	ND	20	20	17.5	20.3	88	102	57-148	15	30	
Ethylbenzene	ug/L	ND	20	20	20.0	22.1	100	111	67-149	10	30	
Hexachloro-1,3-butadiene	ug/L	ND	20	20	16.5	18.7	82	93	65-143	12	30	
Isopropylbenzene (Cumene)	ug/L	ND	20	20	20.3	22.6	101	113	64-150	11	30	
Methyl-tert-butyl ether	ug/L	ND	20	20	19.4	20.6	97	103	71-130	6	30	
Methylene Chloride	ug/L	ND	20	20	19.0	20.2	95	101	67-137	6	30	
n-Butylbenzene	ug/L	ND	20	20	19.9	23.0	99	115	70-138	15	30	
n-Propylbenzene	ug/L	ND	20	20	19.7	22.1	99	110	70-148	11	30	
Naphthalene	ug/L	ND	20	20	14.0	17.8	70	89	39-150	24	30	
p-Isopropyltoluene	ug/L	ND	20	20	19.7	21.7	98	109	74-138	10	30	
sec-Butylbenzene	ug/L	ND	20	20	20.1	22.2	101	111	64-150	10	30	
Styrene	ug/L	ND	20	20	19.7	22.0	98	110	75-132	11	30	
tert-Butylbenzene	ug/L	ND	20	20	19.4	21.0	97	105	75-138	8	30	
Tetrachloroethene	ug/L	ND	20	20	20.9	22.7	105	114	73-136	8	30	
Tetrahydrofuran	ug/L	ND	200	200	183	198	92	99	68-142	8	30	
Toluene	ug/L	ND	20	20	19.0	21.6	95	108	69-139	13	30	
trans-1,2-Dichloroethene	ug/L	ND	20	20	20.6	22.4	103	112	75-135	8	30	
trans-1,3-Dichloropropene	ug/L	ND	20	20	21.4	24.4	107	122	66-136	13	30	
Trichloroethene	ug/L	ND	20	20	18.4	20.2	92	101	74-135	9	30	
Trichlorofluoromethane	ug/L	ND	20	20	21.6	22.6	108	113	75-150	4	30	
Vinyl chloride	ug/L	ND	20	20	23.1	25.7	116	129	69-150	11	30	
Xylene (Total)	ug/L	ND	60	60	59.2	65.8	99	110	70-147	11	30	
1,2-Dichloroethane-d4 (S)	%.						115	115	75-125			
4-Bromofluorobenzene (S)	%.						99	99	75-125			
Toluene-d8 (S)	%.						102	103	75-125			

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REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1700 Elm Street - Suite 200
Minneapolis, MN 55414
(612)607-1700

QUALITY CONTROL DATA

Project: 6G28 Richfield Sinclair
Pace Project No.: 10372832

QC Batch: 451541 Analysis Method: WI MOD DRO
QC Batch Method: WI MOD DRO Analysis Description: WIDRO GCS
Associated Lab Samples: 10372832001, 10372832002, 10372832003

METHOD BLANK: 2472384 Matrix: Solid
Associated Lab Samples: 10372832001, 10372832002, 10372832003

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
WDRO C10-C28	mg/kg	ND	10.0	12/14/16 16:05	
n-Triacontane (S)	%.	85	50-150	12/14/16 16:05	

LABORATORY CONTROL SAMPLE & LCSD: 2472385 2472386

Parameter	Units	Spike Conc.	LCS Result	LCSD Result	LCS % Rec	LCSD % Rec	% Rec Limits	RPD	Max RPD	Qualifiers
WDRO C10-C28	mg/kg	80	71.5	72.6	89	91	70-120	2	20	
n-Triacontane (S)	%.				91	86	50-150			

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REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1700 Elm Street - Suite 200
Minneapolis, MN 55414
(612)607-1700

QUALITY CONTROL DATA

Project: 6G28 Richfield Sinclair
Pace Project No.: 10372832

QC Batch: 451548 Analysis Method: WI MOD DRO
QC Batch Method: WI MOD DRO Analysis Description: WIDRO Low Volume GCS
Associated Lab Samples: 10372832005, 10372832006, 10372832007

METHOD BLANK: 2472409 Matrix: Water
Associated Lab Samples: 10372832005, 10372832006, 10372832007

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
WDRO C10-C28	mg/L	ND	0.10	12/16/16 10:34	
n-Triacontane (S)	%.	86	50-150	12/16/16 10:34	

LABORATORY CONTROL SAMPLE & LCSD: 2472410 2472411

Parameter	Units	Spike Conc.	LCS Result	LCSD Result	LCS % Rec	LCSD % Rec	% Rec Limits	RPD	Max RPD	Qualifiers
WDRO C10-C28	mg/L	.8	0.65	0.69	81	87	75-115	7	20	
n-Triacontane (S)	%.				89	92	50-150			

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REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1700 Elm Street - Suite 200
Minneapolis, MN 55414
(612)607-1700

QUALIFIERS

Project: 6G28 Richfield Sinclair
Pace Project No.: 10372832

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to dilution of the sample aliquot.

ND - Not Detected at or above adjusted reporting limit.

J - Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

RL - Reporting Limit.

S - Surrogate

1,2-Diphenylhydrazine decomposes to and cannot be separated from Azobenzene using Method 8270. The result for each analyte is a combined concentration.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Indicates the compound was analyzed for, but not detected.

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

TNI - The NELAC Institute.

ANALYTE QUALIFIERS

P4 Sample field preservation does not meet EPA or method recommendations for this analysis.

Pace Analytical Services, LLC
1700 Elm Street - Suite 200
Minneapolis, MN 55414
(612)607-1700

QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: 6G28 Richfield Sinclair
Pace Project No.: 10372832

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
10372832001	**1X**	WI MOD DRO	451541	WI MOD DRO	451756
10372832002	**2X**	WI MOD DRO	451541	WI MOD DRO	451756
10372832003	**3X**	WI MOD DRO	451541	WI MOD DRO	451756
10372832005	**1W**	WI MOD DRO	451548	WI MOD DRO	452160
10372832006	**2W**	WI MOD DRO	451548	WI MOD DRO	452160
10372832007	**3W**	WI MOD DRO	451548	WI MOD DRO	452160
10372832001	**1X**	ASTM D2974	452996		
10372832002	**2X**	ASTM D2974	452996		
10372832003	**3X**	ASTM D2974	452996		
10372832001	**1X**	EPA 5035/5030B	452349	EPA 8260B	452668
10372832002	**2X**	EPA 5035/5030B	452349	EPA 8260B	452668
10372832003	**3X**	EPA 5035/5030B	452349	EPA 8260B	452668
10372832005	**1W**	EPA 8260B	451599		
10372832006	**2W**	EPA 8260B	451734		
10372832007	**3W**	EPA 8260B	451734		
10372832008	**DUP**	EPA 8260B	451734		

To Laboratory:

Pace Analytical Labs
1700 Elm St., Suite 200
Minneapolis, MN 55414

From:
Applied Engineering, Inc.
1161 Wayzata Blvd E., Ste #60
Wayzata, MN 55391
Tel 952-939-9095 email applied@AppliedEngineeringUSA.com

LAB SAMPLE CHAIN OF CUSTODY and REQUEST FOR ANALYSES

AE Proj / P.O. # 6G28 10372832 (Lab - PLEASE ensure this Project# appears on Lab Report)

Site Name Richfield Sinclair

Site Address 7733 Portland Ave S, Richfield, MN 55423

Sampler Signature:

#	Sample Code	Date	Time	Soil Water or Air	Location (all samples grab unless noted)	Depth	Type Soil	HNU Level	Preservative (b)	#Containers	REQUESTED ANALYSES: GRO (c)	DRO (c)	MTBE & BTEX	VOCs 465 (d)	Metals Lead (d)	Metals &PCBs (a,d)	Other	
1	1X	12/8	1000	S	GP-1	31.5	Sand	ND	M	6		X	X				*	001
2	2X	"	1230	S	GP-2	37	Sand	ND	M	6		X	X				*	002
3	3X	"	1430	S	GP-3	52	Silt	ND	M	6		X	X				*	003
4	Meth Blank																	004
5																		
6	1W	12/8	1015	W	GP-1				HCl	5		X		X				005
7	2W	"	1245	W	GP-2				HCl	5		X		X				006
8	3W	"	1445	W	GP-3				HCl	5		X		X				007
9	Dup	"			GP-3					3				X				008
10	Trip Blank																	009
11																		
12																		
13	GS-1	12/8	1000		GP-3	26	Sand										**	010
14	GS-2	"	1230		GP-3	30	Sand										**	011
15	GS-3	"	1430		GP-3	34	Sand										**	012
16																		
17																		
18																		
19																		
20																		

Comments: * PAH + PCB Analysis (Please Hold) - include dry weight ** Grain Size Analysis - no hydrometer

Pace Special Quote # Stacey Larsen Quote, May, 2016

Samples shipped on ice: [X] yes [ ] no

Lab: Provide Chromatograms per MPCA requirements: [X] yes [ ] no

Lab: Provide results in MPCA Report Table [X] yes [ ] no

Lab: Provide Hard Copy of Lab Report [ ] yes [ ] no

a Metals to be analyzed include Arsenic, Barium, Cadmium, Chromium, Lead, Mercury, Selenium, and Silver. Also analyze for PCB's
b Type Preservative: M = Methanol; H = Hydrochloric Acid (HCl)
c Analyze sample constituents per Wisconsin DNR GRO and/or DRO Methods; Also perform Dry Weight Analysis
d All water samples to be FILTERED upon arrival by LABORATORY
e California Modified EPA Method 8015

Relinquished by:

1. Sig., Date, & Time 12/9/16 1500 Applied Engineering, Inc.

Received by

Sig., Company: Pace 1610
Print Name Beneath Sig.: Joe Sutton

2. Sig., Date, Time Pace 1708 12.9.16
Print Name Beneath Sig.: Joe Sutton

Sig., Company: Pace 12/9/16 1708
Print Name Beneath Sig.:

chain-tg 03/07

1.4°C Y/N Y

Pace Analytical	Document Name: **Sample Condition Upon Receipt Form**	Document Revised: 08Dec2016 Page 1 of 2
	Document No.: **F-MN-L-213-rev.18**	Issuing Authority: Pace Minnesota Quality Office

Sample Condition Upon Receipt

Client Name: Applied Engeneering

Project #: WO# : 10372832

10372832

Courier: ☐ Fed Ex ☐ UPS ☐ USPS ☒ Client ☐ Commercial ☐ Pace ☐ SpeeDee ☐ Other:

Tracking Number:

Custody Seal on Cooler/Box Present? ☐ Yes ☒ No **Seals Intact?** ☒ Yes ☐ No

Optional: Proj. Due Date: Proj. Name:

Packing Material: ☒ Bubble Wrap ☒ Bubble Bags ☐ None ☐ Other: **Temp Blank?** ☒ Yes ☐ No

Thermometer Used: ☒ 151401163 ☐ 151401164 ☐ B88A912167504 ☐ B88A0143310098 **Type of Ice:** ☒ Wet ☐ Blue ☐ None ☐ Samples on Ice, cooling process has begun

Cooler Temp Read (°C): 1.4 **Cooler Temp Corrected (°C):** 1.4 **Biological Tissue Frozen?** ☐ Yes ☐ No ☒ N/A

Temp should be above freezing to 6°C **Correction Factor:** True **Date and Initials of Person Examining Contents:** 12/9/16 CLO

USDA Regulated Soil (☐ N/A, water sample)

Did samples originate in a quarantine zone within the United States: AL, AR, CA, FL, GA, ID, LA. MS, NC, NM, NY, OK, OR, SC, TN, TX or VA (check maps)? ☐ Yes ☐ No

Did samples originate from a foreign source (internationally, including Hawaii and Puerto Rico)? ☐ Yes ☐ No

If Yes to either question, fill out a Regulated Soil Checklist (F-MN-Q-338) and include with SCUR/COC paperwork.

				COMMENTS:
Chain of Custody Present?	☒ Yes	☐ No		1.
Chain of Custody Filled Out?	☒ Yes	☐ No		2.
Chain of Custody Relinquished?	☒ Yes	☐ No		3.
Sampler Name and/or Signature on COC?	☒ Yes	☐ No	☐ N/A	4.
Samples Arrived within Hold Time?	☒ Yes	☐ No		5.
Short Hold Time Analysis (<72 hr)?	☐ Yes	☒ No	☐ N/A	6.
Rush Turn Around Time Requested?	☐ Yes	☒ No	☐ N/A	7.
Sufficient Volume?	☒ Yes	☐ No		8.
Correct Containers Used?	☒ Yes	☐ No		9.
-Pace Containers Used?	☒ Yes	☐ No		
Containers Intact?	☒ Yes	☐ No		10.
Filtered Volume Received for Dissolved Tests?	☐ Yes	☐ No	☒ N/A	11. Note if sediment is visible in the dissolved container
Sample Labels Match COC? -Includes Date/Time/ID/Analysis Matrix: WT/SL	☒ Yes	☐ No		12.
All containers needing acid/base preservation have been checked?	☐ Yes	☐ No	☒ N/A	13. ☐ HNO_3 ☐ H_2SO_4 ☐ NaOH Positive for Res. Chlorine? Y N
All containers needing preservation are found to be in compliance with EPA recommendation? (HNO_3, H_2SO_4, HCl<2; NaOH >9 Sulfide, NaOH>12 Cyanide)	☐ Yes	☐ No	☒ N/A	Sample #
Exceptions: VOA, Coliform, TOC/DOC Oil and Grease, DRO/8015 (water) and Dioxin.	☒ Yes	☐ No	☐ N/A	Initial when completed: Lot # of added preservative:
Headspace in VOA Vials (>6mm)?	☒ Yes	☐ No	☐ N/A	14.
Trip Blank Present?	☒ Yes	☐ No	☐ N/A	15.
Trip Blank Custody Seals Present?	☒ Yes	☐ No	☐ N/A	
Pace Trip Blank Lot # (if purchased):				

CLIENT NOTIFICATION/RESOLUTION **Field Data Required?** ☐ Yes ☐ No

Person Contacted: Tom Greene Date/Time: 12/12/16

Comments/Resolution: Re: Hold time for PAH on hold. Should we rush the scheduled tests or extract and hold?

Project Manager Review: Diane J. Anderson **Date:** 12/12/16

Note: Whenever there is a discrepancy affecting North Carolina compliance samples, a copy of this form will be sent to the North Carolina DEHNR Certification Office (i.e out of hold, incorrect preservative, out of temp, incorrect containers).

Intra-Regional Chain of Custody

SCANNED

Pace Analytical®
www.pacelabs.com

Workorder: 10372832 **Workorder Name:** 6G28 Richfield Sinclair **Owner Received Date:** 12/9/2016 **Due Date:** 12/23/2016

Received at:	Send To Lab:
Pace Analytical Minnesota 1700 Elm Street Suite 200 Minneapolis, MN 55414 Phone (612)607-1700	Pace Analytical Billings MT 150 N Ninth Street Billings, MT 59101 Phone (406)254-7226

Report To:
Diane J. Anderson

Item	Sample ID	Sample Type	Collect Date/Time	Lab ID	Matrix	Preserved Containers: Other	Preserved Containers	Preserved Containers	Preserved Containers	Preserved Containers	Preserved Containers	Requested Analysis: ASTM D422	Requested Analysis	Requested Analysis	Requested Analysis	Requested Analysis	Requested Analysis	Requested Analysis	Requested Analysis	Requested Analysis	Requested Analysis	Requested Analysis	Requested Analysis	LAB USE ONLY
1	GS-1	PS	12/8/2016 10:00	10372832010	Solid							X												
2	GS-2	PS	12/8/2016 12:30	10372832011	Solid							X												
3	GS-3	PS	12/8/2016 14:30	10372832012	Solid							X												
4																								
5																								

Transfers	Released By	Date/Time	Received By	Date/Time
1	Diane Anderson Fed Ex	12/12/16		
2			N. Jensen/Pace	12/13/16 1000
3				
4				

Comments

Cooler Temperature on Receipt 1.1 °C **Custody Seal** (Y) or N **Received on Ice** (Y) or N **Samples Intact** (Y) or N

****In order to maintain client confidentiality, location/name of the sampling site, sampler's name and signature may not be provided on this COC document. This chain of custody is considered complete as is since this information is available in the owner laboratory.*

Pace Analytical	Document Name: Sample Condition Upon Receipt Form	Document Revised: 04Aug2016 Page 1 of 1
	Document No.: F-MT-C-184-Rev.10	Issuing Authority: Pace Montana Quality Office

Sample Condition Upon Receipt

Client Name: Pace MN

Project #: 10372832

Courier: ☒ Fed Ex ☐ UPS ☐ USPS ☐ Client ☐ Commercial ☐ Pace ☐ Other:

Tracking Number: 6751 5822 26 76

Custody Seal on Cooler/Box Present? ☒ Yes ☐ No **Seals Intact?** ☒ Yes ☐ No **Optional:** Proj. Due Date: Proj. Name:

Packing Material: ☒ Bubble Wrap ☐ Bubble Bags ☐ None ☐ Other: **Temp Blank?** ☐ Yes ☐ No

Thermometer Used: ☒ 160285052 ☐ 140279186 **Type of Ice:** ☒ Wet ☐ Blue ☐ None ☐ Samples on ice, cooling process has begun ☐ NA

Cooler Temp Read: 1.1 **Date and Initials of Person Examining Contents:** 12/13 NH

Cooler Temp Corrected: 1.1 **Biological Tissue Frozen?** ☐ Yes ☒ No

Temp should be above freezing to 6°C

				Comments:
Chain of Custody Present?	☒ Yes	☐ No	☐ N/A	1.
Chain of Custody Filled Out?	☒ Yes	☐ No	☐ N/A	2.
Chain of Custody Relinquished?	☒ Yes	☐ No	☐ N/A	3.
Sampler Name and Signature on COC?	☐ Yes	☐ No	☒ N/A	4.
Samples Arrived within Hold Time?	☒ Yes	☐ No	☐ N/A	5.
Short Hold Time Analysis (<72 hr)?	☐ Yes	☒ No	☐ N/A	6.
Rush Turn Around Time Requested?	☐ Yes	☒ No	☐ N/A	7.
Sufficient Volume?	☒ Yes	☐ No	☐ N/A	8.
Correct Containers Used?	☒ Yes	☐ No	☐ N/A	9.
-Pace Containers Used?	☐ Yes	☒ No	☐ N/A	
Containers Intact?	☒ Yes	☐ No	☐ N/A	10.
Filtered Volume Received for Dissolved Tests?	☐ Yes	☐ No	☒ N/A	11. Note if sediment is visible in the dissolved container.
Sample Labels Match COC? -Includes Date/Time/ID/Analysis Matrix:	☒ Yes	☐ No	☐ N/A	12.
All containers needing acid/base preservation have been checked?	☐ Yes	☐ No	☐ N/A	13. ☐ HNO_3 ☐ H_2SO_4 ☐ NaOH ☐ HCl Sample #
All containers needing preservation are found to be in compliance with EPA recommendation? (HNO_3, H_2SO_4, HCl<2; NaOH >9 Sulfide, NaOH>12 Cyanide)	☐ Yes	☐ No	☐ N/A	
Exceptions: VOA, Coliform, TOC, Oil and Grease, WI-DRO (water)	☐ Yes	☒ No		Initial when completed: Lot # of added preservative:
Headspace in VOA Vials (>6mm)?	☐ Yes	☐ No	☒ N/A	14.
Trip Blank Present?	☐ Yes	☐ No	☒ N/A	15.
Trip Blank Custody Seals Present?	☐ Yes	☐ No	☒ N/A	
Pace Trip Blank Lot # (if purchased):				

CLIENT NOTIFICATION/RESOLUTION **Field Data Required?** ☐ Yes ☐ No

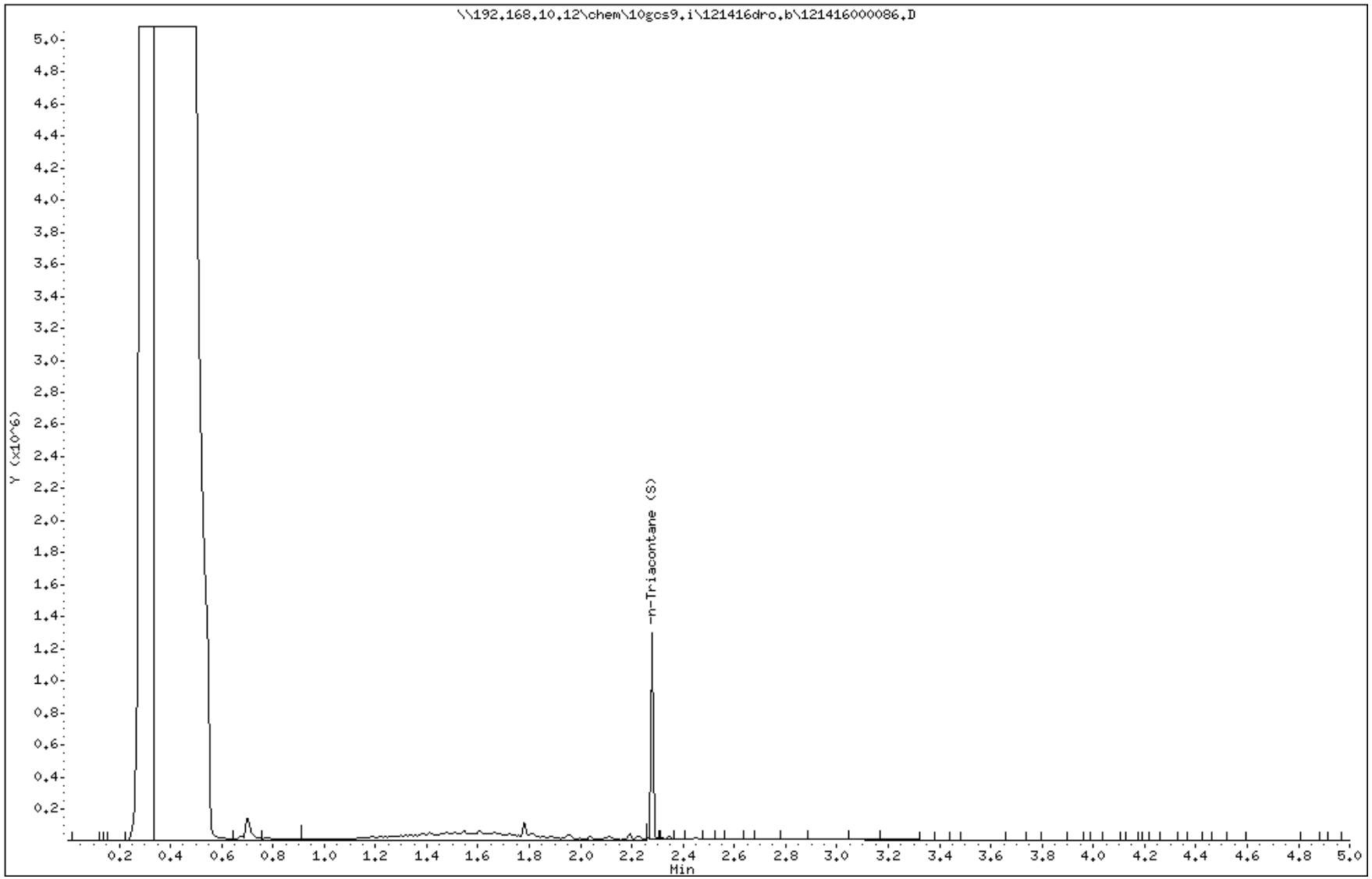
Person Contacted: Date/Time:

Comments/Resolution:

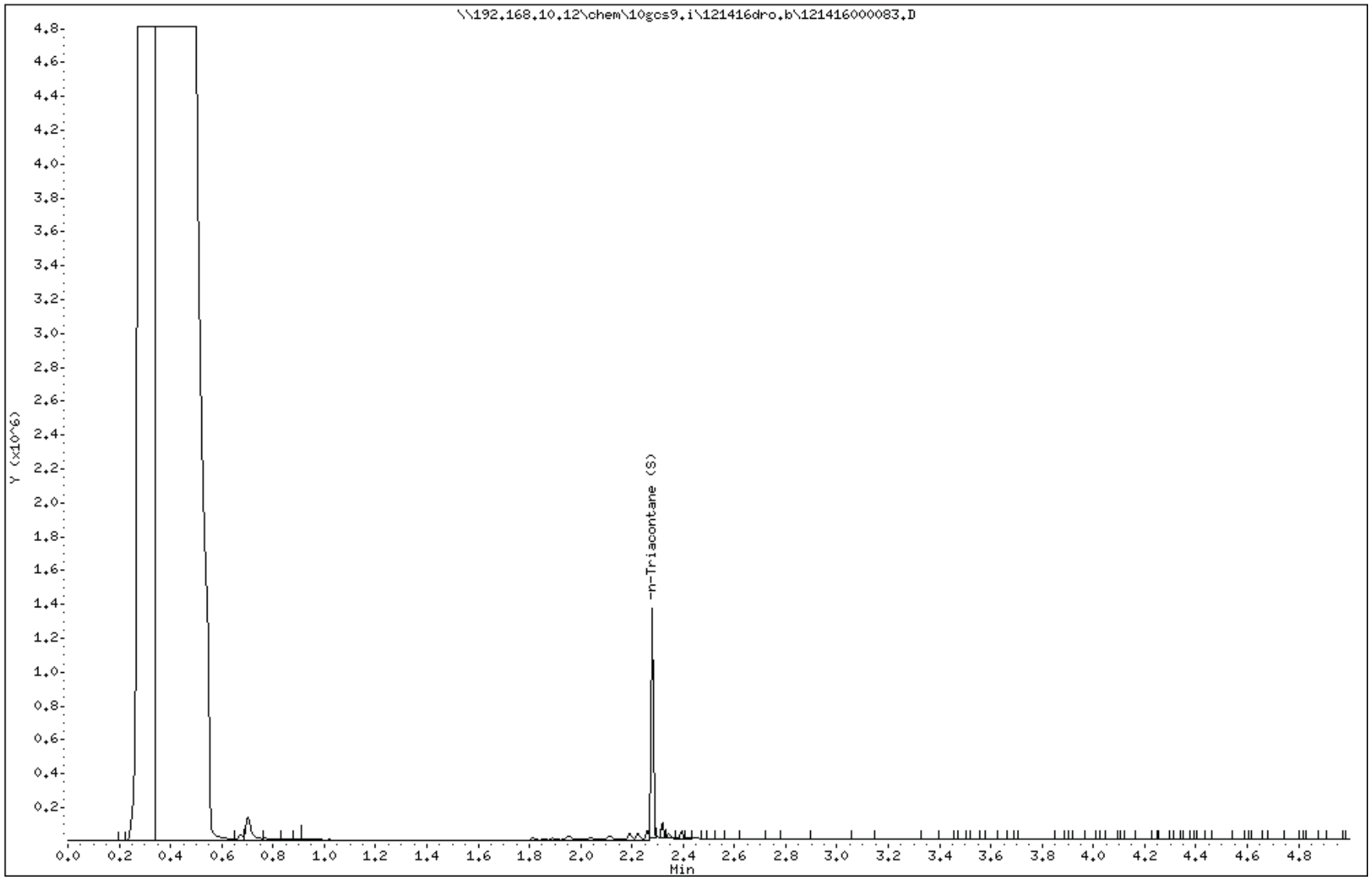
Project Manager Review: **Date:**

Note: Whenever there is a discrepancy affecting North Carolina compliance samples, a copy of this form will be sent to the North Carolina DEHNR Certification Office (i.e out of hold, incorrect preservative, out of temp, incorrect containers)

Data File: \\192.168.10.12\chem\10gcs9.i\121416dro.b\121416000086.D
Date : 14-DEC-2016 17:48
Client ID: 1X
Instrument: 10gcs9.i
Sample Info: 10372832001
Volume Injected (uL): 1.0
Operator: MT
Column phase: DB-5MS
Column diameter: 0.32



Data File: \\192.168.10.12\chem\10gcs9.i\121416dro.b\121416000083.D
Date : 14-DEC-2016 17:27
Client ID: 2X
Instrument: 10gcs9.i
Sample Info: 10372832002
Volume Injected (uL): 1.0
Operator: MT
Column phase: DB-5MS
Column diameter: 0.32



Data File: \\192.168.10.12\chem\10gcs9.i\121416dro.b\121416000090.D

Date : 14-DEC-2016 18:15

Client ID: 3X

Instrument: 10gcs9.i

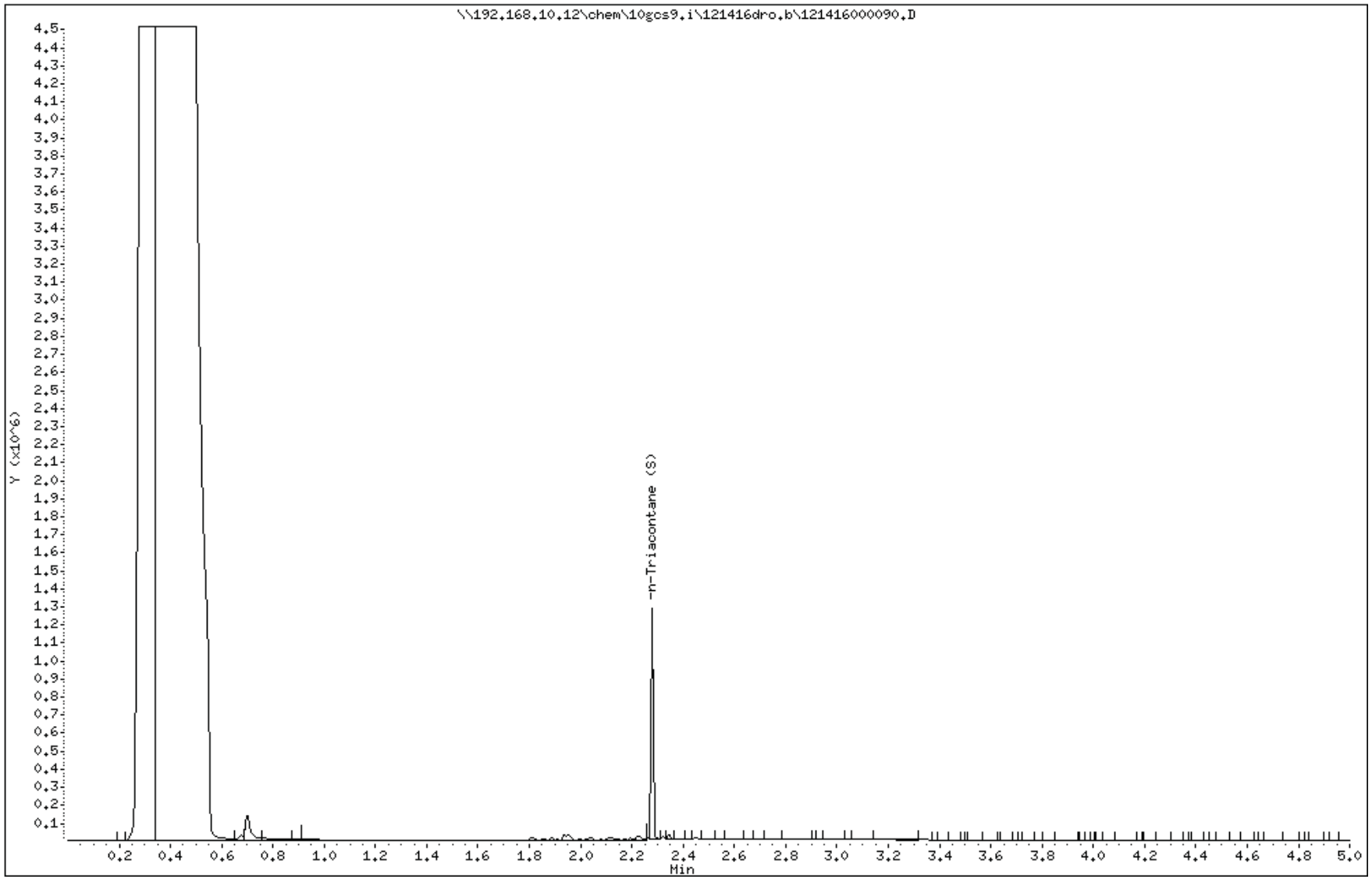
Sample Info: 10372832003

Volume Injected (uL): 1.0

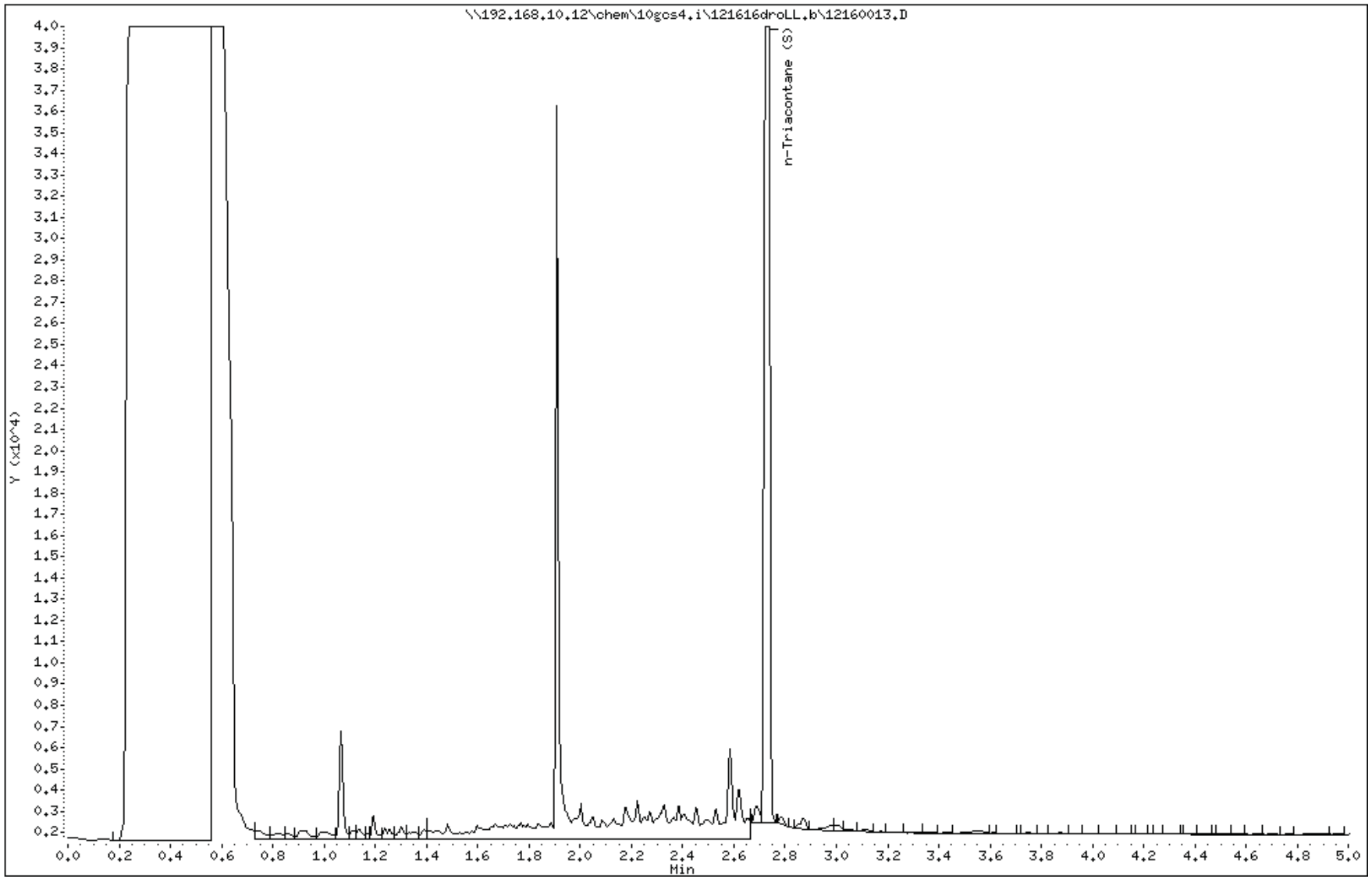
Operator: MT

Column phase: DB-5MS

Column diameter: 0.32



Data File: \\192.168.10.12\chem\10gcs4.i\121616droLL.b\12160013.D
Date : 16-DEC-2016 11:37
Client ID: 1W
Instrument: 10gcs4.i
Sample Info: 10372832005
Volume Injected (uL): 1.0
Operator: JRH
Column phase: DB-5MS
Column diameter: 0.25



Data File: \\192.168.10.12\chem\10gcs4.i\121616droLL.b\12160014.D

Date : 16-DEC-2016 11:45

Client ID: 2W

Instrument: 10gcs4.i

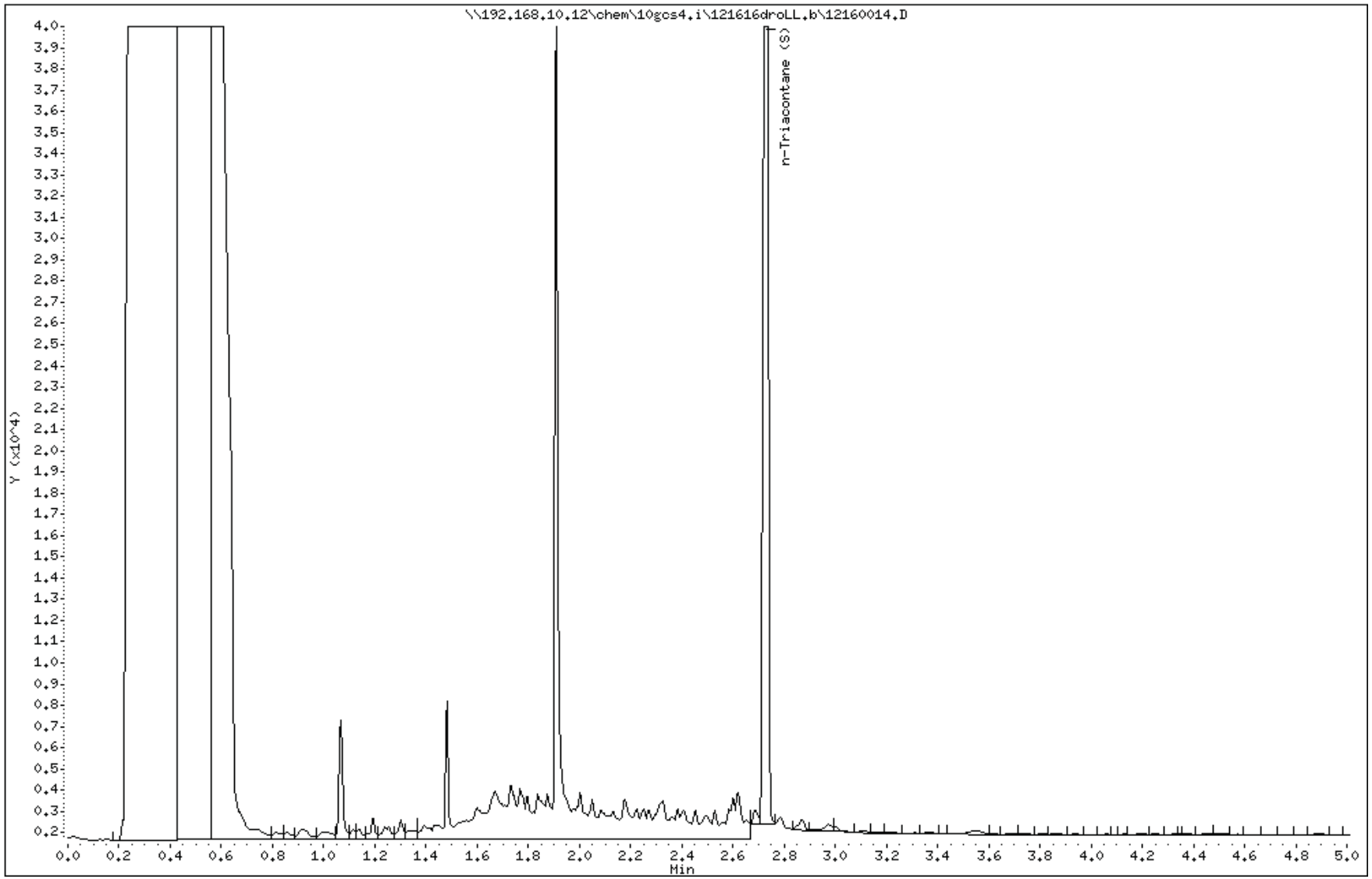
Sample Info: 10372832006

Volume Injected (uL): 1.0

Operator: JRH

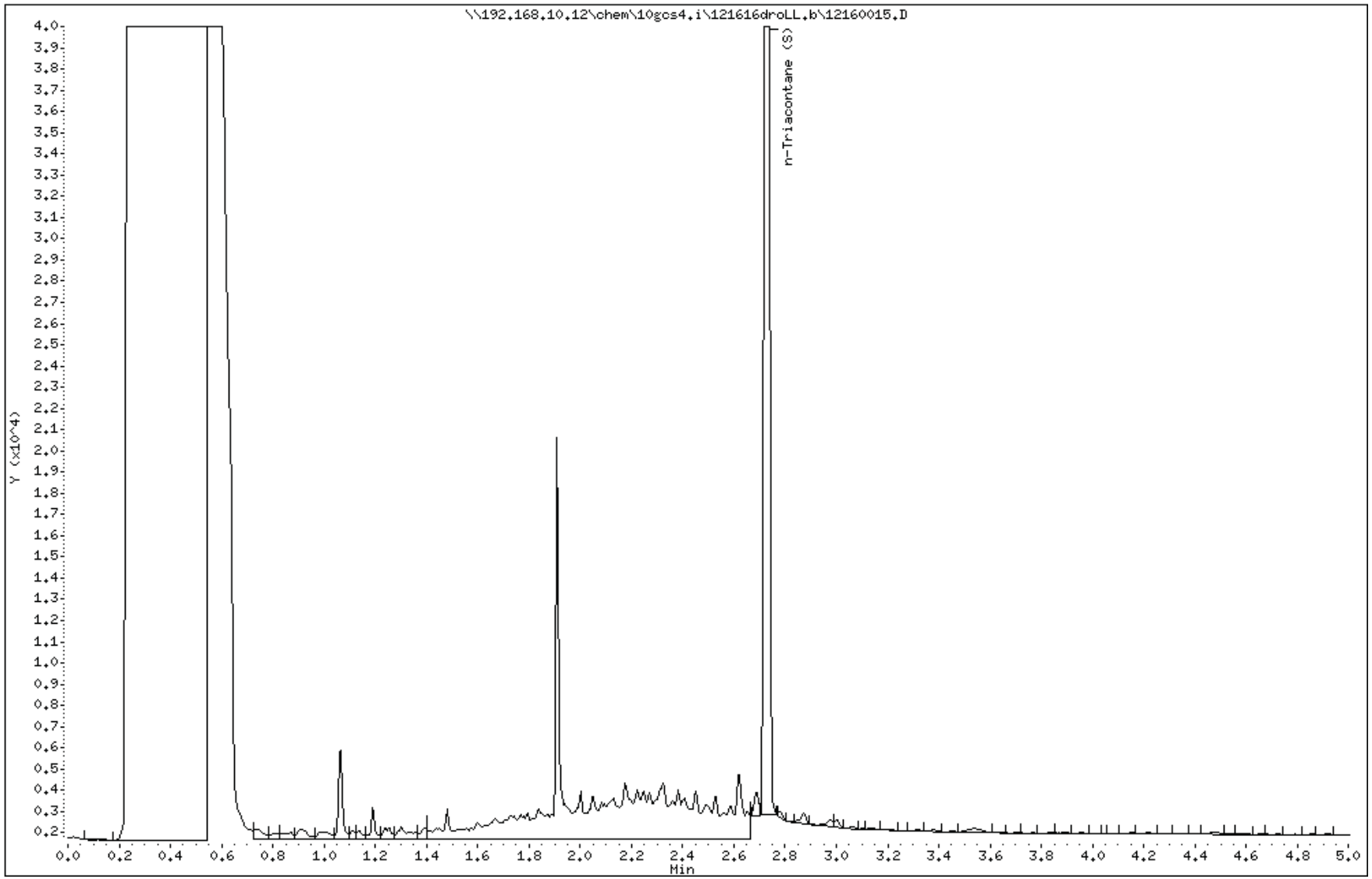
Column phase: DB-5MS

Column diameter: 0.25



Data File: \\192.168.10.12\chem\10gcs4.i\121616droLL.b\12160015.D
Date : 16-DEC-2016 11:53
Client ID: 3W
Sample Info: 10372832007
Volume Injected (uL): 1.0
Column phase: DB-5MS

Instrument: 10gcs4.i
Operator: JRH
Column diameter: 0.25



Pace Analytical Services, LLC
1700 Elm Street - Suite 200
Minneapolis, MN 55414
(612)607-1700

December 15, 2016

Mr. Thomas Greene
Applied Engineering, Inc.
1161 Wayzata Blvd E., Ste #60
Wayzata, MN 55391

RE: Project: 6G28 Richfield Sinclair
Pace Project No.: 10372901

Dear Mr. Greene:
Enclosed are the analytical results for sample(s) received by the laboratory on December 09, 2016. The results relate only to the samples included in this report. Results reported herein conform to the most current, applicable TNI/NELAC standards and the laboratory's Quality Assurance Manual, where applicable, unless otherwise noted in the body of the report.

If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Diane J. Anderson
diane.anderson@pacelabs.com
Project Manager

Enclosures

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1700 Elm Street - Suite 200
Minneapolis, MN 55414
(612)607-1700

CERTIFICATIONS

Project: 6G28 Richfield Sinclair
Pace Project No.: 10372901

Minnesota Certification IDs

1700 Elm Street SE Suite 200, Minneapolis, MN 55414
Alaska Certification UST-107
525 N 8th Street, Salina, KS 67401
A2LA Certification #: 2926.01
Alaska Certification #: UST-078
Alaska Certification #MN00064
Alabama Certification #40770
Arizona Certification #: AZ-0014
Arkansas Certification #: 88-0680
California Certification #: 01155CA
Colorado Certification #Pace
Connecticut Certification #: PH-0256
EPA Region 8 Certification #: 8TMS-L
Florida/NELAP Certification #: E87605
Guam Certification #:14-008r
Georgia Certification #: 959
Georgia EPD #: Pace
Idaho Certification #: MN00064
Hawaii Certification #MN00064
Illinois Certification #: 200011
Indiana Certification#C-MN-01
Iowa Certification #: 368
Kansas Certification #: E-10167
Kentucky Dept of Envi. Protection - DW #90062
Kentucky Dept of Envi. Protection - WW #:90062
Louisiana DEQ Certification #: 3086
Louisiana DHH #: LA140001
Maine Certification #: 2013011
Maryland Certification #: 322
Michigan DEPH Certification #: 9909
Minnesota Certification #: 027-053-137
Mississippi Certification #: Pace
Montana Certification #: MT0092
Nevada Certification #: MN_00064
Nebraska Certification #: Pace
New Jersey Certification #: MN-002
New York Certification #: 11647
North Carolina Certification #: 530
North Carolina State Public Health #: 27700
North Dakota Certification #: R-036
Ohio EPA #: 4150
Ohio VAP Certification #: CL101
Oklahoma Certification #: 9507
Oregon Certification #: MN200001
Oregon Certification #: MN300001
Pennsylvania Certification #: 68-00563
Puerto Rico Certification
Saipan (CNMI) #:MP0003
South Carolina #:74003001
Texas Certification #: T104704192
Tennessee Certification #: 02818
Utah Certification #: MN000642013-4
Virginia DGS Certification #: 251
Virginia/VELAP Certification #: Pace
Washington Certification #: C486
West Virginia Certification #: 382
West Virginia DHHR #:9952C
Wisconsin Certification #: 999407970

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1700 Elm Street - Suite 200
Minneapolis, MN 55414
(612)607-1700

SAMPLE SUMMARY

Project: 6G28 Richfield Sinclair
Pace Project No.: 10372901

Lab ID	Sample ID	Matrix	Date Collected	Date Received
10372901001	**Air-1**	Air	12/08/16 14:00	12/09/16 17:08
10372901002	**Air-2**	Air	12/08/16 14:30	12/09/16 17:08

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1700 Elm Street - Suite 200
Minneapolis, MN 55414
(612)607-1700

SAMPLE ANALYTE COUNT

Project: 6G28 Richfield Sinclair
Pace Project No.: 10372901

Lab ID	Sample ID	Method	Analysts	Analytes Reported
10372901001	**Air-1**	TO-15	NCK	61
10372901002	**Air-2**	TO-15	NCK	61

Pace Analytical Services, LLC
1700 Elm Street - Suite 200
Minneapolis, MN 55414
(612)607-1700

ANALYTICAL RESULTS

Project: 6G28 Richfield Sinclair
Pace Project No.: 10372901

Sample: Air-1 **Lab ID: 10372901001** Collected: 12/08/16 14:00 Received: 12/09/16 17:08 Matrix: Air

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
TO15 MSV AIR	Analytical Method: TO-15							
Acetone	**113**	ug/m3	3.8	1.57		12/11/16 16:27	67-64-1	
Benzene	**27.8**	ug/m3	0.51	1.57		12/11/16 16:27	71-43-2	
Benzyl chloride	ND	ug/m3	4.1	1.57		12/11/16 16:27	100-44-7	
Bromodichloromethane	ND	ug/m3	2.1	1.57		12/11/16 16:27	75-27-4	
Bromoform	ND	ug/m3	3.3	1.57		12/11/16 16:27	75-25-2	
Bromomethane	ND	ug/m3	1.2	1.57		12/11/16 16:27	74-83-9	
1,3-Butadiene	ND	ug/m3	0.71	1.57		12/11/16 16:27	106-99-0	
2-Butanone (MEK)	ND	ug/m3	4.7	1.57		12/11/16 16:27	78-93-3	
Carbon disulfide	**13.7**	ug/m3	0.99	1.57		12/11/16 16:27	75-15-0	
Carbon tetrachloride	ND	ug/m3	1.0	1.57		12/11/16 16:27	56-23-5	
Chlorobenzene	ND	ug/m3	1.5	1.57		12/11/16 16:27	108-90-7	
Chloroethane	ND	ug/m3	0.85	1.57		12/11/16 16:27	75-00-3	
Chloroform	ND	ug/m3	0.78	1.57		12/11/16 16:27	67-66-3	
Chloromethane	ND	ug/m3	0.66	1.57		12/11/16 16:27	74-87-3	
Cyclohexane	**11.6**	ug/m3	1.1	1.57		12/11/16 16:27	110-82-7	
Dibromochloromethane	ND	ug/m3	2.7	1.57		12/11/16 16:27	124-48-1	
1,2-Dibromoethane (EDB)	ND	ug/m3	2.4	1.57		12/11/16 16:27	106-93-4	
1,2-Dichlorobenzene	ND	ug/m3	1.9	1.57		12/11/16 16:27	95-50-1	
1,3-Dichlorobenzene	ND	ug/m3	1.9	1.57		12/11/16 16:27	541-73-1	
1,4-Dichlorobenzene	ND	ug/m3	1.9	1.57		12/11/16 16:27	106-46-7	
Dichlorodifluoromethane	ND	ug/m3	3.9	1.57		12/11/16 16:27	75-71-8	
1,1-Dichloroethane	ND	ug/m3	1.3	1.57		12/11/16 16:27	75-34-3	
1,2-Dichloroethane	ND	ug/m3	0.64	1.57		12/11/16 16:27	107-06-2	
1,1-Dichloroethene	ND	ug/m3	1.3	1.57		12/11/16 16:27	75-35-4	
cis-1,2-Dichloroethene	ND	ug/m3	1.3	1.57		12/11/16 16:27	156-59-2	
trans-1,2-Dichloroethene	ND	ug/m3	1.3	1.57		12/11/16 16:27	156-60-5	
1,2-Dichloropropane	ND	ug/m3	1.5	1.57		12/11/16 16:27	78-87-5	
cis-1,3-Dichloropropene	ND	ug/m3	1.4	1.57		12/11/16 16:27	10061-01-5	
trans-1,3-Dichloropropene	ND	ug/m3	1.4	1.57		12/11/16 16:27	10061-02-6	
Dichlorotetrafluoroethane	ND	ug/m3	2.2	1.57		12/11/16 16:27	76-14-2	
Ethanol	**16.5**	ug/m3	1.5	1.57		12/11/16 16:27	64-17-5	
Ethyl acetate	ND	ug/m3	1.1	1.57		12/11/16 16:27	141-78-6	
Ethylbenzene	**2.6**	ug/m3	1.4	1.57		12/11/16 16:27	100-41-4	
4-Ethyltoluene	ND	ug/m3	1.6	1.57		12/11/16 16:27	622-96-8	
n-Heptane	**22.2**	ug/m3	3.3	1.57		12/11/16 16:27	142-82-5	
Hexachloro-1,3-butadiene	ND	ug/m3	3.4	1.57		12/11/16 16:27	87-68-3	
n-Hexane	**32.1**	ug/m3	1.1	1.57		12/11/16 16:27	110-54-3	
2-Hexanone	ND	ug/m3	6.5	1.57		12/11/16 16:27	591-78-6	
Methylene Chloride	**19.2**	ug/m3	5.5	1.57		12/11/16 16:27	75-09-2	
4-Methyl-2-pentanone (MIBK)	ND	ug/m3	6.5	1.57		12/11/16 16:27	108-10-1	
Methyl-tert-butyl ether	ND	ug/m3	5.8	1.57		12/11/16 16:27	1634-04-4	
Naphthalene	ND	ug/m3	4.2	1.57		12/11/16 16:27	91-20-3	
2-Propanol	ND	ug/m3	3.9	1.57		12/11/16 16:27	67-63-0	
Propylene	**272**	ug/m3	1.4	1.57		12/11/16 16:27	115-07-1	E
Styrene	ND	ug/m3	1.4	1.57		12/11/16 16:27	100-42-5	
1,1,2,2-Tetrachloroethane	ND	ug/m3	1.1	1.57		12/11/16 16:27	79-34-5	
Tetrachloroethene	**1.6**	ug/m3	1.1	1.57		12/11/16 16:27	127-18-4	

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1700 Elm Street - Suite 200
Minneapolis, MN 55414
(612)607-1700

ANALYTICAL RESULTS

Project: 6G28 Richfield Sinclair
Pace Project No.: 10372901

Sample: Air-1 **Lab ID: 10372901001** Collected: 12/08/16 14:00 Received: 12/09/16 17:08 Matrix: Air

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
TO15 MSV AIR	Analytical Method: TO-15							
Tetrahydrofuran	ND	ug/m3	0.94	1.57		12/11/16 16:27	109-99-9	
Toluene	**25.3**	ug/m3	1.2	1.57		12/11/16 16:27	108-88-3	
1,2,4-Trichlorobenzene	ND	ug/m3	5.9	1.57		12/11/16 16:27	120-82-1	
1,1,1-Trichloroethane	ND	ug/m3	1.7	1.57		12/11/16 16:27	71-55-6	
1,1,2-Trichloroethane	ND	ug/m3	0.86	1.57		12/11/16 16:27	79-00-5	
Trichloroethene	ND	ug/m3	0.86	1.57		12/11/16 16:27	79-01-6	
Trichlorofluoromethane	ND	ug/m3	1.8	1.57		12/11/16 16:27	75-69-4	
1,1,2-Trichlorotrifluoroethane	ND	ug/m3	2.5	1.57		12/11/16 16:27	76-13-1	
1,2,4-Trimethylbenzene	ND	ug/m3	1.6	1.57		12/11/16 16:27	95-63-6	
1,3,5-Trimethylbenzene	ND	ug/m3	1.6	1.57		12/11/16 16:27	108-67-8	
Vinyl acetate	**5.7**	ug/m3	1.1	1.57		12/11/16 16:27	108-05-4	
Vinyl chloride	ND	ug/m3	0.41	1.57		12/11/16 16:27	75-01-4	
m&p-Xylene	ND	ug/m3	2.8	1.57		12/11/16 16:27	179601-23-1	
o-Xylene	ND	ug/m3	1.4	1.57		12/11/16 16:27	95-47-6	

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1700 Elm Street - Suite 200
Minneapolis, MN 55414
(612)607-1700

ANALYTICAL RESULTS

Project: 6G28 Richfield Sinclair
Pace Project No.: 10372901

Sample: Air-2 **Lab ID: 10372901002** Collected: 12/08/16 14:30 Received: 12/09/16 17:08 Matrix: Air

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
TO15 MSV AIR	Analytical Method: TO-15							
Acetone	**125**	ug/m3	3.8	1.57		12/11/16 17:08	67-64-1	
Benzene	**6.3**	ug/m3	0.51	1.57		12/11/16 17:08	71-43-2	
Benzyl chloride	ND	ug/m3	4.1	1.57		12/11/16 17:08	100-44-7	
Bromodichloromethane	ND	ug/m3	2.1	1.57		12/11/16 17:08	75-27-4	
Bromoform	ND	ug/m3	3.3	1.57		12/11/16 17:08	75-25-2	
Bromomethane	ND	ug/m3	1.2	1.57		12/11/16 17:08	74-83-9	
1,3-Butadiene	ND	ug/m3	0.71	1.57		12/11/16 17:08	106-99-0	
2-Butanone (MEK)	**17.6**	ug/m3	4.7	1.57		12/11/16 17:08	78-93-3	
Carbon disulfide	**8.3**	ug/m3	0.99	1.57		12/11/16 17:08	75-15-0	
Carbon tetrachloride	ND	ug/m3	1.0	1.57		12/11/16 17:08	56-23-5	
Chlorobenzene	ND	ug/m3	1.5	1.57		12/11/16 17:08	108-90-7	
Chloroethane	ND	ug/m3	0.85	1.57		12/11/16 17:08	75-00-3	
Chloroform	ND	ug/m3	0.78	1.57		12/11/16 17:08	67-66-3	
Chloromethane	ND	ug/m3	0.66	1.57		12/11/16 17:08	74-87-3	
Cyclohexane	**11.7**	ug/m3	1.1	1.57		12/11/16 17:08	110-82-7	
Dibromochloromethane	ND	ug/m3	2.7	1.57		12/11/16 17:08	124-48-1	
1,2-Dibromoethane (EDB)	ND	ug/m3	2.4	1.57		12/11/16 17:08	106-93-4	
1,2-Dichlorobenzene	ND	ug/m3	1.9	1.57		12/11/16 17:08	95-50-1	
1,3-Dichlorobenzene	ND	ug/m3	1.9	1.57		12/11/16 17:08	541-73-1	
1,4-Dichlorobenzene	ND	ug/m3	1.9	1.57		12/11/16 17:08	106-46-7	
Dichlorodifluoromethane	ND	ug/m3	3.9	1.57		12/11/16 17:08	75-71-8	
1,1-Dichloroethane	ND	ug/m3	1.3	1.57		12/11/16 17:08	75-34-3	
1,2-Dichloroethane	ND	ug/m3	0.64	1.57		12/11/16 17:08	107-06-2	
1,1-Dichloroethene	ND	ug/m3	1.3	1.57		12/11/16 17:08	75-35-4	
cis-1,2-Dichloroethene	ND	ug/m3	1.3	1.57		12/11/16 17:08	156-59-2	
trans-1,2-Dichloroethene	ND	ug/m3	1.3	1.57		12/11/16 17:08	156-60-5	
1,2-Dichloropropane	ND	ug/m3	1.5	1.57		12/11/16 17:08	78-87-5	
cis-1,3-Dichloropropene	ND	ug/m3	1.4	1.57		12/11/16 17:08	10061-01-5	
trans-1,3-Dichloropropene	ND	ug/m3	1.4	1.57		12/11/16 17:08	10061-02-6	
Dichlorotetrafluoroethane	ND	ug/m3	2.2	1.57		12/11/16 17:08	76-14-2	
Ethanol	**25.1**	ug/m3	1.5	1.57		12/11/16 17:08	64-17-5	
Ethyl acetate	ND	ug/m3	1.1	1.57		12/11/16 17:08	141-78-6	
Ethylbenzene	**2.0**	ug/m3	1.4	1.57		12/11/16 17:08	100-41-4	
4-Ethyltoluene	ND	ug/m3	1.6	1.57		12/11/16 17:08	622-96-8	
n-Heptane	**9.3**	ug/m3	3.3	1.57		12/11/16 17:08	142-82-5	
Hexachloro-1,3-butadiene	ND	ug/m3	3.4	1.57		12/11/16 17:08	87-68-3	
n-Hexane	**68.5**	ug/m3	1.1	1.57		12/11/16 17:08	110-54-3	
2-Hexanone	ND	ug/m3	6.5	1.57		12/11/16 17:08	591-78-6	
Methylene Chloride	**534**	ug/m3	5.5	1.57		12/11/16 17:08	75-09-2	
4-Methyl-2-pentanone (MIBK)	ND	ug/m3	6.5	1.57		12/11/16 17:08	108-10-1	
Methyl-tert-butyl ether	ND	ug/m3	5.8	1.57		12/11/16 17:08	1634-04-4	
Naphthalene	ND	ug/m3	4.2	1.57		12/11/16 17:08	91-20-3	
2-Propanol	**5.7**	ug/m3	3.9	1.57		12/11/16 17:08	67-63-0	
Propylene	**121**	ug/m3	1.4	1.57		12/11/16 17:08	115-07-1	E
Styrene	ND	ug/m3	1.4	1.57		12/11/16 17:08	100-42-5	
1,1,2,2-Tetrachloroethane	**3.0**	ug/m3	1.1	1.57		12/11/16 17:08	79-34-5	
Tetrachloroethene	**12.4**	ug/m3	1.1	1.57		12/11/16 17:08	127-18-4	

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1700 Elm Street - Suite 200
Minneapolis, MN 55414
(612)607-1700

ANALYTICAL RESULTS

Project: 6G28 Richfield Sinclair
Pace Project No.: 10372901

Sample: Air-2 **Lab ID: 10372901002** Collected: 12/08/16 14:30 Received: 12/09/16 17:08 Matrix: Air

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
TO15 MSV AIR	Analytical Method: TO-15							
Tetrahydrofuran	**8.0**	ug/m3	0.94	1.57		12/11/16 17:08	109-99-9	
Toluene	**11.5**	ug/m3	1.2	1.57		12/11/16 17:08	108-88-3	
1,2,4-Trichlorobenzene	ND	ug/m3	5.9	1.57		12/11/16 17:08	120-82-1	
1,1,1-Trichloroethane	ND	ug/m3	1.7	1.57		12/11/16 17:08	71-55-6	
1,1,2-Trichloroethane	ND	ug/m3	0.86	1.57		12/11/16 17:08	79-00-5	
Trichloroethene	ND	ug/m3	0.86	1.57		12/11/16 17:08	79-01-6	
Trichlorofluoromethane	**2.0**	ug/m3	1.8	1.57		12/11/16 17:08	75-69-4	
1,1,2-Trichlorotrifluoroethane	ND	ug/m3	2.5	1.57		12/11/16 17:08	76-13-1	
1,2,4-Trimethylbenzene	ND	ug/m3	1.6	1.57		12/11/16 17:08	95-63-6	
1,3,5-Trimethylbenzene	ND	ug/m3	1.6	1.57		12/11/16 17:08	108-67-8	
Vinyl acetate	ND	ug/m3	1.1	1.57		12/11/16 17:08	108-05-4	
Vinyl chloride	ND	ug/m3	0.41	1.57		12/11/16 17:08	75-01-4	
m&p-Xylene	**4.0**	ug/m3	2.8	1.57		12/11/16 17:08	179601-23-1	
o-Xylene	**1.5**	ug/m3	1.4	1.57		12/11/16 17:08	95-47-6	

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1700 Elm Street - Suite 200
Minneapolis, MN 55414
(612)607-1700

QUALITY CONTROL DATA

Project: 6G28 Richfield Sinclair
Pace Project No.: 10372901

QC Batch: 451222 Analysis Method: TO-15
QC Batch Method: TO-15 Analysis Description: TO15 MSV AIR Low Level
Associated Lab Samples: 10372901001, 10372901002

METHOD BLANK: 2471174 Matrix: Air
Associated Lab Samples: 10372901001, 10372901002

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
1,1,1-Trichloroethane	ug/m3	ND	1.1	12/11/16 09:00	
1,1,2,2-Tetrachloroethane	ug/m3	ND	0.70	12/11/16 09:00	
1,1,2-Trichloroethane	ug/m3	ND	0.55	12/11/16 09:00	
1,1,2-Trichlorotrifluoroethane	ug/m3	ND	1.6	12/11/16 09:00	
1,1-Dichloroethane	ug/m3	ND	0.82	12/11/16 09:00	
1,1-Dichloroethene	ug/m3	ND	0.81	12/11/16 09:00	
1,2,4-Trichlorobenzene	ug/m3	ND	3.8	12/11/16 09:00	
1,2,4-Trimethylbenzene	ug/m3	ND	1.0	12/11/16 09:00	
1,2-Dibromoethane (EDB)	ug/m3	ND	1.6	12/11/16 09:00	
1,2-Dichlorobenzene	ug/m3	ND	1.2	12/11/16 09:00	
1,2-Dichloroethane	ug/m3	ND	0.41	12/11/16 09:00	
1,2-Dichloropropane	ug/m3	ND	0.94	12/11/16 09:00	
1,3,5-Trimethylbenzene	ug/m3	ND	1.0	12/11/16 09:00	
1,3-Butadiene	ug/m3	ND	0.45	12/11/16 09:00	
1,3-Dichlorobenzene	ug/m3	ND	1.2	12/11/16 09:00	
1,4-Dichlorobenzene	ug/m3	ND	1.2	12/11/16 09:00	
2-Butanone (MEK)	ug/m3	ND	3.0	12/11/16 09:00	
2-Hexanone	ug/m3	ND	4.2	12/11/16 09:00	
2-Propanol	ug/m3	ND	2.5	12/11/16 09:00	
4-Ethyltoluene	ug/m3	ND	1.0	12/11/16 09:00	
4-Methyl-2-pentanone (MIBK)	ug/m3	ND	4.2	12/11/16 09:00	
Acetone	ug/m3	ND	2.4	12/11/16 09:00	
Benzene	ug/m3	ND	0.32	12/11/16 09:00	
Benzyl chloride	ug/m3	ND	2.6	12/11/16 09:00	
Bromodichloromethane	ug/m3	ND	1.4	12/11/16 09:00	
Bromoform	ug/m3	ND	2.1	12/11/16 09:00	
Bromomethane	ug/m3	ND	0.79	12/11/16 09:00	
Carbon disulfide	ug/m3	ND	0.63	12/11/16 09:00	
Carbon tetrachloride	ug/m3	ND	0.64	12/11/16 09:00	
Chlorobenzene	ug/m3	ND	0.94	12/11/16 09:00	
Chloroethane	ug/m3	ND	0.54	12/11/16 09:00	
Chloroform	ug/m3	ND	0.50	12/11/16 09:00	
Chloromethane	ug/m3	ND	0.42	12/11/16 09:00	
cis-1,2-Dichloroethene	ug/m3	ND	0.81	12/11/16 09:00	
cis-1,3-Dichloropropene	ug/m3	ND	0.92	12/11/16 09:00	
Cyclohexane	ug/m3	ND	0.70	12/11/16 09:00	
Dibromochloromethane	ug/m3	ND	1.7	12/11/16 09:00	
Dichlorodifluoromethane	ug/m3	ND	2.5	12/11/16 09:00	
Dichlorotetrafluoroethane	ug/m3	ND	1.4	12/11/16 09:00	
Ethanol	ug/m3	ND	0.96	12/11/16 09:00	
Ethyl acetate	ug/m3	ND	0.73	12/11/16 09:00	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1700 Elm Street - Suite 200
Minneapolis, MN 55414
(612)607-1700

QUALITY CONTROL DATA

Project: 6G28 Richfield Sinclair
Pace Project No.: 10372901

METHOD BLANK: 2471174 Matrix: Air
Associated Lab Samples: 10372901001, 10372901002

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Ethylbenzene	ug/m3	ND	0.88	12/11/16 09:00	
Hexachloro-1,3-butadiene	ug/m3	ND	2.2	12/11/16 09:00	
m&p-Xylene	ug/m3	ND	1.8	12/11/16 09:00	
Methyl-tert-butyl ether	ug/m3	ND	3.7	12/11/16 09:00	
Methylene Chloride	ug/m3	ND	3.5	12/11/16 09:00	
n-Heptane	ug/m3	ND	2.1	12/11/16 09:00	
n-Hexane	ug/m3	ND	0.72	12/11/16 09:00	
Naphthalene	ug/m3	ND	2.7	12/11/16 09:00	
o-Xylene	ug/m3	ND	0.88	12/11/16 09:00	
Propylene	ug/m3	ND	0.88	12/11/16 09:00	
Styrene	ug/m3	ND	0.87	12/11/16 09:00	
Tetrachloroethene	ug/m3	ND	0.69	12/11/16 09:00	
Tetrahydrofuran	ug/m3	ND	0.60	12/11/16 09:00	
Toluene	ug/m3	ND	0.77	12/11/16 09:00	
trans-1,2-Dichloroethene	ug/m3	ND	0.81	12/11/16 09:00	
trans-1,3-Dichloropropene	ug/m3	ND	0.92	12/11/16 09:00	
Trichloroethene	ug/m3	ND	0.55	12/11/16 09:00	
Trichlorofluoromethane	ug/m3	ND	1.1	12/11/16 09:00	
Vinyl acetate	ug/m3	ND	0.72	12/11/16 09:00	
Vinyl chloride	ug/m3	ND	0.26	12/11/16 09:00	

LABORATORY CONTROL SAMPLE: 2471175

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
1,1,1-Trichloroethane	ug/m3	55.5	60.2	108	60-143	
1,1,2,2-Tetrachloroethane	ug/m3	69.8	76.3	109	49-150	
1,1,2-Trichloroethane	ug/m3	55.5	60.7	109	57-149	
1,1,2-Trichlorotrifluoroethane	ug/m3	77.9	84.8	109	66-131	
1,1-Dichloroethane	ug/m3	41.1	45.0	109	62-139	
1,1-Dichloroethene	ug/m3	40.3	45.9	114	62-135	
1,2,4-Trichlorobenzene	ug/m3	75.4	78.6	104	55-146	
1,2,4-Trimethylbenzene	ug/m3	50	54.9	110	57-143	
1,2-Dibromoethane (EDB)	ug/m3	78.1	85.7	110	63-150	
1,2-Dichlorobenzene	ug/m3	61.1	66.6	109	57-141	
1,2-Dichloroethane	ug/m3	41.1	45.3	110	61-144	
1,2-Dichloropropane	ug/m3	47	50.1	107	63-144	
1,3,5-Trimethylbenzene	ug/m3	50	51.6	103	54-147	
1,3-Butadiene	ug/m3	22.5	23.9	106	61-140	
1,3-Dichlorobenzene	ug/m3	61.1	71.0	116	51-150	
1,4-Dichlorobenzene	ug/m3	61.1	67.6	111	57-143	
2-Butanone (MEK)	ug/m3	30	29.7	99	66-144	
2-Hexanone	ug/m3	104	117	112	63-147	
2-Propanol	ug/m3	125	137	110	54-146	
4-Ethyltoluene	ug/m3	50	56.0	112	56-150	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1700 Elm Street - Suite 200
Minneapolis, MN 55414
(612)607-1700

QUALITY CONTROL DATA

Project: 6G28 Richfield Sinclair
Pace Project No.: 10372901

LABORATORY CONTROL SAMPLE: 2471175

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
4-Methyl-2-pentanone (MIBK)	ug/m3	104	111	107	58-150	
Acetone	ug/m3	121	125	104	46-140	
Benzene	ug/m3	32.5	34.2	105	62-141	
Benzyl chloride	ug/m3	52.6	55.7	106	66-138	
Bromodichloromethane	ug/m3	68.1	76.3	112	58-149	
Bromoform	ug/m3	105	138	131	61-150	
Bromomethane	ug/m3	39.5	43.5	110	58-136	
Carbon disulfide	ug/m3	31.6	33.8	107	59-135	
Carbon tetrachloride	ug/m3	64	76.4	119	60-149	
Chlorobenzene	ug/m3	46.8	51.5	110	60-150	
Chloroethane	ug/m3	26.8	30.3	113	61-136	
Chloroform	ug/m3	49.6	52.9	107	65-138	
Chloromethane	ug/m3	21	20.8	99	62-133	
cis-1,2-Dichloroethene	ug/m3	40.3	42.8	106	65-139	
cis-1,3-Dichloropropene	ug/m3	46.1	51.4	111	61-149	
Cyclohexane	ug/m3	35	35.2	101	64-134	
Dibromochloromethane	ug/m3	86.6	102	118	59-150	
Dichlorodifluoromethane	ug/m3	50.3	55.0	110	63-134	
Dichlorotetrafluoroethane	ug/m3	71	71.2	100	62-134	
Ethanol	ug/m3	91.6	106	116	50-144	
Ethyl acetate	ug/m3	36.6	38.7	106	55-146	
Ethylbenzene	ug/m3	44.1	46.2	105	59-149	
Hexachloro-1,3-butadiene	ug/m3	108	105	97	42-150	
m&p-Xylene	ug/m3	88.3	97.4	110	59-146	
Methyl-tert-butyl ether	ug/m3	91.6	102	111	64-135	
Methylene Chloride	ug/m3	177	206	116	64-128	
n-Heptane	ug/m3	41.6	45.0	108	64-140	
n-Hexane	ug/m3	35.8	37.3	104	50-138	
Naphthalene	ug/m3	53.3	55.0	103	46-146	
o-Xylene	ug/m3	44.1	45.2	102	54-149	
Propylene	ug/m3	17.5	18.3	105	58-135	
Styrene	ug/m3	43.3	51.0	118	54-150	
Tetrachloroethene	ug/m3	68.9	72.2	105	60-142	
Tetrahydrofuran	ug/m3	30	29.4	98	56-143	
Toluene	ug/m3	38.3	40.5	106	61-138	
trans-1,2-Dichloroethene	ug/m3	40.3	46.8	116	67-137	
trans-1,3-Dichloropropene	ug/m3	46.1	52.9	115	59-145	
Trichloroethene	ug/m3	54.6	59.9	110	60-144	
Trichlorofluoromethane	ug/m3	57.1	62.0	109	59-134	
Vinyl acetate	ug/m3	35.8	39.1	109	55-143	
Vinyl chloride	ug/m3	26	26.6	102	63-135	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1700 Elm Street - Suite 200
Minneapolis, MN 55414
(612)607-1700

QUALITY CONTROL DATA

Project: 6G28 Richfield Sinclair
Pace Project No.: 10372901

SAMPLE DUPLICATE: 2471724

Parameter	Units	10372664001 Result	Dup Result	RPD	Max RPD	Qualifiers
1,1,1-Trichloroethane	ug/m3	ND	ND		25	
1,1,2,2-Tetrachloroethane	ug/m3	ND	ND		25	
1,1,2-Trichloroethane	ug/m3	ND	ND		25	
1,1,2-Trichlorotrifluoroethane	ug/m3	0.62J	.61J		25	
1,1-Dichloroethane	ug/m3	ND	ND		25	
1,1-Dichloroethene	ug/m3	ND	ND		25	
1,2,4-Trichlorobenzene	ug/m3	ND	ND		25	
1,2,4-Trimethylbenzene	ug/m3	ND	ND		25	
1,2-Dibromoethane (EDB)	ug/m3	ND	ND		25	
1,2-Dichlorobenzene	ug/m3	ND	ND		25	
1,2-Dichloroethane	ug/m3	ND	ND		25	
1,2-Dichloropropane	ug/m3	ND	ND		25	
1,3,5-Trimethylbenzene	ug/m3	ND	ND		25	
1,3-Butadiene	ug/m3	ND	ND		25	
1,3-Dichlorobenzene	ug/m3	ND	ND		25	
1,4-Dichlorobenzene	ug/m3	ND	ND		25	
2-Butanone (MEK)	ug/m3	ND	ND		25	
2-Hexanone	ug/m3	ND	ND		25	
2-Propanol	ug/m3	ND	ND		25	
4-Ethyltoluene	ug/m3	ND	ND		25	
4-Methyl-2-pentanone (MIBK)	ug/m3	ND	ND		25	
Acetone	ug/m3	3.9	3.9	0	25	
Benzene	ug/m3	0.44	0.42	4	25	
Benzyl chloride	ug/m3	ND	ND		25	
Bromodichloromethane	ug/m3	ND	ND		25	
Bromoform	ug/m3	ND	ND		25	
Bromomethane	ug/m3	ND	ND		25	
Carbon disulfide	ug/m3	ND	ND		25	
Carbon tetrachloride	ug/m3	0.53J	.52J		25	
Chlorobenzene	ug/m3	ND	ND		25	
Chloroethane	ug/m3	ND	ND		25	
Chloroform	ug/m3	ND	ND		25	
Chloromethane	ug/m3	0.70	0.73	5	25	
cis-1,2-Dichloroethene	ug/m3	ND	ND		25	
cis-1,3-Dichloropropene	ug/m3	ND	ND		25	
Cyclohexane	ug/m3	ND	ND		25	
Dibromochloromethane	ug/m3	ND	ND		25	
Dichlorodifluoromethane	ug/m3	1.7J	1.7J		25	
Dichlorotetrafluoroethane	ug/m3	ND	ND		25	
Ethanol	ug/m3	3.7	3.3	12	25	
Ethyl acetate	ug/m3	ND	ND		25	
Ethylbenzene	ug/m3	2.1	2.0	3	25	
Hexachloro-1,3-butadiene	ug/m3	ND	ND		25	
m&p-Xylene	ug/m3	ND	ND		25	
Methyl-tert-butyl ether	ug/m3	ND	ND		25	
Methylene Chloride	ug/m3	ND	ND		25	
n-Heptane	ug/m3	ND	ND		25	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1700 Elm Street - Suite 200
Minneapolis, MN 55414
(612)607-1700

QUALITY CONTROL DATA

Project: 6G28 Richfield Sinclair
Pace Project No.: 10372901

SAMPLE DUPLICATE: 2471724

Parameter	Units	10372664001 Result	Dup Result	RPD	Max RPD	Qualifiers
n-Hexane	ug/m3	0.43J	.39J		25	
Naphthalene	ug/m3	1.5J	1.4J		25	
o-Xylene	ug/m3	ND	ND		25	
Propylene	ug/m3	ND	ND		25	
Styrene	ug/m3	7.5	7.4	2	25	
Tetrachloroethene	ug/m3	ND	ND		25	
Tetrahydrofuran	ug/m3	ND	ND		25	
Toluene	ug/m3	0.38J	ND		25	
trans-1,2-Dichloroethene	ug/m3	ND	ND		25	
trans-1,3-Dichloropropene	ug/m3	ND	ND		25	
Trichloroethene	ug/m3	ND	ND		25	
Trichlorofluoromethane	ug/m3	1.4	1.4	3	25	
Vinyl acetate	ug/m3	ND	ND		25	
Vinyl chloride	ug/m3	ND	ND		25	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1700 Elm Street - Suite 200
Minneapolis, MN 55414
(612)607-1700

QUALIFIERS

Project: 6G28 Richfield Sinclair
Pace Project No.: 10372901

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to dilution of the sample aliquot.

ND - Not Detected at or above adjusted reporting limit.

J - Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

RL - Reporting Limit.

S - Surrogate

1,2-Diphenylhydrazine decomposes to and cannot be separated from Azobenzene using Method 8270. The result for each analyte is a combined concentration.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Indicates the compound was analyzed for, but not detected.

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

TNI - The NELAC Institute.

SAMPLE QUALIFIERS

Sample: 10372901001

[1] The Total Hydrocarbon (THC) pattern is evenly distributed throughout the chromatogram (before and after toluene).

Sample: 10372901002

[1] The Total Hydrocarbon (THC) pattern is evenly distributed throughout the chromatogram (before and after toluene).

ANALYTE QUALIFIERS

E Analyte concentration exceeded the calibration range. The reported result is estimated.

Pace Analytical Services, LLC
1700 Elm Street - Suite 200
Minneapolis, MN 55414
(612)607-1700

QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: 6G28 Richfield Sinclair
Pace Project No.: 10372901

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
10372901001	**Air-1**	TO-15	451222		
10372901002	**Air-2**	TO-15	451222		

REPORT OF LABORATORY ANALYSIS

To Laboratory:

LAB SAMPLE CHAIN OF CUSTODY and REQUEST FOR ANALYSES 10372901

Pace Analytical Labs
1700 Elm St., Suite 200
Minneapolis, MN 55414

AE Proj / P.O. # 6628 (Lab - PLEASE ensure this Project# appears on Lab Report)

Site Name Richfield Sinclair

Site Address 7733 Portland Ave S
Richfield, MN 55423

Sampler Signature:

From:
Applied Engineering, Inc.
1161 Wayzata Blvd E., Ste #60
Wayzata, MN 55391
Tel 952-939-9095 email applied@AppliedEngineeringUSA.com

#	Sample Code	Date	Time	Soil Water or Air	Location (all samples grab unless noted)	Depth	Type Soil	HNU Level	Preservative (b)	#Containers	REQUESTED ANALYSES: GRO (c)	DRO (c)	MTBE & BTEX	VOCs 465 (d)	Metals Lead (d)	Metals &PCBs (a,d)	Other
1	Air-1	12/8	1400	A		10	Sand	NSD		1				*		*	001
2	Air-2	12/8	1430	A		5	Sand	ND		1				*		*	002
3																	
4																	
5																	
6																	
7																	
8																	
9																	
10																	
11																	
12																	
13																	
14																	
15																	
16																	
17																	
18																	
19																	
20																	

Comments: * TO-15 MN LIST

Pace Special Quote # Stacey Larsen Quote, May, 2016

Samples shipped on ice: [X] yes [ ] no

Lab: Provide Chromatograms per MPCA requirements: [X] yes [ ] no

Lab: Provide results in MPCA Report Table [X] yes [ ] no

Lab: Provide Hard Copy of Lab Report [ ] yes [ ] no

a Metals to be analyzed include Arsenic, Barium, Cadmium, Chromium, Lead, Mercury, Selenium, and Silver. Also analyze for PCB's
b Type Preservative: M = Methanol; H = Hydrochloric Acid (HCl)
c Analyze sample constituents per Wisconsin DNR GRO and/or DRO Methods; Also perform Dry Weight Analysis
d All water samples to be FILTERED upon arrival by LABORATORY
e California Modified EPA Method 8015

Relinquished by:

1. Sig., Date, & Time 12/9/16 1500
Applied Engineering, Inc.

2. Sig., Date, Time Pace 12.9.16 1708
Print Name Beneath Sig.: Joe Sutton

Received by

Sig., Company: Pace 1610
Print Name Beneath Sig.: Joe Sutton

Sig., Company: Pace 12/9/1708
Print Name Beneath Sig.:

chain-tg 03/07

Pace Analytical	Document Name: Air Sample Condition Upon Receipt	Document Revised: 26APR2016 Page 1 of 1
	Document No.: F-MN-A-106-rev.11	Issuing Authority: Pace Minnesota Quality Office

Air Sample Condition Upon Receipt

Client Name: Applied Eng

Project #: WO# : 10372901

10372901

Courier: ☐Fed Ex ☐UPS ☐Speedee ☒Client ☐Commercial ☐Pace ☐Other:

Tracking Number:

Custody Seal on Cooler/Box Present? ☐Yes ☒No **Seals Intact?** ☐Yes ☐No

Optional: Proj. Due Date: Proj. Name:

Packing Material: ☐Bubble Wrap ☐Bubble Bags ☒Foam ☐None ☐Tin Can ☐Other: **Temp Blank rec:** ☐Yes ☒No

Temp. (TO17 and TO13 samples only) (°C): **Corrected Temp (°C):** **Thermom. Used:** ☐B88A912167504 ☐B88A0143310098 ☐151401163 ☐151401164

Temp should be above freezing to 6°C **Correction Factor:** **Date & Initials of Person Examining Contents:** 12/12/16

Type of Ice Received ☐Blue ☐Wet ☒None

				Comments:
Chain of Custody Present?	☑Yes	☐No	☐N/A	1.
Chain of Custody Filled Out?	☑Yes	☐No	☐N/A	2.
Chain of Custody Relinquished?	☑Yes	☐No	☐N/A	3.
Sampler Name and/or Signature on COC?	☑Yes	☐No	☐N/A	4.
Samples Arrived within Hold Time?	☑Yes	☐No	☐N/A	5.
Short Hold Time Analysis (<72 hr)?	☐Yes	☑No	☐N/A	6.
Rush Turn Around Time Requested?	☐Yes	☑No	☐N/A	7.
Sufficient Volume?	☑Yes	☐No	☐N/A	8.
Correct Containers Used?	☑Yes	☐No	☐N/A	9.
-Pace Containers Used?	☑Yes	☐No	☐N/A	
Containers Intact?	☑Yes	☐No	☐N/A	10.
Media: (Air Can) Airbag Filter TDT Passive				11.
Sample Labels Match COC?	☐Yes	☐No	☐N/A	12.

Samples Received:

Canisters			Canisters		
Sample Number	Can ID	Flow Controller ID	Sample Number	Can ID	Flow Controller ID
	2888	1228			
	2941	2831			

CLIENT NOTIFICATION/RESOLUTION **Field Data Required?** ☐Yes ☐No

Person Contacted: Date/Time:

Comments/Resolution:

Project Manager Review: Diane J. Anderson **Date:** 12/15/16

Note: Whenever there is a discrepancy affecting North Carolina compliance samples, a copy of this form will be sent to the North Carolina DEHNR Certification Office (i.e out of hold, incorrect preservative, out of temp, incorrect containers)

Data File: \\192.168.10.12\chem\10airB.i\121116.b\34618.D
Report Date: 15-Dec-2016 11:46

Pace Analytical Services, Inc.

TO15 Analysis (UNIX)

Data file : \\192.168.10.12\chem\10airB.i\121116.b\34618.D
Lab Smp Id: 10372901001
Inj Date : 11-DEC-2016 16:27
Operator : NCK Inst ID: 10airB.i
Smp Info :
Misc Info : 27314
Comment : Volatile Organic COMPOUNDS in Air
Method : \\192.168.10.12\chem\10airB.i\121116.b\TO15_342-16.m
Meth Date : 12-Dec-2016 13:50 mschmitz Quant Type: ISTD
Cal Date : 07-DEC-2016 11:54 Cal File: 34208.D
Als bottle: 18
Dil Factor: 1.57000
Integrator: HP RTE Compound Sublist: all.sub
Target Version: 4.14
Processing Host: 10MNAIR04

Concentration Formula: Amt * DF * Uf * CpndVariable

Name	Value	Description
DF	1.570	Dilution Factor
Uf	1.000	ng unit correction factor
Cpnd Variable		Local Compound Variable

COMPOUND	RT	AREA	AMOUNT
5 Dichlorodifluoromethane	3.032	4760553	0.102

	CONCENTRATIONS			QUANT			
RT	AREA	ON-COL(ppbv)	FINAL(ppbv)	QUAL	LIBRARY	LIB ENTRY	CPND #
Unknown				CAS #:			
2.916	25569424	0.54976378	0.863	0		0	5

Data File: \\192.168.10.12\chem\10airB.i\121116.b\34618.D
Report Date: 15-Dec-2016 11:46

Pace Analytical Services, Inc.

TENTATIVELY IDENTIFIED COMPOUNDS

Client Name:
Client SDG: 121116.b
Lab Smp Id: 10372901001
Operator : NCK
Sample Date:
Sample Location:
Sample Point:
Sample Matrix: AIR
Date Received:
Analysis Type: VOA
Level: LOW
Inj Date: 11-DEC-2016 16:27

Number TICs found: 1

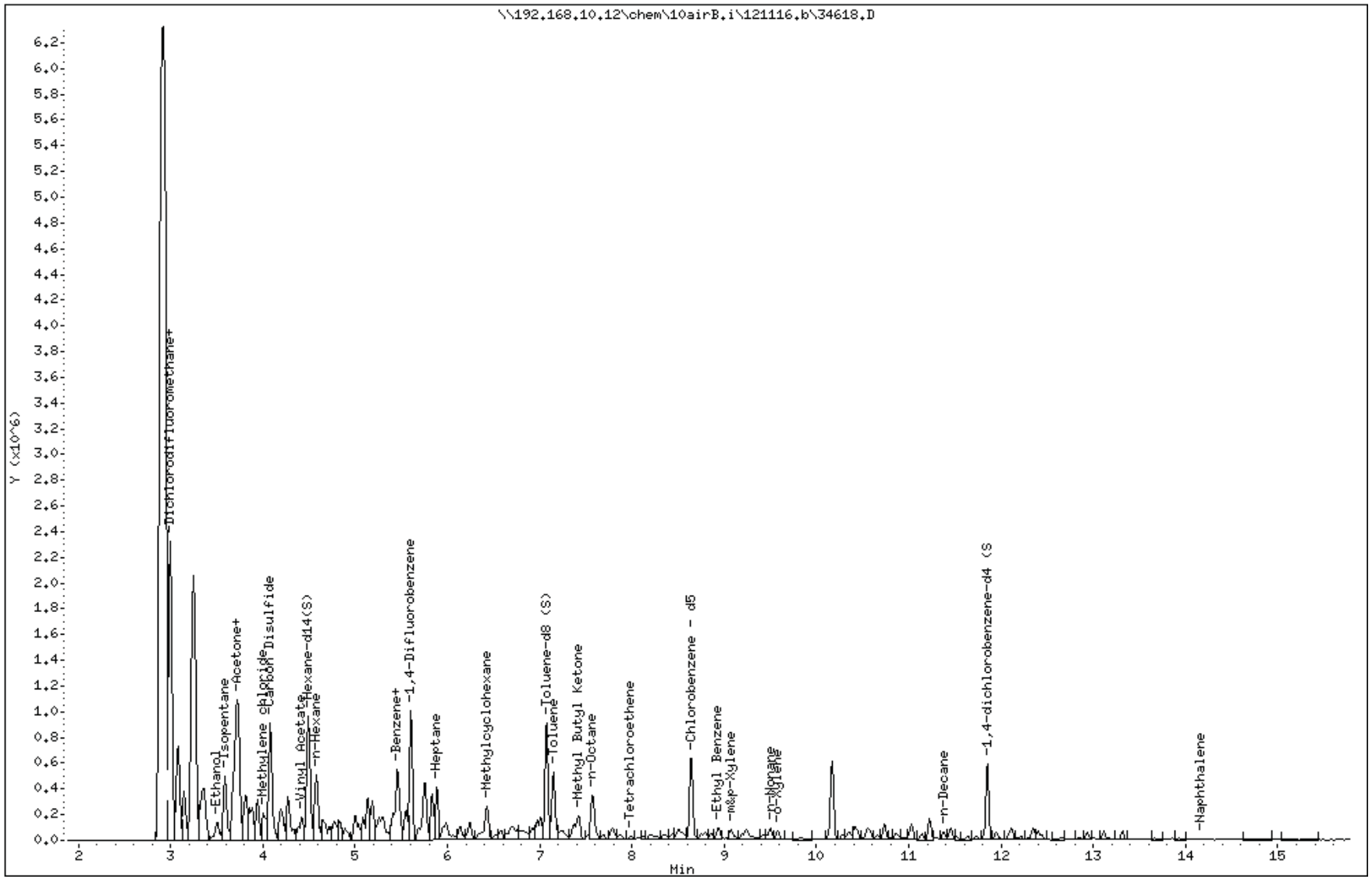
CONCENTRATION UNITS:
(ug/L or ug/KG) ppbv

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.		Unknown	2.916	0.863	_J__

Data File: \\192.168.10.12\chem\10airB.i\121116.b\34618.D
Date : 11-DEC-2016 16:27
Client ID:
Sample Info:

Instrument: 10airB.i
Operator: NCK
Column diameter: 0.32

Column phase: J&W DB-5



Data File: \\192.168.10.12\chem\10airB.i\121116.b\34619.D
Report Date: 15-Dec-2016 11:46

Pace Analytical Services, Inc.

TO15 Analysis (UNIX)

Data file : \\192.168.10.12\chem\10airB.i\121116.b\34619.D
Lab Smp Id: 10372901002
Inj Date : 11-DEC-2016 17:08
Operator : NCK Inst ID: 10airB.i
Smp Info :
Misc Info : 27314
Comment : Volatile Organic COMPOUNDS in Air
Method : \\192.168.10.12\chem\10airB.i\121116.b\TO15_342-16.m
Meth Date : 12-Dec-2016 13:50 mschmitz Quant Type: ISTD
Cal Date : 07-DEC-2016 11:54 Cal File: 34208.D
Als bottle: 19
Dil Factor: 1.57000
Integrator: HP RTE Compound Sublist: all.sub
Target Version: 4.14
Processing Host: 10MNAIR04

Concentration Formula: Amt * DF * Uf * CpndVariable

Name	Value	Description
DF	1.570	Dilution Factor
Uf	1.000	ng unit correction factor
Cpnd Variable		Local Compound Variable

	COMPOUND	RT	AREA	AMOUNT
4	Propylene	3.019	2077695	44.160

	CONCENTRATIONS			QUANT		
RT	AREA	ON-COL(ppbv)	FINAL(ppbv)	QUAL	LIBRARY	LIB ENTRY	CPND #
Unknown				CAS #:			
2.932	15671361	333.086332	523	0		0	4

Data File: \\192.168.10.12\chem\10airB.i\121116.b\34619.D
Report Date: 15-Dec-2016 11:46

Pace Analytical Services, Inc.

TENTATIVELY IDENTIFIED COMPOUNDS

Client Name:
Client SDG: 121116.b
Lab Smp Id: 10372901002
Operator : NCK
Sample Date:
Sample Location:
Sample Point:
Sample Matrix: AIR
Date Received:
Analysis Type: VOA
Level: LOW
Inj Date: 11-DEC-2016 17:08

Number TICs found: 1

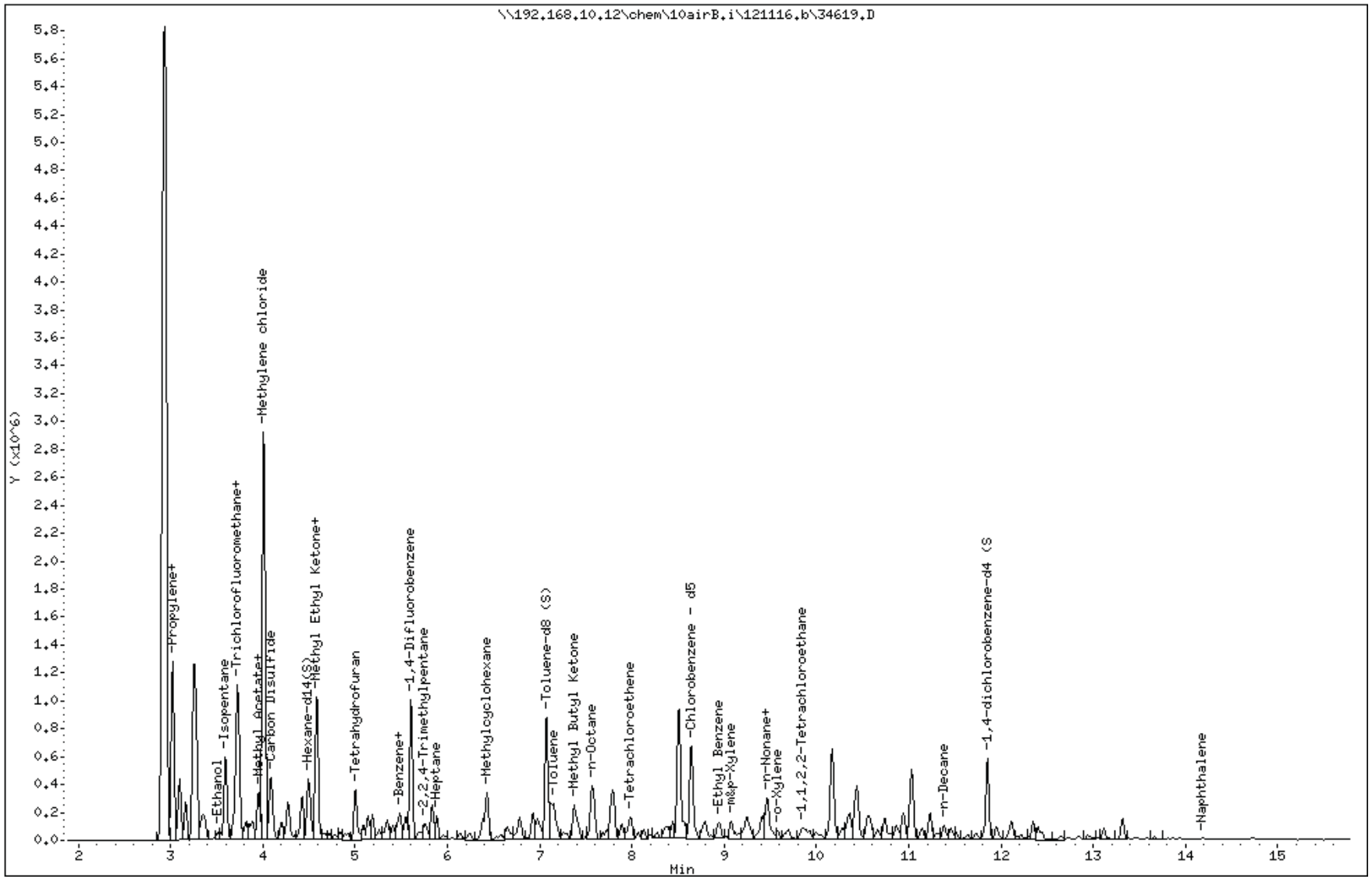
CONCENTRATION UNITS:
(ug/L or ug/KG) ppbv

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.		Unknown	2.932	523	J

Data File: \\192.168.10.12\chem\10airB.i\121116.b\34619.D
Date : 11-DEC-2016 17:08
Client ID:
Sample Info:

Instrument: 10airB.i
Operator: NCK
Column diameter: 0.32

Column phase: J&W DB-5



Appendix G

Methodologies and Procedures for Field Screening of Soil Other Field Analyses Soil Borings Soil Sampling Soil Gas Air Sampling Temporary Well Installation Water Sampling

Guidance Document c-prp4-06: September 2008
Petroleum Remediation Program
Minnesota Pollution Control Agency

Appendix G

Methodologies and Procedures, Including Field Screening of Soil, Other Field Analyses, Soil Boring, Soil Sampling, Soil Gas Sampling, and Water Sampling.

The following methods were used to conduct this investigation:

Field Screening Methods

Field screening methods used to distinguish impacted soil from non-impacted soil included visual identification, any obvious odors, and use of a Photoionization Detector (PID)

PID Soil Analysis

PID analysis included use of a Photoionization Detector (PID) manufactured by HNU Systems, Inc. (Model PI-101 with a 10.2 eV lamp, calibrated to a benzene standard).

Soil samples were collected from the Geoprobe acetate liner into a clean, sealable plastic bag.

Push-Probe Soil Borings

Push-probe technology uses small-diameter sampling rods which are driven through the soil to retrieve soil or water samples from a desired depth.

The push-probe equipment was operated by Bergerson Caswell to collect soil samples at this location. The equipment was a Geoprobe 5410 truck-mounted pneumatic percussion probe rod driver and hydraulic pulling system.

Soil samples were collected by driving the sealed core-sampler with a clean acetate liner to the desired depth. Upon removal from the bore hole, the liner containing the sample was retrieved from the core sampler.

Groundwater samples were collected from the temporary monitoring wells created by PVC Well points pushed to the bottom of the boring. Samples were collected with 1/4" polyethylene tubing and a ball check valve. Water samples were immediately placed into sample vials and placed on ice for follow-up laboratory analyses.

The temporary wells were sealed in accordance with Minnesota Rules, Dept of Health, Wells and Borings, Chapter 4725.3850.

Method used to Measure Water Levels in Borings

The method used to measure water levels in borings was use of an electronic water level gauge provided by the soil boring contractor.

Soil Gas

Soil gas samples were collected by driving the hollow threaded probe rods with a sacrificial drive point to the desired depth. The rods were then partially extracted, dislodging the sacrificial point, and exposing the soil interval of approximately one foot. The rods were air-sealed to the ground with wet bentonite, and PVC tubing (3/8" OD) was threaded to the bottom of the rod. The air inside the tubing was purged with a 60 cc syringe several times. The tubing was then connected to the Summa sampling canister and the sample collected. The Summa canisters were provided to the laboratory for Analysis by EPA method TO-15 (full scan) for compounds in the Minnesota Soil Gas List and THC.

In addition to collection for laboratory analysis, soil gas samples were also collected for field analysis. Immediately upon completion of the summa canister sample collection, the PVC tubing was removed and the PID probe was inserted into the PVC tubing, and the headspace reading recorded.

Sample Handling Methods

Soil sample collection followed MPCA LUST Cleanup Program Guidance documents. Samples were collected using clean, latex gloves. DRO and VOC samples were quickly measured and placed into sampling jars, preserved with methanol provided by the Laboratory. DRO samples were weighed and placed into sampling jars. All samples were immediately put on ice and kept cold until delivered to the laboratory with a chain of custody for analysis.

Samples were analyzed by the fixed-base laboratory in accordance with laboratory-specified guidelines and Wisconsin modified EPA methods for DRO as applicable.

Laboratory Sample Analysis, Fixed-Base Laboratory

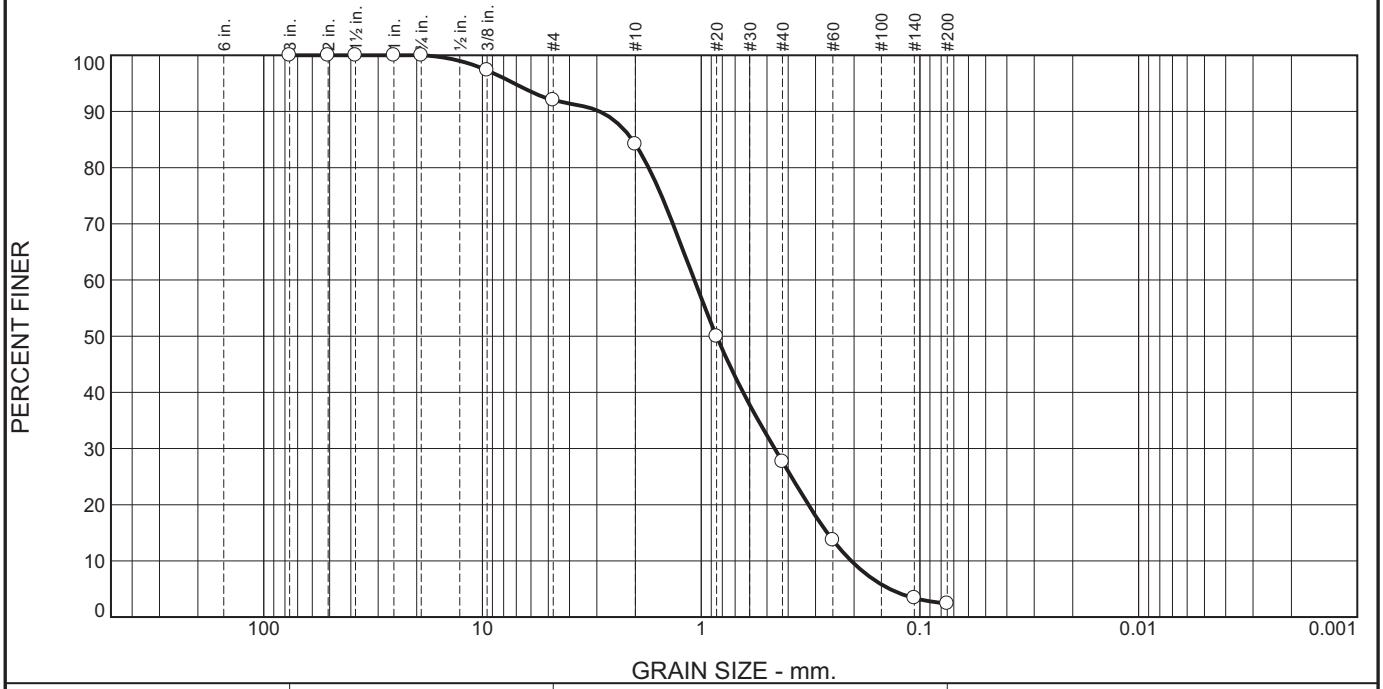
Laboratory analyses were conducted on selected samples. Samples were analyzed in accordance with MPCA guidelines at a state certified laboratory, for the constituents identified on the chain of custody. According to the laboratory, all analyses were performed using Wisconsin modified EPA methods or other EPA methods.

Appendix I

Grain Size Analysis

Gradient Calculations

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0	0	8	8	56	26	2	

TEST RESULTS (ASTM D422)

Opening Size	Percent Finer	Spec.* (Percent)	Pass? (X=Fail)
3	100		
2	100		
1.5	100		
1	100		
.75	100		
.375	97		
#4	92		
#10	84		
#20	50		
#40	28		
#60	14		
#140	3		
#200	2.4		

* (no specification provided)

Material Description

poorly graded sand

Atterberg Limits (ASTM D 4318)

PL= NP **LL=** NV **PI=**

Classification

USCS (D 2487)= SP **AASHTO (M 145)=** A-1-b

Coefficients

D_{90}= 2.9162 D_{85}= 2.0688 D_{60}= 1.0744
D_{50}= 0.8503 D_{30}= 0.4615 D_{15}= 0.2650
D_{10}= 0.2060 C_u= 5.22 C_c= 0.96

Remarks

Date Received: 12/9/16 **Date Tested:** 12/13/16

Tested By: Will Thomas

Checked By: Rhonda Johnson

Title: Lab Manager

Location: GS-1
Sample Number: 10372832-10

Date Sampled: 12/8/16

Pace Analytical Services, Inc.

Billings, MT

Client: Applied Engineering
Project: 6G28 Richfield Sinclair

Project No: **Figure**

GRAIN SIZE DISTRIBUTION TEST DATA

12/14/2016

Client: Applied Engineering
Project: 6G28 Richfield Sinclair
Location: GS-1
Sample Number: 10372832-10
Material Description: poorly graded sand
Sample Date: 12/8/16
Date Received: 12/9/16 **PL:** NP **LL:** NV
USCS Classification: SP **AASHTO Classification:** A-1-b
Grain Size Test Method: ASTM D422
Tested By: Will Thomas **Test Date:** 12/13/16
Checked By: Rhonda Johnson **Title:** Lab Manager

Sieve Test Data

Dry Sample and Tare (grams)	Tare (grams)	Sieve Opening Size	Weight Retained (grams)	Sieve Weight (grams)	Percent Finer
922.28	643.73	3	0.00	0.00	100
		2	0.00	0.00	100
		1.5	0.00	0.00	100
		1	0.00	0.00	100
		.75	0.00	0.00	100
		.375	7.43	0.00	97
		#4	14.77	0.00	92
		#10	21.90	0.00	84
		#20	95.21	0.00	50
		#40	62.23	0.00	28
		#60	38.86	0.00	14
		#140	28.72	0.00	3
		#200	2.77	0.00	2.4

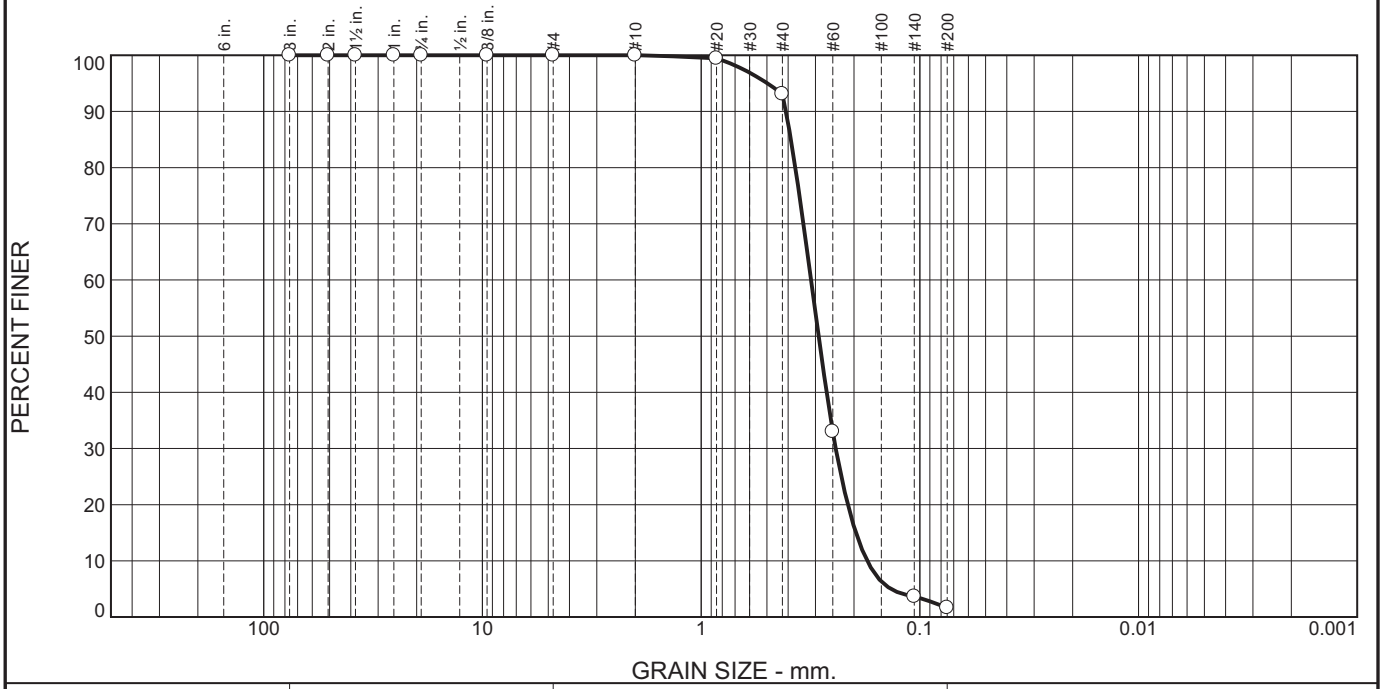
Fractional Components

Cobbles	Gravel			Sand				Fines		
	Coarse	Fine	Total	Coarse	Medium	Fine	Total	Silt	Clay	Total
0	0	8	8	8	56	26	90			2

D_5	D_{10}	D_{15}	D_{20}	D_{30}	D_{40}	D_{50}	D_{60}	D_{80}	D_{85}	D_{90}	D_{95}
0.1371	0.2060	0.2650	0.3234	0.4615	0.6434	0.8503	1.0744	1.7403	2.0688	2.9162	7.1681

Fineness Modulus	C_u	C_c
2.97	5.22	0.96

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0	0	0	0	7	91	2	

TEST RESULTS (ASTM D422)

Opening Size	Percent Finer	Spec.* (Percent)	Pass? (X=Fail)
3	100		
2	100		
1.5	100		
1	100		
.75	100		
.375	100		
#4	100		
#10	100		
#20	99		
#40	93		
#60	33		
#140	4		
#200	1.6		

* (no specification provided)

Material Description

poorly graded sand

Atterberg Limits (ASTM D 4318)

PL= NP **LL=** NV **PI=**

Classification

USCS (D 2487)= SP **AASHTO (M 145)=** A-3

Coefficients

D_{90}= 0.4094 D_{85}= 0.3885 D_{60}= 0.3143
D_{50}= 0.2903 D_{30}= 0.2423 D_{15}= 0.1961
D_{10}= 0.1741 C_u= 1.81 C_c= 1.07

Remarks

Date Received: 12/9/16 **Date Tested:** 12/13/16

Tested By: Will Thomas

Checked By: Rhonda Johnson

Title: Lab Manager

Location: GS-2
Sample Number: 10372832-11

Date Sampled: 12/8/16

Pace Analytical Services, Inc.

Billings, MT

Client: Applied Engineering
Project: 6G28 Richfield Sinclair

Project No: **Figure**

GRAIN SIZE DISTRIBUTION TEST DATA

12/14/2016

Client: Applied Engineering
Project: 6G28 Richfield Sinclair
Location: GS-2
Sample Number: 10372832-11
Material Description: poorly graded sand
Sample Date: 12/8/16
Date Received: 12/9/16 **PL:** NP **LL:** NV
USCS Classification: SP **AASHTO Classification:** A-3
Grain Size Test Method: ASTM D422
Tested By: Will Thomas **Test Date:** 12/13/16
Checked By: Rhonda Johnson **Title:** Lab Manager

Sieve Test Data

Dry Sample and Tare (grams)	Tare (grams)	Sieve Opening Size	Weight Retained (grams)	Sieve Weight (grams)	Percent Finer
818.91	571.03	3	0.00	0.00	100
		2	0.00	0.00	100
		1.5	0.00	0.00	100
		1	0.00	0.00	100
		.75	0.00	0.00	100
		.375	0.00	0.00	100
		#4	0.00	0.00	100
		#10	0.00	0.00	100
		#20	1.40	0.00	99
		#40	15.72	0.00	93
		#60	148.96	0.00	33
		#140	72.79	0.00	4
		#200	4.95	0.00	1.6

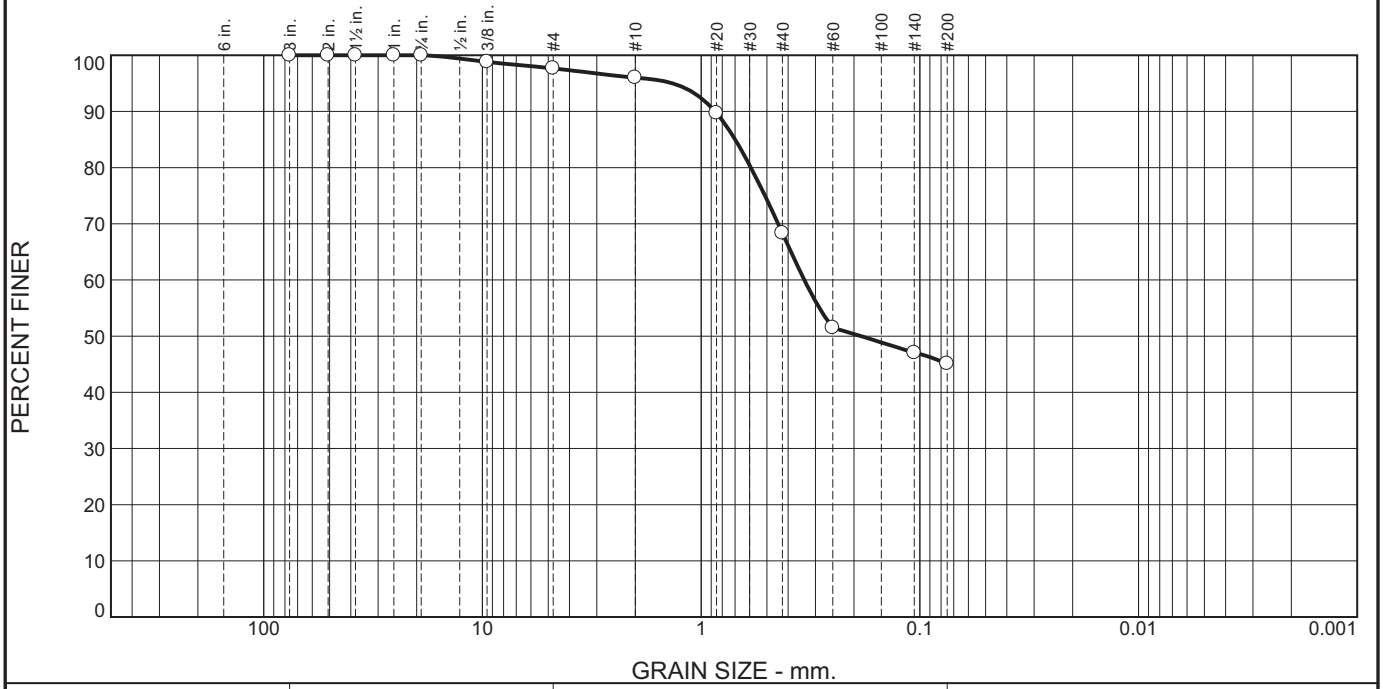
Fractional Components

Cobbles	Gravel			Sand				Fines		
	Coarse	Fine	Total	Coarse	Medium	Fine	Total	Silt	Clay	Total
0	0	0	0	0	7	91	98			2

D_5	D_{10}	D_{15}	D_{20}	D_{30}	D_{40}	D_{50}	D_{60}	D_{80}	D_{85}	D_{90}	D_{95}
0.1357	0.1741	0.1961	0.2136	0.2423	0.2669	0.2903	0.3143	0.3707	0.3885	0.4094	0.4976

Fineness Modulus	C_u	C_c
1.43	1.81	1.07

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0	0	2	2	28	23	45	

TEST RESULTS (ASTM D422)

Opening Size	Percent Finer	Spec.* (Percent)	Pass? (X=Fail)
3	100		
2	100		
1.5	100		
1	100		
.75	100		
.375	99		
#4	98		
#10	96		
#20	90		
#40	68		
#60	52		
#140	47		
#200	45		

* (no specification provided)

Material Description

silty sand

Atterberg Limits (ASTM D 4318)

PL= NP **LL=** NV **PI=**

Classification

USCS (D 2487)= SM **AASHTO (M 145)=** A-4(0)

Coefficients

D_{90}= 0.8635 D_{85}= 0.6989 D_{60}= 0.3374
D_{50}= 0.1859 D_{30}= D_{15}=
D_{10}= C_u= C_c=

Remarks

Date Received: 12/9/16 **Date Tested:** 12/13/16

Tested By: Will Thomas

Checked By: Rhonda Johnson

Title: Lab Manager

Location: GS-3
Sample Number: 10372832-12

Date Sampled: 12/8/16

Pace Analytical Services, Inc.

Billings, MT

Client: Applied Engineering
Project: 6G28 Richfield Sinclair

Project No: **Figure**

GRAIN SIZE DISTRIBUTION TEST DATA

12/14/2016

Client: Applied Engineering
Project: 6G28 Richfield Sinclair
Location: GS-3
Sample Number: 10372832-12
Material Description: silty sand
Sample Date: 12/8/16
Date Received: 12/9/16 **PL:** NP **LL:** NV
USCS Classification: SM **AASHTO Classification:** A-4(0)
Grain Size Test Method: ASTM D422
Tested By: Will Thomas **Test Date:** 12/13/16
Checked By: Rhonda Johnson **Title:** Lab Manager

Sieve Test Data

Dry Sample and Tare (grams)	Tare (grams)	Sieve Opening Size	Weight Retained (grams)	Sieve Weight (grams)	Percent Finer
1070.88	648.09	3	0.00	0.00	100
		2	0.00	0.00	100
		1.5	0.00	0.00	100
		1	0.00	0.00	100
		.75	0.00	0.00	100
		.375	4.96	0.00	99
		#4	4.91	0.00	98
		#10	7.03	0.00	96
		#20	26.68	0.00	90
		#40	90.24	0.00	68
		#60	71.22	0.00	52
		#140	18.95	0.00	47
		#200	8.12	0.00	45

Fractional Components

Cobbles	Gravel			Sand				Fines		
	Coarse	Fine	Total	Coarse	Medium	Fine	Total	Silt	Clay	Total
0	0	2	2	2	28	23	53			45

D_5	D_{10}	D_{15}	D_{20}	D_{30}	D_{40}	D_{50}	D_{60}	D_{80}	D_{85}	D_{90}	D_{95}
						0.1859	0.3374	0.5920	0.6989	0.8635	1.3497

Fineness Modulus
1.28

Pace Analytical Services, Inc.

EPA United States Environmental Protection Agency

EPA On-line Tools for Site Assessment Calculation

Hydraulic Gradient – Magnitude and Direction

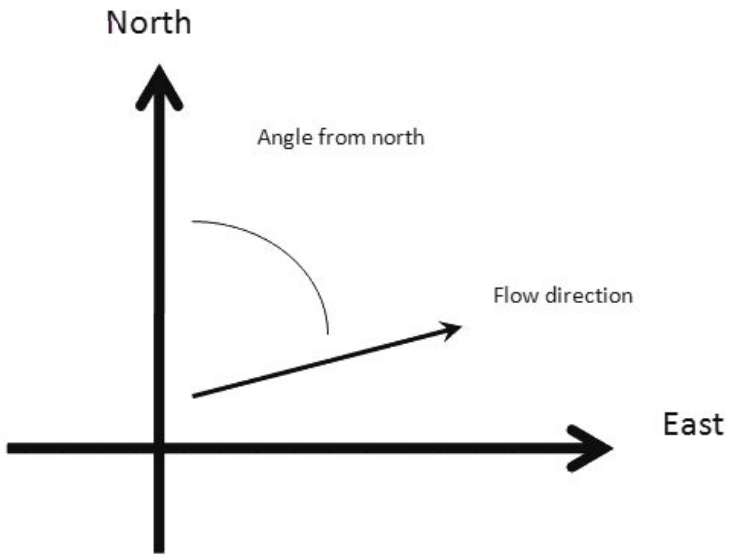
Gradient Calculation from fitting a plane to as many as thirty points

$$a x_1 + b y_1 + c = h_1$$
$$a x_2 + b y_2 + c = h_2$$
$$a x_3 + b y_3 + c = h_3$$
$$\cdots$$
$$a x_{30} + b y_{30} + c = h_{30}$$

where (x_i, y_i) are the coordinates of the well and
h_i is the head

$i = 1,2,3, \ldots, 30$
The coefficients a, b, and c are calculated by a least-squares fitting of the the data to a plane

The gradient is calculated from the square root of $(a^2 + b^2)$ and the angle from the arctangent of a/b or b/a depending on the quadrant



Inputs

Example Data Set 1 | Example Data Set 2 | Calculate | Clear
Save Data | Recall Data | Go Back
Site Name: 8G26
Date: 5/31/2017 | Current Date
Calculation basis: Head
Coordinates: ft

I.D.		x-coordinate	y-coordinate	head ft
1)	GP-1	254.91	925.41	812.4
2)	GP-2	302.26	938.14	812.3
3)	GP-3	301.31	872.04	811.6
4)				
5)				
6)				
7)				
8)				
9)				
10)				
11)				
12)				
13)				
14)				
15)				
16)				

17)				
18)				
19)				
20)				
21)				
22)				
23)				
24)				
25)				
26)				
27)				
28)				
29)				
30)				

Results

Number of Points Used in Calculation	3
Max. Difference Between Head Values	0.2438
Gradient Magnitude (i)	0.01177
Flow direction as degrees from North (positive y axis)	155.0
Coefficient of Determination (R^2)	1.00

WCMS

Last updated on 2/23/2016

Appendix K

Water Supply Well Logs with Legible Unique Numbers

Minnesota Unique Well Number

475680

County Hennepin
Quad Bloomingto
Quad ID 104D

MINNESOTA DEPARTMENT OF HEALTH
WELL AND BORING REPORT
Minnesota Statutes Chapter 1031

Entry Date 11/23/1992
Update Date 01/11/2016
Received Date

Well Name	Township	Range	Dir	Section	Subsection
SINCLAIR	28	24	W	35	CCC

Elevation **Elev. Method**

Address

Contact BOX 6247 KANSAS CITY KS 66106
Well 7733 PORTLAND AV RICHFIELD MN

Stratigraphy Information

Geological Material	From	To (ft.)	Color	Hardness
CLAY	0	2	BLACK	
SILTY CLAY	2	4	BROWN	
SILTY CLAY	4	6	BLK/BRN	
SILTY CLAY	6	9	BLK/BRN	
FINE GRAIN SAND	9	33	LT. BLU	
MED/COARSE SAND	33	36	BROWN	
MED/COARSE SAND	36	39	BROWN	

Remarks
WELL SEALED 09-28-1992 BY 34050
ORIGINAL USE MW - MONITOR WELL

Well Depth 39 ft. **Depth Completed** 39 ft. **Date Well Completed** 01/25/1991
Drill Method Power Auger **Drill Fluid**

Use monitor well **Status** Sealed

Well Hydrofractured? Yes ☐ No ☐ **From** **To**

Casing Type Single casing **Joint**
Drive Shoe? Yes ☐ No ☐ **Above/Below**

Casing Diameter		Weight
2	in. To 29 ft.	lbs./ft.

Open Hole From ft. To ft.

Screen? ☒ **Type** stainless **Make** COOK

Diameter	Slot/Gauze	Length		Set			
2	in.	10	10	ft.	29	ft.	39 ft.

Static Water Level
31 ft. land surface Measure 01/25/1991

Pumping Level (below land surface)

Wellhead Completion
Pitless adapter manufacturer Model
☐ Casing Protection ☒ 12 in. above grade
☐ At-grade (Environmental Wells and Borings ONLY)

Grouting Information Well Grouted? ☒ Yes ☐ No ☐ Not Specified

Material	Amount	From	To
neat cement		ft. 29	ft.

Nearest Known Source of Contamination
feet Direction Volatile organic compounds Type
Well disinfected upon completion? ☐ Yes ☒ No

Pump ☒ Not Installed Date Installed
Manufacturer's name
Model Number HP Volt
Length of drop pipe ft Capacity g.p. Typ

Abandoned
Does property have any not in use and not sealed well(s)? ☐ Yes ☒ No

Variance
Was a variance granted from the MDH for this well? ☐ Yes ☐ No

Miscellaneous
First Bedrock Aquifer
Last Strat Depth to Bedrock ft
Located by
Locate Method
System UTM - NAD83, Zone 15, Meters X Y
Unique Number Verification Input Date

Angled Drill Hole

Well Contractor

Thein Well Co.	34050	THEIN,M.
Licensee Business	Lic. or Reg. No.	Name of Driller

Minnesota Unique Well Number

471526

County Hennepin
Quad Bloomingto
Quad ID 104D

MINNESOTA DEPARTMENT OF HEALTH
WELL AND BORING REPORT
Minnesota Statutes Chapter 1031

Entry Date 11/23/1992
Update Date 01/11/2016
Received Date

Well Name	Township	Range	Dir	Section	Subsection
SINCLAIR	28	24	W	35	CCC

Elevation **Elev. Method**

Address

Contact BOX 6247 KANSAS CITY KS 66106
Well 7733 PORTLAND AV S RICHFIELD MN

Stratigraphy Information

Geological Material	From	To (ft.)	Color	Hardness
BLACKTOP 0-6"	0	0		
SILTY SAND	0	4	BROWN	
SILTY CLAY	4	9	BROWN	MEDIUM
MED/FINE SAND	9	14	LT. BRN	
SAND	14	19	BROWN	MEDIUM
MED/FINE SAND	19	36	LT. BRN	

Remarks
WELL USE: SOIL BORING SB1
WELL SEALED 11-02-1990 BY 34050

Well Depth 36 ft. **Depth Completed** 36 ft. **Date Well Completed** 11/02/1990
Drill Method **Drill Fluid**
Use other (specify in remarks) **Status** Sealed
Well Hydrofractured? **Yes** ☐ **No** ☐ **From** **To**
Casing Type **Joint**
Drive Shoe? **Yes** ☐ **No** ☐ **Above/Below**
Open Hole From ft. To ft.
Screen? ☐ **Type** **Make**
Static Water Level
34 ft. land surface Measure 11/02/1990
Pumping Level (below land surface)
Wellhead Completion
Pitless adapter manufacturer Model
☐ Casing Protection ☐ 12 in. above grade
☐ At-grade (Environmental Wells and Borings ONLY)
Grouting Information Well Grouted? ☒ Yes ☐ No ☐ Not Specified
Nearest Known Source of Contamination
feet Direction Volatile organic compounds Type
Well disinfected upon completion? ☐ Yes ☐ No
Pump ☐ Not Installed Date Installed
Manufacturer's name
Model Number HP Volt
Length of drop pipe ft Capacity g.p. Typ
Abandoned
Does property have any not in use and not sealed well(s)? ☐ Yes ☐ No
Variance
Was a variance granted from the MDH for this well? ☐ Yes ☐ No
Miscellaneous
First Bedrock Aquifer
Last Strat Depth to Bedrock ft
Located by
Locate Method
System UTM - NAD83, Zone 15, Meters X Y
Unique Number Verification Input Date
Angled Drill Hole
Well Contractor
Thein Well Co. 34050
Licensee Business Lic. or Reg. No. Name of Driller

Minnesota Unique Well Number

471525

County Hennepin
Quad Bloomingto
Quad ID 104D

MINNESOTA DEPARTMENT OF HEALTH
WELL AND BORING REPORT
Minnesota Statutes Chapter 1031

Entry Date 11/23/1992
Update Date 01/11/2016
Received Date

Well Name	Township	Range	Dir	Section	Subsection
SINCLAIR	28	24	W	35	CCC

Elevation **Elev. Method**

Address

Contact BOX 6247 KANSAS CITY KS 66106
Well 7733 PORTLAND AV S RICHFIELD MN

Stratigraphy Information

Geological Material	From	To (ft.)	Color	Hardness
3" BLACKTOP/BROWN	0	4		
SAND GRAVEL	4	6	BLACK	
COARSE SAND	6	9	DK. BRN	
SAND MED/COARSE	9	31	LT. BRN	
MED/COARSE, SAND	31	34	BROWN	
MED COARSE SAND	34	36	BROWN	

Remarks
WELL USE: SOIL BORING SB2 ABANDONED
WELL SEALED 11-02-1990 BY 34050

Well Depth 36 ft. **Depth Completed** 34 ft. **Date Well Completed** 11/02/1990
Drill Method Power Auger **Drill Fluid**
Use other (specify in remarks) **Status** Sealed
Well Hydrofractured? Yes ☐ No ☐ **From** **To**
Casing Type **Joint**
Drive Shoe? Yes ☐ No ☐ **Above/Below**

Open Hole From ft. To ft.
Screen? ☐ **Type** **Make**

Static Water Level
34 ft. land surface Measure 11/02/1990

Pumping Level (below land surface)

Wellhead Completion
Pitless adapter manufacturer Model
☐ Casing Protection ☐ 12 in. above grade
☐ At-grade (Environmental Wells and Borings ONLY)

Grouting Information Well Grouted? ☒ Yes ☐ No ☐ Not Specified

Material	Amount	From	To
neat cement		ft. 36	ft.

Nearest Known Source of Contamination
feet Direction Volatile organic compounds Type
Well disinfected upon completion? ☒ Yes ☐ No

Pump ☒ Not Installed Date Installed
Manufacturer's name
Model Number HP Volt
Length of drop pipe ft Capacity g.p. Typ

Abandoned
Does property have any not in use and not sealed well(s)? ☐ Yes ☐ No

Variance
Was a variance granted from the MDH for this well? ☐ Yes ☐ No

Miscellaneous
First Bedrock Aquifer
Last Strat Depth to Bedrock ft
Located by
Locate Method
System UTM - NAD83, Zone 15, Meters X Y
Unique Number Verification Input Date

Angled Drill Hole

Well Contractor
Thein Well Co. 34050 THEIN,M.
Licensee Business Lic. or Reg. No. Name of Driller

Minnesota Unique Well Number

222919

County Hennepin
Quad Bloomingto
Quad ID 104D

MINNESOTA DEPARTMENT OF HEALTH
WELL AND BORING REPORT
Minnesota Statutes Chapter 1031

Entry Date 08/24/1991
Update Date 01/11/2016
Received Date

Well Name	Township	Range	Dir Section	Subsection
	28	24	W 35	CCCCBD

Elevation 838 ft. **Elev. Method** 7.5 minute topographic map (+/- 5 feet)

Address

C/W 616 78TH ST E MN

Stratigraphy Information

Geological Material	From	To (ft.)	Color	Hardness
DRIFT	0	235		
SHAKOPEE	235	245		

Remarks

Well Depth 245 ft. **Depth Completed** 245 ft. **Date Well Completed**

Drill Method **Drill Fluid**

Use domestic **Status** Active

Well Hydrofractured? Yes ☐ No ☐ **From** **To**

Casing Type **Joint**
Drive Shoe? Yes ☐ No ☐ **Above/Below**

Open Hole From ft. To ft.

Screen? ☐ **Type** **Make**

Static Water Level

Pumping Level (below land surface)

Wellhead Completion
Pitless adapter manufacturer Model
☐ Casing Protection ☐ 12 in. above grade
☐ At-grade (Environmental Wells and Borings ONLY)

Grouting Information Well Grouted? ☐ Yes ☐ No ☒ Not Specified

Nearest Known Source of Contamination
feet Direction Type
Well disinfected upon completion? ☐ Yes ☐ No

Pump ☐ Not Installed Date Installed
Manufacturer's name
Model Number HP Volt
Length of drop pipe ft Capacity g.p. Typ

Abandoned
Does property have any not in use and not sealed well(s)? ☐ Yes ☐ No

Variance
Was a variance granted from the MDH for this well? ☐ Yes ☐ No

Miscellaneous
First Bedrock Prairie Du Chien Group Aquifer indeterminate
Last Strat Prairie Du Chien Group Depth to Bedrock 235 ft
Located by Minnesota Geological Survey
Locate Method Digitized - scale 1:24,000 or larger (Digitizing Table)
System UTM - NAD83, Zone 15, Meters X 478879 Y 4967729
Unique Number Verification Address verification Input Date 01/01/1990

Angled Drill Hole

Well Contractor

Licensee Business Lic. or Reg. No. Name of Driller

Minnesota Unique Well Number

206262

County Hennepin
Quad Bloomingto
Quad ID 104D

MINNESOTA DEPARTMENT OF HEALTH
WELL AND BORING REPORT
Minnesota Statutes Chapter 1031

Entry Date 08/24/1991
Update Date 01/11/2016
Received Date

Well Name	Township	Range	Dir Section	Subsection
COBB INC.	28	24	W 35	CCCCAC

Elevation 840 ft. **Elev. Method** 7.5 minute topographic map (+/- 5 feet)

Address

C/W 616 78TH ST E RICHFIELD MN

Stratigraphy Information

Geological Material	From	To (ft.)	Color	Hardness
SAND & GRAVEL	0	64	BROWN	
CLAY	64	127	BLUE	
SAND & GRAVEL	127	235	BROWN	
SHAKOPEE	235	245		

Remarks

Well Depth 245 ft. **Depth Completed** 245 ft. **Date Well Completed** 06/13/1961

Drill Method Cable Tool **Drill Fluid**

Use commercial **Status** Active

Well Hydrofractured? Yes ☐ No ☐ **From** **To**

Casing Type Single casing **Joint**

Drive Shoe? Yes ☐ No ☐ **Above/Below**

Casing Diameter **Weight**

4 in. To 235 ft. lbs./ft.

Open Hole From 235 ft. To 245 ft.

Screen? ☐ **Type** **Make**

Static Water Level

80 ft. land surface Measure 06/13/1961

Pumping Level (below land surface)

80 ft. 6 hrs. Pumping at 20 g.p.m.

Wellhead Completion

Pitless adapter manufacturer Model

☐ Casing Protection ☐ 12 in. above grade

☐ At-grade (Environmental Wells and Borings ONLY)

Grouting Information Well Grouted? ☒ Yes ☐ No ☐ Not Specified

Material	Amount	From	To
well grouted, type unknown		ft.	ft.

Nearest Known Source of Contamination

feet Direction Type

Well disinfected upon completion? ☐ Yes ☐ No

Pump ☒ Not Installed Date Installed

Manufacturer's name

Model Number HP 0 Volt

Length of drop pipe ft Capacity 10 g.p. Typ

Abandoned

Does property have any not in use and not sealed well(s)? ☐ Yes ☐ No

Variance

Was a variance granted from the MDH for this well? ☐ Yes ☐ No

Miscellaneous

First Bedrock Prairie Du Chien Group Aquifer Prairie Du Chien

Last Strat Prairie Du Chien Group Depth to Bedrock 235 ft

Located by Minnesota Geological Survey

Locate Method Digitized - scale 1:24,000 or larger (Digitizing Table)

System UTM - NAD83, Zone 15, Meters X 478912 Y 4967754

Unique Number Verification Input Date 01/01/1990

Angled Drill Hole

Well Contractor

Bissons Well & Pump 19189

Licensee Business Lic. or Reg. No. Name of Driller

Minnesota Unique Well Number

204968

County Hennepin
Quad Bloomingto
Quad ID 104D

MINNESOTA DEPARTMENT OF HEALTH
WELL AND BORING REPORT
Minnesota Statutes Chapter 1031

Entry Date 08/24/1991
Update Date 01/13/2016
Received Date

Well Name	Township	Range	Dir Section	Subsection
STADIUM BOWL	27	24	W 2	BABDBB

Elevation 830 ft. **Elev. Method** 7.5 minute topographic map (+/- 5 feet)

Address

C/W 815 78TH ST E BLOOMINGTON MN

Stratigraphy Information

Geological Material	From	To (ft.)	Color	Hardness
GLACIAL DRIFT	0	47		

Remarks

Well Depth 47 ft. **Depth Completed** 47 ft. **Date Well Completed**

Drill Method **Drill Fluid**

Use commercial **Status** Active

Well Hydrofractured? Yes ☐ No ☐ **From** **To**

Casing Type Single casing **Joint**

Drive Shoe? Yes ☐ No ☐ **Above/Below**

Casing Diameter		Weight
4	in. To 43 ft.	lbs./ft.

Open Hole From ft. To ft.

Screen? ☒ **Type** **Make** SANDPOINT

Diameter	Slot/Gauze	Length	Set	
in.		4 ft.	43 ft.	47 ft.

Static Water Level

12 ft. land surface Measure null

Pumping Level (below land surface)

17 ft. hrs. Pumping at 0 g.p.m.

Wellhead Completion

Pitless adapter manufacturer Model

☐ Casing Protection ☐ 12 in. above grade
☐ At-grade (Environmental Wells and Borings ONLY)

Grouting Information Well Grouted? ☐ Yes ☐ No ☐ Not Specified

Nearest Known Source of Contamination

feet Direction Type

Well disinfected upon completion? ☐ Yes ☐ No

Pump ☒ Not Installed Date Installed

Manufacturer's name

Model Number HP 0 Volt

Length of drop pipe ft Capacity g.p. Typ

Abandoned

Does property have any not in use and not sealed well(s)? ☐ Yes ☐ No

Variance

Was a variance granted from the MDH for this well? ☐ Yes ☐ No

Miscellaneous

First Bedrock Aquifer Quat. Water

Last Strat Quaternary deposit Depth to Bedrock ft

Located by Minnesota Geological Survey

Locate Method Digitized - scale 1:24,000 or larger (Digitizing Table)

System UTM - NAD83, Zone 15, Meters X 479331 Y 4967561

Unique Number Verification Address verification Input Date 01/01/1990

Angled Drill Hole

Well Contractor

Dependable Well Co. 27143

Licensee Business Lic. or Reg. No. Name of Driller

Minnesota Unique Well Number

651516

County Hennepin
Quad Bloomingto
Quad ID 104D

MINNESOTA DEPARTMENT OF HEALTH
WELL AND BORING REPORT
Minnesota Statutes Chapter 1031

Entry Date 06/11/2001
Update Date 01/13/2016
Received Date 11/13/2000

Well Name	Township	Range	Dir Section	Subsection
MW-4 AMOCO	27	24	W 2	BBBBBC

Elevation 832 ft. **Elev. Method** LiDAR 1m DEM (MNDNR)

Address

Contact 2288 C CR W ROSEVILLE MN 55113
Well 7801 PORTLAND AV BLOOMINGTON MN

Stratigraphy Information

Geological Material	From	To (ft.)	Color	Hardness
CONCRETE SAND	0	7	BROWN	SOFT
SAND	7	21	BROWN	SOFT
WET SAND	21	23	BRN/BLK	SOFT
WET SANDY GRAVEL	23	25	BLACK	SOFT
WET GRAVEL	25	27	BLACK	SOFT
WET GRAVEL COARSE	27	32	BROWN	

Remarks

MW#4 / DELTA
WELL SEALED 09-30-2004 BY 27194
ORIGINAL USE MW - MONITOR WELL

Well Depth	Depth Completed	Date Well Completed
32 ft.	28 ft.	08/28/2000

Drill Method Auger (non-specified) **Drill Fluid**

Use monitor well **Status** Sealed

Well Hydrofractured? Yes ☐ No ☒ **From** **To**

Casing Type Single casing **Joint**
Drive Shoe? Yes ☐ No ☒ **Above/Below**

Casing Diameter	Weight	Hole Diameter
2 in. To 18 ft.	0.69 lbs./ft.	4.2 in. To 32 ft.

Open Hole From ft. To ft.

Screen? ☒ **Type** plastic **Make** TIMCO

Diameter	Slot/Gauze	Length	Set	
2 in.	10	10 ft.	18 ft.	28 ft.

Static Water Level
22 ft. land surface Measure 08/28/2000

Pumping Level (below land surface)

Wellhead Completion
Pitless adapter manufacturer Model
☐ Casing Protection ☐ 12 in. above grade
☒ At-grade (Environmental Wells and Borings ONLY)

Grouting Information Well Grouted? ☒ Yes ☐ No ☐ Not Specified

Material	Amount		From	To
neat cement	3	Sacks	0 ft.	13 ft.
bentonite	1	Sacks	13 ft.	15 ft.

Nearest Known Source of Contamination
feet Direction Type
Well disinfected upon completion? ☐ Yes ☒ No

Pump ☒ Not Installed Date Installed
Manufacturer's name
Model Number HP Volt
Length of drop pipe ft Capacity g.p. Typ

Abandoned
Does property have any not in use and not sealed well(s)? ☐ Yes ☒ No

Variance
Was a variance granted from the MDH for this well? ☐ Yes ☒ No

Miscellaneous
First Bedrock Aquifer Quat. Water
Last Strat gravel (+larger)-brown Depth to Bedrock ft
Located by Minnesota Geological Survey
Locate Method Digitization (Screen) - Map (1:12,000)
System UTM - NAD83, Zone 15, Meters X 478844 Y 4967604
Unique Number Verification Site Plan Input Date 05/01/2014

Angled Drill Hole

Well Contractor

Thein Well Co.	34625	HILBRANDS, B.
Licensee Business	Lic. or Reg. No.	Name of Driller

Minnesota Unique Well Number

651515

County Hennepin
Quad Bloomingto
Quad ID 104D

MINNESOTA DEPARTMENT OF HEALTH
WELL AND BORING REPORT
Minnesota Statutes Chapter 1031

Entry Date 06/11/2001
Update Date 01/13/2016
Received Date 11/13/2000

Well Name	Township	Range	Dir Section	Subsection
MW-3 AMOCO	27	24	W 2	BBBBBB

Elevation 831 ft. **Elev. Method** LiDAR 1m DEM (MNDNR)

Address

Contact 2288 C CR W ROSEVILLE MN 55113
Well 7801 PORTLAND AV BLOOMINGTON MN

Stratigraphy Information

Geological Material	From	To (ft.)	Color	Hardness
SANDY CLAY SAND	0	5	BLK/BRN	SOFT
SAND	5	20	BROWN	SOFT
WET SAND COARSE	20	22	BROWN	
SAND	22	26	BRN/BLK	SOFT
SAND	26	27	BROWN	SOFT

Remarks

MW#3 / DELTA
WELL SEALED 09-30-2004 BY 27194
ORIGINAL USE MW - MONITOR WELL

Well Depth 27 ft. **Depth Completed** 27 ft. **Date Well Completed** 08/29/2000

Drill Method Auger (non-specified) **Drill Fluid**

Use monitor well **Status** Sealed

Well Hydrofractured? Yes ☐ No ☒ **From** **To**

Casing Type Single casing **Joint**
Drive Shoe? Yes ☐ No ☒ **Above/Below**

Casing Diameter	Weight	Hole Diameter
2 in. To 17 ft.	0.69 lbs./ft.	4.2 in. To 27 ft.

Open Hole From ft. To ft.

Screen? ☒ **Type** plastic **Make** TIMCO

Diameter	Slot/Gauze	Length	Set	
2 in.	10	10 ft.	17 ft.	27 ft.

Static Water Level

23 ft. land surface Measure 08/29/2000

Pumping Level (below land surface)

Wellhead Completion

Pitless adapter manufacturer Model

☐ Casing Protection ☐ 12 in. above grade
☒ At-grade (Environmental Wells and Borings ONLY)

Grouting Information Well Grouted? ☒ Yes ☐ No ☐ Not Specified

Material	Amount		From	To
neat cement	3	Sacks	0 ft.	12 ft.
bentonite	1	Sacks	12 ft.	14 ft.

Nearest Known Source of Contamination

feet Direction Type

Well disinfected upon completion? ☐ Yes ☒ No

Pump ☒ Not Installed Date Installed

Manufacturer's name
Model Number HP Volt
Length of drop pipe ft Capacity g.p. Typ

Abandoned

Does property have any not in use and not sealed well(s)? ☐ Yes ☒ No

Variance

Was a variance granted from the MDH for this well? ☐ Yes ☒ No

Miscellaneous

First Bedrock Aquifer Quat. Water
Last Strat sand-brown Depth to Bedrock ft
Located by Minnesota Geological Survey
Locate Method Digitization (Screen) - Map (1:12,000)
System UTM - NAD83, Zone 15, Meters X 478835 Y 4967625
Unique Number Verification Site Plan Input Date 05/01/2014

Angled Drill Hole

Well Contractor

Thein Well Co. 34625 HILBRANDS, B.
Licensee Business Lic. or Reg. No. Name of Driller

Minnesota Unique Well Number

651514

County Hennepin
Quad Bloomingto
Quad ID 104D

MINNESOTA DEPARTMENT OF HEALTH
WELL AND BORING REPORT
Minnesota Statutes Chapter 1031

Entry Date 06/11/2001
Update Date 01/13/2016
Received Date 11/13/2000

Well Name	Township	Range	Dir Section	Subsection
MW-2 AMOCO	27	24	W 2	BBBBBC

Elevation 832 ft. **Elev. Method** LiDAR 1m DEM (MNDNR)

Address

Contact 2288 C CR W ROSEVILLE MN 55113
Well 7801 PORTLAND AV BLOOMINGTON MN

Stratigraphy Information

Geological Material	From	To (ft.)	Color	Hardness
SANDY CLAY SAND	0	4	BLK/BRN	SOFT
SAND M.FINE	4	20	BROWN	
WET SAND M.FINE	20	24	BROWN	
WET SAND GRAVEL M.	24	27	BROWN	

Remarks

MW#2 / DELTA
WELL SEALED 09-30-2004 BY 27194
ORIGINAL USE MW - MONITOR WELL

Well Depth	Depth Completed	Date Well Completed
27 ft.	27 ft.	08/28/2000

Drill Method Auger (non-specified) **Drill Fluid**

Use monitor well **Status** Sealed

Well Hydrofractured? Yes ☐ No ☒ **From** **To**

Casing Type Single casing **Joint**
Drive Shoe? Yes ☐ No ☒ **Above/Below**

Casing Diameter	Weight	Hole Diameter
2 in. To 17 ft.	0.69 lbs./ft.	4.2 in. To 27 ft.

Open Hole From ft. To ft.

Screen? ☒ **Type** plastic **Make** TIMCO

Diameter	Slot/Gauze	Length	Set	
2 in.	10	10 ft.	17 ft.	27 ft.

Static Water Level
22 ft. land surface Measure 08/28/2000

Pumping Level (below land surface)

Wellhead Completion
Pitless adapter manufacturer Model
☒ Casing Protection ☐ 12 in. above grade
☐ At-grade (Environmental Wells and Borings ONLY)

Grouting Information Well Grouted? ☒ Yes ☐ No ☐ Not Specified

Material	Amount		From	To
neat cement	3	Sacks	0 ft.	12 ft.
bentonite	1	Sacks	12 ft.	14 ft.

Nearest Known Source of Contamination
feet Direction Type
Well disinfected upon completion? ☐ Yes ☒ No

Pump ☒ Not Installed Date Installed
Manufacturer's name
Model Number HP Volt
Length of drop pipe ft Capacity g.p. Typ

Abandoned
Does property have any not in use and not sealed well(s)? ☐ Yes ☒ No

Variance
Was a variance granted from the MDH for this well? ☐ Yes ☒ No

Miscellaneous
First Bedrock Aquifer Quat. Water
Last Strat sand +larger-brown Depth to Bedrock ft
Located by Minnesota Geological Survey
Locate Method Digitization (Screen) - Map (1:12,000)
System UTM - NAD83, Zone 15, Meters X 478827 Y 4967598
Unique Number Verification Site Plan Input Date 05/01/2014

Angled Drill Hole

Well Contractor
Thein Well Co. 34625 HILBRANDS, B.
Licensee Business Lic. or Reg. No. Name of Driller

Minnesota Unique Well Number

651513

County Hennepin
Quad Bloomingto
Quad ID 104D

MINNESOTA DEPARTMENT OF HEALTH
WELL AND BORING REPORT
Minnesota Statutes Chapter 1031

Entry Date 06/11/2001
Update Date 01/13/2016
Received Date 11/13/2000

Well Name	Township	Range	Dir Section	Subsection
MW-1 AMOCO	27	24	W 2	BBBBBD

Elevation 832 ft. **Elev. Method** LiDAR 1m DEM (MNDNR)

Address

Contact 2288 C CR W ROSEVILLE MN 55113
Well 7801 PORTLAND AV BLOOMINGTON MN

Stratigraphy Information

Geological Material	From	To (ft.)	Color	Hardness
ASPHALT SAND	0	4	BLK/BRN	MEDIUM
SAND GRAVEL	4	8	BROWN	SOFT
SAND MED -F	8	20	BROWN	
WET SAND MED -F	20	22	BROWN	
WET SAND MED - F	22	27	BROWN	

Remarks

MW#1 / DELTA
WELL SEALED 09-30-2004 BY 27194
ORIGINAL USE MW - MONITOR WELL

Well Depth 27 ft. **Depth Completed** 27 ft. **Date Well Completed** 08/28/2000

Drill Method Auger (non-specified) **Drill Fluid**

Use monitor well **Status** Sealed

Well Hydrofractured? Yes ☐ No ☒ **From** **To**

Casing Type Single casing **Joint**
Drive Shoe? Yes ☐ No ☒ **Above/Below**

Casing Diameter	Weight	Hole Diameter
2 in. To 17 ft.	0.69 lbs./ft.	4.2 in. To 27 ft.

Open Hole From ft. To ft.

Screen? ☒ **Type** plastic **Make** TIMCO

Diameter	Slot/Gauze	Length	Set
2 in.	10	10 ft.	17 ft. 27 ft.

Static Water Level
22 ft. land surface Measure 08/28/2000

Pumping Level (below land surface)

Wellhead Completion
Pitless adapter manufacturer Model
☐ Casing Protection ☐ 12 in. above grade
☒ At-grade (Environmental Wells and Borings ONLY)

Grouting Information Well Grouted? ☒ Yes ☐ No ☐ Not Specified

Material	Amount	From	To
neat cement	3 Sacks	0 ft.	12 ft.
bentonite	1 Sacks	12 ft.	14 ft.

Nearest Known Source of Contamination
feet Direction Type
Well disinfected upon completion? ☐ Yes ☒ No

Pump ☒ Not Installed Date Installed
Manufacturer's name
Model Number HP Volt
Length of drop pipe ft Capacity g.p. Typ

Abandoned
Does property have any not in use and not sealed well(s)? ☐ Yes ☒ No

Variance
Was a variance granted from the MDH for this well? ☐ Yes ☒ No

Miscellaneous
First Bedrock Aquifer Quat. Water
Last Strat sand-brown Depth to Bedrock ft
Located by Minnesota Geological Survey
Locate Method Digitization (Screen) - Map (1:12,000)
System UTM - NAD83, Zone 15, Meters X 478870 Y 4967600
Unique Number Verification Site Plan Input Date 05/01/2014

Angled Drill Hole

Well Contractor
Thein Well Co. 34625 HILBRANDS, B.
Licensee Business Lic. or Reg. No. Name of Driller

Minnesota Unique Well Number

480689

County Hennepin
Quad Bloomingto
Quad ID 104D

MINNESOTA DEPARTMENT OF HEALTH
WELL AND BORING REPORT
Minnesota Statutes Chapter 1031

Entry Date 04/17/1995
Update Date 01/11/2016
Received Date

Well Name	Township	Range	Dir Section	Subsection
MW 3	28	24	W 35	CCCACB

Elevation 832 ft. **Elev. Method** LiDAR 1m DEM (MNDNR)

Address

Contact 734 78 ST E RICHFIELD MN 55423
Well 620 78 ST MN

Stratigraphy Information

Geological Material	From	To (ft.)	Color	Hardness
TOPSOIL	0	1	BLACK	
SILTY SAND	1	10	DK. BRN	
FINE SAND	10	29	LT. BRN	

Remarks

MW 3, WELL BETWEEN 620 & 623 78TH STREET
WELL SEALED 04-01-1993 BY M0054
ORIGINAL USE MW - MONITOR WELL

Well Depth	Depth Completed	Date Well Completed
29 ft.	29 ft.	09/02/1992

Drill Method Auger (non-specified) **Drill Fluid**

Use monitor well **Status** Sealed

Well Hydrofractured? Yes ☐ No ☐ **From** **To**

Casing Type Single casing **Joint** Threaded
Drive Shoe? Yes ☐ No ☒ **Above/Below**

Casing Diameter	Weight	Hole Diameter
2 in. To 19 ft.	lbs./ft.	8 in. To 29 ft.

Open Hole From ft. To ft.

Screen? ☒ **Type** plastic **Make**

Diameter	Slot/Gauze	Length	Set
2 in.	10	10 ft.	19 ft. 29 ft.

Static Water Level
0 ft. land surface Measure 09/02/1992

Pumping Level (below land surface)

Wellhead Completion
Pitless adapter manufacturer Model
☒ Casing Protection ☐ 12 in. above grade
☐ At-grade (Environmental Wells and Borings ONLY)

Grouting Information Well Grouted? ☒ Yes ☐ No ☐ Not Specified

Material	Amount	From	To
well grouted, type unknown		2 ft.	15 ft.

Nearest Known Source of Contamination
100 feet Southeas Direction Tanks Type
Well disinfected upon completion? ☐ Yes ☒ No

Pump ☒ Not Installed Date Installed
Manufacturer's name
Model Number HP Volt
Length of drop pipe ft Capacity g.p. Typ

Abandoned
Does property have any not in use and not sealed well(s)? ☐ Yes ☐ No

Variance
Was a variance granted from the MDH for this well? ☐ Yes ☐ No

Miscellaneous
First Bedrock Aquifer Quat. Water
Last Strat sand-brown Depth to Bedrock ft
Located by Minnesota Geological Survey
Locate Method Digitization (Screen) - Map (1:24,000)
System UTM - NAD83, Zone 15, Meters X 478941 Y 4967766
Unique Number Verification Site Plan Input Date 08/27/2013

Angled Drill Hole

Well Contractor
Dpra M0054
Licensee Business Lic. or Reg. No. Name of Driller

Minnesota Unique Well Number

480688

County Hennepin
Quad Bloomingto
Quad ID 104D

MINNESOTA DEPARTMENT OF HEALTH
WELL AND BORING REPORT
Minnesota Statutes Chapter 1031

Entry Date 04/17/1995
Update Date 01/11/2016
Received Date

Well Name	Township	Range	Dir Section	Subsection
MW 2	28	24	W 35	CCCDBB

Elevation 831 ft. **Elev. Method** LiDAR 1m DEM (MNDNR)

Address

Contact 734 78 ST E RICHFIELD MN 55423
Well 620 78 ST MN

Stratigraphy Information

Geological Material	From	To (ft.)	Color	Hardness
TOPSOIL	0	1	BLACK	
SILTY SAND	1	9	DK. BRN	
FINE SAND	9	19	LT. BRN	MEDIUM
SILTY SAND	19	23		
FINE SAND	23	28	LT. BRN	

Remarks

MW 2, WELL BETWEEN620 & 632 78TH ST
WELL SEALED 04-01-1993 BY M0054
ORIGINAL USE MW - MONITOR WELL

Well Depth	Depth Completed	Date Well Completed
27.25 ft.	27.25 ft.	09/02/1992

Drill Method Auger (non-specified) **Drill Fluid**

Use monitor well **Status** Sealed

Well Hydrofractured? Yes ☐ No ☐ **From** **To**

Casing Type Single casing **Joint** Threaded
Drive Shoe? Yes ☐ No ☒ **Above/Below**

Casing Diameter	Weight	Hole Diameter
2 in. To 17.4 ft.	lbs./ft.	8 in. To 27.2 ft.

Open Hole From ft. To ft.

Screen? ☒ **Type** plastic **Make** DIEDRICK

Diameter	Slot/Gauze	Length	Set	
2 in.	10	10 ft.	17.4 ft.	27.2 ft.

Static Water Level
21 ft. land surface Measure 09/02/1992

Pumping Level (below land surface)

Wellhead Completion
Pitless adapter manufacturer Model
☒ Casing Protection ☐ 12 in. above grade
☐ At-grade (Environmental Wells and Borings ONLY)

Grouting Information Well Grouted? ☒ Yes ☐ No ☐ Not Specified

Material	Amount	From	To
neat cement		2 ft.	13 ft.

Nearest Known Source of Contamination
125 feet Northeas Direction Tanks Type
Well disinfected upon completion? ☐ Yes ☒ No

Pump ☒ Not Installed Date Installed
Manufacturer's name
Model Number HP Volt
Length of drop pipe ft Capacity g.p. Typ

Abandoned
Does property have any not in use and not sealed well(s)? ☐ Yes ☐ No

Variance
Was a variance granted from the MDH for this well? ☐ Yes ☐ No

Miscellaneous
First Bedrock Aquifer Quat. Water
Last Strat sand-brown Depth to Bedrock ft
Located by Minnesota Geological Survey
Locate Method Digitization (Screen) - Map (1:24,000)
System UTM - NAD83, Zone 15, Meters X 478942 Y 4967722
Unique Number Verification Site Plan Input Date 08/27/2013

Angled Drill Hole

Well Contractor
Dpra M0054
Licensee Business Lic. or Reg. No. Name of Driller

Minnesota Unique Well Number

480687

County Hennepin
Quad Bloomingto
Quad ID 104D

MINNESOTA DEPARTMENT OF HEALTH
WELL AND BORING REPORT
Minnesota Statutes Chapter 1031

Entry Date 04/17/1995
Update Date 01/11/2016
Received Date

Well Name	Township	Range	Dir Section	Subsection
MW 1	28	24	W 35	CCCDAB

Elevation 829 ft. **Elev. Method** LiDAR 1m DEM (MNDNR)

Address

Contact 734 78 ST E RICHFIELD MN 55423
Well 620 78 ST MN

Stratigraphy Information

Geological Material	From	To (ft.)	Color	Hardness
TOPSOIL	0	2	BLACK	
FINE SAND	2	20	BROWN	MEDIUM
FINE SAND	20	27	BROWN	MEDIUM

Remarks

MW 1, WELL BETWEEN 620 &632 78TH STREET
WELL SEALED 04-01-1993 BY M0054
ORIGINAL USE MW - MONITOR WELL

Well Depth 27 ft. **Depth Completed** 27 ft. **Date Well Completed** 09/02/1992

Drill Method Auger (non-specified) **Drill Fluid**

Use monitor well **Status** Sealed

Well Hydrofractured? Yes ☐ No ☐ **From** **To**

Casing Type Single casing **Joint** Threaded
Drive Shoe? Yes ☐ No ☒ **Above/Below**

Casing Diameter	Weight	Hole Diameter
2 in. To 17 ft.	lbs./ft.	8 in. To 27 ft.

Open Hole From ft. To ft.

Screen? ☒ **Type** plastic **Make** DIEDRICH

Diameter	Slot/Gauze	Length	Set
2 in.	10	10 ft.	17 ft. 27 ft.

Static Water Level
19 ft. land surface Measure 09/02/1992

Pumping Level (below land surface)

Wellhead Completion
Pitless adapter manufacturer Model
☒ Casing Protection ☐ 12 in. above grade
☐ At-grade (Environmental Wells and Borings ONLY)

Grouting Information Well Grouted? ☒ Yes ☐ No ☐ Not Specified

Material	Amount	From	To
well grouted, type unknown		2 ft.	13 ft.

Nearest Known Source of Contamination
150 feet Northwes Direction Tanks Type
Well disinfected upon completion? ☐ Yes ☒ No

Pump ☒ Not Installed Date Installed
Manufacturer's name
Model Number HP Volt
Length of drop pipe ft Capacity g.p. Typ

Abandoned
Does property have any not in use and not sealed well(s)? ☐ Yes ☐ No

Variance
Was a variance granted from the MDH for this well? ☐ Yes ☐ No

Miscellaneous
First Bedrock Aquifer Quat. Water
Last Strat sand-brown Depth to Bedrock ft
Located by Minnesota Geological Survey
Locate Method Digitization (Screen) - Map (1:24,000)
System UTM - NAD83, Zone 15, Meters X 478988 Y 4967721
Unique Number Verification Site Plan Input Date 08/27/2013

Angled Drill Hole

Well Contractor
Dpra M0054
Licensee Business Lic. or Reg. No. Name of Driller

Minnesota Unique Well Number

478122

County Hennepin
Quad
Quad ID

MINNESOTA DEPARTMENT OF HEALTH
WELL AND BORING REPORT
Minnesota Statutes Chapter 1031

Entry Date 10/25/2013
Update Date 01/11/2016
Received Date 02/28/1991

Well Name	Township	Range	Dir Section	Subsection
SINCLAIR	28	24	W 35	CCC

Elevation **Elev. Method**

Address

Well 7733 PORTLAND AV RICHFIELD MN
Contact KANSAS CITY KS 68106

Stratigraphy Information

Geological Material	From	To (ft.)	Color	Hardness
ASPHALT	0	1		
MED/FINE SILTY SAND	1	5	BROWN	
FINE SAND	5	21	GRAY	
FINE SAND	21	35	BROWN	
MED/COARSE SAND	35	36	BROWN	

Remarks
USE-SOIL BORING

Well Depth 36 ft. **Depth Completed** null **Date Well Completed** 01/23/1991
Drill Method Power Auger **Drill Fluid**

Use other (specify in remarks) **Status** Sealed

Well Hydrofractured? Yes ☐ No ☐ **From** **To**

Casing Type **Joint**
Drive Shoe? Yes ☐ No ☐ **Above/Below**

Open Hole From ft. To ft.

Screen? ☐ **Type** **Make**

Static Water Level
33 ft. null Measure 01/23/1991

Pumping Level (below land surface)
ft. hrs. Pumping at g.p.m.

Wellhead Completion
Pitless adapter manufacturer Model
☐ Casing Protection ☐ 12 in. above grade
☐ At-grade (Environmental Wells and Borings ONLY)

Grouting Information Well Grouted? ☒ Yes ☐ No ☐ Not Specified

Material	Amount	From	To
neat cement		ft.	36 ft.

Nearest Known Source of Contamination
feet Direction Type
Well disinfected upon completion? ☐ Yes ☒ No

Pump ☒ Not Installed Date Installed
Manufacturer's name
Model Number HP Volt
Length of drop pipe ft Capacity g.p. Typ

Abandoned
Does property have any not in use and not sealed well(s)? ☐ Yes ☒ No

Variance
Was a variance granted from the MDH for this well? ☐ Yes ☐ No

Miscellaneous
First Bedrock Aquifer
Last Strat Depth to Bedrock ft
Located by
Locate Method
System UTM - NAD83, Zone 15, Meters X Y
Unique Number Verification Input Date

Angled Drill Hole

Well Contractor

Thein Well Co.	34050	THEIN, M.
Licensee Business	Lic. or Reg. No.	Name of Driller

Minnesota Unique Well Number

478121

County Hennepin
Quad
Quad ID

MINNESOTA DEPARTMENT OF HEALTH
WELL AND BORING REPORT
Minnesota Statutes Chapter 1031

Entry Date 10/25/2013
Update Date 01/11/2016
Received Date

Well Name	Township	Range	Dir	Section	Subsection
SINCLAIR	28	24	W	35	CCC

Elevation **Elev. Method**

Address

Well 77633 PORTLAND AV RICHFIELD MN
Contact KANSAS CITY KS 66106

Stratigraphy Information

Geological Material	From	To (ft.)	Color	Hardness
ASPHALT	0	1		
FILL FINE SAND	1	1		
FINE CLAY/SAND	1	12	BROWN	
FINE CLAY/SAND	12	34	BROWN	
COARSE SAND	34	36	GRAY	MEDIUM

Remarks
USE-SOIL BORING

Well Depth 36 ft. **Depth Completed** null **Date Well Completed** 01/23/1991
Drill Method Power Auger **Drill Fluid**

Use other (specify in remarks) **Status** Sealed

Well Hydrofractured? Yes ☐ No ☐ **From** **To**

Casing Type **Joint**
Drive Shoe? Yes ☐ No ☐ **Above/Below**

Open Hole From ft. To ft.

Screen? ☐ **Type** **Make**

Static Water Level
33 ft. land surface Measure 01/23/1991

Pumping Level (below land surface)
ft. hrs. Pumping at g.p.m.

Wellhead Completion
Pitless adapter manufacturer Model
☐ Casing Protection ☐ 12 in. above grade
☐ At-grade (Environmental Wells and Borings ONLY)

Grouting Information Well Grouted? ☒ Yes ☐ No ☐ Not Specified

Material	Amount	From	To
neat cement		ft.	36 ft.

Nearest Known Source of Contamination
feet Direction Type
Well disinfected upon completion? ☐ Yes ☒ No

Pump ☒ Not Installed Date Installed
Manufacturer's name
Model Number HP Volt
Length of drop pipe ft Capacity g.p. Typ

Abandoned
Does property have any not in use and not sealed well(s)? ☐ Yes ☒ No

Variance
Was a variance granted from the MDH for this well? ☐ Yes ☐ No

Miscellaneous
First Bedrock Aquifer
Last Strat Depth to Bedrock ft
Located by
Locate Method
System UTM - NAD83, Zone 15, Meters X Y
Unique Number Verification Input Date

Angled Drill Hole

Well Contractor

Thein Well Co.	34050	THEIN, M.
Licensee Business	Lic. or Reg. No.	Name of Driller

Minnesota Unique Well Number

478120

County Hennepin
Quad Bloomingto
Quad ID 104D

MINNESOTA DEPARTMENT OF HEALTH
WELL AND BORING REPORT
Minnesota Statutes Chapter 1031

Entry Date 11/23/1992
Update Date 01/11/2016
Received Date

Well Name	Township	Range	Dir	Section	Subsection
SINCLAIR	28	24	W	35	CCC

Elevation **Elev. Method**

Address

Contact BOX 6247 KANSAS CITY KS 66106
Well 7733 PORTLAND AV RICHFIELD MN

Stratigraphy Information

Geological Material	From	To (ft.)	Color	Hardness
ASPHALT 0-6"	0	0		
SANDY CLAY	0	9	DK. BRN	
GRAIN SAND	9	11		MEDIUM
SILTY SANDY CLAY	11	19	YELLOW	
MED/FINE GRAIN	19	21	BROWN	
MED/FINE GRAIN	21	39	BROWN	

Remarks
WELL SEALED 09-28-1992 BY 34050
ORIGINAL USE MW - MONITOR WELL

Well Depth 39 ft. **Depth Completed** 39 ft. **Date Well Completed** 01/24/1991

Drill Method Power Auger **Drill Fluid**

Use monitor well **Status** Sealed

Well Hydrofractured? Yes ☐ No ☐ **From** **To**

Casing Type Single casing **Joint**
Drive Shoe? Yes ☐ No ☐ **Above/Below**

Casing Diameter		Weight
2 in.	To 29 ft.	lbs./ft.

Open Hole From ft. To ft.

Screen? ☒ **Type** stainless **Make** COOK

Diameter	Slot/Gauze	Length	Set	
2 in.	10	10 ft.	29 ft.	39 ft.

Static Water Level
31 ft. land surface Measure 01/24/1991

Pumping Level (below land surface)

Wellhead Completion
Pitless adapter manufacturer Model
☐ Casing Protection ☒ 12 in. above grade
☐ At-grade (Environmental Wells and Borings ONLY)

Grouting Information Well Grouted? ☒ Yes ☐ No ☐ Not Specified

Material	Amount	From	To
neat cement		ft. 29	ft.

Nearest Known Source of Contamination
feet Direction Volatile organic compounds Type
Well disinfected upon completion? ☐ Yes ☒ No

Pump ☐ Not Installed Date Installed
Manufacturer's name
Model Number HP Volt
Length of drop pipe ft Capacity g.p. Typ

Abandoned
Does property have any not in use and not sealed well(s)? ☐ Yes ☒ No

Variance
Was a variance granted from the MDH for this well? ☐ Yes ☐ No

Miscellaneous
First Bedrock Aquifer
Last Strat Depth to Bedrock ft
Located by
Locate Method
System UTM - NAD83, Zone 15, Meters X Y
Unique Number Verification Input Date

Angled Drill Hole

Well Contractor
Thein Well Co. 34050 THEIN,M.
Licensee Business Lic. or Reg. No. Name of Driller

Minnesota Unique Well Number

475682

County Hennepin
Quad Bloomingto
Quad ID 104D

MINNESOTA DEPARTMENT OF HEALTH
WELL AND BORING REPORT
Minnesota Statutes Chapter 1031

Entry Date 11/23/1992
Update Date 01/11/2016
Received Date

Well Name	Township	Range	Dir	Section	Subsection
SINCLAIR	28	24	W	35	CCC

Elevation **Elev. Method**

Address

Contact BOX 6247 KANSAS CITY KS 66106
Well 7733 PORTLAND AV RICHFIELD MN

Stratigraphy Information

Geological Material	From	To (ft.)	Color	Hardness
ASPHALT 0-6"	0	0		
FINE SAND	0	35	BROWN	
MED/COARSE SAND	35	43	BROWN	

Remarks
WELL SEALED 09-28-1992 BY 34050
ORIGINAL USE MW - MONITOR WELL

Well Depth 43 ft. **Depth Completed** 43 ft. **Date Well Completed** 01/23/1991
Drill Method Power Auger **Drill Fluid**
Use monitor well **Status** Sealed
Well Hydrofractured? Yes ☐ No ☐ **From** **To**
Casing Type Single casing **Joint**
Drive Shoe? Yes ☐ No ☐ **Above/Below**

Casing Diameter **Weight**
2 in. To 33 ft. lbs./ft.

Open Hole From ft. To ft.
Screen? ☒ **Type** stainless **Make** COOK

Diameter	Slot/Gauze	Length	Set	
2 in.	10	10 ft.	33 ft.	43 ft.

Static Water Level
36 ft. land surface Measure 01/23/1991

Pumping Level (below land surface)

Wellhead Completion
Pitless adapter manufacturer Model
☐ Casing Protection ☒ 12 in. above grade
☐ At-grade (Environmental Wells and Borings ONLY)

Grouting Information Well Grouted? ☒ Yes ☐ No ☐ Not Specified

Material	Amount	From	To
neat cement		ft. 33	ft.

Nearest Known Source of Contamination
feet Direction Volatile organic compounds Type
Well disinfected upon completion? ☐ Yes ☒ No

Pump ☒ Not Installed Date Installed
Manufacturer's name
Model Number HP Volt
Length of drop pipe ft Capacity g.p. Typ

Abandoned
Does property have any not in use and not sealed well(s)? ☐ Yes ☒ No

Variance
Was a variance granted from the MDH for this well? ☐ Yes ☐ No

Miscellaneous
First Bedrock Aquifer
Last Strat Depth to Bedrock ft
Located by
Locate Method
System UTM - NAD83, Zone 15, Meters X Y
Unique Number Verification Input Date

Angled Drill Hole

Well Contractor

Thein Well Co.	34050	THEIN,M.
Licensee Business	Lic. or Reg. No.	Name of Driller

Minnesota Unique Well Number

475681

County Hennepin
Quad Bloomingto
Quad ID 104D

MINNESOTA DEPARTMENT OF HEALTH
WELL AND BORING REPORT
Minnesota Statutes Chapter 1031

Entry Date 11/23/1992
Update Date 01/11/2016
Received Date

Well Name	Township	Range	Dir	Section	Subsection
SINCLAIR	28	24	W	35	CCC

Elevation **Elev. Method**

Address

Contact BOX 6247 KANSAS CITY KS 66106
Well 7733 PORTLAND AV RICHFIELD MN

Stratigraphy Information

Geological Material	From	To (ft.)	Color	Hardness
ASPHALAT 0-6"	0	0		
SILTY SANDY CLAY	0	4	BROWN	
SILTY SAND	4	8	DK. BRN	
SAND	8	18	BROWN	MEDIUM
GRAIN SAND	18	24	LT. BLU	MEDIUM
FINE SAND	24	26	BROWN	
FINE GRAIN SAND	26	33	GRAY	
MED/COARSE SAND	33	42	BROWN	
GRAVEL COARSE	42	44		
MED/COARSE SAND	44	55		
SILTY CLAY	55	60	GRAY	

Remarks
WELL SEALED 09-28-1992 BY 34050
ORIGINAL USE MW - MONITOR WELL

Well Depth 60 ft. **Depth Completed** 60 ft. **Date Well Completed** 01/24/1991
Drill Method Power Auger **Drill Fluid**
Use monitor well **Status** Sealed
Well Hydrofractured? Yes ☐ No ☐ **From** **To**
Casing Type Single casing **Joint**
Drive Shoe? Yes ☐ No ☐ **Above/Below**

Casing Diameter		Weight
2	in. To 50 ft.	lbs./ft.

Open Hole From ft. To ft.
Screen? ☒ **Type** stainless **Make** COOK

Diameter	Slot/Gauze	Length	Set	
2 in.	20	10 ft.	50 ft.	60 ft.

Static Water Level
33 ft. land surface Measure 01/24/1991

Pumping Level (below land surface)

Wellhead Completion
Pitless adapter manufacturer Model
☐ Casing Protection ☒ 12 in. above grade
☐ At-grade (Environmental Wells and Borings ONLY)

Grouting Information Well Grouted? ☒ Yes ☐ No ☐ Not Specified

Material	Amount	From	To
concrete		ft. 50	ft.

Nearest Known Source of Contamination
feet Direction Volatile organic compounds Type
Well disinfected upon completion? ☐ Yes ☒ No

Pump ☐ Not Installed Date Installed
Manufacturer's name
Model Number HP Volt
Length of drop pipe ft Capacity g.p. Typ

Abandoned
Does property have any not in use and not sealed well(s)? ☐ Yes ☒ No

Variance
Was a variance granted from the MDH for this well? ☐ Yes ☐ No

Miscellaneous
First Bedrock Aquifer
Last Strat Depth to Bedrock ft
Located by
Locate Method
System UTM - NAD83, Zone 15, Meters X Y
Unique Number Verification Input Date

Angled Drill Hole

Well Contractor

Thein Well Co.	34050	THEIN,M.
Licensee Business	Lic. or Reg. No.	Name of Driller

Appendix L

Results of the Public Water Supply Risk Assessment:
Copy of the MDH Source Water Assessment
Map from the MPCA Petroleum Remediation Program Maps Online website

Skip to Content

MDH Minnesota Department of Health
(http://www.health.state.mn.us/index.html)

ID Number: 1270045

Facility Contact:
Butch Lupkes
(612) 861-9795
Richfield
Richfield Water Superintendent
6221 Portland Avenue
Richfield, MN 55423

MDH Contact:
John Freitag
(651) 201-4669
625 Robert St N
PO Box 64975
Saint Paul, MN 55101
john.freitag@state.mn.us

Status of the Source Water Protection Plan:

The water supply system is designating its wellhead protection area(s) and preparing assessments of well and aquifer vulnerability as specified under Minnesota Rules Chapter 4720.

Source Water Protection Area: - Click Map1 (http://www.health.state.mn.usjpg/swp00375.pdf) to view SWPA map(s).

Yes - A Source Water Protection Area has been designated for this well.

Description of the source water - The water supply for Richfield is obtained from 7 primary wells. Well depth (in feet), well status, aquifer(s) used, and sensitivity of the source(s) of drinking water are listed in the following table.

Unique Well No	Well ID	Depth	Well Use	Aquifer	Aquifer Sensitivity	*Well Sensitivity	SWPA
133362	Well #7	1066	Primary	Bedrock	High	See (2)	No
206276	Well #4	405	Primary	Bedrock	High	See (2)	No
206279	Well #6	422	Primary	Bedrock	High	See (2)	No
206280	Well #5	408	Primary	Bedrock	High	See (2)	No
206353	Well #1	437	Primary	Bedrock	High	See (2)	No
206354	Well #2	435	Primary	Bedrock	High	See (2)	No
206361	Well #3	425	Primary	Bedrock	High	See (2)	No

Well construction assessment - The water wells used by the Richfield meet current standards for construction and maintenance. These factors do not contribute to the susceptibility of the source water to contamination.

Well Sensitivity - Well sensitivity refers to the integrity of the well due to its construction and maintenance. It is based on the results of the well construction assessment. It can be one of the following:

(1) The well is susceptible to contamination because it does not meet current construction standards or no information about well construction is available, regardless of aquifer sensitivity.
(2) The well is not susceptible because it meets well construction standards and does not present a pathway for contamination to readily enter the water supply.

Aquifer Sensitivity - Aquifer sensitivity refers to the degree of geological protection afforded the aquifer(s) used by the public water supply.

High - The aquifer is considered to exhibit a high sensitivity to contamination because of the local geological setting.

Source Water Susceptibility - Source water susceptibility refers to the likelihood that a contaminant will reach the source of drinking water. It reflects the results of assessing well sensitivity, aquifer sensitivity, and water quality data.

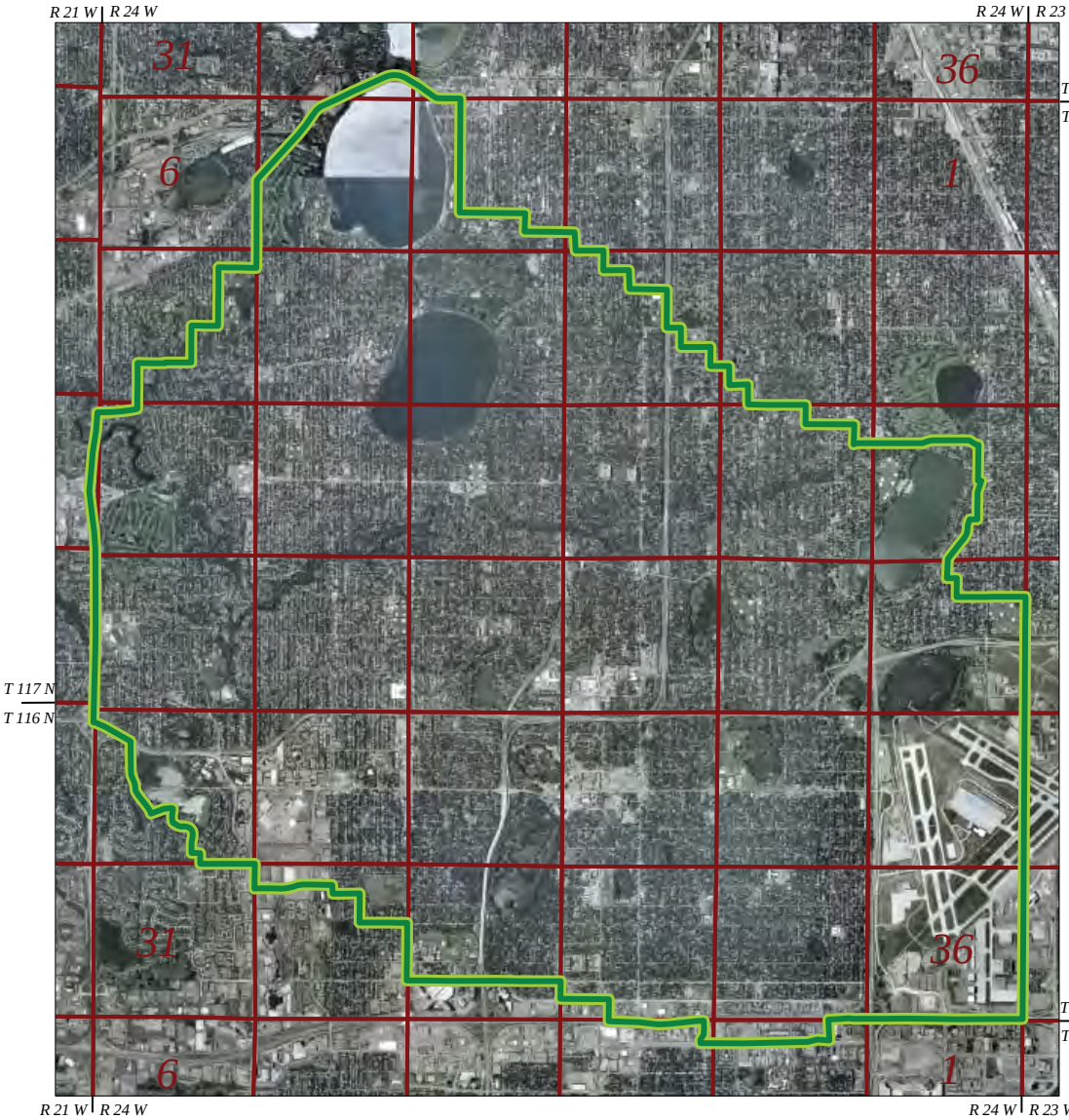
High - The source of drinking water is considered to exhibit a high susceptibility to contamination because of the local geological setting.

High - The source water is considered to be susceptible because of the tritium content of the well water in bedrock.

Contaminants of concern - The following statement summarizes the potential contaminants for which a source of drinking water may be at risk:

One or more contaminants regulated under the federal Safe Drinking Water Act for this public water supply system have been detected in the source water. However, the water supplied to users meets state and federal drinking water standards for potability. For further information, please contact the MDH representative listed at the beginning of this assessment.

Updated



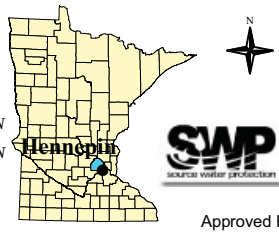
Richfield

Drinking Water Supply Management Area (DWSMA) MN-00375 10 year Time of Travel

DWSMA

For Vulnerability Assessment Contact MDH

0.5 0 0.5 Miles



Approved February 8, 2006