Minnesota Pollution Control Agency
520 Lafayette Road North
St. Paul, MN 55155-4194

Focused Investigation Report

Petroleum Remediation Program
Guidance Document 7-04

Doc Type: Corrective Action Design

Instructions: Complete this report to document the results of a focused investigation. See Guidance Document 7-01 *Corrective Action Design and Implementation* for more information and requirements. Do not revise or delete any text or questions from this report form. Items may be added if they are needed to support the focused investigation results. If an item is not applicable, provide a brief explanation.

Date: August 31, 2013

MPCA Leak ID: 8001 Report date: 11/2/1994

Responsible Party Information

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Mailing address: 102 Main Street

City: Cambridge State: MN Zip code: 55008

Alternate contact (if any) for responsible party: Phone:

Leak Site Information

Leak site name: Cambridge Union 76 Phone: NA

Leak site address: 329 East First Avenue South

City: Cambridge MN Zip code: 55008 County: Isanti

Consultant (or other) 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.

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Name of field technician(s): Dan Larson

Section 1: Focused Investigation Data

Provide a site map and cross sections showing the locations and depths of data collection points in Section 6. Provide data summary figures and tables in Sections 6 and 7, respectively. Include copies of focused investigation boring logs and well construction diagrams in Appendix A, copies of laboratory analytical reports in Appendix B, and copies of field and data sampling sheets in Appendix C.

1. If the completed focused investigation was different than requested by the Minnesota Pollution Control Agency, identify the differences and explain why.

2. Provide a chronological list of focused investigation activities and the date each activity was completed.

   - *Laser Induced Fluorescence (LIF) / Electrical Conductivity (EC) probes L-42 through L-62 (September 11-13, 2012)*
   - *Installation of monitoring wells MW-8 through MW-11 (December 11-13, 2012)*
   - *Sampling of monitoring wells MW-1, 3, 6, 6A, 7, 8, 9, 10, and 11 (January 10, 2013)*
   - *Sampling of monitoring wells MW-1, 3, 6, 6A, 7, 8, 9, 10, and 11 (May 3, 2013)*
   - *Monthly free product checks June 2012 through June 2013 (see Appendix D)*

3. Discuss the rationale for data collection locations and depths.

   All data collection locations were based on:

   - *MPCA's "Request For Additional Work" letter dated February 16, 2012;*
   - *Access to locations on public and private property;*
   - *Real-time data collected during the LIF/EC probe investigation*

   The rationale for LIF data collection depths was based on collecting data at least 10 feet below the water table and beyond the depth of NAPL (free product) detections, generally at least 5 feet beyond NAPL detections, to define the vertical extent of the NAPL. The LIF probe locations were selected to delineate the horizontal extent of the NAPL.

   The rationale for monitoring well installation locations was to delineate the horizontal extent of the NAPL. Screen depths were based on positioning the well screens to straddle the water table.

4. Discuss focused investigation data collection methods and procedures, including field-generated data, sample collection, laboratory analyses, and bench-scale tests.

   LIF
   The delineation investigation was accomplished using an Ultra-Violet Optical Screening Tool (UVOST), which is a laser-induced fluorescence (LIF) screening tool designed to detect NAPL (free product) in the subsurface. The UVOST system sends light (via 308 nm laser) through a fiber optic cable strung within probe rods. The light, reflected by a parabolic mirror, then exits through a sapphire window in the side of the probe. As the probe is advanced, the soil is exposed to the UV laser light. If PAHs are present, longer wavelength light is emitted by the contaminants. PAHs are compounds in petroleum-oil lubricants (POLs) that fluoresce, i.e. LNAPL. This "signal" light is transmitted through a return fiber, back up hole to be analyzed. Responses are indicated in real-time on a graph of signal vs. depth. The UVOST log displays "color mixed" signal logs (contributions from 4 channels) and waveforms ("fingerprint" of multi-wavelength) to aid in identification and relative quantity of the contaminant present.

   Prior to every log the UVOST system was checked for optical quality by observing the background signal for sources of signal in the fiber, filter, mirror and sapphire window. Also, the reference emitter (a standard proprietary NAPL mixture called the

"RE") was placed on the window to determine the qualitative and semi-quantitative properties of the laser system. This was to assure that the RE response had the correct shape and intensity and that the UVOST system was ready to log. Typically the RE will fall between 10,000 and 12,000 picovolt-seconds (PVs, a measure of waveform area) and the background can vary from 0.1% to 1% (area of about 0-100 pVs). It is important to remember that the relationship between the NAPL in the ground and the RE depends on that particular NAPL. The calibration of the system is not to a concentration, but to a known fluorescence signature.

Prior to the previous LIF investigation in March 2011, a sample of free product was collected from MW-7 and analyzed with the UVOST system. This analysis produced a waveform typical of gasoline NAPL. Probe L-1 was completed near the worst case or known area of free product, monitoring well MW-3. The waveform at 18.3 feet was very similar to the waveform from the free product sample in M-7, further confirming the efficacy of the UVOST analysis for the LIF probes (L-1 through L-62).

EC
Electrical Conductivity (EC) is a measure of the soils ability to conduct an electrical current between two dipoles on the LIF/EC probe. Conductivity is the reciprocal of the electrical resistivity and has the units (in our application) of millisiemens per meter (mS/m). Since soil is in the pathway of the charge flow, the relative grain size can be determined by comparing the EC log to a soil boring (LGP-1-12). Conductivity readings in the 100s indicate smaller grain size (such as clay). Larger grain size (sand and gravels) are typically in the 10s of mS/m range. Prior to every log the EC point of the UVOST probe was checked for the proper operation by performing a voltage test with a voltage meter and a conductivity test with a test block.

Decontamination (LIF/EC and Monitoring Well Installation)
All drilling/probing/sampling equipment were decontaminated prior to arrival on site and between sampling points and drilling locations. The decontamination procedure consisted of an Alconox/water wash and a water rinse.

Soil Screening(EC calibration probe and Monitoring Well Installation)
Soil samples collected during the soil boring activities were screened for the presence of organic vapors using the methods described in Part I of MPCA fact sheet 4-04 "Soil Collection and Analysis Procedures." A photoionization detector (PID) equipped with a 10.6 electron volt lamp was used to screen soil samples for the presence of organic vapors. The PID was calibrated prior to analysis on each day of field screening. A quart-size polyethylene freezer bag was filled approximately ½ full with a portion of the sample to be analyzed. Soil clumps were broken and the bag was shaken for approximately 15 seconds. After allowing the headspace to develop for a minimum of 10 minutes, each field screening sample was analyzed using the PID. Soil samples were categorized in the field following the Unified Soil Classification System (USCS) using visual-manual procedures.

Soil Borings and Soil Sample Collection (EC calibration probe and Monitoring Well Installation)
Soil borings were completed utilizing a 6610DT Geoprobe hydraulic push probe. The borings were completed under the direction of Liesch Hydrogeologist Dan Larson. Soil samples collected during soil boring completion were classified in accordance with the Unified Soil Classification System using visual-manual procedures. Soil samples were collected in accordance with Part II of MPCA Fact Sheet 4-04 "Soil Sample Collection and Analysis Procedures". Soil samples were not submitted for laboratory analysis, as discussed in the Focused Investigation Work Plan, with the exception of characterization sampling for disposal of drummed soil cuttings.

Soil Cuttings Disposal
Three 55-gallon drums of contaminated soil and two 55-gallon drums of bituminous were generated during installation of the monitoring wells. A representative sample (D-1) was collected from the soil drums and provided to Veolia landfill along with a waste profile sheet for approval. Veolia accepted the approval request and picked up the soil and asphalt drums on February 14, 2013. The D-1 soil sample was immediately containerized in laboratory provided sample jars and placed in an ice-chilled cooler. Dedicated, disposable polyethylene gloves were used to containerize each soil sample in laboratory-provided containers.

Monitoring Well Installation
Monitoring wells were installed at four locations using 8-inch OD hollow-stem augers. Monitoring wells were completed in compliance with the Minnesota Department of Health regulations, under the supervision of a licensed well contractor. The wells were completed with 10 slot, 10 foot, PVC screen, set in Redflint #30 sandpack. Screen intervals were placed at depths such that they straddled the water table. PVC risers were completed just below ground surface for flush-mount wells and approximately 2 feet above ground surface for protop wells. The annular space above the sandpack was filled in with Enviroplug grout. Lockable caps were placed on top of the PVC riser pipes. A steel cover was cemented in over the PVC riser for flush-mount wells and lockable steel protops were cemented in over the above-grade wells. After completion of the monitoring wells, they were developed to remove excessive sediment and any water introduced during drilling. Development water from monitoring wells MW-8 through MW-10 was contaminated and consequently brought to Minnesota Petroleum in Columbia Heights, Minnesota for disposal.

Groundwater sampling (monitoring wells)
Approximately 5 gallons of water was purged prior to sampling using dedicated, disposable teflon bailers. The water samples were collected using the same bailer used to purge the well. Disposable nitrile gloves were used during handling of all sampling equipment. Groundwater samples were placed in laboratory-provided containers. The sample containers were then immediately placed in an ice-chilled cooler for transportation to the analytical laboratory. Samples were submitted to the laboratory within appropriate holding times. Purge water from monitoring wells MW-8 through MW-10 was contaminated and consequently brought to Minnesota Petroleum in Columbia Heights, Minnesota for disposal.

5. Discuss the data collected during the focused investigation.

EC/Geology

Electrical Conductivity was measured in each LIF probe (L-42 through L-62). Prior to conducting the LIF/EC probes, Matrix completed a soil probe (LGP-1-12) for use as a calibration probe for the electrical conductivity (EC) measurements. Well logs were also completed for the installation of monitoring wells MW-8, MW-9, MW-10, and MW-11. Boring and well logs are included in ***Appendix A****.*

Silty sand with gravel fill soil was observed in LGP-1-12 to a depth of 5.5 feet bg. Poorly graded sand with silt was encountered from 5.5 feet to 12 feet bg. Poorly graded medium grained sand was encountered from 12 to 27.5 feet bg, with water bearing/wet sand from 20 to 27.5 feet bg. Silt was encountered from 27.5 to 29 feet bg, underlain by sandy lean clay from 29 to 30 feet bg. Boring LGP-1-12 was terminated at 30 feet bg. L-42 was drilled adjacent to LPG-1-12. EC measurements from L-42 show variable soil conditions, with possible debris to a depth of approximately 5 feet bg with conductivity measurements from 20 to 40 mS/m from 5 to 13 feet. EC measurements show a conductivity of approximately 20 mS/m from 13 to 17 feet below grade, 40 ms/m from 16 to 22 feet bg, 20 to 30 mS/m from 22 to 24 in the vicinity of the water table, with increasing conductivity from 30 mS/m to 80 mS/m between 24 and 30 feet bg. The conductivity measurements correlate with the grain size distribution, soil type, and groundwater conditions observed in LGP-1-12. In general throughout the investigation area, conductivity measurements consistent with silty sands were measured above the water table, measurements associated with sandy soil were observed in the vicinity of the water table and conductivity increased with depth beyond the water table indicated more silty/clayey soils below the water table. Soils encountered in the monitoring wells consisted of silty sand underlain by fine grain sand. Saturated soil conditions were observed in the wells from 18 feet to 22 bg. Monitoring well elevations and groundwater elevation data are shown on the updated ***Tables 9*** *and* ***10****.*

LIF

Liesch retained Matrix Technologies, Inc. (Matrix) to further assist with the delineation investigation using a UVOST LIF screening tool pushed by a track-mounted 6610DT Geoprobe® rig. Twenty-one (21) probes designated as L-42 through L-62 were completed on the Property on September 11 through September 13, 2012. The probe locations are shown on ***Figure 2****.*

As discussed above, during the previous LIF investigation (March 2011) a sample of free product was collected from MW-7 and analyzed with the UVOST system. This analysis produced a waveform typical of gasoline NAPL. Probe L-1 was completed near the worst case or known area of free product, monitoring well MW-3. The waveform at 18.3 feet was very similar to the waveform from the free product sample in M-7, further confirming the efficacy of the UVOST analysis.

LIF probes were completed to define the vertical and horizontal extent of the LNAPL body. Probes L-42 through L-47 were completed north of the Union 76 building on the Property and north of LIF probe L-19. Probes L-48 through L-62 were completed south of 2nd Avenue, southwest of the site. The UVOST logs for each probe, at two different scales (10% and 40%), are included with the Matrix Direct Sensing report in ***Appendix A****. Liesch considers the background signal to be at approximately 2%, i.e. signals detected below 2% are considered non-detect.*

LIF probes L-42 through L-47 (north of Union 76 building) had maximum fluorescence signals less than 1.5 % with the exception of L-45 (2.9%) and L-47 (2.5%) which were at ground surface which were likely non-NAPL readings, possibly from bituminous or other near-surface artifacts.

The limits of apparent gasoline NAPL south of 2nd Avenue, southwest of the Property was defined in a southerly direction from the source area based on the low signal response (<1.7%) from LIF probes L-48, L-49, L-50, and L-55. However, a signal response was detected from the source area towards the southwest with signal responses near the water table in LIF probes L-51 (9.3% at 22.63 feet), L-53 (4.2% at 21.81 feet), L-54 (3.3% at 21.95 feet), L-58 (2.2% at 27.62 feet), L-59 (3.6% at 22.90 feet), L-60 (3.5% at 23.9 feet) suggesting NAPL presence. A signal response of 9.6% is shown on the log for probe LIF-60 at 0.00 feet. This response is not suspected to be related to the gasoline NAPL.

Figure 3 *is a contour map that identifies the maximum signal at each LIF probe location (L-1 through L-62) for depths <15 feet bg.* ***Figure 4*** *is a contour map that identifies the maximum signal at each LIF probe location for depths >15 feet bg. The maximum signal results for probes L-60 was modified from the maximum signal, which occurred at 0.00 feet, to the maximum signal of 3.5% near the water table at a depth of 23.9 feet. As previously mentioned, these shallow signals are not considered to be indicative of the gasoline NAPL signals found near the source area or at the water table across the site. The map view locations of two cross-sectional views are depicted on* ***Figures 5 and 6****.*

Monitoring Well Sampling Data

Monitoring wells MW-8, MW-9, MW-10, and MW-11 were installed on December 11, 12, and 13, 2013. Well construction diagrams are included in ***Appendix A****. Monitoring wells MW-1, MW-3, MW-6, MW-6A, MW-7, MW-8, MW-9, MW-10, and MW-11 were sampled on January 10, 2013 and May 3, 2013. Groundwater elevations recorded for the events show a groundwater gradient from the source area towards the southwest.* ***Figures 7*** *and* ***8*** *depict the groundwater elevation contours for each event.*

The results of the sampling events are shown on ***Table 11****.*

Free product was noted in MW-3 (2.5 inches) and MW-7 (<0.1 inches) on January 10, 2013. Free Product was noted in MW-3 (5.0 inches), MW-7 (<0.1 inches), and MW-8 (<0.1 inches) on May 3, 2013. MW-3 and MW-7 were not sampled in January 2013 and MW-3, MW-7, and MW-8 were not sampled in May 2013 due to free product. Free product recovery is shown on the attached ***Table 14.***

The monitoring wells were sampled for diesel range organics (DRO), gasoline range organics (GRO), benzene, toluene, ethylbenzene, and xylenes (BTEX) and methyl-tert-butyl-ether (MTBE). Elevated concentrations of DRO and GRO were detected in MW-1, MW-6, MW-8, MW-9, and MW-10 in January 2013 and in MW-1, MW-6, MW-9, and MW-10 in May 2013. The highest concentrations of DRO and GRO were noted in MW-9 and MW-10. Low-level DRO was detected in MW-6A for the January 2013 and May 2013 events.

Benzene was detected above the Minnesota Department of Health (MDH) Health Risk Limit (HRL) of 10 ug/L in MW-6 at 2,280 ug/L and 2,660 ug/L, MW-9 at 6,690 and 7,110 and MW-10 at 375 ug/L and 327 ug/L in January 2013 and May 2013; and MW-8 at 2,590 ug/L in January 2013.

Toluene was detected above the MDH HRL of 1,000 ug/L in MW-6 at 3,370 ug/L and 3,620 ug/L and MW-9 at 7,210 ug/L and 7,330 ug/L in January and May 2013 and in MW-8 at 4,670 ug/L in January 2013.

Ethylbenzene was detected above the MDH HRL of 700 ug/L in MW-6 at 1,090 ug/L and 1,200 ug/L and MW-9 at 1,840 ug/L and 1,950 ug/L in January and May 2013 and in MW-8 at 1,490 ug/L in January 2013.

Xylenes were not detected above the MDH HRL of 10,000 ug/L in any of the wells sampled for the January 2013 and May 2013 events.

MTBE was not detected above laboratory reporting limits in any of the wells sampled for the January 2013 and May 2013 events.

MW-6A showed no concentrations of GRO, BTEX, or MTBE above laboratory reporting limits for the January or May 2013 sampling events. MW-11 showed no concentrations of DRO, GRO, BTEX, or MTBE above laboratory reporting limits for the January or May 2013 sampling events.

Section 2: Data Evaluation

Provide data evaluation figures and cross sections in Section 6 and data evaluation tables in Section 7.

1. Discuss data evaluation methods and your evaluation of the focused investigation data.

Delineation of NAPL

Figures 3 and 4 *in* ***Appendix A*** *shows the LIF signal response data contours for maximum fluorescence.* ***Figure 3*** *shows the responses less than 15 feet bg and* ***Figure 4*** *shows the responses greater than 15 feet bg.*

The results of this investigation indicate that gasoline NAPL was not encountered north of the Union 76 building or north of probe L-19, resulting in definition of NAPL to the north of the source area. The gasoline NAPL has also been defined to the east based on the result of LIF probe L-5 (2.3% at 25.37 feet bg) and L-43 (1.5% at 0.75 feet bg).

Gasoline NAPL has been defined directly south of the source area based on the results of data collected from MW-11 and LIF probes L-10, L-48, and L-49.

Gasoline NAPL has also been defined to the west of the source area based on the results of LIF probes L-37 and L-36.

The gasoline NAPL south of 2nd Avenue, southwest of the Property was defined from the source area towards the southwest based on the low signal response (<1.7%) from LIF probes L-48, L-49, L-50, and L-55. However, a signal response was detected from the source area towards the southwest with signal responses near the water table in LIF probes L-51 (9.3% at 22.63 feet), L-53 (4.2% at 21.81 feet), L-54 (3.3% at 21.95 feet), L-58 (2.2% at 27.62 feet), L-59 (3.6% at 22.90 feet), L-60 (3.5% at 23.9 feet). Signal response to the southwest has been defined for responses >5% at the water table depth. In addition, free product was not observed in MW-6 or MW-6A or MW-10. Based on the above, Liesch concludes the extent of the gasoline NAPL has been defined.

Delineation of Dissolved Phase Petroleum Impacts

LIF signal responses above 2% were detected in L-53, L-54, L-59, and L-60 indicating the presence of petroleum impacts in these borings, which may be indicative of dissolved phase impacts. DRO and GRO were detected in down-gradient wells MW-6 and MW-10 at elevated concentrations. Benzene was detected above the MDH HRL in MW-10 and MW-6 and toluene, and ethylbenzene were detected above MDH HRLs in MW-6.

Section 3: Conclusions

1. Discuss whether the focused investigation results significantly affect the assumptions made when preparing life-cycle cost estimates for the non-selected corrective action alternatives evaluated in Guidance Document 7-02 *Conceptual Corrective Action Design Report (CCAD)*.

   The cumulative data and updated site conceptual model has defined the extent and magnitude of impact at the site and has allowed evaluation of exposure pathways currently present at the site. It is acknowledged that free product remains at the site and a contaminant plume of dissolved phase impacts well above drinking water standard has migrated from the site. The lack of groundwater use for potable consumption and the soil gas testing that has not shown concentrations above standard (other than the Vapor Pt 2) suggests that unacceptable exposure pathways do not exist.

   Although the contamination plume has been relatively stable, considering the age of the release, Liesch has identified soil vapor extraction, bio-remediation, and/or in-situ chemical oxidation as potential corrective actions to further stabilize the plume if corrective action is needed. Based on the previous bail-down test and monthly measurements collected over the past year, no significant recoverable product exists at the site, so an active product recovery system is not seen as an option.

   A CCAD has not been prepared for this site at this time. Liesch would continue the process of evaluating potential corrective action alternatives for the site if corrective action is needed. Liesch would like to discuss these options with the MPCA prior to drafting a CCAD.

2. Discuss whether the focused investigation results support the proposed corrective action and, if so, how the results will be used to design the pilot test, if applicable, and advance the detailed design.

   The results of the Focused Investigation show the extent and magnitude of the gasoline LNAPL and the apparent limits of the dissolved contamination plume related to the Union 76 release. Previous investigation suggests the vapor intrusion risk is low, and the risk to groundwater receptors within 500 feet is low. The purpose of corrective action would be to protect the nearby buildings from potential vapor intrusion issues and stabilize the plume to protect potential down-gradient groundwater and surface water receptors. Note that a groundwater receptor survey was completed in 2002 for properties within 800 feet downgradient of the Property and no significant risk to water wells was identified.

Section 4: Site Conceptual Model Update

Include updated cumulative tables and figures from Guidance Document 4-06 *Investigation Report Form* in Appendix D. Include documentation of additional site investigation, site monitoring, and interim corrective actions in Appendix E.

1. Describe any additional site investigation, site monitoring, and/or interim corrective actions completed since the last submitted report.

   - *Laser Induced Fluorescence (LIF) / Electrical Conductivity (EC) probes L-42 through L-62 (September 11-13, 2012)*
   - *Installation of monitoring wells MW-8 through MW-11 (December 11-13, 2012)*
   - *Sampling of monitoring wells MW-1, 3, 6, 6A, 7, 8, 9, 10, and 11 (January 10, 2013)*
   - *Sampling of monitoring wells MW-1, 3, 6, 6A, 7, 8, 9, 10, and 11 (May 3, 2013)*
   - *Monthly free product checks June 2012 through April 2013 (see Appendix D)*

2. Discuss the results of the additional site investigation, site monitoring, and/or interim corrective actions.

   The results of the two monitoring well sampling events and LIF probes are discussed above. Monthly product checks revealed no significant amount of recoverable product from MW-3. MW-3 had 10 inches of product on February 11, 2013, 7 inches of product on March 28, 2013, and 5 inches of product on May 3, 2013. The product was hand bailed, containerized and disposed of at Minnesota Petroleum. The total amount of product removed from these events was less than one gallon. Less than one inch of product was found in MW-7 and MW-8. Product from MW-7 and MW-8 was not recoverable.

3. Provide an updated and comprehensive site conceptual model.

   LNAPL
   *The source of the release is a gasoline AST which released 6,000-gallons of gasoline in the late 1970s. The source of the release is near MW-3 as shown by the high LIF response in the upper 15 feet near MW-3 (**Figure 3**). LNAPL was detected at MW-3, MW-7 and MW-8 during the two rounds of quarterly sampling in January and May 2013. Monthly product checks revealed no significant amount of recoverable product from MW-3. MW-3 had 10 inches of product on February 11, 2013, 7 inches of product on March 28, 2013, and 5 inches of product on May 3, 2013. The product was hand bailed, containerized and disposed of at Minnesota Petroleum. The total amount of product removed from these events was less than one gallon. While LNAPL has historically been detected at MW-3, LNAPL is only present in very low volume in MW-7 and MW-8. Based on the LIF data collected from LIF-36 and LIF-37, the LNAPL is defined west of MW-8. In addition, LNAPL was not present in down-gradient well MW-9 during the last two rounds of quarterly monitoring in January and May 2013.*

   The supplemental LIF investigation, conducted in September 2012, provided a better understanding of the occurrence of LNAPL beneath the site and adjacent sites to the south and southwest. Based on the LIF boring data from LIF-60 showing a response of 3.5% near MW-6, Liesch concludes that a response of less than 3.5% is not indicative of LNAPL because free

product has not historically been present in MW-6. The LIF data shows that LNAPL from the release is defined.

One finding of the LIF investigation is that there is no shallow LNAPL west of the east curb line separating South Buchanan Street and the Union 76 Property. This observation is important since utilities are not buried deeper than 12 feet beneath Buchanan Street; this significantly reduces the risk these utilities pose as a receptor. Utilities are shown on ***Figure 9****. Further, the EC plots do not indicate heterogeneous soil conditions in the presence of shallow LNAPL which could lead to preferential migration of LNAPL.*

Based on the LIF Investigations, historical monitoring well data, and the previous product draw down testing, the LNAPL at the site appears relatively stable.

Groundwater

Groundwater monitoring/investigation has been ongoing at the site since June 1995. The groundwater contamination plume appears to be relatively stable. Benzene above the MDH HRL of 10 ug/L was detected in MW-6 at 2,280 ug/L and 2,660 ug/L, MW-9 at 6,690 and 7,110 and MW-10 at 375 ug/L and 327 ug/L in January 2013 and May 2013; and MW-8 at 2,590 ug/L in January 2013. Elevated concentrations of DRO and GRO were detected in MW-1, MW-6, MW-8, MW-9, and MW-10 in January 2013 and in MW-1, MW-6, MW-9, and MW-10 in May 2013. Toluene, ethylbenzene, xylenes and MTBE were not detected in down-gradient well MW-10 during the January and May 2013 quarterly sampling events. Concentrations of DRO, GRO, and BTEX are relatively stable compared to historical data. Groundwater analytical data is shown on ***Table 11****. The risk to groundwater receptors is low since the sites within the contaminant plume utilize the City water supply.*

Vapor Intrusion

In 2011, Liesch collected three soil vapor samples to assess off-site vapor intrusion potential. Vapor Pt #1 was collected west of the Midwest Environmental Consulting building located at 145 Second Avenue SE, Vapor Pt #2 was collected on the east side of the American Legion Building located at 200 Second Avenue SE, and Vapor Pt #3 was collected to the east of the Cambridge Bible Bookstore located at 220 Main Street South. All vapor samples were collected at depths between 6-8 feet below grade.

No detectable concentrations of VOCs were identified in Vapor Pt #1 and Vapor Pt #3. Vapor Pt #2 (American Legion) detected several VOCs of which benzene at 84.6 ug/m^3 was detected above the MPCA Residential Intrusion Screening Value (ISV) of 4.5 ug/m^3 and 1,3-butadine was detected at 64.5 ug/m^{3}above the MPCA Residential ISV of 0.3 ug/m^3. MPCA guidance document 4-01a provides guidelines for comparing soil gas sample results to 10 times the ISV and 100 times the ISV. Benzene detected at 86.6 ug/m^3 in Vapor Pt #2 exceeds 10 times the Residential ISV of 45 ug/m^3 but does not exceed the 10 times the Industrial ISV of 130 ug/m^3 or 100 times the Residential ISV 450 ug/m^3. While 1,3 Butadiene exceeds 100 times the Residential ISV of 30 ug/m^3, 1,3-Butadine is not anticipated to be a contaminant of concern for the petroleum release. The results are shown on ***Table 20****.*

*In 2011, Liesch collected a subslab vapor sample beneath the basement of the American Legion building to assess the potential for vapor migration into the building. Petroleum VOCs were not detected above the MPCA Residential or Industrial ISVs in sample Subslab-1 (****Table 20****) . Based on results of the Subslab-1 sample beneath the American Legion building, there does not appear to be a vapor pathway between the deeper (18-20') dissolved phase petroleum impacts and the American Legions subslab. A Vapor Intrusion Interior Building Survey Form was also included to address the potential vapor intrusion risk to the American Legion Building.*

In addition, an updated utility vapor survey was conducted in 2011 and no petroleum vapors were identified. Elevated concentrations of VOC exist in the groundwater; however, the low concentrations of VOCs detected in the soil vapor data and the age of the release suggest that much of the volatilization associated with the release has occurred. Thus, the vapor intrusion risk is low.

Surface Water Receptors

Figure 1 *shows the Rum River located west of the Site. The Rum River is located approximately 4,000 feet down-gradient of the release and 3,500 feet from the leading edge of the contamination plume.*

Hydraulic conductivity (K) data from the Remedial Investigation Report for this site (WCEC, report dated March 2, 1998), shows a K value of 4.55E-04. WCEC calculated a groundwater velocity of 1.59E03 meters/year (5216.535 feet/year). Liesch re-calculated using the same K value, but with the May 2013 groundwater elevation data from MW-7 to MW-6. The Horizontal gradient (dh/dl) was calculated to be 0.00207. Assuming a porosity of 30% as utilized by WCEC, Liesch calculates the groundwater velocity to be at 324.82 ft/year. The revisited groundwater velocity calculation puts the Rum River within an approximate 10-year travel time of the contamination plume. This calculation uses a distance of 3,300 feet between GP-2 (10.4 ug/L) benzene and the east edge of the Rum River, in line with the west-southwest groundwater flow direction. Monitoring data suggests that the LNAPL is relatively static considering the gasoline AST release occurred in the late 1970s and the LNAPL has traveled approximately 350 feet to the west-southwest from the source during that 35+ year timeframe. Calculations are shown in ***Appendix A****. The LIF investigations in 2011 and 2012 further support the data pointing towards plume stability, both in the LNAPL and dissolved phase petroleum impacts.*

Since the Rum River is located approximately 3,300 feet from the leading edge of the contamination plume, the risk to surface water is considered low from this release.

Section 5: Recommendations

1. If the focused investigation results support the proposed corrective action, propose a schedule for submitting Guidance Document 7-05 *Pilot Test Work Plan*, Guidance Document 7-07a *Remediation System Detailed Corrective Action Design Report (SDCAD)*, or Guidance Document 7-07b *Excavation Detailed Corrective Action Design Report (EDCAD)*. If not, recommend an alternative course of action and a schedule for submitting a revised CCAD.

   Liesch recommends that the MPCA review the new data presented herein as part of a discussion of whether closure is warranted, further assessment in support of closure is needed, or whether corrective action is required.

2. Provide recommendations for additional site investigation, site monitoring, and/or interim corrective actions to be completed prior to corrective action design approval, including their purpose and schedule for completion.

   Liesch will continue with monthly product checks as required. Measurable recoverable product from monitoring wells will be hand-bailed, containerized and disposed of properly.

Section 6: Figures

Attach new figures specific to this report in order of discussion in the text. All figures must include a north arrow, scale, and legend as applicable. Approximate scales are not acceptable. Figures required in Appendix D should not be included in this section. New figures must include those listed below. Attach additional figures as needed and list below.

☒ One or more site maps showing (as applicable):

- Structures
- Boring and well locations (including any drinking water wells on site)
- Focused investigation locations
- Suspected source(s) of light non-aqueous phase liquid (LNAPL)
- Locations and depths of on-site buried utilities
- All past and present petroleum storage tanks, piping, dispensers, and transfer areas
- Horizontal extent of LNAPL

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

☒ Cross sections depicting depths of focused investigation data collection points in relation to known contamination extents, geology, subsurface structures, and previous site investigation borings or wells.

Section 7: Tables

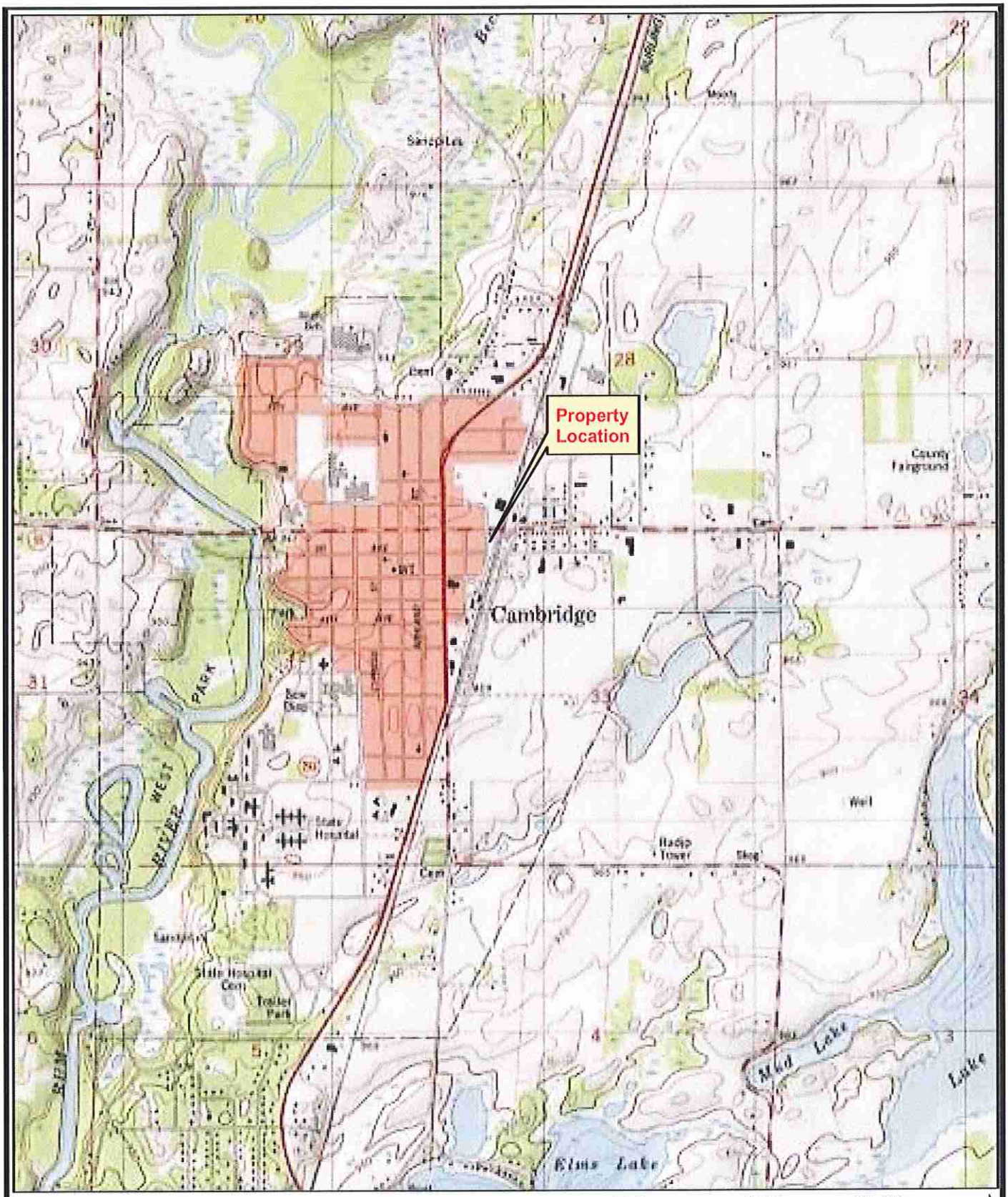
Attach new tables specific to this report in order of discussion in the text and list below. Tables required in Appendix D should not be included in this section.

Section 8: 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. Attach additional appendices as needed and list below.

☒	*Appendix A*	Geologic logs of focused investigation borings or wells, laser-induced fluorescence probe logs, electrical conductivity logs, etc. Include well construction diagrams and copies of the Minnesota Department of Health (MDH) *Well and Boring Record* for new wells.
☒	*Appendix B*	Copies of laboratory analytical reports, including a copy of the chain-of-custody form. Include laboratory QA/QC data, chromatograms, and MDH laboratory certification number.
☒	*Appendix C*	Field or sampling data sheets (sampling forms, field crew notes, etc.).
☒	*Appendix D*	Cumulative and updated tables and figures from Guidance Document 4-06 *Investigation Report Form*.
☒	*Appendix E*	Additional site investigation, site monitoring, and interim corrective action methods and procedures and associated documentation (boring logs, sampling information forms, laboratory analytical reports, etc.).

FIGURES



Source: MS Virtual Eath Topographic Quad
Projection: NAD83 UTM Zone 15N

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Aug 13

Property Location

Figure 1

1st AVENUE

2nd AVENUE

3rd AVENUE

MAINSTREET

ALLEY

SOUTH ADAMS STREET

ALLEY

SOUTH BUCHANAN STREET

RR ROW / PROPERTY BOUNDARY

RAILROAD TRACKS

CASEY'S

NORDBERG ELECTRIC

SHED

AMERICAN LEGION

UNION 76

KLUCK OIL

TH-2 TH-4 TH-5 TH-3 MW-1/TH-1 TH-7 TH-24 TH-23 TH-9 TH-10 TH-11 TH-12 TH-13 TH-14 TH-15 TH-16 TH-17 TH-18 TH-19 TH-20 TH-21 TH-22 TH-25 TH-26 TH-27 TH-28 TH-29 TH-30 TH-31 TH-32 TH-33 TH-34 TH-35 TH-36 TH-37 TH-38 TH-39

MW-2/TH-6 MW-3/TH-8 MW-5 MW-5A MW-6 MW-6A MW-7 MW-8 MW-9 MW-10 MW-11

L-1 L-2 L-3 L-4 L-5 L-6 L-7 L-8 L-9 L-10 L-11 L-12 L-13 L-14 L-15 L-16 L-17 L-18 L-19 L-20 L-21 L-22 L-23 L-24 L-25 L-26 L-27 L-28 L-29 L-30 L-31 L-32 L-33 L-34 L-35 L-36 L-37 L-38 L-39 L-40 L-41 L-42 L-43 L-44 L-45 L-46 L-47 L-48 L-49 L-50 L-51 L-52 L-53 L-54 L-55 L-56 L-57 L-58 L-59 L-60 L-61 L-62

LGP-1-12

SUBSLAB-1

VAPOR PT. 2

VAPOR PT. 3

GP-1

VAPOR PT. 1

GP-2

LEGEND

- TH-7 SOIL BORING
- LGP-1-12 SOIL BORING (SEPT 2012)
- MW-7 MONITORING WELL
- L-8 LIF/EC PROBE (MAR 2011)
- L-42 LIF/EC PROBE (SEPT 2012)
- GP-1 GEOPROBE
- VAPOR PT. 1 VAPOR PROBE

N

0 20 50 75 100

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FORMER UNION 76 FUEL STATION CAMBIRDGE, MN	AUG 13
SAMPLING LOCATIONS	FIGURE 2

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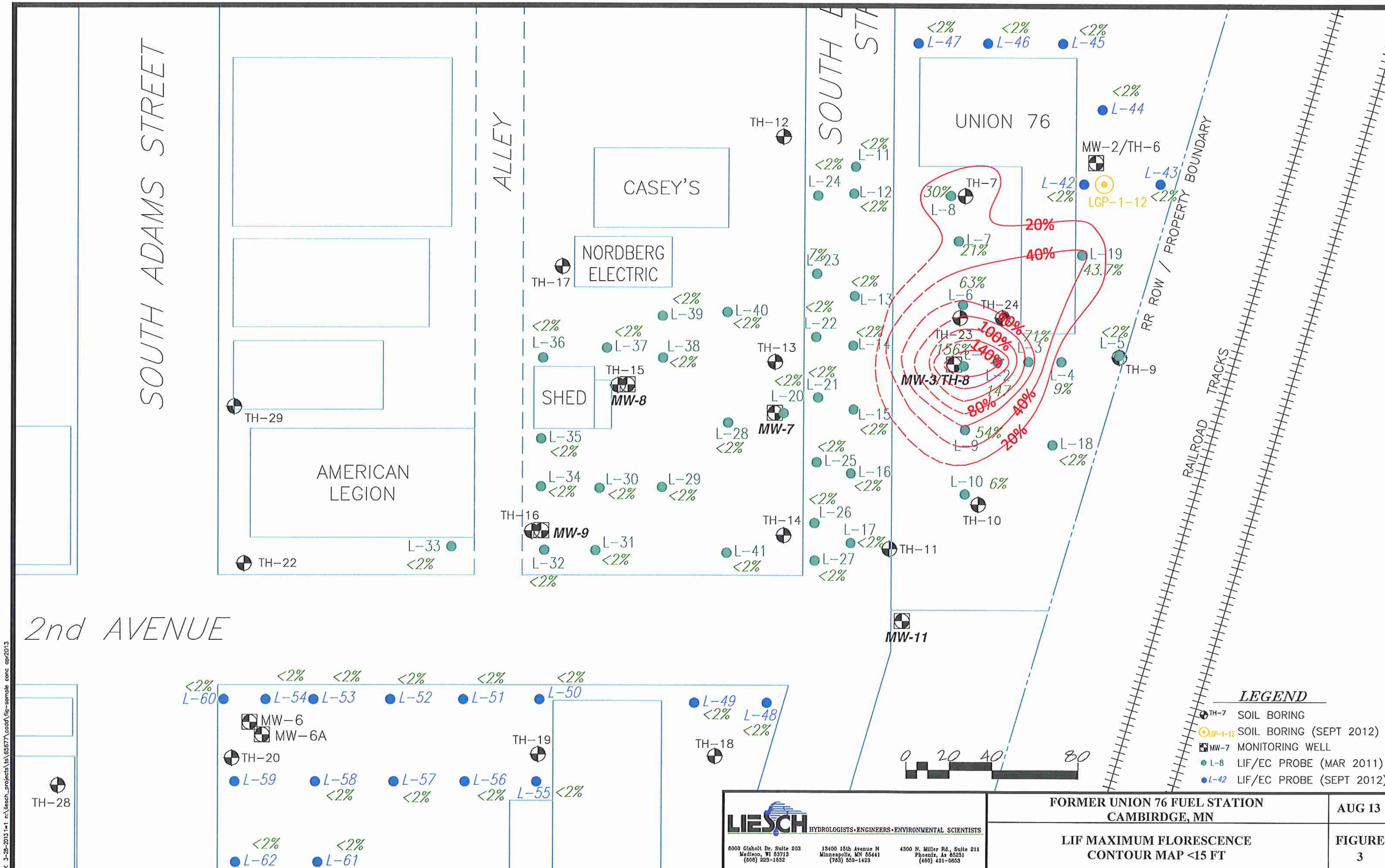
SOUTH ADAMS STREET
ALLEY
SOUTH
2nd AVENUE
CASEY'S
NORDBERG ELECTRIC
SHED
AMERICAN LEGION
UNION 76
RR ROW / PROPERTY BOUNDARY
RAILROAD TRACKS
MW-2/TH-6
MW-3/TH-8
MW-6
MW-6A
MW-7
MW-8
MW-9
MW-11
TH-7
TH-9
TH-10
TH-11
TH-12
TH-13
TH-14
TH-15
TH-16
TH-17
TH-18
TH-19
TH-20
TH-22
TH-23
TH-24
TH-28
TH-29
LGP-1-12
20%
40%
80%
100%
140%
LEGEND
SOIL BORING
SOIL BORING (SEPT 2012)
MONITORING WELL
LIF/EC PROBE (MAR 2011)
LIF/EC PROBE (SEPT 2012)
0 20 40 80

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FORMER UNION 76 FUEL STATION
CAMBIRDGE, MN

LIF MAXIMUM FLORESCENCE CONTOUR MAP <15 FT

AUG 13

FIGURE 3

SOUTH ADAMS STREET

ALLEY

SOUTH ST

RR ROW / PROPERTY BOUNDARY

RAILROAD TRACKS

2nd AVENUE

CASEY'S

NORDBERG ELECTRIC

AMERICAN LEGION

UNION 76

SHED

TH-12 TH-13 TH-14 TH-15 TH-16 TH-17 TH-18 TH-19 TH-20 TH-22 TH-23 TH-24 TH-28 TH-29

TH-7 TH-8 TH-9 TH-10 TH-11

MW-2/TH-6 MW-3/TH-8 MW-6 MW-6A MW-7 MW-8 MW-9 MW-11

LGP-1-12

L-1 L-2 L-3 L-4 L-5 L-6 L-7 L-8 L-9 L-10 L-11 L-12 L-13 L-14 L-15 L-16 L-17 L-18 L-19 L-20 L-21 L-22 L-23 L-24 L-25 L-26 L-27 L-28 L-29 L-30 L-31 L-32 L-33 L-34 L-35 L-36 L-37 L-38 L-39 L-40 L-41 L-42 L-43 L-44 L-45 L-46 L-47 L-48 L-49 L-50 L-51 L-52 L-53 L-54 L-55 L-56 L-57 L-58 L-59 L-60 L-61 L-62

5% 10% 15% 20% 25% 35%

0 20 40 80

LEGEND

- TH-7 SOIL BORING
- LGP-1-12 SOIL BORING (SEPT 2012)
- MW-7 MONITORING WELL
- L-8 LIF/EC PROBE (MAR 2011)
- L-42 LIF/EC PROBE (SEPT 2012)

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FORMER UNION 76 FUEL STATION
CAMBIRDGE, MN

AUG 13

LIF MAXIMUM FLORESCENCE CONTOUR MAP >15FT

FIGURE 4

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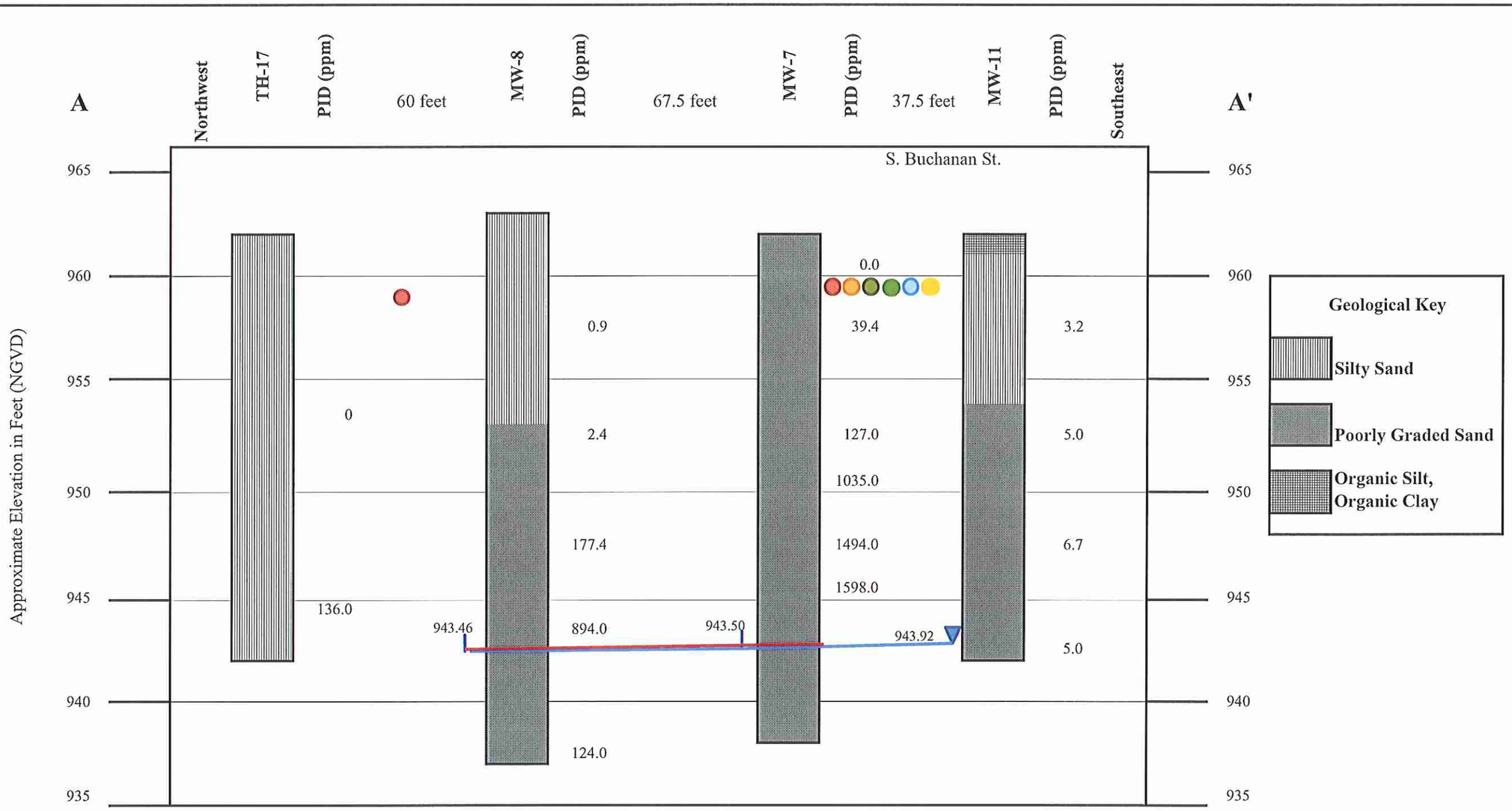

Notes:

PID Photionization detector readings (parts per million)

Water Table Elevations (May 2013)

Sanitary Sewer

Storm Sewer

LNAPL (Light Non-Aqueous Phase Liquid)

Phone/Fiber Optic

Electric

Gas

Water

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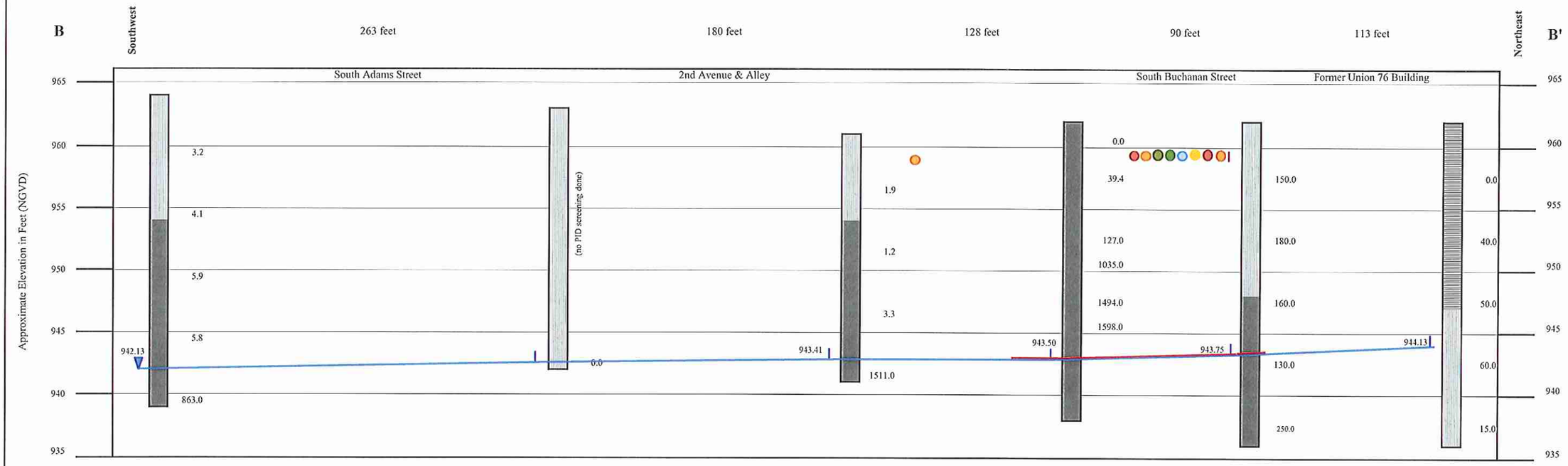
	Former Union 76 Fuel Station Cambridge, MN	Figure 5



Notes:

PID Photionization detector readings (parts per million)

Water Table Elevations (May 2013)

Sanitary Sewer

Storm Sewer

LNAPL (Light Non-Aqueous Phase Liquid)

Phone/Fiber Optic

Electric

Gas

Water

Geological Key

Silty Sand

Poorly Graded Sand

Silt

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B - B' Cross Section	**Jun 13**
Former Union 76 Fuel Station Cambridge, MN	**Figure 6**

1st AVENUE

2nd AVENUE

3rd AVENUE

MAINSTREET

ALLEY

SOUTH ADAMS STREET

ALLEY

SOUTH BUCHANAN STREET

RR ROW / PROPERTY BOUNDARY

RAILROAD TRACKS

AMERICAN LEGION

CASEY'S

NORDBERG ELECTRIC

SHED

UNION 76

KLUCK OIL

TH-2 TH-3 TH-4 TH-5 TH-7 TH-9 TH-10 TH-11 TH-12 TH-13 TH-14 TH-15 TH-16 TH-17 TH-18 TH-19 TH-20 TH-21 TH-22 TH-23 TH-24 TH-25 TH-26 TH-27 TH-28 TH-29 TH-30 TH-31 TH-32 TH-33 TH-34 TH-35 TH-36 TH-37 TH-38 TH-39

MW-1/TH-1 944.79

MW-2/TH-6

LGP-1-12

MW-3/TH-8

MW-5

MW-5A

MW-6 943.55

MW-6A

MW-7 944.28

MW-8 944.16

MW-9 944.06

MW-10 942.76

MW-11 944.59

944.5

944.25

944.0

943.75

943.5

943.25

943.0

944.75

LEGEND

TH-7 SOIL BORING

LGP-1-12 SOIL BORING (SEPT 2012)

MW-7 MONITORING WELL

GROUNDWATER GRADIENT CONTOUR

N

0 20 50 75 100

SCALE IN FEET

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FORMER UNION 76 FUEL STATION CAMBIRDGE, MN	AUG 13
GROUNDWATER GRADIENT CONTOUR MAP 1/10/13	FIGURE 7

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1st AVENUE

2nd AVENUE

3rd AVENUE

MAINSTREET

ALLEY

SOUTH ADAMS STREET

ALLEY

SOUTH BUCHANAN STREET

RR ROW / PROPERTY BOUNDARY

RAILROAD TRACKS

CASEY'S

NORDBERG ELECTRIC

SHED

AMERICAN LEGION

UNION 76

KLUCK OIL

TH-2 TH-3 TH-4 TH-5 TH-6 TH-7 TH-9 TH-10 TH-11 TH-12 TH-13 TH-14 TH-15 TH-16 TH-17 TH-18 TH-19 TH-20 TH-21 TH-22 TH-23 TH-24 TH-25 TH-26 TH-27 TH-28 TH-29 TH-30 TH-31 TH-32 TH-33 TH-34 TH-35 TH-36 TH-37 TH-38 TH-39

MW-1/TH-1 944.13

MW-2/TH-6

LGP-1-12

MW-3/TH-8

MW-5

MW-5A

MW-6

MW-6A

MW-7 943.50

MW-8 943.46

MW-9 943.41

MW-10 942.13

MW-11 943.92

944.0

943.75

943.5

943.25

943.0

942.91

942.75

942.5

942.25

LEGEND

- TH-7 SOIL BORING
- LGP-1-12 SOIL BORING (SEPT 2012)
- MW-7 MONITORING WELL
- GROUNDWATER GRADIENT CONTOUR

N

0 20 50 75 100

SCALE IN FEET

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FORMER UNION 76 FUEL STATION CAMBIRDGE, MN	AUG 13
GROUNDWATER GRADIENT CONTOUR MAP 5/3/13	FIGURE 8

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LEGEND

- TH-7 SOIL BORING
- MW-7 MONITORING WELL
- L-8 LIF/EC PROBE
- VAPOR PT. 2 VAPOR PROBE
- (1) VAPOR SURVEY LOCATION
- ✳ SUBSLAB VAPOR SAMPLE
- SS SANITARY SEWER
- SW STORM SEWER
- T PHONE/FIBER OPTIC
- E ELECTRIC
- GAS GAS
- W WATER
- MANHOLE
- STORM SEWER CATCH BASIN

ALLEY

CASEY'S

NORDBERG ELECTRIC

UNION 76

SHED

AMERICAN LEGION

SUBLAB-1

VAPOR PT. 2

SOUTH BUCHANAN STREET

2nd AVENUE

RR ROW / PROPERTY BOUNDARY

RAILROAD TRACKS

TH-7, TH-8, TH-9, TH-10, TH-11, TH-12, TH-13, TH-14, TH-15, TH-16, TH-17, TH-22, TH-23, TH-24, TH-29

MW-2/TH-6, MW-3/TH-8, MW-7, MW-8, MW-9, MW-11

L-1, L-2, L-3, L-4, L-5, L-6, L-7, L-8, L-9, L-10, L-11, L-12, L-13, L-14, L-15, L-16, L-17, L-18, L-19, L-20, L-22, L-23, L-24, L-25, L-26, L-28, L-29, L-30, L-31, L-32, L-33, L-34, L-35, L-36, L-37, L-38, L-39, L-40, L-41

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N 0 10 20 40

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LIESCH — www.liesch.com — A Terracon COMPANY — Consulting Engineers and Scientists — 13400 15th Avenue North, Minneapolis, MN 55441 — PH. (763) 489-3100 — FAX. (605) 489-3101	FORMER UNION 76 FUEL STATION CAMBIRDGE, MN	AUG 13
	UTILITY LOCATIONS	FIGURE 9

APPENDIX A

Project: Claire-Mille Lacs Oil - 65677.07	**Logged by: Dan Larson**
Date: December 11, 2012	**Drilling Contractor: Matrix**
Boring ID: MW-8	**Driller/Assistant Name: Guy Paquette and Cameron**
Boring Depth (feet): 25'	**Drilling Method: Geoprobe 6600 DT - MacroCore**
Depth to groundwater (feet):	**Weather:**
Boring Location: TH-15 Location, near NE corner of Legion out-building	

Depth	Sample Lithology: color, grain size, grain size distribution, stiffness and other sample / drilling notes	Moisture (dry/moist/wet/ saturated)	Chemical staining or odor	USCS	Sample Recovery-feet (i.e. 1.5 of 2)	PID (ppm)	Lab Sample Collected
	Gravel surface						
0-5'	Brown silty sand	Moist	N	SM	3.8/5	0.9	
5-10'	5-19' Brown silty sand 9-10' Brown very fine sand	Moist Moist	N N	SM SP	3.8/5	2.4	
10-15'	Brown very fine sand changing to fine sand at 14'	Moist	Y	SP	3.7/5	177.4	
15-20'	Brown fine sand	Moist to Saturated at 19'	Y	SP	3.2/5	894	
20-25'	Gray-brown fine sand	Saturated	Y	SP	3/5	124	

Notes: Well screen set 11-26', see Monitoring Well Construction diagram for details

Project: Claire-Mille Lacs Oil - 65677.07	**Logged by: Dan Larson**
Date: December 11, 2012	**Drilling Contractor: Matrix**
Boring ID: MW-9	**Driller/Assistant Name: Guy Paquette and Cameron**
Boring Depth (feet): 20'	**Drilling Method: Geoprobe 6600 DT - MacroCore**
Depth to groundwater (feet):	**Weather:**
Boring Location: TH-16 Location, Legion property	

Depth	Sample Lithology: color, grain size, grain size distribution, stiffness and other sample / drilling notes	Moisture (dry/moist/wet/ saturated)	Chemical staining or odor	USCS	Sample Recovery-feet (i.e. 1.5 of 2)	PID (ppm)	Lab Sample Collected
	Gravel surface						
0-5'	Brown silty sand	Moist	N	SM	4/5	1.9	
5-10'	5-7' Brown silty sand 7-10' Brown fine sand	Moist Moist	N N	SM SP	4/5	1.2	
10-15'	Brown fine sand	Moist	N	SP	4/5	3.3	
15-20'	15-18' Brown fine sand 18-20' Gray fine sand	Moist Saturated at 18'	N Y	SP SP	4/5	1511	

Notes: Well screen set 11-26', see Monitoring Well Construction diagram for details

Project: Claire-Mille Lacs Oil - 65677.07	**Logged by: Dan Larson**
Date: December 11, 2012	**Drilling Contractor: Matrix**
Boring ID: MW-10	**Driller/Assistant Name: Guy Paquette and Cameron**
Boring Depth (feet): 25'	**Drilling Method: Geoprobe 6600 DT - MacroCore**
Depth to groundwater (feet):	**Weather:**
Boring Location: Alley between Main, 2nd, Adams, and 3rd	

Depth	Sample Lithology: color, grain size, grain size distribution, stiffness and other sample / drilling notes	Moisture (dry/moist/wet/ saturated)	Chemical staining or odor	USCS	Sample Recovery-feet (i.e. 1.5 of 2)	PID (ppm)	Lab Sample Collected
	Bituminous surface						
0-5'	Brown silty sand	Moist	N	SM	3.2/5	3.2	
5-10'	Brown silty sand	Moist	N	SM	4/5	4.1	
10-15'	Brown fine sand	Moist	N	SP	3.7/5	5.9	
15-20'	Brown fine sand	Moist	N	SP	3.9/5	5.8	
20-25'	20-22' Brown fine sand 22-25' Gray-brown fine sand with some gravel	Moist Saturated at 22'-22.5'	Poss. Y odor and staining	SP SP	3.9/5	863	

Notes: Well screen set 18-28', see Monitoring Well Construction diagram for details

Project: Claire-Mille Lacs Oil - 65677.07	**Logged by: Dan Larson**
Date: December 11, 2012	**Drilling Contractor: Matrix**
Boring ID: MW-11	**Driller/Assistant Name: Guy Paquette and Cameron**
Boring Depth (feet): 20'	**Drilling Method: Geoprobe 6600 DT - MacroCore**
Depth to groundwater (feet):	**Weather:**
Boring Location: City property, E side of Buchanon	

Depth	Sample Lithology: color, grain size, grain size distribution, stiffness and other sample / drilling notes	Moisture (dry/moist/wet/ saturated)	Chemical staining or odor	USCS	Sample Recovery-feet (i.e. 1.5 of 2)	PID (ppm)	Lab Sample Collected
	Grass surface						
0-5'	0-6" Dark brown sandy loam (topsoil) 6"-5 Brown silty sand	Moist Moist	N N	OL SM	2.5/5	3.2	
5-10'	5-7.5' Brown silty sand 7.5-10' Brown very fine sand	Moist Moist	N N	SM SP	4/5	5	
10-15'	Brown very fine sand	Moist	N	SP	4/5	6.7	
15-20'	Brown fine sand	Saturated at 18.5'	N	SP	3.8/5	5	

Notes: Well screen set 15-25', see Monitoring Well Construction diagram for details

Project: Former Union 76 - 65677.00	**Logged by: Dan Larson**
Date: September 11, 2012	**Drilling Contractor: Matrix**
Boring ID: LGP-1-12	**Driller/Assistant Name:**
Boring Depth (feet):	**Drilling Method: Geoprobe**
Depth to groundwater (feet):	**Weather:**
Boring Location: Near MW-2	

Depth	Sample Lithology: color, grain size, grain size distribution, stiffness and other sample / drilling notes	Moisture (dry/moist/wet/ saturated)	Chemical staining or odor	USCS	Sample Recovery-feet (i.e. 1.5 of 2)	PID (ppm)	Lab Sample Collected
3"	Bituminous surface	Moist			0-2.5	0.5	
5.5'	Fill, silty sand with gravel, brown to dark brown	Moist Moist		Fill	2.5-5 5-7.5	0.5 1	
12'	Poorly graded sand with silt, fine grained, rust and grey mottling	Moist Moist		SP/SM	7.5-10 10-12.5	1.2 10.2	
19.5'	Poorly graded sand, medium grained, grey	Moist Moist		SP	15.5-15 15-17.5 17.5-20	6.4 9.6	
24'	Poorly graded sand, medium grained, brown, water bearing at 20-22', moist to wet at 17.5-20', moist to wet at 22-24'	Wet Moist/wet Moist/wet Moist		SP	20-22.5 22.5-25	3.6 1.5 26.7 2.1	
27.5'	Poorly graded sand, medium grained, grey, moist to wet at 24-27.5'	Moist to wet			25-27.5	1.7	
29'	Silt, brown/grey	Moist to wet		ML	27.5-30		
30'	Sandy loam clay with gravel, grey			CL			
	End of Boring						

Notes: Collapse at 17.5', no lab sampled collected, calibration boring for LIF/EC for soil classification

Liesch Associates, Inc.

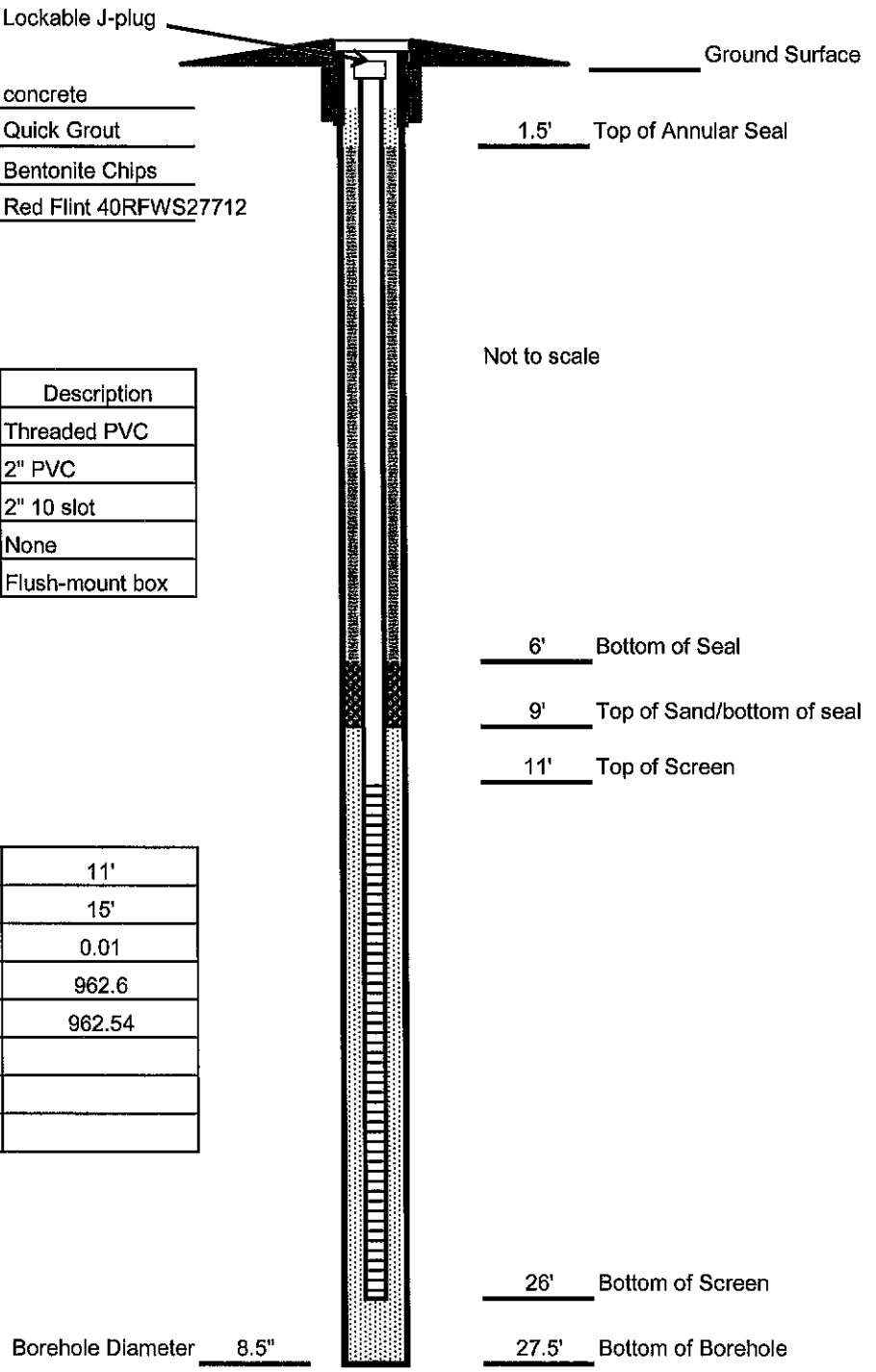
Monitoring Well Construction Diagram

Job Number	MP137795 / 65677	Well No:	MW-8
Project:	Mille Lacs Oil - Cambridge	Unique Well No.:	792988
Location:	Cambridge, MN	Drilling Method:	Geoprobe 6600DT
Date Installed:	12/11/2012	Drilling Fluids:	None
Project Manager:	Dan Larson	Completed by:	Matrix Environmental

Annular Space Details

All depths are referenced to ground surface

Type of Surface Seal	concrete
Type of Annular grout	Quick Grout
Type of Bentonite Seal	Bentonite Chips
Type of Sand Pack	Red Flint 40RFWS27712



Well Construction Materials

	Description
Riser Coupling Joint	Threaded PVC
Riser Pipe	2" PVC
Screen	2" 10 slot
Protective Posts	None
Protective Casing	Flush-mount box

Measurements

Riser Pipe Length	11'
Screen Length	15'
Screen Slot Size	0.01
Top of Riser Elevation	962.6
Ground Surface Elevation	962.54
Depth to Water	
Water Elevation	
Other	

Liesch Associates, Inc.

Monitoring Well Construction Diagram

Job Number	MP137795 / 65677	Well No:	MW-9
Project:	Mille Lacs Oil - Cambridge	Unique Well No.:	792989
Location:	Cambridge, MN	Drilling Method:	Geoprobe 6600DT
Date Installed:	12/12/2012	Drilling Fluids:	None
Project Manager:	Dan Larson	Completed by:	Matrix Environmental

Annular Space Details

All depths are referenced to ground surface

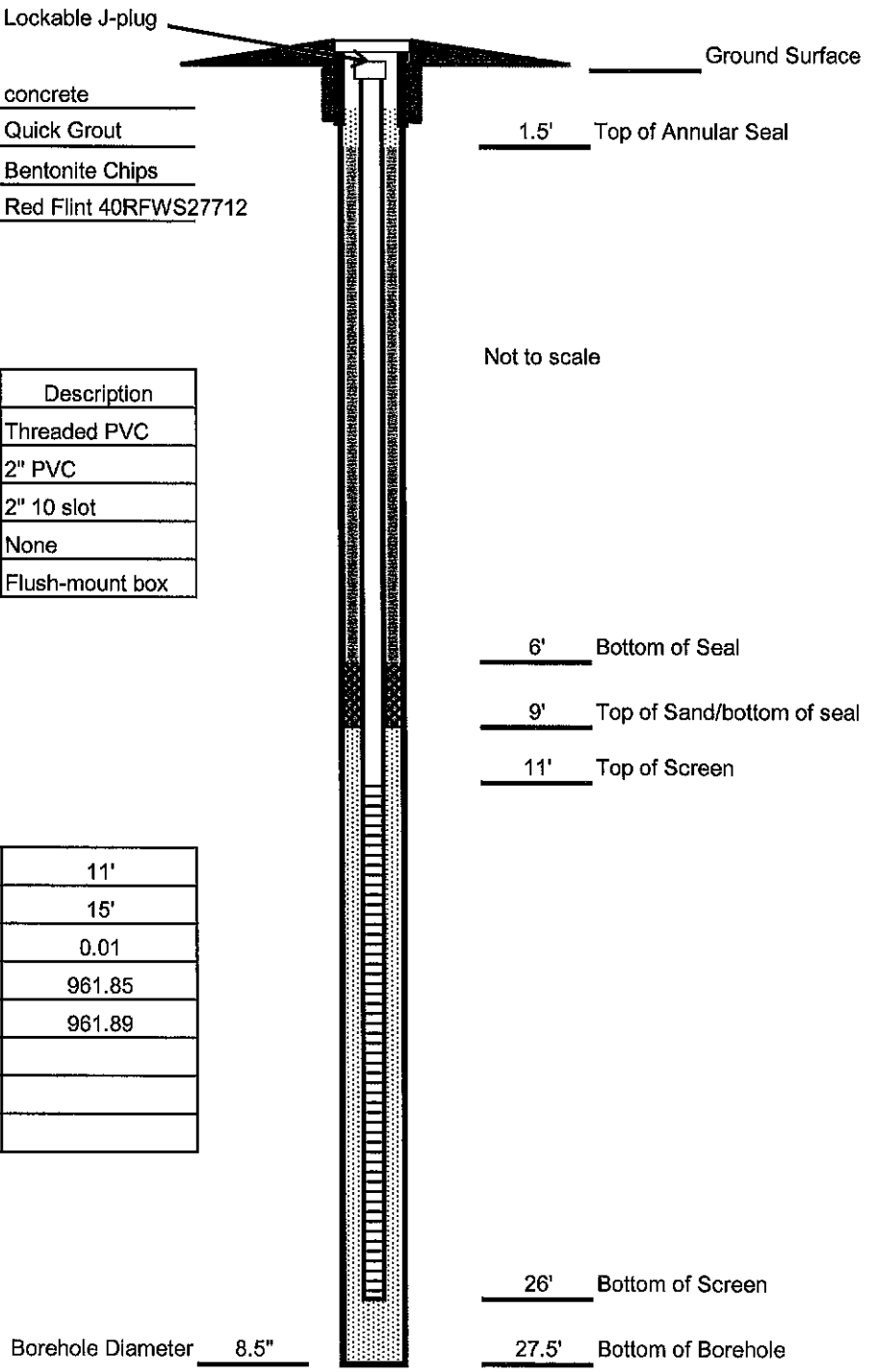
Type of Surface Seal	concrete
Type of Annular grout	Quick Grout
Type of Bentonite Seal	Bentonite Chips
Type of Sand Pack	Red Flint 40RFWS27712

Well Construction Materials

	Description
Riser Coupling Joint	Threaded PVC
Riser Pipe	2" PVC
Screen	2" 10 slot
Protective Posts	None
Protective Casing	Flush-mount box

Measurements

Riser Pipe Length	11'
Screen Length	15'
Screen Slot Size	0.01
Top of Riser Elevation	961.85
Ground Surface Elevation	961.89
Depth to Water	
Water Elevation	
Other	



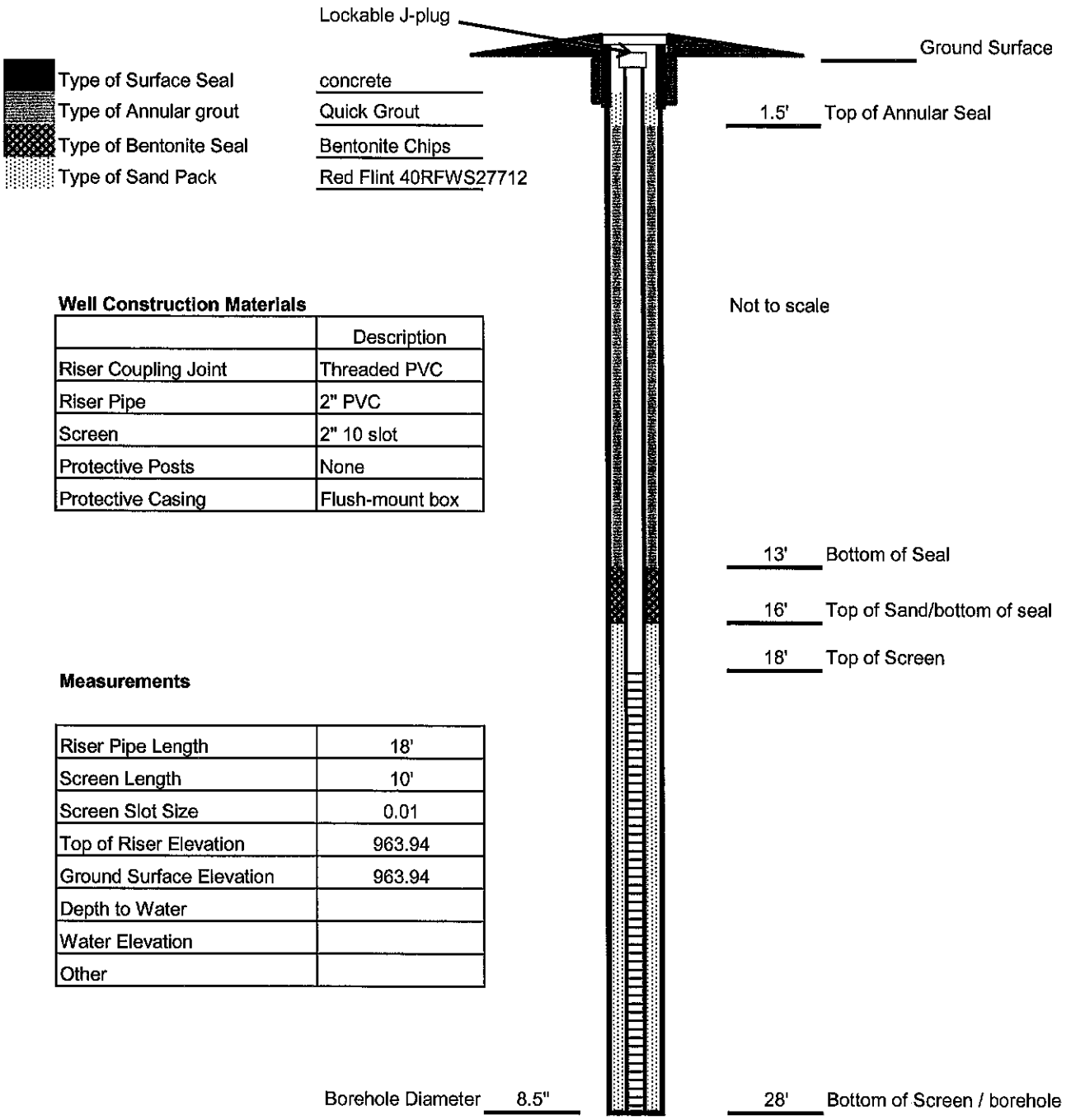
Liesch Associates, Inc.

Monitoring Well Construction Diagram

Job Number	MP137795 / 65677	Well No:	MW-10
Project:	Mille Lacs Oil - Cambridge	Unique Well No.:	792990
Location:	Cambridge, MN	Drilling Method:	Geoprobe 6600DT
Date Installed:	12/13/2012	Drilling Fluids:	None
Project Manager:	Dan Larson	Completed by:	Matrix Environmental

Annular Space Details

All depths are referenced to ground surface



Well Construction Materials

	Description
Riser Coupling Joint	Threaded PVC
Riser Pipe	2" PVC
Screen	2" 10 slot
Protective Posts	None
Protective Casing	Flush-mount box

Measurements

Riser Pipe Length	18'
Screen Length	10'
Screen Slot Size	0.01
Top of Riser Elevation	963.94
Ground Surface Elevation	963.94
Depth to Water	
Water Elevation	
Other	

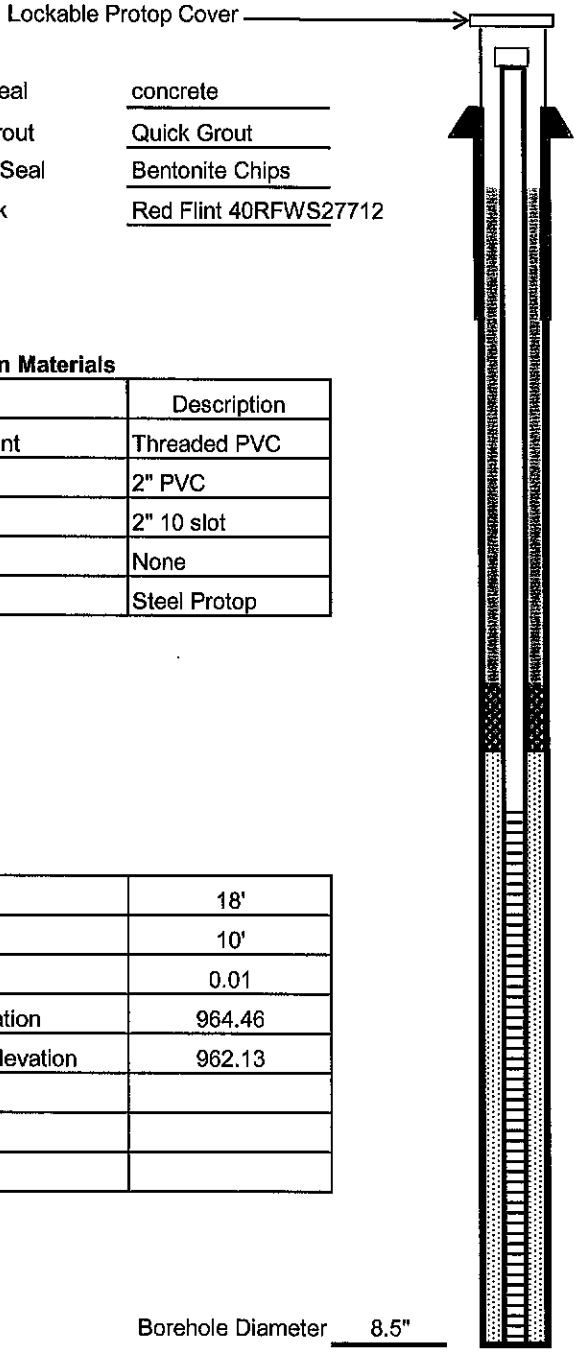
Liesch Associates, Inc.

Monitoring Well Construction Diagram

Job Number	MP137795 / 65677	Well No:	MW-11
Project:	Mille Lacs Oil - Cambridge	Unique Well No.:	792991
Location:	Cambridge, MN	Drilling Method:	Geoprobe 6600DT
Date Installed:	12/11/2012	Drilling Fluids:	None
Project Manager:	Dan Larson	Completed by:	Matrix Environmental

Annular Space Details

All depths are referenced to ground surface



Type of Surface Seal	concrete
Type of Annular grout	Quick Grout
Type of Bentonite Seal	Bentonite Chips
Type of Sand Pack	Red Flint 40RFWS27712

Well Construction Materials

	Description
Riser Coupling Joint	Threaded PVC
Riser Pipe	2" PVC
Screen	2" 10 slot
Protective Posts	None
Protective Casing	Steel Protop

Measurements

Riser Pipe Length	18'
Screen Length	10'
Screen Slot Size	0.01
Top of Riser Elevation	964.46
Ground Surface Elevation	962.13
Depth to Water	
Water Elevation	
Other	

Borehole Diameter 8.5"

Ground Surface

1.5' Top of Annular Seal

Bottom of Protective Casing

Not to scale

10' Bottom of Seal

13' Top of Sand/bottom of seal

15' Top of Screen

25' Bottom of Screen / borehole

WELL OR BORING LOCATION

County Name: Isanti

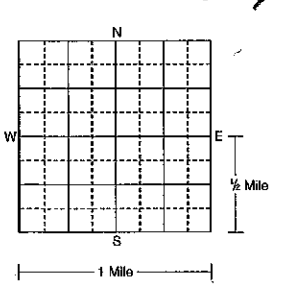
Township Name | Township No.: 36N | Range No.: 23W | Section No.: 33 | Fraction: NW NW NW

GPS LOCATION: Latitude ____ degrees ____ minutes ____ seconds ____ Longitude ____ degrees ____ minutes ____ seconds ____

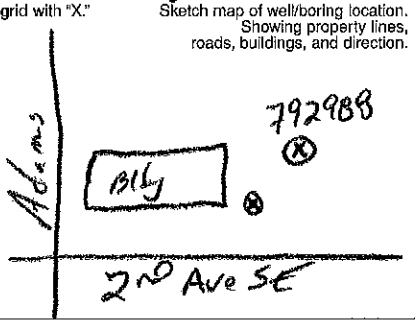
House Number, Street Name, City, and ZIP Code of Well Location: 200 2nd Ave SE, Cambridge

Fire Number:

Show exact location of well/boring in section grid with "X."



Sketch map of well/boring location. Showing property lines, roads, buildings, and direction.



PROPERTY OWNER'S NAME/COMPANY NAME: American Legion Post 290

Property owner's mailing address if different than well location address indicated above.

200 2nd Ave SE
Cambridge, MN 55008

WELL OWNER'S NAME/COMPANY NAME: Mille Lacs Oil Company

Well/boring owner's mailing address if different than property owner's address indicated above.

102 Main St. N
Cambridge, MN 55008

GEOLOGICAL MATERIALS	COLOR	HARDNESS OF MATERIAL	FROM	TO
Fine Sand	Br	mod	0	25

Use a second sheet, if needed.

REMARKS, ELEVATION, SOURCE OF DATA, etc.

MW-B

IMPORTANT - FILE WITH PROPERTY PAPERS
WELL OWNER COPY

792988

MINNESOTA DEPARTMENT OF HEALTH
WELL AND BORING RECORD
Minnesota Statutes, Chapter 103I

MINNESOTA UNIQUE WELL AND BORING NO.: 792988

WELL/BORING DEPTH (completed): 20 ft. | DATE WORK COMPLETED: 12/12/12

DRILLING METHOD: ☐ Cable Tool ☐ Driven ☒ Auger ☐ Rotary ☐ Other

DRILLING FLUID: None | WELL HYDROFRACTURED? ☐ Yes ☒ No From ____ ft. To ____ ft.

USE: ☐ Domestic ☒ Monitoring ☐ Heating/Cooling ☐ Noncommunity PWS ☐ Environ. Bore Hole ☐ Industry/Commercial ☐ Community PWS ☐ Irrigation ☐ Remedial ☐ Elevator ☐ Dewatering ☐ ____

CASING MATERIAL: Drive Shoe? ☐ Yes ☒ No ☐ Steel ☐ Threaded ☐ Welded ☒ Plastic ☐ ____

HOLE DIAM.

CASING Diameter / Weight / Specifications

2 in. To 11 ft.	5.2 4.0 lbs./ft.		8 1/4 in. To 26 ft.
____ in. To ____ ft.	____ lbs./ft.		____ in. To ____ ft.
____ in. To ____ ft.	____ lbs./ft.		____ in. To ____ ft.

SCREEN: Yes | Make: Johnson | Type: ____ | Slot/Gauze: 10 | Set between: 11 ft. and 26 ft.

OPEN HOLE: NA | From 2" ft. To ____ ft. | Diam. ____ | Length: 15 | FITTINGS: Flush Thrd

STATIC WATER LEVEL: 20 ft. ☒ Below ☐ Above land surface | Measured from: TOC | Date measured: 12/12/12

PUMPING LEVEL (below land surface): NA ft. after ____ hrs. pumping 0 g.p.m.

WELLHEAD COMPLETION: ☐ Pitless/adapter manufacturer ____ Model ____ ☐ Casing protection ____ ☐ 12 in. above grade ☒ At grade ☐ Well House ☐ Hand Pump

GROUTING INFORMATION (specify bentonite, cement-sand, neat-cement, concrete, cuttings, or other)

Material: Bentonite	From: 0	To: 9 ft.	1-2	☐ Yds.	☒ Bags
Material: ____	From: ____	To: ____ ft.	____	☐ Yds.	☐ Bags
Material: ____	From: ____	To: ____ ft.	____	☐ Yds.	☐ Bags
Driven casing seal	From: ____	To: ____	____ Bags		

NEAREST KNOWN SOURCE OF CONTAMINATION: Hydrocarbon feet 200 direction NE type

Well disinfected upon completion? ☐ Yes ☐ No

PUMP: ☒ Not installed Date installed ____

Manufacturer's name ____

Model Number ____ HP ____ Volts ____

Length of drop pipe ____ ft. Capacity ____ g.p.m.

Type: ☐ Submersible ☐ L.S. Turbine ☐ Reciprocating ☐ Jet ☐ ____

ABANDONED WELLS: 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 TN# ____

WELL CONTRACTOR CERTIFICATION

This well was drilled under my supervision and in accordance with Minnesota Rules, Chapter 4725. The information contained in this report is true to the best of my knowledge.

Matrix Environmental, LLC — 1916
Licensee Business Name — Lic. or Reg. No.

Certified Representative Signature — 1062 — 12/21/12
Certified Rep. No. — Date

Name of Driller

IC 140-0020

HE-01205-13 (Rev. 11/10)

MINNESOTA DEPARTMENT OF HEALTH
WELL AND BORING RECORD
Minnesota Statutes, Chapter 103I

MINNESOTA UNIQUE WELL AND BORING NO. 792989

WELL OR BORING LOCATION

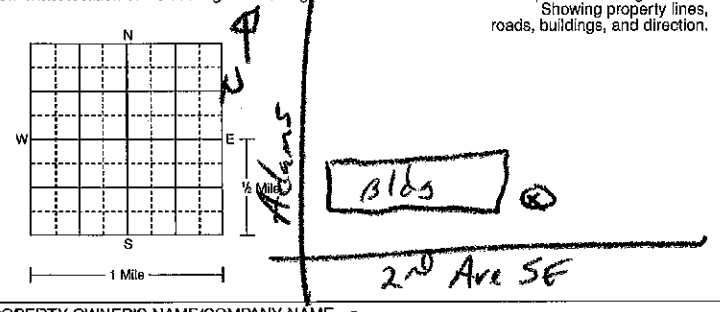
County Name: Isanti

Township Name | Township No. 36N | Range No. 23W | Section No. 33 | Fraction NW NW NW

GPS LOCATION: Latitude ____ degrees ____ minutes ____ seconds ____ Longitude ____ degrees ____ minutes ____ seconds ____

House Number, Street Name, City, and ZIP Code of Well Location: 200 2nd Ave SE, Cambridge | Fire Number

Show exact location of well/boring in section grid with "X." Sketch map of well/boring location. Showing property lines, roads, buildings, and direction.



PROPERTY OWNER'S NAME/COMPANY NAME: American Legion Post 290

Property owner's mailing address if different than well location address indicated above.
200 2nd Ave SE
Cambridge, MN 55008

WELL OWNER'S NAME/COMPANY NAME: Mille Lacs Oil Company

Well/boring owner's mailing address if different than property owner's address indicated above.
102 Main St. N
Cambridge, MN 55008

GEOLOGICAL MATERIALS	COLOR	HARDNESS OF MATERIAL	FROM	TO
Fine Sand	Brn	med	0	25

Use a second sheet, if needed.

REMARKS, ELEVATION, SOURCE OF DATA, etc.
MW-9

IMPORTANT - FILE WITH PROPERTY PAPERS
WELL OWNER COPY
792989

WELL/BORING DEPTH (completed) 26 ft. | DATE WORK COMPLETED 12/12/12

DRILLING METHOD: ☐ Cable Tool ☐ Driven ☒ Auger ☐ Rotary ☐ Other

DRILLING FLUID: None | WELL HYDROFRACTURED? ☐ Yes ☒ No From ____ ft. To ____ ft.

USE: ☐ Domestic ☒ Monitoring ☐ Heating/Cooling ☐ Noncommunity PWS ☐ Environ. Bore Hole ☐ Industry/Commercial ☐ Community PWS ☐ Irrigation ☐ Remedial ☐ Elevator ☐ Dewatering ☐ ____

CASING MATERIAL: ☐ Steel ☒ Plastic | Drive Shoe? ☐ Yes ☒ No ☐ Threaded ☐ Welded ☐ ____

HOLE DIAM.

CASING: Diameter 2 in. To 11 ft. Weight ____ lbs./ft. Specifications Sch 40 | HOLE DIAM. 8 1/4 in. To 26 ft.
____ in. To ____ ft. ____ lbs./ft. ____ | ____ in. To ____ ft.
____ in. To ____ ft. ____ lbs./ft. ____ | ____ in. To ____ ft.

SCREEN: Yes Make ____ Type Johnson Slot/Gauze 10 Set between 11 ft. and 26 ft.
OPEN HOLE: From NA ft. To ____ ft. Diam. 2" Length 15' FITTINGS Flush Thread

STATIC WATER LEVEL: 20 ft. ☒ Below ☐ Above land surface | Measured from TOC | Date measured 12/12/12

PUMPING LEVEL (below land surface): NA ft. after ____ hrs. pumping ____ g.p.m.

WELLHEAD COMPLETION
☐ Pitless/adapter manufacturer ____ Model ____
☐ Casing protection ☐ 12 in. above grade
☒ At-grade ☐ Well House ☐ Hand Pump

GROUTING INFORMATION (Specify bentonite, cement-sand, neat-cement, concrete, cuttings, or other)
Material Bentonite Chips From 0 To 7 ft. 1.2 ☐ Yds. ☒ Bags
Material ____ From ____ To ____ ft. ____ ☐ Yds. ☐ Bags
Material ____ From ____ To ____ ft. ____ ☐ Yds. ☐ Bags
Driven casing seal From ____ To ____ ____ Bags

NEAREST KNOWN SOURCE OF CONTAMINATION: Hydrocarbon 200 feet direction NE type
Well disinfected upon completion? ☐ Yes ☐ No

PUMP
☒ Not installed Date installed ____
Manufacturer's name ____
Model Number ____ HP ____ Volts ____
Length of drop pipe ____ ft. Capacity ____ g.p.m.
Type: ☐ Submersible ☐ L.S. Turbine ☐ Reciprocating ☐ Jet ☐ ____

ABANDONED WELLS
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 TN# ____

WELL CONTRACTOR CERTIFICATION
This well was drilled under my supervision and in accordance with Minnesota Rules, Chapter 4725. The information contained in this report is true to the best of my knowledge.

Matrix Environmental LLC — Licensee Business Name — 1916 Lic. or Reg. No.
Certified Representative Signature — 1062 Certified Rep. No. — 12/12/12 Date
Guy Paquette — Name of Driller

IC 140-0020 HE-01205-13 (Rev. 11/10)

MINNESOTA DEPARTMENT OF HEALTH
WELL AND BORING RECORD
Minnesota Statutes, Chapter 103I

MINNESOTA UNIQUE WELL AND BORING NO. 792990

WELL OR BORING LOCATION

County Name: Isanti

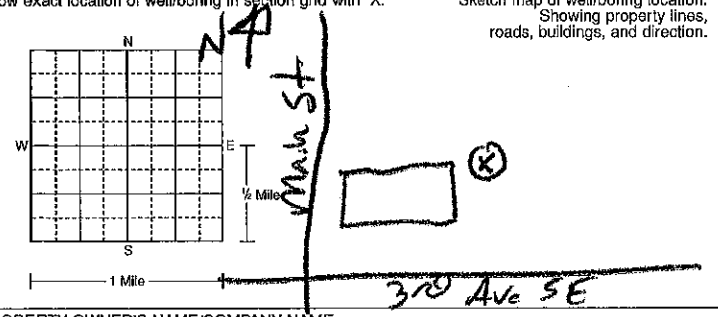
Township Name	Township No.	Range No.	Section No.	Fraction
	36N	23W	33	NW NW NW

GPS LOCATION: Latitude ____ degrees ____ minutes ____ seconds ____ Longitude ____ degrees ____ minutes ____ seconds ____

House Number, Street Name, City, and ZIP Code of Well Location: 232 Main St, Cambridge, MN

Fire Number:

Show exact location of well/boring in section grid with "X." Sketch map of well/boring location. Showing property lines, roads, buildings, and direction.



PROPERTY OWNER'S NAME/COMPANY NAME: City of Cambridge

Property owner's mailing address if different than well location address indicated above.

800 7th Ave SW

Cambridge, MN 55008

WELL OWNER'S NAME/COMPANY NAME: Mille Lacs Oil Company

Well/boring owner's mailing address if different than property owner's address indicated above.

102 Main St. N

Cambridge, MN 55008

GEOLOGICAL MATERIALS	COLOR	HARDNESS OF MATERIAL	FROM	TO
Fine Sand	Br	mod	0	25

Use a second sheet, if needed.

REMARKS, ELEVATION, SOURCE OF DATA, etc.

MW-10

IMPORTANT - FILE WITH PROPERTY PAPERS WELL OWNER COPY

792990

WELL/BORING DEPTH (completed): 28 ft. DATE WORK COMPLETED: 12/13/12

DRILLING METHOD: ☐ Cable Tool ☐ Driven ☒ Auger ☐ Rotary ☐ Other

DRILLING FLUID: None WELL HYDROFRACTURED? ☐ Yes ☒ No From ____ ft. To ____ ft.

USE: ☐ Domestic ☒ Monitoring ☐ Heating/Cooling ☐ Noncommunity PWS ☐ Environ. Bore Hole ☐ Industry/Commercial ☐ Community PWS ☐ Irrigation ☐ Remedial ☐ Elevator ☐ Dewatering ☐ ____

CASING MATERIAL: ☐ Steel ☒ Plastic Drive Shoe? ☐ Yes ☒ No ☐ Threaded ☐ Welded ☐ ____

CASING

Diameter	Weight	Specifications	HOLE DIAM.
2 in. To 18 ft.	____ lbs./ft.	Sch 40 PVC	8 1/4 in. To 28 ft.
____ in. To ____ ft.	____ lbs./ft.		____ in. To ____ ft.
____ in. To ____ ft.	____ lbs./ft.		____ in. To ____ ft.

SCREEN: Yes Make: Johnson Type: ____ Diam.: 2" Slot/Gauze: 10 Length: 10' Set between: 18 ft. and 28 ft. FITTINGS: Flush Thread

OPEN HOLE From: NA ft. To: ____ ft.

STATIC WATER LEVEL: 22 ☒ Below ☐ Above land surface Measured from: TOC Date measured: 12/13/12

PUMPING LEVEL (below land surface): NA ft. after ____ hrs. pumping ____ g.p.m.

WELLHEAD COMPLETION: ☐ Pitless/adapter manufacturer ____ Model ____ ☐ Casing protection ☐ 12 in. above grade ☒ At-grade ☐ Well House ☐ Hand Pump

GROUTING INFORMATION (specify bentonite, cement-sand, neat-cement, concrete, cuttings, or other)

Material: Bentonite Chips	From: 0	To: 16 ft.	1-2	☐ Yds. ☒ Bags
Material: ____	From: ____	To: ____ ft.	____	☐ Yds. ☐ Bags
Material: ____	From: ____	To: ____ ft.	____	☐ Yds. ☐ Bags
Driven casing seal	From: ____	To: ____	____ Bags	

NEAREST KNOWN SOURCE OF CONTAMINATION: Hydrocarbon 400' direction NE type

Well disinfected upon completion? ☐ Yes ☐ No

PUMP: ☒ Not Installed Date installed ____

Manufacturer's name ____

Model Number ____ HP ____ Volts ____

Length of drop pipe ____ ft. Capacity ____ g.p.m.

Type: ☐ Submersible ☐ L.S. Turbine ☐ Reciprocating ☐ Jet ☐ ____

ABANDONED WELLS: 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 TN# ____

WELL CONTRACTOR CERTIFICATION

This well was drilled under my supervision and in accordance with Minnesota Rules, Chapter 4725. The information contained in this report is true to the best of my knowledge.

Matrix Environmental, LLC 1916
Licensee Business Name Lic. or Reg. No.

Jay Pagett 1062 12/21/12
Certified Representative Signature Certified Rep. No. Date

Jay Pagett
Name of Driller

IC 140-0020 HE-01205-13 (Rev. 11/10)

MINNESOTA DEPARTMENT OF HEALTH
WELL AND BORING RECORD
Minnesota Statutes, Chapter 103I

MINNESOTA UNIQUE WELL AND BORING NO. 792991

WELL OR BORING LOCATION

County Name: Isanti

Township Name	Township No.	Range No.	Section No.	Fraction
	36N	23W	33	NW NW NW ¼

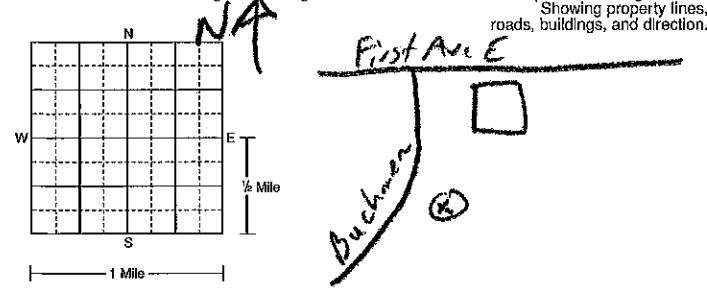
GPS LOCATION: Latitude ____ degrees ____ minutes ____ seconds ____ Longitude ____ degrees ____ minutes ____ seconds ____

House Number, Street Name, City, and ZIP Code of Well Location: 329 E First Ave, Cambridge

Fire Number:

Show exact location of well/boring in section grid with "X." NA

Sketch map of well/boring location. Showing property lines, roads, buildings, and direction.



PROPERTY OWNER'S NAME/COMPANY NAME: City of Cambridge

Property owner's mailing address if different than well location address indicated above.
800 7th Ave SW
Cambridge, MN 55008

WELL OWNER'S NAME/COMPANY NAME: Mille Lacs 8.1 Company

Well/boring owner's mailing address if different than property owner's address indicated above.
102 Main St N
Cambridge, MN 55008

GEOLOGICAL MATERIALS	COLOR	HARDNESS OF MATERIAL	FROM	TO
Fine Sand	Brn	Mod	0	25

Use a second sheet, if needed.

REMARKS, ELEVATION, SOURCE OF DATA, etc.
MW-11

IMPORTANT - FILE WITH PROPERTY PAPERS
WELL OWNER COPY
792991

WELL/BORING DEPTH (completed): 25 ft. DATE WORK COMPLETED: 12/11/12

DRILLING METHOD: ☐ Cable Tool ☐ Driven ☒ Auger ☐ Rotary ☐ Other

DRILLING FLUID: None WELL HYDROFRACTURED? ☐ Yes ☒ No From ____ ft. To ____ ft.

USE: ☐ Domestic ☒ Monitoring ☐ Heating/Cooling ☐ Noncommunity PWS ☐ Environ. Bore Hole ☐ Industry/Commercial ☐ Community PWS ☐ Irrigation ☐ Remedial ☐ Elevator ☐ Dewatering ☐ ____

CASING MATERIAL: ☐ Steel ☒ Plastic Drive Shoe? ☐ Yes ☒ No ☐ Threaded ☐ Welded ☐ ____

HOLE DIAM.

CASING Diameter / Weight / Specifications

2 in. To 15 ft.	____ lbs./ft.	Sch 40 PVC	8 1/4 in. To 25 ft.	
____ in. To ____ ft.	____ lbs./ft.		____ in. To ____ ft.	
____ in. To ____ ft.	____ lbs./ft.		____ in. To ____ ft.	

SCREEN: Yes Make: Johnson Type: ____ Diam.: 2" Slot/Gauze: 10 Length: 10' Set between 15 ft. and 25 ft. FITTINGS: Flush Thread

OPEN HOLE From NA ft. To ____ ft.

STATIC WATER LEVEL: 20 ft. ☒ Below ☐ Above land surface Measured from TOC Date measured 12/11/12

PUMPING LEVEL (below land surface): NA ft. after ____ hrs. pumping ____ g.p.m.

WELLHEAD COMPLETION: ☐ Pitless/adapter manufacturer ____ Model ____ ☒ Casing protection Protect 6" x 7' ☐ 12-in. above grade ☐ At-grade ☐ Well House ☐ Hand Pump

GROUTING INFORMATION (specify bentonite, cement-sand, neat-cement, concrete, cuttings, or other)

Material: Bentonite Chips	From: 0	To: 13 ft.	1-2	☐ Yds. ☒ Bags
Material: ____	From: ____	To: ____ ft.	____	☐ Yds. ☐ Bags
Material: ____	From: ____	To: ____ ft.	____	☐ Yds. ☐ Bags
Driven casing seal	From: ____	To: ____	____ Bags	

NEAREST KNOWN SOURCE OF CONTAMINATION: Hydrocarbon — 100 feet direction North type: ____

Well disinfected upon completion? ☐ Yes ☐ No

PUMP: ☒ Not installed Date installed: ____

Manufacturer's name: ____

Model Number: ____ HP: ____ Volts: ____

Length of drop pipe: ____ ft. Capacity: ____ g.p.m.

Type: ☐ Submersible ☐ L.S. Turbine ☐ Reciprocating ☐ Jet ☐ ____

ABANDONED WELLS: 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 TN# ____

WELL CONTRACTOR CERTIFICATION

This well was drilled under my supervision and in accordance with Minnesota Rules, Chapter 4725. The information contained in this report is true to the best of my knowledge.

Matrix Environmental, LLC — 1916
Licensee Business Name — Lic. or Reg. No.

Guy Paquette — 1062 — 12/11/12
Certified Representative Signature — Certified Rep. No. — Date

Guy Paquette
Name of Driller

IC 140-0020 HE-01205-13 (Rev. 11/10)

Union 76
MPCA LUST No. 8001
Cambridge, MN

Groundwater Velocity Calculation

Horizontal Gradient (dh/dl) (May 2013) MW-7 GW Elevation: 943.50
MW-6 GW Elevation: 942.91

dh = 0.59 feet

dl = 285 feet

Horizontal gradient = 0.0020701

Porosity = 30%

Hydrualic conductivity (K) = 4.55E-04 (from WCEC RI Report dated Mar 2, 1998)

$$\text{GW Velocity} = \frac{K \times (dh/dl)}{\text{Porosity}}$$

$$= \frac{0.000455\ (m/s) \times 0.0020701}{0.30}$$

=3.14E-06 m/s x 3.28 foot/meter
=1.03E-05 feet/sec x 60sec/min x 60 min/hour x 24 hour/day x 365 day/year
=324.82 feet/year

MATRIX
ENVIRONMENTAL LLC

Friday, September 14, 2012

11253 91st Ave. N.
Maple Grove, MN 55369
763-424-4803
FAX: 763-424-9452

-Direct Sensing Report, UVOST-

Client:	**Liesch**
Project Name:	**Former Union 76**
Location:	**Cambridge, MN**
Project Number:	**102-MNDS-12UV**

The analysis and opinions expressed in this report are based upon data obtained from UVOST logs generated (and samples collected for emulations if applicable) at the location specified, and from other information discussed in this report. Exceptions, if any, are discussed in the accompanying discussion if applicable. This report is prepared for the exclusive use of our client for specific application to the project discussed and has been prepared in accordance with generally accepted practices. Reported results shall not be reproduced, except in full, without written approval of the lab. The sample results relate only to the analytes of interest tested. No warranties, expressed or implied are intended or made.

I certify that the data contained in this final report has been generated and reviewed in accordance with approved methods and our Standard Operating Procedure. Release of this final report is authorized by Laboratory management, which is verified by the following signature.

Approval Signature Date

LIF SYSTEM DESCRIPTION & ANALYSIS

UVOST

Fluorescence is a property of some compounds where absorbed UV light stimulates the emission of photons (light) of a longer wavelength relative to the source emission. The release of the photons can be used to detect small amounts of substance (i.e. polycyclic aromatic hydrocarbons or PAHs) in a larger matrix (soil). This method of detection has been used in laboratories for decades. Now, with the availability of lasers and optical fibers, this technology can be applied down hole in the field.

The UVOST system sends light (via 308 nm laser) through a fiber optic cable strung within probe rods. The light, reflected by a parabolic mirror, then exits through a sapphire window in the side of the probe. As the probe is advanced, the soil is exposed to the UV laser light. If PAHs are present (compounds in POLs that fluoresce, i.e. LNAPL) longer wavelength light is emitted by the contaminants. This "signal" light is transmitted through a return fiber, back up hole to be analyzed. Responses are indicated in real-time on a graph of signal vs. depth. The UVOST log displays "color mixed" signal logs (contributions from 4 channels) and waveforms ("fingerprint" of multi-wavelength) to aid in identification and relative quantity of the contaminant present.

Prior to every log the UVOST system is checked for optical quality by observing the background signal for sources of signal in the fiber, filter, mirror and sapphire window. Also, the reference emitter (a standard proprietary NAPL mixture called the "RE") is placed on the window to determine the qualitative and semi-quantitative properties of the laser system. This is to assure that the RE response has the correct shape and intensity and that the UVOST system is ready to log. Typically the RE will fall between 10,000 and 12,000 pVs (picovolt-seconds, a measure of waveform area) and the background can vary from 0.1% to 1% (area of about 0-100 pVs). It is important to remember that the relationship between the NAPL in the ground and the RE depends on that particular NAPL. The calibration of the system is not to a concentration, but to a known fluorescence signature.

EC (Electrical Conductivity)

Electrical Conductivity (EC) is a measure of the soils ability to conduct an electrical current between two dipoles on the LIF/EC probe. Conductivity is the reciprocal of electrical resistivity and has the units (in our application) of millisiemens per meter (mS/m). Since soil is in the pathway of the charge flow, the grain size can be determined by comparing the EC log to a soil boring. Conductivity readings in the 100s indicate smaller grain (size such as clay). Larger grain size (sand and gravels) are typically in the 10s of mS/m range. Prior to every log the EC point of the UVOST probe is checked for proper operation by performing a voltage test with a voltage meter and a conductivity test with a test block.

DISCUSSION

No extraordinary discussion needed.

Field Summary Log MPCA Format.xls

MATRIX ENVIRONMENTAL LLC

11253 91st Ave. N.
Maple Grove, Minnesota 55369
(763) 424-4803
fax (763) 424-9452

Client: Liesch
Contact: Dan Larson
Services: UVOST Logging

Date: 09/11/12-09/13/12
Project: Former Union 76
Project #: 102-MNDS-12UV
Address: Cambridge, MN

UVOST Log Summary

Probe ID (File)	Date/Time	Final Depth *(ft)*	Max Signal *(%RE)*	Max. Signal Depth *(ft)*	Initial RE Area *(pVs)*	Background Area *(pVs)*	Depth to Top of NAPL *(ft)*	<——(zone1, zone2 etc.)——> Depth to bottom of NAPL *(ft)*	NAPL Zone Thickness *(ft)*	Comments: fluourecence @ indicated depths *(ft)*
LIF-42	9/11/2012 13:06	33.3	0.9	1.2	9509	22	NA	NA	NA	NC
LIF-43	9/11/2012 13:47	30.0	1.5	0.8	12320	37	NA	NA	NA	NC
LIF-44	9/11/2012 14:33	30.0	1.2	0.7	9960	22	NA	NA	NA	NC
LIF-45	9/11/2012 15:16	30.0	2.9	0.0	12109	35	NA	NA	NA	NC
LIF-46	9/11/2012 16:01	30.0	0.9	2.2	11540	32	NA	NA	NA	NC
LIF-47	9/11/2012 16:41	30.0	2.5	0.4	11543	23	NA	NA	NA	NC
LIF-48	9/12/2012 9:41	30.0	1.0	5.0	11054	30	NA	NA	NA	NC
LIF-49	9/12/2012 10:44	30.0	1.6	20.1	10511	31	NA	NA	NA	NC
LIF-50	9/12/2012 11:41	30.0	1.7	0.3	10140	19	NA	NA	NA	NC
LIF-51	9/12/2012 13:32	30.0	9.3	22.6	10413	25	21.75	28.50	6.75	9.3% spike @ 22.63'
LIF-52	9/12/2012 14:23	30.0	1.2	22.2	10840	23	NA	NA	NA	NC
LIF-53	9/12/2012 15:05	30.0	4.2	21.8	10015	16	21.25	23.00	1.75	4.2% spike @ 21.8'
LIF-54	9/12/2012 16:14	30.0	3.3	21.9	11107	5	21.50	24.00	2.50	3.3% spike @ 21.95'
LIF-55	9/13/2012 9:40	30.0	0.8	0.2	11968	-6	NA	NA	NA	NC
LIF-56	9/13/2012 10:27	30.1	1.1	0.4	11268	-3	NA	NA	NA	NC
LIF-57	9/13/2012 11:04	30.0	0.8	1.6	10344	-6	NA	NA	NA	NC
LIF-58	9/13/2012 12:41	30.1	2.2	27.6	11424	-9	27.50	28.00	0.50	2.2% spike @ 27.62%
LIF-59	9/13/2012 13:22	32.0	3.6	22.9	10838	-8	21.75	25.25	3.50	3.6% spike @ 22.9'
LIF-60	9/13/2012 8:50	30.0	9.6	0.0	11321	-4	21.50	24.75	3.25	3.5% spike @ 23.9'
LIF-61	9/13/2012 14:14	32.1	1.5	3.0	10448	1	NA	NA	NA	NC
LIF-62	9/13/2012 15:03	30.0	1.7	22.3	11464	-5	21.25	24.50	2.75	1.7% spike @ 22.26'

APPENDIX B

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414
(612)607-1700

January 18, 2013

1st Round
MW Sampling

Dan Larson
Liesch Associates, Inc.
13400 15th Avenue North
Plymouth, MN 55441

RE: Project: 65677.00
Pace Project No.: 10217349

Dear Dan Larson:
Enclosed are the analytical results for sample(s) received by the laboratory on January 11, 2013. The results relate only to the samples included in this report. Results reported herein conform to the most current TNI 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,

Mariah K Peronto

Mariah Peronto for
Carol Davy
carol.davy@pacelabs.com
Project Manager

Enclosures

Pace Analytical Services, Inc.
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CERTIFICATIONS

Project: 65677.00
Pace Project No.: 10217349

Minnesota Certification IDs
1700 Elm Street SE Suite 200, Minneapolis, MN 55414
A2LA Certification #: 2926.01
Alaska Certification #: UST-078
Alaska Certification #MN00064
Arizona Certification #: AZ-0014
Arkansas Certification #: 88-0680
California Certification #: 01155CA
Colorado Certification #Pace
Connecticut Certification #: PH-0256
EPA Region 8 Certification #: Pace
Florida/NELAP Certification #: E87605
Georgia Certification #: 959
Hawaii Certification #Pace
Idaho Certification #: MN00064
Illinois Certification #: 200011
Kansas Certification #: E-10167
Louisiana Certification #: 03086
Louisiana Certification #: LA080009
Maine Certification #: 2007029
Maryland Certification #: 322
Michigan DEQ Certification #: 9909
Minnesota Certification #: 027-053-137
Mississippi Certification #: Pace
Montana Certification #: MT CERT0092
Nebraska Certification #: Pace
Nevada Certification #: MN_00064
New Jersey Certification #: MN-002
New York Certification #: 11647
North Carolina Certification #: 530
North Dakota Certification #: R-036
North Dakota Certification #: R-036A
Ohio VAP Certification #: CL101
Oklahoma Certification #: 9507
Oregon Certification #: MN200001
Oregon Certification #: MN300001
Pennsylvania Certification #: 68-00563
Puerto Rico Certification
Tennessee Certification #: 02818
Texas Certification #: T104704192
Utah Certification #: MN00064
Virginia/DCLS Certification #: 002521
Virginia/VELAP Certification #: 460163
Washington Certification #: C754
West Virginia Certification #: 382
Wisconsin Certification #: 999407970

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SAMPLE SUMMARY

Project: 65677.00
Pace Project No.: 10217349

Lab ID	Sample ID	Matrix	Date Collected	Date Received
10217349001	**MW-11**	Water	01/10/13 09:00	01/11/13 09:20
10217349002	**MW-6A**	Water	01/10/13 01:30	01/11/13 09:20
10217349003	**MW-6**	Water	01/10/13 01:45	01/11/13 09:20
10217349004	**MW-1**	Water	01/10/13 02:15	01/11/13 09:20
10217349005	**MW-8**	Water	01/10/13 03:00	01/11/13 09:20
10217349006	**MW-9**	Water	01/10/13 03:15	01/11/13 09:20
10217349007	**MW-10**	Water	01/10/13 04:00	01/11/13 09:20
10217349008	**TRIP BLANK**	Water	01/10/13 00:00	01/11/13 09:20

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SAMPLE ANALYTE COUNT

Project: 65677.00
Pace Project No.: 10217349

Lab ID	Sample ID	Method	Analysts	Analytes Reported
10217349001	MW-11	WI MOD DRO	MT	2
		WI MOD GRO	MJH	2
		EPA 8260	EB2	77
10217349002	MW-6A	WI MOD DRO	MT	2
		WI MOD GRO	MJH	9
10217349003	MW-6	WI MOD DRO	MT	2
		WI MOD GRO	MJH	9
10217349004	MW-1	WI MOD DRO	MT	2
		WI MOD GRO	MJH	9
10217349005	MW-8	WI MOD DRO	MT	2
		WI MOD GRO	MJH	2
		EPA 8260	EB2	77
10217349006	MW-9	WI MOD DRO	MT	2
		WI MOD GRO	MJH	2
		EPA 8260	EB2	77
10217349007	MW-10	WI MOD DRO	MT	2
		WI MOD GRO	MJH	2
		EPA 8260	EB2	77
10217349008	TRIP BLANK	WI MOD GRO	MJH	2
		EPA 8260	EB2	77

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ANALYTICAL RESULTS

Project: 65677.00
Pace Project No.: 10217349

Sample: MW-11 **Lab ID: 10217349001** Collected: 01/10/13 09:00 Received: 01/11/13 09:20 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
WIDRO GCS	Analytical Method: WI MOD DRO Preparation Method: WI MOD DRO								
Diesel Range Organics	ND	ug/L	105	20.0	1	01/14/13 09:51	01/16/13 08:27		
Surrogates									
n-Triacontane (S)	94	%	50-150		1	01/14/13 09:51	01/16/13 08:27		
WIGRO GCV	Analytical Method: WI MOD GRO								
Gasoline Range Organics	ND	ug/L	100	35.3	1		01/12/13 03:27		
Surrogates									
a,a,a-Trifluorotoluene (S)	102	%	80-125		1		01/12/13 03:27	98-08-8	
8260 VOC	Analytical Method: EPA 8260								
Acetone	ND	ug/L	25.0	12.5	1		01/14/13 12:53	67-64-1	
Allyl chloride	ND	ug/L	4.0	1.8	1		01/14/13 12:53	107-05-1	
Benzene	ND	ug/L	1.0	0.062	1		01/14/13 12:53	71-43-2	
Bromobenzene	ND	ug/L	1.0	0.086	1		01/14/13 12:53	108-86-1	
Bromochloromethane	ND	ug/L	1.0	0.32	1		01/14/13 12:53	74-97-5	
Bromodichloromethane	ND	ug/L	1.0	0.11	1		01/14/13 12:53	75-27-4	
Bromoform	ND	ug/L	4.0	0.068	1		01/14/13 12:53	75-25-2	
Bromomethane	ND	ug/L	4.0	0.36	1		01/14/13 12:53	74-83-9	
2-Butanone (MEK)	ND	ug/L	4.0	2.0	1		01/14/13 12:53	78-93-3	
n-Butylbenzene	ND	ug/L	1.0	0.15	1		01/14/13 12:53	104-51-8	
sec-Butylbenzene	ND	ug/L	1.0	0.10	1		01/14/13 12:53	135-98-8	
tert-Butylbenzene	ND	ug/L	1.0	0.10	1		01/14/13 12:53	98-06-6	
Carbon disulfide	ND	ug/L	1.0	0.50	1		01/14/13 12:53	75-15-0	
Carbon tetrachloride	ND	ug/L	1.0	0.16	1		01/14/13 12:53	56-23-5	
Chlorobenzene	ND	ug/L	1.0	0.10	1		01/14/13 12:53	108-90-7	
Chloroethane	ND	ug/L	1.0	0.22	1		01/14/13 12:53	75-00-3	
Chloroform	ND	ug/L	1.0	0.14	1		01/14/13 12:53	67-66-3	
Chloromethane	ND	ug/L	4.0	0.41	1		01/14/13 12:53	74-87-3	
2-Chlorotoluene	ND	ug/L	1.0	0.50	1		01/14/13 12:53	95-49-8	
4-Chlorotoluene	ND	ug/L	1.0	0.068	1		01/14/13 12:53	106-43-4	
Cyclohexane	ND	ug/L	4.0	2.0	1		01/14/13 12:53	110-82-7	
1,2-Dibromo-3-chloropropane	ND	ug/L	4.0	0.62	1		01/14/13 12:53	96-12-8	
Dibromochloromethane	ND	ug/L	1.0	0.10	1		01/14/13 12:53	124-48-1	
1,2-Dibromoethane (EDB)	ND	ug/L	1.0	0.091	1		01/14/13 12:53	106-93-4	
Dibromomethane	ND	ug/L	4.0	0.21	1		01/14/13 12:53	74-95-3	
1,2-Dichlorobenzene	ND	ug/L	1.0	0.36	1		01/14/13 12:53	95-50-1	
1,3-Dichlorobenzene	ND	ug/L	1.0	0.11	1		01/14/13 12:53	541-73-1	
1,4-Dichlorobenzene	ND	ug/L	1.0	0.064	1		01/14/13 12:53	106-46-7	
Dichlorodifluoromethane	ND	ug/L	1.0	0.20	1		01/14/13 12:53	75-71-8	
1,1-Dichloroethane	ND	ug/L	1.0	0.11	1		01/14/13 12:53	75-34-3	
1,2-Dichloroethane	ND	ug/L	1.0	0.37	1		01/14/13 12:53	107-06-2	
1,1-Dichloroethene	ND	ug/L	1.0	0.19	1		01/14/13 12:53	75-35-4	
cis-1,2-Dichloroethene	ND	ug/L	1.0	0.085	1		01/14/13 12:53	156-59-2	
trans-1,2-Dichloroethene	ND	ug/L	1.0	0.15	1		01/14/13 12:53	156-60-5	
Dichlorofluoromethane	ND	ug/L	1.0	0.11	1		01/14/13 12:53	75-43-4	
1,2-Dichloropropane	ND	ug/L	4.0	0.27	1		01/14/13 12:53	78-87-5	

Pace Analytical Services, Inc.
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ANALYTICAL RESULTS

Project: 65677.00
Pace Project No.: 10217349

Sample: MW-11 **Lab ID: 10217349001** Collected: 01/10/13 09:00 Received: 01/11/13 09:20 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8260 VOC	Analytical Method: EPA 8260								
1,3-Dichloropropane	ND	ug/L	1.0	0.081	1		01/14/13 12:53	142-28-9	
2,2-Dichloropropane	ND	ug/L	4.0	0.15	1		01/14/13 12:53	594-20-7	
1,1-Dichloropropene	ND	ug/L	1.0	0.35	1		01/14/13 12:53	563-58-6	
cis-1,3-Dichloropropene	ND	ug/L	4.0	0.090	1		01/14/13 12:53	10061-01-5	
trans-1,3-Dichloropropene	ND	ug/L	4.0	0.37	1		01/14/13 12:53	10061-02-6	
Diethyl ether (Ethyl ether)	ND	ug/L	4.0	2.0	1		01/14/13 12:53	60-29-7	
Diisopropyl ether	ND	ug/L	1.0	0.078	1		01/14/13 12:53	108-20-3	
Ethylbenzene	ND	ug/L	1.0	0.081	1		01/14/13 12:53	100-41-4	
Hexachloro-1,3-butadiene	ND	ug/L	5.0	0.19	1		01/14/13 12:53	87-68-3	
2-Hexanone	ND	ug/L	4.0	2.0	1		01/14/13 12:53	591-78-6	
Isopropylbenzene (Cumene)	ND	ug/L	1.0	0.076	1		01/14/13 12:53	98-82-8	
p-Isopropyltoluene	ND	ug/L	1.0	0.086	1		01/14/13 12:53	99-87-6	
Methylene Chloride	ND	ug/L	4.0	2.0	1		01/14/13 12:53	75-09-2	
4-Methyl-2-pentanone (MIBK)	ND	ug/L	4.0	2.0	1		01/14/13 12:53	108-10-1	
Methyl-tert-butyl ether	ND	ug/L	1.0	0.088	1		01/14/13 12:53	1634-04-4	
Naphthalene	ND	ug/L	4.0	0.068	1		01/14/13 12:53	91-20-3	
n-Propylbenzene	ND	ug/L	1.0	0.078	1		01/14/13 12:53	103-65-1	
Styrene	ND	ug/L	1.0	0.060	1		01/14/13 12:53	100-42-5	
1,1,1,2-Tetrachloroethane	ND	ug/L	1.0	0.36	1		01/14/13 12:53	630-20-6	
1,1,2,2-Tetrachloroethane	ND	ug/L	1.0	0.097	1		01/14/13 12:53	79-34-5	
Tetrachloroethene	ND	ug/L	1.0	0.13	1		01/14/13 12:53	127-18-4	
Tetrahydrofuran	ND	ug/L	10.0	0.97	1		01/14/13 12:53	109-99-9	
Toluene	ND	ug/L	1.0	0.077	1		01/14/13 12:53	108-88-3	
1,2,3-Trichlorobenzene	ND	ug/L	1.0	0.13	1		01/14/13 12:53	87-61-6	
1,2,4-Trichlorobenzene	ND	ug/L	1.0	0.25	1		01/14/13 12:53	120-82-1	
1,1,1-Trichloroethane	ND	ug/L	1.0	0.19	1		01/14/13 12:53	71-55-6	
1,1,2-Trichloroethane	ND	ug/L	1.0	0.15	1		01/14/13 12:53	79-00-5	
Trichloroethene	ND	ug/L	1.0	0.083	1		01/14/13 12:53	79-01-6	
Trichlorofluoromethane	ND	ug/L	1.0	0.13	1		01/14/13 12:53	75-69-4	
1,2,3-Trichloropropane	ND	ug/L	4.0	0.33	1		01/14/13 12:53	96-18-4	
1,1,2-Trichlorotrifluoroethane	ND	ug/L	1.0	0.18	1		01/14/13 12:53	76-13-1	
1,2,4-Trimethylbenzene	ND	ug/L	1.0	0.071	1		01/14/13 12:53	95-63-6	
1,3,5-Trimethylbenzene	ND	ug/L	1.0	0.087	1		01/14/13 12:53	108-67-8	
Vinyl chloride	ND	ug/L	0.40	0.16	1		01/14/13 12:53	75-01-4	
Xylene (Total)	ND	ug/L	3.0	0.22	1		01/14/13 12:53	1330-20-7	
m&p-Xylene	ND	ug/L	2.0	0.11	1		01/14/13 12:53	179601-23-1	
o-Xylene	ND	ug/L	1.0	0.10	1		01/14/13 12:53	95-47-6	
Surrogates									
Dibromofluoromethane (S)	107	%	75-125		1		01/14/13 12:53	1868-53-7	
1,2-Dichloroethane-d4 (S)	105	%	75-125		1		01/14/13 12:53	17060-07-0	
Toluene-d8 (S)	99	%	75-125		1		01/14/13 12:53	2037-26-5	
4-Bromofluorobenzene (S)	100	%	75-125		1		01/14/13 12:53	460-00-4	

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ANALYTICAL RESULTS

Project: 65677.00
Pace Project No.: 10217349

Sample: MW-6A **Lab ID: 10217349002** Collected: 01/10/13 01:30 Received: 01/11/13 09:20 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
WIDRO GCS	Analytical Method: WI MOD DRO Preparation Method: WI MOD DRO								
Diesel Range Organics	**124**	ug/L	103	19.5	1	01/14/13 09:51	01/16/13 08:34		
Surrogates									
n-Triacontane (S)	99	%	50-150		1	01/14/13 09:51	01/16/13 08:34		
WIGRO GCV	Analytical Method: WI MOD GRO								
Benzene	ND	ug/L	1.0	0.27	1		01/12/13 00:06	71-43-2	
Ethylbenzene	ND	ug/L	1.0	0.25	1		01/12/13 00:06	100-41-4	
Gasoline Range Organics	ND	ug/L	100	35.3	1		01/12/13 00:06		
Methyl-tert-butyl ether	ND	ug/L	5.0	0.63	1		01/12/13 00:06	1634-04-4	
Toluene	ND	ug/L	1.0	0.22	1		01/12/13 00:06	108-88-3	
1,2,4-Trimethylbenzene	ND	ug/L	1.0	0.25	1		01/12/13 00:06	95-63-6	
1,3,5-Trimethylbenzene	ND	ug/L	1.0	0.24	1		01/12/13 00:06	108-67-8	
Xylene (Total)	ND	ug/L	3.0	0.75	1		01/12/13 00:06	1330-20-7	
Surrogates									
a,a,a-Trifluorotoluene (S)	105	%	80-125		1		01/12/13 00:06	98-08-8	

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ANALYTICAL RESULTS

Project: 65677.00
Pace Project No.: 10217349

Sample: MW-6 **Lab ID: 10217349003** Collected: 01/10/13 01:45 Received: 01/11/13 09:20 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
WIDRO GCS	Analytical Method: WI MOD DRO Preparation Method: WI MOD DRO								
Diesel Range Organics	**3750**	ug/L	103	19.5	1	01/14/13 09:51	01/16/13 11:07		T6,T7
Surrogates									
n-Triacontane (S)	91	%	50-150		1	01/14/13 09:51	01/16/13 11:07		
WIGRO GCV	Analytical Method: WI MOD GRO								
Benzene	**2280**	ug/L	10.0	2.7	10		01/12/13 04:47	71-43-2	
Ethylbenzene	**1090**	ug/L	10.0	2.5	10		01/12/13 04:47	100-41-4	
Gasoline Range Organics	**16000**	ug/L	1000	353	10		01/12/13 04:47		
Methyl-tert-butyl ether	ND	ug/L	50.0	6.3	10		01/12/13 04:47	1634-04-4	
Toluene	**3370**	ug/L	10.0	2.2	10		01/12/13 04:47	108-88-3	
1,2,4-Trimethylbenzene	**760**	ug/L	10.0	2.5	10		01/12/13 04:47	95-63-6	
1,3,5-Trimethylbenzene	**209**	ug/L	10.0	2.4	10		01/12/13 04:47	108-67-8	
Xylene (Total)	**4290**	ug/L	30.0	7.5	10		01/12/13 04:47	1330-20-7	
Surrogates									
a,a,a-Trifluorotoluene (S)	104	%	80-125		10		01/12/13 04:47	98-08-8	

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ANALYTICAL RESULTS

Project: 65677.00
Pace Project No.: 10217349

Sample: MW-1 **Lab ID: 10217349004** Collected: 01/10/13 02:15 Received: 01/11/13 09:20 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
WIDRO GCS	Analytical Method: WI MOD DRO Preparation Method: WI MOD DRO								
Diesel Range Organics	**1450**	ug/L	100	19.0	1	01/14/13 09:51	01/16/13 11:15		T6,T7
Surrogates									
n-Triacontane (S)	97	%	50-150		1	01/14/13 09:51	01/16/13 11:15		
WIGRO GCV	Analytical Method: WI MOD GRO								
Benzene	ND	ug/L	1.0	0.27	1		01/12/13 03:07	71-43-2	
Ethylbenzene	**55.2**	ug/L	1.0	0.25	1		01/12/13 03:07	100-41-4	
Gasoline Range Organics	**3990**	ug/L	100	35.3	1		01/12/13 03:07		
Methyl-tert-butyl ether	ND	ug/L	5.0	0.63	1		01/12/13 03:07	1634-04-4	
Toluene	ND	ug/L	1.0	0.22	1		01/12/13 03:07	108-88-3	
1,2,4-Trimethylbenzene	**632**	ug/L	5.0	1.2	5		01/13/13 21:37	95-63-6	
1,3,5-Trimethylbenzene	**207**	ug/L	1.0	0.24	1		01/12/13 03:07	108-67-8	
Xylene (Total)	**1270**	ug/L	15.0	3.8	5		01/13/13 21:37	1330-20-7	
Surrogates									
a,a,a-Trifluorotoluene (S)	99	%	80-125		1		01/12/13 03:07	98-08-8	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: 65677.00
Pace Project No.: 10217349

Sample: MW-8 **Lab ID: 10217349005** Collected: 01/10/13 03:00 Received: 01/11/13 09:20 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
WIDRO GCS	Analytical Method: WI MOD DRO Preparation Method: WI MOD DRO								
Diesel Range Organics	**27800**	ug/L	1050	200	10	01/14/13 09:51	01/16/13 10:23		T7
Surrogates									
n-Triacontane (S)	199	%	50-150		10	01/14/13 09:51	01/16/13 10:23		S5
WIGRO GCV	Analytical Method: WI MOD GRO								
Gasoline Range Organics	**26200**	ug/L	5000	1760	50		01/12/13 06:27		
Surrogates									
a,a,a-Trifluorotoluene (S)	104	%	80-125		50		01/12/13 06:27	98-08-8	
8260 VOC	Analytical Method: EPA 8260								
Acetone	**523**	ug/L	500	250	20		01/16/13 15:27	67-64-1	
Allyl chloride	ND	ug/L	80.0	35.4	20		01/16/13 15:27	107-05-1	
Benzene	**2590**	ug/L	20.0	1.2	20		01/16/13 15:27	71-43-2	
Bromobenzene	ND	ug/L	20.0	1.7	20		01/16/13 15:27	108-86-1	
Bromochloromethane	ND	ug/L	20.0	6.4	20		01/16/13 15:27	74-97-5	
Bromodichloromethane	ND	ug/L	20.0	2.1	20		01/16/13 15:27	75-27-4	
Bromoform	ND	ug/L	80.0	1.4	20		01/16/13 15:27	75-25-2	
Bromomethane	ND	ug/L	80.0	7.1	20		01/16/13 15:27	74-83-9	
2-Butanone (MEK)	ND	ug/L	80.0	40.0	20		01/16/13 15:27	78-93-3	
n-Butylbenzene	**43.7**	ug/L	20.0	2.9	20		01/16/13 15:27	104-51-8	
sec-Butylbenzene	**22.8**	ug/L	20.0	2.1	20		01/16/13 15:27	135-98-8	
tert-Butylbenzene	ND	ug/L	20.0	2.1	20		01/16/13 15:27	98-06-6	
Carbon disulfide	ND	ug/L	20.0	10.0	20		01/16/13 15:27	75-15-0	
Carbon tetrachloride	ND	ug/L	20.0	3.2	20		01/16/13 15:27	56-23-5	
Chlorobenzene	ND	ug/L	20.0	2.0	20		01/16/13 15:27	108-90-7	
Chloroethane	ND	ug/L	20.0	4.3	20		01/16/13 15:27	75-00-3	
Chloroform	ND	ug/L	20.0	2.9	20		01/16/13 15:27	67-66-3	
Chloromethane	ND	ug/L	80.0	8.3	20		01/16/13 15:27	74-87-3	
2-Chlorotoluene	ND	ug/L	20.0	10.0	20		01/16/13 15:27	95-49-8	
4-Chlorotoluene	ND	ug/L	20.0	1.4	20		01/16/13 15:27	106-43-4	
Cyclohexane	**881**	ug/L	80.0	40.0	20		01/16/13 15:27	110-82-7	
1,2-Dibromo-3-chloropropane	ND	ug/L	80.0	12.3	20		01/16/13 15:27	96-12-8	
Dibromochloromethane	ND	ug/L	20.0	2.0	20		01/16/13 15:27	124-48-1	
1,2-Dibromoethane (EDB)	ND	ug/L	20.0	1.8	20		01/16/13 15:27	106-93-4	
Dibromomethane	ND	ug/L	80.0	4.2	20		01/16/13 15:27	74-95-3	
1,2-Dichlorobenzene	ND	ug/L	20.0	7.1	20		01/16/13 15:27	95-50-1	
1,3-Dichlorobenzene	ND	ug/L	20.0	2.2	20		01/16/13 15:27	541-73-1	
1,4-Dichlorobenzene	ND	ug/L	20.0	1.3	20		01/16/13 15:27	106-46-7	
Dichlorodifluoromethane	ND	ug/L	20.0	4.0	20		01/16/13 15:27	75-71-8	
1,1-Dichloroethane	ND	ug/L	20.0	2.2	20		01/16/13 15:27	75-34-3	
1,2-Dichloroethane	ND	ug/L	20.0	7.4	20		01/16/13 15:27	107-06-2	
1,1-Dichloroethene	ND	ug/L	20.0	3.8	20		01/16/13 15:27	75-35-4	
cis-1,2-Dichloroethene	ND	ug/L	20.0	1.7	20		01/16/13 15:27	156-59-2	
trans-1,2-Dichloroethene	ND	ug/L	20.0	2.9	20		01/16/13 15:27	156-60-5	
Dichlorofluoromethane	ND	ug/L	20.0	2.3	20		01/16/13 15:27	75-43-4	
1,2-Dichloropropane	ND	ug/L	80.0	5.4	20		01/16/13 15:27	78-87-5	

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ANALYTICAL RESULTS

Project: 65677.00
Pace Project No.: 10217349

Sample: MW-8 **Lab ID: 10217349005** Collected: 01/10/13 03:00 Received: 01/11/13 09:20 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8260 VOC	Analytical Method: EPA 8260								
1,3-Dichloropropane	ND	ug/L	20.0	1.6	20		01/16/13 15:27	142-28-9	
2,2-Dichloropropane	ND	ug/L	80.0	3.0	20		01/16/13 15:27	594-20-7	
1,1-Dichloropropene	ND	ug/L	20.0	7.1	20		01/16/13 15:27	563-58-6	
cis-1,3-Dichloropropene	ND	ug/L	80.0	1.8	20		01/16/13 15:27	10061-01-5	
trans-1,3-Dichloropropene	ND	ug/L	80.0	7.5	20		01/16/13 15:27	10061-02-6	
Diethyl ether (Ethyl ether)	ND	ug/L	80.0	40.0	20		01/16/13 15:27	60-29-7	
Diisopropyl ether	ND	ug/L	20.0	1.6	20		01/16/13 15:27	108-20-3	
Ethylbenzene	**1490**	ug/L	20.0	1.6	20		01/16/13 15:27	100-41-4	
Hexachloro-1,3-butadiene	ND	ug/L	100	3.8	20		01/16/13 15:27	87-68-3	
2-Hexanone	ND	ug/L	80.0	40.0	20		01/16/13 15:27	591-78-6	
Isopropylbenzene (Cumene)	**115**	ug/L	20.0	1.5	20		01/16/13 15:27	98-82-8	
p-Isopropyltoluene	**28.6**	ug/L	20.0	1.7	20		01/16/13 15:27	99-87-6	
Methylene Chloride	ND	ug/L	80.0	40.0	20		01/16/13 15:27	75-09-2	
4-Methyl-2-pentanone (MIBK)	ND	ug/L	80.0	40.0	20		01/16/13 15:27	108-10-1	
Methyl-tert-butyl ether	ND	ug/L	20.0	1.8	20		01/16/13 15:27	1634-04-4	
Naphthalene	**438**	ug/L	80.0	1.4	20		01/16/13 15:27	91-20-3	
n-Propylbenzene	**234**	ug/L	20.0	1.6	20		01/16/13 15:27	103-65-1	
Styrene	ND	ug/L	20.0	1.2	20		01/16/13 15:27	100-42-5	
1,1,1,2-Tetrachloroethane	ND	ug/L	20.0	7.3	20		01/16/13 15:27	630-20-6	
1,1,2,2-Tetrachloroethane	ND	ug/L	20.0	1.9	20		01/16/13 15:27	79-34-5	
Tetrachloroethene	ND	ug/L	20.0	2.6	20		01/16/13 15:27	127-18-4	
Tetrahydrofuran	ND	ug/L	200	19.3	20		01/16/13 15:27	109-99-9	
Toluene	**4670**	ug/L	20.0	1.5	20		01/16/13 15:27	108-88-3	
1,2,3-Trichlorobenzene	ND	ug/L	20.0	2.7	20		01/16/13 15:27	87-61-6	
1,2,4-Trichlorobenzene	ND	ug/L	20.0	4.9	20		01/16/13 15:27	120-82-1	
1,1,1-Trichloroethane	ND	ug/L	20.0	3.7	20		01/16/13 15:27	71-55-6	
1,1,2-Trichloroethane	ND	ug/L	20.0	3.0	20		01/16/13 15:27	79-00-5	
Trichloroethene	ND	ug/L	20.0	1.7	20		01/16/13 15:27	79-01-6	
Trichlorofluoromethane	ND	ug/L	20.0	2.5	20		01/16/13 15:27	75-69-4	
1,2,3-Trichloropropane	ND	ug/L	80.0	6.6	20		01/16/13 15:27	96-18-4	
1,1,2-Trichlorotrifluoroethane	ND	ug/L	20.0	3.7	20		01/16/13 15:27	76-13-1	
1,2,4-Trimethylbenzene	**1540**	ug/L	20.0	1.4	20		01/16/13 15:27	95-63-6	
1,3,5-Trimethylbenzene	**401**	ug/L	20.0	1.7	20		01/16/13 15:27	108-67-8	
Vinyl chloride	ND	ug/L	8.0	3.2	20		01/16/13 15:27	75-01-4	
Xylene (Total)	**6840**	ug/L	60.0	4.3	20		01/16/13 15:27	1330-20-7	
m&p-Xylene	**4880**	ug/L	40.0	2.2	20		01/16/13 15:27	179601-23-1	
o-Xylene	**1960**	ug/L	20.0	2.1	20		01/16/13 15:27	95-47-6	
Surrogates									
Dibromofluoromethane (S)	101	%	75-125		20		01/16/13 15:27	1868-53-7	
1,2-Dichloroethane-d4 (S)	100	%	75-125		20		01/16/13 15:27	17060-07-0	
Toluene-d8 (S)	100	%	75-125		20		01/16/13 15:27	2037-26-5	
4-Bromofluorobenzene (S)	97	%	75-125		20		01/16/13 15:27	460-00-4	

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ANALYTICAL RESULTS

Project: 65677.00
Pace Project No.: 10217349

Sample: MW-9 **Lab ID: 10217349006** Collected: 01/10/13 03:15 Received: 01/11/13 09:20 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
WIDRO GCS	Analytical Method: WI MOD DRO Preparation Method: WI MOD DRO								
Diesel Range Organics	**16000**	ug/L	532	101	5	01/14/13 09:51	01/16/13 10:16		T7
Surrogates									
n-Triacontane (S)	157	%	50-150		5	01/14/13 09:51	01/16/13 10:16		S5
WIGRO GCV	Analytical Method: WI MOD GRO								
Gasoline Range Organics	**30500**	ug/L	1000	353	10		01/12/13 06:07		
Surrogates									
a,a,a-Trifluorotoluene (S)	103	%	80-125		10		01/12/13 06:07	98-08-8	
8260 VOC	Analytical Method: EPA 8260								
Acetone	ND	ug/L	500	250	20		01/16/13 15:41	67-64-1	
Allyl chloride	ND	ug/L	80.0	35.4	20		01/16/13 15:41	107-05-1	
Benzene	**6690**	ug/L	50.0	3.1	50		01/16/13 16:16	71-43-2	
Bromobenzene	ND	ug/L	20.0	1.7	20		01/16/13 15:41	108-86-1	
Bromochloromethane	ND	ug/L	20.0	6.4	20		01/16/13 15:41	74-97-5	
Bromodichloromethane	ND	ug/L	20.0	2.1	20		01/16/13 15:41	75-27-4	
Bromoform	ND	ug/L	80.0	1.4	20		01/16/13 15:41	75-25-2	
Bromomethane	ND	ug/L	80.0	7.1	20		01/16/13 15:41	74-83-9	
2-Butanone (MEK)	ND	ug/L	80.0	40.0	20		01/16/13 15:41	78-93-3	
n-Butylbenzene	**60.9**	ug/L	20.0	2.9	20		01/16/13 15:41	104-51-8	
sec-Butylbenzene	**31.7**	ug/L	20.0	2.1	20		01/16/13 15:41	135-98-8	
tert-Butylbenzene	ND	ug/L	20.0	2.1	20		01/16/13 15:41	98-06-6	
Carbon disulfide	ND	ug/L	20.0	10.0	20		01/16/13 15:41	75-15-0	
Carbon tetrachloride	ND	ug/L	20.0	3.2	20		01/16/13 15:41	56-23-5	
Chlorobenzene	ND	ug/L	20.0	2.0	20		01/16/13 15:41	108-90-7	
Chloroethane	ND	ug/L	20.0	4.3	20		01/16/13 15:41	75-00-3	
Chloroform	ND	ug/L	20.0	2.9	20		01/16/13 15:41	67-66-3	
Chloromethane	ND	ug/L	80.0	8.3	20		01/16/13 15:41	74-87-3	
2-Chlorotoluene	ND	ug/L	20.0	10.0	20		01/16/13 15:41	95-49-8	
4-Chlorotoluene	ND	ug/L	20.0	1.4	20		01/16/13 15:41	106-43-4	
Cyclohexane	**600**	ug/L	80.0	40.0	20		01/16/13 15:41	110-82-7	
1,2-Dibromo-3-chloropropane	ND	ug/L	80.0	12.3	20		01/16/13 15:41	96-12-8	
Dibromochloromethane	ND	ug/L	20.0	2.0	20		01/16/13 15:41	124-48-1	
1,2-Dibromoethane (EDB)	ND	ug/L	20.0	1.8	20		01/16/13 15:41	106-93-4	
Dibromomethane	ND	ug/L	80.0	4.2	20		01/16/13 15:41	74-95-3	
1,2-Dichlorobenzene	ND	ug/L	20.0	7.1	20		01/16/13 15:41	95-50-1	
1,3-Dichlorobenzene	ND	ug/L	20.0	2.2	20		01/16/13 15:41	541-73-1	
1,4-Dichlorobenzene	ND	ug/L	20.0	1.3	20		01/16/13 15:41	106-46-7	
Dichlorodifluoromethane	ND	ug/L	20.0	4.0	20		01/16/13 15:41	75-71-8	
1,1-Dichloroethane	ND	ug/L	20.0	2.2	20		01/16/13 15:41	75-34-3	
1,2-Dichloroethane	**53.7**	ug/L	20.0	7.4	20		01/16/13 15:41	107-06-2	
1,1-Dichloroethene	ND	ug/L	20.0	3.8	20		01/16/13 15:41	75-35-4	
cis-1,2-Dichloroethene	ND	ug/L	20.0	1.7	20		01/16/13 15:41	156-59-2	
trans-1,2-Dichloroethene	ND	ug/L	20.0	2.9	20		01/16/13 15:41	156-60-5	
Dichlorofluoromethane	ND	ug/L	20.0	2.3	20		01/16/13 15:41	75-43-4	
1,2-Dichloropropane	ND	ug/L	80.0	5.4	20		01/16/13 15:41	78-87-5	

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ANALYTICAL RESULTS

Project: 65677.00
Pace Project No.: 10217349

Sample: MW-9 **Lab ID: 10217349006** Collected: 01/10/13 03:15 Received: 01/11/13 09:20 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8260 VOC	Analytical Method: EPA 8260								
1,3-Dichloropropane	ND	ug/L	20.0	1.6	20		01/16/13 15:41	142-28-9	
2,2-Dichloropropane	ND	ug/L	80.0	3.0	20		01/16/13 15:41	594-20-7	
1,1-Dichloropropene	ND	ug/L	20.0	7.1	20		01/16/13 15:41	563-58-6	
cis-1,3-Dichloropropene	ND	ug/L	80.0	1.8	20		01/16/13 15:41	10061-01-5	
trans-1,3-Dichloropropene	ND	ug/L	80.0	7.5	20		01/16/13 15:41	10061-02-6	
Diethyl ether (Ethyl ether)	ND	ug/L	80.0	40.0	20		01/16/13 15:41	60-29-7	
Diisopropyl ether	ND	ug/L	20.0	1.6	20		01/16/13 15:41	108-20-3	
Ethylbenzene	**1840**	ug/L	20.0	1.6	20		01/16/13 15:41	100-41-4	
Hexachloro-1,3-butadiene	ND	ug/L	100	3.8	20		01/16/13 15:41	87-68-3	
2-Hexanone	ND	ug/L	80.0	40.0	20		01/16/13 15:41	591-78-6	
Isopropylbenzene (Cumene)	**122**	ug/L	20.0	1.5	20		01/16/13 15:41	98-82-8	
p-Isopropyltoluene	**37.9**	ug/L	20.0	1.7	20		01/16/13 15:41	99-87-6	
Methylene Chloride	ND	ug/L	80.0	40.0	20		01/16/13 15:41	75-09-2	
4-Methyl-2-pentanone (MIBK)	ND	ug/L	80.0	40.0	20		01/16/13 15:41	108-10-1	
Methyl-tert-butyl ether	ND	ug/L	20.0	1.8	20		01/16/13 15:41	1634-04-4	
Naphthalene	**550**	ug/L	80.0	1.4	20		01/16/13 15:41	91-20-3	
n-Propylbenzene	**315**	ug/L	20.0	1.6	20		01/16/13 15:41	103-65-1	
Styrene	ND	ug/L	20.0	1.2	20		01/16/13 15:41	100-42-5	
1,1,1,2-Tetrachloroethane	ND	ug/L	20.0	7.3	20		01/16/13 15:41	630-20-6	
1,1,2,2-Tetrachloroethane	ND	ug/L	20.0	1.9	20		01/16/13 15:41	79-34-5	
Tetrachloroethene	ND	ug/L	20.0	2.6	20		01/16/13 15:41	127-18-4	
Tetrahydrofuran	ND	ug/L	200	19.3	20		01/16/13 15:41	109-99-9	
Toluene	**7210**	ug/L	50.0	3.8	50		01/16/13 16:16	108-88-3	
1,2,3-Trichlorobenzene	ND	ug/L	20.0	2.7	20		01/16/13 15:41	87-61-6	
1,2,4-Trichlorobenzene	ND	ug/L	20.0	4.9	20		01/16/13 15:41	120-82-1	
1,1,1-Trichloroethane	ND	ug/L	20.0	3.7	20		01/16/13 15:41	71-55-6	
1,1,2-Trichloroethane	ND	ug/L	20.0	3.0	20		01/16/13 15:41	79-00-5	
Trichloroethene	ND	ug/L	20.0	1.7	20		01/16/13 15:41	79-01-6	
Trichlorofluoromethane	ND	ug/L	20.0	2.5	20		01/16/13 15:41	75-69-4	
1,2,3-Trichloropropane	ND	ug/L	80.0	6.6	20		01/16/13 15:41	96-18-4	
1,1,2-Trichlorotrifluoroethane	ND	ug/L	20.0	3.7	20		01/16/13 15:41	76-13-1	
1,2,4-Trimethylbenzene	**2080**	ug/L	20.0	1.4	20		01/16/13 15:41	95-63-6	
1,3,5-Trimethylbenzene	**523**	ug/L	20.0	1.7	20		01/16/13 15:41	108-67-8	
Vinyl chloride	ND	ug/L	8.0	3.2	20		01/16/13 15:41	75-01-4	
Xylene (Total)	**8950**	ug/L	60.0	4.3	20		01/16/13 15:41	1330-20-7	
m&p-Xylene	**6240**	ug/L	40.0	2.2	20		01/16/13 15:41	179601-23-1	
o-Xylene	**2710**	ug/L	20.0	2.1	20		01/16/13 15:41	95-47-6	
Surrogates									
Dibromofluoromethane (S)	103	%	75-125		20		01/16/13 15:41	1868-53-7	
1,2-Dichloroethane-d4 (S)	100	%	75-125		20		01/16/13 15:41	17060-07-0	
Toluene-d8 (S)	99	%	75-125		20		01/16/13 15:41	2037-26-5	
4-Bromofluorobenzene (S)	99	%	75-125		20		01/16/13 15:41	460-00-4	

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ANALYTICAL RESULTS

Project: 65677.00
Pace Project No.: 10217349

Sample: MW-10 **Lab ID: 10217349007** Collected: 01/10/13 04:00 Received: 01/11/13 09:20 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
WIDRO GCS	Analytical Method: WI MOD DRO Preparation Method: WI MOD DRO								
Diesel Range Organics	**14700**	ug/L	532	101	5	01/14/13 09:51	01/16/13 10:09		T7
Surrogates									
n-Triacontane (S)	163	%	50-150		5	01/14/13 09:51	01/16/13 10:09		S5
WIGRO GCV	Analytical Method: WI MOD GRO								
Gasoline Range Organics	**12500**	ug/L	2000	706	20		01/12/13 05:07		
Surrogates									
a,a,a-Trifluorotoluene (S)	105	%	80-125		20		01/12/13 05:07	98-08-8	
8260 VOC	Analytical Method: EPA 8260								
Acetone	ND	ug/L	250	125	10		01/14/13 16:16	67-64-1	
Allyl chloride	ND	ug/L	40.0	17.7	10		01/14/13 16:16	107-05-1	
Benzene	**375**	ug/L	10.0	0.62	10		01/14/13 16:16	71-43-2	
Bromobenzene	ND	ug/L	10.0	0.86	10		01/14/13 16:16	108-86-1	
Bromochloromethane	ND	ug/L	10.0	3.2	10		01/14/13 16:16	74-97-5	
Bromodichloromethane	ND	ug/L	10.0	1.1	10		01/14/13 16:16	75-27-4	
Bromoform	ND	ug/L	40.0	0.68	10		01/14/13 16:16	75-25-2	
Bromomethane	ND	ug/L	40.0	3.6	10		01/14/13 16:16	74-83-9	
2-Butanone (MEK)	ND	ug/L	40.0	20.0	10		01/14/13 16:16	78-93-3	
n-Butylbenzene	**40.3**	ug/L	10.0	1.5	10		01/14/13 16:16	104-51-8	
sec-Butylbenzene	**24.3**	ug/L	10.0	1.0	10		01/14/13 16:16	135-98-8	
tert-Butylbenzene	ND	ug/L	10.0	1.0	10		01/14/13 16:16	98-06-6	
Carbon disulfide	ND	ug/L	10.0	5.0	10		01/14/13 16:16	75-15-0	
Carbon tetrachloride	ND	ug/L	10.0	1.6	10		01/14/13 16:16	56-23-5	
Chlorobenzene	ND	ug/L	10.0	1.0	10		01/14/13 16:16	108-90-7	
Chloroethane	ND	ug/L	10.0	2.2	10		01/14/13 16:16	75-00-3	
Chloroform	ND	ug/L	10.0	1.4	10		01/14/13 16:16	67-66-3	
Chloromethane	ND	ug/L	40.0	4.1	10		01/14/13 16:16	74-87-3	
2-Chlorotoluene	ND	ug/L	10.0	5.0	10		01/14/13 16:16	95-49-8	
4-Chlorotoluene	ND	ug/L	10.0	0.68	10		01/14/13 16:16	106-43-4	
Cyclohexane	**1030**	ug/L	40.0	20.0	10		01/14/13 16:16	110-82-7	
1,2-Dibromo-3-chloropropane	ND	ug/L	40.0	6.2	10		01/14/13 16:16	96-12-8	
Dibromochloromethane	ND	ug/L	10.0	1.0	10		01/14/13 16:16	124-48-1	
1,2-Dibromoethane (EDB)	ND	ug/L	10.0	0.91	10		01/14/13 16:16	106-93-4	
Dibromomethane	ND	ug/L	40.0	2.1	10		01/14/13 16:16	74-95-3	
1,2-Dichlorobenzene	ND	ug/L	10.0	3.6	10		01/14/13 16:16	95-50-1	
1,3-Dichlorobenzene	ND	ug/L	10.0	1.1	10		01/14/13 16:16	541-73-1	
1,4-Dichlorobenzene	ND	ug/L	10.0	0.64	10		01/14/13 16:16	106-46-7	
Dichlorodifluoromethane	ND	ug/L	10.0	2.0	10		01/14/13 16:16	75-71-8	
1,1-Dichloroethane	ND	ug/L	10.0	1.1	10		01/14/13 16:16	75-34-3	
1,2-Dichloroethane	ND	ug/L	10.0	3.7	10		01/14/13 16:16	107-06-2	
1,1-Dichloroethene	ND	ug/L	10.0	1.9	10		01/14/13 16:16	75-35-4	
cis-1,2-Dichloroethene	ND	ug/L	10.0	0.85	10		01/14/13 16:16	156-59-2	
trans-1,2-Dichloroethene	ND	ug/L	10.0	1.5	10		01/14/13 16:16	156-60-5	
Dichlorofluoromethane	ND	ug/L	10.0	1.1	10		01/14/13 16:16	75-43-4	
1,2-Dichloropropane	ND	ug/L	40.0	2.7	10		01/14/13 16:16	78-87-5	

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ANALYTICAL RESULTS

Project: 65677.00
Pace Project No.: 10217349

Sample: MW-10 **Lab ID: 10217349007** Collected: 01/10/13 04:00 Received: 01/11/13 09:20 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8260 VOC	Analytical Method: EPA 8260								
1,3-Dichloropropane	ND	ug/L	10.0	0.81	10		01/14/13 16:16	142-28-9	
2,2-Dichloropropane	ND	ug/L	40.0	1.5	10		01/14/13 16:16	594-20-7	
1,1-Dichloropropene	ND	ug/L	10.0	3.5	10		01/14/13 16:16	563-58-6	
cis-1,3-Dichloropropene	ND	ug/L	40.0	0.90	10		01/14/13 16:16	10061-01-5	
trans-1,3-Dichloropropene	ND	ug/L	40.0	3.7	10		01/14/13 16:16	10061-02-6	
Diethyl ether (Ethyl ether)	ND	ug/L	40.0	20.0	10		01/14/13 16:16	60-29-7	
Diisopropyl ether	ND	ug/L	10.0	0.78	10		01/14/13 16:16	108-20-3	
Ethylbenzene	**551**	ug/L	10.0	0.81	10		01/14/13 16:16	100-41-4	
Hexachloro-1,3-butadiene	ND	ug/L	50.0	1.9	10		01/14/13 16:16	87-68-3	
2-Hexanone	ND	ug/L	40.0	20.0	10		01/14/13 16:16	591-78-6	
Isopropylbenzene (Cumene)	**119**	ug/L	10.0	0.76	10		01/14/13 16:16	98-82-8	
p-Isopropyltoluene	**40.5**	ug/L	10.0	0.86	10		01/14/13 16:16	99-87-6	
Methylene Chloride	ND	ug/L	40.0	20.0	10		01/14/13 16:16	75-09-2	
4-Methyl-2-pentanone (MIBK)	ND	ug/L	40.0	20.0	10		01/14/13 16:16	108-10-1	
Methyl-tert-butyl ether	ND	ug/L	10.0	0.88	10		01/14/13 16:16	1634-04-4	
Naphthalene	**274**	ug/L	40.0	0.68	10		01/14/13 16:16	91-20-3	
n-Propylbenzene	**225**	ug/L	10.0	0.78	10		01/14/13 16:16	103-65-1	
Styrene	ND	ug/L	10.0	0.60	10		01/14/13 16:16	100-42-5	
1,1,1,2-Tetrachloroethane	ND	ug/L	10.0	3.6	10		01/14/13 16:16	630-20-6	
1,1,2,2-Tetrachloroethane	ND	ug/L	10.0	0.97	10		01/14/13 16:16	79-34-5	
Tetrachloroethene	ND	ug/L	10.0	1.3	10		01/14/13 16:16	127-18-4	
Tetrahydrofuran	ND	ug/L	100	9.7	10		01/14/13 16:16	109-99-9	
Toluene	**207**	ug/L	10.0	0.77	10		01/14/13 16:16	108-88-3	
1,2,3-Trichlorobenzene	ND	ug/L	10.0	1.3	10		01/14/13 16:16	87-61-6	
1,2,4-Trichlorobenzene	ND	ug/L	10.0	2.5	10		01/14/13 16:16	120-82-1	
1,1,1-Trichloroethane	ND	ug/L	10.0	1.9	10		01/14/13 16:16	71-55-6	
1,1,2-Trichloroethane	ND	ug/L	10.0	1.5	10		01/14/13 16:16	79-00-5	
Trichloroethene	ND	ug/L	10.0	0.83	10		01/14/13 16:16	79-01-6	
Trichlorofluoromethane	ND	ug/L	10.0	1.3	10		01/14/13 16:16	75-69-4	
1,2,3-Trichloropropane	ND	ug/L	40.0	3.3	10		01/14/13 16:16	96-18-4	
1,1,2-Trichlorotrifluoroethane	ND	ug/L	10.0	1.8	10		01/14/13 16:16	76-13-1	
1,2,4-Trimethylbenzene	**1890**	ug/L	10.0	0.71	10		01/14/13 16:16	95-63-6	
1,3,5-Trimethylbenzene	**557**	ug/L	10.0	0.87	10		01/14/13 16:16	108-67-8	
Vinyl chloride	ND	ug/L	4.0	1.6	10		01/14/13 16:16	75-01-4	
Xylene (Total)	**2750**	ug/L	30.0	2.2	10		01/14/13 16:16	1330-20-7	
m&p-Xylene	**2280**	ug/L	20.0	1.1	10		01/14/13 16:16	179601-23-1	
o-Xylene	**471**	ug/L	10.0	1.0	10		01/14/13 16:16	95-47-6	
Surrogates									
Dibromofluoromethane (S)	107	%	75-125		10		01/14/13 16:16	1868-53-7	
1,2-Dichloroethane-d4 (S)	106	%	75-125		10		01/14/13 16:16	17060-07-0	
Toluene-d8 (S)	101	%	75-125		10		01/14/13 16:16	2037-26-5	
4-Bromofluorobenzene (S)	103	%	75-125		10		01/14/13 16:16	460-00-4	

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ANALYTICAL RESULTS

Project: 65677.00
Pace Project No.: 10217349

Sample: TRIP BLANK **Lab ID: 10217349008** Collected: 01/10/13 00:00 Received: 01/11/13 09:20 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
WIGRO GCV	Analytical Method: WI MOD GRO								
Gasoline Range Organics	ND	ug/L	100	35.3	1		01/11/13 22:26		
Surrogates									
a,a,a-Trifluorotoluene (S)	101	%	80-125		1		01/11/13 22:26	98-08-8	
8260 VOC	Analytical Method: EPA 8260								
Acetone	ND	ug/L	25.0	12.5	1		01/14/13 11:55	67-64-1	
Allyl chloride	ND	ug/L	4.0	1.8	1		01/14/13 11:55	107-05-1	
Benzene	ND	ug/L	1.0	0.062	1		01/14/13 11:55	71-43-2	
Bromobenzene	ND	ug/L	1.0	0.086	1		01/14/13 11:55	108-86-1	
Bromochloromethane	ND	ug/L	1.0	0.32	1		01/14/13 11:55	74-97-5	
Bromodichloromethane	ND	ug/L	1.0	0.11	1		01/14/13 11:55	75-27-4	
Bromoform	ND	ug/L	4.0	0.068	1		01/14/13 11:55	75-25-2	
Bromomethane	ND	ug/L	4.0	0.36	1		01/14/13 11:55	74-83-9	
2-Butanone (MEK)	ND	ug/L	4.0	2.0	1		01/14/13 11:55	78-93-3	
n-Butylbenzene	ND	ug/L	1.0	0.15	1		01/14/13 11:55	104-51-8	
sec-Butylbenzene	ND	ug/L	1.0	0.10	1		01/14/13 11:55	135-98-8	
tert-Butylbenzene	ND	ug/L	1.0	0.10	1		01/14/13 11:55	98-06-6	
Carbon disulfide	ND	ug/L	1.0	0.50	1		01/14/13 11:55	75-15-0	
Carbon tetrachloride	ND	ug/L	1.0	0.16	1		01/14/13 11:55	56-23-5	
Chlorobenzene	ND	ug/L	1.0	0.10	1		01/14/13 11:55	108-90-7	
Chloroethane	ND	ug/L	1.0	0.22	1		01/14/13 11:55	75-00-3	
Chloroform	ND	ug/L	1.0	0.14	1		01/14/13 11:55	67-66-3	
Chloromethane	ND	ug/L	4.0	0.41	1		01/14/13 11:55	74-87-3	
2-Chlorotoluene	ND	ug/L	1.0	0.50	1		01/14/13 11:55	95-49-8	
4-Chlorotoluene	ND	ug/L	1.0	0.068	1		01/14/13 11:55	106-43-4	
Cyclohexane	ND	ug/L	4.0	2.0	1		01/14/13 11:55	110-82-7	
1,2-Dibromo-3-chloropropane	ND	ug/L	4.0	0.62	1		01/14/13 11:55	96-12-8	
Dibromochloromethane	ND	ug/L	1.0	0.10	1		01/14/13 11:55	124-48-1	
1,2-Dibromoethane (EDB)	ND	ug/L	1.0	0.091	1		01/14/13 11:55	106-93-4	
Dibromomethane	ND	ug/L	4.0	0.21	1		01/14/13 11:55	74-95-3	
1,2-Dichlorobenzene	ND	ug/L	1.0	0.36	1		01/14/13 11:55	95-50-1	
1,3-Dichlorobenzene	ND	ug/L	1.0	0.11	1		01/14/13 11:55	541-73-1	
1,4-Dichlorobenzene	ND	ug/L	1.0	0.064	1		01/14/13 11:55	106-46-7	
Dichlorodifluoromethane	ND	ug/L	1.0	0.20	1		01/14/13 11:55	75-71-8	
1,1-Dichloroethane	ND	ug/L	1.0	0.11	1		01/14/13 11:55	75-34-3	
1,2-Dichloroethane	ND	ug/L	1.0	0.37	1		01/14/13 11:55	107-06-2	
1,1-Dichloroethene	ND	ug/L	1.0	0.19	1		01/14/13 11:55	75-35-4	
cis-1,2-Dichloroethene	ND	ug/L	1.0	0.085	1		01/14/13 11:55	156-59-2	
trans-1,2-Dichloroethene	ND	ug/L	1.0	0.15	1		01/14/13 11:55	156-60-5	
Dichlorofluoromethane	ND	ug/L	1.0	0.11	1		01/14/13 11:55	75-43-4	
1,2-Dichloropropane	ND	ug/L	4.0	0.27	1		01/14/13 11:55	78-87-5	
1,3-Dichloropropane	ND	ug/L	1.0	0.081	1		01/14/13 11:55	142-28-9	
2,2-Dichloropropane	ND	ug/L	4.0	0.15	1		01/14/13 11:55	594-20-7	
1,1-Dichloropropene	ND	ug/L	1.0	0.35	1		01/14/13 11:55	563-58-6	
cis-1,3-Dichloropropene	ND	ug/L	4.0	0.090	1		01/14/13 11:55	10061-01-5	
trans-1,3-Dichloropropene	ND	ug/L	4.0	0.37	1		01/14/13 11:55	10061-02-6	

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ANALYTICAL RESULTS

Project: 65677.00
Pace Project No.: 10217349

Sample: TRIP BLANK **Lab ID: 10217349008** Collected: 01/10/13 00:00 Received: 01/11/13 09:20 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8260 VOC	Analytical Method: EPA 8260								
Diethyl ether (Ethyl ether)	ND	ug/L	4.0	2.0	1		01/14/13 11:55	60-29-7	
Diisopropyl ether	ND	ug/L	1.0	0.078	1		01/14/13 11:55	108-20-3	
Ethylbenzene	ND	ug/L	1.0	0.081	1		01/14/13 11:55	100-41-4	
Hexachloro-1,3-butadiene	ND	ug/L	5.0	0.19	1		01/14/13 11:55	87-68-3	
2-Hexanone	ND	ug/L	4.0	2.0	1		01/14/13 11:55	591-78-6	
Isopropylbenzene (Cumene)	ND	ug/L	1.0	0.076	1		01/14/13 11:55	98-82-8	
p-Isopropyltoluene	ND	ug/L	1.0	0.086	1		01/14/13 11:55	99-87-6	
Methylene Chloride	ND	ug/L	4.0	2.0	1		01/14/13 11:55	75-09-2	
4-Methyl-2-pentanone (MIBK)	ND	ug/L	4.0	2.0	1		01/14/13 11:55	108-10-1	
Methyl-tert-butyl ether	ND	ug/L	1.0	0.088	1		01/14/13 11:55	1634-04-4	
Naphthalene	ND	ug/L	4.0	0.068	1		01/14/13 11:55	91-20-3	
n-Propylbenzene	ND	ug/L	1.0	0.078	1		01/14/13 11:55	103-65-1	
Styrene	ND	ug/L	1.0	0.060	1		01/14/13 11:55	100-42-5	
1,1,1,2-Tetrachloroethane	ND	ug/L	1.0	0.36	1		01/14/13 11:55	630-20-6	
1,1,2,2-Tetrachloroethane	ND	ug/L	1.0	0.097	1		01/14/13 11:55	79-34-5	
Tetrachloroethene	ND	ug/L	1.0	0.13	1		01/14/13 11:55	127-18-4	
Tetrahydrofuran	ND	ug/L	10.0	0.97	1		01/14/13 11:55	109-99-9	
Toluene	ND	ug/L	1.0	0.077	1		01/14/13 11:55	108-88-3	
1,2,3-Trichlorobenzene	ND	ug/L	1.0	0.13	1		01/14/13 11:55	87-61-6	
1,2,4-Trichlorobenzene	ND	ug/L	1.0	0.25	1		01/14/13 11:55	120-82-1	
1,1,1-Trichloroethane	ND	ug/L	1.0	0.19	1		01/14/13 11:55	71-55-6	
1,1,2-Trichloroethane	ND	ug/L	1.0	0.15	1		01/14/13 11:55	79-00-5	
Trichloroethene	ND	ug/L	1.0	0.083	1		01/14/13 11:55	79-01-6	
Trichlorofluoromethane	ND	ug/L	1.0	0.13	1		01/14/13 11:55	75-69-4	
1,2,3-Trichloropropane	ND	ug/L	4.0	0.33	1		01/14/13 11:55	96-18-4	
1,1,2-Trichlorotrifluoroethane	ND	ug/L	1.0	0.18	1		01/14/13 11:55	76-13-1	
1,2,4-Trimethylbenzene	ND	ug/L	1.0	0.071	1		01/14/13 11:55	95-63-6	
1,3,5-Trimethylbenzene	ND	ug/L	1.0	0.087	1		01/14/13 11:55	108-67-8	
Vinyl chloride	ND	ug/L	0.40	0.16	1		01/14/13 11:55	75-01-4	
Xylene (Total)	ND	ug/L	3.0	0.22	1		01/14/13 11:55	1330-20-7	
m&p-Xylene	ND	ug/L	2.0	0.11	1		01/14/13 11:55	179601-23-1	
o-Xylene	ND	ug/L	1.0	0.10	1		01/14/13 11:55	95-47-6	
Surrogates									
Dibromofluoromethane (S)	102	%	75-125		1		01/14/13 11:55	1868-53-7	
1,2-Dichloroethane-d4 (S)	101	%	75-125		1		01/14/13 11:55	17060-07-0	
Toluene-d8 (S)	99	%	75-125		1		01/14/13 11:55	2037-26-5	
4-Bromofluorobenzene (S)	100	%	75-125		1		01/14/13 11:55	460-00-4	

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QUALITY CONTROL DATA

Project: 65677.00
Pace Project No.: 10217349

QC Batch: GCV/10279 Analysis Method: WI MOD GRO
QC Batch Method: WI MOD GRO Analysis Description: WIGRO GCV Water
Associated Lab Samples: 10217349001, 10217349002, 10217349003, 10217349004, 10217349005, 10217349006, 10217349007, 10217349008

METHOD BLANK: 1363592 Matrix: Water
Associated Lab Samples: 10217349001, 10217349002, 10217349003, 10217349004, 10217349005, 10217349006, 10217349007, 10217349008

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
1,2,4-Trimethylbenzene	ug/L	ND	1.0	01/11/13 22:06	
1,3,5-Trimethylbenzene	ug/L	ND	1.0	01/11/13 22:06	
Benzene	ug/L	ND	1.0	01/11/13 22:06	
Ethylbenzene	ug/L	ND	1.0	01/11/13 22:06	
Gasoline Range Organics	ug/L	ND	100	01/11/13 22:06	
Methyl-tert-butyl ether	ug/L	ND	5.0	01/11/13 22:06	
Toluene	ug/L	ND	1.0	01/11/13 22:06	
Xylene (Total)	ug/L	ND	3.0	01/11/13 22:06	
a,a,a-Trifluorotoluene (S)	%	103	80-125	01/11/13 22:06	

LABORATORY CONTROL SAMPLE & LCSD: 1363593 1363594

Parameter	Units	Spike Conc.	LCS Result	LCSD Result	LCS % Rec	LCSD % Rec	% Rec Limits	RPD	Max RPD	Qualifiers
1,2,4-Trimethylbenzene	ug/L	100	101	105	101	105	80-120	3	20	
1,3,5-Trimethylbenzene	ug/L	100	104	108	104	108	80-120	3	20	
Benzene	ug/L	100	108	112	108	112	80-120	4	20	
Ethylbenzene	ug/L	100	102	106	102	106	80-120	4	20	
Gasoline Range Organics	ug/L	1000	884	890	88	89	80-120	.6	20	
Methyl-tert-butyl ether	ug/L	100	110	113	110	113	80-120	3	20	
Toluene	ug/L	100	104	108	104	108	80-120	4	20	
Xylene (Total)	ug/L	300	307	320	102	107	80-120	4	20	
a,a,a-Trifluorotoluene (S)	%				104	104	80-125			

MATRIX SPIKE SAMPLE: 1363846

Parameter	Units	10217276004 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
1,2,4-Trimethylbenzene	ug/L	ND	100	106	106	80-120	
1,3,5-Trimethylbenzene	ug/L	ND	100	109	109	80-120	
Benzene	ug/L	ND	100	114	114	80-120	
Ethylbenzene	ug/L	ND	100	108	107	80-120	
Gasoline Range Organics	ug/L	ND	1000	909	91	80-120	
Methyl-tert-butyl ether	ug/L	ND	100	120	120	80-120	
Toluene	ug/L	ND	100	109	109	80-120	
Xylene (Total)	ug/L	ND	300	322	107	80-120	
a,a,a-Trifluorotoluene (S)	%				102	80-125	

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QUALITY CONTROL DATA

Project: 65677.00
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SAMPLE DUPLICATE: 1363847

Parameter	Units	10217276005 Result	Dup Result	RPD	Max RPD	Qualifiers
1,2,4-Trimethylbenzene	ug/L	ND	ND		20	
1,3,5-Trimethylbenzene	ug/L	ND	ND		20	
Benzene	ug/L	ND	ND		20	
Ethylbenzene	ug/L	ND	ND		20	
Gasoline Range Organics	ug/L	ND	ND		20	
Methyl-tert-butyl ether	ug/L	ND	ND		20	
Toluene	ug/L	ND	ND		20	
Xylene (Total)	ug/L	ND	ND		20	
a,a,a-Trifluorotoluene (S)	%	105	105	.4		

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QUALITY CONTROL DATA

Project: 65677.00
Pace Project No.: 10217349

QC Batch: MSV/22653 Analysis Method: EPA 8260
QC Batch Method: EPA 8260 Analysis Description: 8260 MSV 465 W
Associated Lab Samples: 10217349001, 10217349007, 10217349008

METHOD BLANK: 1363989 Matrix: Water
Associated Lab Samples: 10217349001, 10217349007, 10217349008

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
1,1,1,2-Tetrachloroethane	ug/L	ND	1.0	01/14/13 11:41	
1,1,1-Trichloroethane	ug/L	ND	1.0	01/14/13 11:41	
1,1,2,2-Tetrachloroethane	ug/L	ND	1.0	01/14/13 11:41	
1,1,2-Trichloroethane	ug/L	ND	1.0	01/14/13 11:41	
1,1,2-Trichlorotrifluoroethane	ug/L	ND	1.0	01/14/13 11:41	
1,1-Dichloroethane	ug/L	ND	1.0	01/14/13 11:41	
1,1-Dichloroethene	ug/L	ND	1.0	01/14/13 11:41	
1,1-Dichloropropene	ug/L	ND	1.0	01/14/13 11:41	
1,2,3-Trichlorobenzene	ug/L	ND	1.0	01/14/13 11:41	
1,2,3-Trichloropropane	ug/L	ND	4.0	01/14/13 11:41	
1,2,4-Trichlorobenzene	ug/L	ND	1.0	01/14/13 11:41	
1,2,4-Trimethylbenzene	ug/L	ND	1.0	01/14/13 11:41	
1,2-Dibromo-3-chloropropane	ug/L	ND	4.0	01/14/13 11:41	
1,2-Dibromoethane (EDB)	ug/L	ND	1.0	01/14/13 11:41	
1,2-Dichlorobenzene	ug/L	ND	1.0	01/14/13 11:41	
1,2-Dichloroethane	ug/L	ND	1.0	01/14/13 11:41	
1,2-Dichloropropane	ug/L	ND	4.0	01/14/13 11:41	
1,3,5-Trimethylbenzene	ug/L	ND	1.0	01/14/13 11:41	
1,3-Dichlorobenzene	ug/L	ND	1.0	01/14/13 11:41	
1,3-Dichloropropane	ug/L	ND	1.0	01/14/13 11:41	
1,4-Dichlorobenzene	ug/L	ND	1.0	01/14/13 11:41	
2,2-Dichloropropane	ug/L	ND	4.0	01/14/13 11:41	
2-Butanone (MEK)	ug/L	ND	4.0	01/14/13 11:41	
2-Chlorotoluene	ug/L	ND	1.0	01/14/13 11:41	
2-Hexanone	ug/L	ND	4.0	01/14/13 11:41	
4-Chlorotoluene	ug/L	ND	1.0	01/14/13 11:41	
4-Methyl-2-pentanone (MIBK)	ug/L	ND	4.0	01/14/13 11:41	
Acetone	ug/L	ND	25.0	01/14/13 11:41	
Allyl chloride	ug/L	ND	4.0	01/14/13 11:41	
Benzene	ug/L	ND	1.0	01/14/13 11:41	
Bromobenzene	ug/L	ND	1.0	01/14/13 11:41	
Bromochloromethane	ug/L	ND	1.0	01/14/13 11:41	
Bromodichloromethane	ug/L	ND	1.0	01/14/13 11:41	
Bromoform	ug/L	ND	4.0	01/14/13 11:41	
Bromomethane	ug/L	ND	4.0	01/14/13 11:41	
Carbon disulfide	ug/L	ND	1.0	01/14/13 11:41	
Carbon tetrachloride	ug/L	ND	1.0	01/14/13 11:41	
Chlorobenzene	ug/L	ND	1.0	01/14/13 11:41	
Chloroethane	ug/L	ND	1.0	01/14/13 11:41	
Chloroform	ug/L	ND	1.0	01/14/13 11:41	
Chloromethane	ug/L	ND	4.0	01/14/13 11:41	
cis-1,2-Dichloroethene	ug/L	ND	1.0	01/14/13 11:41	
cis-1,3-Dichloropropene	ug/L	ND	4.0	01/14/13 11:41	

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QUALITY CONTROL DATA

Project: 65677.00
Pace Project No.: 10217349

METHOD BLANK: 1363989 Matrix: Water

Associated Lab Samples: 10217349001, 10217349007, 10217349008

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Cyclohexane	ug/L	ND	4.0	01/14/13 11:41	
Dibromochloromethane	ug/L	ND	1.0	01/14/13 11:41	
Dibromomethane	ug/L	ND	4.0	01/14/13 11:41	
Dichlorodifluoromethane	ug/L	ND	1.0	01/14/13 11:41	
Dichlorofluoromethane	ug/L	ND	1.0	01/14/13 11:41	
Diethyl ether (Ethyl ether)	ug/L	ND	4.0	01/14/13 11:41	
Diisopropyl ether	ug/L	ND	1.0	01/14/13 11:41	
Ethylbenzene	ug/L	ND	1.0	01/14/13 11:41	
Hexachloro-1,3-butadiene	ug/L	ND	5.0	01/14/13 11:41	
Isopropylbenzene (Cumene)	ug/L	ND	1.0	01/14/13 11:41	
m&p-Xylene	ug/L	ND	2.0	01/14/13 11:41	
Methyl-tert-butyl ether	ug/L	ND	1.0	01/14/13 11:41	
Methylene Chloride	ug/L	ND	4.0	01/14/13 11:41	
n-Butylbenzene	ug/L	ND	1.0	01/14/13 11:41	
n-Propylbenzene	ug/L	ND	1.0	01/14/13 11:41	
Naphthalene	ug/L	ND	4.0	01/14/13 11:41	
o-Xylene	ug/L	ND	1.0	01/14/13 11:41	
p-Isopropyltoluene	ug/L	ND	1.0	01/14/13 11:41	
sec-Butylbenzene	ug/L	ND	1.0	01/14/13 11:41	
Styrene	ug/L	ND	1.0	01/14/13 11:41	
tert-Butylbenzene	ug/L	ND	1.0	01/14/13 11:41	
Tetrachloroethene	ug/L	ND	1.0	01/14/13 11:41	
Tetrahydrofuran	ug/L	ND	10.0	01/14/13 11:41	
Toluene	ug/L	ND	1.0	01/14/13 11:41	
trans-1,2-Dichloroethene	ug/L	ND	1.0	01/14/13 11:41	
trans-1,3-Dichloropropene	ug/L	ND	4.0	01/14/13 11:41	
Trichloroethene	ug/L	ND	1.0	01/14/13 11:41	
Trichlorofluoromethane	ug/L	ND	1.0	01/14/13 11:41	
Vinyl chloride	ug/L	ND	0.40	01/14/13 11:41	
Xylene (Total)	ug/L	ND	3.0	01/14/13 11:41	
1,2-Dichloroethane-d4 (S)	%	99	75-125	01/14/13 11:41	
4-Bromofluorobenzene (S)	%	99	75-125	01/14/13 11:41	
Dibromofluoromethane (S)	%	99	75-125	01/14/13 11:41	
Toluene-d8 (S)	%	100	75-125	01/14/13 11:41	

LABORATORY CONTROL SAMPLE: 1363990

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
1,1,1,2-Tetrachloroethane	ug/L	50	45.9	92	75-125	
1,1,1-Trichloroethane	ug/L	50	48.4	97	75-126	
1,1,2,2-Tetrachloroethane	ug/L	50	40.5	81	75-125	
1,1,2-Trichloroethane	ug/L	50	43.0	86	75-125	
1,1,2-Trichlorotrifluoroethane	ug/L	50	54.1	108	51-139	
1,1-Dichloroethane	ug/L	50	46.4	93	75-125	
1,1-Dichloroethene	ug/L	50	50.4	101	71-126	

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LABORATORY CONTROL SAMPLE: 1363990

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
1,1-Dichloropropene	ug/L	50	50.5	101	74-125	
1,2,3-Trichlorobenzene	ug/L	50	41.9	84	75-125	
1,2,3-Trichloropropane	ug/L	50	40.2	80	75-125	
1,2,4-Trichlorobenzene	ug/L	50	43.5	87	75-125	
1,2,4-Trimethylbenzene	ug/L	50	47.5	95	75-125	
1,2-Dibromo-3-chloropropane	ug/L	50	39.1	78	73-125	
1,2-Dibromoethane (EDB)	ug/L	50	42.5	85	75-125	
1,2-Dichlorobenzene	ug/L	50	45.3	91	75-125	
1,2-Dichloroethane	ug/L	50	42.7	85	74-125	
1,2-Dichloropropane	ug/L	50	44.5	89	75-125	
1,3,5-Trimethylbenzene	ug/L	50	47.0	94	75-125	
1,3-Dichlorobenzene	ug/L	50	44.8	90	75-125	
1,3-Dichloropropane	ug/L	50	43.1	86	75-125	
1,4-Dichlorobenzene	ug/L	50	46.7	93	75-125	
2,2-Dichloropropane	ug/L	50	48.8	98	67-132	
2-Butanone (MEK)	ug/L	50	35.5	71	68-126	
2-Chlorotoluene	ug/L	50	45.1	90	74-125	
2-Hexanone	ug/L	50	38.9	78	70-125	
4-Chlorotoluene	ug/L	50	46.9	94	74-125	
4-Methyl-2-pentanone (MIBK)	ug/L	50	38.0	76	72-125	
Acetone	ug/L	125	113	90	69-132	
Allyl chloride	ug/L	50	48.9	98	74-125	
Benzene	ug/L	50	45.3	91	75-125	
Bromobenzene	ug/L	50	44.9	90	75-125	
Bromochloromethane	ug/L	50	44.1	88	75-125	
Bromodichloromethane	ug/L	50	44.0	88	75-125	
Bromoform	ug/L	50	43.2	86	75-126	
Bromomethane	ug/L	50	52.9	106	30-150	
Carbon disulfide	ug/L	50	52.1	104	66-126	
Carbon tetrachloride	ug/L	50	51.8	104	74-127	
Chlorobenzene	ug/L	50	44.6	89	75-125	
Chloroethane	ug/L	50	45.5	91	68-132	
Chloroform	ug/L	50	44.2	88	75-125	
Chloromethane	ug/L	50	46.8	94	61-129	
cis-1,2-Dichloroethene	ug/L	50	45.2	90	75-125	
cis-1,3-Dichloropropene	ug/L	50	45.4	91	75-125	
Cyclohexane	ug/L	50	53.4	107	64-126	
Dibromochloromethane	ug/L	50	44.3	89	75-125	
Dibromomethane	ug/L	50	42.0	84	75-125	
Dichlorodifluoromethane	ug/L	50	46.6	93	49-137	
Dichlorofluoromethane	ug/L	50	46.2	92	66-133	
Diethyl ether (Ethyl ether)	ug/L	50	43.2	86	75-125	
Diisopropyl ether	ug/L	50	43.3	87	74-125	
Ethylbenzene	ug/L	50	45.3	91	75-125	
Hexachloro-1,3-butadiene	ug/L	25	24.1	97	69-127	
Isopropylbenzene (Cumene)	ug/L	50	50.1	100	75-125	
m&p-Xylene	ug/L	100	93.6	94	75-125	
Methyl-tert-butyl ether	ug/L	50	42.1	84	74-126	

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QUALITY CONTROL DATA

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LABORATORY CONTROL SAMPLE: 1363990

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Methylene Chloride	ug/L	50	42.3	85	75-125	
n-Butylbenzene	ug/L	50	48.8	98	72-126	
n-Propylbenzene	ug/L	50	50.3	101	73-125	
Naphthalene	ug/L	50	39.4	79	75-125	
o-Xylene	ug/L	50	46.9	94	75-125	
p-Isopropyltoluene	ug/L	50	49.3	99	74-125	
sec-Butylbenzene	ug/L	50	49.1	98	73-125	
Styrene	ug/L	50	44.9	90	75-125	
tert-Butylbenzene	ug/L	50	49.6	99	73-125	
Tetrachloroethene	ug/L	50	52.0	104	75-125	
Tetrahydrofuran	ug/L	500	362	72	71-125	
Toluene	ug/L	50	45.4	91	75-125	
trans-1,2-Dichloroethene	ug/L	50	48.0	96	74-125	
trans-1,3-Dichloropropene	ug/L	50	44.8	90	75-125	
Trichloroethene	ug/L	50	48.4	97	75-125	
Trichlorofluoromethane	ug/L	50	50.5	101	69-129	
Vinyl chloride	ug/L	50	48.9	98	70-128	
Xylene (Total)	ug/L	150	140	94	75-125	
1,2-Dichloroethane-d4 (S)	%			92	75-125	
4-Bromofluorobenzene (S)	%			99	75-125	
Dibromofluoromethane (S)	%			96	75-125	
Toluene-d8 (S)	%			100	75-125	

MATRIX SPIKE SAMPLE: 1366011

Parameter	Units	10217412001 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
1,1,1,2-Tetrachloroethane	ug/L	ND	50	46.9	94	75-125	
1,1,1-Trichloroethane	ug/L	ND	50	50.5	101	75-136	
1,1,2,2-Tetrachloroethane	ug/L	ND	50	41.7	83	66-131	
1,1,2-Trichloroethane	ug/L	ND	50	44.1	88	75-125	
1,1,2-Trichlorotrifluoroethane	ug/L	ND	50	71.7	143	75-150	
1,1-Dichloroethane	ug/L	ND	50	48.7	97	75-131	
1,1-Dichloroethene	ug/L	ND	50	53.5	107	75-138	
1,1-Dichloropropene	ug/L	ND	50	52.7	105	75-136	
1,2,3-Trichlorobenzene	ug/L	ND	50	42.4	85	75-125	
1,2,3-Trichloropropane	ug/L	ND	50	41.5	83	71-126	
1,2,4-Trichlorobenzene	ug/L	ND	50	44.3	88	75-125	
1,2,4-Trimethylbenzene	ug/L	ND	50	48.2	96	70-126	
1,2-Dibromo-3-chloropropane	ug/L	ND	50	39.9	80	69-127	
1,2-Dibromoethane (EDB)	ug/L	ND	50	44.1	88	75-125	
1,2-Dichlorobenzene	ug/L	ND	50	45.8	92	75-125	
1,2-Dichloroethane	ug/L	ND	50	45.5	91	74-128	
1,2-Dichloropropane	ug/L	ND	50	46.4	93	75-125	
1,3,5-Trimethylbenzene	ug/L	ND	50	46.9	94	72-126	
1,3-Dichlorobenzene	ug/L	ND	50	45.2	90	75-125	
1,3-Dichloropropane	ug/L	ND	50	44.5	89	75-125	
1,4-Dichlorobenzene	ug/L	ND	50	46.6	93	75-125	

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QUALITY CONTROL DATA

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MATRIX SPIKE SAMPLE: 1366011

Parameter	Units	10217412001 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
2,2-Dichloropropane	ug/L	ND	50	50.8	102	71-143	
2-Butanone (MEK)	ug/L	ND	50	37.3	75	64-125	
2-Chlorotoluene	ug/L	ND	50	45.5	91	74-125	
2-Hexanone	ug/L	ND	50	33.8	68	67-125	
4-Chlorotoluene	ug/L	ND	50	47.1	94	75-125	
4-Methyl-2-pentanone (MIBK)	ug/L	ND	50	39.1	78	69-125	
Acetone	ug/L	ND	125	117	94	57-135	
Allyl chloride	ug/L	ND	50	51.6	103	73-134	
Benzene	ug/L	ND	50	47.3	95	70-135	
Bromobenzene	ug/L	ND	50	46.1	92	75-125	
Bromochloromethane	ug/L	ND	50	47.5	95	75-125	
Bromodichloromethane	ug/L	ND	50	46.1	92	75-125	
Bromoform	ug/L	ND	50	44.2	88	68-133	
Bromomethane	ug/L	ND	50	53.8	108	56-150	
Carbon disulfide	ug/L	ND	50	55.0	110	66-135	
Carbon tetrachloride	ug/L	ND	50	54.4	109	75-137	
Chlorobenzene	ug/L	ND	50	45.6	91	75-125	
Chloroethane	ug/L	ND	50	47.5	95	64-150	
Chloroform	ug/L	ND	50	46.8	94	75-127	
Chloromethane	ug/L	ND	50	47.5	95	65-140	
cis-1,2-Dichloroethene	ug/L	ND	50	47.4	95	75-129	
cis-1,3-Dichloropropene	ug/L	ND	50	47.4	95	75-125	
Cyclohexane	ug/L	ND	50	64.7	129	74-150	
Dibromochloromethane	ug/L	ND	50	45.8	92	75-125	
Dibromomethane	ug/L	ND	50	44.5	89	75-125	
Dichlorodifluoromethane	ug/L	ND	50	64.0	128	70-150	
Dichlorofluoromethane	ug/L	ND	50	48.2	96	69-142	
Diethyl ether (Ethyl ether)	ug/L	ND	50	45.2	90	75-125	
Diisopropyl ether	ug/L	ND	50	45.6	91	73-127	
Ethylbenzene	ug/L	ND	50	45.6	91	75-125	
Hexachloro-1,3-butadiene	ug/L	ND	25	26.3	105	75-135	
Isopropylbenzene (Cumene)	ug/L	ND	50	49.0	98	75-125	
m&p-Xylene	ug/L	ND	100	93.8	94	75-125	
Methyl-tert-butyl ether	ug/L	ND	50	44.0	88	70-132	
Methylene Chloride	ug/L	ND	50	45.4	91	73-125	
n-Butylbenzene	ug/L	ND	50	49.4	99	75-130	
n-Propylbenzene	ug/L	ND	50	50.0	100	75-128	
Naphthalene	ug/L	ND	50	40.2	80	73-126	
o-Xylene	ug/L	ND	50	47.7	95	75-125	
p-Isopropyltoluene	ug/L	ND	50	49.6	99	75-125	
sec-Butylbenzene	ug/L	ND	50	49.5	99	75-126	
Styrene	ug/L	ND	50	46.1	92	52-137	
tert-Butylbenzene	ug/L	ND	50	49.5	99	75-125	
Tetrachloroethene	ug/L	ND	50	51.9	104	75-130	
Tetrahydrofuran	ug/L	ND	500	381	76	69-125	
Toluene	ug/L	ND	50	46.2	92	75-125	
trans-1,2-Dichloroethene	ug/L	ND	50	50.3	101	75-135	
trans-1,3-Dichloropropene	ug/L	ND	50	46.5	93	75-125	

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QUALITY CONTROL DATA

Project: 65677.00
Pace Project No.: 10217349

MATRIX SPIKE SAMPLE: 1366011

Parameter	Units	10217412001 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Trichloroethene	ug/L	ND	50	49.6	99	75-129	
Trichlorofluoromethane	ug/L	ND	50	60.0	120	75-150	
Vinyl chloride	ug/L	ND	50	52.4	105	75-147	
Xylene (Total)	ug/L	ND	150	142	94	75-125	
1,2-Dichloroethane-d4 (S)	%				95	75-125	
4-Bromofluorobenzene (S)	%				99	75-125	
Dibromofluoromethane (S)	%				99	75-125	
Toluene-d8 (S)	%				100	75-125	

SAMPLE DUPLICATE: 1366012

Parameter	Units	10217479001 Result	Dup Result	RPD	Max RPD	Qualifiers
1,1,1,2-Tetrachloroethane	ug/L	ND	ND		30	
1,1,1-Trichloroethane	ug/L	ND	ND		30	
1,1,2,2-Tetrachloroethane	ug/L	ND	ND		30	
1,1,2-Trichloroethane	ug/L	ND	ND		30	
1,1,2-Trichlorotrifluoroethane	ug/L	ND	ND		30	
1,1-Dichloroethane	ug/L	ND	ND		30	
1,1-Dichloroethene	ug/L	ND	ND		30	
1,1-Dichloropropene	ug/L	ND	ND		30	
1,2,3-Trichlorobenzene	ug/L	ND	ND		30	
1,2,3-Trichloropropane	ug/L	ND	ND		30	
1,2,4-Trichlorobenzene	ug/L	ND	ND		30	
1,2,4-Trimethylbenzene	ug/L	ND	ND		30	
1,2-Dibromo-3-chloropropane	ug/L	ND	ND		30	
1,2-Dibromoethane (EDB)	ug/L	ND	ND		30	
1,2-Dichlorobenzene	ug/L	ND	ND		30	
1,2-Dichloroethane	ug/L	ND	ND		30	
1,2-Dichloropropane	ug/L	ND	ND		30	
1,3,5-Trimethylbenzene	ug/L	ND	ND		30	
1,3-Dichlorobenzene	ug/L	ND	ND		30	
1,3-Dichloropropane	ug/L	ND	ND		30	
1,4-Dichlorobenzene	ug/L	ND	ND		30	
2,2-Dichloropropane	ug/L	ND	ND		30	
2-Butanone (MEK)	ug/L	ND	ND		30	
2-Chlorotoluene	ug/L	ND	ND		30	
2-Hexanone	ug/L	ND	ND		30	
4-Chlorotoluene	ug/L	ND	ND		30	
4-Methyl-2-pentanone (MIBK)	ug/L	ND	ND		30	
Acetone	ug/L	ND	ND		30	
Allyl chloride	ug/L	ND	ND		30	
Benzene	ug/L	ND	.11J		30	
Bromobenzene	ug/L	ND	ND		30	
Bromochloromethane	ug/L	ND	ND		30	
Bromodichloromethane	ug/L	ND	ND		30	
Bromoform	ug/L	ND	ND		30	
Bromomethane	ug/L	ND	ND		30	

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QUALITY CONTROL DATA

Project: 65677.00
Pace Project No.: 10217349

SAMPLE DUPLICATE: 1366012

Parameter	Units	10217479001 Result	Dup Result	RPD	Max RPD	Qualifiers
Carbon disulfide	ug/L	ND	ND		30	
Carbon tetrachloride	ug/L	ND	ND		30	
Chlorobenzene	ug/L	ND	ND		30	
Chloroethane	ug/L	ND	ND		30	
Chloroform	ug/L	ND	ND		30	
Chloromethane	ug/L	ND	ND		30	
cis-1,2-Dichloroethene	ug/L	ND	ND		30	
cis-1,3-Dichloropropene	ug/L	ND	ND		30	
Cyclohexane	ug/L	ND	ND		30	
Dibromochloromethane	ug/L	ND	ND		30	
Dibromomethane	ug/L	ND	ND		30	
Dichlorodifluoromethane	ug/L	ND	ND		30	
Dichlorofluoromethane	ug/L	ND	ND		30	
Diethyl ether (Ethyl ether)	ug/L	ND	ND		30	
Diisopropyl ether	ug/L	ND	ND		30	
Ethylbenzene	ug/L	ND	.16J		30	
Hexachloro-1,3-butadiene	ug/L	ND	ND		30	
Isopropylbenzene (Cumene)	ug/L	ND	ND		30	
m&p-Xylene	ug/L	ND	ND		30	
Methyl-tert-butyl ether	ug/L	ND	ND		30	
Methylene Chloride	ug/L	ND	ND		30	
n-Butylbenzene	ug/L	ND	ND		30	
n-Propylbenzene	ug/L	ND	ND		30	
Naphthalene	ug/L	ND	.075J		30	
o-Xylene	ug/L	ND	ND		30	
p-Isopropyltoluene	ug/L	ND	ND		30	
sec-Butylbenzene	ug/L	ND	ND		30	
Styrene	ug/L	ND	ND		30	
tert-Butylbenzene	ug/L	ND	ND		30	
Tetrachloroethene	ug/L	3.4	3.7	7	30	
Tetrahydrofuran	ug/L	ND	ND		30	
Toluene	ug/L	ND	.2J		30	
trans-1,2-Dichloroethene	ug/L	ND	ND		30	
trans-1,3-Dichloropropene	ug/L	ND	ND		30	
Trichloroethene	ug/L	ND	ND		30	
Trichlorofluoromethane	ug/L	ND	ND		30	
Vinyl chloride	ug/L	ND	ND		30	
Xylene (Total)	ug/L	ND	ND		30	
1,2-Dichloroethane-d4 (S)	%	105	105	.9		
4-Bromofluorobenzene (S)	%	100	100	.2		
Dibromofluoromethane (S)	%	107	107	.1		HS
Toluene-d8 (S)	%	100	100	.3		

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QUALITY CONTROL DATA

Project: 65677.00
Pace Project No.: 10217349

QC Batch: MSV/22671 Analysis Method: EPA 8260
QC Batch Method: EPA 8260 Analysis Description: 8260 MSV 465 W
Associated Lab Samples: 10217349005, 10217349006

METHOD BLANK: 1365064 Matrix: Water
Associated Lab Samples: 10217349005, 10217349006

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
1,1,1,2-Tetrachloroethane	ug/L	ND	1.0	01/16/13 11:19	
1,1,1-Trichloroethane	ug/L	ND	1.0	01/16/13 11:19	
1,1,2,2-Tetrachloroethane	ug/L	ND	1.0	01/16/13 11:19	
1,1,2-Trichloroethane	ug/L	ND	1.0	01/16/13 11:19	
1,1,2-Trichlorotrifluoroethane	ug/L	ND	1.0	01/16/13 11:19	
1,1-Dichloroethane	ug/L	ND	1.0	01/16/13 11:19	
1,1-Dichloroethene	ug/L	ND	1.0	01/16/13 11:19	
1,1-Dichloropropene	ug/L	ND	1.0	01/16/13 11:19	
1,2,3-Trichlorobenzene	ug/L	ND	1.0	01/16/13 11:19	
1,2,3-Trichloropropane	ug/L	ND	4.0	01/16/13 11:19	
1,2,4-Trichlorobenzene	ug/L	ND	1.0	01/16/13 11:19	
1,2,4-Trimethylbenzene	ug/L	ND	1.0	01/16/13 11:19	
1,2-Dibromo-3-chloropropane	ug/L	ND	4.0	01/16/13 11:19	
1,2-Dibromoethane (EDB)	ug/L	ND	1.0	01/16/13 11:19	
1,2-Dichlorobenzene	ug/L	ND	1.0	01/16/13 11:19	
1,2-Dichloroethane	ug/L	ND	1.0	01/16/13 11:19	
1,2-Dichloropropane	ug/L	ND	4.0	01/16/13 11:19	
1,3,5-Trimethylbenzene	ug/L	ND	1.0	01/16/13 11:19	
1,3-Dichlorobenzene	ug/L	ND	1.0	01/16/13 11:19	
1,3-Dichloropropane	ug/L	ND	1.0	01/16/13 11:19	
1,4-Dichlorobenzene	ug/L	ND	1.0	01/16/13 11:19	
2,2-Dichloropropane	ug/L	ND	4.0	01/16/13 11:19	
2-Butanone (MEK)	ug/L	ND	4.0	01/16/13 11:19	
2-Chlorotoluene	ug/L	ND	1.0	01/16/13 11:19	
2-Hexanone	ug/L	ND	4.0	01/16/13 11:19	
4-Chlorotoluene	ug/L	ND	1.0	01/16/13 11:19	
4-Methyl-2-pentanone (MIBK)	ug/L	ND	4.0	01/16/13 11:19	
Acetone	ug/L	ND	25.0	01/16/13 11:19	
Allyl chloride	ug/L	ND	4.0	01/16/13 11:19	
Benzene	ug/L	ND	1.0	01/16/13 11:19	
Bromobenzene	ug/L	ND	1.0	01/16/13 11:19	
Bromochloromethane	ug/L	ND	1.0	01/16/13 11:19	
Bromodichloromethane	ug/L	ND	1.0	01/16/13 11:19	
Bromoform	ug/L	ND	4.0	01/16/13 11:19	
Bromomethane	ug/L	ND	4.0	01/16/13 11:19	
Carbon disulfide	ug/L	ND	1.0	01/16/13 11:19	
Carbon tetrachloride	ug/L	ND	1.0	01/16/13 11:19	
Chlorobenzene	ug/L	ND	1.0	01/16/13 11:19	
Chloroethane	ug/L	ND	1.0	01/16/13 11:19	
Chloroform	ug/L	ND	1.0	01/16/13 11:19	
Chloromethane	ug/L	ND	4.0	01/16/13 11:19	
cis-1,2-Dichloroethene	ug/L	ND	1.0	01/16/13 11:19	
cis-1,3-Dichloropropene	ug/L	ND	4.0	01/16/13 11:19	

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QUALITY CONTROL DATA

Project: 65677.00
Pace Project No.: 10217349

METHOD BLANK: 1365064 Matrix: Water

Associated Lab Samples: 10217349005, 10217349006

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Cyclohexane	ug/L	ND	4.0	01/16/13 11:19	
Dibromochloromethane	ug/L	ND	1.0	01/16/13 11:19	
Dibromomethane	ug/L	ND	4.0	01/16/13 11:19	
Dichlorodifluoromethane	ug/L	ND	1.0	01/16/13 11:19	
Dichlorofluoromethane	ug/L	ND	1.0	01/16/13 11:19	
Diethyl ether (Ethyl ether)	ug/L	ND	4.0	01/16/13 11:19	
Diisopropyl ether	ug/L	ND	1.0	01/16/13 11:19	
Ethylbenzene	ug/L	ND	1.0	01/16/13 11:19	
Hexachloro-1,3-butadiene	ug/L	ND	5.0	01/16/13 11:19	
Isopropylbenzene (Cumene)	ug/L	ND	1.0	01/16/13 11:19	
m&p-Xylene	ug/L	ND	2.0	01/16/13 11:19	
Methyl-tert-butyl ether	ug/L	ND	1.0	01/16/13 11:19	
Methylene Chloride	ug/L	ND	4.0	01/16/13 11:19	
n-Butylbenzene	ug/L	ND	1.0	01/16/13 11:19	
n-Propylbenzene	ug/L	ND	1.0	01/16/13 11:19	
Naphthalene	ug/L	ND	4.0	01/16/13 11:19	
o-Xylene	ug/L	ND	1.0	01/16/13 11:19	
p-Isopropyltoluene	ug/L	ND	1.0	01/16/13 11:19	
sec-Butylbenzene	ug/L	ND	1.0	01/16/13 11:19	
Styrene	ug/L	ND	1.0	01/16/13 11:19	
tert-Butylbenzene	ug/L	ND	1.0	01/16/13 11:19	
Tetrachloroethene	ug/L	ND	1.0	01/16/13 11:19	
Tetrahydrofuran	ug/L	ND	10.0	01/16/13 11:19	
Toluene	ug/L	ND	1.0	01/16/13 11:19	
trans-1,2-Dichloroethene	ug/L	ND	1.0	01/16/13 11:19	
trans-1,3-Dichloropropene	ug/L	ND	4.0	01/16/13 11:19	
Trichloroethene	ug/L	ND	1.0	01/16/13 11:19	
Trichlorofluoromethane	ug/L	ND	1.0	01/16/13 11:19	
Vinyl chloride	ug/L	ND	0.40	01/16/13 11:19	
Xylene (Total)	ug/L	ND	3.0	01/16/13 11:19	
1,2-Dichloroethane-d4 (S)	%	98	75-125	01/16/13 11:19	
4-Bromofluorobenzene (S)	%	100	75-125	01/16/13 11:19	
Dibromofluoromethane (S)	%	100	75-125	01/16/13 11:19	
Toluene-d8 (S)	%	97	75-125	01/16/13 11:19	

LABORATORY CONTROL SAMPLE: 1365065

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
1,1,1,2-Tetrachloroethane	ug/L	50	44.5	89	75-125	
1,1,1-Trichloroethane	ug/L	50	44.2	88	75-126	
1,1,2,2-Tetrachloroethane	ug/L	50	41.3	83	75-125	
1,1,2-Trichloroethane	ug/L	50	43.6	87	75-125	
1,1,2-Trichlorotrifluoroethane	ug/L	50	43.9	88	51-139	
1,1-Dichloroethane	ug/L	50	45.1	90	75-125	
1,1-Dichloroethene	ug/L	50	43.9	88	71-126	

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QUALITY CONTROL DATA

Project: 65677.00
Pace Project No.: 10217349

LABORATORY CONTROL SAMPLE: 1365065

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
1,1-Dichloropropene	ug/L	50	44.1	88	74-125	
1,2,3-Trichlorobenzene	ug/L	50	42.7	85	75-125	
1,2,3-Trichloropropane	ug/L	50	41.6	83	75-125	
1,2,4-Trichlorobenzene	ug/L	50	42.9	86	75-125	
1,2,4-Trimethylbenzene	ug/L	50	42.9	86	75-125	
1,2-Dibromo-3-chloropropane	ug/L	50	42.1	84	73-125	
1,2-Dibromoethane (EDB)	ug/L	50	44.3	89	75-125	
1,2-Dichlorobenzene	ug/L	50	41.9	84	75-125	
1,2-Dichloroethane	ug/L	50	44.5	89	74-125	
1,2-Dichloropropane	ug/L	50	44.2	88	75-125	
1,3,5-Trimethylbenzene	ug/L	50	41.4	83	75-125	
1,3-Dichlorobenzene	ug/L	50	41.1	82	75-125	
1,3-Dichloropropane	ug/L	50	44.0	88	75-125	
1,4-Dichlorobenzene	ug/L	50	43.1	86	75-125	
2,2-Dichloropropane	ug/L	50	43.7	87	67-132	
2-Butanone (MEK)	ug/L	50	42.1	84	68-126	
2-Chlorotoluene	ug/L	50	39.8	80	74-125	
2-Hexanone	ug/L	50	38.5	77	70-125	
4-Chlorotoluene	ug/L	50	41.3	83	74-125	
4-Methyl-2-pentanone (MIBK)	ug/L	50	42.5	85	72-125	
Acetone	ug/L	125	112	90	69-132	
Allyl chloride	ug/L	50	46.5	93	74-125	
Benzene	ug/L	50	44.1	88	75-125	
Bromobenzene	ug/L	50	41.8	84	75-125	
Bromochloromethane	ug/L	50	46.5	93	75-125	
Bromodichloromethane	ug/L	50	44.0	88	75-125	
Bromoform	ug/L	50	44.5	89	75-126	
Bromomethane	ug/L	50	52.6	105	30-150	
Carbon disulfide	ug/L	50	46.1	92	66-126	
Carbon tetrachloride	ug/L	50	44.5	89	74-127	
Chlorobenzene	ug/L	50	42.3	85	75-125	
Chloroethane	ug/L	50	43.9	88	68-132	
Chloroform	ug/L	50	44.5	89	75-125	
Chloromethane	ug/L	50	44.0	88	61-129	
cis-1,2-Dichloroethene	ug/L	50	45.1	90	75-125	
cis-1,3-Dichloropropene	ug/L	50	45.2	90	75-125	
Cyclohexane	ug/L	50	42.6	85	64-126	
Dibromochloromethane	ug/L	50	44.9	90	75-125	
Dibromomethane	ug/L	50	43.6	87	75-125	
Dichlorodifluoromethane	ug/L	50	39.6	79	49-137	
Dichlorofluoromethane	ug/L	50	43.3	87	66-133	
Diethyl ether (Ethyl ether)	ug/L	50	45.0	90	75-125	
Diisopropyl ether	ug/L	50	44.3	89	74-125	
Ethylbenzene	ug/L	50	40.6	81	75-125	
Hexachloro-1,3-butadiene	ug/L	25	24.1	96	69-127	
Isopropylbenzene (Cumene)	ug/L	50	43.8	88	75-125	
m&p-Xylene	ug/L	100	84.2	84	75-125	
Methyl-tert-butyl ether	ug/L	50	44.6	89	74-126	

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QUALITY CONTROL DATA

Project: 65677.00
Pace Project No.: 10217349

LABORATORY CONTROL SAMPLE: 1365065

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Methylene Chloride	ug/L	50	43.6	87	75-125	
n-Butylbenzene	ug/L	50	43.4	87	72-126	
n-Propylbenzene	ug/L	50	42.6	85	73-125	
Naphthalene	ug/L	50	40.7	81	75-125	
o-Xylene	ug/L	50	43.8	88	75-125	
p-Isopropyltoluene	ug/L	50	43.7	87	74-125	
sec-Butylbenzene	ug/L	50	42.4	85	73-125	
Styrene	ug/L	50	43.1	86	75-125	
tert-Butylbenzene	ug/L	50	43.3	87	73-125	
Tetrachloroethene	ug/L	50	43.1	86	75-125	
Tetrahydrofuran	ug/L	500	429	86	71-125	
Toluene	ug/L	50	41.5	83	75-125	
trans-1,2-Dichloroethene	ug/L	50	44.9	90	74-125	
trans-1,3-Dichloropropene	ug/L	50	44.7	89	75-125	
Trichloroethene	ug/L	50	43.9	88	75-125	
Trichlorofluoromethane	ug/L	50	44.4	89	69-129	
Vinyl chloride	ug/L	50	44.4	89	70-128	
Xylene (Total)	ug/L	150	128	85	75-125	
1,2-Dichloroethane-d4 (S)	%			98	75-125	
4-Bromofluorobenzene (S)	%			97	75-125	
Dibromofluoromethane (S)	%			100	75-125	
Toluene-d8 (S)	%			99	75-125	

MATRIX SPIKE SAMPLE: 1365066

Parameter	Units	10217665003 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
1,1,1,2-Tetrachloroethane	ug/L	<0.36	50	47.8	96	75-125	
1,1,1-Trichloroethane	ug/L	<0.19	50	49.2	98	75-136	
1,1,2,2-Tetrachloroethane	ug/L	<0.097	50	43.7	87	66-131	
1,1,2-Trichloroethane	ug/L	<0.15	50	46.0	92	75-125	
1,1,2-Trichlorotrifluoroethane	ug/L	<0.18	50	62.2	124	75-150	
1,1-Dichloroethane	ug/L	<0.11	50	49.5	99	75-131	
1,1-Dichloroethene	ug/L	<0.19	50	50.6	101	75-138	
1,1-Dichloropropene	ug/L	<0.35	50	50.7	101	75-136	
1,2,3-Trichlorobenzene	ug/L	<0.13	50	41.8	84	75-125	
1,2,3-Trichloropropane	ug/L	<0.33	50	43.8	88	71-126	
1,2,4-Trichlorobenzene	ug/L	<0.25	50	43.8	88	75-125	
1,2,4-Trimethylbenzene	ug/L	<0.071	50	47.3	95	70-126	
1,2-Dibromo-3-chloropropane	ug/L	<0.62	50	41.4	83	69-127	
1,2-Dibromoethane (EDB)	ug/L	<0.091	50	45.6	91	75-125	
1,2-Dichlorobenzene	ug/L	<0.36	50	45.5	91	75-125	
1,2-Dichloroethane	ug/L	<0.37	50	47.8	96	74-128	
1,2-Dichloropropane	ug/L	<0.27	50	47.5	95	75-125	
1,3,5-Trimethylbenzene	ug/L	<0.087	50	45.7	91	72-126	
1,3-Dichlorobenzene	ug/L	<0.11	50	45.0	90	75-125	
1,3-Dichloropropane	ug/L	<0.081	50	46.0	92	75-125	
1,4-Dichlorobenzene	ug/L	<0.064	50	46.6	93	75-125	

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QUALITY CONTROL DATA

Project: 65677.00
Pace Project No.: 10217349

MATRIX SPIKE SAMPLE: 1365066

Parameter	Units	10217665003 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
2,2-Dichloropropane	ug/L	<0.15	50	49.6	99	71-143	
2-Butanone (MEK)	ug/L	<2.0	50	41.8	84	64-125	
2-Chlorotoluene	ug/L	<0.50	50	44.6	89	74-125	
2-Hexanone	ug/L	<2.0	50	36.9	74	67-125	
4-Chlorotoluene	ug/L	<0.068	50	46.7	93	75-125	
4-Methyl-2-pentanone (MIBK)	ug/L	<2.0	50	42.5	85	69-125	
Acetone	ug/L	<12.5	125	120	96	57-135	
Allyl chloride	ug/L	<1.8	50	51.8	104	73-134	
Benzene	ug/L	<0.062	50	48.2	96	70-135	
Bromobenzene	ug/L	<0.086	50	46.0	92	75-125	
Bromochloromethane	ug/L	<0.32	50	49.3	99	75-125	
Bromodichloromethane	ug/L	<0.11	50	47.3	95	75-125	
Bromoform	ug/L	<0.068	50	46.2	92	68-133	
Bromomethane	ug/L	<0.36	50	56.5	113	56-150	
Carbon disulfide	ug/L	<0.50	50	51.8	103	66-135	
Carbon tetrachloride	ug/L	<0.16	50	51.5	103	75-137	
Chlorobenzene	ug/L	<0.10	50	45.8	92	75-125	
Chloroethane	ug/L	<0.22	50	49.0	98	64-150	
Chloroform	ug/L	<0.14	50	47.6	95	75-127	
Chloromethane	ug/L	<0.41	50	48.3	97	65-140	
cis-1,2-Dichloroethene	ug/L	<0.085	50	48.5	97	75-129	
cis-1,3-Dichloropropene	ug/L	<0.090	50	48.7	97	75-125	
Cyclohexane	ug/L	<2.0	50	56.3	113	74-150	
Dibromochloromethane	ug/L	<0.10	50	47.0	94	75-125	
Dibromomethane	ug/L	<0.21	50	47.0	94	75-125	
Dichlorodifluoromethane	ug/L	<0.20	50	56.9	114	70-150	
Dichlorofluoromethane	ug/L	<0.11	50	48.7	97	69-142	
Diethyl ether (Ethyl ether)	ug/L	<2.0	50	47.0	94	75-125	
Diisopropyl ether	ug/L	<0.078	50	47.4	95	73-127	
Ethylbenzene	ug/L	<0.081	50	45.2	90	75-125	
Hexachloro-1,3-butadiene	ug/L	<0.19	25	23.3	93	75-135	
Isopropylbenzene (Cumene)	ug/L	<0.076	50	48.5	97	75-125	
m&p-Xylene	ug/L	<0.11	100	93.3	93	75-125	
Methyl-tert-butyl ether	ug/L	4.2	50	50.5	93	70-132	
Methylene Chloride	ug/L	<2.0	50	46.8	94	73-125	
n-Butylbenzene	ug/L	<0.15	50	47.5	95	75-130	
n-Propylbenzene	ug/L	<0.078	50	48.2	96	75-128	
Naphthalene	ug/L	0.13J	50	40.0	80	73-126	
o-Xylene	ug/L	<0.10	50	47.5	95	75-125	
p-Isopropyltoluene	ug/L	<0.086	50	47.8	96	75-125	
sec-Butylbenzene	ug/L	<0.10	50	47.4	95	75-126	
Styrene	ug/L	<0.060	50	47.0	94	52-137	
tert-Butylbenzene	ug/L	<0.10	50	48.2	96	75-125	
Tetrachloroethene	ug/L	<0.13	50	48.8	98	75-130	
Tetrahydrofuran	ug/L	<0.97	500	425	85	69-125	
Toluene	ug/L	<0.077	50	45.9	92	75-125	
trans-1,2-Dichloroethene	ug/L	<0.15	50	49.9	100	75-135	
trans-1,3-Dichloropropene	ug/L	<0.37	50	47.7	95	75-125	

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QUALITY CONTROL DATA

Project: 65677.00
Pace Project No.: 10217349

MATRIX SPIKE SAMPLE: 1365066

Parameter	Units	10217665003 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Trichloroethene	ug/L	<0.083	50	48.7	97	75-129	
Trichlorofluoromethane	ug/L	<0.13	50	57.0	114	75-150	
Vinyl chloride	ug/L	<0.16	50	51.9	104	75-147	
Xylene (Total)	ug/L	<0.22	150	141	94	75-125	
1,2-Dichloroethane-d4 (S)	%				98	75-125	
4-Bromofluorobenzene (S)	%				99	75-125	
Dibromofluoromethane (S)	%				99	75-125	
Toluene-d8 (S)	%				99	75-125	

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QUALITY CONTROL DATA

Project: 65677.00
Pace Project No.: 10217349

QC Batch: OEXT/20700 Analysis Method: WI MOD DRO
QC Batch Method: WI MOD DRO Analysis Description: WIDRO GCS
Associated Lab Samples: 10217349001, 10217349002, 10217349003, 10217349004, 10217349005, 10217349006, 10217349007

METHOD BLANK: 1363945 Matrix: Water
Associated Lab Samples: 10217349001, 10217349002, 10217349003, 10217349004, 10217349005, 10217349006, 10217349007

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Diesel Range Organics	ug/L	ND	100	01/16/13 08:05	
n-Triacontane (S)	%	87	50-150	01/16/13 08:05	

LABORATORY CONTROL SAMPLE & LCSD: 1363946 1363947

Parameter	Units	Spike Conc.	LCS Result	LCSD Result	LCS % Rec	LCSD % Rec	% Rec Limits	RPD	Max RPD	Qualifiers
Diesel Range Organics	ug/L	2000	1670	1730	83	86	75-115	3	20	
n-Triacontane (S)	%				88	92	50-150			

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QUALIFIERS

Project: 65677.00
Pace Project No.: 10217349

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to changes in sample preparation, dilution of the sample aliquot, or moisture content.

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.

PRL - Pace Reporting Limit.

RL - Reporting Limit.

S - Surrogate

1,2-Diphenylhydrazine (8270 listed analyte) decomposes to Azobenzene.

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

HS	Results are from sample aliquot taken from VOA vial with headspace (air bubble greater than 6 mm diameter).
S5	Surrogate recovery outside control limits due to matrix interferences (not confirmed by re-analysis).
T6	High boiling point hydrocarbons are present in the sample.
T7	Low boiling point hydrocarbons are present in the sample.

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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: 65677.00
Pace Project No.: 10217349

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
10217349001	**MW-11**	WI MOD DRO	OEXT/20700	WI MOD DRO	GCSV/10728
10217349002	**MW-6A**	WI MOD DRO	OEXT/20700	WI MOD DRO	GCSV/10728
10217349003	**MW-6**	WI MOD DRO	OEXT/20700	WI MOD DRO	GCSV/10728
10217349004	**MW-1**	WI MOD DRO	OEXT/20700	WI MOD DRO	GCSV/10728
10217349005	**MW-8**	WI MOD DRO	OEXT/20700	WI MOD DRO	GCSV/10728
10217349006	**MW-9**	WI MOD DRO	OEXT/20700	WI MOD DRO	GCSV/10728
10217349007	**MW-10**	WI MOD DRO	OEXT/20700	WI MOD DRO	GCSV/10728
10217349001	**MW-11**	WI MOD GRO	GCV/10279		
10217349002	**MW-6A**	WI MOD GRO	GCV/10279		
10217349003	**MW-6**	WI MOD GRO	GCV/10279		
10217349004	**MW-1**	WI MOD GRO	GCV/10279		
10217349005	**MW-8**	WI MOD GRO	GCV/10279		
10217349006	**MW-9**	WI MOD GRO	GCV/10279		
10217349007	**MW-10**	WI MOD GRO	GCV/10279		
10217349008	**TRIP BLANK**	WI MOD GRO	GCV/10279		
10217349001	**MW-11**	EPA 8260	MSV/22653		
10217349005	**MW-8**	EPA 8260	MSV/22671		
10217349006	**MW-9**	EPA 8260	MSV/22671		
10217349007	**MW-10**	EPA 8260	MSV/22653		
10217349008	**TRIP BLANK**	EPA 8260	MSV/22653		

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1129,1152

CHAIN-OF-CUSTODY / Analytical Request Document

The Chain-of-Custody is a LEGAL DOCUMENT. All relevant fields must be completed accurately.

10217349

Page: of

1578186

Section A Required Client Information:	Section B Required Project Information:	Section C Invoice Information:
Company: Liesch Associates	Report To: Dan Larson	Attention: Accting
Address: 13400 15th Ave. N	Copy To:	Company Name:
Plymouth, MN		Address:
Email To: dan.larson@lieschcom	Purchase Order No.:	Pace Quote Reference:
Phone: 763-479-3100 Fax: 763-479-3101	Project Name:	Pace Project Manager:
Requested Due Date/TAT:	Project Number: 05677.00	Pace Profile #:

REGULATORY AGENCY: ☐ NPDES ☐ GROUND WATER ☐ DRINKING WATER ☐ UST ☐ RCRA ☐ OTHER

Site Location STATE:

Section D Required Client Information

SAMPLE ID
(A-Z, 0-9 / ,-)
Sample IDs MUST BE UNIQUE

Matrix Codes (MATRIX / CODE): Drinking Water DW; Water WT; Waste Water WW; Product P; Soil/Solid SL; Oil OL; Wipe WP; Air AR; Tissue TS; Other OT

ITEM #	SAMPLE ID	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED: COMPOSITE START DATE	COMPOSITE START TIME	COMPOSITE END/GRAB DATE	COMPOSITE END/GRAB TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Preservatives: Unpreserved	H_2SO_4	HNO_3	HCl	NaOH	$Na_2S_2O_3$	Methanol	Other	Analysis Test Y/N	Requested Analysis Filtered (Y/N): Cond	TDS	VOCs	624/8260 VOCs	Residual Chlorine (Y/N)	Pace Project No./ Lab I.D.
1	MW-11	WT	G	1/10	9:00				8				5						3	2	3				10217349001
2	MW-GA	WT	G	1/10	1:30				5				5							2		3			002
3	MW-6	WT	G	1/10	1:45				5				5							2		3			003
4	MW-1	WT	G	1/10	2:15				5				5							2		3			004
5	MW-8	WT	G	1/10	3:00				9				5						3	2	3				005
6	MW-9	WT	G	1/10	3:15				8				5						3	2	3				006
7	MW-10	WT	G	1/10	4:00				8				5						3	2	3				007
8																									
9																									
10																									
11																									
12																									

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS: Temp In °C	Received on Ice (Y/N)	Custody Sealed Cooler (Y/N)	Samples Intact (Y/N)
	Liesch - Katrina	1/11/12	9:20am	(S) pace	1-11-12	9:20	3.2	-4	N	-7
							5.2			

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER: KATRINA M. SHAW

SIGNATURE of SAMPLER: Katrina Shaw DATE Signed (MM/DD/YY): 1/11/12

ORIGINAL

*Important Note: By signing this form you are accepting Pace's NET 30 day payment terms and agreeing to late charges of 1.5% per month for any invoices not paid within 30 days.

Pace Analytical®	Document Name: Sample Condition Upon Receipt Form	Document Revised: 13Nov2012 Page 1 of 1
	Document No.: F-MN-L-213-rev.05	Issuing Authority: Pace Minnesota Quality Office

Sample Condition Upon Receipt

Client Name: Liesch

Project #: WO#: 10217349

10217349

Courier: ☐ Fed Ex ☐ UPS ☐ USPS ☑ 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 ☐ None ☐ Other: _____ **Temp Blank?** ☑ Yes ☐ No

Thermometer Used: ☑ 688A912167504 ☐ 80512447 **Type of Ice:** ☑ Wet ☐ Blue ☐ None ☐ Samples on ice, cooling process has begun

Cooler Temp Read (°C): 3.0,3.0 **Cooler Temp Corrected (°C):** 3.2,3.2 **Biological Tissue Frozen?** ☐ Yes ☐ No

Temp should be above freezing to 6°C

Date and Initials of Person Examining Contents: CJ 1.11.13

				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.
Filtered Volume Received for Dissolved Tests?	☐ Yes	☐ No	☑ N/A	11.
Sample Labels Match COC? -Includes Date/Time/ID/Analysis Matrix: WT	☑ Yes	☐ No	☐ N/A	12. No TD on COC but 4 are present
All containers needing acid/base preservation have been checked? Noncompliances are noted in 13.	☐ Yes	☐ No	☑ N/A	13. ☐ HNO_3 ☐ H_2SO_4 ☐ NaOH ☐ HCl
All containers needing preservation are found to be in compliance with EPA recommendation? (HNO_3, H_2SO_4, HCl<2; NaOH>12)	☐ Yes	☐ No	☑ N/A	Sample #
Exceptions: VOA, Coliform, TOC, Oil and Grease, WI-DRO (water)	☑ Yes	☐ No		Initial when completed: CJ 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	NTD
Pace Trip Blank Lot # (If purchased): 0103131				

CLIENT NOTIFICATION/RESOLUTION **Field Data Required?** ☐ Yes ☐ No

Person Contacted: _____ Date/Time: _____

Comments/Resolution: _____

Project Manager Review: CMO **Date:** 1-11-13

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)

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D-1

December 18, 2012

Dan Larson
Liesch Associates, Inc.
13400 15th Avenue North
Plymouth, MN 55441

RE: Project: Mille Lacs Oil Cambridge 65677
Pace Project No.: 10215221

Dear Dan Larson:
Enclosed are the analytical results for sample(s) received by the laboratory on December 13, 2012. The results relate only to the samples included in this report. Results reported herein conform to the most current TNI 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,

Carol Davy

Carol Davy

carol.davy@pacelabs.com
Project Manager

Enclosures

Pace Analytical Services, Inc.
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CERTIFICATIONS

Project: Mille Lacs Oil Cambridge 65677
Pace Project No.: 10215221

Minnesota Certification IDs
1700 Elm Street SE Suite 200, Minneapolis, MN 55414
A2LA Certification #: 2926.01
Alaska Certification #: UST-078
Alaska Certification #MN00064
Arizona Certification #: AZ-0014
Arkansas Certification #: 88-0680
California Certification #: 01155CA
Colorado Certification #Pace
Connecticut Certification #: PH-0256
EPA Region 8 Certification #: Pace
Florida/NELAP Certification #: E87605
Georgia Certification #: 959
Hawaii Certification #Pace
Idaho Certification #: MN00064
Illinois Certification #: 200011
Kansas Certification #: E-10167
Louisiana Certification #: 03086
Louisiana Certification #: LA080009
Maine Certification #: 2007029
Maryland Certification #: 322
Michigan DEQ Certification #: 9909
Minnesota Certification #: 027-053-137
Mississippi Certification #: Pace
Montana Certification #: MT CERT0092
Nebraska Certification #: Pace
Nevada Certification #: MN_00064
New Jersey Certification #: MN-002
New York Certification #: 11647
North Carolina Certification #: 530
North Dakota Certification #: R-036
North Dakota Certification #: R-036A
Ohio VAP Certification #: CL101
Oklahoma Certification #: 9507
Oregon Certification #: MN200001
Oregon Certification #: MN300001
Pennsylvania Certification #: 68-00563
Puerto Rico Certification
Tennessee Certification #: 02818
Texas Certification #: T104704192
Utah Certification #: MN00064
Virginia/DCLS Certification #: 002521
Virginia/VELAP Certification #: 460163
Washington Certification #: C754
West Virginia Certification #: 382
Wisconsin Certification #: 999407970

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SAMPLE SUMMARY

Project: Mille Lacs Oil Cambridge 65677
Pace Project No.: 10215221

Lab ID	Sample ID	Matrix	Date Collected	Date Received
10215221001	**D-1**	Solid	12/12/12 16:00	12/13/12 14:30
10215221002	**Trip Blank**	Solid		12/13/12 14:30

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SAMPLE ANALYTE COUNT

Project: Mille Lacs Oil Cambridge 65677
Pace Project No.: 10215221

Lab ID	Sample ID	Method	Analysts	Analytes Reported
10215221001	**D-1**	WI MOD DRO	JRH	2
		WI MOD GRO	KT1	6
		EPA 6010	IP	1
		ASTM D2974	JDL	1
		EPA 8260	SE	5
10215221002	**Trip Blank**	WI MOD GRO	KT1	6

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ANALYTICAL RESULTS

Project: Mille Lacs Oil Cambridge 65677
Pace Project No.: 10215221

Sample: D-1 **Lab ID: 10215221001** Collected: 12/12/12 16:00 Received: 12/13/12 14:30 Matrix: Solid

Results reported on a "dry-weight" basis

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
WIDRO GCS	Analytical Method: WI MOD DRO Preparation Method: WI MOD DRO								
Diesel Range Organics	**13.3**	mg/kg	9.4	1.0	1	12/14/12 12:46	12/16/12 14:29		
Surrogates									
n-Triacontane (S)	77	%	50-150		1	12/14/12 12:46	12/16/12 14:29		
WIGRO GCV	Analytical Method: WI MOD GRO Preparation Method: TPH GRO/PVOC WI ext.								
Benzene	ND	mg/kg	0.056	0.0067	1	12/17/12 10:18	12/17/12 19:43	71-43-2	
Ethylbenzene	**0.43**	mg/kg	0.056	0.0090	1	12/17/12 10:18	12/17/12 19:43	100-41-4	
Gasoline Range Organics	**52.0**	mg/kg	5.6	0.55	1	12/17/12 10:18	12/17/12 19:43		
Toluene	**0.28**	mg/kg	0.056	0.0067	1	12/17/12 10:18	12/17/12 19:43	108-88-3	
Xylene (Total)	**2.0**	mg/kg	0.17	0.018	1	12/17/12 10:18	12/17/12 19:43	1330-20-7	
Surrogates									
a,a,a-Trifluorotoluene (S)	79	%	80-125		1	12/17/12 10:18	12/17/12 19:43	98-08-8	1M
6010 MET ICP	Analytical Method: EPA 6010 Preparation Method: EPA 3050								
Lead	**2.6**	mg/kg	0.26	0.044	1	12/14/12 09:23	12/18/12 14:43	7439-92-1	
Dry Weight	Analytical Method: ASTM D2974								
Percent Moisture	**12.5**	%	0.10	0.10	1		12/14/12 00:00		
8260 MSV TCLP	Analytical Method: EPA 8260 Leachate Method/Date: EPA 1311; 12/15/12 08:43								
Benzene	ND	ug/L	50.0	4.0	1		12/18/12 02:29	71-43-2	
Surrogates									
Dibromofluoromethane (S)	102	%	75-125		1		12/18/12 02:29	1868-53-7	
1,2-Dichloroethane-d4 (S)	93	%	75-125		1		12/18/12 02:29	17060-07-0	
Toluene-d8 (S)	101	%	75-125		1		12/18/12 02:29	2037-26-5	
4-Bromofluorobenzene (S)	99	%	75-125		1		12/18/12 02:29	460-00-4	

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ANALYTICAL RESULTS

Project: Mille Lacs Oil Cambridge 65677
Pace Project No.: 10215221

Sample: Trip Blank **Lab ID: 10215221002** Collected: Received: 12/13/12 14:30 Matrix: Solid

Results reported on a "wet-weight" basis

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
WIGRO GCV	Analytical Method: WI MOD GRO Preparation Method: TPH GRO/PVOC WI ext.								
Benzene	ND	mg/kg	0.050	0.0060	1	12/17/12 10:18	12/17/12 16:17	71-43-2	
Ethylbenzene	ND	mg/kg	0.050	0.0080	1	12/17/12 10:18	12/17/12 16:17	100-41-4	
Gasoline Range Organics	ND	mg/kg	5.0	0.49	1	12/17/12 10:18	12/17/12 16:17		
Toluene	ND	mg/kg	0.050	0.0060	1	12/17/12 10:18	12/17/12 16:17	108-88-3	
Xylene (Total)	ND	mg/kg	0.15	0.016	1	12/17/12 10:18	12/17/12 16:17	1330-20-7	
Surrogates									
a,a,a-Trifluorotoluene (S)	103	%	80-125		1	12/17/12 10:18	12/17/12 16:17	98-08-8	

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QUALITY CONTROL DATA

Project: Mille Lacs Oil Cambridge 65677
Pace Project No.: 10215221

QC Batch: GCV/10200 Analysis Method: WI MOD GRO
QC Batch Method: TPH GRO/PVOC WI ext. Analysis Description: WIGRO Solid GCV
Associated Lab Samples: 10215221001, 10215221002

METHOD BLANK: 1352516 Matrix: Solid
Associated Lab Samples: 10215221001, 10215221002

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Benzene	mg/kg	ND	0.050	12/17/12 15:35	
Ethylbenzene	mg/kg	ND	0.050	12/17/12 15:35	
Gasoline Range Organics	mg/kg	ND	5.0	12/17/12 15:35	
Toluene	mg/kg	ND	0.050	12/17/12 15:35	
Xylene (Total)	mg/kg	ND	0.15	12/17/12 15:35	
a,a,a-Trifluorotoluene (S)	%	100	80-125	12/17/12 15:35	

LABORATORY CONTROL SAMPLE & LCSD: 1352517 1352518

Parameter	Units	Spike Conc.	LCS Result	LCSD Result	LCS % Rec	LCSD % Rec	% Rec Limits	RPD	Max RPD	Qualifiers
Benzene	mg/kg	5	5.0	5.7	101	115	80-120	13	20	
Ethylbenzene	mg/kg	5	5.0	5.5	99	111	80-120	11	20	
Gasoline Range Organics	mg/kg	50	54.0	57.3	108	115	80-120	6	20	
Toluene	mg/kg	5	5.0	5.7	100	113	80-120	12	20	
Xylene (Total)	mg/kg	15	14.7	16.4	98	110	80-120	11	20	
a,a,a-Trifluorotoluene (S)	%				101	101	80-125			

MATRIX SPIKE SAMPLE: 1352519

Parameter	Units	10215210004 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Benzene	mg/kg	ND	6.6	8.8	134	80-120	M1
Ethylbenzene	mg/kg	ND	6.6	8.6	131	80-120	M1
Gasoline Range Organics	mg/kg	ND	66	89.6	136	80-120	M1
Toluene	mg/kg	ND	6.6	8.8	133	80-120	M1
Xylene (Total)	mg/kg	ND	19.8	25.6	129	80-120	ES
a,a,a-Trifluorotoluene (S)	%				100	80-125	

SAMPLE DUPLICATE: 1352520

Parameter	Units	10215210005 Result	Dup Result	RPD	Max RPD	Qualifiers
Benzene	mg/kg	ND	ND		20	
Ethylbenzene	mg/kg	ND	ND		20	
Gasoline Range Organics	mg/kg	ND	ND		20	
Toluene	mg/kg	ND	ND		20	
Xylene (Total)	mg/kg	ND	ND		20	
a,a,a-Trifluorotoluene (S)	%	101	102	4		

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414
(612)607-1700

QUALITY CONTROL DATA

Project: Mille Lacs Oil Cambridge 65677
Pace Project No.: 10215221

QC Batch: MPRP/36898
QC Batch Method: EPA 3050
Analysis Method: EPA 6010
Analysis Description: 6010 MET
Associated Lab Samples: 10215221001

METHOD BLANK: 1351094 Matrix: Solid
Associated Lab Samples: 10215221001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Lead	mg/kg	ND	0.29	12/18/12 13:29	

LABORATORY CONTROL SAMPLE: 1351095

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Lead	mg/kg	46.3	40.8	88	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1351096 1351097

Parameter	Units	10215049001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Lead	mg/kg	8.9	51.9	53.9	47.9	51.1	75	78	75-125	7	30	

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QUALITY CONTROL DATA

Project: Mille Lacs Oil Cambridge 65677
Pace Project No.: 10215221

QC Batch: MPRP/36897
QC Batch Method: ASTM D2974
Analysis Method: ASTM D2974
Analysis Description: Dry Weight/Percent Moisture
Associated Lab Samples: 10215221001

SAMPLE DUPLICATE: 1351056

Parameter	Units	10215248008 Result	Dup Result	RPD	Max RPD	Qualifiers
Percent Moisture	%	14.4	14.3	.5	30	

SAMPLE DUPLICATE: 1351139

Parameter	Units	10215163005 Result	Dup Result	RPD	Max RPD	Qualifiers
Percent Moisture	%	11.3	11.3	.2	30	

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QUALITY CONTROL DATA

Project: Mille Lacs Oil Cambridge 65677
Pace Project No.: 10215221

QC Batch: MSV/22475
QC Batch Method: EPA 8260
Analysis Method: EPA 8260
Analysis Description: 8260 MSV TCLP
Associated Lab Samples: 10215221001

METHOD BLANK: 1352766 Matrix: Water
Associated Lab Samples: 10215221001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Benzene	ug/L	ND	50.0	12/18/12 01:44	
1,2-Dichloroethane-d4 (S)	%	94	75-125	12/18/12 01:44	
4-Bromofluorobenzene (S)	%	98	75-125	12/18/12 01:44	
Dibromofluoromethane (S)	%	102	75-125	12/18/12 01:44	
Toluene-d8 (S)	%	100	75-125	12/18/12 01:44	

LABORATORY CONTROL SAMPLE: 1352767

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Benzene	ug/L	2500	2290	92	75-134	
1,2-Dichloroethane-d4 (S)	%			92	75-125	
4-Bromofluorobenzene (S)	%			95	75-125	
Dibromofluoromethane (S)	%			103	75-125	
Toluene-d8 (S)	%			100	75-125	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1352768 1352769

Parameter	Units	10214910001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Benzene	ug/L	ND	2500	2500	2200	2380	88	95	58-137	8	30	
1,2-Dichloroethane-d4 (S)	%						91	91	75-125			
4-Bromofluorobenzene (S)	%						97	98	75-125			
Dibromofluoromethane (S)	%						102	103	75-125			
Toluene-d8 (S)	%						101	101	75-125			

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QUALITY CONTROL DATA

Project: Mille Lacs Oil Cambridge 65677
Pace Project No.: 10215221

QC Batch: OEXT/20523 Analysis Method: WI MOD DRO
QC Batch Method: WI MOD DRO Analysis Description: WIDRO GCS
Associated Lab Samples: 10215221001

METHOD BLANK: 1351463 Matrix: Solid
Associated Lab Samples: 10215221001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Diesel Range Organics	mg/kg	ND	10.0	12/16/12 12:18	
n-Triacontane (S)	%	73	50-150	12/16/12 12:18	

LABORATORY CONTROL SAMPLE & LCSD: 1351464 1351465

Parameter	Units	Spike Conc.	LCS Result	LCSD Result	LCS % Rec	LCSD % Rec	% Rec Limits	RPD	Max RPD	Qualifiers
Diesel Range Organics	mg/kg	80	56.7	59.8	71	75	70-120	5	20	
n-Triacontane (S)	%				78	77	50-150			

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414
(612)607-1700

QUALIFIERS

Project: Mille Lacs Oil Cambridge 65677
Pace Project No.: 10215221

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to changes in sample preparation, dilution of the sample aliquot, or moisture content.

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.

PRL - Pace Reporting Limit.

RL - Reporting Limit.

S - Surrogate

1,2-Diphenylhydrazine (8270 listed analyte) decomposes to Azobenzene.

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

1M	Surrogate recovery outside laboratory control limits due to matrix interferences.
ES	The reported result is estimated because one or more of the constituent results are qualified as such.
M1	Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.

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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: Mille Lacs Oil Cambridge 65677
Pace Project No.: 10215221

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
10215221001	**D-1**	WI MOD DRO	OEXT/20523	WI MOD DRO	GCSV/10609
10215221001	**D-1**	TPH GRO/PVOC WI ext.	GCV/10200	WI MOD GRO	GCV/10201
10215221002	**Trip Blank**	TPH GRO/PVOC WI ext.	GCV/10200	WI MOD GRO	GCV/10201
10215221001	**D-1**	EPA 3050	MPRP/36898	EPA 6010	ICP/15209
10215221001	**D-1**	ASTM D2974	MPRP/36897		
10215221001	**D-1**	EPA 8260	MSV/22475		

Report Date: 18-Dec-2012 10:39

Pace Analytical Services

WIGRO GASOLINE RANGE ORGANICS

Data file : \\192.168.10.12\chem\10gcv3.i\121712a-2.b\G1-35219.d

Lab Smp Id: 10215221001

Inj Date : 17-DEC-2012 19:43

Operator : KT1 Inst ID: 10gcv3.i

Smp Info : 10215221001

Misc Info : 10201

Comment : WIGRO GASOLINE RANGE ORGANICS

Method : \\192.168.10.12\chem\10gcv3.i\121712a-2.b\G312-GROsoil-340.m

Meth Date : 18-Dec-2012 10:39 10gcv3.i Quant Type: ESTD

Cal Date : 05-DEC-2012 20:10 Cal File: G1-34027.d

Als bottle: 1

Dil Factor: 1.00000

Integrator: HP Genie Compound Sublist: all.sub

Target Version: 4.14

Processing Host: SEMIVOLGCMS

Concentration Formula: Amt * DF * Uf * Vt / (Va * Ws * (100-M)/100) * CpndVariab

Name	Value	Description

DF	1.000	Dilution Factor
Uf	5.000	Unit correction factor
Vt	10.000	Total volume of methanol extract (mL)
Ws	10.000	Weight of the sample extracted (g)
M	0.00000	% Moisture
Va	100.000	Volume of the aliquot of methanol added(

Cpnd Variable Local Compound Variable

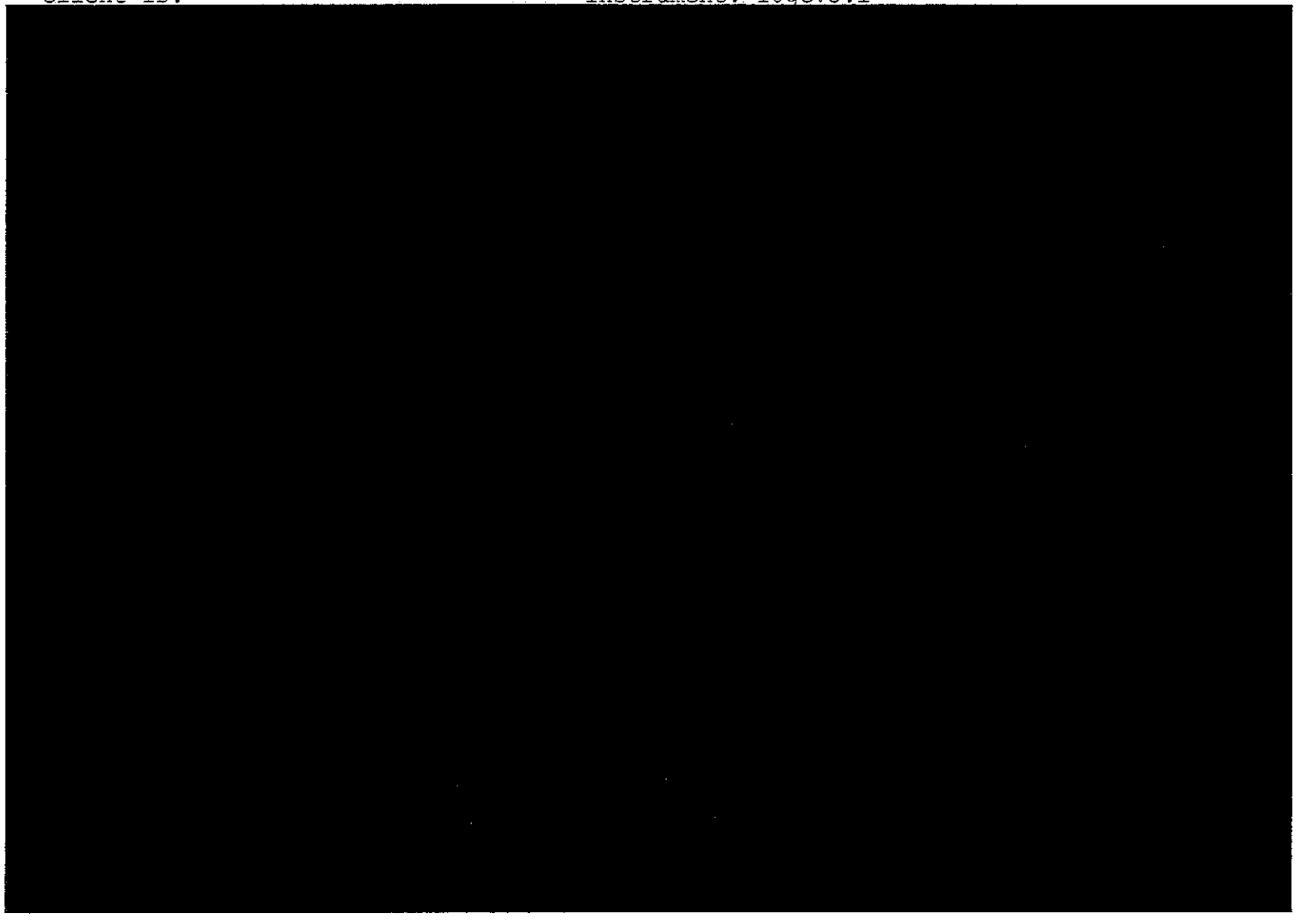
					CONCENTRATIONS	
					ON-COLUMN	FINAL
Compounds	RT	EXP RT	DLT RT	RESPONSE	(ug/L)	(mg/Kg)
S 5 GRO	2.250	-13.750		10262517	927.970	46.40

Data File: \\192.168.10.12\chem\10gcv3.i\121712a-2.b/G1-35219.d

Report Date: 12/18/2012

Sample ID: 10215221001

Client ID: Instrument: 10gcv3.i



Report Date: 16-Dec-2012 14:45

Pace Analytical Services

WI Dept of Nat. Resources- WIDRO

Data file : \\192.168.10.12\chem\10gcs9.i\121612dro.b\121612000024.D

Lab Smp Id: 10215221001

Inj Date : 16-DEC-2012 14:29

Operator : JRH Inst ID: 10gcs9.i

Smp Info : 10215221001

Misc Info : 10609

Comment : C10-C28 DRO

Method : \\192.168.10.12\chem\10gcs9.i\121612dro.b\WDRO9-120312.m

Meth Date : 16-Dec-2012 13:26 jheinecke Quant Type: ESTD

Cal Date : 03-DEC-2012 17:33 Cal File: 120312000050.D

Als bottle: 1

Dil Factor: 1.00000

Integrator: HP Genie Compound Sublist: dro.sub

Target Version: 4.14

Processing Host: 10VOA3

Concentration Formula: Amt * DF * Uf * Vt/(Ws * Vi*(100-M)/100) * CpndVariable

Name	Value	Description

DF	1.000	Dilution Factor
Uf	1.000	Correction factor
Vt	1.000	Volume of final extract (mL)
Ws	25.000	Weight of sample extracted (g)
Vi	1.000	Volume injected (uL)
M	0.00000	% Moisture

Cpnd Variable Local Compound Variable

						CONCENTRATIONS	
						ON-COLUMN	FINAL
Compounds		RT	EXP RT	DLT RT	RESPONSE	(ug/mL)	(mg/kg)
S	1 Diesel Range Organics	0.880-2.040			134608389	355.178	14.2
$	2 n-Triacontane (S)	2.102	2.100	0.002	25678973	95.8227	3.83(aM)

QC Flag Legend

a - Target compound detected but, quantitated amount Below Limit Of Quantitation(BLOQ).

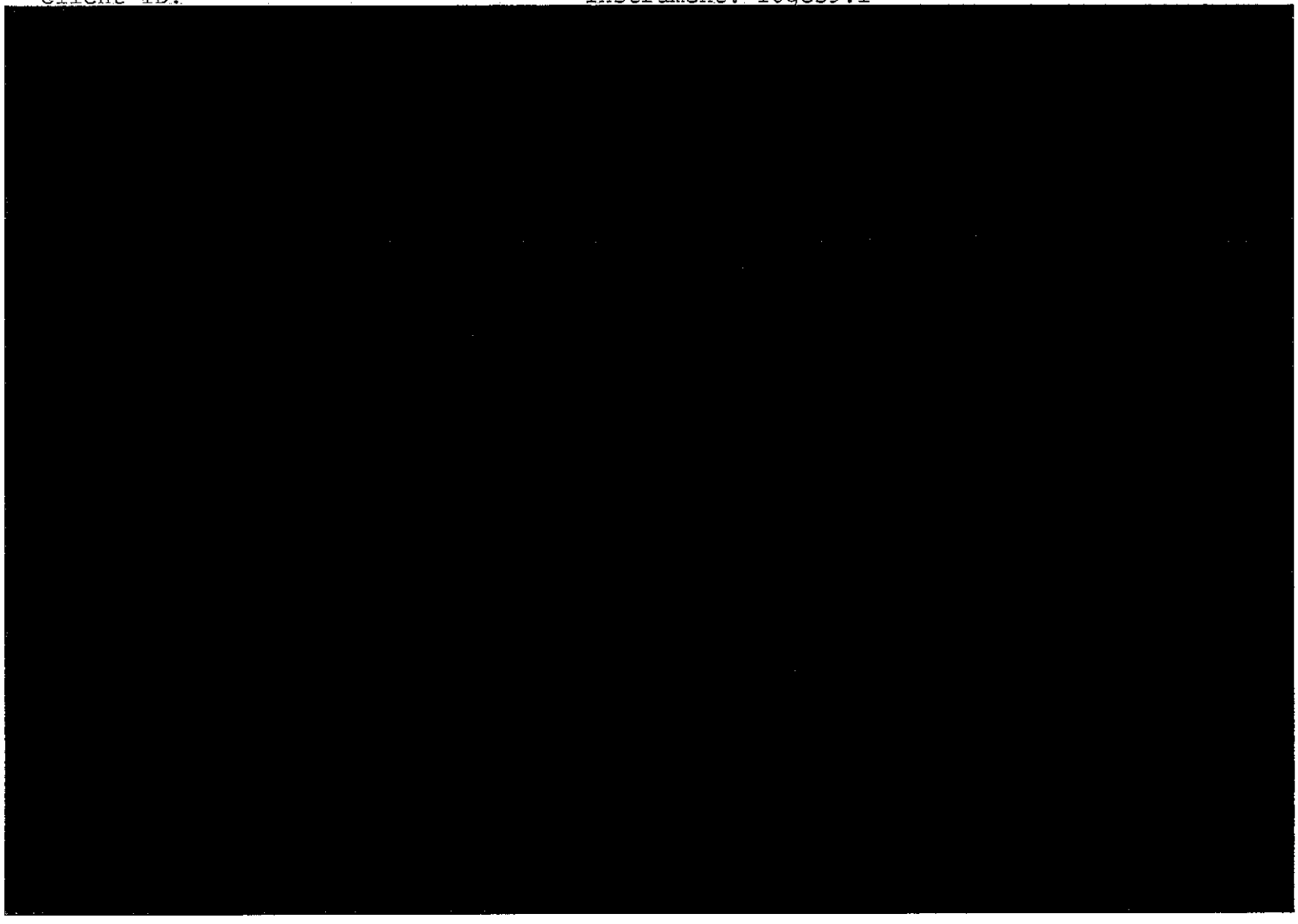
M - Compound response manually integrated.

Data File: \\192.168.10.12\chem\10gcs9.i\121612dro.b/121612000024.D

Report Date: 12/16/2012

Sample ID: 10215221001

Client ID: Instrument: 10gcs9.i



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RUSH (2) 12-13-12

CHAIN-OF-CUSTODY / Analytical Request Document

The Chain-of-Custody is a LEGAL DOCUMENT. All relevant fields must be completed accurately.

1021521

Page: 1 of 1

1546858

20 of 21

Section A Required Client Information:	Section B Required Project Information:	Section C Invoice Information:
Company: Liesch	Report To: Dan Lawson	Attention:
Address: Plymouth, MN	Copy To: Aaron Benker	Company Name:
Email To:	Purchase Order No.:	Address:
Phone: 612 449 1977 Fax:	Project Name: Mills Lacs Oil - Cambridge	Pace Quote Reference:
Requested Due Date/TAT: 5 day	Project Number: 65677	Pace Project Manager:
		Pace Profile #:

REGULATORY AGENCY: ☐ NPDES ☐ GROUND WATER ☐ DRINKING WATER ☒ UST ☐ RCRA ☐ OTHER

Site Location STATE: MN

Section D Required Client Information

SAMPLE ID (A-Z, 0-9 / ,-) Sample IDs MUST BE UNIQUE

Matrix Codes — MATRIX / CODE: Drinking Water DW; Water WT; Waste Water WW; Product P; Soil/Solid SL; Oil OL; Wipe WP; Air AR; Tissue TS; Other OT

ITEM #	SAMPLE ID	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED: COMPOSITE START DATE	COMPOSITE START TIME	COMPOSITE END/GRAB DATE	COMPOSITE END/GRAB TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Preservatives: Unpreserved	H_2SO_4	HNO_3	HCl	NaOH	$Na_2S_2O_3$	Methanol	Other	Analysis Test Y/N	Requested Analysis Filtered (Y/N): DRO	GRO	BTEX	PCLP+ BTEX Total Lead	Residual Chlorine (Y/N)	Pace Project No./ Lab I.D.
1	D-1	SG				12/12/12	1600		9	5						4			X	X	X	X			001
2																									
3																									
4																									
5																									
6																									
7																									
8																									
9																									
10																									
11																									
12																									

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS: Temp in °C	Received on Ice (Y/N)	Custody Sealed Cooler (Y/N)	Samples Intact (Y/N)
Hold Soil for Possible Additional Analysis	Dan Lawson/Liesch	12/13/12	1430	OL POCO	12-13-12	1430	4.7	Y	N	Y

ORIGINAL

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER: Dan Lawson

SIGNATURE of SAMPLER: Dan Lawson

DATE Signed (MM/DD/YY): 12/12/12

*Important Note: By signing this form you are accepting Pace's NET 30 day payment terms and agreeing to late charges of 1.5% per month for any invoices not paid within 30 days.

F-ALL-Q-020rev.07, 15-May-2007

Pace Analytical®	Document Name: Sample Condition Upon Receipt Form	Document Revised: 13Nov2012 Page 1 of 1
	Document No.: F-MN-L-213-rev.05	Issuing Authority: Pace Minnesota Quality Office

Sample Condition Upon Receipt

Client Name: Liesch

Project #: WO#: 10215221

10215221

Courier: ☐Fed Ex ☐UPS ☐USPS ☑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 ☐None ☐Other: **Temp Blank?** ☑Yes ☐No

Thermometer Used: ☑B88A912167504 ☐80512447 **Type of Ice:** ☑Wet ☐Blue ☐None ☐Samples on Ice, cooling process has begun

Cooler Temp Read (°C): 1.8 **Cooler Temp Corrected (°C):** 1.7 **Biological Tissue Frozen?** ☐Yes ☐No

Temp should be above freezing to 6°C

Date and Initials of Person Examining Contents: CS 12-13-12

				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.
Filtered Volume Received for Dissolved Tests?	☐Yes	☐No	☑N/A	11.
Sample Labels Match COC? -Includes Date/Time/ID/Analysis Matrix: SL	☑Yes	☐No	☐N/A	12. TB not on COC
All containers needing acid/base preservation have been checked? Noncompliances are noted in 13.	☐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>12)	☐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. CS 12-13-12
Trip Blank Custody Seals Present?	☑Yes	☐No	☑N/A	
Pace Trip Blank Lot # (if purchased): 0608412-3				

CLIENT NOTIFICATION/RESOLUTION **Field Data Required?** ☐Yes ☐No

Person Contacted: Dan Lawson Date/Time: 12-13-12

Comments/Resolution:

Print on TCLP-BETX. TCLP-Benzene only per Dan Lawson 12-13-12 CAD

Project Manager Review: CMD **Date:** 12-13-12

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)

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414
(612)607-1700

May 13, 2013

Dan Larson
Liesch Associates, Inc.
13400 15th Avenue North
Plymouth, MN 55441

RE: Project: MP027481 MILLE LACS OIL-CAMBRI
Pace Project No.: 10227458

Dear Dan Larson:
Enclosed are the analytical results for sample(s) received by the laboratory on May 03, 2013. The results relate only to the samples included in this report. Results reported herein conform to the most current TNI 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,

Carol Davy

carol.davy@pacelabs.com
Project Manager

Enclosures

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414
(612)607-1700

CERTIFICATIONS

Project: MP027481 MILLE LACS OIL-CAMBRI
Pace Project No.: 10227458

Minnesota Certification IDs
1700 Elm Street SE Suite 200, Minneapolis, MN 55414
A2LA Certification #: 2926.01
Alaska Certification #: UST-078
Alaska Certification #MN00064
Arizona Certification #: AZ-0014
Arkansas Certification #: 88-0680
California Certification #: 01155CA
Colorado Certification #Pace
Connecticut Certification #: PH-0256
EPA Region 8 Certification #: Pace
Florida/NELAP Certification #: E87605
Georgia Certification #: 959
Hawaii Certification #Pace
Idaho Certification #: MN00064
Illinois Certification #: 200011
Kansas Certification #: E-10167
Louisiana Certification #: 03086
Louisiana Certification #: LA080009
Maine Certification #: 2007029
Maryland Certification #: 322
Michigan DEQ Certification #: 9909
Minnesota Certification #: 027-053-137
Mississippi Certification #: Pace
Montana Certification #: MT CERT0092
Nebraska Certification #: Pace
Nevada Certification #: MN_00064
New Jersey Certification #: MN-002
New York Certification #: 11647
North Carolina Certification #: 530
North Dakota Certification #: R-036
North Dakota Certification #: R-036A
Ohio VAP Certification #: CL101
Oklahoma Certification #: 9507
Oregon Certification #: MN200001
Oregon Certification #: MN300001
Pennsylvania Certification #: 68-00563
Puerto Rico Certification
Tennessee Certification #: 02818
Texas Certification #: T104704192
Utah Certification #: MN00064
Virginia/DCLS Certification #: 002521
Virginia/VELAP Certification #: 460163
Washington Certification #: C754
West Virginia Certification #: 382
Wisconsin Certification #: 999407970

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SAMPLE SUMMARY

Project: MP027481 MILLE LACS OIL-CAMBRI
Pace Project No.: 10227458

Lab ID	Sample ID	Matrix	Date Collected	Date Received
10227458001	MW-11	Water	05/03/13 09:00	05/03/13 14:19
10227458002	MW-6A	Water	05/03/13 09:30	05/03/13 14:19
10227458003	MW-6	Water	05/03/13 10:00	05/03/13 14:19
10227458004	MW-10	Water	05/03/13 11:00	05/03/13 14:19
10227458005	MW-9	Water	05/03/13 11:30	05/03/13 14:19
10227458006	MW-1	Water	05/03/13 12:30	05/03/13 14:19
10227458007	TRIP BLANK	Water	05/03/13 00:00	05/03/13 14:19

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SAMPLE ANALYTE COUNT

Project: MP027481 MILLE LACS OIL-CAMBRI
Pace Project No.: 10227458

Lab ID	Sample ID	Method	Analysts	Analytes Reported
10227458001	**MW-11**	WI MOD DRO	JRH	2
		WI MOD GRO	KT1	9
10227458002	**MW-6A**	WI MOD DRO	JRH	2
		WI MOD GRO	KT1	9
10227458003	**MW-6**	WI MOD DRO	JRH	2
		WI MOD GRO	KT1	9
10227458004	**MW-10**	WI MOD DRO	JRH	2
		WI MOD GRO	KT1	9
10227458005	**MW-9**	WI MOD DRO	JRH	2
		WI MOD GRO	KT1	2
		EPA 8260	SE	70
10227458006	**MW-1**	WI MOD DRO	JRH	2
		WI MOD GRO	KT1	9
10227458007	**TRIP BLANK**	WI MOD GRO	KT1	2
		EPA 8260	SE	70

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ANALYTICAL RESULTS

Project: MP027481 MILLE LACS OIL-CAMBRI
Pace Project No.: 10227458

Sample: MW-11 **Lab ID: 10227458001** Collected: 05/03/13 09:00 Received: 05/03/13 14:19 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
WIDRO GCS	Analytical Method: WI MOD DRO Preparation Method: WI MOD DRO								
Diesel Range Organics	ND	ug/L	104	12.5	1	05/08/13 13:48	05/10/13 10:01		
Surrogates									
n-Triacontane (S)	78	%	50-150		1	05/08/13 13:48	05/10/13 10:01	638-68-6	
WIGRO GCV	Analytical Method: WI MOD GRO								
Benzene	ND	ug/L	1.0		1		05/08/13 18:51	71-43-2	
Ethylbenzene	ND	ug/L	1.0		1		05/08/13 18:51	100-41-4	
Gasoline Range Organics	ND	ug/L	100		1		05/08/13 18:51		
Methyl-tert-butyl ether	ND	ug/L	5.0		1		05/08/13 18:51	1634-04-4	
Toluene	ND	ug/L	1.0		1		05/08/13 18:51	108-88-3	
1,2,4-Trimethylbenzene	ND	ug/L	1.0		1		05/08/13 18:51	95-63-6	
1,3,5-Trimethylbenzene	ND	ug/L	1.0		1		05/08/13 18:51	108-67-8	
Xylene (Total)	ND	ug/L	3.0		1		05/08/13 18:51	1330-20-7	
Surrogates									
a,a,a-Trifluorotoluene (S)	100	%	80-125		1		05/08/13 18:51	98-08-8	

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ANALYTICAL RESULTS

Project: MP027481 MILLE LACS OIL-CAMBRI
Pace Project No.: 10227458

Sample: MW-6A **Lab ID: 10227458002** Collected: 05/03/13 09:30 Received: 05/03/13 14:19 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
WIDRO GCS	Analytical Method: WI MOD DRO Preparation Method: WI MOD DRO								
Diesel Range Organics	**123**	ug/L	103	12.4	1	05/08/13 13:48	05/10/13 10:09		
Surrogates									
n-Triacontane (S)	78	%	50-150		1	05/08/13 13:48	05/10/13 10:09	638-68-6	
WIGRO GCV	Analytical Method: WI MOD GRO								
Benzene	ND	ug/L	1.0		1		05/08/13 19:10	71-43-2	
Ethylbenzene	ND	ug/L	1.0		1		05/08/13 19:10	100-41-4	
Gasoline Range Organics	ND	ug/L	100		1		05/08/13 19:10		
Methyl-tert-butyl ether	ND	ug/L	5.0		1		05/08/13 19:10	1634-04-4	
Toluene	ND	ug/L	1.0		1		05/08/13 19:10	108-88-3	
1,2,4-Trimethylbenzene	ND	ug/L	1.0		1		05/08/13 19:10	95-63-6	
1,3,5-Trimethylbenzene	ND	ug/L	1.0		1		05/08/13 19:10	108-67-8	
Xylene (Total)	ND	ug/L	3.0		1		05/08/13 19:10	1330-20-7	
Surrogates									
a,a,a-Trifluorotoluene (S)	107	%	80-125		1		05/08/13 19:10	98-08-8	

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ANALYTICAL RESULTS

Project: MP027481 MILLE LACS OIL-CAMBRI
Pace Project No.: 10227458

Sample: MW-6 **Lab ID: 10227458003** Collected: 05/03/13 10:00 Received: 05/03/13 14:19 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
WIDRO GCS	Analytical Method: WI MOD DRO Preparation Method: WI MOD DRO								
Diesel Range Organics	**4350**	ug/L	102	12.2	1	05/08/13 13:48	05/10/13 10:24		T7
Surrogates									
n-Triacontane (S)	83	%	50-150		1	05/08/13 13:48	05/10/13 10:24	638-68-6	
WIGRO GCV	Analytical Method: WI MOD GRO								
Benzene	**2660**	ug/L	10.0		10		05/08/13 22:46	71-43-2	
Ethylbenzene	**1200**	ug/L	10.0		10		05/08/13 22:46	100-41-4	
Gasoline Range Organics	**26000**	ug/L	1000		10		05/08/13 22:46		
Methyl-tert-butyl ether	ND	ug/L	50.0		10		05/08/13 22:46	1634-04-4	
Toluene	**3620**	ug/L	10.0		10		05/08/13 22:46	108-88-3	
1,2,4-Trimethylbenzene	**830**	ug/L	10.0		10		05/08/13 22:46	95-63-6	
1,3,5-Trimethylbenzene	**255**	ug/L	10.0		10		05/08/13 22:46	108-67-8	
Xylene (Total)	**4890**	ug/L	30.0		10		05/08/13 22:46	1330-20-7	
Surrogates									
a,a,a-Trifluorotoluene (S)	101	%	80-125		10		05/08/13 22:46	98-08-8	

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ANALYTICAL RESULTS

Project: MP027481 MILLE LACS OIL-CAMBRI
Pace Project No.: 10227458

Sample: MW-10 **Lab ID: 10227458004** Collected: 05/03/13 11:00 Received: 05/03/13 14:19 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
WIDRO GCS	Analytical Method: WI MOD DRO Preparation Method: WI MOD DRO								
Diesel Range Organics	**8960**	ug/L	521	62.5	5	05/08/13 13:48	05/10/13 11:32		T7
Surrogates									
n-Triacontane (S)	93	%	50-150		5	05/08/13 13:48	05/10/13 11:32	638-68-6	
WIGRO GCV	Analytical Method: WI MOD GRO								
Benzene	**327**	ug/L	20.0		20		05/08/13 19:50	71-43-2	
Ethylbenzene	**427**	ug/L	20.0		20		05/08/13 19:50	100-41-4	
Gasoline Range Organics	**17700**	ug/L	2000		20		05/08/13 19:50		
Methyl-tert-butyl ether	ND	ug/L	100		20		05/08/13 19:50	1634-04-4	
Toluene	**431**	ug/L	20.0		20		05/08/13 19:50	108-88-3	
1,2,4-Trimethylbenzene	**1240**	ug/L	20.0		20		05/08/13 19:50	95-63-6	
1,3,5-Trimethylbenzene	**443**	ug/L	20.0		20		05/08/13 19:50	108-67-8	
Xylene (Total)	**2080**	ug/L	60.0		20		05/08/13 19:50	1330-20-7	
Surrogates									
a,a,a-Trifluorotoluene (S)	89	%	80-125		20		05/08/13 19:50	98-08-8	

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ANALYTICAL RESULTS

Project: MP027481 MILLE LACS OIL-CAMBRI
Pace Project No.: 10227458

Sample: MW-9 **Lab ID: 10227458005** Collected: 05/03/13 11:30 Received: 05/03/13 14:19 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
WIDRO GCS	Analytical Method: WI MOD DRO Preparation Method: WI MOD DRO								
Diesel Range Organics	**787**	ug/L	105	12.6	1	05/08/13 13:48	05/10/13 10:17		T7
Surrogates									
n-Triacontane (S)	11	%	50-150		1	05/08/13 13:48	05/10/13 10:17	638-68-6	S1
WIGRO GCV	Analytical Method: WI MOD GRO								
Gasoline Range Organics	**47000**	ug/L	2500		25		05/08/13 23:06		
Surrogates									
a,a,a-Trifluorotoluene (S)	104	%	80-125		25		05/08/13 23:06	98-08-8	
8260 VOC	Analytical Method: EPA 8260								
Acetone	ND	ug/L	500	250	25		05/08/13 05:01	67-64-1	
Allyl chloride	ND	ug/L	100	44.2	25		05/08/13 05:01	107-05-1	L2
Benzene	**7110**	ug/L	100	6.2	100		05/09/13 21:15	71-43-2	
Bromobenzene	ND	ug/L	25.0	2.2	25		05/08/13 05:01	108-86-1	
Bromochloromethane	ND	ug/L	25.0	8.0	25		05/08/13 05:01	74-97-5	
Bromodichloromethane	ND	ug/L	25.0	2.6	25		05/08/13 05:01	75-27-4	
Bromoform	ND	ug/L	100	1.7	25		05/08/13 05:01	75-25-2	L2
Bromomethane	ND	ug/L	100	8.9	25		05/08/13 05:01	74-83-9	
2-Butanone (MEK)	ND	ug/L	125	62.5	25		05/08/13 05:01	78-93-3	
n-Butylbenzene	ND	ug/L	25.0	3.6	25		05/08/13 05:01	104-51-8	
sec-Butylbenzene	ND	ug/L	25.0	2.6	25		05/08/13 05:01	135-98-8	
tert-Butylbenzene	ND	ug/L	25.0	2.6	25		05/08/13 05:01	98-06-6	
Carbon tetrachloride	ND	ug/L	25.0	4.0	25		05/08/13 05:01	56-23-5	
Chlorobenzene	ND	ug/L	25.0	2.5	25		05/08/13 05:01	108-90-7	
Chloroethane	ND	ug/L	25.0	5.4	25		05/08/13 05:01	75-00-3	
Chloroform	ND	ug/L	25.0	3.6	25		05/08/13 05:01	67-66-3	
Chloromethane	ND	ug/L	100	10.3	25		05/08/13 05:01	74-87-3	CL,L2
2-Chlorotoluene	ND	ug/L	25.0	12.5	25		05/08/13 05:01	95-49-8	
4-Chlorotoluene	ND	ug/L	25.0	1.7	25		05/08/13 05:01	106-43-4	
1,2-Dibromo-3-chloropropane	ND	ug/L	100	15.4	25		05/08/13 05:01	96-12-8	
Dibromochloromethane	ND	ug/L	25.0	2.6	25		05/08/13 05:01	124-48-1	
1,2-Dibromoethane (EDB)	ND	ug/L	25.0	2.3	25		05/08/13 05:01	106-93-4	
Dibromomethane	ND	ug/L	100	5.2	25		05/08/13 05:01	74-95-3	
1,2-Dichlorobenzene	ND	ug/L	25.0	8.9	25		05/08/13 05:01	95-50-1	
1,3-Dichlorobenzene	ND	ug/L	25.0	2.7	25		05/08/13 05:01	541-73-1	
1,4-Dichlorobenzene	ND	ug/L	25.0	1.6	25		05/08/13 05:01	106-46-7	
Dichlorodifluoromethane	ND	ug/L	25.0	5.0	25		05/08/13 05:01	75-71-8	
1,1-Dichloroethane	ND	ug/L	25.0	2.8	25		05/08/13 05:01	75-34-3	
1,2-Dichloroethane	**74.6**	ug/L	25.0	9.3	25		05/08/13 05:01	107-06-2	
1,1-Dichloroethene	ND	ug/L	25.0	4.7	25		05/08/13 05:01	75-35-4	
cis-1,2-Dichloroethene	ND	ug/L	25.0	2.1	25		05/08/13 05:01	156-59-2	
trans-1,2-Dichloroethene	ND	ug/L	25.0	3.6	25		05/08/13 05:01	156-60-5	
Dichlorofluoromethane	ND	ug/L	25.0	2.8	25		05/08/13 05:01	75-43-4	
1,2-Dichloropropane	ND	ug/L	100	6.8	25		05/08/13 05:01	78-87-5	
1,3-Dichloropropane	ND	ug/L	25.0	2.0	25		05/08/13 05:01	142-28-9	
2,2-Dichloropropane	ND	ug/L	100	3.7	25		05/08/13 05:01	594-20-7	

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ANALYTICAL RESULTS

Project: MP027481 MILLE LACS OIL-CAMBRI
Pace Project No.: 10227458

Sample: MW-9 **Lab ID: 10227458005** Collected: 05/03/13 11:30 Received: 05/03/13 14:19 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8260 VOC	Analytical Method: EPA 8260								
1,1-Dichloropropene	ND	ug/L	25.0	8.8	25		05/08/13 05:01	563-58-6	
cis-1,3-Dichloropropene	ND	ug/L	100	2.2	25		05/08/13 05:01	10061-01-5	
trans-1,3-Dichloropropene	ND	ug/L	100	9.4	25		05/08/13 05:01	10061-02-6	
Diethyl ether (Ethyl ether)	ND	ug/L	100	50.0	25		05/08/13 05:01	60-29-7	
Ethylbenzene	**1950**	ug/L	25.0	2.0	25		05/08/13 05:01	100-41-4	
Hexachloro-1,3-butadiene	ND	ug/L	125	4.7	25		05/08/13 05:01	87-68-3	
Isopropylbenzene (Cumene)	**81.1**	ug/L	25.0	1.9	25		05/08/13 05:01	98-82-8	
p-Isopropyltoluene	ND	ug/L	25.0	2.2	25		05/08/13 05:01	99-87-6	
Methylene Chloride	ND	ug/L	100	50.0	25		05/08/13 05:01	75-09-2	
4-Methyl-2-pentanone (MIBK)	ND	ug/L	125	62.5	25		05/08/13 05:01	108-10-1	
Methyl-tert-butyl ether	ND	ug/L	25.0	2.2	25		05/08/13 05:01	1634-04-4	
Naphthalene	**428**	ug/L	100	1.7	25		05/08/13 05:01	91-20-3	
n-Propylbenzene	**193**	ug/L	25.0	2.0	25		05/08/13 05:01	103-65-1	
Styrene	ND	ug/L	25.0	1.5	25		05/08/13 05:01	100-42-5	
1,1,1,2-Tetrachloroethane	ND	ug/L	25.0	9.1	25		05/08/13 05:01	630-20-6	
1,1,2,2-Tetrachloroethane	ND	ug/L	25.0	2.4	25		05/08/13 05:01	79-34-5	
Tetrachloroethene	ND	ug/L	25.0	3.3	25		05/08/13 05:01	127-18-4	
Tetrahydrofuran	ND	ug/L	250	24.2	25		05/08/13 05:01	109-99-9	
Toluene	**7330**	ug/L	100	7.7	100		05/09/13 21:15	108-88-3	
1,2,3-Trichlorobenzene	ND	ug/L	25.0	3.3	25		05/08/13 05:01	87-61-6	
1,2,4-Trichlorobenzene	ND	ug/L	25.0	6.2	25		05/08/13 05:01	120-82-1	
1,1,1-Trichloroethane	ND	ug/L	25.0	4.7	25		05/08/13 05:01	71-55-6	
1,1,2-Trichloroethane	ND	ug/L	25.0	3.8	25		05/08/13 05:01	79-00-5	
Trichloroethene	ND	ug/L	25.0	2.1	25		05/08/13 05:01	79-01-6	
Trichlorofluoromethane	ND	ug/L	25.0	3.2	25		05/08/13 05:01	75-69-4	
1,2,3-Trichloropropane	ND	ug/L	100	8.2	25		05/08/13 05:01	96-18-4	
1,1,2-Trichlorotrifluoroethane	ND	ug/L	25.0	4.6	25		05/08/13 05:01	76-13-1	
1,2,4-Trimethylbenzene	**1270**	ug/L	25.0	1.8	25		05/08/13 05:01	95-63-6	
1,3,5-Trimethylbenzene	**320**	ug/L	25.0	2.2	25		05/08/13 05:01	108-67-8	
Vinyl chloride	ND	ug/L	10.0	4.0	25		05/08/13 05:01	75-01-4	
Xylene (Total)	**9140**	ug/L	75.0	5.4	25		05/08/13 05:01	1330-20-7	
Surrogates									
1,2-Dichloroethane-d4 (S)	105	%	75-125		25		05/08/13 05:01	17060-07-0	
Toluene-d8 (S)	102	%	75-125		25		05/08/13 05:01	2037-26-5	
4-Bromofluorobenzene (S)	105	%	75-125		25		05/08/13 05:01	460-00-4	

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ANALYTICAL RESULTS

Project: MP027481 MILLE LACS OIL-CAMBRI
Pace Project No.: 10227458

Sample: MW-1 **Lab ID: 10227458006** Collected: 05/03/13 12:30 Received: 05/03/13 14:19 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
WIDRO GCS	Analytical Method: WI MOD DRO Preparation Method: WI MOD DRO								
Diesel Range Organics	**831**	ug/L	104	12.5	1	05/08/13 13:48	05/10/13 10:40		T7
Surrogates									
n-Triacontane (S)	77	%	50-150		1	05/08/13 13:48	05/10/13 10:40	638-68-6	
WIGRO GCV	Analytical Method: WI MOD GRO								
Benzene	ND	ug/L	1.0		1		05/08/13 22:07	71-43-2	
Ethylbenzene	**28.9**	ug/L	1.0		1		05/08/13 22:07	100-41-4	
Gasoline Range Organics	**2050**	ug/L	100		1		05/08/13 22:07		
Methyl-tert-butyl ether	ND	ug/L	5.0		1		05/08/13 22:07	1634-04-4	
Toluene	ND	ug/L	1.0		1		05/08/13 22:07	108-88-3	
1,2,4-Trimethylbenzene	**298**	ug/L	5.0		5		05/11/13 18:21	95-63-6	
1,3,5-Trimethylbenzene	**105**	ug/L	1.0		1		05/08/13 22:07	108-67-8	
Xylene (Total)	**573**	ug/L	3.0		1		05/08/13 22:07	1330-20-7	
Surrogates									
a,a,a-Trifluorotoluene (S)	94	%	80-125		1		05/08/13 22:07	98-08-8	

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ANALYTICAL RESULTS

Project: MP027481 MILLE LACS OIL-CAMBRI
Pace Project No.: 10227458

Sample: TRIP BLANK **Lab ID: 10227458007** Collected: 05/03/13 00:00 Received: 05/03/13 14:19 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
WIGRO GCV	Analytical Method: WI MOD GRO								
Gasoline Range Organics	ND	ug/L	100		1		05/06/13 10:43		
Surrogates									
a,a,a-Trifluorotoluene (S)	96	%	80-125		1		05/06/13 10:43	98-08-8	
8260 VOC	Analytical Method: EPA 8260								
Acetone	ND	ug/L	20.0	10.0	1		05/07/13 22:28	67-64-1	
Allyl chloride	ND	ug/L	4.0	1.8	1		05/07/13 22:28	107-05-1	L2
Benzene	ND	ug/L	1.0	0.062	1		05/07/13 22:28	71-43-2	
Bromobenzene	ND	ug/L	1.0	0.086	1		05/07/13 22:28	108-86-1	
Bromochloromethane	ND	ug/L	1.0	0.32	1		05/07/13 22:28	74-97-5	
Bromodichloromethane	ND	ug/L	1.0	0.11	1		05/07/13 22:28	75-27-4	
Bromoform	ND	ug/L	4.0	0.068	1		05/07/13 22:28	75-25-2	L2
Bromomethane	ND	ug/L	4.0	0.36	1		05/07/13 22:28	74-83-9	
2-Butanone (MEK)	ND	ug/L	5.0	2.5	1		05/07/13 22:28	78-93-3	
n-Butylbenzene	ND	ug/L	1.0	0.15	1		05/07/13 22:28	104-51-8	
sec-Butylbenzene	ND	ug/L	1.0	0.10	1		05/07/13 22:28	135-98-8	
tert-Butylbenzene	ND	ug/L	1.0	0.10	1		05/07/13 22:28	98-06-6	
Carbon tetrachloride	ND	ug/L	1.0	0.16	1		05/07/13 22:28	56-23-5	
Chlorobenzene	ND	ug/L	1.0	0.10	1		05/07/13 22:28	108-90-7	
Chloroethane	ND	ug/L	1.0	0.22	1		05/07/13 22:28	75-00-3	
Chloroform	ND	ug/L	1.0	0.14	1		05/07/13 22:28	67-66-3	
Chloromethane	ND	ug/L	4.0	0.41	1		05/07/13 22:28	74-87-3	CL,L2
2-Chlorotoluene	ND	ug/L	1.0	0.50	1		05/07/13 22:28	95-49-8	
4-Chlorotoluene	ND	ug/L	1.0	0.068	1		05/07/13 22:28	106-43-4	
1,2-Dibromo-3-chloropropane	ND	ug/L	4.0	0.62	1		05/07/13 22:28	96-12-8	
Dibromochloromethane	ND	ug/L	1.0	0.10	1		05/07/13 22:28	124-48-1	
1,2-Dibromoethane (EDB)	ND	ug/L	1.0	0.091	1		05/07/13 22:28	106-93-4	
Dibromomethane	ND	ug/L	4.0	0.21	1		05/07/13 22:28	74-95-3	
1,2-Dichlorobenzene	ND	ug/L	1.0	0.36	1		05/07/13 22:28	95-50-1	
1,3-Dichlorobenzene	ND	ug/L	1.0	0.11	1		05/07/13 22:28	541-73-1	
1,4-Dichlorobenzene	ND	ug/L	1.0	0.064	1		05/07/13 22:28	106-46-7	
Dichlorodifluoromethane	ND	ug/L	1.0	0.20	1		05/07/13 22:28	75-71-8	
1,1-Dichloroethane	ND	ug/L	1.0	0.11	1		05/07/13 22:28	75-34-3	
1,2-Dichloroethane	ND	ug/L	1.0	0.37	1		05/07/13 22:28	107-06-2	
1,1-Dichloroethene	ND	ug/L	1.0	0.19	1		05/07/13 22:28	75-35-4	
cis-1,2-Dichloroethene	ND	ug/L	1.0	0.085	1		05/07/13 22:28	156-59-2	
trans-1,2-Dichloroethene	ND	ug/L	1.0	0.15	1		05/07/13 22:28	156-60-5	
Dichlorofluoromethane	ND	ug/L	1.0	0.11	1		05/07/13 22:28	75-43-4	
1,2-Dichloropropane	ND	ug/L	4.0	0.27	1		05/07/13 22:28	78-87-5	
1,3-Dichloropropane	ND	ug/L	1.0	0.081	1		05/07/13 22:28	142-28-9	
2,2-Dichloropropane	ND	ug/L	4.0	0.15	1		05/07/13 22:28	594-20-7	
1,1-Dichloropropene	ND	ug/L	1.0	0.35	1		05/07/13 22:28	563-58-6	
cis-1,3-Dichloropropene	ND	ug/L	4.0	0.090	1		05/07/13 22:28	10061-01-5	
trans-1,3-Dichloropropene	ND	ug/L	4.0	0.37	1		05/07/13 22:28	10061-02-6	
Diethyl ether (Ethyl ether)	ND	ug/L	4.0	2.0	1		05/07/13 22:28	60-29-7	
Ethylbenzene	ND	ug/L	1.0	0.081	1		05/07/13 22:28	100-41-4	

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ANALYTICAL RESULTS

Project: MP027481 MILLE LACS OIL-CAMBRI
Pace Project No.: 10227458

Sample: TRIP BLANK **Lab ID: 10227458007** Collected: 05/03/13 00:00 Received: 05/03/13 14:19 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8260 VOC	Analytical Method: EPA 8260								
Hexachloro-1,3-butadiene	ND	ug/L	5.0	0.19	1		05/07/13 22:28	87-68-3	
Isopropylbenzene (Cumene)	ND	ug/L	1.0	0.076	1		05/07/13 22:28	98-82-8	
p-Isopropyltoluene	ND	ug/L	1.0	0.086	1		05/07/13 22:28	99-87-6	
Methylene Chloride	ND	ug/L	4.0	2.0	1		05/07/13 22:28	75-09-2	
4-Methyl-2-pentanone (MIBK)	ND	ug/L	5.0	2.5	1		05/07/13 22:28	108-10-1	
Methyl-tert-butyl ether	ND	ug/L	1.0	0.088	1		05/07/13 22:28	1634-04-4	
Naphthalene	ND	ug/L	4.0	0.068	1		05/07/13 22:28	91-20-3	
n-Propylbenzene	ND	ug/L	1.0	0.078	1		05/07/13 22:28	103-65-1	
Styrene	ND	ug/L	1.0	0.060	1		05/07/13 22:28	100-42-5	
1,1,1,2-Tetrachloroethane	ND	ug/L	1.0	0.36	1		05/07/13 22:28	630-20-6	
1,1,2,2-Tetrachloroethane	ND	ug/L	1.0	0.097	1		05/07/13 22:28	79-34-5	
Tetrachloroethene	ND	ug/L	1.0	0.13	1		05/07/13 22:28	127-18-4	
Tetrahydrofuran	ND	ug/L	10.0	0.97	1		05/07/13 22:28	109-99-9	
Toluene	ND	ug/L	1.0	0.077	1		05/07/13 22:28	108-88-3	
1,2,3-Trichlorobenzene	ND	ug/L	1.0	0.13	1		05/07/13 22:28	87-61-6	
1,2,4-Trichlorobenzene	ND	ug/L	1.0	0.25	1		05/07/13 22:28	120-82-1	
1,1,1-Trichloroethane	ND	ug/L	1.0	0.19	1		05/07/13 22:28	71-55-6	
1,1,2-Trichloroethane	ND	ug/L	1.0	0.15	1		05/07/13 22:28	79-00-5	
Trichloroethene	ND	ug/L	1.0	0.083	1		05/07/13 22:28	79-01-6	
Trichlorofluoromethane	ND	ug/L	1.0	0.13	1		05/07/13 22:28	75-69-4	
1,2,3-Trichloropropane	ND	ug/L	4.0	0.33	1		05/07/13 22:28	96-18-4	
1,1,2-Trichlorotrifluoroethane	ND	ug/L	1.0	0.18	1		05/07/13 22:28	76-13-1	
1,2,4-Trimethylbenzene	ND	ug/L	1.0	0.071	1		05/07/13 22:28	95-63-6	
1,3,5-Trimethylbenzene	ND	ug/L	1.0	0.087	1		05/07/13 22:28	108-67-8	
Vinyl chloride	ND	ug/L	0.40	0.16	1		05/07/13 22:28	75-01-4	
Xylene (Total)	ND	ug/L	3.0	0.22	1		05/07/13 22:28	1330-20-7	
Surrogates									
1,2-Dichloroethane-d4 (S)	107	%	75-125		1		05/07/13 22:28	17060-07-0	
Toluene-d8 (S)	99	%	75-125		1		05/07/13 22:28	2037-26-5	
4-Bromofluorobenzene (S)	97	%	75-125		1		05/07/13 22:28	460-00-4	

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QUALITY CONTROL DATA

Project: MP027481 MILLE LACS OIL-CAMBRI
Pace Project No.: 10227458

QC Batch: GCV/10690 Analysis Method: WI MOD GRO
QC Batch Method: WI MOD GRO Analysis Description: WIGRO GCV Water
Associated Lab Samples: 10227458007

METHOD BLANK: 1422860 Matrix: Water
Associated Lab Samples: 10227458007

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Gasoline Range Organics	ug/L	ND	100	05/06/13 10:03	
a,a,a-Trifluorotoluene (S)	%	94	80-125	05/06/13 10:03	

LABORATORY CONTROL SAMPLE & LCSD: 1422861 1422862

Parameter	Units	Spike Conc.	LCS Result	LCSD Result	LCS % Rec	LCSD % Rec	% Rec Limits	RPD	Max RPD	Qualifiers
Gasoline Range Organics	ug/L	1000	1060	1040	106	104	80-120	2	20	
a,a,a-Trifluorotoluene (S)	%				97	97	80-125			

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1423257 1423258

Parameter	Units	10227335002 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Gasoline Range Organics	ug/L	10900	20000	20000	32000	32400	106	107	80-120	1	20	
a,a,a-Trifluorotoluene (S)	%						89	94	80-125			

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: MP027481 MILLE LACS OIL-CAMBRI
Pace Project No.: 10227458

QC Batch: GCV/10696 Analysis Method: WI MOD GRO
QC Batch Method: WI MOD GRO Analysis Description: WIGRO GCV Water
Associated Lab Samples: 10227458001, 10227458002, 10227458003, 10227458004, 10227458005, 10227458006

METHOD BLANK: 1424117 Matrix: Water
Associated Lab Samples: 10227458001, 10227458002, 10227458003, 10227458004, 10227458005, 10227458006

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
1,2,4-Trimethylbenzene	ug/L	ND	1.0	05/08/13 17:33	
1,3,5-Trimethylbenzene	ug/L	ND	1.0	05/08/13 17:33	
Benzene	ug/L	ND	1.0	05/08/13 17:33	
Ethylbenzene	ug/L	ND	1.0	05/08/13 17:33	
Gasoline Range Organics	ug/L	ND	100	05/08/13 17:33	
Methyl-tert-butyl ether	ug/L	ND	5.0	05/08/13 17:33	
Toluene	ug/L	ND	1.0	05/08/13 17:33	
Xylene (Total)	ug/L	ND	3.0	05/08/13 17:33	
a,a,a-Trifluorotoluene (S)	%	102	80-125	05/08/13 17:33	

LABORATORY CONTROL SAMPLE & LCSD: 1424118 1424119

Parameter	Units	Spike Conc.	LCS Result	LCSD Result	LCS % Rec	LCSD % Rec	% Rec Limits	RPD	Max RPD	Qualifiers
1,2,4-Trimethylbenzene	ug/L	100	114	96.7	114	97	80-120	16	20	
1,3,5-Trimethylbenzene	ug/L	100	113	95.4	113	95	80-120	17	20	
Benzene	ug/L	100	111	102	111	102	80-120	8	20	
Ethylbenzene	ug/L	100	111	101	111	101	80-120	10	20	
Gasoline Range Organics	ug/L	1000	1080	1040	108	104	80-120	4	20	
Methyl-tert-butyl ether	ug/L	100	99.9	101	100	101	80-120	1	20	
Toluene	ug/L	100	111	101	111	101	80-120	9	20	
Xylene (Total)	ug/L	300	338	300	113	100	80-120	12	20	
a,a,a-Trifluorotoluene (S)	%				101	102	80-125			

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1426157 1426158

Parameter	Units	10227458004 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
1,2,4-Trimethylbenzene	ug/L	1240	2000	2000	3060	2950	91	86	80-120	4	20	
1,3,5-Trimethylbenzene	ug/L	443	2000	2000	2380	2330	97	94	80-120	2	20	
Benzene	ug/L	327	2000	2000	2510	2500	109	109	80-120	.5	20	
Ethylbenzene	ug/L	427	2000	2000	2510	2440	104	101	80-120	3	20	
Gasoline Range Organics	ug/L	17700	20000	20000	35800	36500	91	94	80-120	2	20	
Methyl-tert-butyl ether	ug/L	ND	2000	2000	1890	1980	94	99	80-120	5	20	
Toluene	ug/L	431	2000	2000	2550	2510	106	104	80-120	2	20	
Xylene (Total)	ug/L	2080	6000	6000	8120	7870	101	97	80-120	3	20	
a,a,a-Trifluorotoluene (S)	%						97	96	80-125			

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QUALITY CONTROL DATA

Project: MP027481 MILLE LACS OIL-CAMBRI
Pace Project No.: 10227458

QC Batch: MSV/23565 Analysis Method: EPA 8260
QC Batch Method: EPA 8260 Analysis Description: 8260 MSV 465 W
Associated Lab Samples: 10227458005, 10227458007

METHOD BLANK: 1424073 Matrix: Water
Associated Lab Samples: 10227458005, 10227458007

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
1,1,1,2-Tetrachloroethane	ug/L	ND	1.0	05/07/13 22:08	
1,1,1-Trichloroethane	ug/L	ND	1.0	05/07/13 22:08	
1,1,2,2-Tetrachloroethane	ug/L	ND	1.0	05/07/13 22:08	
1,1,2-Trichloroethane	ug/L	ND	1.0	05/07/13 22:08	
1,1,2-Trichlorotrifluoroethane	ug/L	ND	1.0	05/07/13 22:08	
1,1-Dichloroethane	ug/L	ND	1.0	05/07/13 22:08	
1,1-Dichloroethene	ug/L	ND	1.0	05/07/13 22:08	
1,1-Dichloropropene	ug/L	ND	1.0	05/07/13 22:08	
1,2,3-Trichlorobenzene	ug/L	ND	1.0	05/07/13 22:08	
1,2,3-Trichloropropane	ug/L	ND	4.0	05/07/13 22:08	
1,2,4-Trichlorobenzene	ug/L	ND	1.0	05/07/13 22:08	
1,2,4-Trimethylbenzene	ug/L	ND	1.0	05/07/13 22:08	
1,2-Dibromo-3-chloropropane	ug/L	ND	4.0	05/07/13 22:08	
1,2-Dibromoethane (EDB)	ug/L	ND	1.0	05/07/13 22:08	
1,2-Dichlorobenzene	ug/L	ND	1.0	05/07/13 22:08	
1,2-Dichloroethane	ug/L	ND	1.0	05/07/13 22:08	
1,2-Dichloropropane	ug/L	ND	4.0	05/07/13 22:08	
1,3,5-Trimethylbenzene	ug/L	ND	1.0	05/07/13 22:08	
1,3-Dichlorobenzene	ug/L	ND	1.0	05/07/13 22:08	
1,3-Dichloropropane	ug/L	ND	1.0	05/07/13 22:08	
1,4-Dichlorobenzene	ug/L	ND	1.0	05/07/13 22:08	
2,2-Dichloropropane	ug/L	ND	4.0	05/07/13 22:08	
2-Butanone (MEK)	ug/L	ND	5.0	05/07/13 22:08	
2-Chlorotoluene	ug/L	ND	1.0	05/07/13 22:08	
4-Chlorotoluene	ug/L	ND	1.0	05/07/13 22:08	
4-Methyl-2-pentanone (MIBK)	ug/L	ND	5.0	05/07/13 22:08	
Acetone	ug/L	ND	20.0	05/07/13 22:08	
Allyl chloride	ug/L	ND	4.0	05/07/13 22:08	
Benzene	ug/L	ND	1.0	05/07/13 22:08	
Bromobenzene	ug/L	ND	1.0	05/07/13 22:08	
Bromochloromethane	ug/L	ND	1.0	05/07/13 22:08	
Bromodichloromethane	ug/L	ND	1.0	05/07/13 22:08	
Bromoform	ug/L	ND	4.0	05/07/13 22:08	
Bromomethane	ug/L	ND	4.0	05/07/13 22:08	
Carbon tetrachloride	ug/L	ND	1.0	05/07/13 22:08	
Chlorobenzene	ug/L	ND	1.0	05/07/13 22:08	
Chloroethane	ug/L	ND	1.0	05/07/13 22:08	
Chloroform	ug/L	ND	1.0	05/07/13 22:08	
Chloromethane	ug/L	ND	4.0	05/07/13 22:08	CL
cis-1,2-Dichloroethene	ug/L	ND	1.0	05/07/13 22:08	
cis-1,3-Dichloropropene	ug/L	ND	4.0	05/07/13 22:08	
Dibromochloromethane	ug/L	ND	1.0	05/07/13 22:08	
Dibromomethane	ug/L	ND	4.0	05/07/13 22:08	

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: MP027481 MILLE LACS OIL-CAMBRI
Pace Project No.: 10227458

METHOD BLANK: 1424073 Matrix: Water

Associated Lab Samples: 10227458005, 10227458007

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Dichlorodifluoromethane	ug/L	ND	1.0	05/07/13 22:08	
Dichlorofluoromethane	ug/L	ND	1.0	05/07/13 22:08	
Diethyl ether (Ethyl ether)	ug/L	ND	4.0	05/07/13 22:08	
Ethylbenzene	ug/L	ND	1.0	05/07/13 22:08	
Hexachloro-1,3-butadiene	ug/L	ND	5.0	05/07/13 22:08	
Isopropylbenzene (Cumene)	ug/L	ND	1.0	05/07/13 22:08	
Methyl-tert-butyl ether	ug/L	ND	1.0	05/07/13 22:08	
Methylene Chloride	ug/L	ND	4.0	05/07/13 22:08	
n-Butylbenzene	ug/L	ND	1.0	05/07/13 22:08	
n-Propylbenzene	ug/L	ND	1.0	05/07/13 22:08	
Naphthalene	ug/L	ND	4.0	05/07/13 22:08	
p-Isopropyltoluene	ug/L	ND	1.0	05/07/13 22:08	
sec-Butylbenzene	ug/L	ND	1.0	05/07/13 22:08	
Styrene	ug/L	ND	1.0	05/07/13 22:08	
tert-Butylbenzene	ug/L	ND	1.0	05/07/13 22:08	
Tetrachloroethene	ug/L	ND	1.0	05/07/13 22:08	
Tetrahydrofuran	ug/L	ND	10.0	05/07/13 22:08	
Toluene	ug/L	ND	1.0	05/07/13 22:08	
trans-1,2-Dichloroethene	ug/L	ND	1.0	05/07/13 22:08	
trans-1,3-Dichloropropene	ug/L	ND	4.0	05/07/13 22:08	
Trichloroethene	ug/L	ND	1.0	05/07/13 22:08	
Trichlorofluoromethane	ug/L	ND	1.0	05/07/13 22:08	
Vinyl chloride	ug/L	ND	0.40	05/07/13 22:08	
Xylene (Total)	ug/L	ND	3.0	05/07/13 22:08	
1,2-Dichloroethane-d4 (S)	%	113	75-125	05/07/13 22:08	
4-Bromofluorobenzene (S)	%	100	75-125	05/07/13 22:08	
Toluene-d8 (S)	%	100	75-125	05/07/13 22:08	

LABORATORY CONTROL SAMPLE: 1424074

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
1,1,1,2-Tetrachloroethane	ug/L	20	19.9	99	75-125	
1,1,1-Trichloroethane	ug/L	20	22.1	111	75-126	
1,1,2,2-Tetrachloroethane	ug/L	20	21.7	108	75-125	
1,1,2-Trichloroethane	ug/L	20	22.2	111	75-125	
1,1,2-Trichlorotrifluoroethane	ug/L	20	22.0	110	51-139	
1,1-Dichloroethane	ug/L	20	23.4	117	75-125	
1,1-Dichloroethene	ug/L	20	19.3	97	71-126	
1,1-Dichloropropene	ug/L	20	23.2	116	74-125	
1,2,3-Trichlorobenzene	ug/L	20	22.0	110	75-125	
1,2,3-Trichloropropane	ug/L	20	20.8	104	75-125	
1,2,4-Trichlorobenzene	ug/L	20	21.9	109	75-125	
1,2,4-Trimethylbenzene	ug/L	20	22.0	110	75-125	
1,2-Dibromo-3-chloropropane	ug/L	50	47.8	96	73-125	
1,2-Dibromoethane (EDB)	ug/L	20	22.6	113	75-125	

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QUALITY CONTROL DATA

Project: MP027481 MILLE LACS OIL-CAMBRI
Pace Project No.: 10227458

LABORATORY CONTROL SAMPLE: 1424074

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
1,2-Dichlorobenzene	ug/L	20	21.7	109	75-125	
1,2-Dichloroethane	ug/L	20	23.3	116	74-125	
1,2-Dichloropropane	ug/L	20	23.5	118	75-125	
1,3,5-Trimethylbenzene	ug/L	20	21.6	108	75-125	
1,3-Dichlorobenzene	ug/L	20	20.7	103	75-125	
1,3-Dichloropropane	ug/L	20	22.3	112	75-125	
1,4-Dichlorobenzene	ug/L	20	21.5	108	75-125	
2,2-Dichloropropane	ug/L	20	22.4	112	67-132	
2-Butanone (MEK)	ug/L	100	110	110	68-126	
2-Chlorotoluene	ug/L	20	22.1	111	74-125	
4-Chlorotoluene	ug/L	20	21.2	106	74-125	
4-Methyl-2-pentanone (MIBK)	ug/L	100	97.0	97	72-125	
Acetone	ug/L	100	92.4	92	69-132	
Allyl chloride	ug/L	20	14.2	71	74-125	L0
Benzene	ug/L	20	22.2	111	75-125	
Bromobenzene	ug/L	20	21.2	106	75-125	
Bromochloromethane	ug/L	20	23.8	119	75-125	
Bromodichloromethane	ug/L	20	20.9	104	75-125	
Bromoform	ug/L	20	14.2	71	75-126	L0
Bromomethane	ug/L	20	26.0	130	30-150	SS
Carbon tetrachloride	ug/L	20	17.3	87	74-127	
Chlorobenzene	ug/L	20	20.9	105	75-125	
Chloroethane	ug/L	20	24.8	124	68-132	
Chloroform	ug/L	20	22.7	114	75-125	
Chloromethane	ug/L	20	5.8	29	61-129	CL,L0
cis-1,2-Dichloroethene	ug/L	20	22.2	111	75-125	
cis-1,3-Dichloropropene	ug/L	20	21.4	107	75-125	
Dibromochloromethane	ug/L	20	18.7	93	75-125	
Dibromomethane	ug/L	20	21.4	107	75-125	
Dichlorodifluoromethane	ug/L	20	25.1	125	49-137	
Dichlorofluoromethane	ug/L	20	25.6	128	66-133	
Diethyl ether (Ethyl ether)	ug/L	20	21.4	107	75-125	
Ethylbenzene	ug/L	20	20.3	102	75-125	
Hexachloro-1,3-butadiene	ug/L	20	21.5	107	69-127	
Isopropylbenzene (Cumene)	ug/L	20	21.3	107	75-125	
Methyl-tert-butyl ether	ug/L	20	23.0	115	74-126	
Methylene Chloride	ug/L	20	21.4	107	75-125	
n-Butylbenzene	ug/L	20	22.8	114	72-126	
n-Propylbenzene	ug/L	20	21.7	109	73-125	
Naphthalene	ug/L	20	23.1	116	75-125	
p-Isopropyltoluene	ug/L	20	21.6	108	74-125	
sec-Butylbenzene	ug/L	20	22.3	111	73-125	
Styrene	ug/L	20	20.4	102	75-125	
tert-Butylbenzene	ug/L	20	21.8	109	73-125	
Tetrachloroethene	ug/L	20	20.5	102	75-125	
Tetrahydrofuran	ug/L	200	195	98	71-125	
Toluene	ug/L	20	21.4	107	75-125	
trans-1,2-Dichloroethene	ug/L	20	21.9	109	74-125	

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QUALITY CONTROL DATA

Project: MP027481 MILLE LACS OIL-CAMBRI
Pace Project No.: 10227458

LABORATORY CONTROL SAMPLE: 1424074

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
trans-1,3-Dichloropropene	ug/L	20	19.8	99	75-125	
Trichloroethene	ug/L	20	21.4	107	75-125	
Trichlorofluoromethane	ug/L	20	24.8	124	69-129	
Vinyl chloride	ug/L	20	23.7	119	70-128	
Xylene (Total)	ug/L	60	62.3	104	75-125	
1,2-Dichloroethane-d4 (S)	%			112	75-125	
4-Bromofluorobenzene (S)	%			102	75-125	
Toluene-d8 (S)	%			103	75-125	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1427947 1427948

Parameter	Units	10227309009 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	200	200	193	202	96	101	75-125	5	30	
1,1,1-Trichloroethane	ug/L	ND	200	200	207	215	103	108	75-136	4	30	
1,1,2,2-Tetrachloroethane	ug/L	ND	200	200	221	242	111	121	66-131	9	30	
1,1,2-Trichloroethane	ug/L	ND	200	200	233	229	117	115	75-125	2	30	
1,1,2-Trichlorotrifluoroethane	ug/L	ND	200	200	206	214	103	107	75-150	4	30	
1,1-Dichloroethane	ug/L	ND	200	200	204	214	102	107	75-131	5	30	
1,1-Dichloroethene	ug/L	ND	200	200	186	193	93	97	75-138	4	30	
1,1-Dichloropropene	ug/L	ND	200	200	222	238	111	119	75-136	7	30	
1,2,3-Trichlorobenzene	ug/L	ND	200	200	214	225	106	112	75-125	5	30	
1,2,3-Trichloropropane	ug/L	ND	200	200	220	235	110	117	71-126	6	30	
1,2,4-Trichlorobenzene	ug/L	ND	200	200	211	223	106	111	75-125	5	30	
1,2,4-Trimethylbenzene	ug/L	1360	200	200	1290	1340	-38	-13	70-126	4	30	M1
1,2-Dibromo-3-chloropropane	ug/L	ND	500	500	467	495	93	99	69-127	6	30	
1,2-Dibromoethane (EDB)	ug/L	ND	200	200	221	226	110	113	75-125	2	30	
1,2-Dichlorobenzene	ug/L	ND	200	200	206	214	103	107	75-125	4	30	
1,2-Dichloroethane	ug/L	ND	200	200	218	219	109	109	74-128	.09	30	
1,2-Dichloropropane	ug/L	ND	200	200	231	242	116	121	75-125	5	30	
1,3,5-Trimethylbenzene	ug/L	619	200	200	683	717	32	49	72-126	5	30	M1
1,3-Dichlorobenzene	ug/L	ND	200	200	194	201	97	100	75-125	4	30	
1,3-Dichloropropane	ug/L	ND	200	200	220	227	110	113	75-125	3	30	
1,4-Dichlorobenzene	ug/L	ND	200	200	203	212	101	106	75-125	4	30	
2,2-Dichloropropane	ug/L	ND	200	200	208	215	104	108	71-143	4	30	
2-Butanone (MEK)	ug/L	ND	1000	1000	1250	1350	125	135	64-125	8	30	M1
2-Chlorotoluene	ug/L	ND	200	200	262	276	131	138	74-125	5	30	M1
4-Chlorotoluene	ug/L	ND	200	200	200	210	100	105	75-125	5	30	
4-Methyl-2-pentanone (MIBK)	ug/L	ND	1000	1000	1020	1080	102	108	69-125	6	30	
Acetone	ug/L	ND	1000	1000	1020	989	102	99	57-135	3	30	
Allyl chloride	ug/L	ND	200	200	140	150	70	75	73-134	7	30	M0
Benzene	ug/L	ND	200	200	217	224	106	110	70-135	3	30	
Bromobenzene	ug/L	ND	200	200	203	209	102	105	75-125	3	30	
Bromochloromethane	ug/L	ND	200	200	222	220	111	110	75-125	.6	30	
Bromodichloromethane	ug/L	ND	200	200	185	181	92	91	75-125	2	30	
Bromoform	ug/L	ND	200	200	135	140	67	70	68-133	4	30	M0
Bromomethane	ug/L	ND	200	200	299	283	139	131	56-150	6	30	SS

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(612)607-1700

QUALITY CONTROL DATA

Project: MP027481 MILLE LACS OIL-CAMBRI
Pace Project No.: 10227458

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1427947 1427948

Parameter	Units	10227309009 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Carbon tetrachloride	ug/L	ND	200	200	160	164	80	82	75-137	2	30	
Chlorobenzene	ug/L	ND	200	200	198	205	99	102	75-125	3	30	
Chloroethane	ug/L	ND	200	200	216	218	108	109	64-150	.8	30	
Chloroform	ug/L	ND	200	200	214	220	107	110	75-127	3	30	
Chloromethane	ug/L	ND	200	200	66.3	44.6	27	16	65-140	39	30	CL,M0, R1
cis-1,2-Dichloroethene	ug/L	ND	200	200	206	215	103	107	75-129	4	30	
cis-1,3-Dichloropropene	ug/L	ND	200	200	203	209	101	104	75-125	3	30	
Dibromochloromethane	ug/L	ND	200	200	178	180	89	90	75-125	1	30	
Dibromomethane	ug/L	ND	200	200	193	195	96	97	75-125	1	30	
Dichlorodifluoromethane	ug/L	ND	200	200	232	227	116	114	70-150	2	30	
Dichlorofluoromethane	ug/L	ND	200	200	223	230	111	115	69-142	3	30	
Diethyl ether (Ethyl ether)	ug/L	ND	200	200	203	206	102	103	75-125	1	30	
Ethylbenzene	ug/L	1010	200	200	1060	1120	26	52	75-125	5	30	M1
Hexachloro-1,3-butadiene	ug/L	ND	200	200	198	220	99	110	75-135	11	30	
Isopropylbenzene (Cumene)	ug/L	112	200	200	290	305	89	96	75-125	5	30	
Methyl-tert-butyl ether	ug/L	ND	200	200	231	239	115	120	70-132	4	30	
Methylene Chloride	ug/L	ND	200	200	204	209	102	105	73-125	2	30	
n-Butylbenzene	ug/L	48.2	200	200	255	275	103	114	75-130	8	30	
n-Propylbenzene	ug/L	342	200	200	468	499	63	78	75-128	6	30	M1
Naphthalene	ug/L	298	200	200	491	508	97	105	73-126	3	30	
p-Isopropyltoluene	ug/L	13.2	200	200	226	245	106	116	75-125	8	30	
sec-Butylbenzene	ug/L	22.4	200	200	227	245	102	111	75-126	8	30	
Styrene	ug/L	ND	200	200	147	158	73	79	52-137	8	30	
tert-Butylbenzene	ug/L	ND	200	200	210	228	104	113	75-125	8	30	
Tetrachloroethene	ug/L	ND	200	200	193	207	97	103	75-130	7	30	
Tetrahydrofuran	ug/L	ND	2000	2000	1910	1780	96	89	69-125	7	30	
Toluene	ug/L	12.8	200	200	213	224	100	106	75-125	5	30	
trans-1,2-Dichloroethene	ug/L	ND	200	200	198	207	99	104	75-135	4	30	
trans-1,3-Dichloropropene	ug/L	ND	200	200	194	203	97	102	75-125	5	30	
Trichloroethene	ug/L	ND	200	200	205	215	102	107	75-129	5	30	
Trichlorofluoromethane	ug/L	ND	200	200	222	231	111	115	75-150	4	30	
Vinyl chloride	ug/L	ND	200	200	206	217	103	108	75-147	5	30	
Xylene (Total)	ug/L	1170	600	600	1580	1640	69	79	75-125	4	30	ES
1,2-Dichloroethane-d4 (S)	%						112	110	75-125			
4-Bromofluorobenzene (S)	%						105	106	75-125			
Toluene-d8 (S)	%						104	103	75-125			

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414
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QUALITY CONTROL DATA

Project: MP027481 MILLE LACS OIL-CAMBRI
Pace Project No.: 10227458

QC Batch: OEXT/21591 Analysis Method: WI MOD DRO
QC Batch Method: WI MOD DRO Analysis Description: WIDRO GCS
Associated Lab Samples: 10227458001, 10227458002, 10227458003, 10227458004, 10227458005, 10227458006

METHOD BLANK: 1425289 Matrix: Water
Associated Lab Samples: 10227458001, 10227458002, 10227458003, 10227458004, 10227458005, 10227458006

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Diesel Range Organics	ug/L	ND	100	05/10/13 09:38	
n-Triacontane (S)	%	78	50-150	05/10/13 09:38	

LABORATORY CONTROL SAMPLE & LCSD: 1425290 1425291

Parameter	Units	Spike Conc.	LCS Result	LCSD Result	LCS % Rec	LCSD % Rec	% Rec Limits	RPD	Max RPD	Qualifiers
Diesel Range Organics	ug/L	2000	1540	1820	77	91	75-115	17	20	
n-Triacontane (S)	%				82	98	50-150			

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1425292 1425293

Parameter	Units	10227537003 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Diesel Range Organics	ug/L	ND	2040	2040	1510	1640	70	77	75-115	8	20	M1
n-Triacontane (S)	%						77	81	50-150			

REPORT OF LABORATORY ANALYSIS

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QUALIFIERS

Project: MP027481 MILLE LACS OIL-CAMBRI
Pace Project No.: 10227458

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to changes in sample preparation, dilution of the sample aliquot, or moisture content.

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.

PRL - Pace Reporting Limit.

RL - Reporting Limit.

S - Surrogate

1,2-Diphenylhydrazine (8270 listed analyte) decomposes to Azobenzene.

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

CL	The continuing calibration for this compound is outside of Pace Analytical acceptance limits. The results may be biased low.
ES	The reported result is estimated because one or more of the constituent results are qualified as such.
L0	Analyte recovery in the laboratory control sample (LCS) was outside QC limits.
L2	Analyte recovery in the laboratory control sample (LCS) was below QC limits. Results may be biased low.
M0	Matrix spike recovery and/or matrix spike duplicate recovery was outside laboratory control limits.
M1	Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.
R1	RPD value was outside control limits.
S1	Surrogate recovery outside laboratory control limits (confirmed by re-analysis).
SS	This analyte did not meet the secondary source verification criteria for the initial calibration. The reported result should be considered an estimated value.
T7	Low boiling point hydrocarbons are present in the sample.

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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: MP027481 MILLE LACS OIL-CAMBRI
Pace Project No.: 10227458

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
10227458001	**MW-11**	WI MOD DRO	OEXT/21591	WI MOD DRO	GCSV/11275
10227458002	**MW-6A**	WI MOD DRO	OEXT/21591	WI MOD DRO	GCSV/11275
10227458003	**MW-6**	WI MOD DRO	OEXT/21591	WI MOD DRO	GCSV/11275
10227458004	**MW-10**	WI MOD DRO	OEXT/21591	WI MOD DRO	GCSV/11275
10227458005	**MW-9**	WI MOD DRO	OEXT/21591	WI MOD DRO	GCSV/11275
10227458006	**MW-1**	WI MOD DRO	OEXT/21591	WI MOD DRO	GCSV/11275
10227458001	**MW-11**	WI MOD GRO	GCV/10696		
10227458002	**MW-6A**	WI MOD GRO	GCV/10696		
10227458003	**MW-6**	WI MOD GRO	GCV/10696		
10227458004	**MW-10**	WI MOD GRO	GCV/10696		
10227458005	**MW-9**	WI MOD GRO	GCV/10696		
10227458006	**MW-1**	WI MOD GRO	GCV/10696		
10227458007	**TRIP BLANK**	WI MOD GRO	GCV/10690		
10227458005	**MW-9**	EPA 8260	MSV/23565		
10227458007	**TRIP BLANK**	EPA 8260	MSV/23565		

Report Date: 10-May-2013 11:40

Pace Analytical Services

WI Dept of Nat. Resources- WIDRO

Data file : \\192.168.10.12\chem\10gcs4.i\051013dro.b\0510F010.D
Lab Smp Id: 10227458001
Inj Date : 10-MAY-2013 10:01
Operator : JRH Inst ID: 10gcs4.i
Smp Info : 10227458001
Misc Info : 11275
Comment : C10-C28 DRO
Method : \\192.168.10.12\chem\10gcs4.i\051013dro.b\WDRO4-050613.m
Meth Date : 10-May-2013 10:03 jheinecke Quant Type: ESTD
Cal Date : 06-MAY-2013 08:41 Cal File: 0506F012.D
Als bottle: 5
Dil Factor: 1.00000
Integrator: HP Genie Compound Sublist: all.sub
Target Version: 4.14
Processing Host: 10VOA3

Concentration Formula: Amt * DF * Uf * Vt/ (Vo * Vi) * CpndVariable

Name	Value	Description

DF	1.000	Dilution Factor
Uf	1.000	ng unit correction factor
Vt	1.000	Volume of final extract (mL)
Vo	1000.000	Volume of sample extracted (mL)
Vi	1.000	Volume injected
Cpnd Variable		Local Compound Variable

					CONCENTRATIONS	
					ON-COLUMN	FINAL
Compounds	RT	EXP RT	DLT RT	RESPONSE	(ug/mL)	(mg/L)
S 2 DRO	1.450-2.770			3069470	73.1232	0.0731
$ 5 n-Triacontane (S)	2.845	2.843	0.002	1385817	39.0358	0.0390(M)

QC Flag Legend

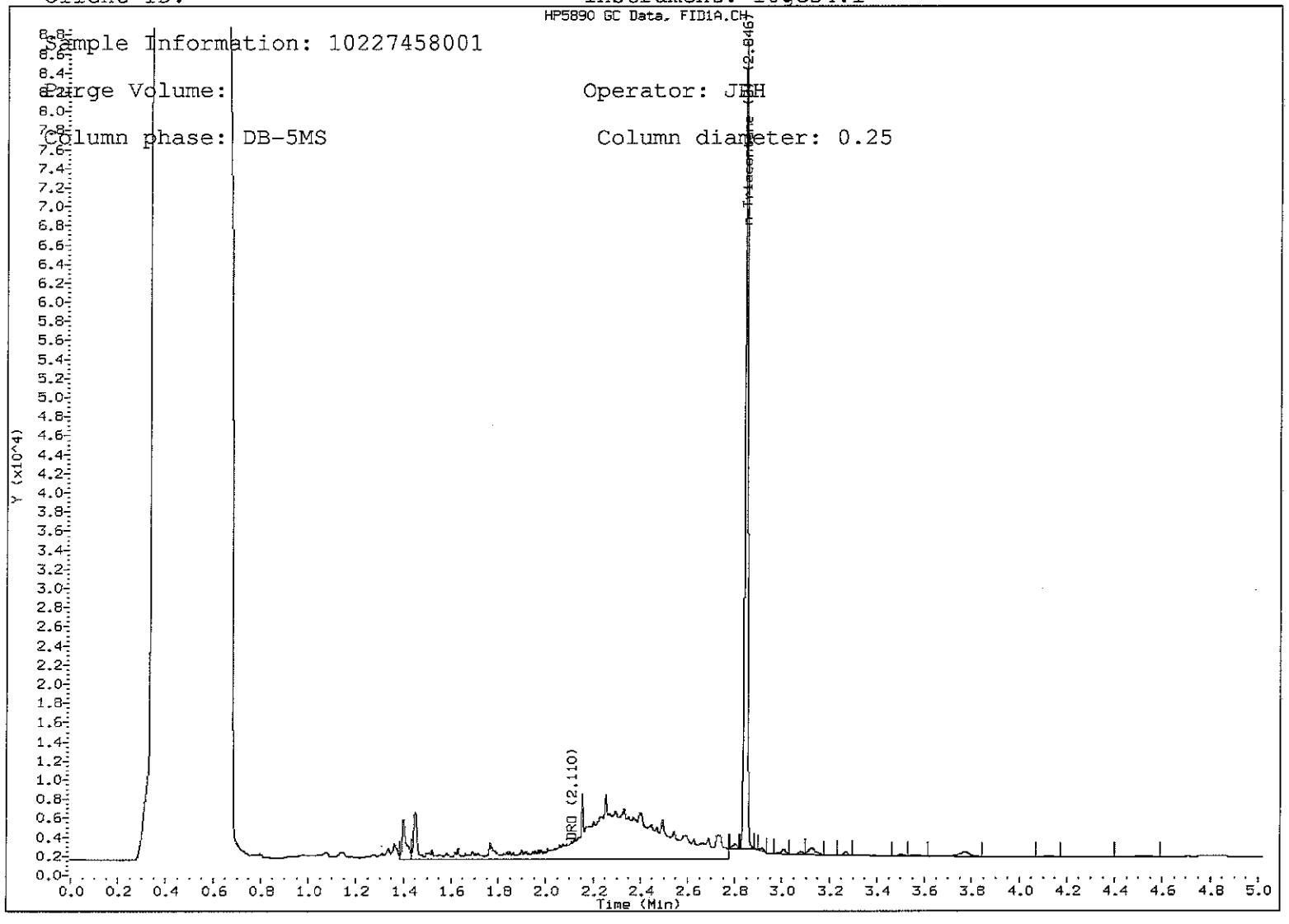
M - Compound response manually integrated.

Data File: \\192.168.10.12\chem\10gcs4.i\051013dro.b/0510F010.D

Report Date: 05/10/2013

Sample ID: 10227458001

Client ID: Instrument: 10gcs4.i



Sample Information: 10227458001

Purge Volume: Operator: JBH

Column phase: DB-5MS Column diameter: 0.25

Report Date: 09-May-2013 09:43

Pace Analytical Services

Wisconsin GAS RANGE ORGANICS

Data file : \\192.168.10.12\chem\10gcv3.i\050813b-2.b\G1-12821.d

Lab Smp Id: 10227458001

Inj Date : 08-MAY-2013 18:51

Operator : KT1 Inst ID: 10gcv3.i

Smp Info : 10227458001

Misc Info : 10696

Comment : Modified WIGRO

Method : \\192.168.10.12\chem\10gcv3.i\050813b-2.b\g313-wigro-128.m

Meth Date : 09-May-2013 09:43 10gcv3.i Quant Type: ESTD

Cal Date : 08-MAY-2013 14:32 Cal File: G1-12811.d

Als bottle: 1

Dil Factor: 1.00000

Integrator: HP Genie Compound Sublist: all.sub

Target Version: 4.14

Processing Host: SEMIVOLGCMS

Concentration Formula: Amt * DF * CpndVariable

Cpnd Variable Local Compound Variable

				CONCENTRATIONS	
				ON-COLUMN	FINAL
Compounds	RT	EXP RT	DLT RT	RESPONSE	(ug/L)	(ug/L)
S 5 GRO	Compound Not Detected.					

Data File: \\192.168.10.12\chem\10gcv3.i\050813b-2.b/G1-12821.d

Report Date: 05/09/2013

Sample ID: 10227458001

Client ID:

Instrument: 10gcv3.i

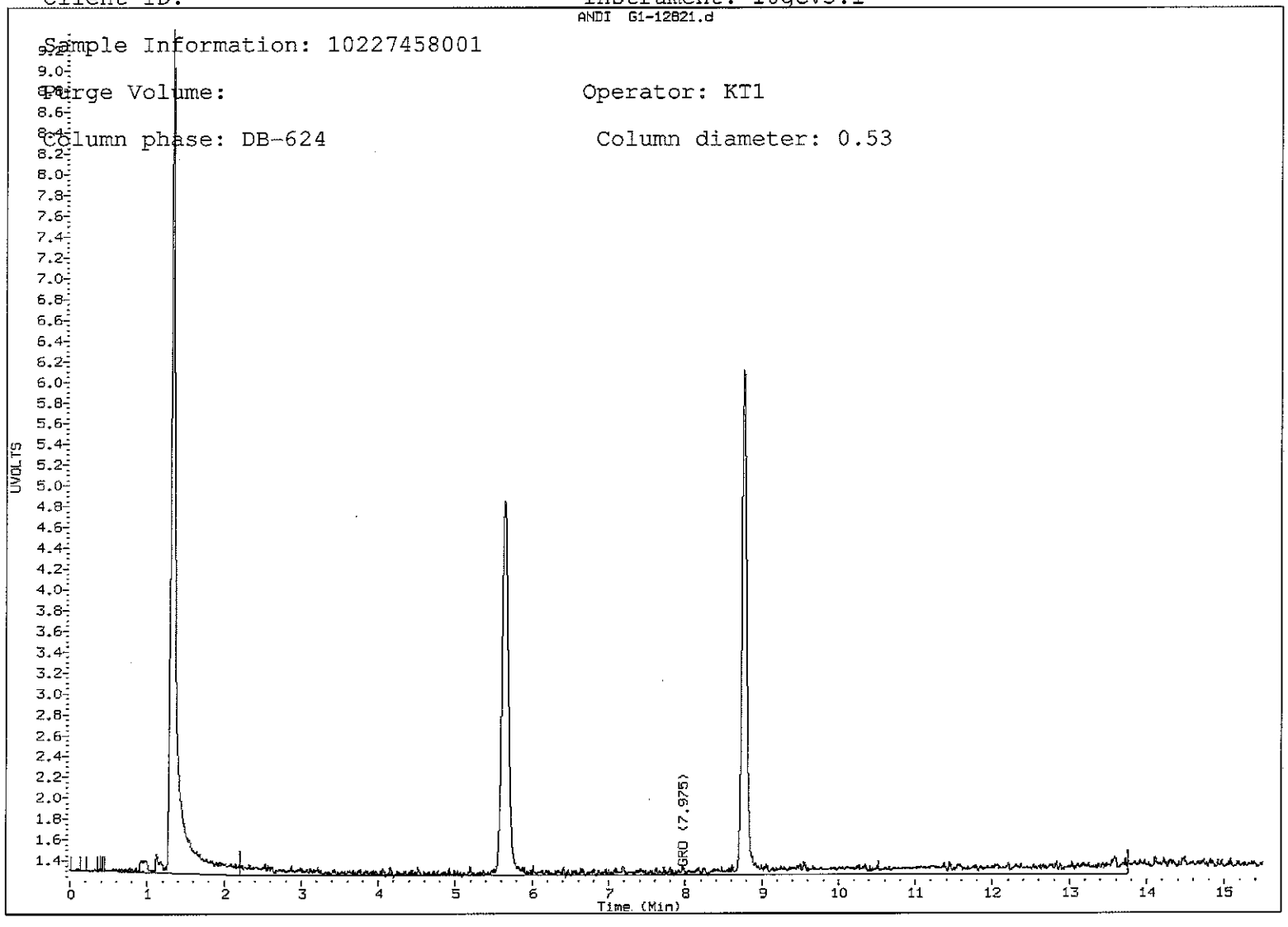
Sample Information: 10227458001

Purge Volume:

Operator: KT1

Column phase: DB-624

Column diameter: 0.53



Report Date: 09-May-2013 09:43

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Wisconsin GAS RANGE ORGANICS

Data file : \\192.168.10.12\chem\10gcv3.i\050813b-2.b\G1-12822.d
Lab Smp Id: 10227458002
Inj Date : 08-MAY-2013 19:10
Operator : KT1 Inst ID: 10gcv3.i
Smp Info : 10227458002
Misc Info : 10696
Comment : Modified WIGRO
Method : \\192.168.10.12\chem\10gcv3.i\050813b-2.b\g313-wigro-128.m
Meth Date : 09-May-2013 09:43 10gcv3.i Quant Type: ESTD
Cal Date : 08-MAY-2013 14:32 Cal File: G1-12811.d
Als bottle: 1
Dil Factor: 1.00000
Integrator: HP Genie Compound Sublist: all.sub
Target Version: 4.14
Processing Host: SEMIVOLGCMS

Concentration Formula: Amt * DF * CpndVariable
Cpnd Variable Local Compound Variable

Compounds	RT	EXP RT	DLT RT	RESPONSE	CONCENTRATIONS ON-COLUMN (ug/L)	CONCENTRATIONS FINAL (ug/L)
S 5 GRO	2.200-13.750			406476	5.31017	5.310(a)

QC Flag Legend

a - Target compound detected but, quantitated amount Below Limit Of Quantitation(BLOQ).

Data File: \\192.168.10.12\chem\10gcv3.i\050813b-2.b/G1-12822.d

Report Date: 05/09/2013

Sample ID: 10227458002

Client ID:

Instrument: 10gcv3.i

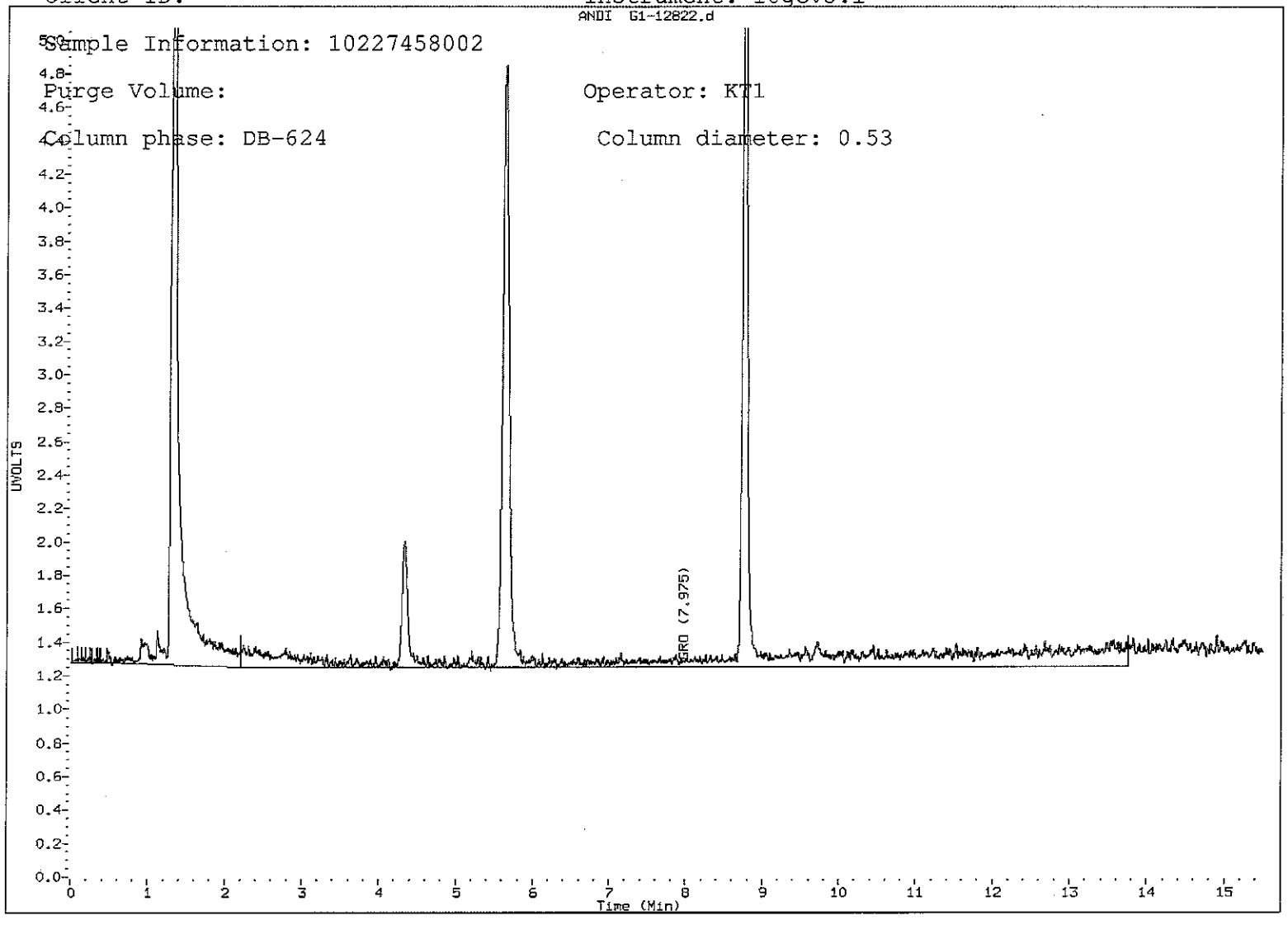
Sample Information: 10227458002

Purge Volume:

Operator: KT1

Column phase: DB-624

Column diameter: 0.53



Report Date: 10-May-2013 11:39

Pace Analytical Services

WI Dept of Nat. Resources- WIDRO

Data file : \\192.168.10.12\chem\10gcs4.i\051013dro.b\0510F011.D
Lab Smp Id: 10227458002
Inj Date : 10-MAY-2013 10:09
Operator : JRH Inst ID: 10gcs4.i
Smp Info : 10227458002
Misc Info : 11275
Comment : C10-C28 DRO
Method : \\192.168.10.12\chem\10gcs4.i\051013dro.b\WDRO4-050613.m
Meth Date : 10-May-2013 10:03 jheinecke Quant Type: ESTD
Cal Date : 06-MAY-2013 08:41 Cal File: 0506F012.D
Als bottle: 6
Dil Factor: 1.00000
Integrator: HP Genie Compound Sublist: all.sub
Target Version: 4.14
Processing Host: 10VOA3

Concentration Formula: Amt * DF * Uf * Vt/ (Vo * Vi) * CpndVariable

Name	Value	Description

DF	1.000	Dilution Factor
Uf	1.000	ng unit correction factor
Vt	1.000	Volume of final extract (mL)
Vo	1000.000	Volume of sample extracted (mL)
Vi	1.000	Volume injected

Cpnd Variable Local Compound Variable

						CONCENTRATIONS	
						ON-COLUMN	FINAL
	Compounds	RT	EXP RT	DLT RT	RESPONSE	(ug/mL)	(mg/L)
S	2 DRO	1.450-2.770			5131496	119.112	0.119
$	5 n-Triacontane (S)	2.849	2.843	0.006	1376786	38.7818	0.0388(M)

QC Flag Legend

M - Compound response manually integrated.

Data File: \\192.168.10.12\chem\10gcs4.i\051013dro.b/0510F011.D

Report Date: 05/10/2013

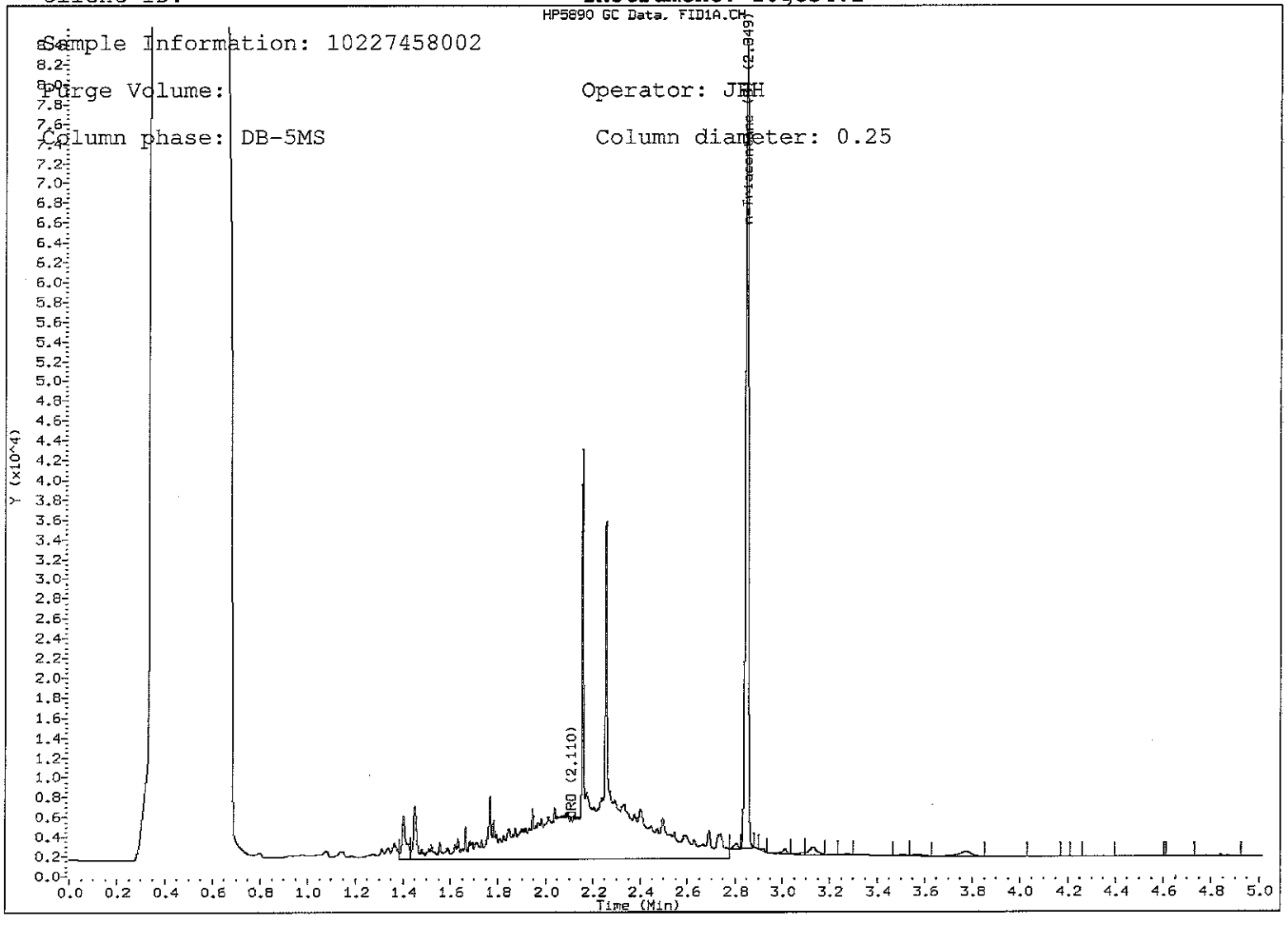
Sample ID: 10227458002

Client ID: Instrument: 10gcs4.i

Sample Information: 10227458002

Purge Volume: Operator: JHH

Column phase: DB-5MS Column diameter: 0.25



Report Date: 10-May-2013 11:39

Pace Analytical Services

WI Dept of Nat. Resources- WIDRO

Data file : \\192.168.10.12\chem\10gcs4.i\051013dro.b\0510F013.D
Lab Smp Id: 10227458003
Inj Date : 10-MAY-2013 10:24
Operator : JRH Inst ID: 10gcs4.i
Smp Info : 10227458003
Misc Info : 11275
Comment : C10-C28 DRO
Method : \\192.168.10.12\chem\10gcs4.i\051013dro.b\WDRO4-050613.m
Meth Date : 10-May-2013 10:03 jheinecke Quant Type: ESTD
Cal Date : 06-MAY-2013 08:41 Cal File: 0506F012.D
Als bottle: 8
Dil Factor: 1.00000
Integrator: HP Genie Compound Sublist: all.sub
Target Version: 4.14
Processing Host: 10VOA3

Concentration Formula: Amt * DF * Uf * Vt/ (Vo * Vi) * CpndVariable

Name	Value	Description

DF	1.000	Dilution Factor
Uf	1.000	ng unit correction factor
Vt	1.000	Volume of final extract (mL)
Vo	1000.000	Volume of sample extracted (mL)
Vi	1.000	Volume injected

Cpnd Variable Local Compound Variable

						CONCENTRATIONS	
						ON-COLUMN	FINAL
Compounds		RT	EXP RT	DLT RT	RESPONSE	(ug/mL)	(mg/L)
S	2 DRO	1.450-2.770			191133567	4267.46	4.27
$	5 n-Triacontane (S)	2.847	2.843	0.004	1465225	41.2693	0.0413(M)

QC Flag Legend

M - Compound response manually integrated.

Data File: \\192.168.10.12\chem\10gcs4.i\051013dro.b/0510F013.D

Report Date: 05/10/2013

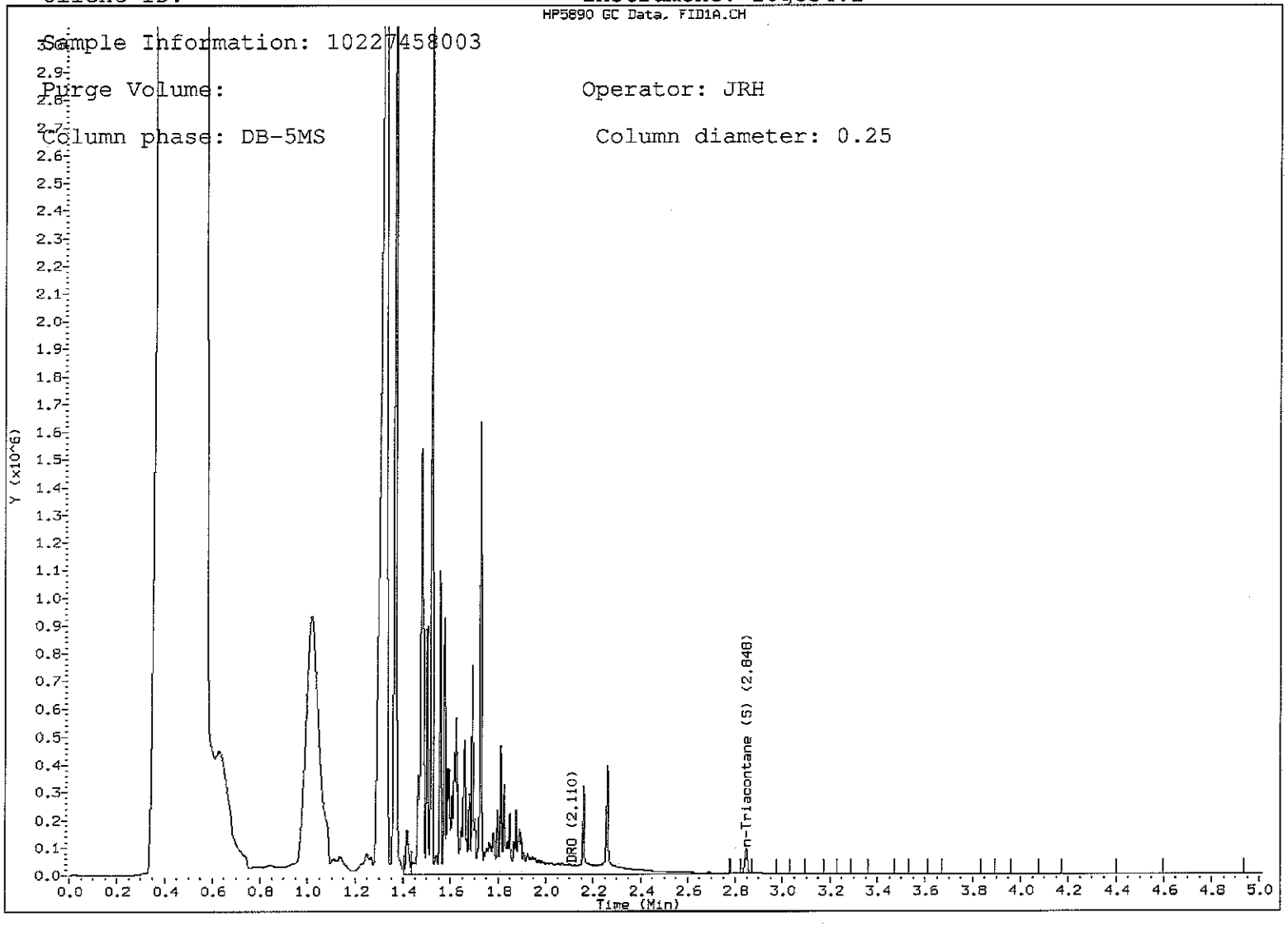
Sample ID: 10227458003

Client ID: Instrument: 10gcs4.i

Sample Information: 10227458003

Purge Volume: Operator: JRH

Column phase: DB-5MS Column diameter: 0.25



Report Date: 09-May-2013 09:43

Pace Analytical Services

Wisconsin GAS RANGE ORGANICS

Data file : \\192.168.10.12\chem\10gcv3.i\050813b-2.b\G1-12833.d

Lab Smp Id: 10227458003

Inj Date : 08-MAY-2013 22:46

Operator : KT1 Inst ID: 10gcv3.i

Smp Info : 10227458003,10

Misc Info : 10696

Comment : Modified WIGRO

Method : \\192.168.10.12\chem\10gcv3.i\050813b-2.b\g313-wigro-128.m

Meth Date : 09-May-2013 09:43 10gcv3.i Quant Type: ESTD

Cal Date : 08-MAY-2013 14:32 Cal File: G1-12811.d

Als bottle: 1

Dil Factor: 10.00000

Integrator: HP Genie Compound Sublist: all.sub

Target Version: 4.14

Processing Host: SEMIVOLGCMS

Concentration Formula: Amt * DF * CpndVariable

Cpnd Variable Local Compound Variable

Compounds	RT	EXP RT	DLT RT	RESPONSE	CONCENTRATIONS ON-COLUMN (ug/L)	CONCENTRATIONS FINAL (ug/L)
S 5 GRO	2.200-13.750			23228815	2603.78	26040

Data File: \\192.168.10.12\chem\10gcv3.i\050813b-2.b/G1-12833.d

Report Date: 05/09/2013

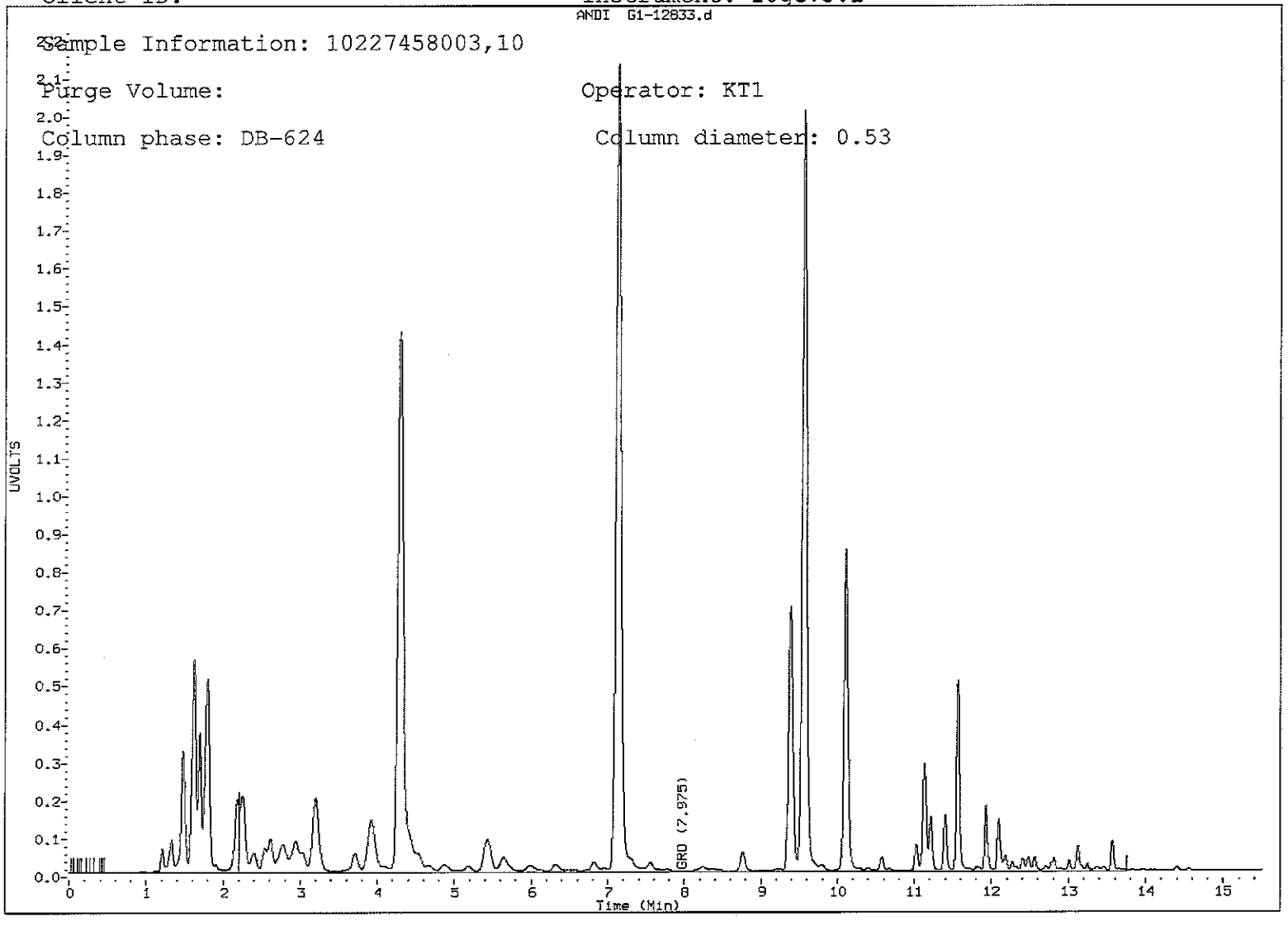
Sample ID: 10227458003

Client ID: Instrument: 10gcv3.i

Sample Information: 10227458003,10

Purge Volume: Operator: KT1

Column phase: DB-624 Column diameter: 0.53



Report Date: 09-May-2013 09:43

Pace Analytical Services

Wisconsin GAS RANGE ORGANICS

Data file : \\192.168.10.12\chem\10gcv3.i\050813b-2.b\G1-12824.d

Lab Smp Id: 10227458004

Inj Date : 08-MAY-2013 19:50

Operator : KT1 Inst ID: 10gcv3.i

Smp Info : 10227458004,20

Misc Info : 10696

Comment : Modified WIGRO

Method : \\192.168.10.12\chem\10gcv3.i\050813b-2.b\g313-wigro-128.m

Meth Date : 09-May-2013 09:43 10gcv3.i Quant Type: ESTD

Cal Date : 08-MAY-2013 14:32 Cal File: G1-12811.d

Als bottle: 1

Dil Factor: 20.00000

Integrator: HP Genie Compound Sublist: all.sub

Target Version: 4.14

Processing Host: SEMIVOLGCMS

Concentration Formula: Amt * DF * CpndVariable

Cpnd Variable Local Compound Variable

				CONCENTRATIONS	
				ON-COLUMN	FINAL
Compounds	RT	EXP RT	DLT RT	RESPONSE	(ug/L)	(ug/L)
S 5 GRO	2.200-13.750			8111556	882.583	17650

Data File: \\192.168.10.12\chem\10gcv3.i\050813b-2.b/G1-12824.d

Report Date: 05/09/2013

Sample ID: 10227458004

Client ID:

Instrument: 10gcv3.i

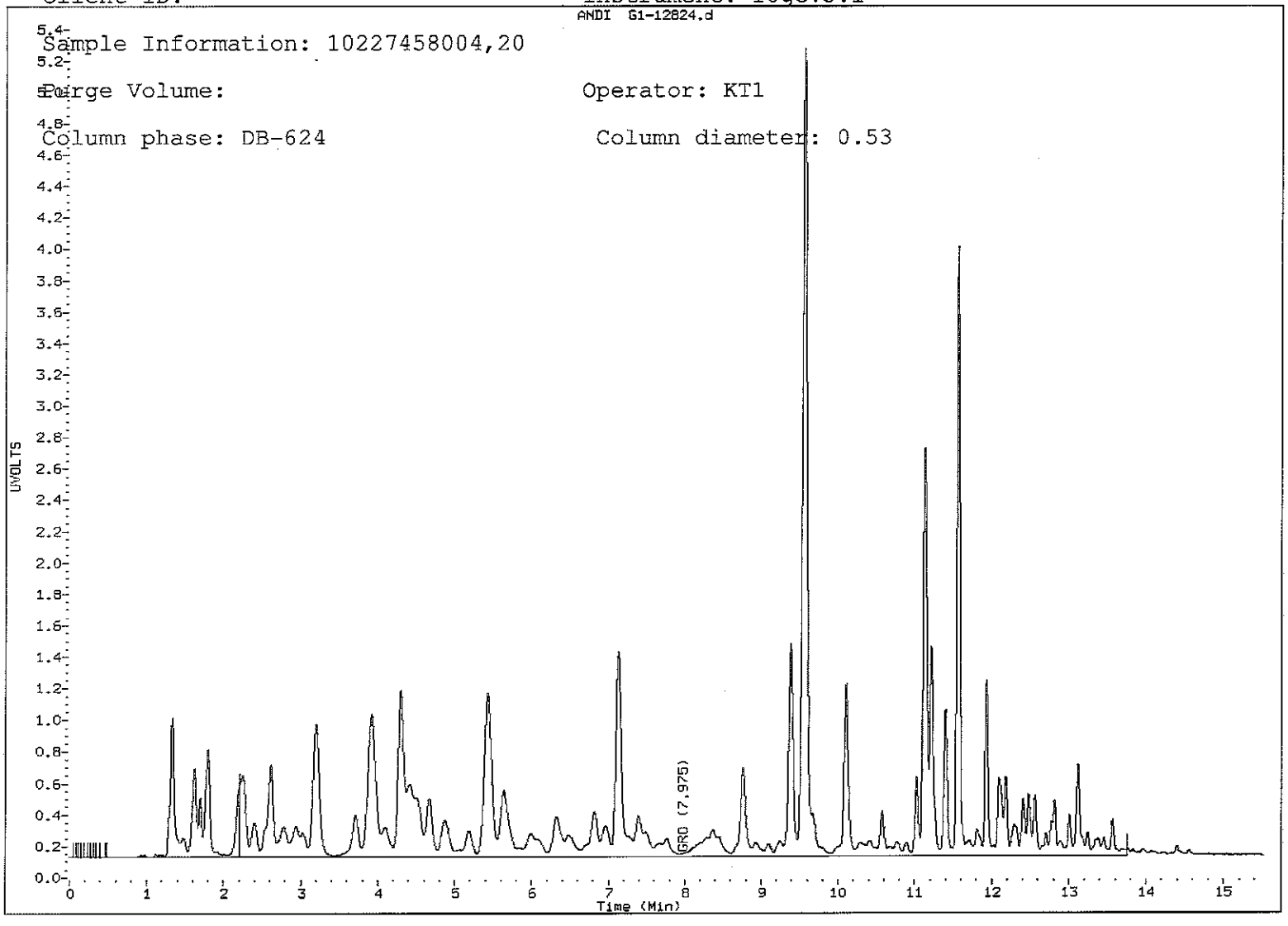
Sample Information: 10227458004,20

Purge Volume:

Operator: KT1

Column phase: DB-624

Column diameter: 0.53



Report Date: 10-May-2013 12:04

Pace Analytical Services

WI Dept of Nat. Resources- WIDRO

Data file : \\192.168.10.12\chem\10gcs4.i\051013dro.b\0510F021.D

Lab Smp Id: 10227458004

Inj Date : 10-MAY-2013 11:32

Operator : JRH Inst ID: 10gcs4.i

Smp Info : 10227458004,5

Misc Info : 11275

Comment : C10-C28 DRO

Method : \\192.168.10.12\chem\10gcs4.i\051013dro.b\WDRO4-050613.m

Meth Date : 10-May-2013 12:02 jheinecke Quant Type: ESTD

Cal Date : 06-MAY-2013 08:41 Cal File: 0506F012.D

Als bottle: 16

Dil Factor: 5.00000

Integrator: HP Genie Compound Sublist: all.sub

Target Version: 4.14

Processing Host: 10VOA3

Concentration Formula: Amt * DF * Uf * Vt/ (Vo * Vi) * CpndVariable

Name	Value	Description

DF	5.000	Dilution Factor
Uf	1.000	ng unit correction factor
Vt	1.000	Volume of final extract (mL)
Vo	1000.000	Volume of sample extracted (mL)
Vi	1.000	Volume injected

Cpnd Variable Local Compound Variable

					CONCENTRATIONS	
					ON-COLUMN	FINAL
Compounds	RT	EXP RT	DLT RT	RESPONSE	(ug/mL)	(mg/L)
S 2 DRO	1.450-2.770			76907253	1719.91	8.60
$ 5 n-Triacontane (S)	2.845	2.843	0.002	327613	9.27230	0.0464(M)

QC Flag Legend

M - Compound response manually integrated.

Data File: \\192.168.10.12\chem\10gcs4.i\051013dro.b/0510F021.D

Report Date: 05/10/2013

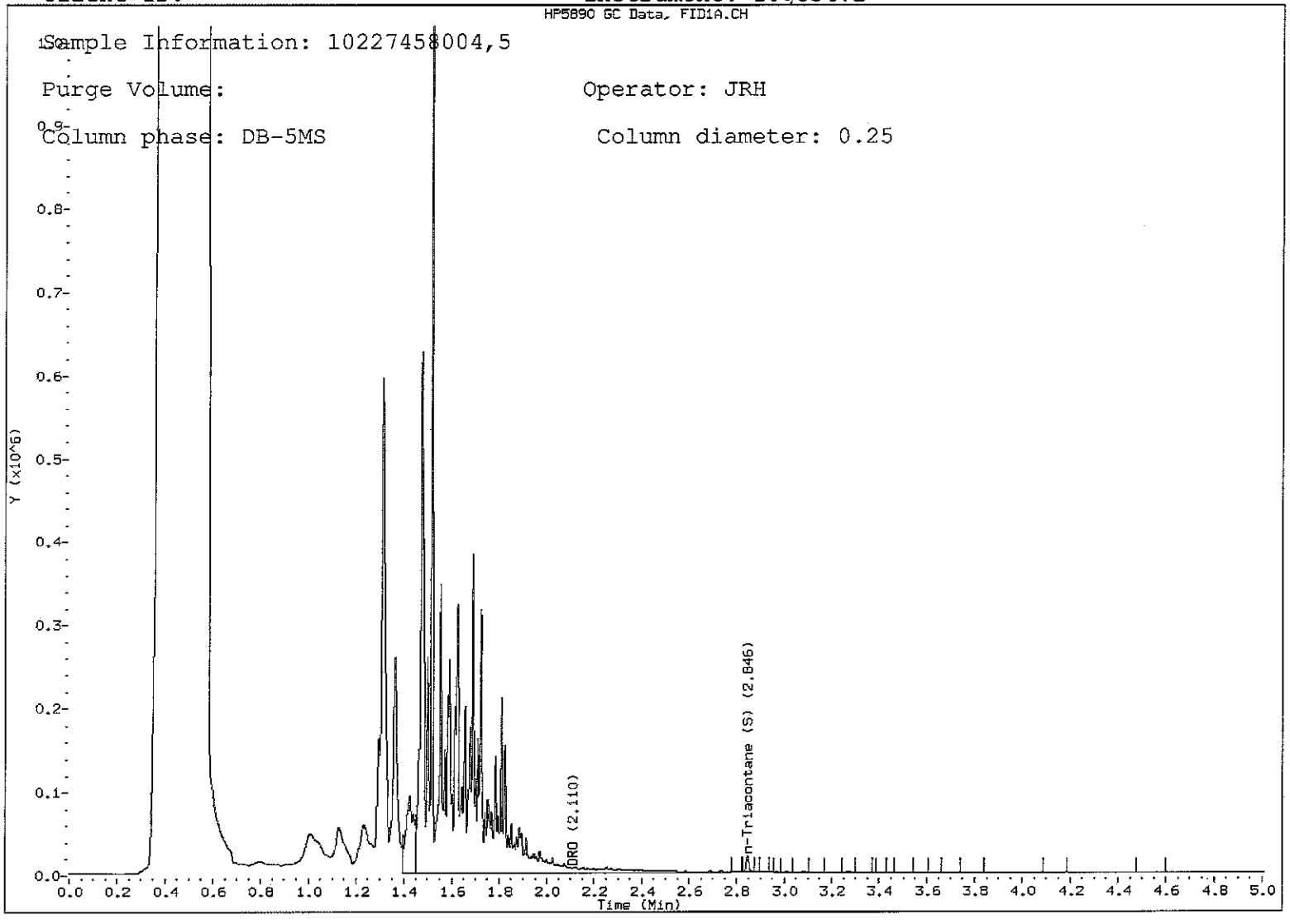
Sample ID: 10227458004

Client ID: Instrument: 10gcs4.i

Sample Information: 10227458004,5

Purge Volume: Operator: JRH

Column phase: DB-5MS Column diameter: 0.25



Report Date: 10-May-2013 11:38

Pace Analytical Services

WI Dept of Nat. Resources- WIDRO

Data file : \\192.168.10.12\chem\10gcs4.i\051013dro.b\0510F012.D
Lab Smp Id: 10227458005
Inj Date : 10-MAY-2013 10:17
Operator : JRH Inst ID: 10gcs4.i
Smp Info : 10227458005
Misc Info : 11275
Comment : C10-C28 DRO
Method : \\192.168.10.12\chem\10gcs4.i\051013dro.b\WDRO4-050613.m
Meth Date : 10-May-2013 10:03 jheinecke Quant Type: ESTD
Cal Date : 06-MAY-2013 08:41 Cal File: 0506F012.D
Als bottle: 7
Dil Factor: 1.00000
Integrator: HP Genie Compound Sublist: all.sub
Target Version: 4.14
Processing Host: 10VOA3

Concentration Formula: Amt * DF * Uf * Vt/ (Vo * Vi) * CpndVariable

Name	Value	Description

DF	1.000	Dilution Factor
Uf	1.000	ng unit correction factor
Vt	1.000	Volume of final extract (mL)
Vo	1000.000	Volume of sample extracted (mL)
Vi	1.000	Volume injected

Cpnd Variable Local Compound Variable

					CONCENTRATIONS	
					ON-COLUMN	FINAL
Compounds	RT	EXP RT	DLT RT	RESPONSE	(ug/mL)	(mg/L)
S 2 DRO	1.450-2.770			33314555	747.671	0.748
$ 5 n-Triacontane (S)	2.843	2.843	0.000	199822	5.67799	0.00568(RM)

QC Flag Legend

R - Spike/Surrogate failed recovery limits.

M - Compound response manually integrated.

Data File: \\192.168.10.12\chem\10gcs4.i\051013dro.b/0510F012.D

Report Date: 05/10/2013

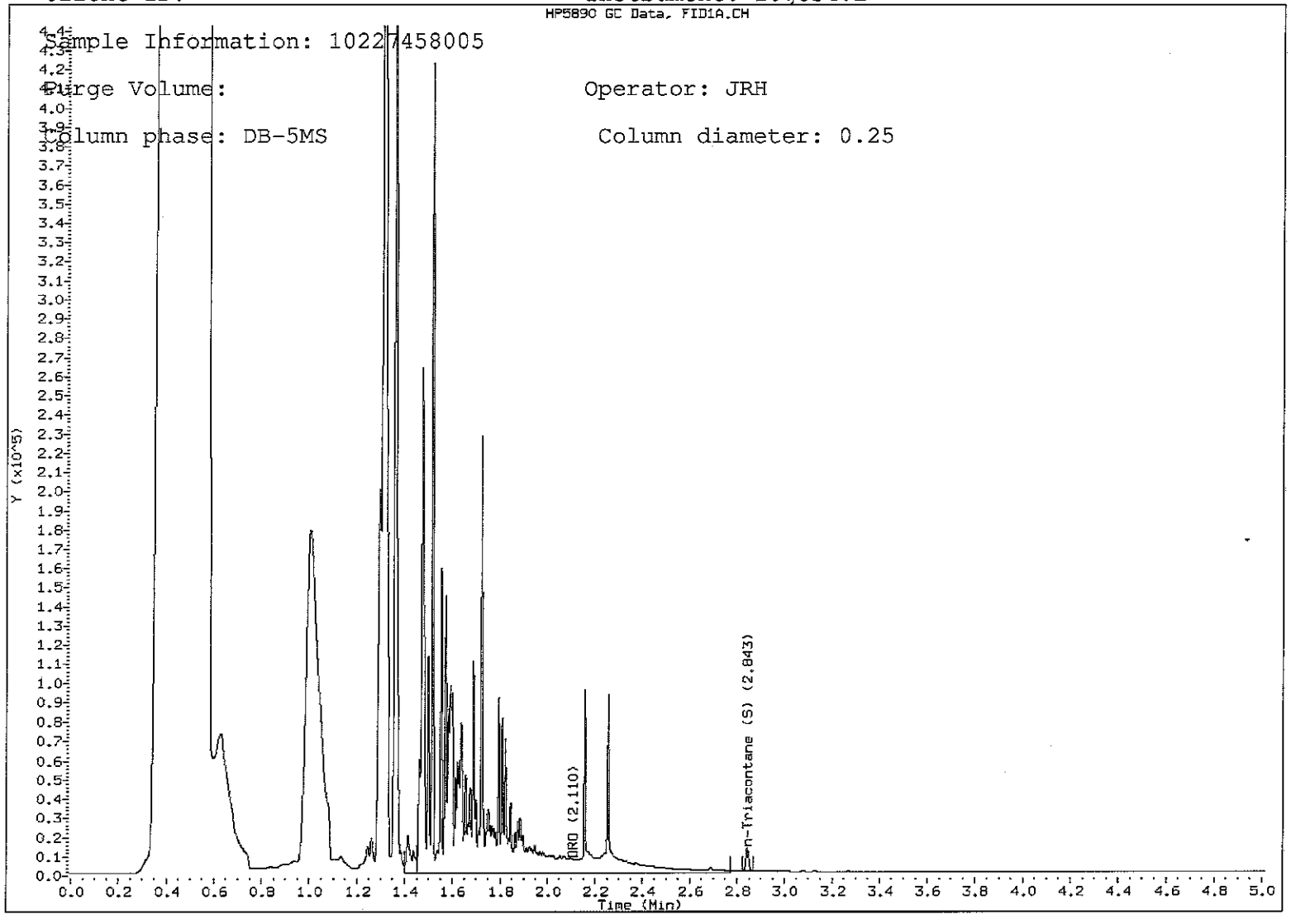
Sample ID: 10227458005

Client ID: Instrument: 10gcs4.i

Sample Information: 10227458005

Purge Volume: Operator: JRH

Column phase: DB-5MS Column diameter: 0.25



Report Date: 09-May-2013 09:43

Pace Analytical Services

Wisconsin GAS RANGE ORGANICS

Data file : \\192.168.10.12\chem\10gcv3.i\050813b-2.b\G1-12834.d

Lab Smp Id: 10227458005

Inj Date : 08-MAY-2013 23:06

Operator : KT1 Inst ID: 10gcv3.i

Smp Info : 10227458005,25

Misc Info : 10696

Comment : Modified WIGRO

Method : \\192.168.10.12\chem\10gcv3.i\050813b-2.b\g313-wigro-128.m

Meth Date : 09-May-2013 09:43 10gcv3.i Quant Type: ESTD

Cal Date : 08-MAY-2013 14:32 Cal File: G1-12811.d

Als bottle: 1

Dil Factor: 25.00000

Integrator: HP Genie Compound Sublist: all.sub

Target Version: 4.14

Processing Host: SEMIVOLGCMS

Concentration Formula: Amt * DF * CpndVariable

Cpnd Variable Local Compound Variable

Compounds	RT	EXP RT	DLT RT	RESPONSE	CONCENTRATIONS ON-COLUMN (ug/L)	FINAL (ug/L)
S 5 GRO	2.200-13.750			16878080	1880.71	47020

Data File: \\192.168.10.12\chem\10gcv3.i\050813b-2.b/G1-12834.d

Report Date: 05/09/2013

Sample ID: 10227458005

Client ID:

Instrument: 10gcv3.i

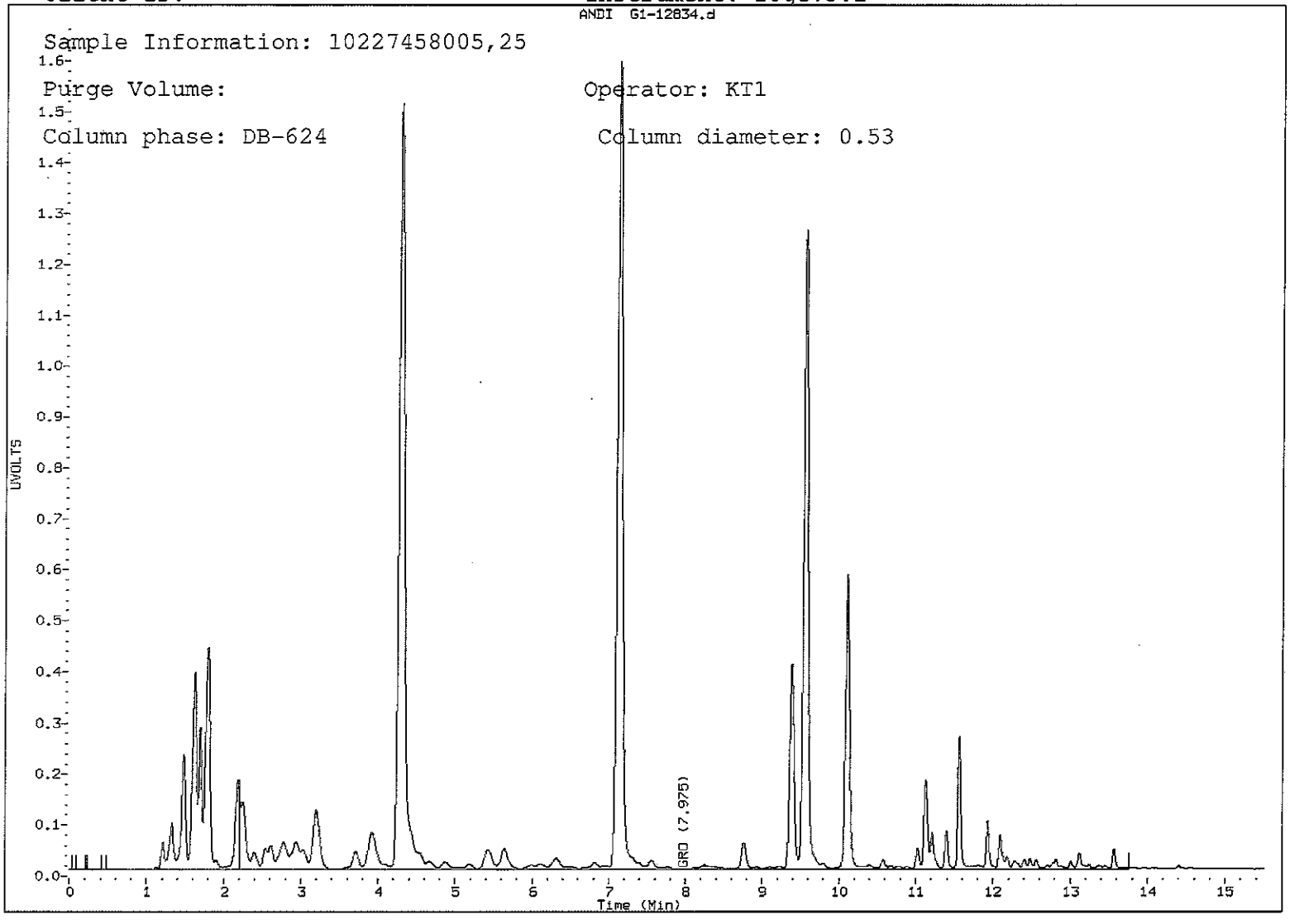
Sample Information: 10227458005,25

Purge Volume:

Operator: KT1

Column phase: DB-624

Column diameter: 0.53



Report Date: 09-May-2013 09:43

Pace Analytical Services

Wisconsin GAS RANGE ORGANICS

Data file : \\192.168.10.12\chem\10gcv3.i\050813b-2.b\G1-12831.d
Lab Smp Id: 10227458006
Inj Date : 08-MAY-2013 22:07
Operator : KT1 Inst ID: 10gcv3.i
Smp Info : 10227458006
Misc Info : 10696
Comment : Modified WIGRO
Method : \\192.168.10.12\chem\10gcv3.i\050813b-2.b\g313-wigro-128.m
Meth Date : 09-May-2013 09:43 10gcv3.i Quant Type: ESTD
Cal Date : 08-MAY-2013 14:32 Cal File: G1-12811.d
Als bottle: 1
Dil Factor: 1.00000
Integrator: HP Genie Compound Sublist: all.sub
Target Version: 4.14
Processing Host: SEMIVOLGCMS

Concentration Formula: Amt * DF * CpndVariable
Cpnd Variable Local Compound Variable

				CONCENTRATIONS	
				ON-COLUMN	FINAL
Compounds	RT	EXP RT	DLT RT	RESPONSE	(ug/L)	(ug/L)
S 5 GRO	2.200-13.750			18327937	2045.78	2046

Data File: \\192.168.10.12\chem\10gcv3.i\050813b-2.b/G1-12831.d

Report Date: 05/09/2013

Sample ID: 10227458006

Client ID:

Instrument: 10gcv3.i

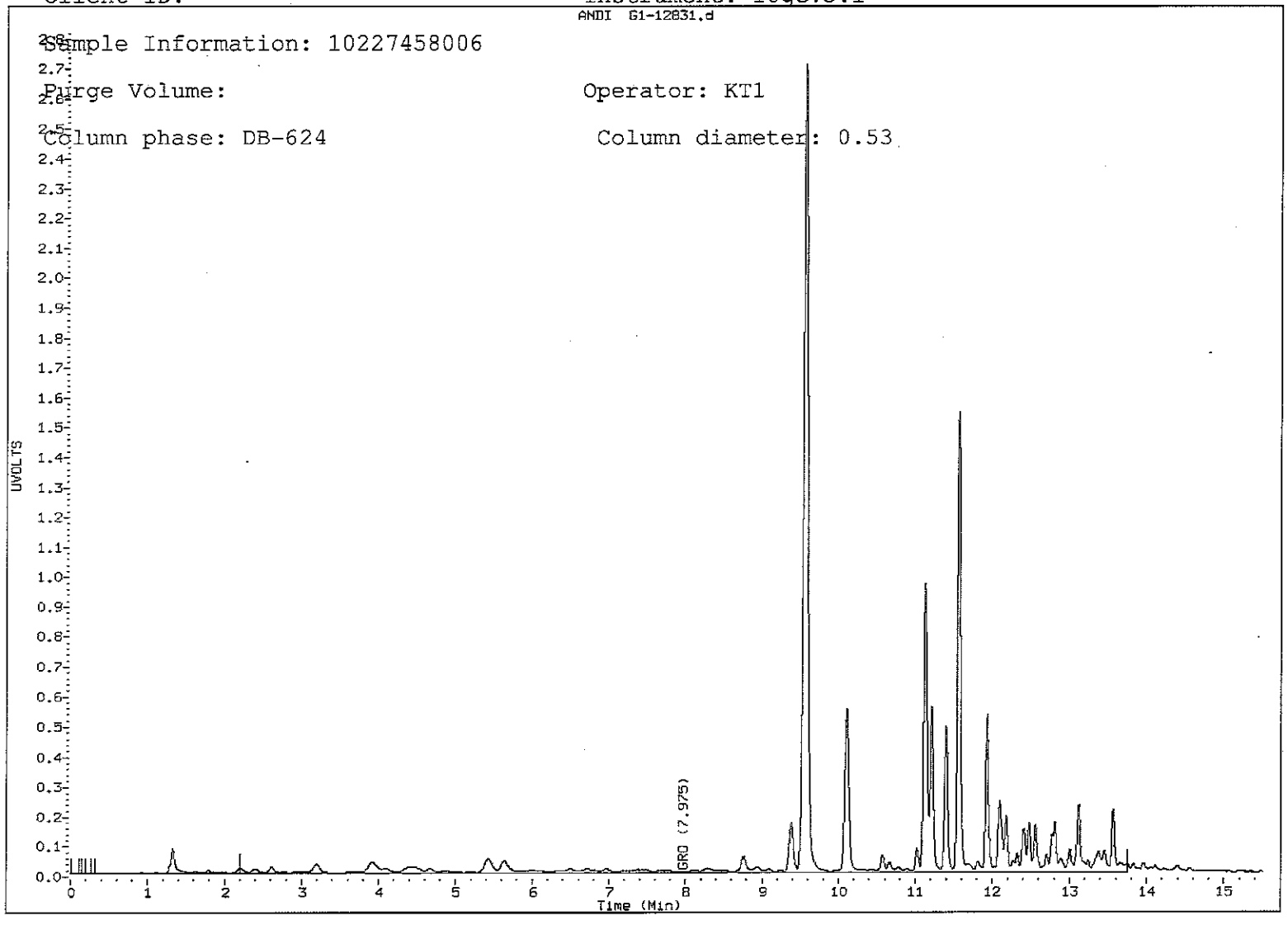
Sample Information: 10227458006

Purge Volume:

Operator: KT1

Column phase: DB-624

Column diameter: 0.53



Report Date: 10-May-2013 11:39

Pace Analytical Services

WI Dept of Nat. Resources- WIDRO

Data file : \\192.168.10.12\chem\10gcs4.i\051013dro.b\0510F015.D
Lab Smp Id: 10227458006
Inj Date : 10-MAY-2013 10:40
Operator : JRH Inst ID: 10gcs4.i
Smp Info : 10227458006
Misc Info : 11275
Comment : C10-C28 DRO
Method : \\192.168.10.12\chem\10gcs4.i\051013dro.b\WDRO4-050613.m
Meth Date : 10-May-2013 10:03 jheinecke Quant Type: ESTD
Cal Date : 06-MAY-2013 08:41 Cal File: 0506F012.D
Als bottle: 10
Dil Factor: 1.00000
Integrator: HP Genie Compound Sublist: all.sub
Target Version: 4.14
Processing Host: 10VOA3

Concentration Formula: Amt * DF * Uf * Vt/ (Vo * Vi) * CpndVariable

Name	Value	Description

DF	1.000	Dilution Factor
Uf	1.000	ng unit correction factor
Vt	1.000	Volume of final extract (mL)
Vo	1000.000	Volume of sample extracted (mL)
Vi	1.000	Volume injected

Cpnd Variable Local Compound Variable

						CONCENTRATIONS	
						ON-COLUMN	FINAL
	Compounds	RT	EXP RT	DLT RT	RESPONSE	(ug/mL)	(mg/L)
S	2 DRO	1.450-2.770			35569274	797.957	0.798
$	5 n-Triacontane (S)	2.847	2.843	0.004	1359530	38.2965	0.0383(M)

QC Flag Legend

M - Compound response manually integrated.

Data File: \\192.168.10.12\chem\10gcs4.i\051013dro.b/0510F015.D

Report Date: 05/10/2013

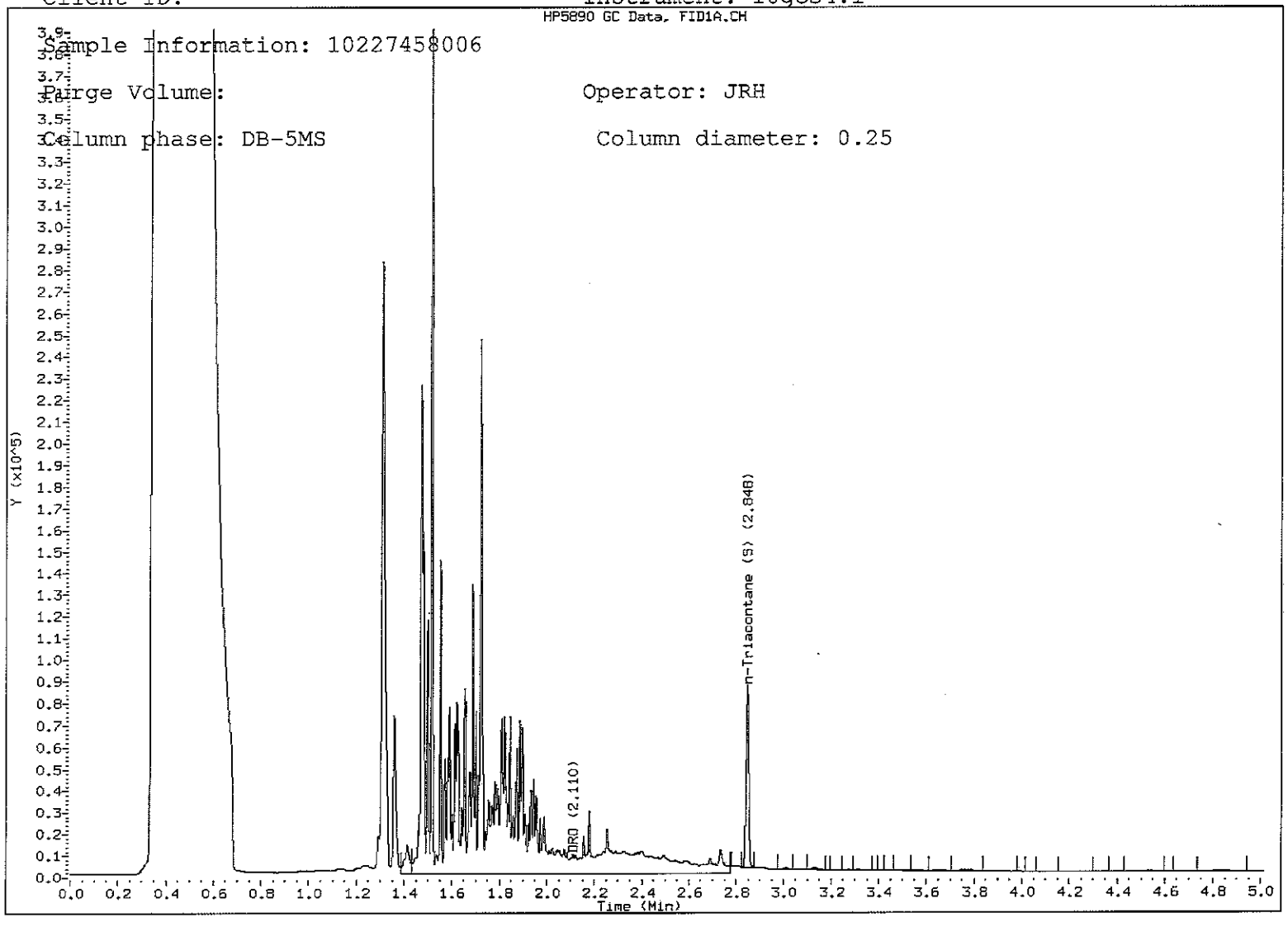
Sample ID: 10227458006

Client ID: Instrument: 10gcs4.i

Sample Information: 10227458006

Purge Volume: Operator: JRH

Column phase: DB-5MS Column diameter: 0.25



Report Date: 08-May-2013 14:48

Pace Analytical Services

WIGRO GASOLINE RANGE ORGANICS

Data file : \\192.168.10.12\chem\10gcv6.i\050613a-2.b\050613005.d

Lab Smp Id: 10227458007

Inj Date : 06-MAY-2013 10:43

Operator : KT1 Inst ID: 10gcv6.i

Smp Info : 10227458007,TB

Misc Info : 10690

Comment : WIGRO GASOLINE RANGE ORGANICS

Method : \\192.168.10.12\chem\10gcv6.i\050613a-2.b\G613-WIGRO-050213.m

Meth Date : 08-May-2013 14:48 10gcv6.i Quant Type: ESTD

Cal Date : 02-MAY-2013 18:28 Cal File: 050213014.d

Als bottle: 1

Dil Factor: 1.00000

Integrator: HP Genie Compound Sublist: all.sub

Target Version: 4.14

Processing Host: SEMIVOLGCMS

Concentration Formula: Amt * DF * CpndVariable

Cpnd Variable Local Compound Variable

					CONCENTRATIONS	
					ON-COLUMN	FINAL
Compounds	RT	EXP RT	DLT RT	RESPONSE	(ug/L)	(ug/L)
S 5 GRO	Compound Not Detected.					

Data File: \\192.168.10.12\chem\10gcv6.i\050613a-2.b/050613005.d

Report Date: 05/08/2013

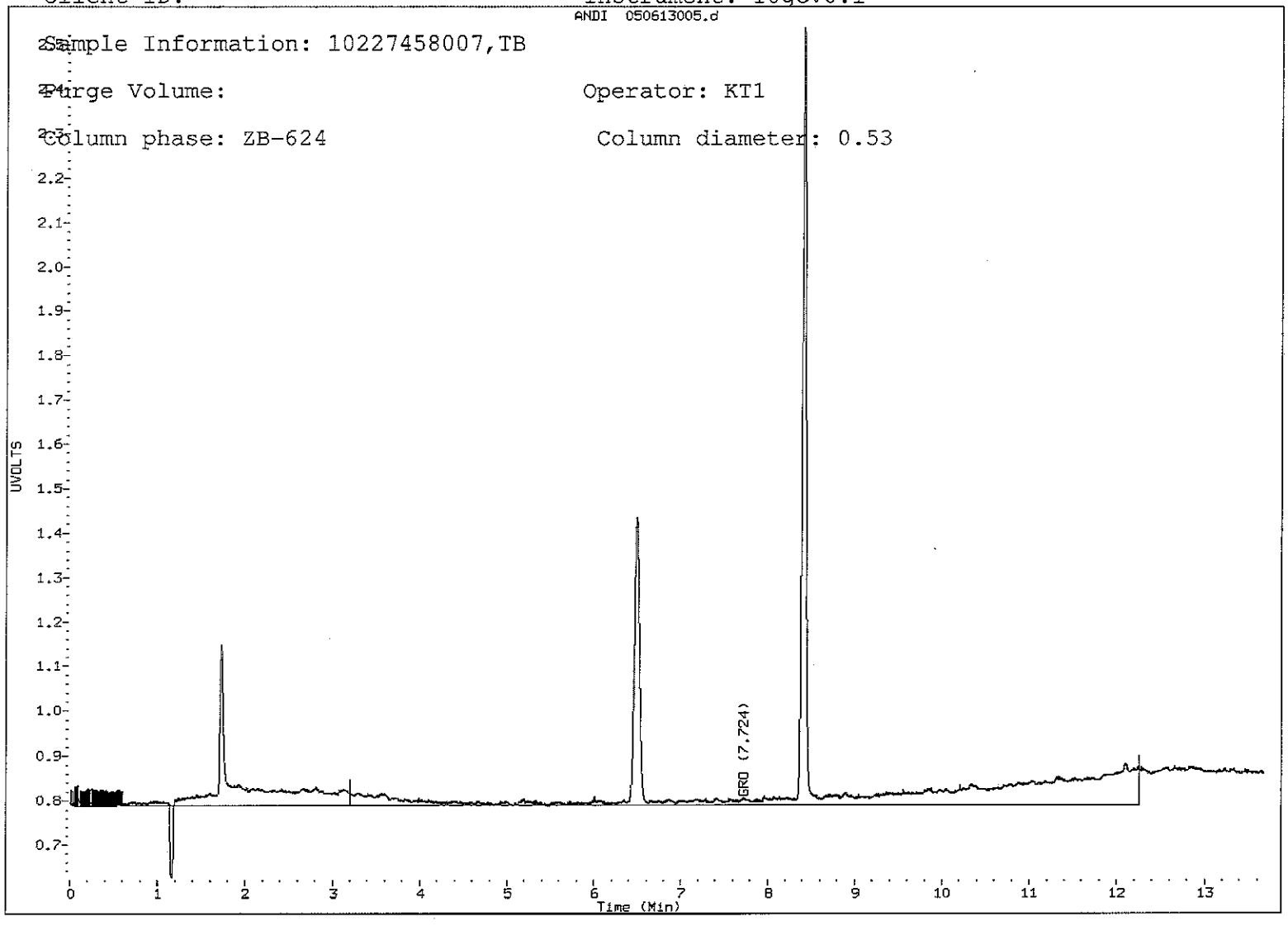
Sample ID: 10227458007

Client ID: Instrument: 10gcv6.i

Sample Information: 10227458007,TB

Purge Volume: Operator: KT1

Column phase: ZB-624 Column diameter: 0.53



CHAIN-OF-CUSTODY / Analytical Request Document

The Chain-of-Custody is a LEGAL DOCUMENT: All relevant fields must be completed accurately.

Pace Analytical® www.pacelabs.com

10227458

Page: 1 of 1

1586422

63 of 64

Section A Required Client Information:

Company: Liesch

Address:

Email To: Plymouth, MN

Phone: 763 489 3100 Fax:

Requested Due Date/TAT: Std.

Section B Required Project Information:

Report To: Dan Larson

Copy To: Aaron Benker

Purchase Order No.:

Project Name: Mille Lacs O/T - Cambridge

Project Number: MP027481

Section C Invoice Information:

Attention:

Company Name:

Address:

Pace Quote Reference:

Pace Project Manager:

Pace Profile #:

REGULATORY AGENCY

☐ NPDES ☐ GROUND WATER ☐ DRINKING WATER

☒ UST ☐ RCRA ☐ OTHER

Site Location STATE: MN

Section D Required Client Information

SAMPLE ID (A-Z, 0-9 / ,-) Sample IDs MUST BE UNIQUE

Matrix Codes — MATRIX / CODE: Drinking Water DW; Water WT; Waste Water WW; Product P; Soil/Solid SL; Oil OL; Wipe WP; Air AR; Tissue TS; Other OT

Requested Analysis Filtered (Y/N)

ITEM #	SAMPLE ID	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED: COMPOSITE START DATE	COMPOSITE START TIME	COMPOSITE END/GRAB DATE	COMPOSITE END/GRAB TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Preservatives: Unpreserved	H_2SO_4	HNO_3	HCl	NaOH	$Na_2S_2O_3$	Methanol	Other	Analysis Test Y/N	DRO	GRO	BTEX	VOCs	Residual Chlorine (Y/N)	Pace Project No./ Lab I.D.
1	MW-11	WT	G			5/3/13	9:00						5						X	X	X				001
2	MW-6A						9:30						5						X	X	X				002
3	MW-6						10:00						5						X	X	X				003
4	MW-10						11:00						5						X	X	X				004
5	MW-9						11:30						8						X	X		X			005
6	MW-1						12:30						5						X	X	X				006
7	Trip Blank	↓	↓										4							X		X			007
8																									
9																									
10																									
11																									
12																									

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS: Temp in °C	Received on Ice (Y/N)	Custody Sealed Cooler (Y/N)	Samples Intact (Y/N)
	Dan Larson/Liesch	5/3/13	1419	CSI Pace	5-3-13	1419	2.2	-1	N	Y
							5.5			

ORIGINAL

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER: Dan Larson

SIGNATURE of SAMPLER: Dan Larson DATE Signed (MM/DD/YY): 5/3/13

*Important Note: By signing this form you are accepting Pace's NET 30 day payment terms and agreeing to late charges of 1.5% per month for any invoices not paid within 30 days.

F-ALL-Q-020rev.07, 15-May-2007

Pace Analytical®	Document Name: Sample Condition Upon Receipt Form	Document Revised: 28Jan2013 Page 1 of 1
	Document No.: F-MN-L-213-rev.06	Issuing Authority: Pace Minnesota Quality Office

Sample Condition Upon Receipt

Client Name: LIESCH

Project #: WO# : 10227458

10227458

Courier: ☐Fed Ex ☐UPS ☐USPS ☑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 ☐None ☐Other: **Temp Blank?** ☑Yes ☐No

Thermom. Used: ☐B88A912167504 ☐80512447 ☐72337080 **Type of Ice:** ☑Wet ☐Blue ☐None ☐Samples on Ice, cooling process has begun

Cooler Temp Read (°C): 2.2/5.5 **Cooler Temp Corrected (°C):** 3.0/6.3

Temp should be above freezing to 6°C **Correction Factor:** +0.8 **Biological Tissue Frozen?** ☐Yes ☑No

Date and Initials of Person Examining Contents: 5/3/13

				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.
Filtered Volume Received for Dissolved Tests?	☐Yes	☐No	☑N/A	11.
Sample Labels Match COC?	☑Yes	☑No	☐N/A	12.
-Includes Date/Time/ID/Analysis Matrix: WT				NO TIME/DATE ON SAMPLES
All containers needing acid/base preservation have been checked? Noncompliances are noted in 13.	☐Yes	☐No	☑N/A	13. ☐HNO_3 ☐H_2SO_4 ☐NaOH ☐HCl
All containers needing preservation are found to be in compliance with EPA recommendation? (HNO_3, H_2SO_4, HCl<2; NaOH>12)	☐Yes	☐No	☑N/A	Sample #
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. H.S. IN 3 OF 4 TRIP BLANKS
Trip Blank Present?	☑Yes	☐No	☐N/A	15.
Trip Blank Custody Seals Present?	☑Yes	☐No	☐N/A	
Pace Trip Blank Lot # (if purchased): 04-08 13-1				QTY: 4

CLIENT NOTIFICATION/RESOLUTION **Field Data Required?** ☐Yes ☐No

Person Contacted: Date/Time:

Comments/Resolution:

Project Manager Review: Date: 5-3-13

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)

APPENDIX C

Project No. 65677.00	
Project Name: Mille Lacs Oil Company	
Weather Conditions	
Completed By: Dan L. / Katrina S.	

GROUNDWATER MONITORING DATA SHEET

	N of Bldg	S of Bldg	2nd Ave Shallow	2nd Ave Deep	Legion East	Legion by Shed	Legion by Alley	Alley Down Grad.	Above Grade South
Location ID	MW-1	MW-3	MW-6	MW-6A	MW-7	MW-8	MW-9	MW-10	MW-11
Unique #	554377	554379	617203	617204	731591	792988	792989	792990	792491
Date:	1/10/2012	1/10/2012	1/10/2012	1/10/2012	1/10/2012	1/10/2012	1/10/2012	1/10/2012	40918
Time:	2:15	2:35	1:40	11:30	2:45	3:30	3:15	4:00	9:00
Chronology:	4		2	1					X1
Casing Diameter (in):	2”	2”	2”	2”	2”	2”	2”	2”	2”
Static Depth (ft):	18.21	FP	18.86	18.53	17.62	18.44	17.79	21.18	19.77
Casing Length (ft):	24	29	29	41	24				
Column Length (ft):	24	29	29	41	24				
Column Volume (gal):	3.9	4.7	4.7	6.7	3.9	0.0	0.0	0.0	0.0
Gallons Removed:	5	5	5	10	5	5	5	5	10
TOC Elevation	963.1	963.72	963.93	963.73	963.8				
Ground Elevation	963.07	961.97	963.94	963.76	961.35				
Bottom of Screen Elevation	939.07	934.97	934.94	922.76	939.8				
Screen Elevation Interval	949.07-939.07	944.97-934.97	944.94-934.94	932.76-922.76	949.80-939.80				
Static Water Elevation	**963.1**	**963.72** 2.5 [illegible]	**963.93**	**963.73**	**963.8** [illegible]	**0**	**0**	**0**	**0**
Sample Appearance					11/16 [illegible]	Sheen	Brown	Slight sheen	
Color:	brown		Clear	clear		[illegible]	[illegible]	dark [illegible]	Brown / Light brown
Phases:	--		[illegible]	[illegible]		—	—	[illegible]	[illegible]
Odor:	[illegible]		yes	[illegible]		—	Petro	—	no
Sample Parameters									
VOCs						X	X	X	X
DRO	X	X	X	X	X	X	X	X	X
GRO						X	X	X	X
GRO/PVOCs	X	X	X	X	X				
Notes:									

Project No. 65677.00	
Project Name: Mille Lacs Oil Company	
Weather Conditions	
Completed By: Dan L. / Katrina S.	

GROUNDWATER MONITORING DATA SHEET

	N of Bldg	S of Bldg	2nd Ave Shallow	2nd Ave Deep	Legion East	Legion by Shed	Legion by Alley	Alley Down Grad.	Above Grade South
Location ID	MW-1	MW-3	MW-6	MW-6A	MW-7	MW-8	MW-9	MW-10	MW-11
Unique #	554377	554379	617203	617204	731591	792988	792989	792990	792491
Date: 5/3/13	~~1/10/2012~~	~~1/10/2012~~	~~1/10/2012~~	~~1/10/2012~~	~~1/10/2012~~	~~1/10/2012~~	~~1/10/2012~~	~~1/10/2012~~	~~[illegible]~~0918
Time:									
Chronology:	#7	8	#3	#2	9	5	6	4	1
Casing Diameter (in):	2"	2"	2"	2"	2"	2"	2"	2"	2"
Static Depth (ft):	18.87	NA	19.50	19.55	18.31	19.14	18.44	21.81	20.54
Casing Length (ft):	24	29	29	41	24				
Column Length (ft):	24	29	29	41	24				
Column Volume (gal):	3.9	4.7	4.7	6.7	3.9	0.0	0.0	0.0	0.0
Gallons Removed:	5	5	5	10	5				
TOC Elevation	963.1	963.72	963.93	963.73	963.8				
Ground Elevation	963.07	961.97	963.94	963.76	961.35				
Bottom of Screen Elevation	939.07	934.97	934.94	922.76	939.8				
Screen Elevation Interval	949.07-939.07	944.97-934.97	944.94-934.94	932.76-922.76	949.80-939.80				
Static Water Elevation	**963.1**	**963.72**	**963.93**	**963.73**	**963.8**	**0**	**0**	**0**	**0**
Sample Appearance									
Color:	Lt grn	NA	clear	Clear	NA	NA	Clear	Lt Gray	Lt brn
Phases:	NP	5" prod	NP	NP	1/16" prod	1/16" prod	NP	Sheen	NP
Odor:	yes	Strong	Strong	NO	strong	Strong	strong	strong	ND
Sample Parameters									
VOCs							X		
DRO	X	NA	X	X	NA	NA	X	X	X
GRO							X		
GRO/PVOCs	X	NA	X	X	NA	NA		X	X
Notes:									

MW-8
1/16" product, too little
to bail effectively.
Did not Sample

MW-3
5" prod. Rem 1 Gal
which ~ .4 Gal
prod. being & mr petro
Along w/ purge water

MW-7 1/16" prod. too
little to bail
Did not Sample

APPENDIX D

Tables

Attach all tables from the *Investigation Report Form* and indicate those that have been updated during this reporting period by marking the check box below. **Tables must include all cumulative data.**

Updated	Table Number and Name
☒	Table 1. Tank Information
☒	Table 2. Results of Soil Headspace Screening
☒	Table 3. Analytical Results of Soil Samples
☐	~~Table 4. Other Contaminants Detected in Soils (Petroleum or Non-petroleum Derived)~~
☐	~~Table 5. Contaminated Surface Soil Results~~
☐	~~Table 6. Water Level Measurements and Depths of Water Samples Collected from Borings~~
☒	Table 7. Analytical Results of Water Samples Collected from Borings
☒	Table 8. Other Contaminants Detected in Water Samples Collected from Borings (Petroleum or Non-petroleum Derived)
☒	Table 9. Monitoring Well Completion Information
☒	Table 10. Water Level Measurements in Wells
☒	Table 11. Analytical Results of Water Samples Collected from Wells
☒	Table 12. Other Contaminants Detected in Water Samples Collected from Wells (Petroleum or Non-petroleum Derived)
☐	~~Table 13. Natural Attenuation Parameters~~
☒	Table 14. Free Product Recovery
☐	~~Table 15. Properties Located within 500 feet of the Release Source~~
☐	~~Table 16. Water Supply Wells Located within 500 feet of the Release Source and Municipal or Industrial Wells within ½ mile~~
☐	~~Table 17. Surface Water Receptor Information~~
☒	Table 18. Utility Receptor Information
☒	Table 19. Vapor Survey Results
☒	Table 20. Results of Soil Gas Sampling for Vapor Intrusion Screening
☒	Table 21. LNAPL Recovery Test

Table 1
Tank Information

Tank #	Tank Material[1]	UST or AST	Capacity (gallons)	Contents (product type)	Year Installed	Tank Status[2]	Tank Condition
001		UST	1,000	Diesel Fuel	Unknown	Removed	Good
002		UST	5,000	Gasoline	Unknown	Removed	Good
003		UST	5,000	Gasoline	Unknown	Removed	Good

[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									
	1	2	3	4	5	6	7	8	9	10
4										
5	80	6.0			210		170			
6						0.0		150		
8										
9										
11	1000+	5.0	5.0	0.0	310	4.0	160	180		
12									66	450
15							135			
16					400	50		160	32	12
17			5.0	0.0						
18	1000+	68								
20	1000+		7.5	0.0					1000+	1000+
21					200	30	140	130		
26					240	0.5	5.0	250		
29	5.0									

Depth (ft)	Soil Boring ID									
	11	12	13	14	15	16	17	18	19	20
4	0.5	1.0	5.0	9.5						
5										
6										
8	0.0	0.5	1000+	36						
9			1000+			0.0	0.0	0.0	0.0	
11					390					
12	0.0	0.0	580	240						
15	0.5									
16		0.0	1000+	550	1000+					
17										
18										360
20		9.0	1000+	1000+	1000+	105	136	0.0	480	
21										
26										
29										

Table 2
Results of Soil Headspace Screening

Depth (ft)	Soil Boring ID									
	21	22	23	24	25					
4										
5			1999	1999	5.0					
6										
8										
9			1999	1999	5.0					
11										
12										
15			1999	1999	5.4					
16										
17										
18	360									
20		698								

Depth (ft)	Soil Boring ID									
	MW-7	LGP-1-12	MW-8	MW-9	MW-10	MW-11				
0-2	0									
0-2.5		0.5								
0-5			0.9	1.9	3.2	3.2				
2.5-5		0.5								
5-7	39.4									
5-7.5		1.0								
5-10			2.4	1.2	4.1	5.0				
7.5-10		1.2								
10-12	127									
10-12.5		10.2								
10-15			177.4	3.3	5.9	6.7				
12.5-15		6.4								
12.5-14.5	1035									
15-17.5		9.6								
15-20			894	1511	5.8	5.0				
15-17	1494									
15-17.5										
17-19	1598									
17.5-20		3.6								
20-22.5		1.5								
20-25			124		863					
22.5-25		26.7								
25-27.5		2.1								
27.5-30		1.7								

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. Notes:

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]
TH-1	17.5-19.5	4/19/95	<0.05	0.078	<0.05	<0.15		<10*	334	Fix
TH-1	28-30	4/19/95	4.97	52	45.9	322		2140	<10	Fix
TH-2	17.5-19.5	4/19/95	<0.05	0.101	<0.05	0.159		<10	<10	Fix
TH-3	17.5-19.5	4/19/95	<0.05	<0.05	<0.05	<0.15		<10	<10	Fix
TH-4	18.5-20.5	4/19/95	<0.05	0.069	<0.05	<0.15		<10	<10	Fix
TH-6	15-16.5	6/27/95	<0.05	<0.05	<0.05	<0.15		<10	<10	Fix
TH-7	5-6.5	6/27/95	<0.05	<0.145	0.109	<0.15		86.6	155	Fix
TH-7	25-26.5	6/27/95	<0.05	0.089	<0.05	<0.15		<10	<10	Fix
TH-8	5-6.5	6/27/95	326	794	183	955		14700	3470	Fix

[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:

~~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									
	1	2	3	4	5	6	7	8	9	10
Static Water Level Depth[1] (ft)										
Sampled Depth (ft)										
Sampling Method[2]										

[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:

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

Boring ID	Date Sampled	Sampled Depth (ft)	Benzene	Toluene	Ethyl-benzene	Xylenes	MTBE	GRO	DRO	Lab Type[2]
TH-1	4/19/95		1,080	1,520	943	9,000		5,840		Fixed
TH-9	8/01/95	20	129	133	38.5	68.7		3,200	1,500	Fixed
TH-10	8/01/95	20	318	314	49.9	295		15,100		Fixed
TH-11	8/01/95	20	<1.0	<1.0	<1.0	<3.0		<100		Fixed
TH-12	8/01/95	20	1.1	1.9	1.1	3.1		<100		Fixed
TH-13	8/01/95	20	130,000	349,000	162,000	244,000		9,100,000		Fixed
TH-14	8/01/95	20	19,600	37,200	11,200	66,200		1,660,000		Fixed
TH-15	8/01/95	20	10,100	20,500	5,160	23,100		597,000		Fixed
TH-16	8/01/95	20	2,130	5,210	1,230	5,910		135,000		Fixed
TH-17	11/28/95	20	3.6	<0.4	<0.4	<0.5		<100	300	Fixed
TH-18	11/28/95	20	<0.5	<0.4	<0.4	<0.5		<100	<100	Fixed
TH-19	11/28/95	20	1,900	5,470	3,350	25,730		57,900	7,300	Fixed
TH-20	11/28/95	20	1,450	85.6	75.1	494.7		10,900	1,500	Fixed
TH-21	11/28/95	22	328	55.5	377	910		12,900		Fixed
TH-22	11/28/95	22	122	69.9	17.1	99.6		1,100	100	Fixed
TH-23	6/23/97	20-24	1,346	11,900	990	6,590		49,880		Fixed
TH-24	6/23/97	20-24	1,310	2,650	674	4,200		26,930		Fixed
TH-25	6/23/97	20-24	<1.0	2.1	<1.0	<3.0		<100		Fixed
TH-26	6/23/97	20-24	1.0	3.4	<1.0	<3.0		<100		Fixed
TH-27	6/23/97	22-26	2,260	899	774	1,540		13,100		Fixed
TH-28	6/23/97	22-26	4,160	2,520	538	2,880		22,800		Fixed
TH-29	6/23/97	22	11.3	3.3	<1.0	<3.0		180		Fixed
TH-30	6/23/97	22	<1.0	<1.0	<1.0	<3.0		<100		Fixed
TH-31	6/24/97	22-26	88.2	3.1	<1.0	7.1		730		Fixed
TH-32	6/24/97	22-26	2,550	9,080	1,350	7,190		33,000		Fixed
TH-33	6/24/97	22-26	3,340	5,230	1,980	9,320		50,200		Fixed
TH-34	6/24/97	22-26	28.5	39.5	43.2	209		1,380		Fixed
TH-35	6/24/97	20-22	3,540	9,690	1,370	8,380		37,600		Fixed
TH-36	6/24/97	22-26	1,720	298	294	754		8,360		Fixed
TH-37	7/21/97	24-25	313	3.5	2.2	10.8		1,800		Fixed
TH-38	7/21/97	22-26	209	<1.0	1.2	8.8		700		Fixed
TH-39	7/21/97	28-32	147	<1.0	<1.0	<3.0		500		Fixed
TH-40	7/21/97	24-28	42	<1.0	<1.0	1.8		100		Fixed
TH-41	7/21/97	24-28	<1.0	<1.0	<1.0	<3.0		<100		Fixed
TH-42	8/02/97	24-26	<1.0	<1.0	<1.0	<3.0		<100		Fixed
TH-43	7/23/97	21-26	291	<1.0	1.1	5.3		670		Fixed
TH-44	7/23/97	24-26	36	<1.0	<1.0	<3.0		<100		Fixed
TH-45	7/23/97	26-28	4.9	<1.0	<1.0	<3.0		<100		Fixed
GP-1	1/21/2010	24-29	895	613	508	2,200	<25	10,200	3.6	Fixed
GP-2	1/21/2010	25-30	10.4	3.5	<1.0	8.6	5.7	1,240	0.42	Fixed
Trip Blank	1/21/2010		<1.0	<1.0	<1.0	<1.0	<5.0	<100		Fixed
Equip. Blank										
Lab Blank										
HRL[3]			10	200	50	300		200		

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

Boring ID	Date Sampled	Sampled Depth (ft)	Acetone	Methylethyl ketone	1,2-di-chloroethane	Methyl isobutylethane	1,2-Dibromoethane	Chlorobenzene	Isopropylbenzene	N-propylbenzene	1,3,5-TMB	Tert-Butylbenzene	1,2,4-TMB	Sec-Butylbenzene	p-Isopropyltoluene	n-butylbenzene	Napthalene	Lab Type[2]
TH-17	20	11/20/1995	4.5	<2.8	<0.3	<0.7	<0.8	<0.4	<0.7	<0.8	<0.2	<0.6	<0.7	<0.5	<0.4	<0.3	<0.7	
TH-18	20	11/20/1995	<0.3	<2.8	<0.3	<0.7	<0.8	<0.4	<0.7	<0.8	<0.2	<0.6	<0.7	<0.5	<0.4	<0.3	<0.7	
TH-19	20	11/20/1995	820	52,200	<0.3	<0.7	<0.8	<0.4	7,780	3,010	3,680	1,430	10,200	2,110	968	5,330	2,200	
TH-20	20	11/21/1995	52.3	529	41.9	12	15.9	<0.4	19.4	2.2	70.1	<0.6	375	<0.5	<0.4	28.7	172	
TH-21	22	11/21/1995	56.8	1630	24	<0.7	<0.8	112	302	384	491	120	1500	224	77.5	505	361	
TH-22	22	11/21/1995	29	63	<0.3	<0.7	<0.8	<0.4	4.1	0.9	4.6	<0.6	20.7	<0.5	<0.4	4.8	5.8	
GP-1											113		413					
GP-2	25-30	1/21/2010											1.1					
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.htmlfor 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:

Table 9 (Previous Data)
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)
MW-1	554377	6/15/1995	963.07	963.10	939.07	939.07–949.07	24
MW-2	554378	6/15/1995	963.67	963.37	939.67	939.67–949.67	24
MW-3	554379	6/15/1995	961.97	963.72	934.97	934.97–944.97	27
MW-4	617207	9/01/1998	964.87	964.62	935.87	935.87–945.87	29
MW-5	617205	9/02/1998	963.84	963.68	934.84	934.84–944.84	29
MW-5A	617206	9/02/1998	963.81	963.62	919.81	919.81–929.81	44
MW-6	617203	9/02/1998	963.94	963.93	934.94	934.94–944.94	29
MW-6A	617204	9/02/1998	963.76	963.73	922.76	922.76–932.76	41
MW-7	731591	9/19/2005	963.27	963.29	939.29	939.29–949.29	24

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

Table 9 (January 2013 Resurveyed Data)
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)
MW-1	554377	6/15/1995	962.92	963.00	938.92	938.92–948.92	24
MW-2	554378	6/15/1995	Unknown	Unknown	Unknown	Unknown	24
MW-3	554379	6/15/1995	962.18	961.59	935.18	935.18–945.18	27
MW-4	617207	9/01/1998	Unknown	Unknown	Unknown	Unknown	29
MW-5	617205	9/02/1998	Unknown	Unknown	Unknown	Unknown	29
MW-5A	617206	9/02/1998	Unknown	Unknown	Unknown	Unknown	44
MW-6	617203	9/02/1998	962.61	962.41	933.61	933.61-943.61	29
MW-6A	617204	9/02/1998	962.65	962.46	921.65	921.65-931.65	41
MW-7	731591	9/19/2005	962.01	961.91	938.01	938.01-948.01	24
MW-8	792988	12/11/2012	962.54	962.60	936.54	936.54-951.54	26
MW-9	792989	12/12/2012	961.89	961.85	935.89	935.89-950.89	26
MW-10	792990	12/13/2012	963.94	963.94	935.94	935.94-945.94	28
MW-11	792991	12/11/2012	962.13	964.46	937.13	937.13-947.13	25

[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)
MW-1	1/11/2002	NR	NR	NR	NR	NR
	6/24/2002	NR	ND	NR	NR	N
	9/13/2002	18.21	ND	18.18	944.89	N
	12/26/2002	17.73	ND	17.70	945.37	N
	4/14/2003	18.18	ND	18.15	944.92	N
	7/7/2003	17.74	ND	17.71	945.36	N
	10/10/2003	17.42	ND	17.39	945.68	N
	2/6/2004	18.20	ND	18.17	944.9	N
	3/18/2004	18.48	ND	18.45	944.62	N
	6/18/2004	NR	ND	NR	NR	NR
	9/7/2004	18.17	ND	18.14	944.93	N
	9/14/2004	NR	ND	NR	NR	NR
	12/20/2004	18.32	ND	18.29	944.78	N
	2/23/2005	NR	ND	NR	NR	NR
	3/10/2005	18.51	ND	18.48	944.59	N
	4/11/2005	18.79	ND	18.76	944.31	N
	6/9/2005	18.93	ND	18.90	944.17	N
	8/4/2005	18.77	ND	18.74	944.33	N
	11/1/2005	17.16	ND	17.13	945.94	N
	3/1/2006	18.13	ND	18.1	944.97	N
	7/13/2006	Dry	ND	NR	NR	N
	10/4/2006	18.67	ND	18.64	944.43	N
	3/9/2007	NS Covered w snow pile	NA	NR	NR	NA
	7/24/2007	19.28	ND	19.25	943.82	N
	1/20/2010	19.95	ND	19.92	943.15	N
	1/12/2011	18.96	0.15	18.93	944.14	N
	3/21/2011	19.16	ND	19.13	943.94	N
	6/7/2011	18.59	ND	18.56	944.51	N
	10/4/2011	17.03	ND	17.00	946.07	N
	01/10/2013	**18.21**	**ND**	**18.13**	**944.79**	**N**
	05/3/2013	**18.87**	**ND**	**18.79**	**944.13**	**N**
MW-3	10/10/2003	18.11	ND	16.36	945.61	Y
	2/6/2004	20.19	1.3'	18.44	943.53	N
	3/18/2004	20.21	1.3	18.46	943.51	N
	6/18/2004	19.65	0.56	17.90	944.07	N
	9/7/2004	18.97	ND	17.22	944.75	N
	9/14/2004	18.82	NR	17.07	944.90	N

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)
	12/20/2004	19.13	0.05	17.38	944.59	N
	2/23/2005	10.94	0.77	9.19	952.78	N
	3/10/2005	19.61	0.47	17.86	944.11	Y
	4/11/2005	20.13	0.86	18.38	943.59	N
	6/9/2005	20.46	1.03	18.71	943.26	N
	7/12/2005	20.22	0.82	18.47	943.50	N
	8/4/2005	20.15	0.79	18.4	943.57	N
	9/28/2005	N/R	N/R	NR	NR	
	10/5/2005	16.76	0.3	15.01	946.96	Y
	11/1/2005	17.44	0	15.69	946.28	Y
	3/1/2006	17.65	ND	15.9	946.07	Y
	7/13/2006	18.34	.52'	16.59	945.38	Y
	10/4/2006	18.92	ND	17.17	944.8	N
	3/9/2007	19.98	5.5"	18.23	943.74	N
	7/24/2007	NA	0.8"	NR	NR	N
	1/20/2010	TOC Broken	4"	NR	NR	N
	3/21/2011	17.89	ND	16.14	945.83	Y
	6/7/2011	17.29	ND	15.54	946.43	Y
	10/4/2011	15.77	ND	14.02	947.95	Y
	01/10/2013	**NA**	**7"**	**NA**	**NA**	**NA**
	05/3/2013	**NA**	**5"**	**NA**	**NA**	**NA**
MW-6	1/11/2002	20.21	ND	20.22	943.72	N
	6/24/2002	NR	ND	NR	NR	N
	9/13/2002	19.57	ND	19.58	944.36	N
	12/26/2002	18.58	ND	18.59	945.35	Y
	4/14/2003	18.85	ND	18.86	945.08	Y
	7/7/2003	18.65	ND	18.66	945.28	Y
	10/10/2003	18.21	ND	18.22	945.72	Y
	2/6/2004	19.41	ND	19.42	944.52	N
	3/18/2004	19.14	ND	19.15	944.79	N
	6/18/2004	NR	ND	NR	NR	NR
	9/7/2004	19.02	ND	19.03	944.91	N
	9/14/2004	NR	ND	NR	NR	N
	12/20/2004	19.1	ND	19.11	944.83	N
	2/23/2005	NR	ND	NR	NR	NR
	3/10/2005	19.13	ND	19.14	944.80	N
	4/11/2005	20.59	ND	20.60	943.34	N
	6/9/2005	19.65	ND	19.66	944.28	N
	8/4/2005	19.71	ND	19.72	944.22	N

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)
	11/1/2005	19.22	ND	19.23	944.71	N
	3/1/2006	19.74	ND	19.75	944.19	N
	7/13/2006	19.51	ND	19.52	944.42	N
	10/4/2006	19.59	ND	19.60	944.34	N
	3/9/2007	19.87	ND	19.88	944.06	N
	7/24/2007	20.12	ND	20.13	943.81	N
	1/20/2010	20.67	ND	20.68	943.26	N
	1/12/2011	19.73	ND	19.74	944.2	N
	3/21/2011	19.83	ND	19.84	944.1	N
	6/7/2011	19.52	ND	19.53	944.41	N
	10/4/2011	17.98	ND	17.99	945.95	Y
	01/10/2013	**18.86**	**ND**	**19.06**	**943.55**	**N**
	05/3/2013	**19.50**	**ND**	**19.70**	**942.91**	**N**
MW-6A	1/11/2002	20.13	ND	20.16	943.6	Y
	6/24/2002	NR	ND	NR	NR	Y
	6/24/2002	NR	ND	NR	NR	Y
	9/13/2002	19.48	ND	19.51	944.25	Y
	12/26/2002	18.61	ND	18.64	945.12	Y
	4/14/2003	18.96	ND	18.99	944.77	Y
	7/7/2003	18.79	ND	18.82	944.94	Y
	10/10/2003	20.19	ND	20.22	943.54	Y
	2/6/2004	19.46	ND	19.49	944.27	Y
	3/18/2004	19.19	ND	19.22	944.54	Y
	6/18/2004	NR	ND	NR	NR	NR
	9/7/2004	19.83	ND	19.86	943.9	Y
	9/14/2004	NR	ND	NR	NR	NR
	12/20/2004	19.18	ND	19.21	944.55	Y
	2/23/2005	NR	ND	NR	NR	NR
	3/10/2005	19.21	ND	19.24	944.52	Y
	4/11/2005	19.44	ND	19.47	944.29	Y
	6/9/2005	20.06	ND	20.09	943.67	Y
	8/4/2005	21.11	ND	21.14	942.62	Y
	11/1/2005	21.51	ND	21.54	942.22	Y
	3/1/2006	19.13	ND	19.16	944.6	Y
	7/13/2006	21.19	ND	21.22	942.54	Y
	10/4/2006	20.05	ND	20.08	943.68	Y
	3/9/2007	20.31	ND	20.34	943.42	Y
	7/24/2007	20.16	ND	20.19	943.57	Y
	1/20/2010	20.70	ND	20.73	943.03	Y

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)
	1/12/2011	19.78	ND	19.81	943.95	Y
	3/21/2011	19.87	ND	19.9	943.86	Y
	6/7/2011	19.56	ND	19.59	944.17	Y
	10/4/2011	18.03	ND	18.06	945.7	Y
	01/10/2013	**18.53**	**ND**	**18.72**	**943.93**	**Y**
	05/3/2013	**19.55**	**ND**	**19.74**	**942.91**	**Y**
MW-7	9/16/2005	17.00	ND	16.98	946.29	N
	11/1/2005	17.72	ND	17.70	945.57	N
	3/1/2006	17.81	ND	17.79	945.48	N
	7/13/2006	18.14	ND	18.12	945.15	N
	10/4/2006	18.20	ND	18.18	945.09	N
	3/9/2007	18.60	ND	18.58	944.69	N
	7/24/2007	18.83	ND	18.81	944.46	N
	1/20/2010	20.45	16"	20.43	942.84	N
	1/21/2011	18.50	0.15	18.48	944.79	N
	3/21/2011	18.8	0.15	18.78	944.49	N
	6/7/2011	18.13	ND	18.11	945.16	N
	10/4/2011	16.53	ND	16.51	946.76	N
	01/10/2013	**17.63**	**1/16"**	**17.73**	**944.28**	**N**
	05/3/2013	**18.31**	**1/16"**	**18.41**	**943.50**	**N**
MW-8	**01/10/2013**	**18.44**	**ND**	**18.38**	**944.16**	**N**
	05/3/2013	**19.14**	**1/16"**	**19.08**	**943.46**	**N**
MW-9	**01/10/2013**	**17.79**	**ND**	**17.83**	**944.06**	**N**
	05/3/2013	**18.44**	**ND**	**18.48**	**943.41**	**N**
MW-10	**01/10/2013**	**21.18**	**ND**	**21.18**	**942.76**	**N**
	05/3/2013	**21.81**	**ND**	**21.81**	**942.13**	**N**
MW-11	**01/10/2013**	**19.87**	**ND**	**17.54**	**944.59**	**N**
	05/3/2013	**20.54**	**ND**	**18.21**	**943.92**	**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	1/11/2002	NS	NS	NS	NS	NS	NS	NS	Fixed
	6/24/2002	<1.0	<1.0	2.6	26/15	<1.0	200	NA	Fixed
	9/13/2002	<1.0	5.6	14	240	NA	610 H	NA	Fixed
	12/26/2002	<1.0	<1.0	<1.0	67	NA	110	NA	Fixed
	4/14/2003	<1.0	2.1	4.1	131	<1.0	1,900	NA	Fixed
	7/7/2003	<1.0	17	8	2,100	<1.0	4,300	NA	Fixed
	10/10/2003	<1.0	10	19	580	<1.0	2,500	NA	Fixed
	2/6/2004	ND	2.1	9.1	192	ND	240	NS	Fixed
	3/18/2004	ND	14	63	1120	ND	2,300	NA	Fixed
	9/7/2004	ND	32	220	2400	ND	6,800	NA	Fixed
	12/20/2004	ND	51.9	300	4660	ND	8,940	NA	Fixed
	3/10/2005	ND	ND	72.8	2940	ND	11,500	NA	Fixed
	6/9/2005	ND	ND	16.4	905	ND	2,220	NA	Fixed
	8/4/2005	3.8	ND	94	2100	ND	4,300	NA	Fixed
	11/9/2005	<0.50	ND	ND	100	ND	9,400	NA	Fixed
	3/1/2006	<1.0	<5.0	110	3,900	NS	10,000	NA	Fixed
	7/13/2006	Well dry	NS	NS	NS	NS	NS	NS	Fixed
	10/4/2006	<0.05	<5.0	2.7	100	<1.0	190	680	Fixed
	3/9/2007	NS	NS	NS	NS	NS	NS	NS	Fixed
	7/24/2007	<0.5	<0.5	0.55	1.93	<1.0	<100	NS	Fixed
	1/20/2010	<1.0	<1.0	<1.0	<3.0	<5.0	<100	180	Fixed
	1/12/2011	<1.0	<1.0	<1.0	23.4	<5.0	<100	2600	Fixed
	3/23/2011	<1.0	<1.0	<1.0	4.7	<5.0	<100	1610	Fixed
	6/8/2011	<1.0	<1.0	1.5	59.2	<5.0	218	2230	Fixed
	10/4/2011	<1.0	<1.0	8.6	272	<5.0	838	1960	Fixed
	01/10/2013	**<1.0**	**<1.0**	**55.2**	**1,270**	**<5.0**	***3,390***	***1,450***	**Fixed**
	05/3/2013	**<1.0**	**<1.0**	**28.9**	**573**	**<5.0**	***2,050***	***831***	**Fixed**
MW-3	3/1/2006	1,600	<5,000	<1,000	5,100	NS	260,000	NA	Fixed
	3/23/2011	159	209	46.9	777	ND	8,320	8270	Fixed
	6/8/2011	493	521	71.8	2,900	<50	15,600	12800	Fixed
	10/5/2011	2,420	1780	156	6,800	<50	22,600	7630	Fixed
	01/10/2013	**NS**	**NS**	**NS**	**NS**	**NS**	**NS**	**NS**	**Fixed**
	05/3/2013	**NS**	**NS**	**NS**	**NS**	**NS**	**NS**	**NS**	**Fixed**
MW-6	1/11/2002	3,600	3,100	680	1,200/490	<1.0	19,000	NA	Fixed

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]
	6/24/2002	5,800	5,800	1,200	3,100/1,100	<50	27,000	NA	Fixed
	9/13/2002	1,600	1,100	360	1,100	NA	8,400 H	NA	Fixed
	12/26/2002	2,800	750	3,200	2,800	NA	16,000	NA	Fixed
	4/14/2003	3,500	2,600	830	2,750	<20	18,000	NA	Fixed
	7/7/2003	2,300	2,200	660	1,940	<50	16,000	NA	Fixed
	10/10/2003	1,500	1,600	450	1,400	<50	10,000	NA	Fixed
	2/6/2004	2700	2,200	1,000	2,540	ND	17,000	NA	Fixed
	3/18/2004	3,200	2,600	830	2,180	ND	17,000	NA	Fixed
	9/7/2004	3,600	2,800	1,200	4,130	ND	21,000	NA	Fixed
	12/20/2004	3,110	6,110	1,470	5,040	ND	25,200	NA	Fixed
	3/10/2005	4,030	7,650	1,610	6,340	ND	28,200	NA	Fixed
	6/9/2005	4,500	5,800	1,570	5,310	ND	25,800	NA	Fixed
	8/4/2005	4,900	2,400	950	2,870	420	18,000	NA	Fixed
	11/9/2005	3,700	4,400	970	100	ND	27,000	NA	Fixed
	3/1/2006	2,500	1,300	<100	3,500	NS	22,000	NA	Fixed
	7/13/2006	2,500	<500	<50	1,100	<100	<10,000	5,100	Fixed
	10/4/2006	3,500	2,100	1,100	2,260	350	18,000	4,300	Fixed
	3/9/2007	4,000	2,700	350	3,540	780	19,000	5,100	Fixed
	7/24/2007	740	480	72	730	<10	5,200	NS	Fixed
	1/20/2010	3,010	1,430	578	1,510	<50	13,700	4,600	Fixed
	1/12/2011	2,200	2,280	725	2,690	<50	14,300	2,670	Fixed
	3/23/2011	2,410	1,670	490	1,320	13.6	13,600	3,850	Fixed
	6/8/2011	1,890	484	272	748	<50	7,060	3,230	Fixed
	10/4/2011	2,810	3,500	913	4,110	<50	18,100	4,250	Fixed
	01/10/2013	***2280***	***3370***	***1090***	**4290**	**<50**	***16,000***	***3,750***	**Fixed**
	05/3/2013	***2660***	***3620***	***1200***	**4890**	**<50**	***26,000***	***4,350***	**Fixed**
MW-6A	1/11/2002	<1.0	<1.0	<1.0	<2.0/<1.0	3.4	<100	NA	Fixed
	6/24/2002	<1.0	<1.0	<1.0	<2.0/<1.0	<1.0	<100	NA	Fixed
	9/13/2002	<1.0	<1.0	<1.0	<1.0 total	<1.0	<100	NA	Fixed
	12/26/2002	<1.0	<1.0	<1.0	<1.0 total	<1.0	<100	NA	Fixed
	4/14/2003	<1.0	<1.0	<1.0	<2.0/<1.0	<1.0	<60	NA	Fixed
	7/7/2003	<1.0	<1.0	<1.0	<2.0/<1.0	<1.0	<60	NA	Fixed
	10/10/2003	<1.0	<1.0	<1.0	<2.0/<1.0	<1.0	<60	NA	Fixed
	2/6/2004	ND	ND	ND	ND	ND	ND	NA	Fixed
	3/18/2004	<0.5	<1.0	<1.0	<0.50/<0.50	<1.0	ND	NA	Fixed
	9/7/2004	ND	ND	ND	ND	ND	ND	NA	Fixed

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]
	12/20/2004	ND	ND	ND	ND	ND	ND	NA	Fixed
	3/10/2005	ND	ND	ND	ND	ND	ND	NA	Fixed
	6/9/2005	ND	ND	ND	ND	ND	ND	NA	Fixed
	8/4/2005	ND	ND	ND	ND	ND	ND	NA	Fixed
	11/9/2005	ND	ND	ND	ND	ND	ND	NA	Fixed
	3/1/2006	<1.0	<5.0	<1.0	<3.0	NS	<100	NA	Fixed
	7/13/2006	<0.5	<5.0	<0.5	<1.0	<10.0	<100	140	Fixed
	10/4/2006	<0.5	<5.0	<0.5	<1.0	<10.0	<100	190	Fixed
	3/9/2007	<0.5	<5.0	<0.5	<1.0	<10.0	<100	170	Fixed
	7/24/2007	<0.5	<5.0	<0.5	<1.0	<10.0	<100	NS	Fixed
	1/20/2010	<1.0	<1.0	<1.0	<3.0	<5.0	<100	170	Fixed
	1/12/2011	<1.0	<1.0	<1.0	<3.0	<5.0	<100	126	Fixed
	3/23/2011	<1.0	<1.0	<1.0	<3.0	<5.0	<100	125	Fixed
	6/8/2011	<1.0	<1.0	<1.0	<3.0	<5.0	<100	312	Fixed
	10/4/2011	<1.0	<1.0	<1.0	<3.0	<5.0	<100	146	Fixed
	01/10/2013	**<1.0**	**<1.0**	**<1.0**	**<3.0**	**<1.0**	**<100**	**124**	**Fixed**
	05/3/2013	**<1.0**	**<1.0**	**<1.0**	**<3.0**	**<1.0**	**<100**	**123**	**Fixed**
MW-7	11/9/2005	3900	8600	1200	7800	ND	37000	NA	Fixed
	3/1/2006	5,200	<12,000	<2,500	8,200	<2,500	42,000	NA	Fixed
	7/13/2006	2,200	6,000	1,400	7,700	<1.0	NA	6,900	Fixed
	10/4/2006	3,300	6,000	1,900	8,300	<50	NA	9,100	Fixed
	3/9/2007	3,900	7,300	1,500	7,000	<10	43,000	10,000	Fixed
	7/24/2007	3,700	7,600	1,700	8,600	1,300	<100,000	8,600	Fixed
	10/4/2011	4,540	8,050	1,910	10,200	572	10200	14,200	Fixed
	01/10/2013	**NS**	**NS**	**NS**	**NS**	**NS**	**NS**	**NS**	**Fixed**
	05/3/2013	**NS**	**NS**	**NS**	**NS**	**NS**	**NS**	**NS**	**Fixed**
MW-8	**01/10/2013**	***2,590***	**4,670**	**1,490**	**6,840**	**<20**	***26,200***	***27,800***	**Fixed**
	05/3/2013	**NS**	**NS**	**NS**	**NS**	**NS**	**NS**	**NS**	**Fixed**
MW-9	**01/10/2013**	***6,690***	**7,210**	**1,840**	**8,950**	**<20**	***30,500***	***16,000***	**Fixed**
	05/3/2013	***7,110***	**7,330**	**1,950**	**9,140**	**<25**	***47,000***	***787***	**Fixed**
MW-10	**01/10/2013**	***375***	**207**	**551**	**2,750**	**<10**	***12,500***	***14,700***	**Fixed**
	05/3/2013	***327***	**431**	**427**	**2,080**	**<100**	***17,700***	***8,960***	**Fixed**
MW-11	**01/10/2013**	**<1.0**	**<1.0**	**<1.0**	**<3.0**	**<1.0**	**<100**	**<105**	**Fixed**
	05/3/2013	**<1.0**	**<1.0**	**<1.0**	**<3.0**	**<1.0**	**<100**	**<104**	**Fixed**
Lab Blank	1/11/2002	ND	ND	ND	ND	NA	ND	NA	Fixed
	6/24/2002	ND	ND	ND	ND	NA	ND	NA	Fixed
	9/13/2002	ND	ND	ND	ND	NA	ND	NA	Fixed
	12/26/2002	ND	ND	ND	ND	NA	ND	NA	Fixed

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]
	4/14/2003	ND	ND	ND	ND	NA	ND	NA	Fixed
	7/7/2003	ND	ND	ND	ND	NA	ND	NA	Fixed
	10/10/2003	ND	ND	ND	ND	NA	ND	NA	Fixed
	2/6/2004	ND	ND	ND	ND	NA	ND	NA	Fixed
	3/18/2004	ND	ND	ND	ND	NA	ND	NA	Fixed
	9/7/2004	ND	ND	ND	ND	NA	ND	NA	Fixed
	12/20/2004	ND	ND	ND	ND	NA	ND	NA	Fixed
	3/10/2005	ND	ND	ND	ND	NA	ND	NA	Fixed
	6/9/2005	ND	ND	ND	ND	NA	ND	NA	Fixed
	8/4/2005	ND	ND	ND	ND	NA	ND	NA	Fixed
	11/9/2005	ND	ND	ND	ND	NA	ND	NA	Fixed
	3/1/2006	ND	ND	ND	ND	NA	ND	NA	Fixed
	7/13/2006	ND	ND	ND	ND	ND	ND	NA	Fixed
	10/4/2006	ND	ND	ND	ND	ND	ND	NA	Fixed
	1/12/2011	ND	ND	ND	ND	ND	ND	NA	Fixed
	3/23/2011	ND	ND	ND	ND	ND	ND	NA	Fixed
	6/8/2011	ND	ND	ND	ND	ND	ND	NA	Fixed
	10/4/2011	ND	ND	ND	ND	ND	ND	NA	Fixed
	01/10/2013	ND	ND	ND	ND	ND	ND	NA	Fixed
	05/3/2013	ND	ND	ND	ND	ND	ND	NA	Fixed
HRL(ug/L)		10	1000	700	10000				

[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/hrltablehtml for list of current HRLs.
Add additional rows as needed.
Notes:
NS = not sampled

Well Number	MW-8	MW-9	MW-9	MW-10	HRL	**Lab Type[2]**
Date Sampled	1/10/13	1/10/13	5/3/13	1/10/13		
Acetone	523	<500	<500	<250	4,000	Fixed
n-Butylbenzene	43.7	60.9	<25	40.3	NE	Fixed
Sec-Butylbenzene	22.8	31.7	<25	24.3	NE	Fixed
Cyclohexane	881	600	NA	1,030	NE	Fixed
1,2-Dichloroethane	<20	53.7	74.6	<10	4	Fixed
Cumene	115	122	81.1	119	300	Fixed
p-Isopropyltoluene	28.6	37.9	<25	40.5	NE	Fixed
Naphthalene	438	550	428	274	300	Fixed
n-Propylbenzene	234	315	193	225	NE	Fixed
1,2,4-Trimethylbenzene	1,540	2,080	1,270	1,890	100	Fixed
1,3,5-Trimethylbenzene	401	523	320	557	100	Fixed
Trip Blank						
Equip. Blank						
Lab Blank						

[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.htmlfor 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: NA = Not Analyzed; NE = Not Established

~~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 MW-3, MW-7 and MW-8

Monitoring Well	Date	Product Recovered (ml)	Water Level Depth Below Grade	Product Interface Level - Notes
MW-3	1/11/2002	800	20.73'	0.3"- Gasoline Recovered
MW-3	1/23/2002	100	-	Gasoline Recovered
MW-3	3/20/2002	500	21'	0.5" - Gasoline Recovered
MW-3	3/29/2002	1000	-	Gasoline Recovered
MW-3	5/1/2002	800	21.22'	0.5" - Gasoline Recovered
MW-3	5/14/2002	1000	-	Gasoline Recovered
MW-3	6/7/2002	200	-	Gasoline Recovered
MW-3	6/24/2002	200	21.3'	None Recorded - Gasoline/Water Mixture
MW-3	8/12/2002	1000	-	Gasoline/Water Mixture
MW-3	8/28/2002	1000	-	Gasoline/Water Mixture
MW-3	9/13/2002	1000	20.0'	None Recorded - Gasoline/Water Mixture
MW-3	9/27/2002	1000	-	Gasoline/Water Mixture
MW-3	10/11/2002	1000	-	Gasoline/Water Mixture
MW-3	10/25/2002	1000	-	Gasoline/Water Mixture
MW-3	11/4/2002	1000	-	Gasoline/Water Mixture
MW-3	12/6/2002	1000	-	Gasoline/Water Mixture
MW-3	12/26/2002	1000	17.1'	None Recorded - Gasoline/Water Mixture
MW-3	1/14/2002	1000	-	Gasoline/Water Mixture
MW-3	2/6/2004	11356		Gasoline/Water Mixture
MW-3	3/18/2004	6435	20.21	DTP = 18.91, DTW = 20.21 (1.3' product)
MW-3	9/7/2004	10	18.97	
MW-3	9/14/2004	0	18.82	no measurable free product- after vac truck
MW-3	9/27/2004	0	18.83	well raiser tilted by car collision, could not send bailor down
MW-3	12/20/2004	200	19.18	
MW-3	2/23/2005	2250	10.94	0.77 inches of product in well
MW-3	2/28/2005	34360	19.72	vac truck removed apporx. 8 gal of free product
MW-3	3/10/2005	2300	19.61	balied product to a sheen/ waited for well to recover and repeated
MW-3	4/11/2005	2.7	20.13	bailed product, but well recharged and prod. Still remained
MW-3	6/9/2005	0.25	20.46	bailed product and well recharged leaving a sheen
MW-3	7/12/2005	0.2	20.22	bailed product
MW-3	8/4/2005	0	20.15	no product removed
MW-3	9/28/2005	4000	N/A	vac truck removed approximately 1 gallon of product from well
MW-3	10/5/2005	0	16.76	no product removed
MW-3	11/1/2005	0	17.44	no product present in well
MW-3	3/1/2006	0	17.65	no product present in well
MW-3	7/13/2006	1000	18.34	0.52 inches of product in well
MW-3	10/4/2006	0	18.92	no product present in well
MW-3	3/9/2007	1200	19.88	5.5 inches of product in well
MW-3	7/24/2007	800	NA	0.8 inches of product in well
MW-3	1/20/2010	1200	NA	4 inches of product in well
MW-3	1/12/2011	0	NA	no product present in well
MW-3	3/21/2011	0	17.89	no product present in well
MW-3	6/7/2011	0	17.29	no product present in well
MW-3	10/4/2011	0	15.77	no product present in well
MW-3	3/29/2012	0	18.00	no product present in well
MW-3	4/27/2012	0	NA	no product present in well
MW-3	5/30/2012	1894	NA	3.5 inches of product in well
MW-3	6/21/2012	1500	NA	2.5" product in well
MW-3	7/26/2012	0	NA	1/2" product in well
MW-3	8/10/2012	0	NA	1" product in well
MW-3	9/12/2012	0	16.27	1.5" product in well
MW-3	10/26/2012	0	NA	3/4" product in well
MW-3	11/29/2012	0	NA	1/4"product in well
MW-3	12/11/2012	0	NA	1" product in well
MW-3	1/10/2013	0	NA	2.5" product in well
MW-3	2/11/2013	1200	NA	10" product in well
MW-3	3/28/2013	1200	NA	7" product in well
MW-3	4/12/2013	0	NA	4" prod in well
MW-3	5/3/2013	1500	NA	5" prod in well
MW-3	6/17/2013	0	NA	3" prod in well
MW-3	7/31/2013	0	NA	1" prod in well
MW-3 Total (ml)		**87008**		
MW-3 Total (Gal)		**23.0**		
MW-7	9/16/2005	0	17.00	no product present in well
MW-7	11/1/2005	0	17.72	no product present in well
MW-7	3/1/2006	0	17.81	no product present in well
MW-7	7/13/2006	0	18.14	no product present in well
MW-7	10/4/2006	0	18.2	no product present in well
MW-7	3/9/2007	0	18.6	no product present in well
MW-7	7/24/2007	0	18.83	no product present in well
MW-7	1/20/2010	2500	20.45	16 inches of product in well
MW-7	1/12/2011	2000	18.5	1.8 inches of product in well
MW-7	3/21/2011	1700	18.8	1.8 inches of product in well
MW-7	6/7/2011	0	18.13	no product present in well
MW-7	10/4/2011	0	16.53	no product present in well
MW-7	3/29/2012	0	19.05	no product present in well
MW-7	4/27/2012	0	NA	no product present in well
MW-7	5/30/2012	0	17.55	no product present in well
MW-7	6/21/2012	0	NA	no product present in well
MW-7	7/26/2012	0	NA	no product present in well
MW-7	8/10/2012	0	NA	no product present in well
MW-7	9/12/2012	0	NA	no product present in well
MW-7	10/26/2012	0	NA	no product present in well
MW-7	11/29/2013	0	NA	no product present in well
MW-7	12/11/2012	0	NA	no product present in well
MW-7	1/10/2013	0	NA	no product present in well
MW-7	2/11/2013	0	NA	no product present in well
MW-7	3/28/2013	0	NA	no product present in well
MW-7	4/12/2013	0	NA	1/32 inch product in well
MW-7	5/3/2013	0	NA	1/16 inch product in well
MW-7	6/17/2013	0	NA	1/16 inch product in well
MW-7	7/31/2013	0	NA	1/16 inch product in well
MW-7 Total (ml)		**6,200**		
MW-7 Total (Gal)		**1.6**		
MW-8	5/3/2013	0	19.14	1/16 inch product in well
MW-8	6/17/2013	0	NA	1/32 inch product in well
MW-8	7/31/2013	0	NA	1/32 inch product in well
MW-8 Total (ml)		**0**		
MW-8 Total (Gal)		**0.0**		

~~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											
2											
3											
4											
5											
6											
7											
8											
9											
10											
11											
12											
13											
14											
15											
16											
17											
18											
19											
20											

[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:

~~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	Aquifer	Use	Owner	Distance and Direction from Source (ft)

[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:

~~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
1	*Sanitary sewer main beneath S. Buchanan Street between 1st Ave. E. and 2nd Ave SE*	*PVC*	*10'*	*21 inches*	*South*	*2001-2002*	*Native soil*	*8'*
2	*Water main beneath S. Buchanan Street between 1st Ave. E. and 2nd Ave SE*	*Ductile Iron*	*7-8'*	*16 inches*	*North*	*2001-2002*	*Native soil*	*10'*
3	*Storm sewer beneath S. Buchanan Street between 1st Ave. E. and 2nd Ave SE*	*Concrete*	*4.5-5' ft*	*21 inches*	*South*	*unknown*	*Native soil*	*13'*
1								
2								
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
1, 2, 3	As built drawings provided by utility locator with City of Cambridge.

[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	Storm Sewer catch basin	3/23/11	0	0
2	Storm Sewer manhole	3/23/11	0	0
3	Storm Sewer catch basin	3/23/11	0	0
4	Storm Sewer manhole	3/23/11	0	0
5	Storm Sewer catch basin	3/23/11	0	0
6	Storm Sewer catch basin	3/23/11	0	0
7	Storm Sewer catch basin	3/23/11	0	0
8	Storm Sewer manhole	3/23/11	0	0
9	Legion basement ambient	3/23/11	0	0

[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]	Vapor Pt 1		Vapor Pt 2		Vapor Pt 3		Subslab-1				
Date	1/21/2010		1/21/2010		1/21/2010		3/22/2011				
Depth (feet)											
PID (ppm)											
COMPOUNDS	Result	Report Limit	Result	Report Limit	Result	Report Limit	Result	Report Limit	Result	Report Limit	Residential Intrusion Screening Value[3]
Acetone	<0.64	0.64	83.6	0.64	<0.64	0.64	64.4	0.86			31,000
Benzene	<0.87	0.87	84.6	0.87	<0.87	0.87	1.5	1.2			4.5
2-Butanone (MEK)							5.1	1.1			5000
1,3-Butadiene	<0.6	0.6	64.5	0.6	<0.6	0.6	<0.81	0.81			0.3
Carbon Disulfide	<0.84	0.84	3.7	0.84	<0.84	0.84	<1.1	1.1			700
Chloroform							10.2	1.8			100
Cyclohexane	<0.91	0.91	12.8	0.91	<0.91	0.91	3.2	1.2			6,000
Dichlorodifluoromethane							14.5	1.8			200
Ethanol	<2.5	2.5	15.0	2.5	<2.5	2.5	341	3.4			15,000
Ethylbenzene	<1.2	1.2	42.1	1.2	<1.2	1.2	5.7	1.6			1,000
4-Ethyltoluene	<3.4	3.4	7.4	3.4	<3.4	3.4	<4.5	4.5			NA
n-Heptane	<1.1	1.1	78	1.1	<0.96	0.96	4.5	1.5			NA
n-Hexane							12.2	1.3			2000
Methylene Chloride							13.8	1.3			20
2-Propanol							18.1	4.5			7000
Propylene							2.7	0.63			3000
Styrene	<1.2	1.2	44.7	1.2	<1.2	1.2	<1.6	1.6			1,000
Tolunene	<1.0	1.0	132	1.0	<1.0	1.0	22	1.4			5,000
1,2,4-Trimethylbenzene	<1.3	1.3	9.3	3.4	<3.4	3.4	<1.8	1.8			4
M&p-Xylene	<2.4	2.4	88.9	2.4	<2.4	2.4	24.8	3.2			100
o-Xylene	<1.2	1.2	27	1.2	<1.2	1.2	5.1	1.6			100

[1] Report results in $\mu g/m^3$.
[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:

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. The appendix section of the report contains sufficient information to document all activities completed since the last report. All reproduced data must be legible. Reports missing required documentation are subject to rejection.

☒	*Appendix A*	Copies of most recent laboratory analytical reports for Soil, Soil Gas/Sub-slab Vapor/Indoor Air/Ambient Air, and Ground Water samples, including a copy of the Chain of Custody. Include laboratory QA/QC data, Chromatograms, and MDH laboratory certification number.
☒	*Appendix B*	Methodologies and Procedures, Including Field Screening of Soil, Other Field Analyses, Soil Boring, Soil Sampling, Soil Gas/Sub-Slab/Indoor air/Ambient Air Sampling, Well Installation, and Water Sampling.
☐	*Appendix C*	Geologic Logs of Additional Soil Borings and Wells Installed. Include Well Construction Diagrams and Copies of the Minnesota Department of Health Well Record for new wells.
☒	*Appendix D*	Field or sampling data sheets (sampling forms, field crew notes, etc.).
☐	*Appendix E*	Guidance Document 1-03a *Spatial Data Reporting Form* (if not previously submitted or new site features need to be reported).
☐	*Appendix F*	Guidance Document 2-05 *Release Information Worksheet* (if not previously submitted).
☐	*Appendix G*	Guidance Document 4-19 *Conceptual Corrective Action Design Worksheet.*

Web pages and phone numbers	
MPCA staff	http://www.pca.state.mn.us/pca/staff/index.cfm
MPCA toll free	**1-800-657-3864**
Petroleum Remediation Program web page	http://www.pca.state.mn.us/programs/lust_p.html
MPCA Info. Request	http://www.pca.state.mn.us/about/inforequest.html
MPCA VIC program	http://www.pca.state.mn.us/cleanup/vic.html
MPCA Petroleum Brownfields Program	http://www.pca.state.mn.us/programs/vpic_p.html
MPCA SRS guidance documents	http://www.pca.state.mn.us/cleanup/riskbasedoc.html http://www.pca.state.mn.us/cleanup/riskbasedoc.html#surfacewaterpathway
MDH HRLs	http://www.health.state.mn.us/divs/eh/groundwater/hrltable.html
MDH DW hotline	**1-800-818-9318**
Petrofund Web Page	http://www.state.mn.us/cgi-bin/portal/mn/jsp/content.do?id=53688137?&agency=Commerce
Petrofund Phone	**651-215-1775 or 1-800-638-0418**
State Duty Officer	**651-649-5451 or 1-800-422-0798**

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