Carlson McCain

ENVIRONMENTAL • ENGINEERING • LAND SURVEYING

August 18, 2011

Mr. Gary Zarling
Minnesota Pollution Control Agency
520 Lafayette Road
St. Paul, Minnesota 55155

Re: Investigation Report Form (MPCA Guidance Document 4-06)
Sinclair #22020
223 East Larpenteur Avenue
Maplewood, MN 55117
MPCA LEAK #17952

Dear Mr. Zarling:

Carlson McCain, Inc. (Carlson), on behalf of Mr. Paul Conrad of Sinclair Marketing, Inc. has completed the enclosed Investigation Report Form (MPCA Guidance Document 4-06) in regards to the standard scope Limited Site Investigation conducted at the above-referenced Site. Carlson is recommending Site Closure. Investigation activities conducted at the Site appear to define the vertical and horizontal extent of residual soil or groundwater impacts from a previously documented petroleum release (former MPCA Leak #2643). In addition, recent LSI activities appear to define any potential impacts to Site and nearby receptors.

If you have any questions, you may contact me at (952) 346-3913 or email cloch@carlsonmccain.com.

Sincerely,

Carlson McCain, Inc.

Chris Loch
Project Manager

Enclosure

cc: Mr. Paul Conrad – Sinclair Marketing, Inc.

LIMITED SITE INVESTIGATION REPORT FORM (MPCA GUIDANCE DOCUMENT 4-06)

Sinclair #22020
223 East Larpenteur Avenue
Maplewood, MN 55117
Project #3327-00
MPCA Leak #17952

Prepared for:

Sinclair Marketing, Inc.
Attn: Mr. Paul Conrad
550 East South Temple
Salt Lake City, Utah 84102

August 18, 2011

Carlson McCain

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Maple Plain, MN 55359
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ENVIRONMENTAL • ENGINEERING • LAND SURVEYING

Minnesota Pollution Control Agency

Investigation Report Form

Guidance Document 4-06

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

MPCA Site ID: **Leak #17952** Date: **August 18, 2011**

Responsible Party Information

Name: **Sinclair Marketing Inc.** Phone #: **801-526-3825**

Mailing Address: **550 East South Temple**

City: **Salt Lake City** Zip Code: **84102**

Alternate Contact (if any) for Responsible Party: **Paul Conrad** Phone #: **801-526-3825**

Leak Site Information

Leak Site Name: **Sinclair #22020** Phone #: **N/A**

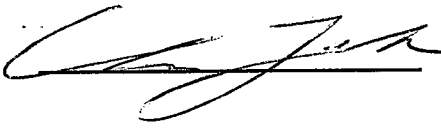
Leak Site Address: **223 East Larpenteur Avenue**

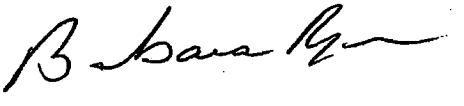
City: **Maplewood** Zip Code: **55117** County: **Ramsey**

Environmental Professional Information

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

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

Name and Title of Report Author(s)	Signature	Date Signed
Christopher J. Loch Project Manager		**8/18/11**

Name and Title of Report Reviewer(s)	Signature	Date Signed
Barbara A. Ryan, P.G. Senior Geologists		**8/18/11**

Name(s) of Field Technician(s): **Chris Loch**

Company and Mailing Address: **Carlson McCain, Inc.**
P.O Box 429
Maple Plain, MN 55359

Project Manager E-mail Address: **cloch@carlsonmccain.com**

Phone: **952-346-3913**

Fax: **952-346-3901**

Emergency and High Priority Sites

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

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

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

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

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

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

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

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

A total of four soil-gas vapor samples were collected. Samples were collected from vapor borings (VP-1, VP-2, VP-3 and VP-4) at depths of four and six feet below ground surface (bgs). Benzene (3,100 ug/m³); ethylbenzene (42,000 ug/m³); toluene (45,000 ug/m³); m&p-xylene (160,000 ug/m³); and o-xylene (48,000 ug/m³) concentrations exceeded their MPCA acute intrusion screening values (ISVs) within the soil vapor sample collected from VP-4. Soil vapor probe VP-4 was advanced next to direct-push probe LSI soil boring GP-1, within the petroleum release area discovered during previous Site Assessment and historical investigation activities. The elevated soil vapor concentrations appear to be a direct result of collecting the soil vapor sample within the release source area. LSI soil boring GP-1 indicated petroleum impacted soil at depths from two to four feet bgs. The threat for acute soil vapor migration and accumulation is considered low due to the lack of nearby receptors (i.e. current use of Site is undeveloped with no utility trenches or adjoining property buildings). In addition, laboratory analysis of the soil-gas samples collected from vapor probes VP-2 and

VP-3 indicated petroleum constituent concentrations not exceeding Acute or ten times (10x) their ISVs. Vapor probes VP-2 and VP-3 appear to define potential soil-gas migration towards nearby residential homes and utility corridors located along Adolphus Street and Larpenteur Avenue, respectively. Vapor and soil boring locations are visually depicted on Figure 2, attached.

Section 1: Site Assessment

Site and Release Information

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

1.1 Describe the land use and pertinent geographic features (e.g., topographic changes, surface waters, etc.) within 1,000 feet of the site. Illustrate these features using the Site Location Map, aerial photographs, and Sanborn Fire Insurance Maps™ for the various time periods they are available in Section 4.

The former Sinclair #22020 service and station store (Site) is located at 223 East Larpenteur Avenue in Maplewood, Minnesota. The Site location is visually depicted on Figure 1, attached. The Site is currently undeveloped. Buildings, utilities, underground storage tanks (USTs), piping, dispensers, asphalt and concrete surfaces associated with the former Sinclair gas and service station (#22020) no longer exist at the Site. Land use surrounding the Site is primarily residential and light commercial. The Site is adjoined by an asphalt parking lot followed by a restaurant (Champs) to the north; Interstate 35E and associated exit ramps to the east; Larpenteur Avenue followed by undeveloped wooded area to the south; and Adolphus Street followed by residential properties to the west. The nearest surface water bodies are two unnamed ponds located approximately 260 feet (0.05 mile) and 350 feet (0.07 mile) to the northwest and south of the Site, respectively. The area of the Site is defined by generally flat topography, sloping downward toward the northern adjoining parking lot and southern adjoining Adolphus Street. The Site Plan View visually depicting former tank basin, dispenser islands and building locations is attached as Figure 2.

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

The Site historically has been developed as a commercial building, functioning as a Sinclair gas and service station. Sinclair and the MPCA online database indicated a previous MPCA leak number (#2643) had been assigned to this Site on May 31, 1990 and subsequently closed by the MPCA in May of 2000. Documentation provided by Sinclair indicated that subsurface investigations, monitoring well installation and sampling, and remedial system operations were previously conducted at the Site to warrant MPCA Leak #2643 closure.

A Phase II Site Assessment dated April 26, 2010 was completed by Ground Water & Environmental Services, Inc. (GES) to confirm any potential Site contamination for a property transaction. Soil borings were advanced throughout the Site within areas (i.e. tank basins and dispenser islands) to assess any potential soil and or ground water

contamination. The Phase II soil borings identified petroleum contamination impacts to soil and ground water within areas located to the west and south of the former Site dispenser islands. A copy of the Phase II Site Assessment is attached as Appendix D. GES notified the Minnesota State Duty Officer of the petroleum release and the MPCA assigned the Site a new leak number.

Subsequent to Phase II Site Assessment activities, GES conducted tank removal activities at the Site on November 10, 2010. The excavation report indicated that three USTs, two hydraulic hoists, associated piping and dispensers were removed. In addition, the tank excavation report included information about a total of six USTs removed from the Site on July 10, 1990. The General Excavation Report Worksheet (MPCA Guidance Document 3-02) dated May 20, 2011 is attached as Appendix A.

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

Review of the MPCA's electronic leaking underground storage tank (LUST) and "Whats in my Neighborhood" release database indicated that no other releases are present within the Site property or at properties located within the 500 foot search radius.

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

A total of nine USTs and two hydraulic hoists, along with all piping and associated dispensers have been historically removed from the Site. The Site is currently undeveloped with no tanks, piping, dispensers or buildings remaining on-site. Most recently, three 10,000-gallon gasoline tanks (USTs #007, #008, and #009), associated piping, four dispenser pumps and two hydraulic hoists (USTs #010 and #011) were removed from the Site on November 10, 2010. GES documented that USTs, piping and dispensers were in good condition. The former building, tank basins and dispenser pumps locations are visually depicted on Figure 2, attached.

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

The suspected source of the release is from residual contamination from the previous Site release (former MPCA Leak #2643). The MPCA assigned a new leak number (#17952) following GES's Phase II Site Assessment results. In addition, it should be noted that recent tank removal activities conducted by GES appear to conclude that a new release associated with the three removed 10,000-gallon gasoline USTs, piping and dispensers has not occurred. However, petroleum soil contamination was identified by GES below hydraulic hoist #2, which was removed from inside the service garage area of the former Site building.

1.6 When did the release occur (if known)?

Petroleum impacts to soil and ground water identified during recent tank removal, Phase II and LSI activities appear to be residual contamination associated with the previously assigned and ultimately closed MPCA Leak #2643.

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

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

1.8 Was soil excavated for off-site treatment? ☐ *Yes* ☒ *No*

Date(s) soil was excavated: **N/A** Total volume removed: **N/A**

Volume of total soil removed that was petroleum saturated: **N/A**

Soil treatment method:
☐ Land treatment
☐ Thermal treatment
☐ Composting/Biopiling
☐ Other ( )
Name and location of treatment facility: **N/A**

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

Site-Specific Geology and Hydrogeology

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

Initially, a total of four Phase II Site Assessment direct-push probe soil borings (GP-1 through GP-4) were advanced at the Site by GES on April 14, 2010. Borings were advanced within potential areas of contamination. GP-1 was advanced directly to the north of the former tank basin consisting of USTs #007, #008 and #009 (three 10-gallon gasoline tanks); GP-2 was advanced directly to the south of the former tank basin consisting of USTs #007 through #009; GP-3 was advanced adjacent to the western extent of the former dispenser islands; and GP-4 was advanced to the south of the recently removed dispenser islands. Phase II soil borings were advanced within safe locations to not contact buried utilities present throughout the Site. The Phase II Site Assessment provides information which is referenced in this LSI report indicating that petroleum impacts to soil and ground water appear to be residual contamination from the petroleum release associated with the previously closed MPCA Leak #2643 at the Site.

Following review of Phase II assessment results and Site characteristics, a total of five LSI soil borings were advanced throughout the Site on June 29, 2011. LSI soil borings were advanced within locations to assess and define residual soil and ground water contamination. In addition, LSI soil borings were advanced in locations to assess any potential petroleum contamination associated with the recently removed USTs, dispensers, piping and hydraulic hoists. LSI borings were advanced at locations designed to encounter ground water and potentially define the vertical and horizontal extent of soil and ground water contamination. LSI soil boring GP-1 was advanced adjacent to Phase II soil boring GP-3, along the western side of the former dispenser islands; GP-2 was advanced directly to the east of the former tank basin consisting of three recently removed 10,000-gallon gasoline tanks (USTs #007, #008 and #009); GP-3 was advanced within the former foundation area of the Site building and service garage area, located along the northern extent of the Site; GP-4 was advanced along the west section of the Site, towards Adolphus Street; and GP-5 was advanced to the south of Phase II soil boring GP-3 and the former dispenser islands. Phase II and LSI soil boring locations are visually depicted on Figure 2, attached.

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

A total of three grain size samples were collected during LSI push-probe advancement activities. Grain size samples were collected from LSI soil borings GP-2, GP-3 and GP-4 at depths of 16-20 and 12-16 feet bgs. Samples were collected at intervals which intersected the relatively shallow ground water table within wet to saturated, fine to medium grained, poorly graded sand (SP).

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

Based on soil borings advanced at the Site, surficial geology in the area consists of brown silty sand (SM) from the surface to depths between 10 and 15 feet bgs. Brown, fine to medium grained, well sorted sand (SP) was encountered below the silty sand in all boreholes except GP-1, where a 2.5 foot lens of well graded sand was present below the silty sand. The poorly graded sand (SP) layer was wet to saturated in each soil boring. Grey to brown, sandy silt with some clay (SM) was encountered directly below the wet to saturated sand layer within each soil boring with thickness ranging between 1 and 3 feet. Reddish brown, medium grained, poorly sorted sand (SW) was encountered directly below the sandy silt layer to a maximum depth of 31 feet bgs (terminus depth of LSI soil boring GP-1).

According to boring logs of two nearby private domestic wells (MDH unique #270268 and #247034), located approximately 900 and 1,160 feet to the west of the Site, respectively, glacial drift (clay and mixed sand and clay soil) exists from the surface to depths of 78 and 87 feet bgs. The glacial drift is followed by the Platteville Limestone, Glenwood Shale and St. Peter Sandstone formations in each private well boring log from depths ranging from 78 to 184 feet bgs and 87 to 200 feet bgs, respectively.

Grain size analysis was completed for three soil samples collected at depths intersecting the shallow ground water. Grain size analysis data was utilized to complete hydraulic conductivity (K) estimates using the Krumbien & Monk Method. Grain size data evaluation and calculations are attached as Appendix I. The Krumbien & Monk Method uses grain size distribution to estimate K. The calculated values were averaged to provide an average K of 4.57 feet per day. The thickness of the shallow aquifer unit is estimated to be at least five feet ("b" value). Based on this data, the transmissivity value was estimated to be 22.83 square feet per day.

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

Site ground water was encountered within soil borings ranging at depths from 11.1 to 17.9 feet bgs as indicated by wet to saturated soil. The depth to Site ground water appears to closely reflect Site topography. Ground water was encountered within brown, fined to medium grained, wells sorted sand encountered in each advanced soil boring.

The Minnesota Department of Health (MDH) County Well Index (CWI) database indicated that nearby domestic wells #270268 and 247034, located approximately 900 and 1,160 feet to the west of the Site, respectively, have measured static water levels between depths of 80 and 89 feet bgs. The boring logs indicate that each domestic well receives resource ground water at depths ranging between 172 and 181 feet bgs within

the St. Peter Sandstone. The MDH well logs referenced for geologic and resource water information for properties located beyond 500 feet from the Site are attached as Appendix K. General well locations are visually depicted on Figure 7, attached.

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

Based on soil boring data, Site observations, review of the Google Earth® database, and review of historical release (MPCA Leak #2643) investigation and monitoring information, regional ground water is interpolated to flow towards the south and southeast, following the change of elevation towards an unnamed pond and associated undeveloped wooded wetland area located approximately 350 feet to the south of the Site. A change of elevation from approximately 854 feet above sea level at the Site to 846 feet above sea level near the undeveloped wooded wetlands and unnamed pond was calculated.

In addition, petroleum constituent concentrations reported in collected ground water samples appear to have horizontally migrated from the release source area to soil borings advanced along the southern extent of the Site.

The interpolated ground water flow direction reflects the topography and natural drainage surrounding the Site. Flow direction was based on the assumption that ground water flow closely parallels ground surface topography. This does not take into account any historic cut and fill activity, shallow bedrock or unobserved artificial conditions.

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

Evidence of a fluctuating water table or a seasonal high water table was observed in each advanced LSI soil boring. Mottled soils were encountered in soil samples collected approximately one to two feet above the initial ground water levels measured in each LSI soil boring. Mottling was documented within sandy silt and poorly graded sand layers at depths ranging from 14 to 15 feet bgs in each advanced LSI soil boring.

Extent and Magnitude of Soil Contamination

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

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

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

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

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

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

An attempt to reach 20 feet below the encountered ground water (16.4 feet bgs) in LSI soil boring GP-1 was made. However, LSI soil boring GP-1 encountered refusal at a depth of approximately 31 feet bgs. Well graded sand (SW) was compacting and inhibiting direct push technology from achieving the stratigraphy depth of 36 feet bgs.

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

Soil samples were collected from each push-probe soil boring and submitted to a Minnesota Department of Health (MDH) certified laboratory for chemical analysis. Soil samples were collected from either the two foot interval with the highest PID reading, directly above the surficial ground water table encountered in each LSI soil boring and the termination depth in LSI soil boring GP-1. Field screening activities, including visual and olfactory observations indicated strong petroleum odors from LSI soil boring GP-1 from depths of four to approximately 20 feet bgs. Photoionization detector (PID) readings ranging between 2.5 and greater than 2,500 parts per million (ppm) were detected within soil sample intervals collected between two and 24 feet bgs from LSI soil

boring GP-1. In addition, visual and olfactory observations indicated low to moderate level petroleum odors and grey stained soil from soil samples collected from LSI soil boring GP-3 (advanced near a former hydraulic hoist) within soil sample intervals between six to twelve feet bgs. PID readings of 1,079, 155 and 28.1 ppm were detected within soil sample intervals GP-3 (6-8'); GP-3 (8-10'); and GP-3 (10-12'), respectively. Elevated PID readings were not detected in any other LSI soil borings advanced throughout the Site. Collected soil samples were analyzed for benzene, toluene, ethylbenzene, xylenes (BTEX), methyl-tert-butyl-ether (MTBE), naphthalene, trimethylbenzenes (TMBs), gasoline range organics (GRO) and diesel range organics (DRO).

Laboratory analysis of the soil sample collected from GP-1 (10-12'), advanced adjacent to Phase II soil boring GP-3 (indentified petroleum contamination) and within the suspected historical release source area, indicated concentrations of 1.3 mg/kg benzene; 1.9 mg/kg toluene; 5.1 mg/kg ethylbenzene; 21.2 mg/kg xylenes; 0.33 mg/kg MTBE; 520 mg/kg GRO; 120 mg/kg DRO; 6.6 mg/kg naphthalene; 29 mg/kg 1,2,4 TMB; and 9.6 mg/kg 1,3,5 TMB. It should be noted that soil sample GP-1 (10-12') was collected from the soil interval indicating the highest PID detection of 2,500 ppm. Laboratory analysis of the LSI soil sample GP-1 (30-32'), collected at the termination depth of the soil boring, indicated petroleum constituent concentrations were not present at concentrations above laboratory detection limits. The soil sample collected from LSI soil boring GP-3, from the soil sample collection interval of six to eight feet bgs, indicated laboratory concentrations of 0.1 mg/kg benzene; 1.8 mg/kg ethylbenzene; 6 mg/kg xylenes; 1,200 mg/kg GRO; 800 mg/kg DRO; 4.7 mg/kg naphthalene; 50 mg/kg 1,2,4 TMB; and 11 mg/kg 1,3,5 TMB Laboratory analysis of LSI soil sample GP-3 (14-16'), collected directly above the encountered ground water table indicated that constituent concentrations do not exceed laboratory detection limits. Petroleum constituent concentrations were not reported above laboratory detection limits in soil samples collected from LSI soil borings GP-2, GP-4, and GP-5. Detected constituent concentrations observed in LSI soil borings GP-1 and GP-2 are believed to be associated with the degradation of petroleum.

Soil samples collected during 2010 Phase II soil boring activities (GP-1 through GP-4) were obtained from the termination depth of each boring and analyzed for BTEX, MTBE, GRO and DRO. Elevated PID readings along with visual and olfactory observations were observed and documented by GES personnel during Phase II soil boring advancement activities. Phase II soil borings GP-3 and GP-4 indicated petroleum odors and elevated PID readings at depths between 14 to 20 feet bgs. Laboratory analysis of Phase II soil sample GP-3 (15-17'), collected directly above encountered ground water, indicated concentrations of 4.9 milligrams per kilogram (mg/kg) benzene; 24.1 mg/kg toluene; 26.5 mg/kg ethylbenzene; 187 mg/kg xylenes; 1,230 mg/kg GRO; and 426 mg/kg DRO. In addition, laboratory analysis of Phase II soil sample GP-4 (18-20'), collected within encountered ground water, indicated concentrations of 9.1 mg/kg toluene; 33.2 mg/kg ethylbenzene; 194 mg/kg xylenes; 1,270 mg/kg GRO; and 164 mg/kg

DRO. The Phase II Site Assessment report, which includes soil boring logs and laboratory analysis of collected soil samples, is attached as Appendix D.

Horizontally, residual soil petroleum impacts appear to be confined to an area surrounding Phase II soil boring GP-3 and LSI soil boring GP-1, extending to the south section of the property towards Phase II soil boring GP-4. In addition, LSI soil boring GP-3 appears to indicate a hydraulic hoist release near the northern extent of the Site (within the footprint of the former building). However, it does not appear that hydraulic oil impacts have impacted shallow ground water. Phase II and LSI soil borings advanced around the recently removed USTs did not indicate petroleum impacts to subsurface soil. In addition, LSI soil borings advanced near the west, east and south boundaries of the Site appear to indicate soil contamination is not migrating off-site. It appears petroleum soil contamination encountered at the Site is residual impacts associated with the Site's previously reported and closed release (MPCA Leak #2643). The horizontal extents of GRO, DRO and benzene soil contamination is visually depicted on Figure 2b, attached. Vertically, it appears that residual petroleum soil contamination remains in contact with shallow ground water. Laboratory analytical reports are attached as Appendix F and summarized in Tables 3 and 4. The geologic cross sectional plan view for the Site is attached as Figure 4. Geologic cross sections of the Site are attached as Figures 5a and 5b. Figures 5a and 5b also depict the vertical extent of GRO, DRO and benzene soil contamination.

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

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

If ***NO***, complete question 1.21.

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

N/A

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

N/A

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

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

N/A

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

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

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

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

Field screening activities, including olfactory and visual observation of collected soil samples from the surface to approximately two feet bgs in each advanced soil boring did not indicate the presence of petroleum impacts.

Aquifer Determination

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

1.23 Calculate an average hydraulic conductivity value (K).

GP-2 (16-20'): K = 1.64
GP-3 (16-20'): K = 7.20
GP-4 (12-16'): K = 4.86

K = 4.57 ft/day (Average)

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

Grain-size distribution approximations were conducted by Krumbien/Monk method.

1.24 Calculate a range for aquifer transmissivity (T) using the equation T = Kb, where b is the thickness of the aquifer.

T_{High} = 22.83 ft^2/day (b = 5 feet thick, K = 4.57 ft/day)
T_{Low} = 18.26 ft^2/day (b = 4 feet thick, K = 4.57 ft/day)

$T_{Average}$ = 20.57 ft^2/day (b = 4.5 feet thick, K = 4.57 ft/day)

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

Aquifer Characterization

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

Monitoring wells were not installed at the Site.

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

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

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

1.28 Provide an estimate of the longitudinal length of the dissolved contaminant plume: feet

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

Hydraulic conductivity (K) = ft/day
(Method if different than that used in 1.23:)
Porosity (n) = method/reference
Average horizontal gradient (dh/dl) = (unitless)
Calculated ground water velocity (v) = ft/day

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

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

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

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

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

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

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

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

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

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

Extent and Magnitude of Ground Water Contamination

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

Initially, GES collected ground water samples from Phase II push probe borings GP-1 and GP-3 and submitted them for laboratory analysis. Laboratory analysis of the ground water sample collected from Phase II soil boring GP-3, advanced within the suspected former release source area indicated concentrations of 21,300 micrograms per liter (µg/L) benzene; 22,400 µg/L toluene; 4,570 µg/L ethylbenzene; 25,700 µg/L xylenes; 109,000 µg/L GRO; 207,000 µg/L DRO; 4,770 µg/L 1,2,4 TMB; and 1,210 µg/L 1,3,5 TMB. The ground water sample collected from Phase II soil boring GP-1 indicated constituent concentrations were not above laboratory detection limits. The reported concentrations of benzene, toluene, ethylbenzene, xylenes and TMBs exceed Minnesota Department of Health (MDH) Health Risk Limits (HRLs) in the ground water sample collected from Phase II soil boring GP-3.

Ground water samples were collected from each LSI push probe boring (GP-1 through GP-5) and submitted for laboratory analysis. Each collected groundwater sample was submitted to a certified laboratory for DRO, GRO and VOC analysis. Laboratory analysis of the ground water sample collected from GP-1, advanced adjacent to Phase II soil boring GP-3 and within the suspected historical release source area, indicated significantly lower petroleum concentrations (1.3 µg/L benzene; 7.8 µg/L toluene; 15 µg/L ethylbenzene; 82 µg/L xylenes; 440 µg/L GRO; 3,200 µg/L DRO; 6.8 µg/L naphthalene; 22 µg/L 1,2,4 TMB; 4.5 µg/L 1,3,5 TMB; 4.3 µg/L n-propylbenzene; 1.3 µg/L isopropylbenzene; and 5.1 µg/L 1,2,3 TMB). Laboratory analysis of the ground water sample collected from LSI soil boring GP-3, advanced adjacent to the recently removed hydraulic hoist, indicated low to moderate concentration detections of 3.7 µg/L ethylbenzene; 20 µg/L xylenes; 1,100 µg/L GRO; 750 µg/L DRO; 6.2 µg/L naphthalene; 100 µg/L 1,2,4 TMB; 28 µg/L 1,3,5 TMB; 11 µg/L n-propylbenzene; 5 µg/L isopropylbenzene; 39 µg/L 1,2,3 TMB; 5.5 µg/L p-isopropyltoluene; 4.9 µg/L n-butylbenzene; and 5 µg/L sec-butylbenzene. The ground water sample collected from LSI soil boring GP-5, advanced to the south of Phase II soil boring GP-3 indicated laboratory concentration detections of 450 µg/L GRO; 530 µg/L DRO; 45 µg/L 1,2,4 TMB; 2.6 µg/L 1,3,5 TMB; 12 µg/L n-propylbenzene; 5.8 µg/L isopropylbenzene; 4.7 µg/L 1,2,3 TMB; 1.2 µg/L n-butylbenzene; and 3 µg/L sec-butylbenzene. Laboratory analysis of the ground water samples collected from LSI soil borings GP-2 and GP-4 identified no petroleum concentrations above laboratory detection limits. The constituent concentrations reported in the groundwater samples collected from each LSI soil boring (GP-1 through GP-5) did not exceed the MDH HRLs. However, concentrations of DRO and GRO in soil borings GP-1, GP-3 and GP-5 exceed MDH Health Based Values (HBVs) for drinking water.

Based on laboratory analytical results for groundwater samples collected from borings advanced across the Site, elevated ground water contamination appears to be primarily confined to the suspected historical release source area located directly to the west of the Site's former dispenser islands. Horizontally, petroleum constituent concentrations significantly decrease radially towards LSI soil borings GP-1, GP-3 and GP-5, located approximately 20 feet to the east, 60 feet towards the northeast, and 40 feet south of the source area, respectively. The groundwater samples collected from Phase II soil boring GP-1 and LSI soil boring GP-2 appear to verify that there is no new release associated with the recently removed USTs and horizontally define contamination towards the east and northeast extents of the Site. In addition, the ground water sample collected from LSI soil boring GP-4 appears to horizontally define residual petroleum contamination from migrating to the west of the Site, towards nearby residential homes. Vertically, sandy silt followed by well graded sand may confine the shallow ground water at depths ranging from 18 to 22 feet bgs.

Laboratory analytical reports are attached as Appendix F and summarized in Tables 7 and 8. The orizontal extents of GRO, DRO and benzene groundwater contamination are depicted on Figures 3a, 3b and 3c (Horizontal Groundwater Contamination Extents), respectively and attached for reference.

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

N/A

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

The ground water samples were collected from temporary wells installed within each advanced LSI soil boring and submitted to Environmental Science Corporation (ESC) for laboratory analysis. The ground water samples were collected from a screened interval intersecting the wet to saturated, well to poorly graded sand (SP) at depths ranging between 11.1 and 17.9 feet bgs. Either a five or 10 foot plastic screen was set to straddle the wet to saturated sandy soil and collect the ground water samples.

The ground water samples were analyzed for GRO, DRO and volatile organic compounds (VOCs). Sample collection procedures, laboratory analysis conducted, and QA/QC information is attached as Appendix G.

1.35 Laboratory certification number:

Environmental Science Corporation (ESC) Lab Certification #047-999-395

Evaluation of Natural Attenuation

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

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

Natural attenuation parameters were not assessed. However, due to the significant decrease of petroleum constituent concentrations reported in the ground water samples collected from LSI soil boring GP-1 and the interpolated down-gradient push-probe boring (GP-5), bioremediation and natural attenuation may be occurring at the Site.

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

N/A

Extent and Recovery of Free Product

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

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

Free product was not documented or encountered during Phase II Site Assessment or recent tank removal activities conducted by GES. In addition, LSI soil boring advancement activities did not encounter or identify free product throughout the Site.

Section 2: Risk Assessment

Well Receptors

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

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

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

A total of 5 receptor survey letters were sent to properties located within 500 feet of the Site. One completed residential survey letter was returned. In addition, Mr. Michael Thompson (City Engineer) from the City of Maplewood Public Works returned the survey letter sent to him regarding nearby properties and their respective public water and sewer service.

If *NO*, please explain.

N/A

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

N/A

2.3 Discuss the results of the ground water receptor survey. Comment on the risks to water supply wells identified within 500 feet from the site as well as the risk posed by or to any municipal or industrial wells found within ½ mile. Specifically indicate whether identified water supply wells use the impacted aquifer. (Note: an impacted aquifer separated from another aquifer by a clay lens may not be considered a separate aquifer).

Information obtained during the water well survey activities (receptor survey walkthrough, returned survey letters, City of Maplewood Public Works correspondence and review of the MDH CWI database) indicates that the properties in the area are connected to municipal water services. Water supply wells or borings were not observed or identified within 500 feet of the Site during receptor survey walkthrough activities or review of the online MDH CWI database. In addition, municipal or industrial wells were not acknowledged or identified within ½ mile of the Site. Mr. Michael Thompson (City

Engineer/Deputy Director of Maplewood Public Utilities) confirmed that nearby properties are connected to City of Maplewood and St. Paul public water and sewer services. One returned receptor survey letter was completed by Ms. Jennifer Tillman. The Tillman residence is located at 196 Larpentuer Avenue, approximately 440 feet to the southwest of the Site. Ms. Tillman acknowledged that no private well exists on her property and unusual odors have not been observed within the property's basement or sump area.

The nearest private water wells identified during review of the online MDH CWI database are located approximately 900 and 1,160 feet to the west of the Site, respectively. Resource water is reported to be obtained from these wells (MDH unique well #270268 and 247034) at depths of 172 and 181 feet bgs, respectively.

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

N/A

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

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

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

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

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

Name: **Michael Thompson**
Title: **City Engineer/Deputy Director of Maplewood Public Works**
Telephone: **651-249-2403**

Surface Water Receptors

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

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

The nearest surface water bodies are two unnamed ponds located approximately 260 feet (0.05 mile) and 350 feet (0.07 mile) to the northwest and south of the Site, respectively.

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

Utilities were not present at the Site and do not appear to act as a potential pathway for migration.

2.9 If surface water is present downgradient of the site, is there a clean downgradient soil boring or monitoring well located between the site and the surface water?

☐ *Yes*
☒ *No*
☐ *NA*

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

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

LSI soil boring GP-5, advanced along the southern extent of the Site within the interpolated down-gradient direction from the suspected historical release source area indicated relatively low petroleum constituent concentrations reported from laboratory analysis of the collected groundwater sample. Based on the laboratory analytical results of soil and ground water samples collected during soil boring advancement activities, the constituents detected from the ground water sample collected from LSI soil boring GP-5 are believed to be degradation products indicative of the previous Site release. BTEX concentrations were not reported above laboratory detection limits in the ground water sample collected from LSI soil boring GP-5. The lab results indicated a significant decrease in concentrations from those identified within the source area, located approximately 35 feet to the north of LSI soil boring GP-5. The unnamed pond is located approximately an additional 315 feet to the south of LSI soil boring GP-5. In addition, petroleum contamination encountered throughout the Site is believed to be residual contamination associated with MPCA closed leak site #2643. The threat of residual petroleum impacts detected within ground water collected from GP-5 migrating to the unnamed pond is expected to be low.

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

Utilities and Subsurface Structures

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

Underground utilities are not currently present at the Site (undeveloped). The nearest identified buried utility lines consist of storm sewer, sanitary sewer and water mains located to the south of the Site along Larpenteur Avenue; water and sanitary sewer mains located to the west of the Site along Adolphus Street; and a sanitary sewer service line located to the east of the Site, transecting towards the northern adjoining property (Champps Restaurant). Phase II soil borings (GP-1, GP-2 and GP-4); LSI soil borings (GP-2, GP-4 and GP-5); and soil vapor borings VP-2 and VP-3, advanced between the historical release source area and each identified off-site buried utility location appear to provide definition for soil contamination and vapors potentially impacting utility trenches and acting as a migration pathway. LSI soil boring GP-4 and vapor boring VP-2 also provide evidence that the potential risk for soil and soil vapor migration towards western adjoining residential homes is low. In addition, a total of five open storm sewers were observed between approximately 270 and 370 feet to the west and southwest of the Site, along Larpenteur Avenue. Field screening of each open storm sewer grate conducted during receptor survey walkthrough activities did not identify the presence of petroleum vapors. Utility locations are visually depicted on Figure 2. Open storm sewer grates are visually depicted on Figure 5 (Potential Receptor Survey Map), attached.

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

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

N/A

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

If *YES*, describe:

N/A

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

monitoring locations listed in Table 19. Vapor monitoring methods, including instruments used, must be discussed in Section 6.

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

A limited vapor survey was conducted within a total of five open storm sewer grates located between approximately 270 and 370 feet to the west and southwest of the Site, along Larpenteur Avenue. PID readings were obtained from each observed storm sewer grate. Collected PID readings from the five open storm sewer grates indicated 0.0 ppm. Storm sewer grate locations are visually depicted on Figure 5, attached.

Vapor Intrusion Receptors

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

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

If ***NO***, explain why.

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

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

A soil gas sample collected from VP-4 (6'), advanced directly to the west of the former dispenser island and within the historical release source area indicated benzene, ethylbenzene, xylenes, TMBs and n-hexane concentrations significantly above the MPCA's interim Intrusion Screening Values (ISVs) by ten times (10x) the concentration. However, the Site is currently undeveloped and the nearest inhabited building is located approximately 160 feet to the west of soil vapor boring VP-4. In addition, soil vapor boring VP-1, advanced adjacent to LSI soil boring GP-3 and within the footprint of the former Site building indicated a tetrachloroethylene concentration exceeding 10x the ISV. Again, the Site is currently undeveloped and the nearest off-site buildings from vapor boring VP-1 are located approximately 170 and 320 feet to the west and north, respectively. Also, tetrachlorethylene (PCE) was not detected in the ground water sample collected from LSI soil boring GP-3. Soil vapor VP-2 indicated a 1,3 butadiene concentration exceeding 10x its ISV. Again, the 1,3 butadiene was not encountered in VOC analysis of the ground water samples collected throughout the Site.

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

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

N/A

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

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

If ***NO***, explain why.

The results of soil-gas samples collected from vapor borings VP-1, VP-2 and VP-3, advanced around the Site's historical release source area appear to minimize the threat of potential soil-gas migration and accumulation impacting nearby commercial building and residential homes. With the exception of PCE in soil vapor sample VP-1, and 1,3 butadiene in soil vapor sample VP-2, detected petroleum constituent concentrations were not reported above 10x their ISVs from soil-gas samples collected from each radial vapor boring. In addition, soil and ground water samples collected from LSI radial soil borings GP-2 through GP-5 indicated petroleum constituent concentrations were not above laboratory detection limits and also identified a significant petroleum constituent concentration decrease from the source area.

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

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

Site Conceptual Model Discussion

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

Soil and ground water petroleum impacts observed and reported during Phase II Site Assessment, UST removal and LSI activities at the Site appear to pose a minimal risk to the immediate and surrounding environment. The Site is currently undeveloped, previously operating as a Sinclair gas and service station. Land use surrounding the Site is primarily residential and light commercial. The Site is adjoined by an asphalt parking lot followed by a restaurant (Champps) to the north; Interstate 35E and associated exit ramps to the east; Larpenteur Avenue followed by undeveloped wooded area to the south; and Adolphus Street followed by residential properties to the west. The nearest surface water bodies are two unnamed ponds located approximately 260 feet (0.05 mile) and 350 feet (0.07 mile) to the northwest and south of the Site, respectively. Current access to the Site is from either Larpenteur Avenue or Adolphus Street.

Evidence of residual petroleum impacts to soil and ground water were encountered directly to the west and south of the former dispenser islands during Phase II Site assessment activities conducted by GES. In addition, recent removal activities of tanks (USTs #007, #008 and #009), piping, dispenser islands and buried hydraulic hoists conducted by GES did not identify a new release with the exception of petroleum impacted soil surrounding a former hydraulic hoist. Laboratory analysis of soil sample HH-2, collected below the removed hydraulic hoist #2 (UST #011) indicated concentrations of 1,930 mg/kg DRO; 0.432 mg/kg ethylbenzene; and 2.14 mg/kg xylenes. The release appears to be the result of a spill, overfill or low magnitude release from the former hoist. Subsequent LSI activities appear to indicate that the soil and ground water contamination encountered during Phase II Site Assessment activities is residual contamination associated with the previous Site release (MPCA LEAK #2643). In addition, LSI soil boring GP-3 appears to define the hydraulic hoist release to a relatively small area extending from depths between 6 and 12 feet bgs. It does not appear the limited release associated with the hydraulic hoist is in contact with shallow ground water. The LSI soil borings advanced throughout the Site and towards potential Site receptors appear to have defined the vertical and horizontal extent of identified petroleum contamination.

The primary risk associated with residual soil and ground water contamination is the potential for horizontal migration towards nearby receptors (i.e. surface water and utility corridors). Residual soil and ground water appears to be concentrated in the area surrounding Phase II soil boring GP-3, directly to the south of a former tank basin and west of the former dispenser islands. Advancement of LSI soil borings indicated

significantly lower concentration contamination impacts and appears to indicate that contamination is not migrating off-site.

Ground water was encountered in Phase II soil borings GP-1 and GP-3 at depths between 15 to 19 feet bgs and LSI soil borings GP-1 through GP-5 at depths between 11 and 17.9 feet bgs within a relatively thin poorly graded sand layer. Sandy silt (SM) was encountered in each advanced soil boring directly below the poorly graded sand. Horizontally, ground water is interpolated to flow towards the south. The ground water sample collected from LSI soil boring GP-5, advanced within the interpolated down-gradient direction from the historical release source area, indicated significantly lower petroleum constituent concentrations when compared to source area soil borings (Phase II soil boring GP-3 and LSI soil boring GP-1). In addition, laboratory analysis of ground water sample GP-5W did not identify benzene and toluene concentrations above laboratory detection limits. The nearest down-gradient surface water from the source area is an unnamed pond and surrounding wooded wetlands located approximately 350 feet to the south. The risk of ground water contamination migrating to nearby surface water is considered low.

The transmissivity of the contaminated hydrogeologic unit encountered at the Site was calculated under 50 ft^2/day. Transmissity calculated from grain size samples collected from wet to saturated soil intervals encountered in each soil boring ranged from 18.26 to 22.83 ft^2/day. The wet to saturated sand is not considered an aquifer (non-resource) for the purpose of the Petroleum Remediation Program. Additional investigation such as monitoring well installation does not appear necessary due to low transmissivity and ground water samples collected from soil borings advanced around the historical release source area indicating constituent concentrations not exceeding MDH HRLs and 1,000 µg/L GRO and DRO.

The risk of vapor accumulation and/or migration at the Site appears to be very low. The soil gas sample collected from VP-4 (6'), advanced within the historical release source area indicated benzene, ethylbenzene, xylenes, TMBs and n-hexane concentrations significantly above the MPCA's interim ISV by 10x the concentration. However, the Site is currently undeveloped and the nearest inhabited building is located approximately 160 feet to the west of soil vapor boring VP-4. The results of soil-gas samples collected from vapor borings VP-1, VP-2 and VP-3, advanced around the Site's historical release source area appear to indicate the threat of potential soil-gas migration and accumulation impacting a nearby commercial building and residential homes is low. Detected petroleum constituent concentrations were not reported above 10x their ISVs from soil-gas samples collected from each radial vapor boring with the exception of PCE and 1,3 butadiene concentrations reported in soil vapor samples VP-1 and VP-2, respectively; it should be noted that PCE or 1,3 butadiene were not observed in any of the water samples collected from the Site.

Underground utilities are not currently present at the Site (undeveloped). The nearest identified buried utility lines consist of storm sewer, sanitary sewer and water mains

located to the south of the Site along Larpenteur Avenue; water and sanitary sewer mains located to the west of the Site along Adolphus Street; and a sanitary sewer service line located to the east of the Site, transecting towards the northern adjoining property (Champps Restaurant). Phase II soil borings (GP-1, GP-2 and GP-4); LSI soil borings (GP-2, GP-4 and GP-5); and soil vapor borings VP-2 and VP-3, advanced between the historical release source area and each identified off-site buried utility location appear to provide definition for soil contamination and vapors potentially impacting utility trenches and acting as a migration pathway. LSI soil boring GP-4 and vapor boring VP-2 also provide evidence that the potential risk for soil and soil vapor migration towards western adjoining residential homes is low. Each identified off-site utility was calculated at least between 6 to 10 feet above the shallow ground water table. In addition, a total of five open storm sewers were observed between approximately 270 and 370 feet to the west and southwest of the Site, along Larpenteur Avenue. Field screening of each open storm sewer grate conducted during receptor survey walkthrough activities did not identify the presence of petroleum vapors.

Information obtained during the water well survey activities (receptor survey walkthrough, returned survey letters, City of Maplewood Public Works correspondence and review of the MDH CWI database) indicates that the properties in the area are connected to municipal water services. Water supply wells or borings were not observed or identified within 500 feet of the Site during receptor survey walkthrough activities or review of the online MDH CWI database. In addition, municipal or industrial wells were not identified within ½ mile of the Site.

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

N/A

Section 3: Site Management Decision

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

3.1 Recommendation for site:

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

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

Carlson recommends Site Closure. A release was notified to the Minnesota State Duty Officer during Phase II Site Assessment activities conducted by GES and assigned MPCA LEAL ID #17952. Phase II soil borings encountered relatively high concentration soil and ground water petroleum contamination directly to the west of the former dispenser island location. Subsequent to Phase II activities, GES was on-site for the removal of three USTs, two hydraulic hoists, dispensers and associated piping. GES documented that recent tank, dispenser and piping removal activities did not identify a petroleum release with the exception of contaminated soil surrounding a former hydraulic hoist. The impacted soil and ground water encountered during the Phase II Site Assessment appear to be associated with residual petroleum contamination from a historical release at the Site (former MPCA Leak Site #2643). Sinclair and the MPCA online database indicated the previous MPCA Leak (#2643) had been assigned to this Site on May 31, 1990 and subsequently closed by the MPCA in May of 2000. Documentation provided by Sinclair indicated that subsurface investigations, monitoring well installation and sampling, and remedial system operations were previously conducted at the Site to warrant MPCA Leak #2643 closure.

Subsequent to the recent release notification, the MPCA required a standard scope LSI to be completed. The LSI was completed to define the horizontal and vertical extents of residual soil and ground water contamination including potential soil vapor impacts to the Site and any adjoining properties. A total of five direct push-probe borings (GP-1 through GP-5) and four soil vapor borings (VP-1 through VP-4) were advanced within and around the suspected historical release source area in an attempt to delineate soil, ground water, and soil gas contamination in respect to potential receptors.

LSI soil boring GP-1, advanced within the interpolated Site release source area and adjacent to Phase II soil boring GP-3, indicated elevated PID readings ranging from 2.5 to greater than 2,500 ppm at depths ranging from 4 to 24 feet bgs during field screening activities. Strong petroleum odors were present in soil sample intervals collected throughout LSI soil boring GP-1. In addition, visual and olfactory observations indicated low to moderate level petroleum odors and grey stained soil in soil samples

collected from LSI soil boring GP-3 (advanced near a former hydraulic hoist) within soil sample intervals between six to twelve feet bgs. PID readings of 1,079, 155 and 28.1 ppm were detected within soil sample intervals GP-3 (6-8'); GP-3 (8-10'); and GP-3 (10-12'), respectively. Soil sample collection intervals between 12 feet bgs and directly above the encountered shallow ground water (17.9 feet bgs) indicated PID readings of 0.0 ppm. Soil borings GP-2, GP-4 and GP-5 did not indicate the presence of petroleum soil contamination during field screening activities. PID readings were all 0.0 parts per million (ppm). In addition, visual and olfactory observations of collected soil sample intervals did not indicate the presence of petroleum impacted soil.

Laboratory analysis of the soil sample collected from soil boring GP-1, collected from the soil sample interval (10-12') with the highest PID reading (>2,500), indicated relatively low BTEX, naphthalene, TMBs, GRO and DRO concentrations. Petroleum constituents were not reported above laboratory detection limits in soil sample GP-1 (30-32'), collected from the terminus depth of the soil boring. Laboratory analysis of LSI soil sample GP-3 (6-8'), collected from the soil sample interval with the highest PID reading (1,079 ppm) indicated relatively low concentrations of BTEX, naphthalene, TMBs, GRO and DRO. Soil sample GP-3 (14-16'), collected directly above the shallow ground water table indicated petroleum constituent concentrations were not above laboratory detection limits. Laboratory analysis of soil samples collected from radial soil borings GP-2, GP-4 and GP-5 indicated petroleum constituent concentrations did not exceed laboratory detection limits.

Ground water was encountered in each soil boring. Laboratory analysis of the ground water samples collected from LSI soil borings GP-1, GP-3 and radial soil boring GP-5 indicated relatively low petroleum constituent concentrations. Concentrations did not exceed MDH HRLs for each detected petroleum constituent. Ground water samples collected from LSI borings GP-3 and GP-5 did not indicate benzene or toluene concentrations when compared to residual source contamination concentrations identified in Phase II soil boring GP-3 and LSI soil boring GP-1. Ground water samples collected from radial LSI soil borings GP-2 through GP-4 did not indicate petroleum constituents above laboratory detection limits.

Vertically, residual petroleum soil contamination remains within silty and sandy soils to the south of a former tank basin location and to the west of the former dispenser islands, identified within Phase II soil boring GP-3 and LSI soil boring GP-1. Soil contamination appears to significantly decrease in concentration below the shallow ground water table encountered throughout the Site. In addition, LSI soil boring GP-3 appears to have identified soil contamination associated with a previously removed hydraulic hoist documented by GES. Soil sample GP-3 (14-16'), collected directly above the encountered ground water indicated petroleum constituent concentrations were not present above laboratory detection limits. It appears that approximately three feet of soil separates the deepest measurable contamination and the encountered ground water within LSI soil boring GP-3. Horizontally, residual petroleum constituents (GRO, DRO, TMBs, n-propylbenzne, isopropylbenzene, and butylbenzenes) were detected in the

groundwater sample collected from GP-5 (interpolated down-gradient direction). Constituent concentrations decreased significantly in the radial direction from the source area when compared to source area contamination levels. The significant constituent concentration decrease and non-detections of benzene, toluene and naphthalene from the historical release source area to approximately 40 feet down-gradient appears to define residual horizontal groundwater contamination. Ground water contamination identified from the sample collected from LSI soil boring GP-3 appears to be associated with the historical tank release and appears to represent the northern most plume of the release.

The Site management decision is based on confirmatory information regarding the MPCA general policy.

- ***Impacted ground water that has or may affect human health:*** **The Site is currently undeveloped. The City of Maplewood and St. Paul provide resource water to the Site, nearby homes and commercial properties. Private water supply wells were not identified within 500 feet of the Site, with the nearest domestic wells located approximately 900 and 1,160 feet to the west (side-gradient direction) of the Site. In addition, municipal or industrial wells were not identified within ½ mile of the Site release. LSI soil borings GP-4 and GP-5 appear to define horizontal residual ground water contamination towards underground public water mains located along Larpenteur Avenue and Adolphus Street. The public water mains were interpolated to exist between 8.5 and 10 feet above the contaminated ground water plume. In addition, the shallow ground water table appears to define the vertical migration of petroleum constituents. Field screening results from each advanced soil boring and laboratory analysis of soil sample GP-1 (30-32') appear to conclude that soil contamination does not extend to depth throughout the Site.**

- ***Led or may lead to dangerous conditions due to petroleum vapor:*** **The soil gas sample collected from vapor boring VP-4 (6'), advanced within the historical petroleum release source area (advanced west of the former dispenser islands) indicated petroleum constituent concentrations above MPCA ISVs (x10). However, buildings, utility corridors or other potential vapor migration and accumulation pathways do not currently exist at the Site. In addition, inhabited buildings are not present within 100 feet of vapor boring VP-4. The results of soil-gas samples collected from vapor borings VP-1, VP-2 and VP-3, advanced around the Site's historical release source area and toward commercial and residential buildings located between 160 and 400 feet from the release source area appear to suggest that there is a low threat of potential soil-gas migration and accumulation. In addition, the radial soil vapor borings appear to define potential soil gas impacts to nearby water and sewer mains transecting along Larpenteur Avenue and Adolphus Street adjoining the Site to the south and west, respectively.**

- *Affect or may affect surface water quality:* **The nearest surface water bodies are two unnamed ponds located approximately 260 feet (0.05 mile) and 350 feet (0.07 mile) to the northwest and south of the Site, respectively. Laboratory analysis of the ground water sample collected from LSI soil boring GP-5, advanced along the southern extent of the Site within the interpolated down-gradient direction from the suspected historical release source area, reported significantl lower petroleum constituent concentrations. Based on the laboratory analytical results of soil and ground water samples collected during soil boring advancement activities, the constituents detected within the ground water sample collected from LSI soil boring GP-5 are believed to be degradation products indicative of the previous Site release. BTEX concentrations were not reported above laboratory detection limits in ground water sample GP-5W. The lab results indicated a significant decrease in concentrations from those identified within the source area, located approximately 35 feet to the north of LSI soil boring GP-5. The unnamed pond is located approximately 315 feet to the south of LSI soil boring GP-5. In addition, petroleum contamination encountered throughout the Site is believed to be residual contamination associated with MPCA closed leak site #2643. The threat of residual petroleum impacts detected within ground water collected from GP-5 migrating to the unnamed pond in considered low.**

- *Caused or may cause dermal contact:* **Petroleum impacted soil remaining at the Site was reported at depths below twp feet bgs and is not expected to pose a risk for dermal contact.**

Based on Site conditions with respect to MPCA general Guidance Closure Criteria, Carlson recommends LEAK Site closure.

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

N/A

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

N/A

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

Section 4: Figures

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

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

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

☒ One or more Site Maps showing:

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

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

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

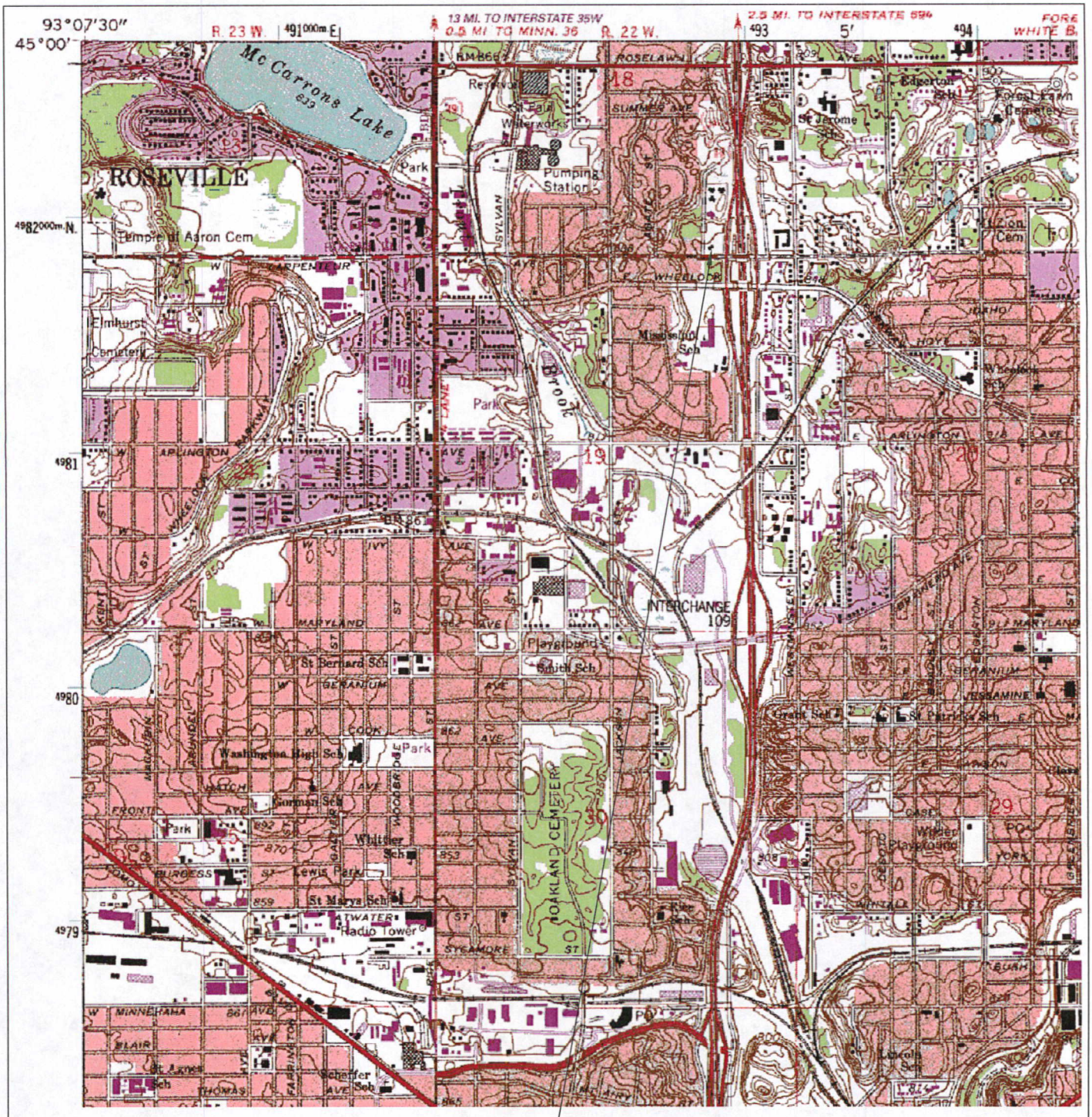
☐ Ground water gradient contour maps (for sites with monitoring wells) for each gauging event.

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

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

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

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



SOURCE: USGS ST. PAUL EAST 7.5 MIN. QUADRANGLE

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FIGURE 1
SITE LOCATION MAP

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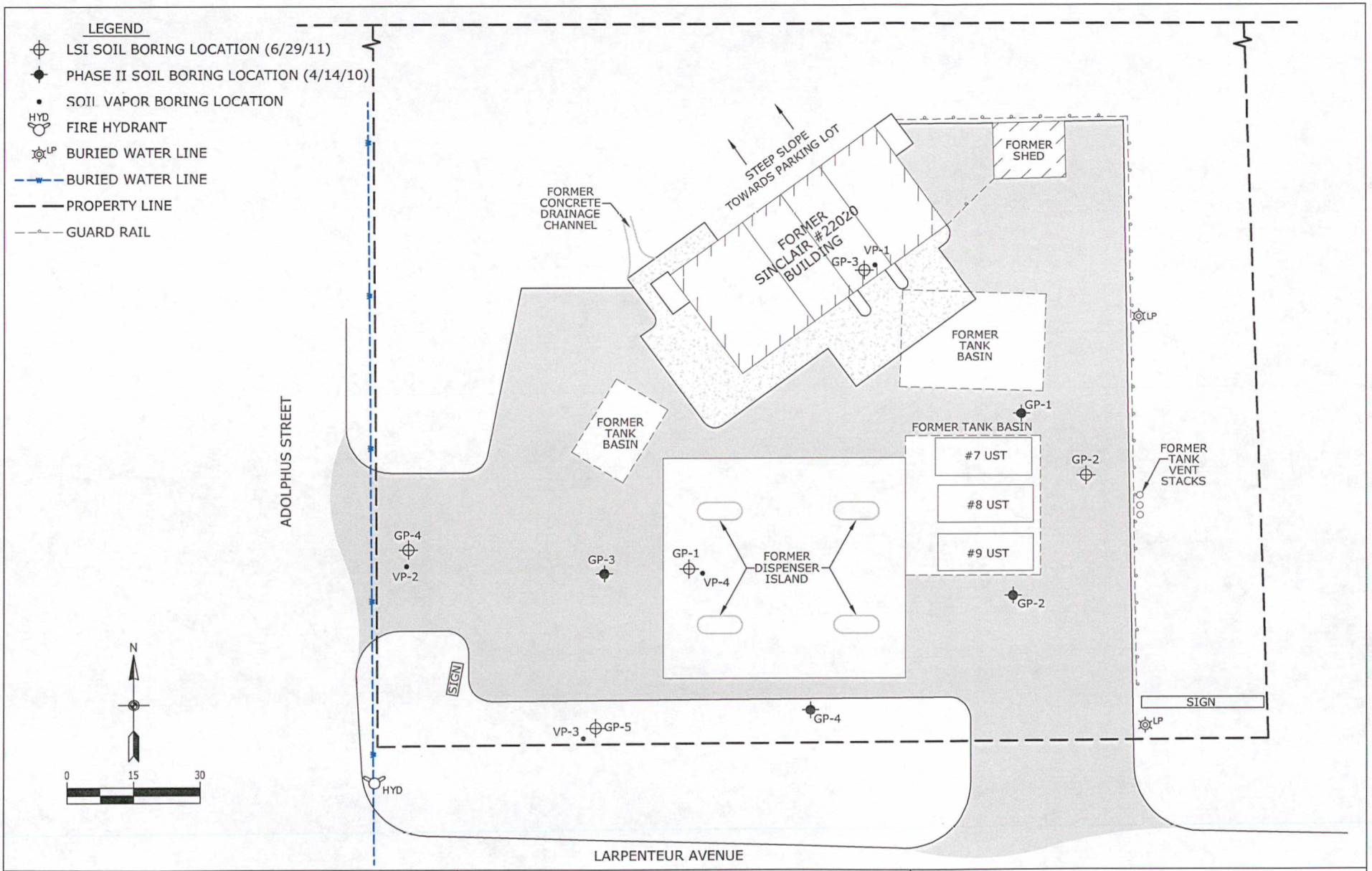

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FIGURE 2
SITE PLAN VIEW

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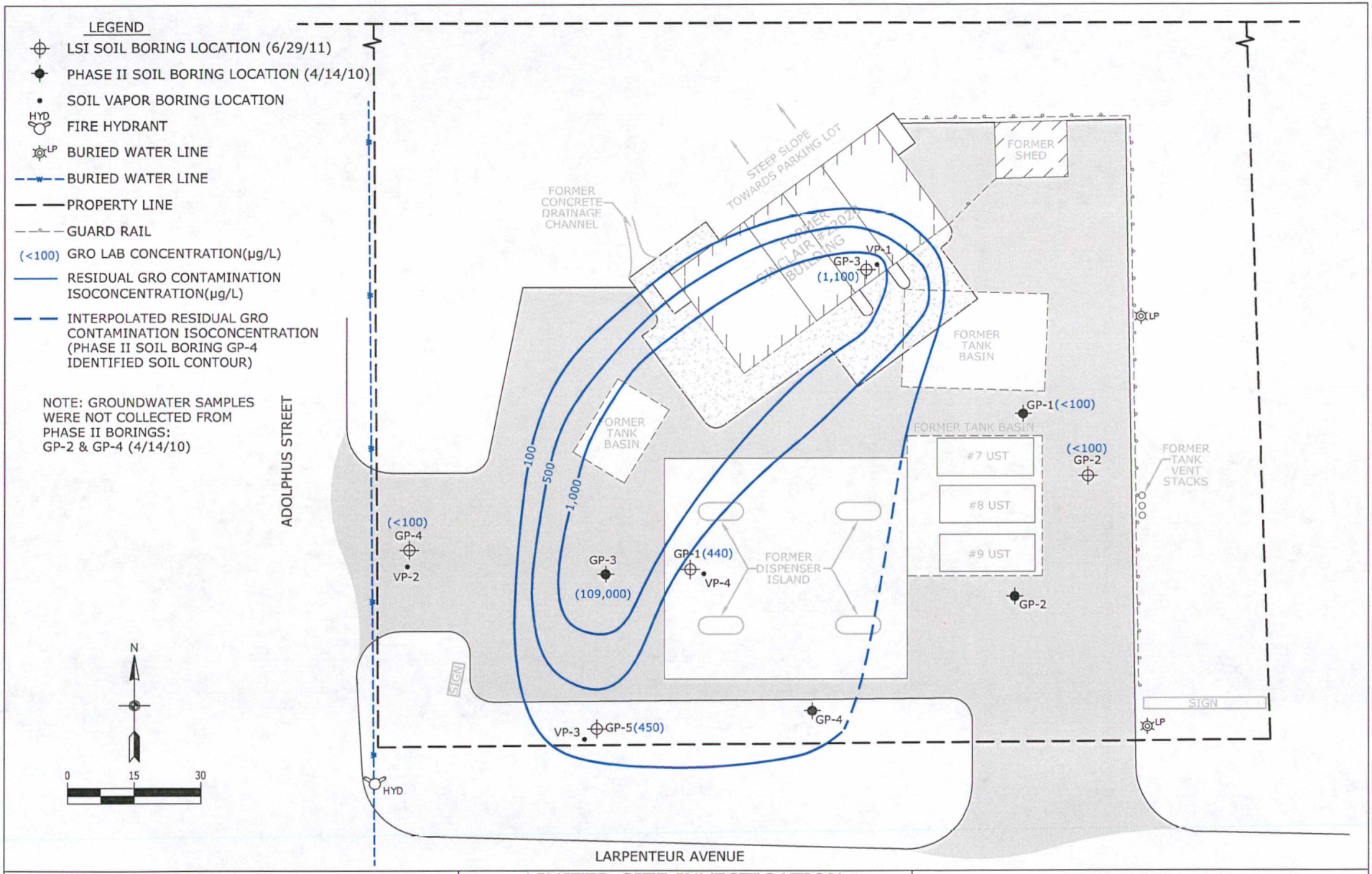

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FIGURE 3a
HORIZONTAL GRO GROUNDWATER CONTAMINATION EXTENTS
(6/29/11)

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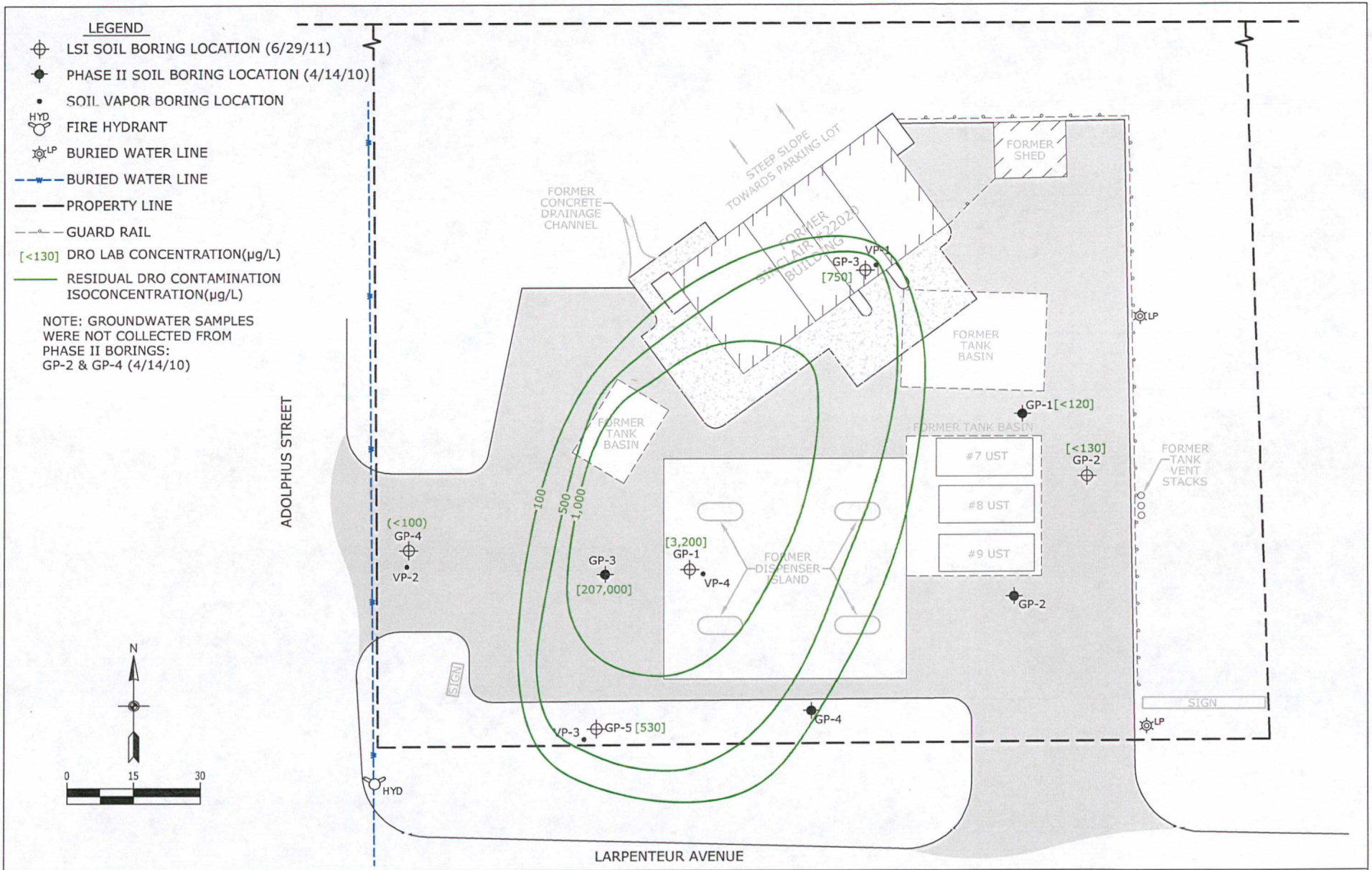

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FIGURE 3b
HORIZONTAL DRO GROUNDWATER CONTAMINATION EXTENTS
(6/29/11)

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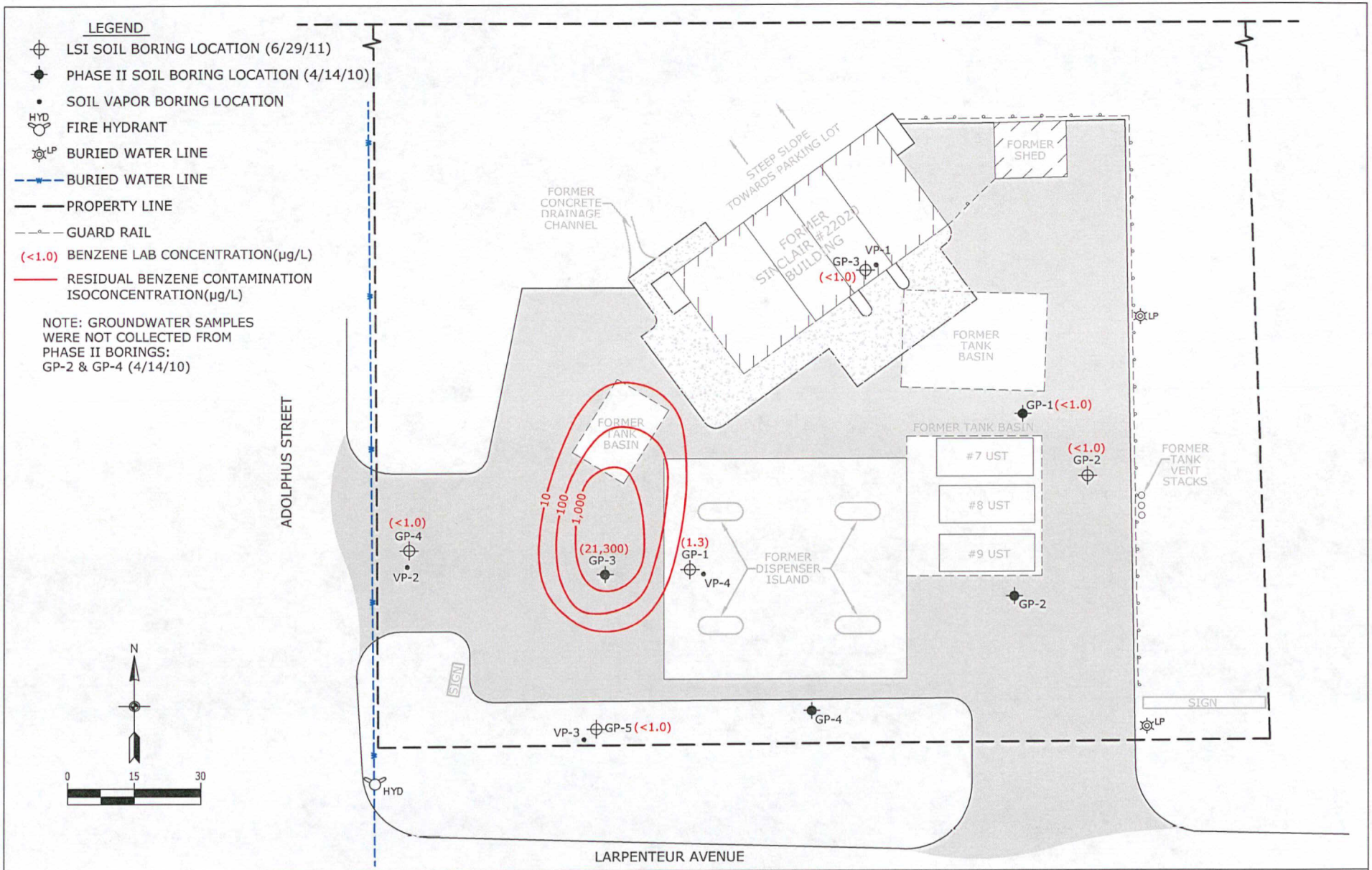

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FIGURE 3c
HORIZONTAL BENZENE GROUNDWATER CONTAMINATION EXTENTS (6/29/11)

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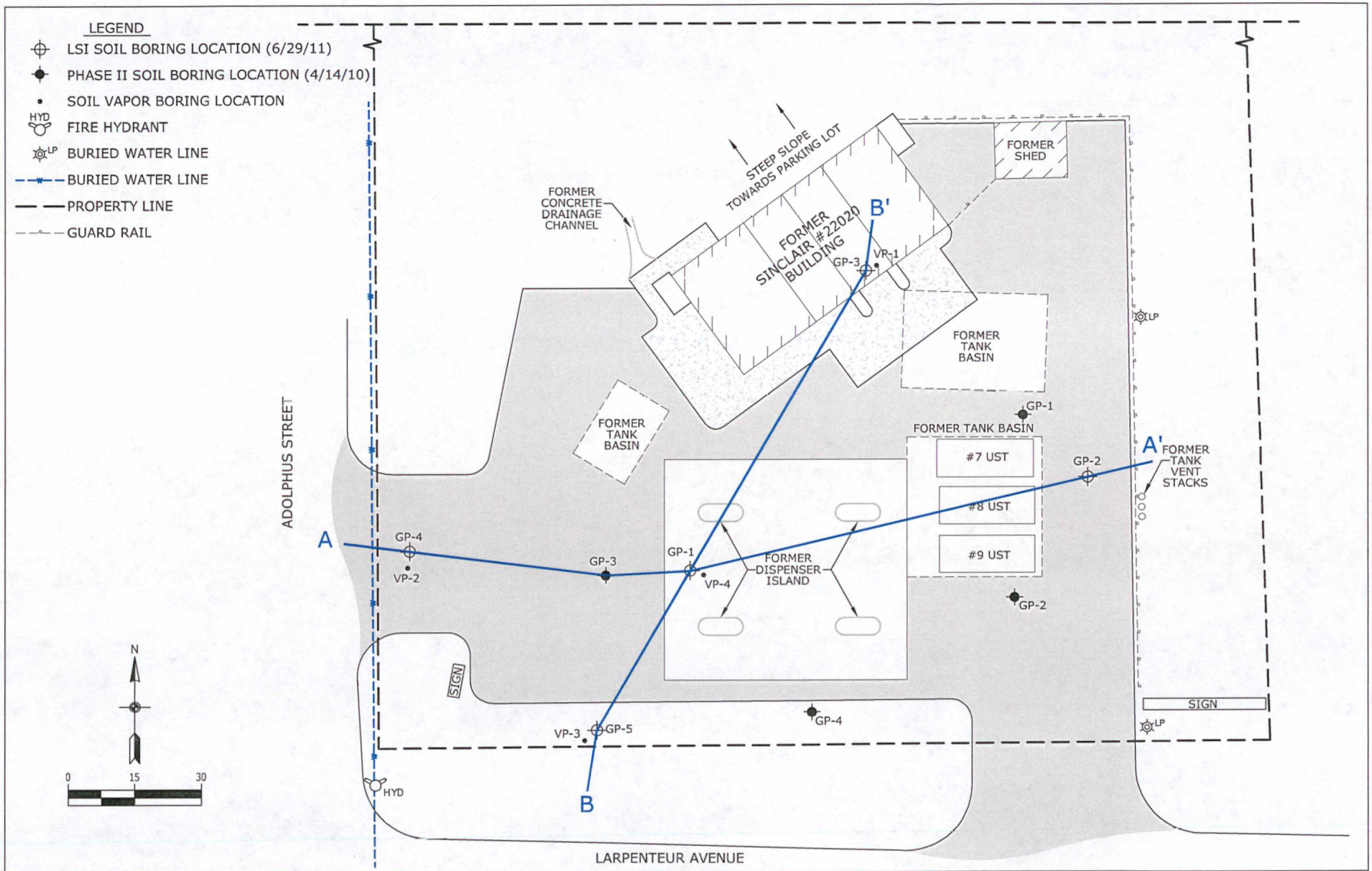

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FIGURE 4
GEOLOGIC CROSS-SECTION VIEW

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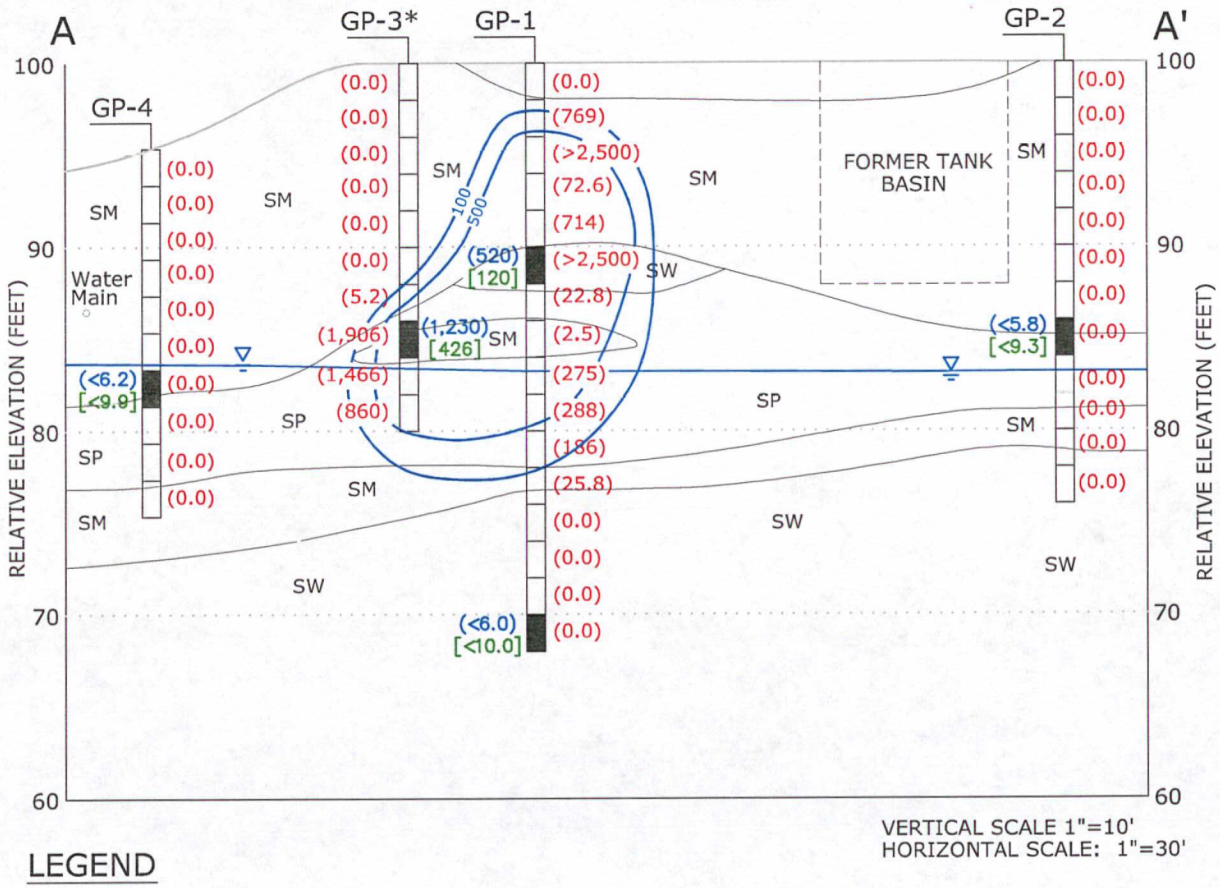

LEGEND

- COLLECTED SOIL SAMPLE INTERVAL
- GROUNDWATER LEVEL (6/13/11)
- (0.0) PID READING (ppm)
- SM SANDY SILT
- SW WELL GRADED SAND
- SP POORLY GRADED SAND
- * PHASE II SOIL BORING
- (<10.0) SOIL GRO CONCENTRATION (mg/kg)
- [<13.0] SOIL DRO CONCENTRATION (mg/kg)
- SOIL GRO ISOCONCENTRATION CONTOUR(mg/kg)

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FIGURE 5a
GEOLOGIC CROSS-SECTION
A - A'

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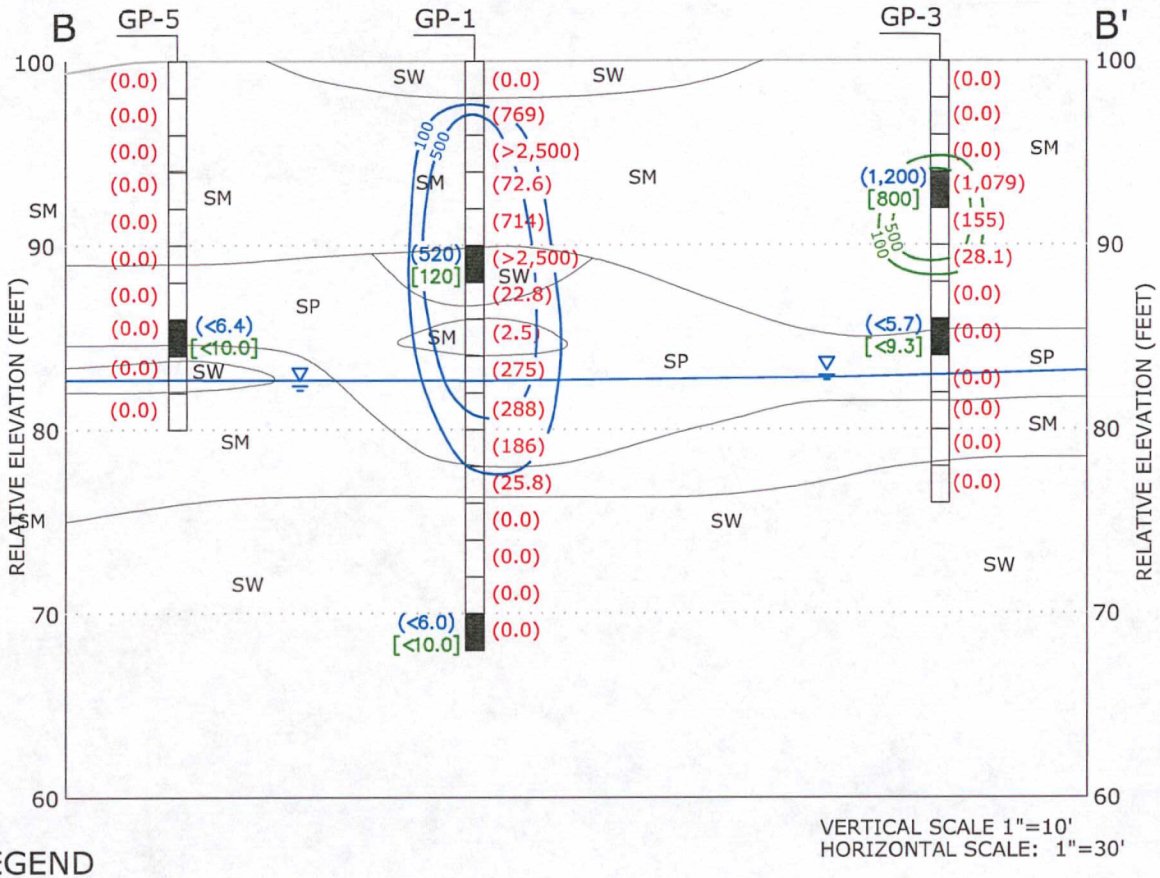

LEGEND

- COLLECTED SOIL SAMPLE INTERVAL
- GROUNDWATER LEVEL (6/13/11)
- (0.0) PID READING (ppm)
- SM SANDY SILT
- SW WELL GRADED SAND
- SP POORLY GRADED SAND
- (<10.0) SOIL GRO CONCENTRATION (mg/kg)
- [<13.0] SOIL DRO CONCENTRATION (mg/kg)
- SOIL GRO ISOCONCENTRATION CONTOUR(mg/kg)
- SOIL DRO ISOCONCENTRATION CONTOUR(mg/kg)

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FIGURE 5b
GEOLOGIC CROSS-SECTION
B - B'

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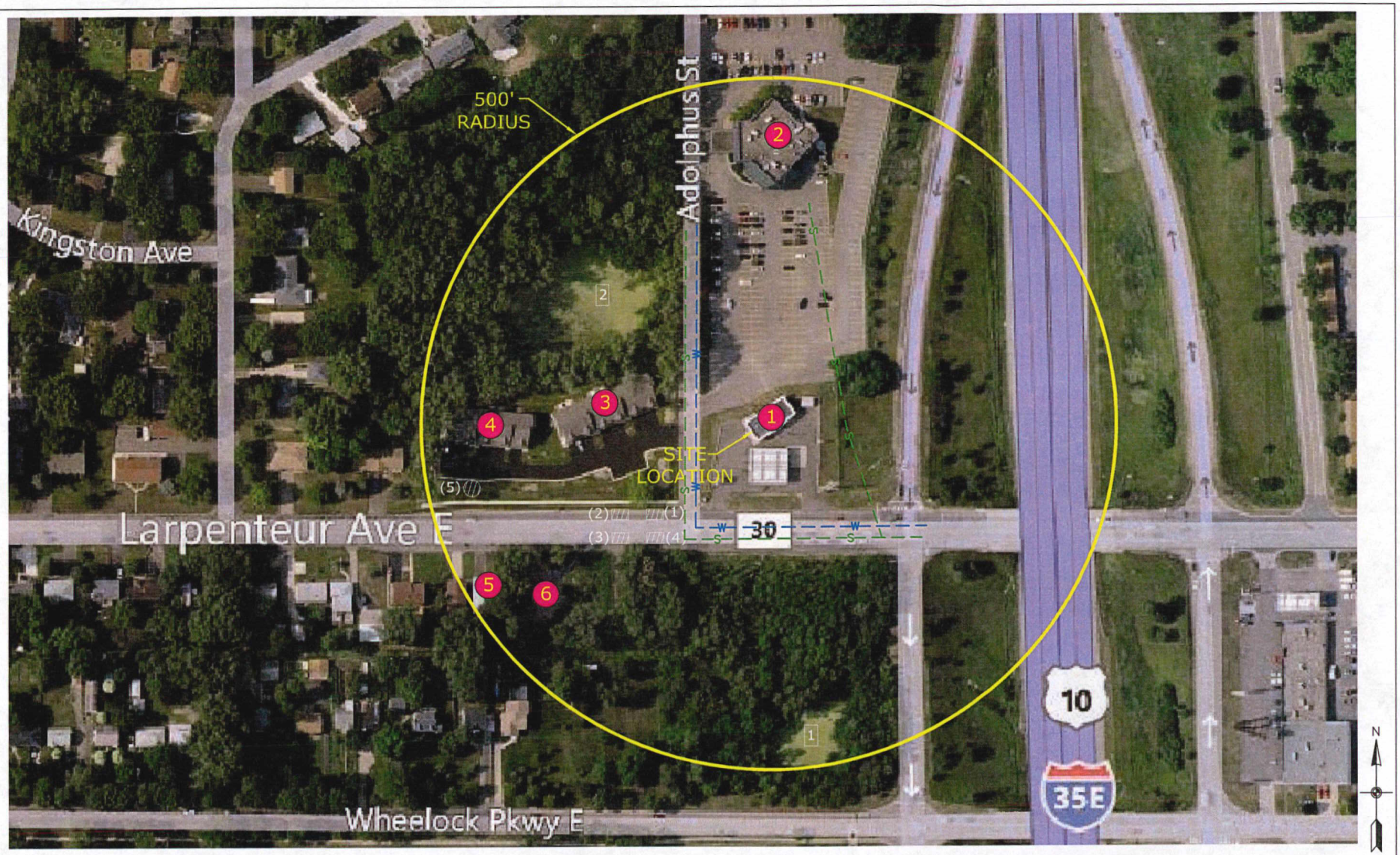

1 PROPERTY ID's CORRESPOND TO PROPERTIES LISTED IN TABLES 15 & 16

[1] SURFACE WATER ID CORRESPOND TO TABLE 17

(1) STORM SEWER LOCATION

-S- SANITARY SEWER MAIN

-W- PUBLIC WATERMAIN

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FIGURE 6
RECEPTOR SURVEY MAP

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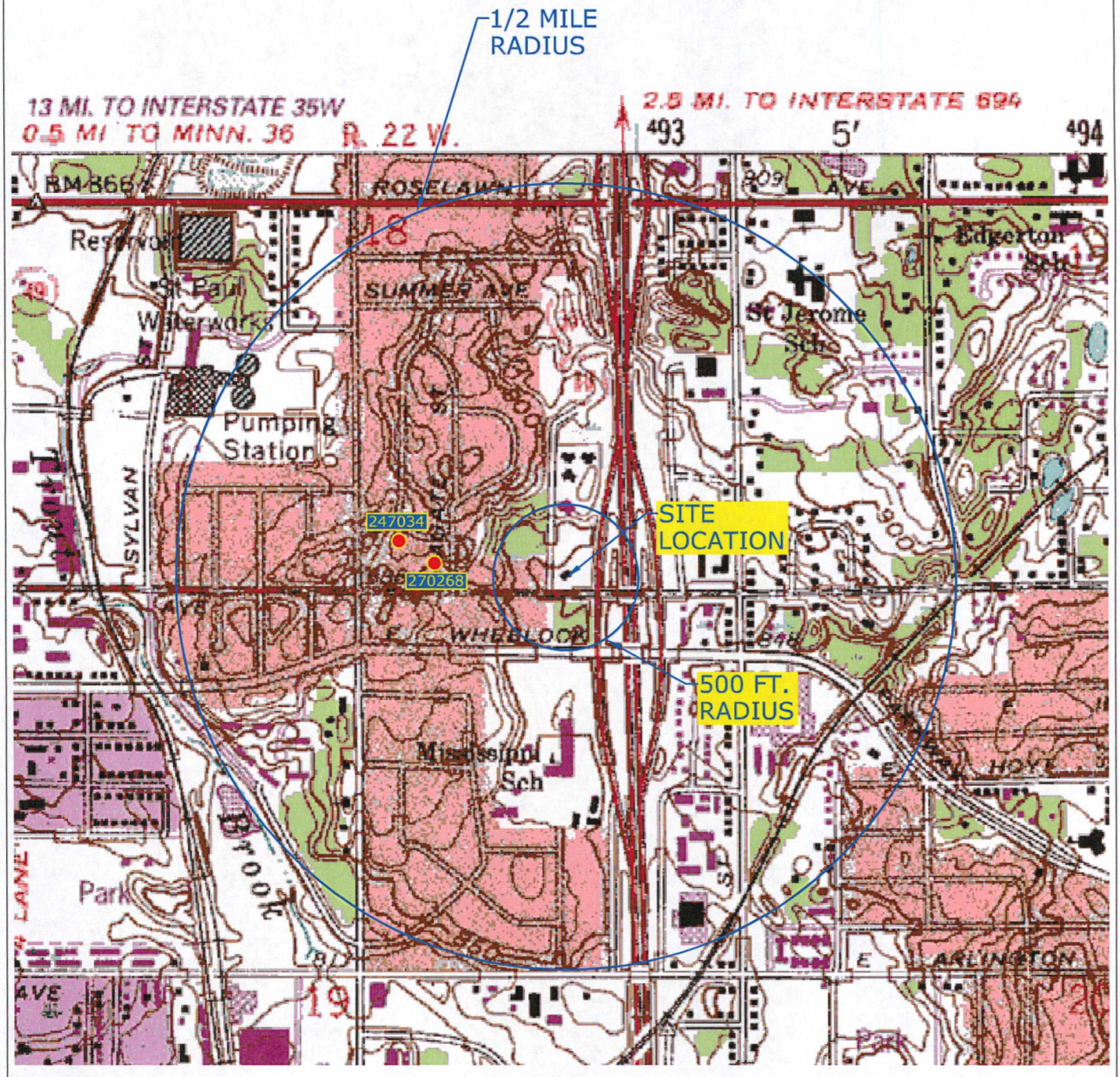

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FIGURE 7
WATER WELL SURVEY MAP

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Section 5: Tables

Table 1
Tank Information

Tank #	Tank Material[1]	UST or AST	Capacity (gallons)	Contents (product type)	Year Installed	Tank Status[2]	Tank Condition
001	Steel	UST	4,000-gallons	Gasoline	Unknown	Removed (7/10/90)	Unknown
002	Steel	UST	6,000-gallons	Gasoline	Unknown	Removed (7/10/90)	Unknown
003	Steel	UST	5,000-gallons	Alcohol Blend	Unknown	Removed (7/10/90)	Unknown
004	Fiberglass	UST	8,000-gallons	Gasoline	Unknown	Removed (7/10/90)	Unknown
005	Steel	UST	1,000-gallons	Fuel Oil	Unknown	Removed (7/10/90)	Unknown
006	Steel	UST	560-gallons	Waste Oil	Unknown	Removed (7/10/90)	Unknown
007	STI-P3	UST	10,000-gallons	Gasoline	1990	Removed (11/10/10)	Good
008	STI-P3	UST	10,000-gallons	Gasoline	1990	Removed (11/10/10)	Good
009	STI-P3	UST	10,000-gallons	Diesel	1990	Removed (11/10/10)	Good
010	Steel	UST*	Unknown	Hydraulic oil	Unknown	Removed (11/10/10)	Good
011	Steel	UST*	Unknown	Hydraulic oil	Unknown	Removed (11/10/10)	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: *UST = underground storage tank; AST = aboveground storage tank. * indicates hydraulic hoist.*

Table 2
Results of Soil Headspace Screening

Depth (ft)	Soil Boring ID									
	GP-1	GP-2	GP-3	GP-4	GP-5	6	7	8	9	10
0-2'	0.0	0.0	0.0	0.0	0.0					
2-4'	769	0.0	0.0	0.0	0.0					
4-6'	>2,500	0.0	0.0	0.0	0.0					
6-8'	72.6	0.0	1,079	0.0	NR					
8-10'	714	0.0	155	0.0	0.0					
10-12'	>2,500	0.0	28.1	0.0	0.0					
12-14'	22.8	0.0	0.0	0.0	0.0					
14-16'	2.5	0.0	0.0	0.0	0.0					
16-18'	215	0.0	0.0	0.0	0.0					
18-20'	288	0.0	0.0	0.0*	0.0					
20-22'	186	0.0	0.0							
22-24'	25.8	0.0*	0.0*							
24-26'	0.0									
26-28'	0.0									
28-30'	0.0									
30-32'	0.0*									

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: * *indicates end of boring. NR = no recovery. Results reported in parts per million (ppm) and obtained by utilizing a MiniRae Photo-ionization detector equipped with a 10.6eV lamp.*

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]
GP-1*	17-19'	4/14/10	<0.060	<0.060	<0.060	<0.18	<0.30	<6.0	<6.7	Fixed
GP-2*	12-14'	4/14/10	<0.062	<0.062	<0.062	<0.18	<0.31	<6.2	<9.7	Fixed
GP-3*	15-17'	4/14/10	**4.9**	**24.1**	**26.5**	**187**	<2.9	**1,230**	**426**	Fixed
GP-4*	18-20'	4/14/10	<0.62	**9.1**	**33.2**	**194**	<3.1	**1,270**	**164**	Fixed
MeOH Blank*		4/14/10	<0.050	<0.050	<0.050	<0.15	<0.25	<5.0	NA	Fixed
GP-1	10-12'	6/29/11	**1.3**	**1.9**	**5.1**	**21.2**	**0.33**	**520**	**120**	Fixed
GP-1	30-32'	6/29/11	<0.030	<0.30	<0.030	<0.090	<0.060	<6.0	<10.0	Fixed
GP-2	14-16'	6/29/11	<0.029	<0.29	<0.029	<0.087	<0.058	<5.8	<9.3	Fixed
GP-3	6-8'	6/29/11	**0.10**	<0.32	**1.8**	**6.0**	<0.063	**1,200**	**800**	Fixed
GP-3	14-16'	6/29/11	<0.029	<0.29	<0.029	<0.086	<0.057	<5.7	<9.3	Fixed
GP-4	12-14'	6/29/11	<0.031	<0.31	<0.031	<0.093	<0.062	<6.2	<9.9	Fixed
GP-5	10-12'	6/29/11	<0.032	<0.32	<0.032	<0.096	<0.064	<6.4	<10.0	Fixed
MeOH Blank		6/29/11	6/29/11	<0.025	<0.25	<0.025	<0.050	<5.0	NA	Fixed

[1] Report results in mg/kg. Use less than symbols to show detection limit.
[2] Indicate "mobile" or "fixed" in the lab type column.
Add additional rows as needed.
Notes: ** indicates Phase II Site Assessment soil boring conducted by GES. mg/kg = milligrams per kilogram; GRO = gasoline range organics; DRO = diesel range organics; NA = not analyzed; and **Bold** indicates concentration above laboratory detection limits.*

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

Boring ID	Sampled Depth (ft)	Date Sampled	Naphthalene	1,2,4 TMB	1,3,5 TMB					Lab Type[2]
GP-1	10-12'	6/29/11	**6.6**	**29.0**	**9.6**					Fixed
GP-1	30-32'	6/29/11	<0.30	<0.060	<0.060					Fixed
GP-2	14-16	6/29/11	<0.29	<0.058	<0.058					Fixed
GP-3	6-8'	6/29/11	**4.7**	**50.0**	**11.0**					Fixed
GP-3	14-16'	6/29/11	<0.29	<0.057	<0.057					Fixed
GP-4	12-14'	6/29/11	<0.31	<0.062	<0.062					Fixed
GP-5	10-12'	6/29/11	<0.32	<0.064	<0.064					Fixed
MeOH Blank		6/29/11	<0.25	<0.050	<0.050					Fixed

[1] Report results in mg/kg. Use less than symbols to show detection limit.
[2] Indicate "mobile" or "fixed" in the lab type column.
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: *TMB = trimethylbenzene. mg/kg = milligrams per kilogram; and **Bold** indicates concentration above laboratory detection limits.*

Table 5
Contaminated Surface Soil Results

Sample ID	Headspace 10 ppm or Greater[1] (Y/N)	Petroleum Saturated (Y/N)
GP-1 (0-2')	No (0.0 ppm)	No
GP-2 (0-2')	No (0.0 ppm)	No
GP-3 (0-2')	No (0.0 ppm)	No
GP-4 (0-2')	No (0.0 ppm)	No
GP-5 (0-2')	No (0.0 ppm)	No

[1] As measured with a photoionization detector (PID).
Add additional rows as needed.
Notes: *ppm = parts per million.*

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

	Soil Boring									
	GP-1	GP-2	GP-3	GP-4	GP-5	6	7	8	9	10
Static Water Level Depth[1] (ft)	16.4'	17.1'	17.9'	11.1'	17.1					
Sampled Depth (ft)	14-24'	15-20'	17-22'	8-18'	9-19'					
Sampling Method[2]	Check Valve	Check Valve	Check Valve	Check Valve	Check Valve					

[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: *All units are in feet below ground surface (bgs). Sample depth indicates the screened interval for ground water collection from each boring.*

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]
GP-1*	4/14/10	19'	<1.0	<1.0	<1.0	<3.0	<5.0	<100	<120	Fixed
GP-3*	4/14/10	17'	**21,300**	**22,400**	**4,570**	**25,700**	<500	**109,000**	**207,000**	Fixed
Trip Blank	4/14/10	N/A	<1.0	<1.0	<1.0	<3.0	<5.0	<100	NA	Fixed
GP-1W	6/29/11	14-24'	**1.3**	**7.8**	**15.0**	**82.0**	<1.0	**440**	**3,200**	Fixed
GP-2W	6/29/11	15-20'	<1.0	<5.0	<1.0	<3.0	<5.0	<100	<130	Fixed
GP-3W	6/29/11	17-22'	<1.0	<5.0	**3.7**	**20.0**	<1.0	**1,100**	**750**	Fixed
GP-4W	6/29/11	8-18'	<1.0	<5.0	<1.0	<3.0	<1.0	<100	<100	Fixed
GP-5W	6/29/11	9-19'	<1.0	<5.0	<1.0	<3.0	<1.0	**450**	**530**	Fixed
MN Department of Health HRL[3]			2.0	200	50	300	--	--	--	--

[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/ground water/hrltable.html for list of current HRLs.
Add additional rows as needed.
Notes: * *indicates Phase II Site Assessment soil boring conducted by GES.GRO = gasoline range organics; DRO = diesel range organics; MTBE = methyl-tert-butyl-ether; NA = not analyzed; ug/L = micrograms per liter;* ***Bold*** *indicates concentrations above or at laboratory detection limits; Highlighted cell indicates concentration exceeding Minnesota Department of Health (MDH) Health Risk Limits (HRLs). MDH HRLs are currently not established for GRO, DRO and MTBE.*

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

Boring ID	Date Sampled	Sampled Depth (ft)	Naph-thalene	1,2,4 TMB	1,3,5 TMB	n-Propyl benzene	Isopropyl - benzene	1,2,3 TMB	p-Isopropyl-toluene	Lab Type[2]
GP-1*	4/14/10	19'	NA	<1.0	<1.0	NA	NA	NA	NA	Fixed
GP-3*	4/14/10	17'	NA	**4,770**	**1,210**	NA	NA	NA	NA	Fixed
Trip Blank	4/14/10	N/A	NA	<1.0	<1.0	NA	NA	NA	NA	Fixed
GP-1W	6/29/11	14-24'	**6.8**	**22.0**	**4.5**	**4.3**	**1.3**	**5.1**	<1.0	Fixed
GP-2W	6/29/11	15-20'	<5.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	Fixed
GP-3W	6/29/11	17-22'	**6.2**	**100**	**28.0**	**11.0**	**5.0**	**39.0**	**5.5**	Fixed
GP-4W	6/29/11	8-18'	<5.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	Fixed
GP-5W	6/29/11	9-19'	<5.0	**45.0**	**2.6**	**12.0**	**5.8**	**4.7**	<1.0	Fixed
MN Department of Health HRL[3]			300	100	100	--	--	--	--	--

[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/ground water/hrltable.html for list of current HRLs.
Indicate other contaminants (either petroleum or non-petroleum derived) detected in water samples collected from soil borings and temporary wells. Add additional rows as needed, and copy the entire table if more columns are needed.
Notes: * *indicates Phase II Site Assessment soil boring conducted by GES. NA = not analyzed; ug/L = micrograms per liter;* ***Bold*** *indicates concentrations above or at laboratory detection limits; Highlighted cell indicates concentration exceeding Minnesota Department of Health (MDH) Health Risk Limits (HRLs). MDH HRLs are currently not established for n-propylbenzene, isopropylbenzene, 1,2,3 TMB and p-isopropyltoluene. The ground water samples collected from LSI borings GP-3W and GP-5W also reported concentrations of 4.9 and 1.2 ug/L n-butylbenzene; and 5.0 ug/L and 3.0 sec-butylbenzene, respectively.*

Table 9
Monitoring Well Completion Information[1]

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

[1] Include well construction diagrams and MDH well logs in Section 6.
Add additional rows as needed.
Notes: (location and elevation of benchmark) *Monitoring wells were not installed.*

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 Ground water Elevation	Water Level Above Screen (Y/N)
N/A						

[1] Describe the methods used to measure water levels in Section 6.
Add additional rows as needed.
Notes: *Monitoring wells were not installed.*

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	N/A								
MW-2									
MW-3									
MW-4									
Trip Blank									
Equip. Blank									
Lab Blank									
HRL[3]									

[1] Report results in µg/L. Use less than symbols to show detection limit.
[2] Indicate "mobile" or "fixed" in the lab type column.
[3] See http://www.health.state.mn.us/divs/eh/ground water/hrltable.html for list of current HRLs.
Add additional rows as needed.
Notes: *Monitoring wells were not installed.*

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

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

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

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	N/A						
MW-2							
MW-3							
MW-4							

Describe the methods and procedures used in Section 6. Add additional rows as needed
Notes: *Monitoring wells were not installed.*

Table 14
Free Product Recovery

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

[1] FP = Free Product
[2] GW = Ground Water
[3] Volume recovered during individual recovery event for that location.
[4] Cumulative volume recovered at each recovery location (i.e., keep a running total for each recovery point).
Describe the methods and procedures used in Section 6. Add additional rows as needed.
Notes: *Monitoring wells were not installed.*

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	223 Larpenteur Ave E	Site	No	Personal contact	N/A	No*	Yes	No	No	Yes	Residual contamination remaining/currently undeveloped
2	1734 Adolphus St	400' N	No	Assumed	N/A	Yes	Yes	Yes	Unk.	No	Champps Restaurant
3	191 Larpenteur Ave E	160' W	No	Assumed	N/A	Yes	Yes	Yes	Unk.	No	Residential Town Home
4	181 Larpenteur Ave E	330' W	No	Assumed	N/A	Yes	Yes	Yes	Unk.	No	Residential Town Home
5	196 Larpenteur Ave E	440' SW	No	Survey Letter	N/A	Yes	Yes	Yes	Yes	No	Tillman Residence
6	200 Larpenteur Ave E	405' SW	No	Assumed	N/A	Yes	Yes	Yes	Unk.	No	Residential Home

[1] Property IDs should correspond to labeled properties in the Potential Receptor Map.
[2] For example, visual observation, personal contact, telephone, returned postcard, assumed (i.e., no postcard returned).
[3] For example, domestic, industrial, municipal, livestock, lawn/gardening, irrigation.
Add additional rows as needed.
Notes: * *indicates that the Site did utilize public water and sewer services when the property was in operation. Unk. = unknown.*

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)
N/A									

[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: *Domestic, Municipal and Industrial wells were not identified within 500 feet or 0.5 mile from the Site.*

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	Unnamed Pond	350 feet South	No
2	Unnamed Pond	260 feet Northwest	NA

[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: *Surface water features are visually depicted on Figure 6, attached.*

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	Water Main along Larpenteur Ave.	Copper	6-8 feet	1 ½ inch	East	Unknown	Native soils	At least 8.5 feet above water table
2	Water Main along Adolphus Street	PVC	6-7'	6 inch	North	Unknown	Native soils	At least 10 feet above water table
3	Sanitary Sewer Main along Larpenteur Ave.	PVC	8 feet	12 inch	West	Unknown	Native soils	At least 8 feet above water table
4	Sanitary Sewer Main along Adolphus Street	PVC	8-10 feet	12 inch	South	Unknown	Native soils	At least 6 feet above water table
5	Sanitary Sewer east of Site	PVC	8-10 feet	10 inch	South	Unknown	Native soils	At least 6 feet above water table
6	Storm Sewer along Larpenteur Ave.	Concrete	5 feet	0.5 inch	N/A	Unknown	Native soils	At least 9 feet above water table

[1] ID should correspond to an identified utility line on the Potential Receptor Map.
Add more rows as needed.
Notes: *Utilities are visually depicted on Figures 2 and 6.*

Utility ID[1]	Name, title, and telephone number for public entity contacted to obtain information or other source of information
1 through 5	Maps provided by Michael Thompson, City Engineer/Deputy Director of Maplewood Public Works
6	Observed from open storm sewer grates

Table 19
Vapor Survey Results

Location ID[1]	Description[2]	Monitoring Date	PID Reading (ppm)	Percent of the LEL[3]
1	Storm Sewer Grate	6/29/11	0.0	N/A
2	Storm Sewer Grate	6/29/11	0.0	N/A
3	Storm Sewer Grate	6/29/11	0.0	N/A
4	Storm Sewer Grate	6/29/11	0.0	N/A
5	Storm Sewer Grate	6/29/11	0.0	N/A

[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: *Underground corridors, basements or utilities were not observed or identified at the Site.*

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

Sample ID[2]											
Date											
Depth (feet)											
PID (ppm)											Intrusion Screening Value[3]
COMPOUNDS	Result	Report Limit	Result	Report Limit	Result	Report Limit	Result	Report Limit	Result	Report Limit	
See Attached Table 20											

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

Table 20
Results of Soil Gas Sampling for Vapor Intrusion Screening

Sample Location	VP-1		VP-2		VP-3		VP-4		Intrusion Screening Values (ISVs)	Acute Intrusion Screening Values (ISVs)
Date	6/29/2011		6/29/2011		6/29/2011		6/29/2011			
Depth (ft)	4.0'		6.0'		6.0'		6.0'			
PPM	10.2		0.0		0.0		20.3		–	–
COMPOUNDS	Result (ug/m³)	Report Limit	Result (ug/m³)	Report Limit	Result (ug/m³)	Report Limit	Result (ug/m³)	Report Limit	(ug/m³)	(ug/m³)
Acetone	<59	59.0	**81**	48.0	**38.0**	24.0	<12,000	12,000	400	63,000
Benzene	<13.0	13.0	**11.0**	1.3	**9.6**	5.1	**3,100***	2,600	4.5	1,000
Benzyl chloride	<21.0	21.0	<2.1	2.1	<8.3	8.3	<4,200	4,200	0.2	240
Bromodichloromethane	<27.0	27.0	<2.7	2.7	<11.0	11.0	<5,400	5,400	0.6	NE
Bromoform	<120	120	<12.0	12.0	<50.0	50.0	<25,000	25,000	9	NE
Bromomethane (Methyl bromide)	<16.0	16.0	<1.6	1.6	<6.2	6.2	<3,100	3,100	5	2,000
1,3-Butadiene	<89.0	89.0	**14.0**	8.9	<35.0	35.0	<18,000	18,000	0.3	NE
2-Butanone (Methyl ethyl ketone, MEK)	<74.0	74.0	**25.0**	7.4	<29.0	29.0	<15,000	15,000	5,000	10,000
Carbon disulfide	<12.0	12.0	**19.0**	1.2	**5.9**	5.0	<2,500	2,500	700	6,000
Carbon tetrachloride	<25.0	25.0	<2.5	2.5	<10.0	10.0	<5,000	5,000	0.7	1,900
Chlorobenzene	<18.0	18.0	<1.8	1.8	<7.4	7.4	<3,700	3,700	50	NE
Chloroethane (Ethyl chloride)	<11.0	11.0	<1.1	1.1	<4.2	4.2	<2,100	2,100	10,000	100,000
Chloroform	<19.0	19.0	<1.9	1.9	<7.8	7.8	<3,900	3,900	100	150
Chloromethane (Methyl chloride)	<8.3	8.3	**3.50**	0.83	<3.3	3.3	<1,700	1,700	6	1,000
2-Chlorotoluene	<21.0	21.0	<2.1	2.1	<8.2	8.2	<4,100	4,100	NE	NE
Cyclohexane	**55.0**	14.0	**2.1**	1.4	<5.5	5.5	**18,000**	2,800	6,000	NE
Dibromochloromethane	<34.0	34.0	<3.4	3.4	<14.0	14.0	<6,800	6,800	0.4	NE
1,2-Dibromoethane (Ethylene dibromide)	<31.0	31.0	<3.1	3.1	<12.0	12.0	<6,200	6,200	0.02	NE
1,2-Dichlorobenzene	<24.0	24.0	<2.4	2.4	<9.6	9.6	<4,800	4,800	200	NE
1,3-Dichlorobenzene	<24.0	24.0	<2.4	2.4	<9.6	9.6	<4,800	4,800	100	NE
1,4-Dichlorobenzene	<24.0	24.0	<2.4	2.4	<9.6	9.6	<4,800	4,800	60	12,000
1,1-Dichloroethane	<16.0	16.0	<1.6	1.6	<6.5	6.5	<3,200	3,200	500	NE
1,2-Dichloroethane	<16.0	16.0	<1.6	1.6	<6.4	6.4	<3,200	3,200	0.4	NE
1,1-Dichloroethene (DCE)	<16.0	16.0	<1.6	1.6	<6.3	6.3	<3,200	3,200	200	NE
cis-1,2-Dichloroethene	<16.0	16.0	<1.6	1.6	<6.3	6.3	<3,200	3,200	40	NE
trans-1,2-Dichloroethene	<16.0	16.0	<1.6	1.6	<6.3	6.3	<3,200	3,200	60	825
Dichlorodifluoromethane (Freon 12)	<20.0	20.0	**3.3**	2.0	<7.9	7.9	<4,000	4,000	200	NE
1,2-Dichloropropane	<18.0	18.0	<1.8	1.8	<7.4	7.4	<3,700	3,700	4	235
cis-1,3-Dichloropropene	<18.0	18.0	<1.8	1.8	<7.3	7.3	<3,600	3,600	3	NE
trans-1,3-Dichloropropene	<18.0	18.0	<1.8	1.8	<7.3	7.3	<3,600	3,600	3	NE
1,4 Dioxane	<14.0	14.0	<1.4	1.4	<5.8	5.8	<2,900	2,900	NE	NE
Ethanol	<24.0	24.0	**6.4**	2.4	<9.5	9.5	<4,800	4,800	15,000	40,000
Ethylbenzene	<17.0	17.0	**2.6**	1.7	<6.9	6.9	**42,000***	3,500	1,000	10,000
4-Ethyltoluene	<20.0	20.0	**3.1**	2.0	<7.9	7.9	**17,000**	3,900	NE	NE
Heptane	**110**	16.0	**4.9**	1.6	<6.5	6.5	**33,000**	3,300	NE	NE
Hexachloro-1,3-butadiene	<130	130	<13.0	13.0	<54.0	54.0	<27,000	27,000	0.5	NE
n-Hexane	**130**	14.0	**6.7**	1.4	**9.5**	5.6	**21,000**	2,800	2,000	NE
Isopropylbenzene	<20.0	20.0	<2.0	2.0	<7.9	7.9	**4,000**	3,900	NE	NE
Methyl Butyl Ketone	<100	100	<10.0	10.0	<41.0	41.0	<20,000	20,000	NE	NE
4-Methyl-2-pentanone (Methyl isobutyl ketone)	<100	100	<10.0	10.0	<41.0	41.0	<20,000	20,000	3,000	NE
Methylene Chloride (Dichloromethane)	<14.0	14.0	<1.4	1.4	<5.6	5.6	<2,800	2,800	20	10,000
Methyl methacrylate	<16.0	16.0	**4.5**	1.6	<6.6	6.6	<3,300	3,300	NE	NE
Methyl-tert-butyl ether (MTBE)	<14.0	14.0	<1.4	1.4	<5.8	5.8	<2,900	2,900	3000	7,000
Naphthalene	<66.0	66.0	<6.6	6.6	<26.0	26.0	<13,000	13,000	9.0	NE
2-Propanol (Isopropyl alcohol)	<61.0	61.0	<6.1	6.1	<25.0	25.0	<12,000	12,000	7,000	3,200
Propene	**40.0**	14.0	**55**	1.4	**130**	5.5	<2,800	2,800	NE	NE
Styrene	<17.0	17.0	**2.0**	1.7	<6.8	6.8	<3,400	3,400	1,000	21,000
1,1,2,2-Tetrachloroethane	<27.0	27.0	<2.7	2.7	<11.0	11.0	<5,500	5,500	0.2	NE
Tetrachloroethylene (PCE)	**880**	27.0	<2.7	2.7	<11.0	11.0	<5,400	5,400	20	20,000
Tetrahydrofuran	<12.0	12.0	<1.2	1.2	<4.7	4.7	<2,400	2,400	NE	NE
Toluene (Methylbenzene)	<15.0	15.0	**9.0**	1.5	**9.0**	6.0	**45,000***	3,000	5,000	37,000
1,2,4-Trichlorobenzene	<93.0	93.0	<9.3	9.3	<37.0	37.0	<19000	19,000	4	NE
1,1,1-Trichloroethane (Methyl chloroform)	<22.0	22.0	**11.0**	2.2	<8.7	8.7	<4,400	4,400	1,000	140,000
1,1,2-Trichloroethane	<22.0	22.0	<2.2	2.2	<8.7	8.7	<4,400	4,400	0.6	NE
Trichloroethylene (TCE)	<21.0	21.0	<2.1	2.1	<8.6	8.6	<4,300	4,300	3	2,000
Trichlorofluoromethane (Freon 11)	<22.0	22.0	**3.9**	2.2	<9.0	9.0	<4,500	4,500	700	NE
1,1,2-Trichlorotrifluoroethane	<31.0	31.0	<3.1	3.1	<12.0	12.0	<6,100	6,100	30,000	NE
1,2,4-Trimethylbenzene	<20.0	20.0	**19.0**	2.0	<7.9	7.9	**49,000**	3,900	7	NE
1,3,5-Trimethylbenzene	<20.0	20.0	**6.9**	2.0	<7.9	7.9	**21,000**	3,900	6	NE
2,2,4 Trimethylpentane	**200**	19.0	<1.9	1.9	<7.5	7.5	**70,000**	3,700	NE	NE
Vinyl acetate	<14.0	14.0	<1.4	1.4	<5.6	5.6	<2,800	2,800	200	NE
Vinyl Bromide	<17.0	17.0	<1.7	1.7	<7.0	7.0	<3,500	3,500	NE	NE
Vinyl chloride	<10.0	10.0	<1.0	1.0	<4.1	4.1	<2,000	2,000	1.0	180,000
m&p-Xylene	<35.0	35.0	**6.5**	3.5	<14.0	14.0	**160,000***	6,900	100	43,000
o-Xylene	<17.0	17.0	**3.1**	1.7	<6.9	6.9	**48,000***	3,500	100	43,000
Total Petroleum Hydrocarbons (TPH)	**20,000**	4,100	**2,400**	410	<1700	1,700	**2,000,000**	830,000	NE	NE

Notes:
NE = Not Established
Shaded indicates exceedance of 10x the ISVs
ISV = Minnesota Pollution Control Agency (MPCA) Interim Intrusion Screening Values
Bold indicates concentration above laboratory reporting limit
* inidcates Acute screening ISV exceedance

Section 6: Appendices

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

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

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/ground water/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=-536881377&agency=Commerce
Petrofund Phone	**651-215-1775 or 1-800-638-0418**
State Duty Officer	**651-649-5451 or 1-800-422-0798**

Groundwater & Environmental Services, Inc.

MINNESOTA OFFICE

May 20, 2011

Mr. Gary Zarling
Remediation Division
Unit 3
Minnesota Pollution Control Agency
520 Lafayette Road North
St. Paul, Minnesota 55155-4194

RE: Excavation Report Worksheet
Former Sinclair Station #22020
223 East Larpenteur Avenue
Maplewood, Minnesota
MPCA Leak #17952

Dear Mr. Zarling:

On behalf of Sinclair Marketing, Inc., Groundwater & Environmental Services, Inc. (GES), is pleased to submit the enclosed Excavation Report Worksheet for the above-referenced site.

Three underground storage tanks and the associated product dispensers were removed at this site on November 10, 2010. In addition, 2 hydraulic hoists were also removed at the site. Based on a previous subsurface investigation conducted in April 2010, the site is an active Minnesota Pollution Control Agency (MPCA) Leak site, #17952. Therefore, a Limited Site Investigation is required for the site.

If you have any questions or comments, please feel free to contact me at (800) 735-1077, Extension 3182.

Respectfully,

Groundwater & Environmental Services, Inc.

Valerie J. Wood

Valerie Wood
Project Environmental Scientist

Attachment

Cc: Paul Conrad, Sinclair Marketing Inc.

Minnesota Pollution Control Agency

General Excavation Report Worksheet

Guidance Document 3-02

Complete the worksheet below to document excavation and treatment of petroleum contaminated soil removed **prior to** a Site Investigation and/or during tank removals and/or upgrades. If soil is excavated as an MPCA-approved corrective action **after** a Site Investigation is conducted, complete Guidance Document 3-02a *Corrective Action Excavation Report Worksheet.* Conduct excavations in accordance with Guidance Document 3-01 *Excavation of Petroleum Contaminated Soil.* Please type or print clearly. Do not revise or delete text or questions from this report form.

The excavation worksheet 3-02 deadline is 10 months from the date of receipt of the MPCA "Petroleum Storage Tank Release Investigation and Corrective Action" letter. MPCA staff may establish a shorter deadline for high priority sites.

PART I: BACKGROUND

A. Site: *Former Sinclair Station #22020*

MPCA Site ID#: LEAK00017952

Street: *223 East Larpenteur*
City, Zip: *Maplewood*
County: *Ramsey*

B. Tank Owner/Operator: *Sinclair Marketing, Inc., c/o Paul Conrad*

Mailing Address:

Street/Box: *550 East South Temple*
City, Zip: *Salt Lake City, Utah 84102*
Telephone: *913-233-7325*

C. Excavating Contractor: *Pump and Meter Service, Inc.*

Contact: *Mike Haggstrom*
Telephone: *952-933-4800*
Tank Contractor Certification Number: *607*

D. Consultant: *GES*

Contact: *Valerie Wood*
Street/Box: *1285 Corporate Center Dr., Suite 120*
City, Zip: *Eagan, 55121*
Telephone: *800-735-1077*

E. Others on-site during site work (e.g., fire marshal, local officials, MPCA staff, etc.): *Assistant Fire Chief/Fire Marshall for city of Maplewood, Butch Gervais, phone: 651-249-2804*

F. Site Location Information: Attach Guidance Document 1-03a *Spatial Data Reporting Form* if it has not already been submitted or will not be submitted as part of Guidance Document 4-06 *Investigation Report Form.*

Note: If person other than tank owner and/or operator is conducting the cleanup, provide name, address, and relationship to site on a separate attached sheet.

PART II: DATES

A. Date release reported to MPCA: *4-14-2010*

B. Dates site work performed (tanks removed, piping removed, soil excavation, soil borings, etc.):

Work Performed	Date
Subsurface investigation	*04-14-2010*
Tank removal	*11-10-2010*
Piping removal	*11-10-2010*
Dispenser removal	*11-10-2010*
Hydraulic lift removal	*11-10-2010*

PART III: SITE AND RELEASE INFORMATION

A. Describe the land use and pertinent geographic features within 1,000 feet of the site. (i.e. residential property, industrial, wetlands, etc.)

A commercial property is located to the north of the site. Larpenteur Avenue is located south of the site with undeveloped land further south. Highway 35E is located east of the site and residential properties are located west of the site. A pond is located northwest of the site.

B. Provide the following information for all tanks removed and any remaining at the site:

Table 1.

Tank #	Tank ** Material	UST or AST	Capacity (gallons)	Contents (product type)	Year installed	Tank Status*	Condition of Tank
001	*Coated steel*	*UST*	*4,000*	*Gasoline*	*Unknown*	*Removed 7-10-90*	*Unknown*
002	*Coated steel*	*UST*	*6,000*	*Gasoline*	*Unknown*	*Removed 7-10-90*	*Unknown*
003	*Coated steel*	*UST*	*5,000*	*Alcohol Blend*	*Unknown*	*Removed 7-10-90*	*Unknown*
004	*Fiberglass*	*UST*	*8,000*	*Gasoline*	*Unknown*	*Removed 7-10-90*	*Unknown*
005	*Coated steel*	*UST*	*1,000*	*Fuel oil*	*Unknown*	*Removed 7-10-90*	*Unknown*
006	*Coated steel*	*UST*	*560*	*Waste oil*	*Unknown*	*Removed 7-10-90*	*Unknown*
007	*STI-P3*	*UST*	*10,000*	*Gasoline*	*1990*	*Removed 11-10-10*	*Good*
008	*STI-P3*	*UST*	*10,000*	*Gasoline*	*1990*	*Removed 11-10-10*	*Good*
009	*STI-P3*	*UST*	*10,000*	*Diesel*	*1990*	*Removed 11-10-10*	*Good*

*Indicate: *removed (date), abandoned in place (date), or currently used, upgraded tank, installation of new tank. ** F for fiberglass or S for Steel*
Notes:

Piping Material (check all that apply): ☐ Steel, ☐ Fiberglass, ☒ Flexible Plastic, ☐ Copper, ☐ Other

C. Describe the location and status of the other components of the tank system(s) (i.e., transfer locations, valves, piping and dispensers) for those tanks listed above.

The dispensers and piping were located to the west of the tank basin; most of the piping was directly above the tanks. The dispensers were removed before GES personnel arrived on site. The tanks were contained in one tank basin and were removed while GES personnel were on site.

D. Identify the source(s) of the release or contamination encountered. Only check those options that were verified, if source is unknown check Other and describe:
☐ Piping, ☐ Tank, ☐ Dispenser, ☐ Pump/Turbine, ☐ Delivery Problem, ☒ Other

The site has been identified as former MPCA Leak site #2643. Previous leak investigations for Leak #2643 identified impacts beneath the former piping which was in the proximate location of the new piping. Previous piping may have leaked; however, there was no evidence that the new piping exhibited any leaks. Additionally, contamination was identified in an area under a former hydraulic lift.

E. Identify the cause of the release (tank and/or piping).
Check all that apply: ☐ Corrosion, ☐ Install Problem, ☐ Spill, ☒ Unknown,
☐ Mechanical or Physical Damage, ☐ Other

F. Identify the method the release was detected.
Check all that apply: ☒ Removal, ☐ Line Leak Detection, ☐ Tank Leak Detection,
☐ Visual/Olfactory, ☐ Site Assessment, ☐ Other

G. Identify any surface soil contamination.

No surface soil contamination was observed during the tank removal activities

H. What was the volume of the release? (if known): *Unknown* gallons

I. Historic contamination present (unknown origin?). ☒ Yes, ☐ No

J. When did the release occur? (if known): *Leak #2643 was reported on May 31, 1990 and closed on May 12, 2000. Leak #17952 was reported on April 14, 2010.*

K. Describe source of on-site drinking water. *Municipal*

L. Has the site ever, at any point had an E-85 tank? ☐ Yes, ☒ No

PART IV: EXCAVATION INFORMATION

A. Dimensions of excavation(s): Length *50'* Width *40'* Depth *14'*

B. Original tank backfill material (sand, gravel, etc.), if applicable: *Sand*

C. Native soil type (clay, sand, etc.): *Silty sand*

D. Quantity of contaminated soil removed for treatment (cubic yards): *None*
(Indicate on the site map where the petroleum contaminated soil was excavated)

How many cubic yards of the removed soil was petroleum saturated? *None*
(Indicate on the site map where the petroleum saturated soil was excavated)

[**Note:** If the volume removed is more than allowed in Guidance Document 3-01 *Excavation of Petroleum Contaminated Soil*, please document MPCA staff approval.]

E. Were new tanks and/or piping and dispensers installed? (yes/no) If yes, what volume of contaminated soil was excavated to accommodate the installation of the new tanks and piping?

No new tanks or piping were installed at this site.

F. If contaminated soil was removed to accommodate the installation of new tanks and/or piping, show your calculations for the amount of soil removal allowed using Table 3 in Guidance Document 3-01 *Excavation of Petroleum Contaminated Soil.*

No contaminated soil was removed from the site.

G. Was ground water encountered or a suspected perched water layer or was there evidence of a seasonally high ground water table (i.e. mottling)? (yes/no) At what depth?

No groundwater or evidence of a fluctuating water table was observed during the excavation.

H. If ground water was not encountered during the excavation, what is the expected depth of ground water?

Previous work at the site indicates water is approximately 15 to 19 feet below ground surface.

I. Additional investigation to determine the need for a Limited Site Investigation is necessary at sites with sandy or silty sandy soil, a water table within 25 feet of the ground surface, and visual or other evidence of soil remaining contamination. See Table 2 in Guidance Document 3-01 *Excavation of Petroleum Contaminated Soil.* If a soil boring is necessary, describe the soil screening and analytical results. Attach the boring logs and laboratory results to this report.

J. If no soil boring was performed, explain.

A Limited Site Investigation is necessary at the site.

K. If ground water was encountered or if a soil boring was conducted, was there evidence of ground water contamination? (yes/no) Describe this evidence of contamination, e.g., free product (specify thickness), product sheen, ground water in contact with petroleum contaminated soil, water analytical results, etc. **Note:** If you observe free product, contact MPCA staff immediately, as outlined in Guidance Document 2-02 *Free Product: Evaluation and Recovery.*

Groundwater was not encountered during tank removal activities.

L. Was bedrock encountered in the excavation? (☐yes/ ☒no) At what depth?

M. Were other unique conditions associated with this site? (☐yes/ ☒no) If so, explain.

PART V: SAMPLING INFORMATION

A. Briefly describe the field screening methods used to distinguish contaminated from uncontaminated soil:

Soil samples were screened for the presence of organic vapors using a photoionization detector (PID) with a 10.6 eV lamp. The PID was calibrated prior to the field activities to an isobutylene standard for readings in ppm benzene on a volume/volume basis. For each sample, a clean polyethylene bag was half-filled with soil and immediately sealed. The bag was shaken for approximately 15 seconds. The sample was then stored for a minimum of 10 minutes at a temperature of at least 70°F. After headspace development, the bag was shaken for another 15 seconds. The PID probe was inserted through a small opening in the bag. Within approximately 2 seconds after insertion, the highest PID reading was recorded for each sample.

B. List soil vapor headspace analysis results collected during excavation of tanks, lines and dispensers, valves, and transfer locations. (i.e., soils left in place when excavation is complete). Code the samples with sampling depths in parentheses as follows: sidewall samples S-1 (8 feet), S-2 (4 feet), etc.; bottom samples B-1 (13 feet), B-2 (14 feet), removed soil R-1 (4 feet), R-1 (8 feet), etc.; stockpile samples SP-1, etc; line samples L-1, L2, etc.; transfer locations T-1 (4 feet), T-1 (8 feet), etc.; dispensers D-1 (4 feet), etc. **Be sure the sample codes correspond with the site map in part VI, below.**

Sample Code	Soil Type	Reading ppm	Sample Code	Soil Type	Reading ppm
S1 (8ft)	*Silty sand*	*0.0*	*S4 (9ft)*	*Silty sand*	*0.0*
B1 (14 ft)	*Silty sand*	*0.0*	*D1 (4ft)*	*Silty sand*	*48*
B2 (1 4ft)	*Silty sand*	*0.0*	*D2 (4ft)*	*Silty sand*	*7.4*
S2 (9ft)	*Silty sand*	*2.9*	*D3 (4ft)*	*Silty sand*	*1.4*
B3 (14 ft)	*Silty sand*	*0.0*	*D4 (4ft)*	*Silty sand*	*3.2*
B4 (14 ft)	*Silty sand*	*2.4*	*HH1 (8ft)*	*Silty sand*	*2.2*
R1 (4 ft)	*Silty sand*	*0.0*	*HH2 (8ft)*	*Silty sand*	*687*
R2 (6 ft)	*Silty sand*	*0.0*			
S3 (9 ft)	*Silty sand*	*0.9*			
B5 (14 ft)	*Silty sand*	*0.3*			
B6 (14 ft)	*Silty sand*	*0.0*			
S5 (10 ft)	*Silty sand*	*0.0*			

C. Was the "removed soil" placed back into the excavation basin? (☒yes/ ☐no)
If no, please complete Part VIII: Soil Treatment Information section. If yes, a Limited Site Investigation is necessary (see Guidance Document 4-01 *Soil and Ground Water Assessments Performed during Site Investigations*).

D. Briefly describe the soil analytical sampling and handling procedures used:

Soil samples were placed in laboratory-supplied sampling containers, labeled, stored on ice, and shipped with chain-of-custody to Pace Analytical, Inc. located in Minneapolis, Minnesota. Soil samples were analyzed for benzene, toluene, ethylbenzene, xylene (BTEX) and methyl tert-butyl ether

(MTBE) by EPA Method 8260, gasoline range organics (GRO) and diesel range organics (DRO) by Wisconsin Department of Natural Resources (WDNR) Modified Methodology. In addition, soil samples collected beneath the removed hydraulic hoists were analyzed for volatile organic compounds (VOCs) by EPA Method 8260 and DRO by the previously referenced method.

E. List below all soil sample analytical results from bottom and side wall samples collected after excavation of tanks, lines and dispensers, valves, and transfer locations (i.e., soils left in place when excavation is complete). Code the samples with sampling depths in parentheses as follows: sidewall samples S-1 (8 feet), S-2 (4 feet), etc.; bottom samples B-1 (13 feet), B-2 (14 feet), removed soil R-1 (4 feet), R-1 (8 feet), etc.; stockpile samples SP-1, etc; line samples L-1, L2, etc.; transfer locations T-1 (4 feet), T-1 (8 feet), etc.; dispensers D-1 (4 feet), etc.; **Be sure the sample codes correspond to the site map required in part VI.**

Sample Code	GRO mg/kg	Benzene mg/kg	Ethyl-benzene mg/kg	Toluene mg/kg	Xylene mg/kg	MTBE mg/kg	DRO mg/kg
B1 (14 ft)	*NA*	*<0.056*	*<0.056*	*<0.056*	*<0.17*	*<0.28*	*<8.3*
B2 (14 ft)	*NA*	*<0.057*	*<0.057*	*<0.057*	*<0.17*	*<0.28*	*<9.6*
B3 (14 ft)	*<5.0*	*<0.050*	*<0.050*	*<0.050*	*<0.15*	*<0.25*	*NA*
B4 (14 ft)	*<6.1*	*<0.061*	*<0.061*	*<0.061*	*<0.18*	*<0.31*	*NA*
B5 (14 ft)	*<6.0*	*<0.060*	*<0.060*	*<0.060*	*<0.18*	*<0.30*	*NA*
B6 (14 ft)	*<6.1*	*<0.061*	*<0.061*	*<0.061*	*<0.18*	*<0.30*	*NA*
D1 (4 ft)	*<5.3*	*<0.053*	*<0.053*	*<0.053*	*<0.16*	*<0.27*	*<9.1*
D2 (4 ft)	*<5.7*	*<0.057*	*<0.057*	*<0.057*	*<0.17*	*<0.28*	*<9.9*
D3 (4 ft)	*<5.7*	*<0.057*	*<0.057*	*<0.057*	*<0.17*	*<0.29*	*<7.8*
D4 (4ft)	*<5.9*	*<0.059*	*<0.059*	*<0.059*	*<0.18*	*<0.29*	*<9.0*
HH1 (8 ft)	*NA*	*<0.0233*	*<0.0583*	*<0.0583*	*<0.175*	*<0.0583*	*<8.5*
HH2 (8 ft)	*NA*	*<0.108*	*0.432*	*<0.271*	*2.14*	*<0.271*	*1,930*

Note: Attach copies of laboratory reports and chain of custody forms.
NA = Not analyzed for that parameter.

PART VI: FIGURES

Attach the following figures to this report:

1. Site location map.
2. Site map(s) drawn to scale illustrating the following:
   a. Location of all present and former tanks, piping, and dispensers;
   b. Location of surface soil contamination
   c. Location of other structures (buildings, canopies, etc.);
   d. Adjacent city, township, or county roadways;
   e. Dimensions of excavation(s), including contour lines (maximum 2-foot contour intervals) to represent the depths of the final excavation(s);
   f. Location of soil screening samples (e.g. R-1), soil analytical samples (e.g., S-1 or B-1), and any soil borings (e.g., SB-1). Also, attach all boring logs.
   g. North arrow, bar scale and map legend.
   h. Provide location of any on-site water wells. If on-site water wells exist, please provide well logs and/or construction diagrams.
   i. Locations of new tanks, piping and dispensers, if installed.

PART VII: CONCLUSIONS AND RECOMMENDATIONS

Recommendation for site: ☐ site closure
☒ additional investigation

Justify the recommendations for the site. If no further action is necessary, the MPCA staff will review this report following notification of soil treatment.

The release for Leak #17952 was reported in April 2010 and was based on soil results from a subsurface investigation. A Limited Site Investigation (LSI) is necessary at the site for Leak #17952.

The soil samples collected during UST and hydraulic hoist removal activities were taken beneath the 3 tanks and hydraulic hoists as well as under the 4 dispensers on site. Laboratory results indicate no concentrations above method detection limits with the exception of 1 soil sample collected beneath the hydraulic hoists (HH2) which indicated a concentration of xylenes and DRO above the detection limits.

Since the site is an active leak site, based on the April 2010 subsurface investigation, a LSI is required for the site.

PART VIII: SOIL TREATMENT INFORMATION

A. Soil treatment method used (thermal, land application, composting, other). If you choose "other" specify treatment method:

B. Location of treatment site/facility:

C. Date MPCA approved soil treatment (if thermal treatment was used, indicate date that the MPCA-permitted thermal treatment facility agreed to accept soil):

D. Identify the location of stockpiled contaminated soil:

PART IX: CONSULTANT (OR OTHER) PREPARING THIS REPORT

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 reduction of reimbursement awards. 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 (1994) or Minn. 7000.0300 (Duty of Candor), and that the responsible person or volunteer may be liable for civil penalties.

MPCA staff are instructed to reject unsigned excavation reports or if the report form has been altered.

Name and Title: | Signature: | Date signed:

Tim Morrell
Associate Geologist

5/20/2011

Valerie L. Wood
Project Environmental Scientist

5/20/2011

Company and mailing address: *Groundwater & Environmental Services, Inc.*
1285 Corporate Center Drive, Suite 120
Eagan, Minnesota 55121

Telephone *800-735-1077* Fax: *651-405-1036*

If additional investigation is not necessary, please mail this form and all necessary attachments to the MPCA project manager. If additional investigation is necessary, include this form as an appendix to Guidance Document 4-06 *Investigation Report Form.* **MPCA staff will not review excavation reports indicating a limited site investigation is necessary unless the limited site investigation has been completed.**

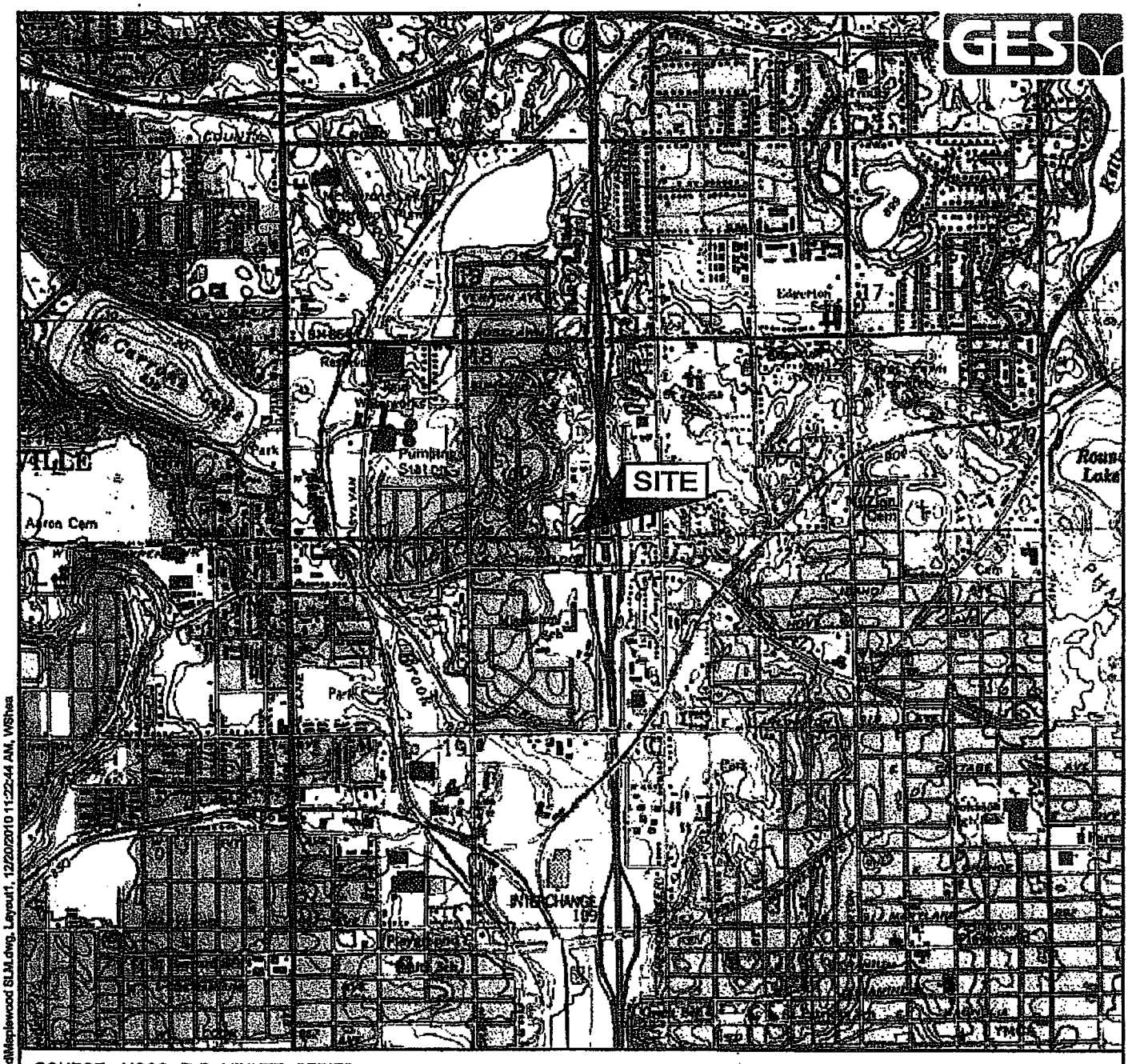
Web pages and phone numbers

MPCA staff	http://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 Infor. Request	http://www.pca.state.mn.us/about/inforequest.html
MPCA Petroleum Brownfields Program	http://www.pca.state.mn.us/programs/vpic_p.html
PetroFund Web Page	http://www.state.mn.us/cgi-bin/portal/mn/jsp/content.do?id=-536881377&agency=Commerce
PetroFund Phone	**651-297-1119, or 1-800-638-0418**
State Duty Officer	**651-649-5451 or 1-800-422-0798**

Upon request, this document can be made available in other formats, including Braille, large print and audio tape. TTY users call 651/282-5332 or 1-800-657-3864 (voice/TTY).

Printed on recycled paper containing at least 10 percent fibers from paper recycled by consumers.
Guidance Document c-prp3-02: February 2010
Petroleum Remediation Program
Minnesota Pollution Control Agency

FIGURES



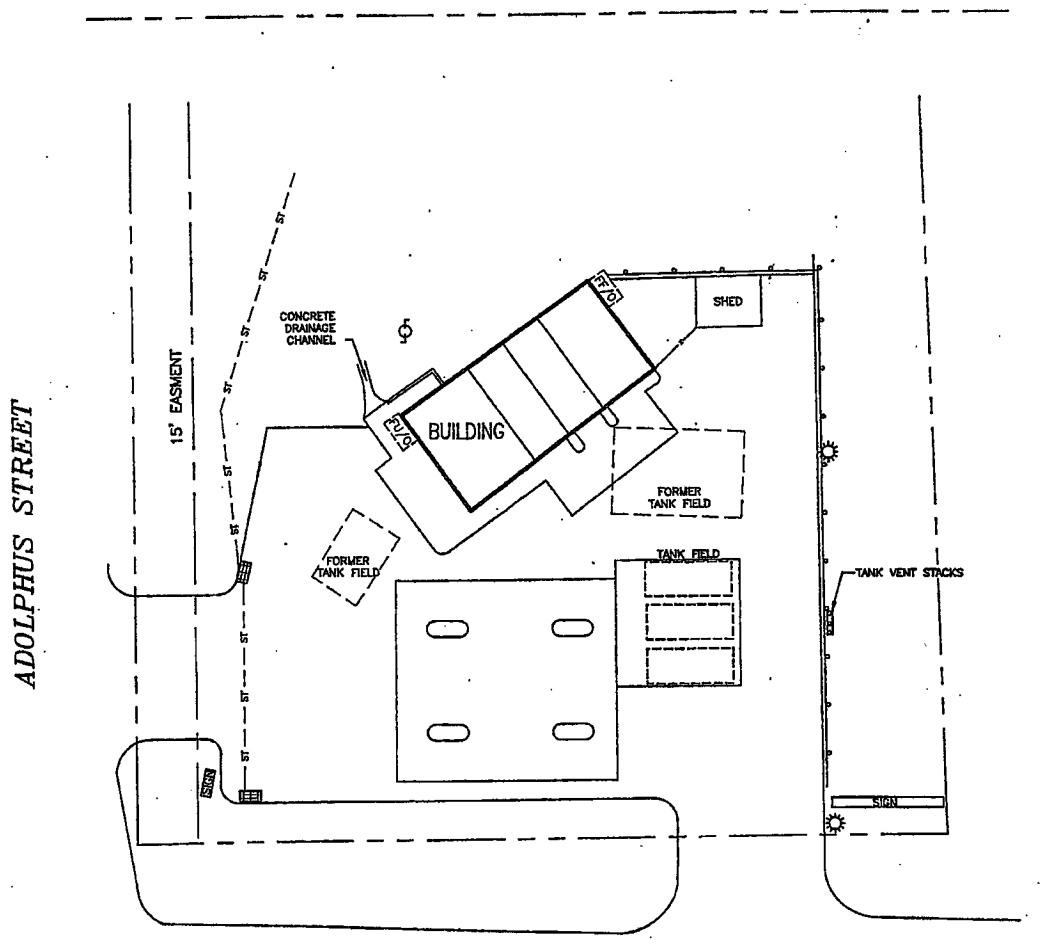
SOURCE: USGS 7.5 MINUTE SERIES
TOPOGRAPHIC QUADRANGLE 1993
ST. PAUL EAST, MINNESOTA
CONTOUR INTERVAL = 10'

QUADRANGLE LOCATION

DRAFTED BY: W.G.S. (N.J.)	SITE LOCATION MAP
CHECKED BY:	SINCLAIR MARKETING INC. 223 EAST LARPENTAUR AVENUE MAPLEWOOD, MINNESOTA
REVIEWED BY:	
NORTH	Groundwater & Environmental Services, Inc. 1285 CORPORATE CENTER DRIVE, SUITE 120, EAGAN, MN 55121

SCALE IN FEET	DATE	FIGURE
0 2000	12-20-10	1

M:\Graphics\3500-Minnesota\Sinclair Oil Corp_GES\Maplewood\Maplewood SLM.dwg, Layout1, 12/20/2010 11:22:44 AM, WShea

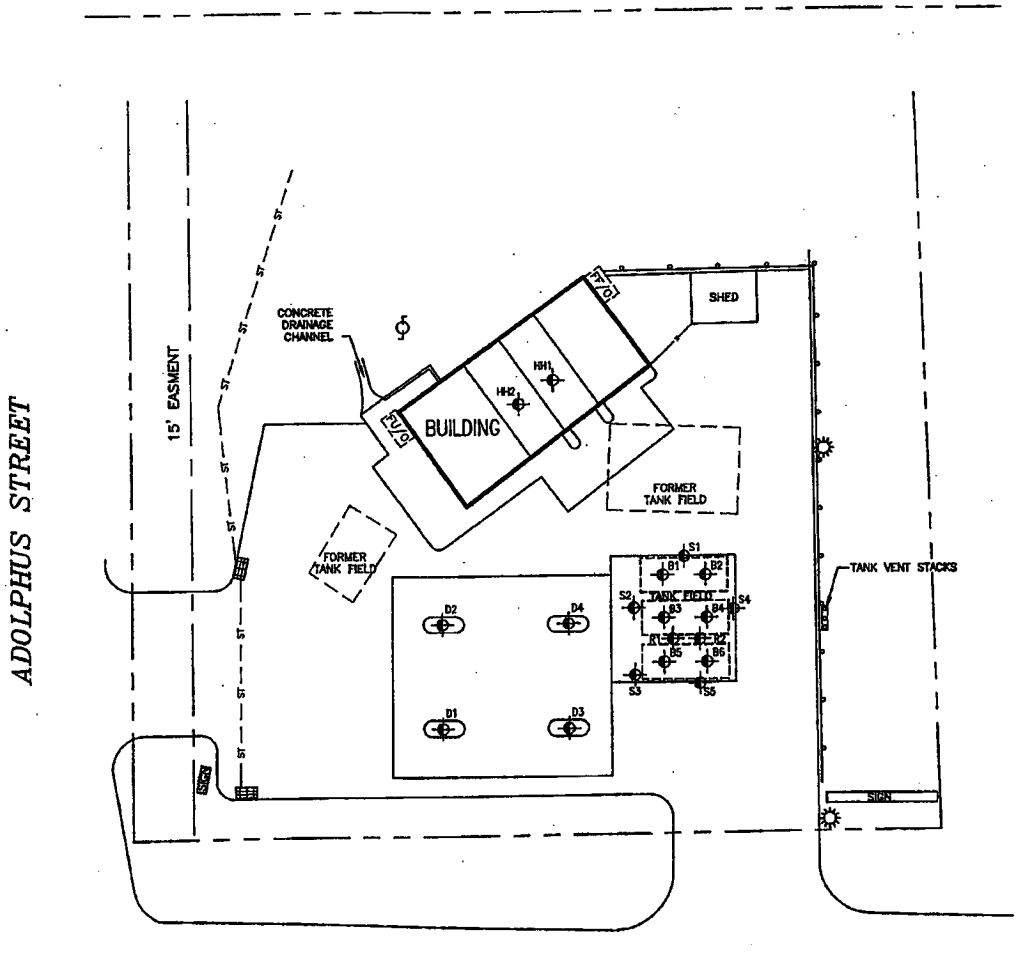


LEGEND

- PROPERTY BOUNDARY
- FF/O FORMER FUEL OIL TANK
- FU/O FORMER WASTE OIL TANK
- GUARD RAIL
- CATCH BASIN
- LIGHT POLE
- UTILITY POLE
- DISPENSER ISLAND
- ST UNDERGROUND STORM SEWER LINE

DRAFTED BY: W.G.S. (N.J.)	SITE MAP
CHECKED BY:	SINCLAIR MARKETING INC. 223 EAST LARPENTAUR AVENUE MAPLEWOOD, MINNESOTA
REVIEWED BY:	Groundwater & Environmental Services, Inc. 1285 CORPORATE CENTER DRIVE, SUITE 120, EAGAN, MN 55121
NORTH	SCALE IN FEET: 0 APPROXIMATE 30 / DATE: 12-20-10 / FIGURE:

M:\Graphics\3500-Minnesota\Sinclair Oil Corp_GES\Maplewood\Maplewood SM.Arcg, B-30, 12/20/2010 10:54:57 AM, WShea



LEGEND

- PROPERTY BOUNDARY
- FORMER FUEL OIL TANK
- FORMER WASTE OIL TANK
- GUARD RAIL
- CATCH BASIN
- LIGHT POLE
- UTILITY POLE
- DISPENSER ISLAND
- UNDERGROUND STORM SEWER LINE
- SOIL BORING

DRAFTED BY: W.G.S. (N.J.)	SOIL SAMPLE LOCATION MAP
CHECKED BY:	SINCLAIR MARKETING INC. 223 EAST LARPENTAUR AVENUE MAPLEWOOD, MINNESOTA
REVIEWED BY:	Groundwater & Environmental Services, Inc. 1285 CORPORATE CENTER DRIVE, SUITE 120, EAGAN, MN 55121
NORTH	SCALE IN FEET: 0 APPROXIMATE 30 / DATE: 12-20-10 / FIGURE:

M:\Graphics\3500-Minnesota\Sinclair Oil Corp_GES\Maplewood\Maplewood SM.dwg, B-30, 12/20/2010 11:25:20 AM, WShea

ATTACHMENT A

SPATIAL DATA REPORTING FORM (1-03a)

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

Spatial Data Reporting Form

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

Part 1. Background

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

MPCA Site ID: LEAK00*17952*
Site Name: *Former Sinclair Station #22020*
Data Collection Date: *December 6, 2010*
Name of Person Who Collected Data: *Tim Morrell*
Organization Name: *Groundwater & Environmental Services, Inc.*
Organization Type: *Consultant*

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

Point Description: *Center of Site*
Collection Method: *interpolation*
Datum (circle/highlight): WGS84 NAD83

1) Longitude (dd mm ss.ss): Latitude (dd mm ss.ss):

2) Longitude (dd.dddddd): Latitude (dd.dddddd):

3) UTM - X (Easting): *-93.0907* UTM - Y (Northing): *44.9921*
UTM Zone:

Part 3. Other Site Features

Point Description:
Collection Method:
Datum (circle/highlight): WGS84 NAD83
1) Longitude (dd mm ss.ss): Latitude (dd mm ss.ss):
2) Longitude (dd.dddddd): Latitude (dd.dddddd):
3) UTM - X (Easting): UTM - Y (Northing):
UTM Zone:

Point Description:
Collection Method:
Datum (circle/highlight): WGS84 NAD83
1) Longitude (dd mm ss.ss): Latitude (dd mm ss.ss):
2) Longitude (dd.dddddd): Latitude (dd.dddddd):
3) UTM - X (Easting): UTM - Y (Northing):
UTM Zone:

Point Description:
Collection Method:
Datum (circle/highlight): WGS84 NAD83
1) Longitude (dd mm ss.ss): Latitude (dd mm ss.ss):
2) Longitude (dd.dddddd): Latitude (dd.dddddd):
3) UTM - X (Easting): UTM - Y (Northing):
UTM Zone:

Point Description:
Collection Method:
Datum (circle/highlight): WGS84 NAD83
1) Longitude (dd mm ss.ss): Latitude (dd mm ss.ss):
2) Longitude (dd.dddddd): Latitude (dd.dddddd):
3) UTM - X (Easting): UTM - Y (Northing):
UTM Zone:

Point Description:

Collection Method:

Datum (circle/highlight): WGS84 NAD83

1) Longitude (dd mm ss.ss): Latitude (dd mm ss.ss):

2) Longitude (dd.dddddd): Latitude (dd.dddddd):

3) UTM - X (Easting): UTM - Y (Northing):

UTM Zone:

ATTACHMENT B

LABORATORY REPORTS

Pace Analytical
www.pacelabs.com

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

November 19, 2010

Valerie Wood
Groundwater Environmental Services, Inc.
1285 Corporate Center Drive
Suite 120
Eagan, MN 55121

RE: Project: 3500919 Sinclair Station 22020
Pace Project No.: 10143006

Dear Valerie Wood:
Enclosed are the analytical results for sample(s) received by the laboratory on November 11, 2010. The results relate only to the samples included in this report. Results reported herein conform to the most current NELAC standards, where applicable, unless otherwise narrated 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: 3500919 Sinclair Station 22020
Pace Project No.: 10143006

Minnesota Certification IDs
1700 Elm Street SE Suite 200, Minneapolis, MN 55414
Alaska Certification #: UST-078
Alaska Certification #MN00064
Arizona Certification #: AZ-0014
Arkansas Certification #: 88-0680
California Certification #: 01155CA
EPA Region 8 Certification #: Pace
Florida/NELAP Certification #: E87605
Georgia Certification #: 959
Idaho Certification #: MN00064
Illinois Certification #: 200011
Iowa Certification #: 368
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
Nevada Certification #: MN_00064
Nebraska Certification #: Pace
New Jersey Certification #: MN-002
New Mexico Certification #: Pace
New York Certification #: 11647
North Carolina Certification #: 530
North Dakota Certification #: R-036
North Dakota Certification #: R-036A
Ohio VAP Certification #: CL101
Oklahoma Certification #: D9921
Oklahoma Certification #: 9507
Oregon Certification #: MN200001
Pennsylvania Certification #: 68-00563
Puerto Rico Certification
Tennessee Certification #: 02818
Texas Certification #: T104704192
Washington Certification #: C754
Wisconsin Certification #: 999407970

Pace Analytical Services, Inc.
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Minneapolis, MN 55414
(612)607-1700

SAMPLE SUMMARY

Project: 3500919 Sinclair Station 22020
Pace Project No.: 10143006

Lab ID	Sample ID	Matrix	Date Collected	Date Received
10143006001	B1 14	Solid	11/10/10 09:40	11/11/10 15:49
10143006002	B2 14	Solid	11/10/10 09:45	11/11/10 15:49
10143006003	B3 14	Solid	11/10/10 11:05	11/11/10 15:49
10143006004	B4 14	Solid	11/10/10 11:10	11/11/10 15:49
10143006005	B5 14	Solid	11/10/10 11:30	11/11/10 15:49
10143006006	B6 14	Solid	11/10/10 11:35	11/11/10 15:49
10143006007	D1 4	Solid	11/11/10 13:15	11/11/10 15:49
10143006008	D2 4	Solid	11/11/10 13:25	11/11/10 15:49
10143006009	D3 4	Solid	11/11/10 13:35	11/11/10 15:49
10143006010	D4 4	Solid	11/11/10 13:45	11/11/10 15:49
10143006011	HH1 8	Solid	11/11/10 14:00	11/11/10 15:49
10143006012	HH2 8	Solid	11/11/10 14:15	11/11/10 15:49

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SAMPLE ANALYTE COUNT

Project: 3500919 Sinclair Station 22020
Pace Project No.: 10143006

Lab ID	Sample ID	Method	Analysts	Analytes Reported
10143006001	B1 14	WI MOD DRO	KL1	2
		WI MOD GRO	MJH	6
		% Moisture	JDL	1
10143006002	B2 14	WI MOD DRO	KL1	2
		WI MOD GRO	MJH	6
		% Moisture	JDL	1
10143006003	B3 14	WI MOD GRO	MJH	7
		% Moisture	JDL	1
10143006004	B4 14	WI MOD GRO	MJH	7
		% Moisture	JDL	1
10143006005	B5 14	WI MOD GRO	MJH	7
		% Moisture	JDL	1
10143006006	B6 14	WI MOD GRO	MJH	7
		% Moisture	JDL	1
10143006007	D1 4	WI MOD DRO	KL1	2
		WI MOD GRO	MJH	7
		% Moisture	JDL	1
10143006008	D2 4	WI MOD DRO	KL1	2
		WI MOD GRO	MJH	7
		% Moisture	JDL	1
10143006009	D3 4	WI MOD DRO	KL1	2
		WI MOD GRO	MJH	7
		% Moisture	JDL	1
10143006010	D4 4	WI MOD DRO	KL1	2
		WI MOD GRO	MJH	7
		% Moisture	JDL	1
10143006011	HH1 8	WI MOD DRO	KL1	2
		% Moisture	JDL	1
		EPA 8260	MJH	71
10143006012	HH2 8	WI MOD DRO	KL1	2
		% Moisture	JDL	1
		EPA 8260	MJH	71

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ANALYTICAL RESULTS

Project: 3500919 Sinclair Station 22020
Pace Project No.: 10143006

Sample: B1 14 **Lab ID: 10143006001** Collected: 11/10/10 09:40 Received: 11/11/10 15:49 Matrix: Solid

Results reported on a "dry-weight" basis

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
WIDRO GCS	Analytical Method: WI MOD DRO Preparation Method: WI MOD DRO							
Diesel Range Organics	ND	mg/kg	8.3	1	11/15/10 08:55	11/16/10 00:17		
n-Triacontane (S)	90	%	50-150	1	11/15/10 08:55	11/16/10 00:17		
WIGRO GCV	Analytical Method: WI MOD GRO Preparation Method: TPH GRO/PVOC WI ext.							
Benzene	ND	mg/kg	0.056	1	11/12/10 11:45	11/13/10 11:33	71-43-2	
Ethylbenzene	ND	mg/kg	0.056	1	11/12/10 11:45	11/13/10 11:33	100-41-4	
Methyl-tert-butyl ether	ND	mg/kg	0.28	1	11/12/10 11:45	11/13/10 11:33	1634-04-4	
Toluene	ND	mg/kg	0.056	1	11/12/10 11:45	11/13/10 11:33	108-88-3	
Xylene (Total)	ND	mg/kg	0.17	1	11/12/10 11:45	11/13/10 11:33	1330-20-7	
a,a,a-Trifluorotoluene (S)	103	%	80-125	1	11/12/10 11:45	11/13/10 11:33	98-08-8	
Dry Weight	Analytical Method: % Moisture							
Percent Moisture	12.2	%	0.10	1		11/17/10 00:00		

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ANALYTICAL RESULTS

Project: 3500919 Sinclair Station 22020
Pace Project No.: 10143006

Sample: B2 14 **Lab ID: 10143006002** Collected: 11/10/10 09:45 Received: 11/11/10 15:49 Matrix: Solid

Results reported on a "dry-weight" basis

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
WIDRO GCS	Analytical Method: WI MOD DRO Preparation Method: WI MOD DRO							
Diesel Range Organics	ND	mg/kg	9.6	1	11/15/10 06:55	11/16/10 00:03		
n-Triacontane (S)	88	%	50-150	1	11/15/10 06:55	11/16/10 00:03		
WIGRO GCV	Analytical Method: WI MOD GRO Preparation Method: TPH GRO/PVOC WI ext.							
Benzene	ND	mg/kg	0.057	1	11/12/10 11:45	11/13/10 11:57	71-43-2	
Ethylbenzene	ND	mg/kg	0.057	1	11/12/10 11:45	11/13/10 11:57	100-41-4	
Methyl-tert-butyl ether	ND	mg/kg	0.28	1	11/12/10 11:45	11/13/10 11:57	1634-04-4	
Toluene	ND	mg/kg	0.057	1	11/12/10 11:45	11/13/10 11:57	108-88-3	
Xylene (Total)	ND	mg/kg	0.17	1	11/12/10 11:45	11/13/10 11:57	1330-20-7	
a,a,a-Trifluorotoluene (S)	101	%	80-125	1	11/12/10 11:45	11/13/10 11:57	98-08-8	
Dry Weight	Analytical Method: % Moisture							
Percent Moisture	15.8	%	0.10	1		11/17/10 00:00		

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ANALYTICAL RESULTS

Project: 3500919 Sinclair Station 22020
Pace Project No.: 10143006

Sample: B3 14 Lab ID: **10143006003** Collected: 11/10/10 11:05 Received: 11/11/10 15:49 Matrix: Solid

Results reported on a "dry-weight" basis

Parameters	Results	Units	Report Limit	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	1	11/12/10 11:45	11/13/10 12:21	71-43-2	
Ethylbenzene	ND	mg/kg	0.050	1	11/12/10 11:45	11/13/10 12:21	100-41-4	
Gasoline Range Organics	ND	mg/kg	5.0	1	11/12/10 11:45	11/13/10 12:21		
Methyl-tert-butyl ether	ND	mg/kg	0.25	1	11/12/10 11:45	11/13/10 12:21	1634-04-4	
Toluene	ND	mg/kg	0.050	1	11/12/10 11:45	11/13/10 12:21	108-88-3	
Xylene (Total)	ND	mg/kg	0.15	1	11/12/10 11:45	11/13/10 12:21	1330-20-7	
a,a,a-Trifluorotoluene (S)	104	%	80-125	1	11/12/10 11:45	11/13/10 12:21	98-08-8	
Dry Weight	Analytical Method: % Moisture							
Percent Moisture	3.4	%	0.10	1		11/17/10 00:00		

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ANALYTICAL RESULTS

Project: 3500919 Sinclair Station 22020
Pace Project No.: 10143006

Sample: B4 14 Lab ID: 10143006004 Collected: 11/10/10 11:10 Received: 11/11/10 15:49 Matrix: Solid

Results reported on a "dry-weight" basis

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
WIGRO GCV	Analytical Method: WI MOD GRO Preparation Method: TPH GRO/PVOC WI ext.							
Benzene	ND	mg/kg	0.061	1	11/12/10 11:45	11/13/10 12:45	71-43-2	
Ethylbenzene	ND	mg/kg	0.061	1	11/12/10 11:45	11/13/10 12:45	100-41-4	
Gasoline Range Organics	ND	mg/kg	6.1	1	11/12/10 11:45	11/13/10 12:45		
Methyl-tert-butyl ether	ND	mg/kg	0.31	1	11/12/10 11:45	11/13/10 12:45	1634-04-4	
Toluene	ND	mg/kg	0.061	1	11/12/10 11:45	11/13/10 12:45	108-88-3	
Xylene (Total)	ND	mg/kg	0.18	1	11/12/10 11:45	11/13/10 12:45	1330-20-7	
a,a,a-Trifluorotoluene (S)	101	%	80-125	1	11/12/10 11:45	11/13/10 12:45	98-08-8	
Dry Weight	Analytical Method: % Moisture							
Percent Moisture	19.2	%	0.10	1		11/17/10 00:00		

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ANALYTICAL RESULTS

Project: 3500919 Sinclair Station 22020
Pace Project No.: 10143006

Sample: B5 14 Lab ID: 10143006005 Collected: 11/10/10 11:30 Received: 11/11/10 15:49 Matrix: Solid

Results reported on a "dry-weight" basis

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
WIGRO GCV	Analytical Method: WI MOD GRO Preparation Method: TPH GRO/PVOC WI ext.							
Benzene	ND	mg/kg	0.060	1	11/12/10 11:45	11/13/10 13:09	71-43-2	
Ethylbenzene	ND	mg/kg	0.060	1	11/12/10 11:45	11/13/10 13:09	100-41-4	
Gasoline Range Organics	ND	mg/kg	6.0	1	11/12/10 11:45	11/13/10 13:09		
Methyl-tert-butyl ether	ND	mg/kg	0.30	1	11/12/10 11:45	11/13/10 13:09	1634-04-4	
Toluene	ND	mg/kg	0.060	1	11/12/10 11:45	11/13/10 13:09	108-88-3	
Xylene (Total)	ND	mg/kg	0.18	1	11/12/10 11:45	11/13/10 13:09	1330-20-7	
a,a,a-Trifluorotoluene (S)	104	%	80-125	1	11/12/10 11:45	11/13/10 13:09	98-08-8	
Dry Weight	Analytical Method: % Moisture							
Percent Moisture	19.2	%	0.10	1		11/17/10 00:00		

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: 3500919 Sinclair Station 22020
Pace Project No.: 10143006

Sample: B6 14 Lab ID: **10143006006** Collected: 11/10/10 11:35 Received: 11/11/10 15:49 Matrix: Solid

Results reported on a "dry-weight" basis

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
WIGRO GCV	Analytical Method: WI MOD GRO Preparation Method: TPH GRO/PVOC WI ext.							
Benzene	ND	mg/kg	0.061	1	11/12/10 11:45	11/13/10 13:32	71-43-2	
Ethylbenzene	ND	mg/kg	0.061	1	11/12/10 11:45	11/13/10 13:32	100-41-4	
Gasoline Range Organics	ND	mg/kg	6.1	1	11/12/10 11:45	11/13/10 13:32		
Methyl-tert-butyl ether	ND	mg/kg	0.30	1	11/12/10 11:45	11/13/10 13:32	1634-04-4	
Toluene	ND	mg/kg	0.061	1	11/12/10 11:45	11/13/10 13:32	108-88-3	
Xylene (Total)	ND	mg/kg	0.18	1	11/12/10 11:45	11/13/10 13:32	1330-20-7	
a,a,a-Trifluorotoluene (S)	104	%	80-125	1	11/12/10 11:45	11/13/10 13:32	98-08-8	
Dry Weight	Analytical Method: % Moisture							
Percent Moisture	14.5	%	0.10	1		11/17/10 00:00		

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ANALYTICAL RESULTS

Project: 3500919 Sinclair Station 22020
Pace Project No.: 10143006

Sample: D1 4 **Lab ID: 10143006007** Collected: 11/11/10 13:15 Received: 11/11/10 15:49 Matrix: Solid

Results reported on a "dry-weight" basis

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
WIDRO GCS	Analytical Method: WI MOD DRO Preparation Method: WI MOD DRO							
Diesel Range Organics	ND	mg/kg	9.1	1	11/15/10 06:55	11/15/10 23:42		
n-Triacontane (S)	87	%	50-150	1	11/15/10 06:55	11/15/10 23:42		
WIGRO GCV	Analytical Method: WI MOD GRO Preparation Method: TPH GRO/PVOC WI ext.							
Benzene	ND	mg/kg	0.053	1	11/12/10 11:45	11/13/10 13:56	71-43-2	
Ethylbenzene	ND	mg/kg	0.053	1	11/12/10 11:45	11/13/10 13:56	100-41-4	
Gasoline Range Organics	ND	mg/kg	5.3	1	11/12/10 11:45	11/13/10 13:56		
Methyl-tert-butyl ether	ND	mg/kg	0.27	1	11/12/10 11:45	11/13/10 13:56	1634-04-4	
Toluene	ND	mg/kg	0.053	1	11/12/10 11:45	11/13/10 13:56	108-88-3	
Xylene (Total)	ND	mg/kg	0.16	1	11/12/10 11:45	11/13/10 13:56	1330-20-7	
a,a,a-Trifluorotoluene (S)	103	%	80-125	1	11/12/10 11:45	11/13/10 13:56	98-08-8	
Dry Weight	Analytical Method: % Moisture							
Percent Moisture	10.0	%	0.10	1		11/17/10 00:00		

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ANALYTICAL RESULTS

Project: 3500919 Sinclair Station 22020
Pace Project No.: 10143006

Sample: D2 4 **Lab ID: 10143006008** Collected: 11/11/10 13:25 Received: 11/11/10 15:49 Matrix: Solid

Results reported on a "dry-weight" basis

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
WIDRO GCS	Analytical Method: WI MOD DRO Preparation Method: WI MOD DRO							
Diesel Range Organics	ND	mg/kg	9.9	1	11/15/10 06:55	11/16/10 00:24		
n-Triacontane (S)	69	%	50-150	1	11/15/10 06:55	11/16/10 00:24		
WIGRO GCV	Analytical Method: WI MOD GRO Preparation Method: TPH GRO/PVOC WI ext.							
Benzene	ND	mg/kg	0.057	1	11/12/10 11:45	11/13/10 15:07	71-43-2	
Ethylbenzene	ND	mg/kg	0.057	1	11/12/10 11:45	11/13/10 15:07	100-41-4	
Gasoline Range Organics	ND	mg/kg	5.7	1	11/12/10 11:45	11/13/10 15:07		
Methyl-tert-butyl ether	ND	mg/kg	0.28	1	11/12/10 11:45	11/13/10 15:07	1634-04-4	
Toluene	ND	mg/kg	0.057	1	11/12/10 11:45	11/13/10 15:07	108-88-3	
Xylene (Total)	ND	mg/kg	0.17	1	11/12/10 11:45	11/13/10 15:07	1330-20-7	
a,a,a-Trifluorotoluene (S)	101	%	80-125	1	11/12/10 11:45	11/13/10 15:07	98-08-8	
Dry Weight	Analytical Method: % Moisture							
Percent Moisture	10.0	%	0.10	1		11/17/10 00:00		

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: 3500919 Sinclair Station 22020
Pace Project No.: 10143006

Sample: D3 4 **Lab ID: 10143006009** Collected: 11/11/10 13:35 Received: 11/11/10 15:49 Matrix: Solid

Results reported on a "dry-weight" basis

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
WIDRO GCS	Analytical Method: WI MOD DRO Preparation Method: WI MOD DRO							
Diesel Range Organics	ND	mg/kg	7.8	1	11/15/10 06:55	11/15/10 23:56		
n-Triacontane (S)	88	%	50-150	1	11/15/10 06:55	11/15/10 23:56		
WIGRO GCV	Analytical Method: WI MOD GRO Preparation Method: TPH GRO/PVOC WI ext.							
Benzene	ND	mg/kg	0.057	1	11/12/10 11:45	11/13/10 15:31	71-43-2	
Ethylbenzene	ND	mg/kg	0.057	1	11/12/10 11:45	11/13/10 15:31	100-41-4	
Gasoline Range Organics	ND	mg/kg	5.7	1	11/12/10 11:45	11/13/10 15:31		
Methyl-tert-butyl ether	ND	mg/kg	0.29	1	11/12/10 11:45	11/13/10 15:31	1634-04-4	
Toluene	ND	mg/kg	0.057	1	11/12/10 11:45	11/13/10 15:31	108-88-3	
Xylene (Total)	ND	mg/kg	0.17	1	11/12/10 11:45	11/13/10 15:31	1330-20-7	
a,a,a-Trifluorotoluene (S)	104	%	80-125	1	11/12/10 11:45	11/13/10 15:31	98-08-8	
Dry Weight	Analytical Method: % Moisture							
Percent Moisture	**11.1**	%	0.10	1		11/17/10 00:00		

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ANALYTICAL RESULTS

Project: 3500919 Sinclair Station 22020
Pace Project No.: 10143006

Sample: D4 4 **Lab ID: 10143006010** Collected: 11/11/10 13:45 Received: 11/11/10 15:49 Matrix: Solid

Results reported on a "dry-weight" basis

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
WIDRO GCS	Analytical Method: WI MOD DRO Preparation Method: WI MOD DRO							
Diesel Range Organics	ND	mg/kg	9.0	1	11/15/10 06:55	11/15/10 23:35		
n-Triacontane (S)	68	%	50-150	1	11/15/10 06:55	11/15/10 23:35		
WIGRO GCV	Analytical Method: WI MOD GRO Preparation Method: TPH GRO/PVOC WI ext.							
Benzene	ND	mg/kg	0.059	1	11/12/10 11:45	11/13/10 15:54	71-43-2	
Ethylbenzene	ND	mg/kg	0.059	1	11/12/10 11:45	11/13/10 15:54	100-41-4	
Gasoline Range Organics	ND	mg/kg	5.9	1	11/12/10 11:45	11/13/10 15:54		
Methyl-tert-butyl ether	ND	mg/kg	0.29	1	11/12/10 11:45	11/13/10 15:54	1634-04-4	
Toluene	ND	mg/kg	0.059	1	11/12/10 11:45	11/13/10 15:54	108-88-3	
Xylene (Total)	ND	mg/kg	0.18	1	11/12/10 11:45	11/13/10 15:54	1330-20-7	
a,a,a-Trifluorotoluene (S)	104	%	80-125	1	11/12/10 11:45	11/13/10 15:54	98-08-8	
Dry Weight	Analytical Method: % Moisture							
Percent Moisture	**11.0**	**%**	0.10	1		11/17/10 00:00		

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ANALYTICAL RESULTS

Project: 3500919 Sinclair Station 22020
Pace Project No.: 10143006

Sample: HH1 8 **Lab ID: 10143006011** Collected: 11/11/10 14:00 Received: 11/11/10 15:49 Matrix: Solid

Results reported on a "dry-weight" basis

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
WIDRO GCS	Analytical Method: WI MOD DRO Preparation Method: WI MOD DRO							
Diesel Range Organics	ND	mg/kg	8.5	1	11/15/10 06:55	11/15/10 23:49		
n-Triacontane (S)	77	%	50-150	1	11/15/10 06:55	11/15/10 23:49		
Dry Weight	Analytical Method: % Moisture							
Percent Moisture	10.9	%	0.10	1		11/17/10 00:00		
8260 MSV 5030 Med Level	Analytical Method: EPA 8260 Preparation Method: EPA 5035/5030B							
Acetone	ND	ug/kg	583	1	11/15/10 09:06	11/17/10 21:56	67-64-1	
Allyl chloride	ND	ug/kg	233	1	11/15/10 09:06	11/17/10 21:56	107-05-1	
Benzene	ND	ug/kg	23.3	1	11/15/10 09:06	11/17/10 21:56	71-43-2	
Bromobenzene	ND	ug/kg	58.3	1	11/15/10 09:06	11/17/10 21:56	108-86-1	
Bromochloromethane	ND	ug/kg	58.3	1	11/15/10 09:06	11/17/10 21:56	74-97-5	
Bromodichloromethane	ND	ug/kg	58.3	1	11/15/10 09:06	11/17/10 21:56	75-27-4	
Bromoform	ND	ug/kg	466	1	11/15/10 09:06	11/17/10 21:56	75-25-2	
Bromomethane	ND	ug/kg	583	1	11/15/10 09:06	11/17/10 21:56	74-83-9	
2-Butanone (MEK)	ND	ug/kg	583	1	11/15/10 09:06	11/17/10 21:56	78-93-3	
n-Butylbenzene	ND	ug/kg	58.3	1	11/15/10 09:06	11/17/10 21:56	104-51-8	
sec-Butylbenzene	ND	ug/kg	58.3	1	11/15/10 09:06	11/17/10 21:56	135-98-8	
tert-Butylbenzene	ND	ug/kg	58.3	1	11/15/10 09:06	11/17/10 21:56	98-06-6	
Carbon tetrachloride	ND	ug/kg	233	1	11/15/10 09:06	11/17/10 21:56	56-23-5	
Chlorobenzene	ND	ug/kg	58.3	1	11/15/10 09:06	11/17/10 21:56	108-90-7	
Chloroethane	ND	ug/kg	583	1	11/15/10 09:06	11/17/10 21:56	75-00-3	
Chloroform	ND	ug/kg	58.3	1	11/15/10 09:06	11/17/10 21:56	67-66-3	
Chloromethane	ND	ug/kg	233	1	11/15/10 09:06	11/17/10 21:56	74-87-3	
2-Chlorotoluene	ND	ug/kg	58.3	1	11/15/10 09:06	11/17/10 21:56	95-49-8	
4-Chlorotoluene	ND	ug/kg	58.3	1	11/15/10 09:06	11/17/10 21:56	106-43-4	
1,2-Dibromo-3-chloropropane	ND	ug/kg	233	1	11/15/10 09:06	11/17/10 21:56	96-12-8	
Dibromochloromethane	ND	ug/kg	58.3	1	11/15/10 09:06	11/17/10 21:56	124-48-1	
1,2-Dibromoethane (EDB)	ND	ug/kg	58.3	1	11/15/10 09:06	11/17/10 21:56	106-93-4	
Dibromomethane	ND	ug/kg	58.3	1	11/15/10 09:06	11/17/10 21:56	74-95-3	
1,2-Dichlorobenzene	ND	ug/kg	58.3	1	11/15/10 09:06	11/17/10 21:56	95-50-1	
1,3-Dichlorobenzene	ND	ug/kg	58.3	1	11/15/10 09:06	11/17/10 21:56	541-73-1	
1,4-Dichlorobenzene	ND	ug/kg	58.3	1	11/15/10 09:06	11/17/10 21:56	106-46-7	
Dichlorodifluoromethane	ND	ug/kg	58.3	1	11/15/10 09:06	11/17/10 21:56	75-71-8	
1,1-Dichloroethane	ND	ug/kg	58.3	1	11/15/10 09:06	11/17/10 21:56	75-34-3	
1,2-Dichloroethane	ND	ug/kg	58.3	1	11/15/10 09:06	11/17/10 21:56	107-06-2	
1,1-Dichloroethene	ND	ug/kg	58.3	1	11/15/10 09:06	11/17/10 21:56	75-35-4	
cis-1,2-Dichloroethene	ND	ug/kg	58.3	1	11/15/10 09:06	11/17/10 21:56	156-59-2	
trans-1,2-Dichloroethene	ND	ug/kg	58.3	1	11/15/10 09:06	11/17/10 21:56	156-60-5	
Dichlorofluoromethane	ND	ug/kg	58.3	1	11/15/10 09:06	11/17/10 21:56	75-43-4	
1,2-Dichloropropane	ND	ug/kg	58.3	1	11/15/10 09:06	11/17/10 21:56	78-87-5	
1,3-Dichloropropane	ND	ug/kg	58.3	1	11/15/10 09:06	11/17/10 21:56	142-28-9	
2,2-Dichloropropane	ND	ug/kg	233	1	11/15/10 09:06	11/17/10 21:56	594-20-7	
1,1-Dichloropropene	ND	ug/kg	58.3	1	11/15/10 09:06	11/17/10 21:56	563-58-6	
cis-1,3-Dichloropropene	ND	ug/kg	58.3	1	11/15/10 09:06	11/17/10 21:56	10061-01-5	

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ANALYTICAL RESULTS

Project: 3500919 Sinclair Station 22020
Pace Project No.: 10143006

Sample: HH1 8 **Lab ID: 10143006011** Collected: 11/11/10 14:00 Received: 11/11/10 15:49 Matrix: Solid

Results reported on a "dry-weight" basis

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV 5030 Med Level	Analytical Method: EPA 8260 Preparation Method: EPA 5035/5030B							
trans-1,3-Dichloropropene	ND	ug/kg	58.3	1	11/15/10 09:06	11/17/10 21:56	10061-02-6	
Diethyl ether (Ethyl ether)	ND	ug/kg	233	1	11/15/10 09:06	11/17/10 21:56	60-29-7	
Ethylbenzene	ND	ug/kg	58.3	1	11/15/10 09:06	11/17/10 21:56	100-41-4	
Hexachloro-1,3-butadiene	ND	ug/kg	233	1	11/15/10 09:06	11/17/10 21:56	87-68-3	
Isopropylbenzene (Cumene)	ND	ug/kg	58.3	1	11/15/10 09:06	11/17/10 21:56	98-82-8	
p-Isopropyltoluene	ND	ug/kg	58.3	1	11/15/10 09:06	11/17/10 21:56	99-87-6	
Methylene Chloride	ND	ug/kg	233	1	11/15/10 09:06	11/17/10 21:56	75-09-2	
4-Methyl-2-pentanone (MIBK)	ND	ug/kg	583	1	11/15/10 09:06	11/17/10 21:56	108-10-1	
Methyl-tert-butyl ether	ND	ug/kg	58.3	1	11/15/10 09:06	11/17/10 21:56	1634-04-4	
Naphthalene	ND	ug/kg	233	1	11/15/10 09:06	11/17/10 21:56	91-20-3	
n-Propylbenzene	ND	ug/kg	58.3	1	11/15/10 09:06	11/17/10 21:56	103-65-1	
Styrene	ND	ug/kg	58.3	1	11/15/10 09:06	11/17/10 21:56	100-42-5	
1,1,1,2-Tetrachloroethane	ND	ug/kg	58.3	1	11/15/10 09:06	11/17/10 21:56	630-20-6	
1,1,2,2-Tetrachloroethane	ND	ug/kg	58.3	1	11/15/10 09:06	11/17/10 21:56	79-34-5	
Tetrachloroethene	ND	ug/kg	58.3	1	11/15/10 09:06	11/17/10 21:56	127-18-4	
Tetrahydrofuran	ND	ug/kg	583	1	11/15/10 09:06	11/17/10 21:56	109-99-9	
Toluene	ND	ug/kg	58.3	1	11/15/10 09:06	11/17/10 21:56	108-88-3	
1,2,3-Trichlorobenzene	ND	ug/kg	58.3	1	11/15/10 09:06	11/17/10 21:56	87-61-6	
1,2,4-Trichlorobenzene	ND	ug/kg	58.3	1	11/15/10 09:06	11/17/10 21:56	120-82-1	
1,1,1-Trichloroethane	ND	ug/kg	58.3	1	11/15/10 09:06	11/17/10 21:56	71-55-6	
1,1,2-Trichloroethane	ND	ug/kg	58.3	1	11/15/10 09:06	11/17/10 21:56	79-00-5	
Trichloroethene	ND	ug/kg	58.3	1	11/15/10 09:06	11/17/10 21:56	79-01-6	
Trichlorofluoromethane	ND	ug/kg	58.3	1	11/15/10 09:06	11/17/10 21:56	75-69-4	
1,2,3-Trichloropropane	ND	ug/kg	58.3	1	11/15/10 09:06	11/17/10 21:56	96-18-4	
1,1,2-Trichlorotrifluoroethane	ND	ug/kg	58.3	1	11/15/10 09:06	11/17/10 21:56	76-13-1	
1,2,4-Trimethylbenzene	ND	ug/kg	58.3	1	11/15/10 09:06	11/17/10 21:56	95-63-6	
1,3,5-Trimethylbenzene	ND	ug/kg	58.3	1	11/15/10 09:06	11/17/10 21:56	108-67-8	
Vinyl chloride	ND	ug/kg	23.3	1	11/15/10 09:06	11/17/10 21:56	75-01-4	
Xylene (Total)	ND	ug/kg	175	1	11/15/10 09:06	11/17/10 21:56	1330-20-7	
Dibromofluoromethane (S)	94	%	69-127	1	11/15/10 09:06	11/17/10 21:56	1868-53-7	
1,2-Dichloroethane-d4 (S)	95	%	67-125	1	11/15/10 09:06	11/17/10 21:56	17060-07-0	
Toluene-d8 (S)	100	%	75-144	1	11/15/10 09:06	11/17/10 21:56	2037-26-5	
4-Bromofluorobenzene (S)	92	%	75-132	1	11/15/10 09:06	11/17/10 21:56	460-00-4	

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ANALYTICAL RESULTS

Project: 3500919 Sinclair Station 22020
Pace Project No.: 10143006

Sample: HH2 8 **Lab ID: 10143006012** Collected: 11/11/10 14:15 Received: 11/11/10 15:49 Matrix: Solid

Results reported on a "dry-weight" basis

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
WIDRO GCS	Analytical Method: WI MOD DRO Preparation Method: WI MOD DRO							
Diesel Range Organics	1930	mg/kg	460	50	11/15/10 06:55	11/16/10 11:38		T7
n-Triacontane (S)	0	%	50-150	50	11/15/10 06:55	11/16/10 11:38		S4
Dry Weight	Analytical Method: % Moisture							
Percent Moisture	10.1	%	0.10	1		11/17/10 00:00		
8260 MSV 5030 Med Level	Analytical Method: EPA 8260 Preparation Method: EPA 5035/5030B							
Acetone	ND	ug/kg	2710	5	11/15/10 09:06	11/18/10 11:14	67-64-1	
Allyl chloride	ND	ug/kg	1080	5	11/15/10 09:06	11/18/10 11:14	107-05-1	
Benzene	ND	ug/kg	108	5	11/15/10 09:06	11/18/10 11:14	71-43-2	
Bromobenzene	ND	ug/kg	271	5	11/15/10 09:06	11/18/10 11:14	108-86-1	
Bromochloromethane	ND	ug/kg	271	5	11/15/10 09:06	11/18/10 11:14	74-97-5	
Bromodichloromethane	ND	ug/kg	271	5	11/15/10 09:06	11/18/10 11:14	75-27-4	
Bromoform	ND	ug/kg	2170	5	11/15/10 09:06	11/18/10 11:14	75-25-2	
Bromomethane	ND	ug/kg	2710	5	11/15/10 09:06	11/18/10 11:14	74-83-9	
2-Butanone (MEK)	ND	ug/kg	2710	5	11/15/10 09:06	11/18/10 11:14	78-93-3	
n-Butylbenzene	9010	ug/kg	271	5	11/15/10 09:06	11/18/10 11:14	104-51-8	
sec-Butylbenzene	3020	ug/kg	271	5	11/15/10 09:06	11/18/10 11:14	135-98-8	
tert-Butylbenzene	ND	ug/kg	271	5	11/15/10 09:06	11/18/10 11:14	98-06-6	
Carbon tetrachloride	ND	ug/kg	1080	5	11/15/10 09:06	11/18/10 11:14	56-23-5	
Chlorobenzene	ND	ug/kg	271	5	11/15/10 09:06	11/18/10 11:14	108-90-7	
Chloroethane	ND	ug/kg	2710	5	11/15/10 09:06	11/18/10 11:14	75-00-3	
Chloroform	ND	ug/kg	271	5	11/15/10 09:06	11/18/10 11:14	67-66-3	
Chloromethane	ND	ug/kg	1080	5	11/15/10 09:06	11/18/10 11:14	74-87-3	
2-Chlorotoluene	ND	ug/kg	271	5	11/15/10 09:06	11/18/10 11:14	95-49-8	
4-Chlorotoluene	ND	ug/kg	271	5	11/15/10 09:06	11/18/10 11:14	106-43-4	
1,2-Dibromo-3-chloropropane	ND	ug/kg	1080	5	11/15/10 09:06	11/18/10 11:14	96-12-8	
Dibromochloromethane	ND	ug/kg	271	5	11/15/10 09:06	11/18/10 11:14	124-48-1	
1,2-Dibromoethane (EDB)	ND	ug/kg	271	5	11/15/10 09:06	11/18/10 11:14	106-93-4	
Dibromomethane	ND	ug/kg	271	5	11/15/10 09:06	11/18/10 11:14	74-95-3	
1,2-Dichlorobenzene	ND	ug/kg	271	5	11/15/10 09:06	11/18/10 11:14	95-50-1	
1,3-Dichlorobenzene	ND	ug/kg	271	5	11/15/10 09:06	11/18/10 11:14	541-73-1	
1,4-Dichlorobenzene	ND	ug/kg	271	5	11/15/10 09:06	11/18/10 11:14	106-46-7	
Dichlorodifluoromethane	ND	ug/kg	271	5	11/15/10 09:06	11/18/10 11:14	75-71-8	
1,1-Dichloroethane	ND	ug/kg	271	5	11/15/10 09:06	11/18/10 11:14	75-34-3	
1,2-Dichloroethane	ND	ug/kg	271	5	11/15/10 09:06	11/18/10 11:14	107-06-2	
1,1-Dichloroethene	ND	ug/kg	271	5	11/15/10 09:06	11/18/10 11:14	75-35-4	
cis-1,2-Dichloroethene	ND	ug/kg	271	5	11/15/10 09:06	11/18/10 11:14	156-59-2	
trans-1,2-Dichloroethene	ND	ug/kg	271	5	11/15/10 09:06	11/18/10 11:14	156-60-5	
Dichlorofluoromethane	ND	ug/kg	271	5	11/15/10 09:06	11/18/10 11:14	75-43-4	
1,2-Dichloropropane	ND	ug/kg	271	5	11/15/10 09:06	11/18/10 11:14	78-87-5	
1,3-Dichloropropane	ND	ug/kg	271	5	11/15/10 09:06	11/18/10 11:14	142-28-9	
2,2-Dichloropropane	ND	ug/kg	1080	5	11/15/10 09:06	11/18/10 11:14	594-20-7	
1,1-Dichloropropene	ND	ug/kg	271	5	11/15/10 09:06	11/18/10 11:14	563-58-6	
cis-1,3-Dichloropropene	ND	ug/kg	271	5	11/15/10 09:06	11/18/10 11:14	10061-01-5	

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ANALYTICAL RESULTS

Project: 3500919 Sinclair Station 22020
Pace Project No.: 10143006

Sample: HH2 8 Lab ID: **10143006012** Collected: 11/11/10 14:15 Received: 11/11/10 15:49 Matrix: Solid

Results reported on a "dry-weight" basis

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV 5030 Med Level	Analytical Method: EPA 8260 Preparation Method: EPA 5035/5030B							
trans-1,3-Dichloropropene	ND	ug/kg	271	5	11/15/10 09:06	11/18/10 11:14	10061-02-6	
Diethyl ether (Ethyl ether)	ND	ug/kg	1080	5	11/15/10 09:06	11/18/10 11:14	60-29-7	
Ethylbenzene	432	ug/kg	271	5	11/15/10 09:06	11/18/10 11:14	100-41-4	
Hexachloro-1,3-butadiene	ND	ug/kg	1080	5	11/15/10 09:06	11/18/10 11:14	87-68-3	
Isopropylbenzene (Cumene)	1380	ug/kg	271	5	11/15/10 09:06	11/18/10 11:14	98-82-8	
p-Isopropyltoluene	4600	ug/kg	271	5	11/15/10 09:06	11/18/10 11:14	99-87-6	
Methylene Chloride	ND	ug/kg	1080	5	11/15/10 09:06	11/18/10 11:14	75-09-2	
4-Methyl-2-pentanone (MIBK)	ND	ug/kg	2710	5	11/15/10 09:06	11/18/10 11:14	108-10-1	
Methyl-tert-butyl ether	ND	ug/kg	271	5	11/15/10 09:06	11/18/10 11:14	1634-04-4	
Naphthalene	2650	ug/kg	1080	5	11/15/10 09:06	11/18/10 11:14	91-20-3	
n-Propylbenzene	2850	ug/kg	271	5	11/15/10 09:06	11/18/10 11:14	103-65-1	
Styrene	ND	ug/kg	271	5	11/15/10 09:06	11/18/10 11:14	100-42-5	
1,1,1,2-Tetrachloroethane	ND	ug/kg	271	5	11/15/10 09:06	11/18/10 11:14	630-20-6	
1,1,2,2-Tetrachloroethane	ND	ug/kg	271	5	11/15/10 09:06	11/18/10 11:14	79-34-5	
Tetrachloroethene	ND	ug/kg	271	5	11/15/10 09:06	11/18/10 11:14	127-18-4	
Tetrahydrofuran	ND	ug/kg	2710	5	11/15/10 09:06	11/18/10 11:14	109-99-9	
Toluene	ND	ug/kg	271	5	11/15/10 09:06	11/18/10 11:14	108-88-3	
1,2,3-Trichlorobenzene	ND	ug/kg	271	5	11/15/10 09:06	11/18/10 11:14	87-61-6	
1,2,4-Trichlorobenzene	ND	ug/kg	271	5	11/15/10 09:06	11/18/10 11:14	120-82-1	
1,1,1-Trichloroethane	ND	ug/kg	271	5	11/15/10 09:06	11/18/10 11:14	71-55-6	
1,1,2-Trichloroethane	ND	ug/kg	271	5	11/15/10 09:06	11/18/10 11:14	79-00-5	
Trichloroethene	ND	ug/kg	271	5	11/15/10 09:06	11/18/10 11:14	79-01-6	
Trichlorofluoromethane	ND	ug/kg	271	5	11/15/10 09:06	11/18/10 11:14	75-69-4	
1,2,3-Trichloropropane	ND	ug/kg	271	5	11/15/10 09:06	11/18/10 11:14	96-18-4	
1,1,2-Trichlorotrifluoroethane	ND	ug/kg	271	5	11/15/10 09:06	11/18/10 11:14	76-13-1	
1,2,4-Trimethylbenzene	30600	ug/kg	271	5	11/15/10 09:06	11/18/10 11:14	95-63-6	
1,3,5-Trimethylbenzene	9510	ug/kg	271	5	11/15/10 09:06	11/18/10 11:14	108-67-8	
Vinyl chloride	ND	ug/kg	108	5	11/15/10 09:06	11/18/10 11:14	75-01-4	
Xylene (Total)	2140	ug/kg	814	5	11/15/10 09:06	11/18/10 11:14	1330-20-7	
Dibromofluoromethane (S)	87	%	69-127	5	11/15/10 09:06	11/18/10 11:14	1868-53-7	
1,2-Dichloroethane-d4 (S)	89	%	67-125	5	11/15/10 09:06	11/18/10 11:14	17060-07-0	
Toluene-d8 (S)	101	%	75-144	5	11/15/10 09:06	11/18/10 11:14	2037-26-5	
4-Bromofluorobenzene (S)	82	%	75-132	5	11/15/10 09:06	11/18/10 11:14	460-00-4	

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QUALITY CONTROL DATA

Project: 3500919 Sinclair Station 22020
Pace Project No.: 10143006

QC Batch: OEXT/14251 Analysis Method: WI MOD DRO
QC Batch Method: WI MOD DRO Analysis Description: WIDRO GCS
Associated Lab Samples: 10143006001, 10143006002, 10143006007, 10143006008, 10143006009, 10143006010, 10143006011, 10143006012

METHOD BLANK: 891785 Matrix: Solid
Associated Lab Samples: 10143006001, 10143006002, 10143006007, 10143006008, 10143006009, 10143006010, 10143006011, 10143006012

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Diesel Range Organics	mg/kg	ND	5.0	11/15/10 22:18	
n-Triacontane (S)	%	74	50-150	11/15/10 22:18	

LABORATORY CONTROL SAMPLE & LCSD: 891786 891787

Parameter	Units	Spike Conc.	LCS Result	LCSD Result	LCS % Rec	LCSD % Rec	% Rec Limits	RPD	Max RPD	Qualifiers
Diesel Range Organics	mg/kg	80	57.2	58.2	72	73	70-120	2	20	
n-Triacontane (S)	%				86	82	50-150			

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QUALITY CONTROL DATA

Project: 3500919 Sinclair Station 22020
Pace Project No.: 10143006

QC Batch: GCV/7583 Analysis Method: WI MOD GRO
QC Batch Method: TPH GRO/PVOC WI ext. Analysis Description: WIGRO Solid GCV
Associated Lab Samples: 10143006001, 10143006002, 10143006003, 10143006004, 10143006005, 10143006006, 10143006007, 10143006008, 10143006009, 10143006010

METHOD BLANK: 890729 Matrix: Solid
Associated Lab Samples: 10143006001, 10143006002, 10143006003, 10143006004, 10143006005, 10143006006, 10143006007, 10143006008, 10143006009, 10143006010

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Benzene	mg/kg	ND	0.050	11/13/10 08:02	
Ethylbenzene	mg/kg	ND	0.050	11/13/10 08:02	
Gasoline Range Organics	mg/kg	ND	5.0	11/13/10 08:02	
Methyl-tert-butyl ether	mg/kg	ND	0.25	11/13/10 08:02	
Toluene	mg/kg	ND	0.050	11/13/10 08:02	
Xylene (Total)	mg/kg	ND	0.15	11/13/10 08:02	
a,a,a-Trifluorotoluene (S)	%	104	80-125	11/13/10 08:02	

LABORATORY CONTROL SAMPLE & LCSD: 890730 890731

Parameter	Units	Spike Conc.	LCS Result	LCSD Result	LCS % Rec	LCSD % Rec	% Rec Limits	RPD	Max RPD	Qualifiers
Benzene	mg/kg	5	5.0	5.0	100	99	80-120	.8	20	
Ethylbenzene	mg/kg	5	5.0	4.8	101	96	80-120	5	20	
Gasoline Range Organics	mg/kg	50	53.0	51.0	106	102	80-120	4	20	
Methyl-tert-butyl ether	mg/kg	5	5.1	5.2	102	103	80-120	1	20	
Toluene	mg/kg	5	4.9	4.8	98	97	80-120	1	20	
Xylene (Total)	mg/kg	15	15.2	14.6	102	97	80-120	4	20	
a,a,a-Trifluorotoluene (S)	%				98	103	80-125			

MATRIX SPIKE SAMPLE: 890732

Parameter	Units	10142898008 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Benzene	mg/kg	ND	5.7	7.9	139	80-120	M1
Ethylbenzene	mg/kg	ND	5.7	7.7	137	80-120	M1
Gasoline Range Organics	mg/kg	ND	56.3	81.9	145	80-120	M1
Methyl-tert-butyl ether	mg/kg	ND	5.7	6.7	119	80-120	
Toluene	mg/kg	ND	5.7	7.8	138	80-120	M1
Xylene (Total)	mg/kg	ND	17	24.2	143	80-120	ES
a,a,a-Trifluorotoluene (S)	%				102	80-125	

SAMPLE DUPLICATE: 890733

Parameter	Units	10142898009 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	
Methyl-tert-butyl ether	mg/kg	ND	ND		20	

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QUALITY CONTROL DATA

Project: 3500919 Sinclair Station 22020
Pace Project No.: 10143006

SAMPLE DUPLICATE: 890733

Parameter	Units	10142898009 Result	Dup Result	RPD	Max RPD	Qualifiers
Toluene	mg/kg	ND	ND		20	
Xylene (Total)	mg/kg	ND	ND		20	
a,a,a-Trifluorotoluene (S)	%	105	106	7		

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QUALITY CONTROL DATA

Project: 3500919 Sinclair Station 22020
Pace Project No.: 10143006

QC Batch: MPRP/23592 Analysis Method: % Moisture
QC Batch Method: % Moisture Analysis Description: Dry Weight/Percent Moisture
Associated Lab Samples: 10143006001, 10143006002, 10143006003, 10143006004, 10143006005, 10143006006, 10143006007, 10143006008, 10143006009, 10143006010, 10143006011, 10143006012

SAMPLE DUPLICATE: 894181

Parameter	Units	10142997001 Result	Dup Result	RPD	Max RPD	Qualifiers
Percent Moisture	%	2.8	2.8	1	30	

SAMPLE DUPLICATE: 894182

Parameter	Units	10143052003 Result	Dup Result	RPD	Max RPD	Qualifiers
Percent Moisture	%	10.7	11.0	3	30	

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QUALITY CONTROL DATA

Project: 3500919 Sinclair Station 22020
Pace Project No.: 10143006

QC Batch: MSV/15792
QC Batch Method: EPA 5035/5030B
Analysis Method: EPA 8260
Analysis Description: 8260 MSV 5030 Med Level
Associated Lab Samples: 10143006011, 10143006012

METHOD BLANK: 891890
Matrix: Solid
Associated Lab Samples: 10143006011, 10143006012

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
1,1,1,2-Tetrachloroethane	ug/kg	ND	50.0	11/16/10 03:38	
1,1,1-Trichloroethane	ug/kg	ND	50.0	11/16/10 03:38	
1,1,2,2-Tetrachloroethane	ug/kg	ND	50.0	11/16/10 03:38	
1,1,2-Trichloroethane	ug/kg	ND	50.0	11/16/10 03:38	
1,1,2-Trichlorotrifluoroethane	ug/kg	ND	50.0	11/16/10 03:38	
1,1-Dichloroethane	ug/kg	ND	50.0	11/16/10 03:38	
1,1-Dichloroethene	ug/kg	ND	50.0	11/16/10 03:38	
1,1-Dichloropropene	ug/kg	ND	50.0	11/16/10 03:38	
1,2,3-Trichlorobenzene	ug/kg	ND	50.0	11/16/10 03:38	
1,2,3-Trichloropropane	ug/kg	ND	50.0	11/16/10 03:38	
1,2,4-Trichlorobenzene	ug/kg	ND	50.0	11/16/10 03:38	
1,2,4-Trimethylbenzene	ug/kg	ND	50.0	11/16/10 03:38	
1,2-Dibromo-3-chloropropane	ug/kg	ND	200	11/16/10 03:38	
1,2-Dibromoethane (EDB)	ug/kg	ND	50.0	11/16/10 03:38	
1,2-Dichlorobenzene	ug/kg	ND	50.0	11/16/10 03:38	
1,2-Dichloroethane	ug/kg	ND	50.0	11/16/10 03:38	
1,2-Dichloropropane	ug/kg	ND	50.0	11/16/10 03:38	
1,3,5-Trimethylbenzene	ug/kg	ND	50.0	11/16/10 03:38	
1,3-Dichlorobenzene	ug/kg	ND	50.0	11/16/10 03:38	
1,3-Dichloropropane	ug/kg	ND	50.0	11/16/10 03:38	
1,4-Dichlorobenzene	ug/kg	ND	50.0	11/16/10 03:38	
2,2-Dichloropropane	ug/kg	ND	200	11/16/10 03:38	
2-Butanone (MEK)	ug/kg	ND	500	11/16/10 03:38	
2-Chlorotoluene	ug/kg	ND	50.0	11/16/10 03:38	
4-Chlorotoluene	ug/kg	ND	50.0	11/16/10 03:38	
4-Methyl-2-pentanone (MIBK)	ug/kg	ND	500	11/16/10 03:38	
Acetone	ug/kg	ND	500	11/16/10 03:38	
Allyl chloride	ug/kg	ND	200	11/16/10 03:38	
Benzene	ug/kg	ND	20.0	11/16/10 03:38	
Bromobenzene	ug/kg	ND	50.0	11/16/10 03:38	
Bromochloromethane	ug/kg	ND	50.0	11/16/10 03:38	
Bromodichloromethane	ug/kg	ND	50.0	11/16/10 03:38	
Bromoform	ug/kg	ND	400	11/16/10 03:38	
Bromomethane	ug/kg	ND	500	11/16/10 03:38	
Carbon tetrachloride	ug/kg	ND	200	11/16/10 03:38	
Chlorobenzene	ug/kg	ND	50.0	11/16/10 03:38	
Chloroethane	ug/kg	ND	500	11/16/10 03:38	
Chloroform	ug/kg	ND	50.0	11/16/10 03:38	
Chloromethane	ug/kg	ND	200	11/16/10 03:38	
cis-1,2-Dichloroethene	ug/kg	ND	50.0	11/16/10 03:38	
cis-1,3-Dichloropropene	ug/kg	ND	50.0	11/16/10 03:38	
Dibromochloromethane	ug/kg	ND	50.0	11/16/10 03:38	
Dibromomethane	ug/kg	ND	50.0	11/16/10 03:38	

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QUALITY CONTROL DATA

Project: 3500919 Sinclair Station 22020
Pace Project No.: 10143006

METHOD BLANK: 891890 Matrix: Solid

Associated Lab Samples: 10143006011, 10143006012

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Dichlorodifluoromethane	ug/kg	ND	50.0	11/16/10 03:38	
Dichlorofluoromethane	ug/kg	ND	50.0	11/16/10 03:38	
Diethyl ether (Ethyl ether)	ug/kg	ND	200	11/16/10 03:38	
Ethylbenzene	ug/kg	ND	50.0	11/16/10 03:38	
Hexachloro-1,3-butadiene	ug/kg	ND	200	11/16/10 03:38	
Isopropylbenzene (Cumene)	ug/kg	ND	50.0	11/16/10 03:38	
Methyl-tert-butyl ether	ug/kg	ND	50.0	11/16/10 03:38	
Methylene Chloride	ug/kg	ND	200	11/16/10 03:38	
n-Butylbenzene	ug/kg	ND	50.0	11/16/10 03:38	
n-Propylbenzene	ug/kg	ND	50.0	11/16/10 03:38	
Naphthalene	ug/kg	ND	200	11/16/10 03:38	
p-Isopropyltoluene	ug/kg	ND	50.0	11/16/10 03:38	
sec-Butylbenzene	ug/kg	ND	50.0	11/16/10 03:38	
Styrene	ug/kg	ND	50.0	11/16/10 03:38	
tert-Butylbenzene	ug/kg	ND	50.0	11/16/10 03:38	
Tetrachloroethene	ug/kg	ND	50.0	11/16/10 03:38	
Tetrahydrofuran	ug/kg	ND	500	11/16/10 03:38	
Toluene	ug/kg	ND	50.0	11/16/10 03:38	
trans-1,2-Dichloroethene	ug/kg	ND	50.0	11/16/10 03:38	
trans-1,3-Dichloropropene	ug/kg	ND	50.0	11/16/10 03:38	
Trichloroethene	ug/kg	ND	50.0	11/16/10 03:38	
Trichlorofluoromethane	ug/kg	ND	50.0	11/16/10 03:38	
Vinyl chloride	ug/kg	ND	20.0	11/16/10 03:38	
Xylene (Total)	ug/kg	ND	150	11/16/10 03:38	
1,2-Dichloroethane-d4 (S)	%	122	67-125	11/16/10 03:38	
4-Bromofluorobenzene (S)	%	128	75-132	11/16/10 03:38	
Dibromofluoromethane (S)	%	118	69-127	11/16/10 03:38	
Toluene-d8 (S)	%	127	75-144	11/16/10 03:38	

LABORATORY CONTROL SAMPLE & LCSD: 891891 891892

Parameter	Units	Spike Conc.	LCS Result	LCSD Result	LCS % Rec	LCSD % Rec	% Rec Limits	RPD	Max RPD	Qualifiers
1,1,1,2-Tetrachloroethane	ug/kg	1000	1050	1190	105	119	75-125	12	20	
1,1,1-Trichloroethane	ug/kg	1000	1060	1180	106	118	75-136	11	20	
1,1,2,2-Tetrachloroethane	ug/kg	1000	982	1130	98	113	70-135	14	20	
1,1,2-Trichloroethane	ug/kg	1000	1050	1170	105	117	75-126	11	20	
1,1,2-Trichlorotrifluoroethane	ug/kg	1000	1130	1080	113	108	47-150	5	20	
1,1-Dichloroethane	ug/kg	1000	1040	1160	104	116	75-130	11	20	
1,1-Dichloroethene	ug/kg	1000	989	1070	99	107	69-134	8	20	
1,1-Dichloropropene	ug/kg	1000	994	1060	99	106	70-130	7	20	
1,2,3-Trichlorobenzene	ug/kg	1000	1170	1250	117	125	75-141	6	20	
1,2,3-Trichloropropane	ug/kg	1000	925	1120	93	112	71-136	19	20	
1,2,4-Trichlorobenzene	ug/kg	1000	1180	1240	118	124	75-139	6	20	
1,2,4-Trimethylbenzene	ug/kg	1000	1030	1170	103	117	75-126	13	20	
1,2-Dibromo-3-chloropropane	ug/kg	1000	1070	1170	107	117	58-150	10	20	

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QUALITY CONTROL DATA

Project: 3500919 Sinclair Station 22020
Pace Project No.: 10143006

LABORATORY CONTROL SAMPLE & LCSD: 891891 891892

Parameter	Units	Spike Conc.	LCS Result	LCSD Result	LCS % Rec	LCSD % Rec	% Rec Limits	RPD	Max RPD	Qualifiers
1,2-Dibromoethane (EDB)	ug/kg	1000	1020	1120	102	112	75-128	10	20	
1,2-Dichlorobenzene	ug/kg	1000	1030	1160	103	116	75-125	12	20	
1,2-Dichloroethane	ug/kg	1000	1010	1080	101	108	73-130	7	20	
1,2-Dichloropropane	ug/kg	1000	987	1150	99	115	75-125	15	20	
1,3,5-Trimethylbenzene	ug/kg	1000	1030	1190	103	119	75-125	14	20	
1,3-Dichlorobenzene	ug/kg	1000	1020	1170	102	117	75-125	14	20	
1,3-Dichloropropane	ug/kg	1000	1030	1120	103	112	75-125	9	20	
1,4-Dichlorobenzene	ug/kg	1000	1030	1140	103	114	75-131	11	20	
2,2-Dichloropropane	ug/kg	1000	940	980	94	98	42-150	4	20	
2-Butanone (MEK)	ug/kg	1000	1050	1090	105	109	44-150	4	20	
2-Chlorotoluene	ug/kg	1000	972	1140	97	114	75-125	16	20	
4-Chlorotoluene	ug/kg	1000	988	1140	99	114	75-125	14	20	
4-Methyl-2-pentanone (MIBK)	ug/kg	1000	1040	1190	104	119	56-147	13	20	
Acetone	ug/kg	2500	2200	3040	88	121	57-146	32	20	D6
Allyl chloride	ug/kg	1000	1070	1170	107	117	75-128	10	20	
Benzene	ug/kg	1000	1000	1130	100	113	69-134	12	20	
Bromobenzene	ug/kg	1000	1080	1170	108	117	75-125	8	20	
Bromochloromethane	ug/kg	1000	1150	1140	115	114	75-125	1	20	
Bromodichloromethane	ug/kg	1000	1030	1140	103	114	75-129	10	20	
Bromoform	ug/kg	1000	1020	1130	102	113	73-141	10	20	
Bromomethane	ug/kg	1000	1050	1060	105	106	71-142	1	20	
Carbon tetrachloride	ug/kg	1000	1020	1120	102	112	73-141	10	20	
Chlorobenzene	ug/kg	1000	1040	1150	104	115	75-125	10	20	
Chloroethane	ug/kg	1000	1050	1090	105	109	65-137	4	20	
Chloroform	ug/kg	1000	1010	1100	101	110	75-127	9	20	
Chloromethane	ug/kg	1000	930	956	93	96	60-125	3	20	
cis-1,2-Dichloroethene	ug/kg	1000	1040	1070	104	107	75-129	3	20	
cis-1,3-Dichloropropene	ug/kg	1000	996	1120	100	112	75-134	12	20	
Dibromochloromethane	ug/kg	1000	1060	1160	106	116	75-129	9	20	
Dibromomethane	ug/kg	1000	1000	1140	100	114	75-127	12	20	
Dichlorodifluoromethane	ug/kg	1000	886	929	89	93	36-134	5	20	
Dichlorofluoromethane	ug/kg	1000	1040	1100	104	110	53-142	5	20	
Diethyl ether (Ethyl ether)	ug/kg	1000	966	1040	97	104	64-131	7	20	
Ethylbenzene	ug/kg	1000	1060	1140	106	114	75-125	7	20	
Hexachloro-1,3-butadiene	ug/kg	500	530	591	106	118	70-150	11	20	
Isopropylbenzene (Cumene)	ug/kg	1000	1100	1170	110	117	75-127	6	20	
Methyl-tert-butyl ether	ug/kg	1000	962	1090	96	109	69-138	13	20	
Methylene Chloride	ug/kg	1000	1010	1050	101	105	69-130	4	20	
n-Butylbenzene	ug/kg	1000	1110	1240	111	124	75-135	11	20	
n-Propylbenzene	ug/kg	1000	1000	1170	100	117	75-125	15	20	
Naphthalene	ug/kg	1000	1150	1220	115	122	75-142	5	20	
p-Isopropyltoluene	ug/kg	1000	1120	1220	112	122	75-133	9	20	
sec-Butylbenzene	ug/kg	1000	1090	1190	109	119	75-129	9	20	
Styrene	ug/kg	1000	1010	1100	101	110	75-125	8	20	
tert-Butylbenzene	ug/kg	1000	1020	1150	102	115	75-128	13	20	
Tetrachloroethene	ug/kg	1000	1130	1100	113	110	75-130	3	20	
Tetrahydrofuran	ug/kg	10000	9690	11100	97	111	53-136	14	20	
Toluene	ug/kg	1000	997	1140	100	114	75-125	13	20	

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QUALITY CONTROL DATA

Project: 3500919 Sinclair Station 22020
Pace Project No.: 10143006

LABORATORY CONTROL SAMPLE & LCSD: 891891 891892

Parameter	Units	Spike Conc.	LCS Result	LCSD Result	LCS % Rec	LCSD % Rec	% Rec Limits	RPD	Max RPD	Qualifiers
trans-1,2-Dichloroethene	ug/kg	1000	966	1120	97	112	75-132	14	20	
trans-1,3-Dichloropropene	ug/kg	1000	955	1070	95	107	75-128	12	20	
Trichloroethene	ug/kg	1000	997	1160	100	116	75-125	15	20	
Trichlorofluoromethane	ug/kg	1000	1010	1110	101	111	35-150	10	20	
Vinyl chloride	ug/kg	1000	912	1040	91	104	60-126	13	20	
Xylene (Total)	ug/kg	3000	3190	3370	106	112	75-125	5	20	
1,2-Dichloroethane-d4 (S)	%				104	119	67-125			
4-Bromofluorobenzene (S)	%				101	122	75-132			
Dibromofluoromethane (S)	%				107	120	69-127			
Toluene-d8 (S)	%				107	122	75-144			

MATRIX SPIKE SAMPLE: 891893

Parameter	Units	10142908010 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
1,1,1,2-Tetrachloroethane	ug/kg	ND	999	1330	133	49-150	
1,1,1-Trichloroethane	ug/kg	ND	999	1390	139	58-150	
1,1,2,2-Tetrachloroethane	ug/kg	ND	999	1260	126	54-146	
1,1,2-Trichloroethane	ug/kg	ND	999	1360	136	48-154	
1,1,2-Trichlorotrifluoroethane	ug/kg	ND	999	1550	155	47-150	M1
1,1-Dichloroethane	ug/kg	ND	999	1330	133	57-143	
1,1-Dichloroethene	ug/kg	ND	999	1300	130	52-150	
1,1-Dichloropropene	ug/kg	ND	999	1320	132	58-147	
1,2,3-Trichlorobenzene	ug/kg	ND	999	1400	140	36-150	
1,2,3-Trichloropropane	ug/kg	ND	999	1260	126	56-147	
1,2,4-Trichlorobenzene	ug/kg	ND	999	1470	147	30-150	
1,2,4-Trimethylbenzene	ug/kg	ND	999	1310	131	38-150	
1,2-Dibromo-3-chloropropane	ug/kg	ND	999	1240	124	30-150	
1,2-Dibromoethane (EDB)	ug/kg	ND	999	1340	134	63-144	
1,2-Dichlorobenzene	ug/kg	ND	999	1280	128	45-150	
1,2-Dichloroethane	ug/kg	ND	999	1250	125	39-150	
1,2-Dichloropropane	ug/kg	ND	999	1190	119	60-135	
1,3,5-Trimethylbenzene	ug/kg	ND	999	1280	128	30-150	
1,3-Dichlorobenzene	ug/kg	ND	999	1310	131	42-150	
1,3-Dichloropropane	ug/kg	ND	999	1310	131	62-129	M1
1,4-Dichlorobenzene	ug/kg	ND	999	1280	128	45-150	
2,2-Dichloropropane	ug/kg	ND	999	1290	129	30-150	
2-Butanone (MEK)	ug/kg	ND	999	1330	133	37-150	
2-Chlorotoluene	ug/kg	ND	999	1220	122	30-150	
4-Chlorotoluene	ug/kg	ND	999	1260	126	40-150	
4-Methyl-2-pentanone (MIBK)	ug/kg	ND	999	1280	128	45-150	
Acetone	ug/kg	ND	2500	2910	116	30-150	
Allyl chloride	ug/kg	ND	999	1340	134	30-150	
Benzene	ug/kg	ND	999	1290	129	57-140	
Bromobenzene	ug/kg	ND	999	1230	123	57-141	
Bromochloromethane	ug/kg	ND	999	1380	138	58-140	
Bromodichloromethane	ug/kg	ND	999	1270	127	54-146	
Bromoform	ug/kg	ND	999	1370	137	35-150	

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(612)607-1700

QUALITY CONTROL DATA

Project: 3500919 Sinclair Station 22020
Pace Project No.: 10143006

MATRIX SPIKE SAMPLE: 891893

Parameter	Units	10142908010 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Bromomethane	ug/kg	ND	999	1220	122	30-150	
Carbon tetrachloride	ug/kg	ND	999	1320	132	34-150	
Chlorobenzene	ug/kg	ND	999	1350	135	54-142	
Chloroethane	ug/kg	ND	999	1440	144	30-150	
Chloroform	ug/kg	ND	999	1260	126	60-136	
Chloromethane	ug/kg	ND	999	1160	117	44-129	
cis-1,2-Dichloroethene	ug/kg	ND	999	1260	126	54-144	
cis-1,3-Dichloropropene	ug/kg	ND	999	1250	125	52-141	
Dibromochloromethane	ug/kg	ND	999	1340	134	43-150	
Dibromomethane	ug/kg	ND	999	1190	119	55-139	
Dichlorodifluoromethane	ug/kg	ND	999	1300	130	30-150	
Dichlorofluoromethane	ug/kg	ND	999	1350	136	53-142	
Diethyl ether (Ethyl ether)	ug/kg	ND	999	1150	115	59-135	
Ethylbenzene	ug/kg	ND	999	1350	135	51-150	
Hexachloro-1,3-butadiene	ug/kg	ND	500	753	151	30-150	M1
Isopropylbenzene (Cumene)	ug/kg	ND	999	1430	143	41-150	
Methyl-tert-butyl ether	ug/kg	ND	999	1230	123	52-139	
Methylene Chloride	ug/kg	ND	999	1230	123	56-138	
n-Butylbenzene	ug/kg	ND	999	1380	138	30-150	
n-Propylbenzene	ug/kg	ND	999	1340	134	30-150	
Naphthalene	ug/kg	ND	999	1440	144	30-150	
p-Isopropyltoluene	ug/kg	ND	999	1400	140	30-150	
sec-Butylbenzene	ug/kg	ND	999	1340	134	30-150	
Styrene	ug/kg	ND	999	1290	129	40-150	
tert-Butylbenzene	ug/kg	ND	999	1320	132	61-150	
Tetrachloroethene	ug/kg	ND	999	1430	144	30-150	
Tetrahydrofuran	ug/kg	ND	9990	12800	129	53-136	
Toluene	ug/kg	ND	999	1360	136	50-146	
trans-1,2-Dichloroethene	ug/kg	ND	999	1340	134	58-139	
trans-1,3-Dichloropropene	ug/kg	ND	999	1210	121	43-146	
Trichloroethene	ug/kg	ND	999	1290	129	30-150	
Trichlorofluoromethane	ug/kg	ND	999	1420	142	30-150	
Vinyl chloride	ug/kg	ND	999	1250	125	45-142	
Xylene (Total)	ug/kg	ND	3000	4030	134	43-150	
1,2-Dichloroethane-d4 (S)	%				130	67-125	S0
4-Bromofluorobenzene (S)	%				125	75-132	
Dibromofluoromethane (S)	%				127	69-127	
Toluene-d8 (S)	%				132	75-144	

SAMPLE DUPLICATE: 891894

Parameter	Units	10142908011 Result	Dup Result	RPD	Max RPD	Qualifiers
1,1,1,2-Tetrachloroethane	ug/kg	ND	ND		30	
1,1,1-Trichloroethane	ug/kg	ND	ND		30	
1,1,2,2-Tetrachloroethane	ug/kg	ND	ND		30	
1,1,2-Trichloroethane	ug/kg	ND	ND		30	
1,1,2-Trichlorotrifluoroethane	ug/kg	ND	ND		30	

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QUALITY CONTROL DATA

Project: 3500919 Sinclair Station 22020
Pace Project No.: 10143006

SAMPLE DUPLICATE: 891894

Parameter	Units	10142808011 Result	Dup Result	RPD	Max RPD	Qualifiers
1,1-Dichloroethane	ug/kg	ND	ND		30	
1,1-Dichloroethene	ug/kg	ND	ND		30	
1,1-Dichloropropene	ug/kg	ND	ND		30	
1,2,3-Trichlorobenzene	ug/kg	ND	ND		30	
1,2,3-Trichloropropane	ug/kg	ND	ND		30	
1,2,4-Trichlorobenzene	ug/kg	ND	ND		30	
1,2,4-Trimethylbenzene	ug/kg	ND	ND		30	
1,2-Dibromo-3-chloropropane	ug/kg	ND	ND		30	
1,2-Dibromoethane (EDB)	ug/kg	ND	ND		30	
1,2-Dichlorobenzene	ug/kg	ND	ND		30	
1,2-Dichloroethane	ug/kg	ND	ND		30	
1,2-Dichloropropane	ug/kg	ND	ND		30	
1,3,5-Trimethylbenzene	ug/kg	ND	ND		30	
1,3-Dichlorobenzene	ug/kg	ND	ND		30	
1,3-Dichloropropane	ug/kg	ND	ND		30	
1,4-Dichlorobenzene	ug/kg	ND	ND		30	
2,2-Dichloropropane	ug/kg	ND	ND		30	
2-Butanone (MEK)	ug/kg	ND	ND		30	
2-Chlorotoluene	ug/kg	ND	ND		30	
4-Chlorotoluene	ug/kg	ND	ND		30	
4-Methyl-2-pentanone (MIBK)	ug/kg	ND	ND		30	
Acetone	ug/kg	ND	ND		30	
Allyl chloride	ug/kg	ND	ND		30	
Benzene	ug/kg	ND	ND		30	
Bromobenzene	ug/kg	ND	ND		30	
Bromochloromethane	ug/kg	ND	ND		30	
Bromodichloromethane	ug/kg	ND	ND		30	
Bromoform	ug/kg	ND	ND		30	
Bromomethane	ug/kg	ND	ND		30	
Carbon tetrachloride	ug/kg	ND	ND		30	
Chlorobenzene	ug/kg	ND	ND		30	
Chloroethane	ug/kg	ND	ND		30	
Chloroform	ug/kg	ND	ND		30	
Chloromethane	ug/kg	ND	ND		30	
cis-1,2-Dichloroethene	ug/kg	ND	ND		30	
cis-1,3-Dichloropropene	ug/kg	ND	ND		30	
Dibromochloromethane	ug/kg	ND	ND		30	
Dibromomethane	ug/kg	ND	ND		30	
Dichlorodifluoromethane	ug/kg	ND	ND		30	
Dichlorofluoromethane	ug/kg	ND	ND		30	
Diethyl ether (Ethyl ether)	ug/kg	ND	ND		30	
Ethylbenzene	ug/kg	ND	ND		30	
Hexachloro-1,3-butadiene	ug/kg	ND	ND		30	
Isopropylbenzene (Cumene)	ug/kg	ND	ND		30	
Methyl-tert-butyl ether	ug/kg	ND	ND		30	
Methylene Chloride	ug/kg	ND	ND		30	
n-Butylbenzene	ug/kg	ND	ND		30	
n-Propylbenzene	ug/kg	ND	ND		30	

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QUALITY CONTROL DATA

Project: 3500919 Sinclair Station 22020
Pace Project No.: 10143006

SAMPLE DUPLICATE: 891894

Parameter	Units	10142908011 Result	Dup Result	RPD	Max RPD	Qualifiers
Naphthalene	ug/kg	ND	ND		30	
p-Isopropyltoluene	ug/kg	ND	ND		30	
sec-Butylbenzene	ug/kg	ND	ND		30	
Styrene	ug/kg	ND	ND		30	
tert-Butylbenzene	ug/kg	ND	ND		30	
Tetrachloroethene	ug/kg	ND	ND		30	
Tetrahydrofuran	ug/kg	ND	ND		30	
Toluene	ug/kg	ND	ND		30	
trans-1,2-Dichloroethene	ug/kg	ND	ND		30	
trans-1,3-Dichloropropene	ug/kg	ND	ND		30	
Trichloroethene	ug/kg	ND	ND		30	
Trichlorofluoromethane	ug/kg	ND	ND		30	
Vinyl chloride	ug/kg	ND	ND		30	
Xylene (Total)	ug/kg	ND	ND		30	
1,2-Dichloroethane-d4 (S)	%	107	123	16		
4-Bromofluorobenzene (S)	%	111	127	15		
Dibromofluoromethane (S)	%	105	121	16		
Toluene-d8 (S)	%	113	122	9		

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QUALIFIERS

Project: 3500919 Sinclair Station 22020
Pace Project No.: 10143006

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.
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.
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 NELAP accredited. Contact your Pace PM for the current list of accredited analytes.

ANALYTE QUALIFIERS

D6	The relative percent difference (RPD) between the sample and sample duplicate exceeded laboratory control limits.
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.
S0	Surrogate recovery outside laboratory control limits.
S4	Surrogate recovery not evaluated against control limits due to sample dilution.
T7	Low boiling point hydrocarbons are present in the sample.

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CHAIN-OF-CUSTODY / Analytical Request Document

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

10143006

Page: 1 of 1

1384159

Section A Required Client Information:

Company: GES
Address: 295 Corporate Ct, Eagan MN
Email To:
Phone: 800-735-1077 Fax:
Requested Due Date/TAT: 5-day

Section B Required Project Information:

Report To: Valerie Wood
Copy To:
Purchase Order No.:
Project Name: Sinclair Station 22020
Project Number: 3500919

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:

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Section D Required Client Information

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

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

ITEM #	SAMPLE ID		MATRIX CODE	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED COMPOSITE START DATE	TIME	COMPOSITE END/GRAB DATE	TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Unpreserved	H_2SO_4	HNO_3	HCl	NaOH	$Na_2S_2O_3$	Methanol	Other	Analysis Test	BTEX MTBE	GRO	DRO	Moisture	VOC	Residual Chlorine (Y/N)	Pace Project No./ Lab I.D.
1	B1	14	SL	G	11-10-10	940					1						2			X		X	X			001
2	B2	14	SL	G	11-10-10	945					1						2			X		X	X			002
3	B3	14	SL	G	11-10-10	1105					1						2			X	X		X			003
4	B4	14	SL	G	11-10-10	1110					1						2			X	X		X			004
5	B5	14	SL	G	11-10-10	1130					1						2			X	X		X			005
6	B6	14	SL	G	11-10-10	1135					1						2			X	X		X			006
7	D1	4	SL	G	11-11-10	1315					3						2			X	X	X	X			007
8	D2	4	SL	G	11-11-10	1325					3						2			X	X	X	X			008
9	D3	4	SL	G	11-11-10	1335					3						2			X	X	X	X			009
10	D4	4	SL	G	11-11-10	1345					3						2			X	X	X	X			010
11	HH1	8	SL	G	11-11-10	1400					3						2					X	X	X		011
12	HH2	8	SL	G	11-11-10	1415					3						2					X	X	X		012

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS			
	[signature]	11-11-10	1549	[signature] / Pace MN	11/11/10	1549	0.0	Y	N	Y

ORIGINAL

SAMPLER NAME AND SIGNATURE
PRINT Name of SAMPLER: Tim Morrell
SIGNATURE of SAMPLER: [signature] DATE Signed (MM/DD/YY): 11-11-10

Temp in °C | Received on Ice (Y/N) | Custody Sealed Cooler (Y/N) | Samples Intact (Y/N)

*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

1135
1136

Pace Analytical

Sample Condition Upon Receipt

Client Name: CES Project # 10143006

Courier: ☐ Fed Ex ☐ UPS ☐ USPS ☑ Client ☐ Commercial ☐ Pace Other RUSH

Tracking #: [redacted]

Custody Seal on Cooler/Box Present: ☐ yes ☑ no Seals intact: ☐ yes ☑ no

Packing Material: ☐ Bubble Wrap ☑ Bubble Bags ☐ None ☐ Other ____ Temp Blank: Yes ☑ No ____

Thermometer Used 80344042 or 79425 Type of Ice: (Wet) Blue None ☐ Samples on ice, cooling process has begun

Cooler Temperature 0.0 Biological Tissue is Frozen: Yes No

Temp should be above freezing to 6°C Comments:

Date and Initials of person examining contents: 11-11-10 LJS

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 & Signature on COC:	☑Yes ☐No ☐N/A	4.
Samples Arrived within Hold Time:	☑Yes ☐No ☐N/A	5.
Short Hold Time Analysis (<72hr):	☐Yes ☑No ☐N/A	6.
Rush Turn Around Time Requested:	☑Yes ☐No ☐N/A	7. 5day
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: SL		
All containers needing acid/base preservation have been checked. Noncompliance are noted in 13.	☐Yes ☐No ☑N/A	13. ☐ HNO3 ☐ H2SO4 ☐ NaOH ☐ HCl
All containers needing preservation are found to be in compliance with EPA recommendation.	☐Yes ☐No ☑N/A	Samp #
Exceptions: VOA, Coliform, TOC, Oil and Grease, WI-DRO (water)	☑Yes ☐No	Initial when completed / Lot # of added preservative
Samples checked for dechlorination:	☐Yes ☑No ☐N/A	14.
Headspace in VOA Vials (>6mm):	☐Yes ☑No ☐N/A	15.
Trip Blank Present:	☐Yes ☐No ☑N/A	16.
Trip Blank Custody Seals Present	☐Yes ☐No ☑N/A	
Pace Trip Blank Lot # (if purchased):		

Client Notification/ Resolution: Field Data Required? Y / N

Person Contacted: ____ Date/Time: ____

Comments/ Resolution: ____

Project Manager Review: DRM Date: 11-11-10

Note: Whenever there is a discrepancy affecting North Carolina compliance samples, a copy of this form will be sent to the North Carolina DENR.

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

Spatial Data Reporting Form

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

Part 1. Background

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

MPCA Site ID: LEAK00017952
Site Name: **Sinclair #22020**
Data Collection Date: **July 21, 2011**
Name of Person Who Collected Data: **Chris Loch**
Organization Name: **Carlson McCain, Inc.**
Organization Type: **Environmental Consulting Firm**

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

Point Description: **Former tank basin**
Collection Method: **Map Interpolation**
Datum (circle/highlight): WGS84 **NAD83**

1) **Longitude (dd mm ss.ss): 93° 05' 26.54"**	**Latitude (dd mm ss.ss): 44° 59' 31.71"**
2) Longitude (dd.dddddd):	Latitude (dd.dddddd):
3) UTM - X (Easting):	UTM - Y (Northing):
UTM Zone:	

Part 3. Other Site Features

Point Description: **LSI soil boring GP-1 location**
Collection Method: **Map Interpolation**
Datum (circle/highlight): WGS84 **NAD83**
1) **Longitude (dd mm ss.ss): 93° 05' 27.23"** **Latitude (dd mm ss.ss): 44° 59' 31.71"**
2) Longitude (dd.dddddd): Latitude (dd.dddddd):
3) UTM - X (Easting): UTM - Y (Northing):
UTM Zone:

Point Description: **LSI soil boring GP-2 location**
Collection Method: **Map Interpolation**
Datum (circle/highlight): WGS84 **NAD83**
1) **Longitude (dd mm ss.ss): 93° 05' 26.10"** **Latitude (dd mm ss.ss): 44° 59' 31.76"**
2) Longitude (dd.dddddd): Latitude (dd.dddddd):
3) UTM - X (Easting): UTM - Y (Northing):
UTM Zone:

Point Description: **LSI soil boring GP-3 location**
Collection Method: **Map Interpolation**
Datum (circle/highlight): WGS84 **NAD83**
1) **Longitude (dd mm ss.ss): 93° 05' 27.03"** **Latitude (dd mm ss.ss): 44° 59' 32.24"**
2) Longitude (dd.dddddd): Latitude (dd.dddddd):
3) UTM - X (Easting): UTM - Y (Northing):
UTM Zone:

Point Description: **LSI soil boring GP-4 location**
Collection Method: **Map Interpolation**
Datum (circle/highlight): WGS84 **NAD83**
1) Longitude (dd mm ss.ss): 93° 05' 28.41" **Latitude (dd mm ss.ss): 44° 59' 33.39"**
2) Longitude (dd.dddddd): Latitude (dd.dddddd):
3) UTM - X (Easting): UTM - Y (Northing):
UTM Zone:

Point Description: **LSI soil boring GP-5 location**
Collection Method: **Map Interpolation**
Datum (circle/highlight): WGS84 **NAD83**
1) Longitude (dd mm ss.ss): 93° 05' 27.51" **Latitude (dd mm ss.ss): 44° 59' 31.05"**
2) Longitude (dd.dddddd): Latitude (dd.dddddd):
3) UTM - X (Easting): UTM - Y (Northing):
UTM Zone:

Minnesota Pollution Control Agency

Release Information Worksheet

Guidance Document 2-05
Petroleum Remediation Program

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

A. General information

Site name/city: **Sinclair #22020** MPCA Site ID#: LEAK000 **17952**

B. Tank material (check all that apply):

☒ **Steel** ☐ Fiberglass

C. Piping material (check all that apply):

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

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

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

☒ **Other (specify): Residual contamination associated with Closed MPCA Leak #2643**

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

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

☐ Other (specify): _____

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

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

☐ Other (specify): _____

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

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

Web pages and phone numbers:

MPCA staff:	http://www.pca.state.mn.us/pca/staff/index.cfm
MPCA phone:	**651-296-6300 or 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
PetroFund Web page:	http://www.state.mn.us/cgi-bin/portal/mn/jsp/content.do?id=-536881377&agency=Commerce
PetroFund phone:	**651-215-1775 or 1-800-638-0418**
State Duty Officer:	**651-649-5451 or 1-800-422-0798**

Minnesota Pollution Control Agency • 520 Lafayette Rd. N., St. Paul, MN 55155-4194 • www.pca.state.mn.us
651-296-6300 • 800-657-3864 • TTY 651-282-5332 or 800-657-3864 • Available in alternative formats

Groundwater
& Environmental Services, Inc.

1285 Corporate Center Drive • Suite 120 • Eagan, Minnesota 55121 • (800) 735-1077 • Fax (651) 405-1036

April 26, 2010

Mr. Larry Feldsien, P.E.
Sinclair Marketing, Inc.
1628 County Hwy 10
Spring Lake Park, MN 55432

RE: Limited Phase II Site Assessment
223 East Larpenteur
Maplewood, Minnesota

Dear Mr. Feldsien:

Groundwater & Environmental Services, Inc. (GES) is pleased to present the results of the Limited Phase II Environmental Site Assessment for the above-referenced site. This work was conducted in general accordance with Task Order Number 2010-GES-01 dated April 9, 2010.

Background

The Subject Site is located at 223 E Larpenteur, Maplewood, Minnesota. The site is an active retail gasoline station that maintains three underground storage tanks (USTs) and four dispenser islands. According to Minnesota Pollution Control Agency (MPCA) online storage tank database records, USTs have been installed at this location since January 1961.

Investigation Activities

On April 14, 2010, GES oversaw the advancement of 4 soil borings at the site using Geoprobe technology. The borings were advanced proximal to the UST basin and dispenser islands to approximately 20 feet below ground surface (bgs). Boring locations are illustrated on the Site Map provided in **Attachment 1.** Prior to advancement of the borings, underground utilities were marked via public and private locates. Soil samples were collected on a continuous basis during boring advancement for field screening of volatile organic vapors utilizing a photoionization detector (PID) and soil classification. Soil boring logs are provided in **Attachment 2.** One soil sample was collected from the interval exhibiting the highest PID reading from each boring. If no PID readings were detected, a soil sample was collected at the interval above the water table. Soil samples were submitted to Pace Analytical for the analysis of benzene, toluene, ethylbenzene, xylenes (BTEX), methyl-tert-butyl-ether (MTBE) and gasoline range organics (GRO) by Wisconsin Modified GRO method and diesel range organics (DRO) by Wisconsin Modified DRO method.

Groundwater was encountered at approximately 15-19 feet bgs at the site. Temporary PVC wells were installed in boreholes GP1 and GP3 and screened from approximately 16 to 21 feet bgs. Groundwater samples were obtained utilizing new polyethylene tubing and a peristaltic pump and submitted to Pace Analytical for the analysis of GRO and partial list of volatile organic carbons (PVOCs) by Wisconsin Modified GRO method, DRO by Wisconsin Modified DRO method and dissolved lead by EPA method 6010.

Investigation Results

Soil at the site consist of sand and silt. Screening of the soil collected during probe advancement with the PID indicated the presence of hydrocarbon vapors ranging from 0 parts per million (ppm) to 1,906 ppm. PID readings are provided on the attached boring logs.

Laboratory analytical results from soil samples indicate the presence of BTEX, GRO and DRO at soil boring GP3 and GRO, ethylbenzene, toluene, xylenes and DRO at soil boring GP4. Soil sample results from soil borings GP1 and GP2 were below laboratory method detection limits. Laboratory results are summarized on the Tables presented in **Attachment 3**. The laboratory report and chain of custody documentation are provided in **Attachment 4.**

Groundwater analytical results indicate the presence of BTEX, GRO, DRO, 1,2,4-trimethylbenzene, 1,3,5-trimethylbenzene and dissolved lead at GP3. BTEX concentrations at GP3 are above the current Minnesota Department of Health – Health Risk Limits (HRLs). All analyzed parameters were below laboratory method detection limits in GP1. Laboratory results are summarized in the Tables provided in **Attachment 3.** The laboratory report and chain of custody documentation is provided in Attachment 4.

Conclusions

Based on soil and groundwater data obtained during this drilling investigation, petroleum hydrocarbon impacts to soil and groundwater exist at this site. After confirmation with Sinclair, a leak was reported to the Minnesota State Duty Officer and report #110602 was generated. Further investigation may be required by the MPCA at this site pending review of the data obtained during this drilling investigation. A leak number, 2643, had previously been assigned to this site. The MPCA granted closure of the leak number in May 2000. Per Petroleum Remediation Program Guidance Document 3-16: *Assessment of Petroleum Contamination At Closed Sites*, the MPCA will re-open the previous leak number, open a new leak number or decide that no further action is necessary.

If you have any questions or concerns regarding this information, please contact Scott Vasko at (800) 735-1077, Ext. 3181.

Sincerely,

GROUNDWATER & ENVIRONMENTAL SERVICES, INC.

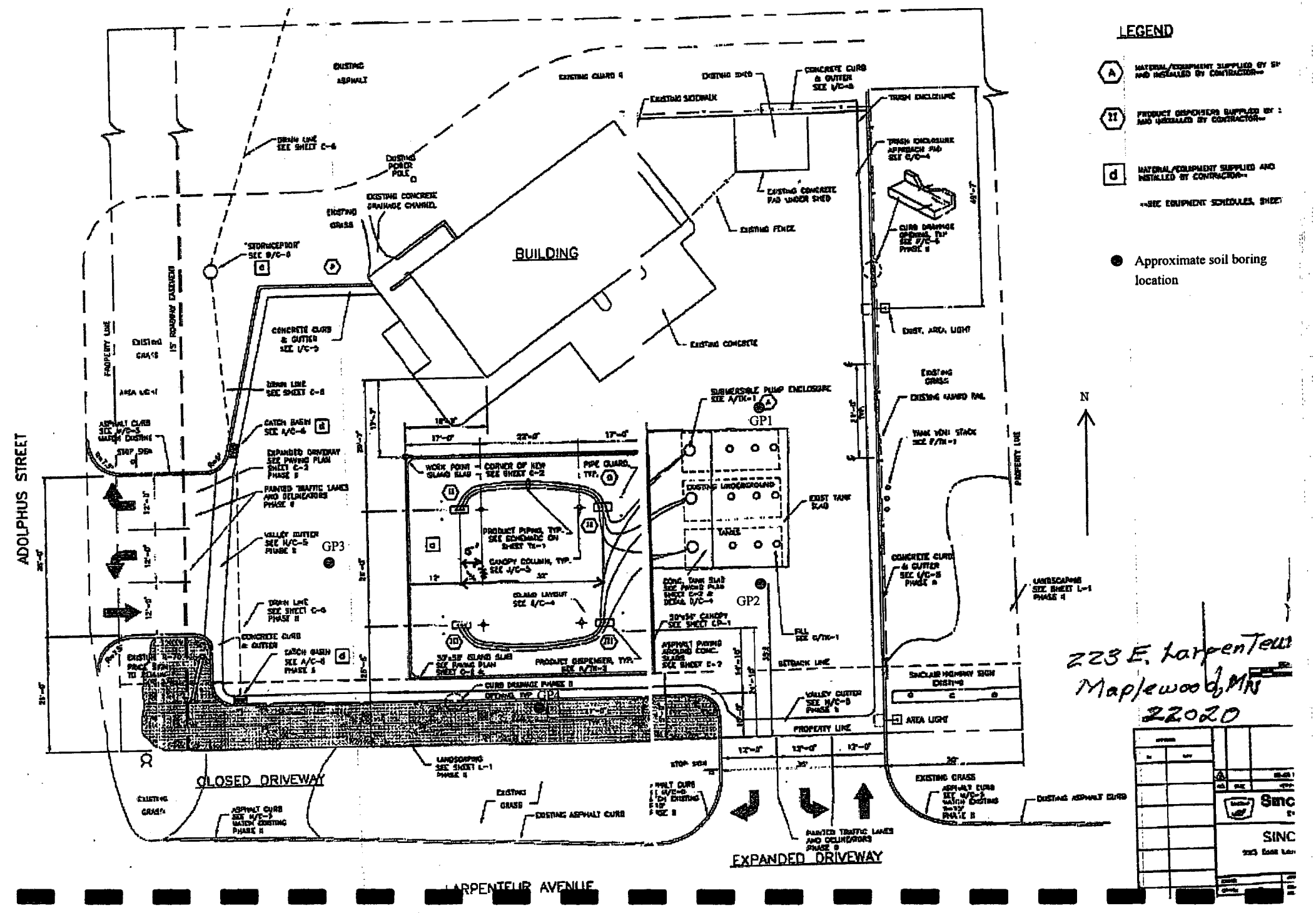
Scott Vasko, P.E.
Project Engineer

Robert Jenson, CHMM
Site Operations Manager

Attachments

ATTACHMENT 1

SITE MAP


LEGEND
Approximate soil boring location
BUILDING
GP1
GP2
GP3
GP4
ADOLPHUS STREET
CLOSED DRIVEWAY
EXPANDED DRIVEWAY
LARPENTEUR AVENUE
N
223 E. Larpenteur
Maplewood, MN
22020

ATTACHMENT 2

SOIL BORING LOGS

LOCATION MAP:

SEE SITE MAP

GES Groundwater & Environmental Services, Inc.

1285 Corporate Center Drive
Suite 120
Eagan, MN 55121

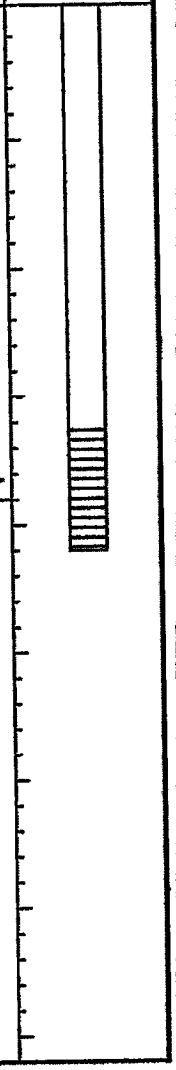
TEST HOLE/WELL LOG — PAGE 1 OF 1

TEST/WELL NUMBER:	PROJECT:
GP1	Sinclair Maplewood (223 Larpenteur)
DATE: 4/14/2010	PROJECT NUMBER: 3500824
LOGGED BY: SV	DRILLED BY: Nathan - Thein

ELEVATION	DETECTOR:	CALIBRATED TO:	BACKGROUND (PPM):	DRILLING METHOD	SAMPLING METHOD:
	PID 10.6 eV	100 ppm Isobutylene	0.0 ppm	Geoprobe	Push Probe

GRAVEL PACK:	SEAL	GROUT: Bentonite
CASING TYPE: PVC	DIAMETER: 1" LENGTH: 0' to 16'	HOLE DIA: 2" / DEPTH TO LIQUID: 19'
SCREEN TYPE: PVC	DIAMETER: 1" LENGTH: 16' to 21'	TOTAL DEPT 21' / DEPTH TO WATER: 19'

SOIL/ROCK TYPE	COLOR	MOISTURE	PID READING: FIELD	PID READING: HEAD-SPACE	ODOR	SAMPLE TYPE	DEPTH	% RECOVERED	BLOW COUNTS	LITHOLOGY/REMARKS	WATER LEVEL	TIME	WELL COMPLETION
							0			Asphalt at surface.			
SM		Dry		0.0	None	Grab		100		SM silty sand, dark brown, with gravel, dry, no odor			
				0.0									
		Wet		0.0			5	100		SM silty sand, dark brown, with gravel, wet, no odor			
		Moist		0.0						SM silty sand, gray, with gravel and sand, moist, no odor			
				0.0			10	75					
				0.0									
SP				0.0						SP sand, brown, with gravel, moist, no odor			
				0.0			15	100		SM silty sand, brown, moist, no odor			
SM		Wet		0.0*						SM silty sand, brown and gray, wet, no odor			
				0.0				75					
							20			SM silty sand, gray, mottling, wet, no odor			
										*Soil sample submitted for analysis of BTEX/MTBE, GRO, DRO			
							25						
							30						
							35						
							40						



LOCATION MAP:

SEE SITE MAP

GES Groundwater & Environmental Services, Inc.

1285 Corporate Center Drive
Suite 120
Eagan, MN 55121

TEST HOLE/WELL LOG

PAGE 1 OF 1

TEST/WELL NUMBER: GP2	PROJECT: Sinclair Maplewood (223 Larpenteur)
DATE: 4/14/2010	PROJECT NUMBER: 3500824
LOGGED BY: TM	DRILLED BY: Nathan - Thein

ELEVATION	DETECTOR: PID 10.6 eV	CALIBRATED TO: 100 ppm Isobutylene	BACKGROUND (PPM): 0.0 ppm	DRILLING METHOD: Geoprobe

SAMPLING METHOD: Push Probe

GRAVEL PACK:

SEAL

GROUT: Bentonite

CASING TYPE:

DIAMETER: LENGTH:

HOLE DIA: 2"

DEPTH TO LIQUID: 15'

SCREEN TYPE:

DIAMETER: LENGTH:

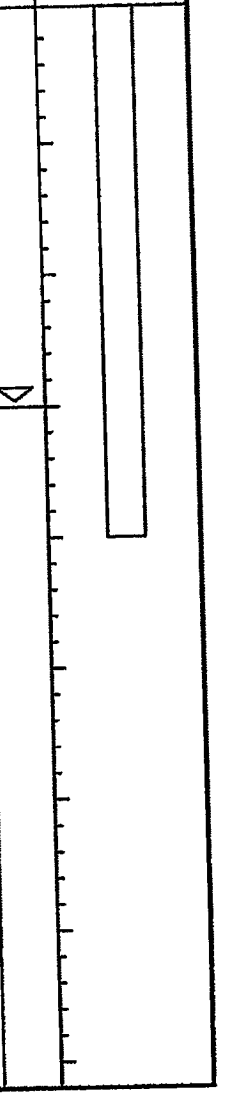
TOTAL DEPT 20'

DEPTH TO WATER: 15'

WATER LEVEL	TIME

SOIL/ROCK TYPE	MOISTURE	PID READING: FIELD	PID READING: HEAD-SPACE	ODOR	SAMPLE TYPE	DEPTH	% RECOVERED	BLOW COUNTS	LITHOLOGY/REMARKS
									Asphalt at surface.
SM	Dry to Moist		0.0	None	Grab	0	100		SM silty sand, medium dense, with some gravel, tan, contains some coarser layers, dry to moist, no odor
			0.0						
			0.0			5	100		
			0.0						
			0.0			10	100		
			0.0						
SP	Moist		0.0*				70		SP sand, fine-grained, loose, yellow to dark brown, moist to wet, no odor.
			0.0			15			
	Wet		0.0				70		
			0.0			20			
									*Soil sample submitted for analysis of BTEX/MTBE, GRO, DRO
						25			
						30			
						35			
						40			

WELL COMPLETION



LOCATION MAP:	Groundwater & Environmental Services, Inc.	1285 Corporate Center Drive Suite 120 Eagan, MN 55121
SEE SITE MAP	TEST HOLE/WELL LOG	PAGE 1 OF 1
	TEST/WELL NUMBER: GP3	PROJECT: Sinclair Maplewood (223 Larpenteur)
	DATE: 4/14/2010	PROJECT NUMBER: 3500824
	LOGGED BY: SV	DRILLED BY: Nathan - Thein

ELEVATION	DETECTOR:	CALIBRATED TO:	BACKGROUND (PPM)	DRILLING METHOD	SAMPLING METHOD:
	PID 10.6 eV	100 ppm Isobutylene	0.0 ppm	Geoprobe	Push Probe

GRAVEL PACK:	SEAL	GROUT: Bentonite	
CASING TYPE: PVC	DIAMETER: 1" LENGTH 0' to 16'	HOLE DIA: 2"	DEPTH TO LIQUID: 17'
SCREEN TYPE: PVC	DIAMETER: 1" LENGTH 16' to 21'	TOTAL DEPT 21'	DEPTH TO WATER: 17'

SOIL/ROCK TYPE	MOISTURE	PID READING: FIELD	PID READING: HEAD-SPACE	ODOR	SAMPLE TYPE	DEPTH	% RECOVERED	BLOW COUNTS	LITHOLOGY/REMARKS	WATER LEVEL	TIME	WELL COMPLETION
									Asphalt at surface.			
SM	Dry		0.0	None	Grab	0	100		SM silty sand, dark brown, with gravel, dry, no odor			
			0.0									
			0.0			5	100					
	Moist		0.0						SM silty sand, dark brown, with gravel, moist, no odor			
			0.0			10	100		SM silty sand and gravel, dark brown, moist, no odor			
			0.0						SM silty sand, brown, moist, no odor			
			5.2	Mild					SM silty sand, brown, with gravel, moist, mild odor			
	Wet		1906*	Strong		15	100		SM silty sand, gray, wet, strong odor			
			1466									
			860			20	100					
									*Soil sample submitted for analysis of BTEX/MTBE, GRO, DRO			
						25						
						30						
						35						
						40						

LOCATION MAP:

SEE SITE MAP

Groundwater & Environmental Services, Inc.

1285 Corporate Center Drive
Suite 120
Eagan, MN 55121

TEST HOLE/WELL LOG

TEST/WELL NUMBER: GP4	PROJECT: Sinclair Maplewood (223 Larpenteur)
DATE: 4/14/2010	PROJECT NUMBER: 3500824
LOGGED BY: TM	DRILLED BY: Nathan - Thein

ELEVATION	DETECTOR: PID 10.6 eV	CALIBRATED TO: 100 ppm Isobutylene	BACKGROUND (PPM): 0.0 ppm	DRILLING METHOD: Geoprobe	SAMPLING METHOD: Push Probe
GRAVEL PACK:	SEAL				GROUT: Bentonite
CASING TYPE:	DIAMETER:	LENGTH:			HOLE DIA: 2" / DEPTH TO LIQUID: 18'
SCREEN TYPE:	DIAMETER:	LENGTH:			TOTAL DEPT 20' / DEPTH TO WATER: 18'

SOIL/ROCK TYPE	COLOR	MOISTURE	PID READING: FIELD	PID READING: HEAD-SPACE	ODOR	SAMPLE TYPE	DEPTH	% RECOVERED	BLOW COUNTS	LITHOLOGY/REMARKS	WATER LEVEL	TIME	WELL COMPLETION
							0			Asphalt at surface.			
SM	10YR 3/3	Dry		0.0	None	G				SM sandy silt, medium dense, with some gravel, tan, dry			
				0.0			5	100					
				0.0									
				0.0									
SP	10YR 3/3	Moist		0.0			10	100		SP sand, coarse, loose, tan, moist, no odor.			
				0.0									
				0.0				70					
				0.0			15						
ML	10YR 7/6	Wet		0.0				70		ML silt, soft, yellow, wet, no odor to strong odor.			
				871*	Strong		20						
										*Soil sample submitted for analysis of BTEX/MTBE, GRO, DRO			
							25						
							30						
							35						
							40						

ATTACHMENT 3

LABORATORY ANALYTICAL RESULTS

Analytical Results of Water Samples Collected from Soil Borings
Sinclair Station #2220
223 E Larpenteur
Maplewood, Minnesota

Boring ID	Date Sampled	Benzene	Toluene	Ethyl-benzene	Xylenes	MTBE	GRO	DRO	1,2,4-trimethyl-benzene	1,3,5-trimethyl-benzene	Dissolved Lead	Lab Type
GP1	04/14/10	<1.0	<1.0	<1.0	<3.0	<5.0	<100	<120	<1.0	<1.0	<3.0	fixed
GP3	04/14/10	21,300	22,400	4,570	25,700	<500	109,000	207,000	4,770	1,210	11.8	fixed
H2O BLANK	04/14/10	<1.0	<1.0	<1.0	<3.0	<5.0	<100	NA	<1.0	<1.0	NA	fixed
MDH-HRL		10	1,000	700	10,000							

Notes:
Report results in µg/L. Less than symbols show detection limit.
NA = Not Analyzed for that parameter.
Minnesota Department of Health - Health Risk Limit (MDH-HRL)

Analytical Results of Soil Samples
Sinclair Station #2220
223 E Larpenteur
Maplewood, Minnesota

Boring ID	Sampled Depth (ft)	Date Sampled	Benzene	Toluene	Ethyl-benzene	Xylenes	MTBE	GRO	DRO	Lab Type
GP1 17-19	17-19	04/14/10	<0.060	<0.060	<0.060	<0.18	<0.30	<6.0	<6.7	fixed
GP2 12-14	12-14	04/14/10	<0.062	<0.062	<0.062	<0.18	<0.31	<6.2	<9.7	fixed
GP3 15-17	15-17	04/14/10	4.9	24.1	26.5	187	<2.9	1,230	426	fixed
GP4 18-20	18-20	04/14/10	<0.62	9.1	33.2	194	<3.1	1,270	164	fixed
MEOH BLANK		04/14/10	<0.050	<0.050	<0.050	<0.15	<0.25	<5.0	NA	fixed

Notes:
Report results in mg/kg. Less than symbols show detection limit.
NA = Not Analyzed for that parameter.

ATTACHMENT 4

LABORATORY ANALYTICAL REPORT

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

April 22, 2010

Scott Vasko
Groundwater Environmental Services, Inc.
1285 Corporate Center Dr
Eagan, MN 55121

RE: Project: 3500824 SINCLAIR-MAPLEWOOD
Pace Project No.: 10126500

Dear Scott Vasko:
Enclosed are the analytical results for sample(s) received by the laboratory on April 15, 2010. The results relate only to the samples included in this report. Results reported herein conform to the most current NELAC standards, where applicable, unless otherwise narrated 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: 3500824 SINCLAIR-MAPLEWOOD
Pace Project No.: 10126500

Minnesota Certification IDs
1700 Elm Street SE, Suite 200 Minneapolis, MN 55414
Alaska Certification #: UST-078
Washington Certification #: C754
Tennessee Certification #: 02818
Pennsylvania Certification #: 68-00563
Oregon Certification #: MN200001
North Dakota Certification #: R-036
North Carolina Certification #: 530
New York Certification #: 11647
New Jersey Certification #: MN-002
Montana Certification #: MT CERT0092
Minnesota Certification #: 027-053-137

Michigan DEQ Certification #: 9909
Maine Certification #: 2007029
Louisiana Certification #: LA080009
Louisiana Certification #: 03086
Kansas Certification #: E-10167
Iowa Certification #: 368
Illinois Certification #: 200011
Florida/NELAP Certification #: E87605
California Certification #: 01155CA
Arizona Certification #: AZ-0014
Wisconsin Certification #: 999407970

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

SAMPLE SUMMARY

Project: 3500824 SINCLAIR-MAPLEWOOD
Pace Project No.: 10126500

Lab ID	Sample ID	Matrix	Date Collected	Date Received
10126500001	GP4 18-20	Solid	04/14/10 19:00	04/15/10 10:42
10126500002	GP3 15-17	Solid	04/14/10 07:00	04/15/10 10:42
10126500003	GP1	Water	04/14/10 05:50	04/15/10 10:42
10126500004	GP2 12-14	Solid	04/14/10 18:00	04/15/10 10:42
10126500005	GP3	Water	04/14/10 19:10	04/15/10 10:42
10126500006	GP1 17-19	Solid	04/14/10 05:30	04/15/10 10:42
10126500007	MEOH BLANK	Solid	04/14/10 00:00	04/15/10 10:42
10126500008	H2O BLANK	Water	04/14/10 00:00	04/15/10 10:42

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

SAMPLE ANALYTE COUNT

Project: 3500824 SINCLAIR-MAPLEWOOD
Pace Project No.: 10126500

Lab ID	Sample ID	Method	Analysts	Analytes Reported
10126500001	GP4 18-20	WI MOD DRO	KL1	2
		WI MOD GRO	MJH	7
		% Moisture	JDL	1
10126500002	GP3 15-17	WI MOD DRO	KL1	2
		WI MOD GRO	MJH	7
		% Moisture	JDL	1
10126500003	GP1	WI MOD DRO	KL1	2
		WI MOD GRO	MJH	9
		EPA 6010	IP	1
10126500004	GP2 12-14	WI MOD DRO	KL1	2
		WI MOD GRO	MJH	7
		% Moisture	JDL	1
10126500005	GP3	WI MOD DRO	KL1	2
		WI MOD GRO	MJH	9
		EPA 6010	IP	1
10126500006	GP1 17-19	WI MOD DRO	KL1	2
		WI MOD GRO	MJH	7
		% Moisture	JDL	1
10126500007	MEOH BLANK	WI MOD GRO	MJH	7
10126500008	H2O BLANK	WI MOD GRO	MJH	9

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www.pacelabs.com

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1700 Elm Street - Suite 200
Minneapolis, MN 55414
(612)607-1700

ANALYTICAL RESULTS

Project: 3500824 SINCLAIR-MAPLEWOOD
Pace Project No.: 10126500

Sample: GP4 18-20 **Lab ID: 10126500001** Collected: 04/14/10 19:00 Received: 04/15/10 10:42 Matrix: Solid

Results reported on a "dry-weight" basis

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
WIDRO GCS	Analytical Method: WI MOD DRO Preparation Method: WI MOD DRO							
Diesel Range Organics	**164**	mg/kg	10.2	1	04/16/10 14:21	04/19/10 19:52		T7
n-Triacontane (S)	85	%	50-150	1	04/16/10 14:21	04/19/10 19:52		
WIGRO GCV	Analytical Method: WI MOD GRO Preparation Method: TPH GRO/PVOC WI ext.							
Benzene	ND	mg/kg	0.62	10	04/16/10 14:30	04/20/10 20:21	71-43-2	
Ethylbenzene	**33.2**	mg/kg	0.62	10	04/16/10 14:30	04/20/10 20:21	100-41-4	
Gasoline Range Organics	**1270**	mg/kg	62.4	10	04/16/10 14:30	04/20/10 20:21		
Methyl-tert-butyl ether	ND	mg/kg	3.1	10	04/16/10 14:30	04/20/10 20:21	1634-04-4	
Toluene	**9.1**	mg/kg	0.62	10	04/16/10 14:30	04/20/10 20:21	108-88-3	
Xylene (Total)	**194**	mg/kg	1.9	10	04/16/10 14:30	04/20/10 20:21	1330-20-7	
a,a,a-Trifluorotoluene (S)	93	%	80-125	10	04/16/10 14:30	04/20/10 20:21	98-08-8	
Dry Weight	Analytical Method: % Moisture							
Percent Moisture	**19.2**	%	0.10	1		04/16/10 00:00		

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(612)607-1700

ANALYTICAL RESULTS

Project: 3500824 SINCLAIR-MAPLEWOOD
Pace Project No.: 10126500

Sample: GP3 15-17 **Lab ID: 10126500002** Collected: 04/14/10 07:00 Received: 04/15/10 10:42 Matrix: Solid

Results reported on a "dry-weight" basis

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
WIDRO GCS	Analytical Method: WI MOD DRO Preparation Method: WI MOD DRO							
Diesel Range Organics	**426**	mg/kg	58.1	10	04/16/10 14:21	04/20/10 12:19		T7
n-Triacontane (S)	88	%	50-150	10	04/16/10 14:21	04/20/10 12:19		
WIGRO GCV	Analytical Method: WI MOD GRO Preparation Method: TPH GRO/PVOC WI ext.							
Benzene	**4.9**	mg/kg	0.58	10	04/16/10 14:30	04/19/10 23:31	71-43-2	
Ethylbenzene	**26.5**	mg/kg	0.58	10	04/16/10 14:30	04/19/10 23:31	100-41-4	
Gasoline Range Organics	**1230**	mg/kg	57.9	10	04/16/10 14:30	04/19/10 23:31		
Methyl-tert-butyl ether	ND	mg/kg	2.9	10	04/16/10 14:30	04/19/10 23:31	1634-04-4	
Toluene	**24.1**	mg/kg	0.58	10	04/16/10 14:30	04/19/10 23:31	108-88-3	
Xylene (Total)	**187**	mg/kg	1.7	10	04/16/10 14:30	04/19/10 23:31	1330-20-7	
a,a,a-Trifluorotoluene (S)	89	%	80-125	10	04/16/10 14:30	04/19/10 23:31	98-08-8	
Dry Weight	Analytical Method: % Moisture							
Percent Moisture	**15.3**	%	0.10	1		04/16/10 00:00		

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www.pacelabs.com

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

ANALYTICAL RESULTS

Project: 3500824 SINCLAIR-MAPLEWOOD
Pace Project No.: 10126500

Sample: GP1 **Lab ID: 10126500003** Collected: 04/14/10 05:50 Received: 04/15/10 10:42 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
WIDRO GCS	Analytical Method: WI MOD DRO Preparation Method: WI MOD DRO							
Diesel Range Organics	ND	mg/L	0.12	1	04/15/10 13:20	04/19/10 18:36		1M,P4
n-Triacontane (S)	87	%	50-150	1	04/15/10 13:20	04/19/10 18:36		
WIGRO GCV	Analytical Method: WI MOD GRO							
Benzene	ND	ug/L	1.0	1		04/16/10 00:42	71-43-2	
Ethylbenzene	ND	ug/L	1.0	1		04/16/10 00:42	100-41-4	
Gasoline Range Organics	ND	ug/L	100	1		04/16/10 00:42		
Methyl-tert-butyl ether	ND	ug/L	5.0	1		04/16/10 00:42	1634-04-4	
Toluene	ND	ug/L	1.0	1		04/16/10 00:42	108-88-3	
1,2,4-Trimethylbenzene	ND	ug/L	1.0	1		04/16/10 00:42	95-63-6	
1,3,5-Trimethylbenzene	ND	ug/L	1.0	1		04/16/10 00:42	108-67-8	
Xylene (Total)	ND	ug/L	3.0	1		04/16/10 00:42	1330-20-7	
a,a,a-Trifluorotoluene (S)	96	%	80-125	1		04/16/10 00:42	98-08-8	
6010 MET ICP, Dissolved	Analytical Method: EPA 6010 Preparation Method: EPA 3010							
Lead, Dissolved	ND	ug/L	3.0	1	04/16/10 11:37	04/16/10 14:02	7439-92-1	

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ANALYTICAL RESULTS

Project: 3500824 SINCLAIR-MAPLEWOOD
Pace Project No.: 10126500

Sample: GP2 12-14 **Lab ID: 10126500004** Collected: 04/14/10 18:00 Received: 04/15/10 10:42 Matrix: Solid

Results reported on a "dry-weight" basis

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
WIDRO GCS	Analytical Method: WI MOD DRO Preparation Method: WI MOD DRO							
Diesel Range Organics	ND	mg/kg	9.7	1	04/16/10 14:21	04/19/10 19:59		
n-Triacontane (S)	79	%	50-150	1	04/16/10 14:21	04/19/10 19:59		
WIGRO GCV	Analytical Method: WI MOD GRO Preparation Method: TPH GRO/PVOC WI ext.							
Benzene	ND	mg/kg	0.062	1	04/16/10 14:30	04/19/10 19:47	71-43-2	
Ethylbenzene	ND	mg/kg	0.062	1	04/16/10 14:30	04/19/10 19:47	100-41-4	
Gasoline Range Organics	ND	mg/kg	6.2	1	04/16/10 14:30	04/19/10 19:47		
Methyl-tert-butyl ether	ND	mg/kg	0.31	1	04/16/10 14:30	04/19/10 19:47	1634-04-4	
Toluene	ND	mg/kg	0.062	1	04/16/10 14:30	04/19/10 19:47	108-88-3	
Xylene (Total)	ND	mg/kg	0.18	1	04/16/10 14:30	04/19/10 19:47	1330-20-7	
a,a,a-Trifluorotoluene (S)	99	%	80-125	1	04/16/10 14:30	04/19/10 19:47	98-08-8	
Dry Weight	Analytical Method: % Moisture							
Percent Moisture	**16.7**	%	0.10	1		04/16/10 00:00		

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ANALYTICAL RESULTS

Project: 3500824 SINCLAIR-MAPLEWOOD
Pace Project No.: 10126500

Sample: GP3 **Lab ID: 10126500005** Collected: 04/14/10 19:10 Received: 04/15/10 10:42 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
WIDRO GCS	Analytical Method: WI MOD DRO Preparation Method: WI MOD DRO							
Diesel Range Organics	**207**	mg/L	14.9	100	04/15/10 13:20	04/20/10 11:53		2M,P4
n-Triacontane (S)	0	%	50-150	100	04/15/10 13:20	04/20/10 11:53		S4
WIGRO GCV	Analytical Method: WI MOD GRO							
Benzene	**21300**	ug/L	100	100		04/16/10 01:03	71-43-2	
Ethylbenzene	**4570**	ug/L	100	100		04/16/10 01:03	100-41-4	
Gasoline Range Organics	**109000**	ug/L	10000	100		04/16/10 01:03		
Methyl-tert-butyl ether	ND	ug/L	500	100		04/16/10 01:03	1634-04-4	
Toluene	**22400**	ug/L	100	100		04/16/10 01:03	108-88-3	
1,2,4-Trimethylbenzene	**4770**	ug/L	100	100		04/16/10 01:03	95-63-6	
1,3,5-Trimethylbenzene	**1210**	ug/L	100	100		04/16/10 01:03	108-67-8	
Xylene (Total)	**25700**	ug/L	300	100		04/16/10 01:03	1330-20-7	
a,a,a-Trifluorotoluene (S)	95	%	80-125	100		04/16/10 01:03	98-08-8	
6010 MET ICP, Dissolved	Analytical Method: EPA 6010 Preparation Method: EPA 3010							
Lead, Dissolved	**11.8**	ug/L	3.0	1	04/16/10 11:37	04/16/10 14:08	7439-92-1	

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ANALYTICAL RESULTS

Project: 3500824 SINCLAIR-MAPLEWOOD
Pace Project No.: 10126500

Sample: GP1 17-19 **Lab ID: 10126500006** Collected: 04/14/10 05:30 Received: 04/15/10 10:42 Matrix: Solid

Results reported on a "dry-weight" basis

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
WIDRO GCS	Analytical Method: WI MOD DRO Preparation Method: WI MOD DRO							
Diesel Range Organics	ND	mg/kg	6.7	1	04/16/10 14:21	04/19/10 20:06		
n-Triacontane (S)	84	%	50-150	1	04/16/10 14:21	04/19/10 20:06		
WIGRO GCV	Analytical Method: WI MOD GRO Preparation Method: TPH GRO/PVOC WI ext.							
Benzene	ND	mg/kg	0.060	1	04/16/10 14:30	04/19/10 20:10	71-43-2	
Ethylbenzene	ND	mg/kg	0.060	1	04/16/10 14:30	04/19/10 20:10	100-41-4	
Gasoline Range Organics	ND	mg/kg	6.0	1	04/16/10 14:30	04/19/10 20:10		
Methyl-tert-butyl ether	ND	mg/kg	0.30	1	04/16/10 14:30	04/19/10 20:10	1634-04-4	
Toluene	ND	mg/kg	0.060	1	04/16/10 14:30	04/19/10 20:10	108-88-3	
Xylene (Total)	ND	mg/kg	0.18	1	04/16/10 14:30	04/19/10 20:10	1330-20-7	
a,a,a-Trifluorotoluene (S)	100	%	80-125	1	04/16/10 14:30	04/19/10 20:10	98-08-8	
Dry Weight	Analytical Method: % Moisture							
Percent Moisture	**16.7**	%	0.10	1		04/16/10 00:00		

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: 3500824 SINCLAIR-MAPLEWOOD
Pace Project No.: 10126500

Sample: MEOH BLANK **Lab ID: 10126500007** Collected: 04/14/10 00:00 Received: 04/15/10 10:42 Matrix: Solid

Results reported on a "wet-weight" basis

Parameters	Results	Units	Report Limit	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	1	04/16/10 14:30	04/19/10 17:11	71-43-2	
Ethylbenzene	ND	mg/kg	0.050	1	04/16/10 14:30	04/19/10 17:11	100-41-4	
Gasoline Range Organics	ND	mg/kg	5.0	1	04/16/10 14:30	04/19/10 17:11		
Methyl-tert-butyl ether	ND	mg/kg	0.25	1	04/16/10 14:30	04/19/10 17:11	1634-04-4	
Toluene	ND	mg/kg	0.050	1	04/16/10 14:30	04/19/10 17:11	108-88-3	
Xylene (Total)	ND	mg/kg	0.15	1	04/16/10 14:30	04/19/10 17:11	1330-20-7	
a,a,a-Trifluorotoluene (S)	99	%	80-125	1	04/16/10 14:30	04/19/10 17:11	98-08-8	

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ANALYTICAL RESULTS

Project: 3500824 SINCLAIR-MAPLEWOOD
Pace Project No.: 10126500

Sample: H2O BLANK **Lab ID: 10126500008** Collected: 04/14/10 00:00 Received: 04/15/10 10:42 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
WIGRO GCV	Analytical Method: WI MOD GRO							
Benzene	ND	ug/L	1.0	1		04/15/10 19:19	71-43-2	
Ethylbenzene	ND	ug/L	1.0	1		04/15/10 19:19	100-41-4	
Gasoline Range Organics	ND	ug/L	100	1		04/15/10 19:19		
Methyl-tert-butyl ether	ND	ug/L	5.0	1		04/15/10 19:19	1634-04-4	
Toluene	ND	ug/L	1.0	1		04/15/10 19:19	108-88-3	
1,2,4-Trimethylbenzene	ND	ug/L	1.0	1		04/15/10 19:19	95-63-6	
1,3,5-Trimethylbenzene	ND	ug/L	1.0	1		04/15/10 19:19	108-67-8	
Xylene (Total)	ND	ug/L	3.0	1		04/15/10 19:19	1330-20-7	
a,a,a-Trifluorotoluene (S)	97	%	80-125	1		04/15/10 19:19	98-08-8	

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QUALITY CONTROL DATA

Project: 3500824 SINCLAIR-MAPLEWOOD
Pace Project No.: 10126500

QC Batch: OEXT/12720 Analysis Method: WI MOD DRO
QC Batch Method: WI MOD DRO Analysis Description: WIDRO GCS
Associated Lab Samples: 10126500001, 10126500002, 10126500004, 10126500006

METHOD BLANK: 774675 Matrix: Solid
Associated Lab Samples: 10126500001, 10126500002, 10126500004, 10126500006

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Diesel Range Organics	mg/kg	ND	5.0	04/19/10 19:04	
n-Triacontane (S)	%	76	50-150	04/19/10 19:04	

LABORATORY CONTROL SAMPLE & LCSD: 774676 774677

Parameter	Units	Spike Conc.	LCS Result	LCSD Result	LCS % Rec	LCSD % Rec	% Rec Limits	RPD	Max RPD	Qualifiers
Diesel Range Organics	mg/kg	80	69.2	75.9	86	95	70-120	9	20	
n-Triacontane (S)	%				89	95	50-150			

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: 3500824 SINCLAIR-MAPLEWOOD
Pace Project No.: 10126500

QC Batch: OEXT/12715
QC Batch Method: WI MOD DRO
Analysis Method: WI MOD DRO
Analysis Description: WIDRO GCS
Associated Lab Samples: 10126500003, 10126500005

METHOD BLANK: 774358 Matrix: Water
Associated Lab Samples: 10126500003, 10126500005

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Diesel Range Organics	mg/L	0.15	0.10	04/19/10 16:54	C0
n-Triacontane (S)	%	89	50-150	04/19/10 16:54	

LABORATORY CONTROL SAMPLE & LCSD: 774359 774360

Parameter	Units	Spike Conc.	LCS Result	LCSD Result	LCS % Rec	LCSD % Rec	% Rec Limits	RPD	Max RPD	Qualifiers
Diesel Range Organics	mg/L	2	1.9	2.0	97	99	75-115	1	20	2M
n-Triacontane (S)	%				99	99	50-150			

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QUALITY CONTROL DATA

Project: 3500824 SINCLAIR-MAPLEWOOD
Pace Project No.: 10126500

QC Batch: GCV/6983 Analysis Method: WI MOD GRO
QC Batch Method: TPH GRO/PVOC WI ext. Analysis Description: WIGRO Solid GCV
Associated Lab Samples: 10126500001, 10126500002, 10126500004, 10126500006, 10126500007

METHOD BLANK: 774622 Matrix: Solid
Associated Lab Samples: 10126500001, 10126500002, 10126500004, 10126500006, 10126500007

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Benzene	mg/kg	ND	0.050	04/19/10 16:04	
Ethylbenzene	mg/kg	ND	0.050	04/19/10 16:04	
Gasoline Range Organics	mg/kg	ND	5.0	04/19/10 16:04	
Methyl-tert-butyl ether	mg/kg	ND	0.25	04/19/10 16:04	
Toluene	mg/kg	ND	0.050	04/19/10 16:04	
Xylene (Total)	mg/kg	ND	0.15	04/19/10 16:04	
a,a,a-Trifluorotoluene (S)	%	99	80-125	04/19/10 16:04	

LABORATORY CONTROL SAMPLE & LCSD: 774623 774624

Parameter	Units	Spike Conc.	LCS Result	LCSD Result	LCS % Rec	LCSD % Rec	% Rec Limits	RPD	Max RPD	Qualifiers
Benzene	mg/kg	5	4.8	4.9	95	98	80-120	3	20	
Ethylbenzene	mg/kg	5	4.8	4.9	96	98	80-120	2	20	
Gasoline Range Organics	mg/kg	50	48.6	56.7	97	113	80-120	15	20	
Methyl-tert-butyl ether	mg/kg	5	4.7	4.7	95	94	80-120	1	20	
Toluene	mg/kg	5	4.8	4.9	96	97	80-120	1	20	
Xylene (Total)	mg/kg	15	14.7	15.0	98	100	80-120	2	20	
a,a,a-Trifluorotoluene (S)	%				100	99	80-125			

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QUALITY CONTROL DATA

Project: 3500824 SINCLAIR-MAPLEWOOD
Pace Project No.: 10126500

QC Batch: GCV/6980
QC Batch Method: WI MOD GRO
Analysis Method: WI MOD GRO
Analysis Description: WIGRO GCV Water
Associated Lab Samples: 10126500003, 10126500005, 10126500008

METHOD BLANK: 774054 Matrix: Water
Associated Lab Samples: 10126500003, 10126500005, 10126500008

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
1,2,4-Trimethylbenzene	ug/L	ND	1.0	04/15/10 17:31	
1,3,5-Trimethylbenzene	ug/L	ND	1.0	04/15/10 17:31	
Benzene	ug/L	ND	1.0	04/15/10 17:31	
Ethylbenzene	ug/L	ND	1.0	04/15/10 17:31	
Gasoline Range Organics	ug/L	ND	100	04/15/10 17:31	
Methyl-tert-butyl ether	ug/L	ND	5.0	04/15/10 17:31	
Toluene	ug/L	ND	1.0	04/15/10 17:31	
Xylene (Total)	ug/L	ND	3.0	04/15/10 17:31	
a,a,a-Trifluorotoluene (S)	%	99	80-125	04/15/10 17:31	

LABORATORY CONTROL SAMPLE & LCSD: 774055 774056

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	111	107	111	107	80-120	4	20	
1,3,5-Trimethylbenzene	ug/L	100	112	107	112	107	80-120	4	20	
Benzene	ug/L	100	109	108	109	108	80-120	1	20	
Ethylbenzene	ug/L	100	111	109	111	109	80-120	2	20	
Gasoline Range Organics	ug/L	1000	1070	1060	107	106	80-120	1	20	
Methyl-tert-butyl ether	ug/L	100	103	98.9	103	99	80-120	4	20	
Toluene	ug/L	100	110	108	110	108	80-120	2	20	
Xylene (Total)	ug/L	300	342	329	114	110	80-120	4	20	
a,a,a-Trifluorotoluene (S)	%				97	97	80-125			

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 774057 774058

Parameter	Units	10126015002 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	535	500	500	1070	1020	108	97	50-146	5	20	
1,3,5-Trimethylbenzene	ug/L	228	500	500	758	728	106	100	50-148	4	20	
Benzene	ug/L	ND	500	500	694	658	139	132	50-145	5	20	
Ethylbenzene	ug/L	483	500	500	1040	985	112	100	56-138	6	20	
Gasoline Range Organics	ug/L	12500	5000	5000	18300	18700	115	124	73-132	2	20	
Methyl-tert-butyl ether	ug/L	62.1	500	500	324	324	52	52	50-150	0	20	
Toluene	ug/L	46.3	500	500	601	575	111	106	66-126	4	20	
Xylene (Total)	ug/L	1230	1500	1500	2850	2720	109	99	56-134	5	20	
a,a,a-Trifluorotoluene (S)	%						122	117	80-125			

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QUALITY CONTROL DATA

Project: 3500824 SINCLAIR-MAPLEWOOD
Pace Project No.: 10126500

QC Batch: MPRP/19993
QC Batch Method: EPA 3010
Analysis Method: EPA 6010
Analysis Description: 6010 MET Dissolved
Associated Lab Samples: 10126500003, 10126500005

METHOD BLANK: 774515 Matrix: Water
Associated Lab Samples: 10126500003, 10126500005

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Lead, Dissolved	ug/L	ND	3.0	04/16/10 13:31	

LABORATORY CONTROL SAMPLE: 774516

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Lead, Dissolved	ug/L	1000	1010	101	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 774517 774518

Parameter	Units	10126498001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Lead, Dissolved	ug/L	ND	1000	1000	987	987	99	99	80-120	0	30	

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QUALITY CONTROL DATA

Project: 3500824 SINCLAIR-MAPLEWOOD
Pace Project No.: 10126500

QC Batch: MPRP/19994
QC Batch Method: % Moisture
Analysis Method: % Moisture
Analysis Description: Dry Weight/Percent Moisture
Associated Lab Samples: 10126500001, 10126500002, 10126500004, 10126500006

SAMPLE DUPLICATE: 774635

Parameter	Units	10126498004 Result	Dup Result	RPD	Max RPD	Qualifiers
Percent Moisture	%	7.0	7.3	4	30	

SAMPLE DUPLICATE: 774685

Parameter	Units	10126577011 Result	Dup Result	RPD	Max RPD	Qualifiers
Percent Moisture	%	3.9	4.1	5	30	

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QUALIFIERS

Project: 3500824 SINCLAIR-MAPLEWOOD
Pace Project No.: 10126500

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.
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.
Pace Analytical is NELAP accredited. Contact your Pace PM for the current list of accredited analytes.
U - Indicates the compound was analyzed for, but not detected.

BATCH QUALIFIERS

Batch: GCV/6983

[M5]	A matrix spike/matrix spike duplicate was not performed for this batch due to insufficient sample volume.

ANALYTE QUALIFIERS

1M	Analyte detected in method blank but was not detected in the sample.
2M	Analyte was detected in the method blank. The sample had concentrations of at least ten times greater than the blank.
C0	Result confirmed by second analysis.
P4	Sample field preservation does not meet EPA or method recommendations for this analysis.
S4	Surrogate recovery not evaluated against control limits due to sample dilution.
T7	Low boiling point hydrocarbons are present in the sample.

1148, 1149 1026500

CHAIN-OF-CUSTODY / Analytical Request Document

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

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Page: 1 of 1

1343571

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Section A Required Client Information:

Company:	GES
Address:	1285 Corporate Ctr Dr Suite 120 Eagan
Email To:	
Phone: 8007351077	Fax:
Requested Due Date/TAT:	5-day

Section B Required Project Information:

Report To:	Scott Vasko
Copy To:	
Purchase Order No.:	
Project Name:	Sinclair - Maplewood
Project Number:	3500824

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:

Section D Required Client Information

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

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

Requested Analysis Filtered (Y/N)

ITEM #	SAMPLE ID	MATRIX CODE	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED Composite Start DATE	TIME	Composite End/Grab DATE	TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Unpreserved	H_2SO_4	HNO_3	HCl	NaOH	$Na_2S_2O_3$	Methanol	Other	Analysis Test Y/N	BTEX/MTBE	GRO WI	DRO WI	PVOC 8021	Dissolved lead	Residual Chlorine (Y/N)	Pace Project No./ Lab I.D.
1	GP4 18-20	Sl	g	4-14-10	1900				4	3						1			X	X	X				001
2	GP3 15-17	Sl	g	4-14-10	700 PM				4	3						1			X	X	X				002
3	GP1 ~~17-19~~	Wt	g	4-14-10	5:50 pm				9			1	8							X	X	X	X		003
4	GP2 12-14	Sl	g	4-14-10	1800				4	3						1			X	X	X				004
5	GP3	Wt	g	4-14-10	1910				9			1	8							X	X	X	X		005
6	GP1 17-19	SL	g	4/14/10	5:30 pm				4	3						1			X	X	X				006
7																									007
8																									008
9																									
10																									
11																									
12																									

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	Temp in °C	Received on Ice (Y/N)	Custody Sealed Cooler (Y/N)	Samples Intact (Y/N)
	Valerie L. Moore	4/15/10	10:05	[signature] / Pace	4/15/10	1042	4.8	Y	N	Y

ORIGINAL

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER: Tim Morrey

SIGNATURE of SAMPLER: [signature] DATE Signed (MM/DD/YY): 4-14-10

*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

Carlson

BORING NUMBER GP-1

CLIENT Sinclair Marketing Inc. **PROJECT NAME** Sinclair #22020

PROJECT NUMBER 3327-00 **PROJECT LOCATION** Maplewood, Minnesota

DATE STARTED 6/29/11 **COMPLETED** 6/29/11 **GROUND ELEVATION** _____ **HOLE SIZE** 2 inch

DRILLING CONTRACTOR Range Environmental Drilling **GROUND WATER LEVELS:**

DRILLING METHOD Direct Push ▽ **AT TIME OF DRILLING** 16.4 ft

LOGGED BY C. Loch **CHECKED BY** B. Ryan **AT END OF DRILLING** —

NOTES _____ **AFTER DRILLING** —

FORMATION	DEPTH (ft)	SAMPLE TYPE NUMBER	RECOVERY %	U.S.C.S.	GRAPHIC LOG	MATERIAL DESCRIPTION	TIME	PID (ppm)
	0							
		MAC 1 2	100	SW		Coarse-grained sand, no odors or stains, dry, FILL.		
						2.0	15:41	0.0
				SM		Brown, sandy silt, strong odor, dry.		
						4.0	15:41	769
	5					Gray and black staining throughout, strong gas odor, dry, mixed with sand, FILL.		
		MAC 3 4	100				15:44	>2,500
				SM				
							15:44	72.6
	10	MAC 5 6	75			10.0	15:55	714
				SW		Medium-grained sand, well-graded, strong petroleum odor, gray staining, dry.		
						12.5	15:55	>2,500
				SP		Brown, fine-grained sand, poorly graded, moist to wet, slight odor.		
		MAC 7 8	100			14.0	16:02	22.8
	15			SM		Light gray sandy silt with brown mottling, moist, no odor or stains.		
						16.0	16:02	2.5
						▽ Light gray fine-grained sand with gravel lenses and silt, moderate petroleum odor, wet to saturated.		
		MAC 9 10	100	SP			16:11	215
	20					Same as above, strong odor and saturated.	16:11	288
		MAC 11 12	100			22.0		
				SM		Gray sandy silt with slight odor.	16:21	186
						23.0		
				SW		Reddish brown medium-grained, well graded, moist, no odor.		
	25					Some small rocks.	16:21	25.8

(Continued Next Page)

Carlson

BORING NUMBER GP-1

CLIENT Sinclair Marketing Inc. **PROJECT NAME** Sinclair #22020

PROJECT NUMBER 3327-00 **PROJECT LOCATION** Maplewood, Minnesota

FORMATION	DEPTH (ft)	SAMPLE TYPE NUMBER	RECOVERY %	U.S.C.S.	GRAPHIC LOG	MATERIAL DESCRIPTION	TIME	PID (ppm)
	25	MAC 13 14	100	SW		Reddish brown medium-grained, well graded, moist, no odor. *(continued)*	16:35	0.0
							16:35	0.0
	30	MAC 15 16	100				16:50	0.0
						Soil sample collected at 10' to 12' bgs and 30' to 32' bgs. Water sample collected at 17' bgs.		
						31.0 End of boring at 31.0 feet.	16:50	0.0

Carlson

BORING NUMBER GP-2

CLIENT Sinclair Marketing Inc. **PROJECT NAME** Sinclair #22020

PROJECT NUMBER 3327-00 **PROJECT LOCATION** Maplewood, Minnesota

DATE STARTED 6/29/11 **COMPLETED** 6/29/11 **GROUND ELEVATION** _____ **HOLE SIZE** 2 inch

DRILLING CONTRACTOR Range Environmental Drilling **GROUND WATER LEVELS:**

DRILLING METHOD Direct Push ▽ **AT TIME OF DRILLING** 17.1 ft

LOGGED BY C. Loch **CHECKED BY** B. Ryan **AT END OF DRILLING** —

NOTES _____ **AFTER DRILLING** —

FORMATION	DEPTH (ft)	SAMPLE TYPE NUMBER	RECOVERY %	U.S.C.S.	GRAPHIC LOG	MATERIAL DESCRIPTION	TIME	PID (ppm)
	0	MAC 1 2	100	SM		Brown (7.5YR 2.5/2) sandy silt, no odor or stains, dry.	11:07	0.0
	5	MAC 3 4	100			No odor or stains, dry.	11:07	0.0
							11:11	0.0
						Some sandy gravel, no odor or stains, dry to moist.	11:11	0.0
	10	MAC 5 6	100				11:18	0.0
						No odor or stains, dry to moist, sand lens at 13.5' bgs., moist.	11:18	0.0
		MAC 7 8	100				11:26	0.0
	15					15.0		
				SP		Brown (7.5YR 3/4) fine-grained sand, poorly graded, no odor or stains, moist to wet, some mottling.	11:26	0.0
		MAC 9 10	100		▽		11:32	0.0
						19.0		
	20			SM		Brownish gray, mottled sandy silt, no odor or stains, moist.	11:32	0.0
						21.0		
		MAC 11 12	100	SW		Reddish brown medium-grained sand, well-graded, moist, no odor or stains.	11:45	0.0
						Soil sample collected at 14' to 16' bgs. Water sample collected at 17' bgs.		
						24.0		
						End of boring at 24.0 feet.	11:45	0.0

Carlson

BORING NUMBER GP-3

CLIENT Sinclair Marketing Inc.
PROJECT NAME Sinclair #22020
PROJECT NUMBER 3327-00
PROJECT LOCATION Maplewood, Minnesota
DATE STARTED 6/29/11 COMPLETED 6/29/11
GROUND ELEVATION ____ HOLE SIZE 2 inch
DRILLING CONTRACTOR Range Environmental Drilling
GROUND WATER LEVELS:
DRILLING METHOD Direct Push
▽ AT TIME OF DRILLING 17.9 ft
LOGGED BY C. Loch CHECKED BY B. Ryan
AT END OF DRILLING —
NOTES
AFTER DRILLING —

FORMATION	DEPTH (ft)	SAMPLE TYPE NUMBER	RECOVERY %	U.S.C.S.	GRAPHIC LOG	MATERIAL DESCRIPTION	TIME	PID (ppm)
	0	MAC 1 2	100	SM		Dark brown (7.5YR 2.5/2) sandy silt, no odor or stains, dry.	12:13	0.0
	5	MAC 3 4	100			Gray stained soils and petroleum odor from 6' to 8' bgs., dry.	12:13	0.0
							12:18	0.0
						Strong odor and staining (gray).		
						Gray stained throughout, moderate odor, dry to moist.	12:18	1079
	10	MAC 5 6	100				12:23	155
		MAC 7 8	100			No stains present, no odors, dry.	12:23	28.1
	15						12:30	0.0
						15.0		
				SP		Brown (7.5YR 3/4) fine-grained sand, poorly graded, no odor or stains, moist to wet.		
						Wet to saturated, no odor or stains.	12:30	0.0
		MAC 9 10	100		▽		12:45	0.0
						19.0		
	20			SM		Light gray, mottled sandy silt, no odor or stains, moist.	12:45	0.0
		MAC 11 12	100			22.0		
				SW		Reddish brown medium-grained sand, well-graded, moist, no odor or stains.	13:00	0.0
						Soil sample collected at 6' to 8' bgs. and 14' to 16' bgs. Water sample collected at 18' bgs.		
						24.0	13:00	0.0
						End of boring at 24.0 feet.		

GENERAL BH / TP / WELL 3327-00 SINCLAIR #22020.GPJ GINT US.GDT 8/9/11

Carlson

BORING NUMBER GP-4

CLIENT Sinclair Marketing Inc.
PROJECT NAME Sinclair #22020
PROJECT NUMBER 3327-00
PROJECT LOCATION Maplewood, Minnesota
DATE STARTED 6/29/11 COMPLETED 6/29/11
GROUND ELEVATION ____ HOLE SIZE 2 inch
DRILLING CONTRACTOR Range Environmental Drilling
GROUND WATER LEVELS:
DRILLING METHOD Direct Push
▽ AT TIME OF DRILLING 11.1 ft
LOGGED BY C. Loch CHECKED BY B. Ryan
AT END OF DRILLING ---
NOTES
AFTER DRILLING ---

FORMATION	DEPTH (ft)	SAMPLE TYPE NUMBER	RECOVERY %	U.S.C.S.	GRAPHIC LOG	MATERIAL DESCRIPTION	TIME	PID (ppm)
	0	MAC 1 2	100	SM		Dark brown (7.5YR 2.5/2) sandy silt, no odor or stains, dry.	13:44	0.0
	5	MAC 3 4	75			No odor or stains, dry.	13:44	0.0
							13:58	0.0
	10	MAC 5 6	100			More reddish brown (7.5YR 3/3), some sandy gravel lenses, no odors or stains, dry to moist.	13:58	0.0
						▽	14:08	0.0
	15	MAC 7 8	100	SP		No stains present, no odors, moist.	14:08	0.0
						13.0 Brown (7.5YR 3/4) fine-grained sand with some silt, poorly graded, no odor or stains, wet to saturated.	14:14	0.0
		MAC 9 10	100			No odor or stains, saturated.	14:14	0.0
	20			SM		18.0 Gray, stiff sandy silt with some clay, no odor or stains, moist to dry.	14:24	0.0
						Soil sample collected at 12' to 14' bgs. Water sample collected at 14' bgs.		
						20.0 End of boring at 20.0 feet.	14:24	0.0

Carlson

BORING NUMBER GP-5

CLIENT Sinclair Marketing Inc. **PROJECT NAME** Sinclair #22020
PROJECT NUMBER 3327-00 **PROJECT LOCATION** Maplewood, Minnesota
DATE STARTED 6/29/11 **COMPLETED** 6/29/11 **GROUND ELEVATION** _____ **HOLE SIZE** 2 inch
DRILLING CONTRACTOR Range Environmental Drilling **GROUND WATER LEVELS:**
DRILLING METHOD Direct Push ▽ **AT TIME OF DRILLING** 17.1 ft
LOGGED BY C. Loch **CHECKED BY** B. Ryan ▼ **AT END OF DRILLING** 12.2 ft
NOTES _____ **AFTER DRILLING** —

FORMATION	DEPTH (ft)	SAMPLE TYPE NUMBER	RECOVERY %	U.S.C.S.	GRAPHIC LOG	MATERIAL DESCRIPTION	TIME	PID (ppm)
	0	MAC 1 2	100	SM		Dark brown (7.5YR 2.5/2) sandy silt, some rocks present, no odor or stains, dry.	14:51	0.0
	5	MAC 3 4	50			No odor or stains, dry.	14:51	0.0
							14:55	0.0
						No stains present, no odors, dry.	14:55	NR
	10	MAC 5 6	100				15:07	0.0
						11.0		
				SP	▼	Light gray to brown (7.5YR 5/2) fine-grained sand, poorly graded, no odor or stains, moist to wet. No odor or stains, wet to saturated.	15:07	0.0
		MAC 7 8	100				15:14	0.0
	15					15.0		
				SM		Light gray, sandy silt with brown mottling, no odor or stains, moist.		
						16.0	15:14	0.0
				SW	▽	Brown medium-grained sand, no odor or stains, saturated.		
		MAC 9 10	100			18.0	15:22	0.0
				SM		Light gray sandy silt.		
	20					Soil sample collected at 10' to 12' bgs. Water sample collected at 12' bgs. 20.0	15:22	0.0
						End of boring at 20.0 feet.		

GENERAL BH / TP / WELL 3327-00 SINCLAIR #22020.GPJ GINT US.GDT 8/9/11

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

Minnesota Well and Boring Sealing No. H 295021
Minnesota Unique Well No. or W-series No. (Leave blank if not known)

WELL OR BORING LOCATION

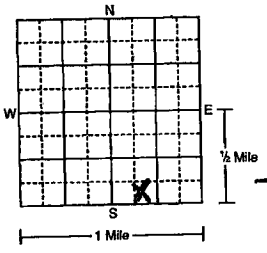
County Name: Ramsey

Township Name	Township No.	Range No.	Section No.	Fraction (sm. → lg.)
Maplewood	29N	22W	18	SE¼ SW¼ SE¼

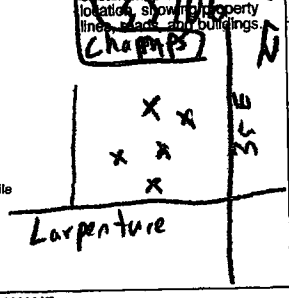
GPS LOCATION: Latitude____ degrees____ minutes____ seconds; Longitude____ degrees____ minutes____ seconds

Numerical Street Address or Fire Number and City of Well or Boring Location: 223 Lorpenture Ave. E, Maplewood

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



Sketch map of well or boring location, showing property lines, roads, and buildings.



PROPERTY OWNER'S NAME/COMPANY NAME: Sinclair Marketing, Inc.

Property owner's mailing address if different than well location address indicated above: 550 East South Temple, Salt Lake City, UT 84102

WELL OWNER'S NAME/COMPANY NAME: Same

Well owner's mailing address if different than property owner's address indicated above: Same

GEOLOGICAL MATERIAL	COLOR	HARDNESS OR FORMATION	FROM	TO
If not known, indicate estimated formation log from nearby well or boring.				
Silty Sandy clay	Brn	Soft	0	12
Silty Sand w/Gravel	Brn	med	12	31

REMARKS, SOURCE OF DATA, DIFFICULTIES IN SEALING

Date Sealed: 6/29/11
Date Well or Boring Constructed: 6/29/11
Depth Before Sealing: 31 ft.
Original Depth: N/A ft.

AQUIFER(S): ☑ Single Aquifer ☐ Multiaquifer

WELL/BORING: ☐ Water-Supply Well ☑ Monit. Well ☐ Env. Bore Hole ☐ Other____

STATIC WATER LEVEL: ☑ Measured ☐ Estimated Date Measured 6/29/11
15 ft. ☑ below ☐ above land surface

CASING TYPE(S): ☐ Steel ☐ Plastic ☐ Tile ☑ Other Temp. Geoprobe

WELLHEAD COMPLETION
Outside: ☐ Well House ☐ At Grade ☐ Pitless Adapter/Unit ☐ Buried ☐ Well Pit ☑ Other Temp. well - Abond.
Inside: ☐ Basement Offset ☐ Well Pit ☐ Buried ☐ Other____

CASING(S)

Diameter	Depth	Set in oversize hole?	Annular space initially grouted?
Temp Geoprobe	in. from____ to____ ft.	☐ Yes ☐ No	☐ Yes ☐ No ☐ Unknown
	in. from____ to____ ft.	☐ Yes ☐ No	☐ Yes ☐ No ☐ Unknown
	in. from____ to____ ft.	☐ Yes ☐ No	☐ Yes ☐ No ☐ Unknown

SCREEN/OPEN HOLE: Screen from 15 to 25 ft. Open Hole from N/A to____ ft.

OBSTRUCTIONS: ☐ Rods/Drop Pipe ☐ Check Valve(s) ☐ Debris ☐ Fill ☑ No Obstruction
Type of Obstructions (Describe)____
Obstructions removed? ☐ Yes ☐ No Describe____

PUMP
Type____
☐ Removed ☑ Not Present ☐ Other____

METHOD USED TO SEAL ANNULAR SPACE BETWEEN 2 CASINGS, OR CASING AND BORE HOLE:
☐ No Annular Space Exists ☑ Annular Space Grouted with Tremie Pipe ☐ Casing Perforation/Removal
____ in. from____ to____ ft. ☐ Perforated ☐ Removed
____ in. from____ to____ ft. ☐ Perforated ☐ Removed
Type of Perforator____
☐ Other____

GROUTING MATERIAL(S) (One bag of cement = 94 lbs., one bag of bentonite = 50 lbs.)
Grouting Material Bentonite from 0 to 31 ft.____ yards 1/4 bags
____ from____ to____ ft.____ yards____ bags
____ from____ to____ ft.____ yards____ bags

OTHER WELLS AND BORINGS
Other unsealed and unused well or boring on property? ☐ Yes ☑ No How many?____

LICENSED OR REGISTERED CONTRACTOR CERTIFICATION
This well or boring was sealed in accordance with Minnesota Rules, Chapter 4725. The information contained in this report is true to the best of my knowledge.

Range Env. Drilling — Licensee Business Name — 2622 — License or Registration No.
Todd J. Knuckey — Certified Representative Signature — 1150 — Certified Rep. No. — 7/5/11 — Date
Todd J. Knuckey — Name of Person Sealing Well or Boring

IMPORTANT-FILE WITH PROPERTY PAPERS-WELL OWNER COPY — H 295021

HE-01434-12 IC# 140-0423 9/09R

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12065 Lebanon Rd.
Mt. Juliet, TN 37122
(615) 758-5858
1-800-767-5859
Fax (615) 758-5859

Tax I.D. 62-0814289

Est. 1970

Chris Loch
Carlson Professional Services, Inc.
248 Apollo Dr: Suite 100
Lino Lakes, MN 55014

Report Summary

Thursday July 14, 2011

Report Number: L524215
Samples Received: 07/02/11
Client Project: 3327-00

Description: Sinclair Oil #22020

The analytical results in this report are based upon information supplied by you, the client, and are for your exclusive use. If you have any questions regarding this data package, please do not hesitate to call.

Entire Report Reviewed By: John Hawkins

John Hawkins , ESC Representative

Laboratory Certification Numbers

A2LA - 1461-01, AIHA - 100789, AL - 40660, CA - I-2327, CT - PH-0197, FL - E87487
GA - 923, IN - C-TN-01, KY - 90010, KYUST - 0016, NC - ENV375/DW21704, ND - R-140
NJ - TN002,NJ NELAP - TN002, SC - 84004, TN - 2006, VA - 00109, WV - 233
AZ - 0612, MN - 047-999-395, NY - 11742, WI - 998093910, NV - TN000032008A,
TX - T104704245, OK-9915

Accreditation is only applicable to the test methods specified on each scope of accreditation held by ESC Lab Sciences.
Note: The use of the preparatory EPA Method 3511 is not approved or endorsed by the CA ELAP.

Where applicable, sampling conducted by ESC is performed per guidance provided in laboratory standard operating procedures: 060302, 060303, and 060304.

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Chris Loch
Carlson Professional Services, Inc.
248 Apollo Dr: Suite 100
Lino Lakes, MN 55014

Case Narrative

Thursday July 14, 2011

Report Number: L524215
Samples Received: 07/02/11
Client Project: 3327-00

Description: Sinclair Oil #22020

Sample Receiving

The samples were received in proper containers and in good condition.

The samples were received on ice (less than or equal to 4 degrees centigrade), in properly preserved containers and in good condition.

Data

All samples were treated according to method protocol, no other treatment was necessary.

All Samples were extracted and analyzed within appropriate holding times.

QA/QC was within acceptable ranges. See Qualifiers where applicable.

ESC Level 2 Data Package

I certify that, for other than the conditions detailed herein, this data package is in compliance with the terms and conditions of this Agreement, both technically and for completeness. Release of this data has been authorized by the Laboratory Manager or his designee.

Other Comments

L524215-02 (GP-1 30-32ft) DROWM sample had greater weight of sample than required for DROWM protocol. An alternate DRO method was used to determined DRO content in this sample. JVH 7-12-2011

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REPORT OF ANALYSIS

July 14,2011

Chris Loch
Carlson Professional Services, Inc.
248 Apollo Dr: Suite 100
Lino Lakes, MN 55014

ESC Sample # : L524215-01

Date Received : July 02, 2011
Description : Sinclair Oil #22020

Site ID : MAPLEWOOD, MN

Sample ID : GP-1 10-12FT

Project # : 3327-00

Collected By : Chris Loch
Collection Date : 06/29/11 16:30

Parameter	Dry Result	Det. Limit	Units	Method	Date	Dil.
Total Solids	93.		%	2540G	07/11/11	1
PVOCGRO						
Benzene	1.3	0.027	mg/kg	8021	07/03/11	51
Toluene	1.9	0.27	mg/kg	8021	07/03/11	51
Ethylbenzene	5.1	0.027	mg/kg	8021	07/03/11	51
m&p-Xylene	16.	0.055	mg/kg	8021	07/03/11	51
o-Xylene	5.2	0.027	mg/kg	8021	07/03/11	51
Methyl tert-butyl ether	0.33	0.055	mg/kg	8021	07/03/11	51
Naphthalene	6.6	0.27	mg/kg	8021	07/03/11	51
1,3,5-Trimethylbenzene	9.6	0.55	mg/kg	8021	07/08/11	510
1,2,4-Trimethylbenzene	29.	0.55	mg/kg	8021	07/08/11	510
Gasoline (C6-C10)	520	55.	mg/kg	8015	07/08/11	510
Surrogate recovery-%						
a,a,a-Trifluorotoluene(PID)	115.		% Rec.	8021	07/03/11	51
TPH (GC/FID) High Fraction	120	8.6	mg/kg	DROWM/8015M	07/08/11	1
Surrogate recovery(%)						
Triacontane	84.2		% Rec.	DROWM/8015M	07/08/11	1

Results listed are dry weight basis.
BDL - Below Detection Limit
Det. Limit - Practical Quantitation Limit(PQL)
Note:

The reported analytical results relate only to the sample submitted
Reported: 07/14/11 09:50 Printed: 07/14/11 11:57

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REPORT OF ANALYSIS

July 14,2011

Chris Loch
Carlson Professional Services, Inc.
248 Apollo Dr: Suite 100
Lino Lakes, MN 55014

ESC Sample # : L524215-02

Date Received : July 02, 2011
Description : Sinclair Oil #22020

Site ID : MAPLEWOOD, MN

Sample ID : GP-1 30-32FT

Project # : 3327-00

Collected By : Chris Loch
Collection Date : 06/29/11 17:00

Parameter	Dry Result	Det. Limit	Units	Method	Date	Dil.
Total Solids	83.		%	2540G	07/11/11	1
PVOCGRO						
Benzene	BDL	0.030	mg/kg	8021	07/03/11	50
Toluene	BDL	0.30	mg/kg	8021	07/03/11	50
Ethylbenzene	BDL	0.030	mg/kg	8021	07/03/11	50
m&p-Xylene	BDL	0.060	mg/kg	8021	07/03/11	50
o-Xylene	BDL	0.030	mg/kg	8021	07/03/11	50
Methyl tert-butyl ether	BDL	0.060	mg/kg	8021	07/03/11	50
Naphthalene	BDL	0.30	mg/kg	8021	07/03/11	50
1,3,5-Trimethylbenzene	BDL	0.060	mg/kg	8021	07/03/11	50
1,2,4-Trimethylbenzene	BDL	0.060	mg/kg	8021	07/03/11	50
Gasoline (C6-C10)	BDL	6.0	mg/kg	8015	07/03/11	50
Surrogate recovery-%						
a,a,a-Trifluorotoluene(PID)	100.		% Rec.	8021	07/03/11	50
Petroleum Range Organics		10.	mg/kg	FLPRO	07/13/11	1
Surrogate Recovery						
o-Terphenyl	69.4		% Rec.	FLPRO	07/13/11	1
C35	74.0		% Rec.	FLPRO	07/13/11	1

Results listed are dry weight basis.
BDL - Below Detection Limit
Det. Limit - Practical Quantitation Limit(PQL)
Note:

The reported analytical results relate only to the sample submitted
Reported: 07/14/11 09:50 Printed: 07/14/11 11:57

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Est. 1970

REPORT OF ANALYSIS

July 14,2011

Chris Loch
Carlson Professional Services, Inc.
248 Apollo Dr: Suite 100
Lino Lakes, MN 55014

ESC Sample # : L524215-03

Date Received : July 02, 2011
Description : Sinclair Oil #22020

Site ID : MAPLEWOOD, MN

Sample ID : GP-2 14-16FT

Project # : 3327-00

Collected By : Chris Loch
Collection Date : 06/29/11 11:50

Parameter	Dry Result	Det. Limit	Units	Method	Date	Dil.
Total Solids	86.		%	2540G	07/11/11	1
PVOCGRO						
Benzene	BDL	0.029	mg/kg	8021	07/03/11	50
Toluene	BDL	0.29	mg/kg	8021	07/03/11	50
Ethylbenzene	BDL	0.029	mg/kg	8021	07/03/11	50
m&p-Xylene	BDL	0.058	mg/kg	8021	07/03/11	50
o-Xylene	BDL	0.029	mg/kg	8021	07/03/11	50
Methyl tert-butyl ether	BDL	0.058	mg/kg	8021	07/03/11	50
Naphthalene	BDL	0.29	mg/kg	8021	07/03/11	50
1,3,5-Trimethylbenzene	BDL	0.058	mg/kg	8021	07/03/11	50
1,2,4-Trimethylbenzene	BDL	0.058	mg/kg	8021	07/03/11	50
Gasoline (C6-C10)	BDL	5.8	mg/kg	8015	07/03/11	50
Surrogate recovery-%						
a,a,a-Trifluorotoluene(PID)	98.1		% Rec.	8021	07/03/11	50
TPH (GC/FID) High Fraction	BDL	9.3	mg/kg	DROWM/8015M	07/08/11	1
Surrogate recovery(%)						
Triacontane	89.0		% Rec.	DROWM/8015M	07/08/11	1

Results listed are dry weight basis.
BDL - Below Detection Limit
Det. Limit - Practical Quantitation Limit(PQL)
Note:

The reported analytical results relate only to the sample submitted
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REPORT OF ANALYSIS

July 14,2011

Chris Loch
Carlson Professional Services, Inc.
248 Apollo Dr: Suite 100
Lino Lakes, MN 55014

ESC Sample # : L524215-04

Date Received : July 02, 2011
Description : Sinclair Oil #22020

Site ID : MAPLEWOOD, MN

Sample ID : GP-3 6-8FT

Project # : 3327-00

Collected By : Chris Loch
Collection Date : 06/29/11 12:35

Parameter	Dry Result	Det. Limit	Units	Method	Date	Dil.
Total Solids	90.		%	2540G	07/11/11	1
PVOCGRO						
Benzene	0.10	0.032	mg/kg	8021	07/03/11	57
Toluene	BDL	0.32	mg/kg	8021	07/03/11	57
Ethylbenzene	1.8	0.032	mg/kg	8021	07/03/11	57
m&p-Xylene	3.2	0.063	mg/kg	8021	07/03/11	57
o-Xylene	2.8	0.032	mg/kg	8021	07/03/11	57
Methyl tert-butyl ether	BDL	0.063	mg/kg	8021	07/03/11	57
Naphthalene	4.7	0.32	mg/kg	8021	07/03/11	57
1,3,5-Trimethylbenzene	11.	0.63	mg/kg	8021	07/08/11	570
1,2,4-Trimethylbenzene	50.	0.63	mg/kg	8021	07/08/11	570
Gasoline (C6-C10)	1200	63.	mg/kg	8015	07/08/11	570
Surrogate recovery-%						
a,a,a-Trifluorotoluene(PID)	98.8		% Rec.	8021	07/03/11	57
TPH (GC/FID) High Fraction	800	100	mg/kg	DROWM/8015M	07/08/11	11.3
Surrogate recovery(%)						
Triacontane	90.6		% Rec.	DROWM/8015M	07/08/11	11.3

Results listed are dry weight basis.
BDL - Below Detection Limit
Det. Limit - Practical Quantitation Limit(PQL)

The reported analytical results relate only to the sample submitted
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REPORT OF ANALYSIS

July 14,2011

Chris Loch
Carlson Professional Services, Inc.
248 Apollo Dr: Suite 100
Lino Lakes, MN 55014

ESC Sample # : L524215-05

Date Received : July 02, 2011
Description : Sinclair Oil #22020

Site ID : MAPLEWOOD, MN

Sample ID : GP-3 14-16FT

Project # : 3327-00

Collected By : Chris Loch
Collection Date : 06/29/11 13:10

Parameter	Dry Result	Det. Limit	Units	Method	Date	Dil.
Total Solids	86.		%	2540G	07/11/11	1
PVOCGRO						
Benzene	BDL	0.029	mg/kg	8021	07/03/11	49.5
Toluene	BDL	0.29	mg/kg	8021	07/03/11	49.5
Ethylbenzene	BDL	0.029	mg/kg	8021	07/03/11	49.5
m&p-Xylene	BDL	0.057	mg/kg	8021	07/03/11	49.5
o-Xylene	BDL	0.029	mg/kg	8021	07/03/11	49.5
Methyl tert-butyl ether	BDL	0.057	mg/kg	8021	07/03/11	49.5
Naphthalene	BDL	0.29	mg/kg	8021	07/03/11	49.5
1,3,5-Trimethylbenzene	BDL	0.057	mg/kg	8021	07/03/11	49.5
1,2,4-Trimethylbenzene	BDL	0.057	mg/kg	8021	07/03/11	49.5
Gasoline (C6-C10)	BDL	5.7	mg/kg	8015	07/03/11	49.5
Surrogate recovery-%						
a,a,a-Trifluorotoluene(PID)	100.		% Rec.	8021	07/03/11	49.5
TPH (GC/FID) High Fraction	BDL	9.3	mg/kg	DROWM/8015M	07/08/11	1
Surrogate recovery(%)						
Triacontane	91.6		% Rec.	DROWM/8015M	07/08/11	1

Results listed are dry weight basis.
BDL - Below Detection Limit
Det. Limit - Practical Quantitation Limit(PQL)
Note:

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REPORT OF ANALYSIS

July 14,2011

Chris Loch
Carlson Professional Services, Inc.
248 Apollo Dr: Suite 100
Lino Lakes, MN 55014

ESC Sample # : L524215-06

Date Received : July 02, 2011
Description : Sinclair Oil #22020

Site ID : MAPLEWOOD, MN

Sample ID : GP-4 12-14FT

Project # : 3327-00

Collected By : Chris Loch
Collection Date : 06/29/11 14:30

Parameter	Dry Result	Det. Limit	Units	Method	Date	Dil.
Total Solids	81.		%	2540G	07/11/11	1
PVOCGRO						
Benzene	BDL	0.031	mg/kg	8021	07/03/11	50
Toluene	BDL	0.31	mg/kg	8021	07/03/11	50
Ethylbenzene	BDL	0.031	mg/kg	8021	07/03/11	50
m&p-Xylene	BDL	0.062	mg/kg	8021	07/03/11	50
o-Xylene	BDL	0.031	mg/kg	8021	07/03/11	50
Methyl tert-butyl ether	BDL	0.062	mg/kg	8021	07/03/11	50
Naphthalene	BDL	0.31	mg/kg	8021	07/03/11	50
1,3,5-Trimethylbenzene	BDL	0.062	mg/kg	8021	07/03/11	50
1,2,4-Trimethylbenzene	BDL	0.062	mg/kg	8021	07/03/11	50
Gasoline (C6-C10)	BDL	6.2	mg/kg	8015	07/03/11	50
Surrogate recovery-% a,a,a-Trifluorotoluene(PID)	100.		% Rec.	8021	07/03/11	50
TPH (GC/FID) High Fraction	BDL	9.9	mg/kg	DROWM/8015M	07/08/11	1
Surrogate recovery(%) Triacontane	86.6		% Rec.	DROWM/8015M	07/08/11	1

Results listed are dry weight basis.
BDL - Below Detection Limit
Det. Limit - Practical Quantitation Limit(PQL)

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REPORT OF ANALYSIS

July 14,2011

Chris Loch
Carlson Professional Services, Inc.
248 Apollo Dr: Suite 100
Lino Lakes, MN 55014

ESC Sample # : L524215-07

Date Received : July 02, 2011
Description : Sinclair Oil #22020

Site ID : MAPLEWOOD, MN

Sample ID : GP-5 10-12FT

Project # : 3327-00

Collected By : Chris Loch
Collection Date : 06/29/11 15:20

Parameter	Dry Result	Det. Limit	Units	Method	Date	Dil.
Total Solids	78.		%	2540G	07/11/11	1
PVOCGRO						
Benzene	BDL	0.032	mg/kg	8021	07/03/11	49.5
Toluene	BDL	0.32	mg/kg	8021	07/03/11	49.5
Ethylbenzene	BDL	0.032	mg/kg	8021	07/03/11	49.5
m&p-Xylene	BDL	0.064	mg/kg	8021	07/03/11	49.5
o-Xylene	BDL	0.032	mg/kg	8021	07/03/11	49.5
Methyl tert-butyl ether	BDL	0.064	mg/kg	8021	07/03/11	49.5
Naphthalene	BDL	0.32	mg/kg	8021	07/03/11	49.5
1,3,5-Trimethylbenzene	BDL	0.064	mg/kg	8021	07/03/11	49.5
1,2,4-Trimethylbenzene	BDL	0.064	mg/kg	8021	07/03/11	49.5
Gasoline (C6-C10)	BDL	6.4	mg/kg	8015	07/03/11	49.5
Surrogate recovery-%						
a,a,a-Trifluorotoluene(PID)	98.6		% Rec.	8021	07/03/11	49.5
TPH (GC/FID) High Fraction	BDL	10.	mg/kg	DROWM/8015M	07/08/11	1
Surrogate recovery(%)						
Triacontane	87.3		% Rec.	DROWM/8015M	07/08/11	1

Results listed are dry weight basis.
BDL - Below Detection Limit
Det. Limit - Practical Quantitation Limit(PQL)
Note:

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REPORT OF ANALYSIS

July 14,2011

Chris Loch
Carlson Professional Services, Inc.
248 Apollo Dr: Suite 100
Lino Lakes, MN 55014

ESC Sample # : L524215-08

Date Received : July 02, 2011
Description : Sinclair Oil #22020

Site ID : MAPLEWOOD, MN

Sample ID : GP-1W

Project # : 3327-00

Collected By : Chris Loch
Collection Date : 06/29/11 17:10

Parameter	Result	Det. Limit	Units	Method	Date	Dil.
WI DNR						
Gasoline (C6-C10)	440	100	ug/l	GROWM/8015	07/08/11	1
Surrogate recovery-%						
a,a,a-Trifluorotoluene(PID)	105.		% Rec.	8021	07/08/11	1
Volatile Organics						
Acetone	BDL	50.	ug/l	8260B	07/03/11	1
Acrolein	BDL	50.	ug/l	8260B	07/03/11	1
Acrylonitrile	BDL	10.	ug/l	8260B	07/03/11	1
Allyl chloride	BDL	5.0	ug/l	8260B	07/03/11	1
Benzene	1.3	1.0	ug/l	8260B	07/03/11	1
Bromobenzene	BDL	1.0	ug/l	8260B	07/03/11	1
Bromodichloromethane	BDL	1.0	ug/l	8260B	07/03/11	1
Bromoform	BDL	1.0	ug/l	8260B	07/03/11	1
Bromomethane	BDL	5.0	ug/l	8260B	07/03/11	1
n-Butylbenzene	BDL	1.0	ug/l	8260B	07/03/11	1
sec-Butylbenzene	BDL	1.0	ug/l	8260B	07/03/11	1
tert-Butylbenzene	BDL	1.0	ug/l	8260B	07/03/11	1
Carbon tetrachloride	BDL	1.0	ug/l	8260B	07/03/11	1
Chlorobenzene	BDL	1.0	ug/l	8260B	07/03/11	1
Chlorodibromomethane	BDL	1.0	ug/l	8260B	07/03/11	1
Chloroethane	BDL	5.0	ug/l	8260B	07/03/11	1
2-Chloroethyl vinyl ether	BDL	50.	ug/l	8260B	07/03/11	1
Chloroform	BDL	5.0	ug/l	8260B	07/03/11	1
Chloromethane	BDL	2.5	ug/l	8260B	07/03/11	1
2-Chlorotoluene	BDL	1.0	ug/l	8260B	07/03/11	1
4-Chlorotoluene	BDL	1.0	ug/l	8260B	07/03/11	1
1,2-Dibromo-3-Chloropropane	BDL	5.0	ug/l	8260B	07/03/11	1
1,2-Dibromoethane	BDL	1.0	ug/l	8260B	07/03/11	1
Dibromomethane	BDL	1.0	ug/l	8260B	07/03/11	1
1,2-Dichlorobenzene	BDL	1.0	ug/l	8260B	07/03/11	1
1,3-Dichlorobenzene	BDL	1.0	ug/l	8260B	07/03/11	1
1,4-Dichlorobenzene	BDL	1.0	ug/l	8260B	07/03/11	1
Dichlorodifluoromethane	BDL	5.0	ug/l	8260B	07/03/11	1
Dichlorofluoromethane	BDL	5.0	ug/l	8260B	07/03/11	1
1,1-Dichloroethane	BDL	1.0	ug/l	8260B	07/03/11	1
1,2-Dichloroethane	BDL	1.0	ug/l	8260B	07/03/11	1
1,1-Dichloroethene	BDL	1.0	ug/l	8260B	07/03/11	1
cis-1,2-Dichloroethene	BDL	1.0	ug/l	8260B	07/03/11	1
trans-1,2-Dichloroethene	BDL	1.0	ug/l	8260B	07/03/11	1
1,2-Dichloropropane	BDL	1.0	ug/l	8260B	07/03/11	1
1,1-Dichloropropene	BDL	1.0	ug/l	8260B	07/03/11	1
1,3-Dichloropropane	BDL	1.0	ug/l	8260B	07/03/11	1
cis-1,3-Dichloropropene	BDL	1.0	ug/l	8260B	07/03/11	1

BDL - Below Detection Limit
Det. Limit - Practical Quantitation Limit(PQL)

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REPORT OF ANALYSIS

July 14,2011

Chris Loch
Carlson Professional Services, Inc.
248 Apollo Dr: Suite 100
Lino Lakes, MN 55014

ESC Sample # : L524215-08

Date Received : July 02, 2011
Description : Sinclair Oil #22020

Site ID : MAPLEWOOD, MN

Sample ID : GP-1W

Project # : 3327-00

Collected By : Chris Loch
Collection Date : 06/29/11 17:10

Parameter	Result	Det. Limit	Units	Method	Date	Dil.
trans-1,3-Dichloropropene	BDL	1.0	ug/l	8260B	07/03/11	1
2,2-Dichloropropane	BDL	1.0	ug/l	8260B	07/03/11	1
Di-isopropyl ether	BDL	1.0	ug/l	8260B	07/03/11	1
Ethylbenzene	15.	1.0	ug/l	8260B	07/03/11	1
Ethyl ether	BDL	1.0	ug/l	8260B	07/03/11	1
Hexachloro-1,3-butadiene	BDL	1.0	ug/l	8260B	07/03/11	1
Isopropylbenzene	1.3	1.0	ug/l	8260B	07/03/11	1
p-Isopropyltoluene	BDL	1.0	ug/l	8260B	07/03/11	1
2-Butanone (MEK)	BDL	10.	ug/l	8260B	07/03/11	1
Methylene Chloride	BDL	5.0	ug/l	8260B	07/03/11	1
2-Hexanone	BDL	10.	ug/l	8260B	07/03/11	1
4-Methyl-2-pentanone (MIBK)	BDL	10.	ug/l	8260B	07/03/11	1
Methyl tert-butyl ether	BDL	1.0	ug/l	8260B	07/03/11	1
Naphthalene	6.8	5.0	ug/l	8260B	07/03/11	1
n-Propylbenzene	4.3	1.0	ug/l	8260B	07/03/11	1
Styrene	BDL	1.0	ug/l	8260B	07/03/11	1
1,1,1,2-Tetrachloroethane	BDL	1.0	ug/l	8260B	07/03/11	1
1,1,2,2-Tetrachloroethane	BDL	1.0	ug/l	8260B	07/03/11	1
1,1,2-Trichloro-1,2,2-trifluoro	BDL	1.0	ug/l	8260B	07/03/11	1
Tetrachloroethene	BDL	1.0	ug/l	8260B	07/03/11	1
Tetrahydrofuran	BDL	5.0	ug/l	8260B	07/03/11	1
Toluene	7.8	5.0	ug/l	8260B	07/03/11	1
1,2,3-Trichlorobenzene	BDL	1.0	ug/l	8260B	07/03/11	1
1,2,4-Trichlorobenzene	BDL	1.0	ug/l	8260B	07/03/11	1
1,1,1-Trichloroethane	BDL	1.0	ug/l	8260B	07/03/11	1
1,1,2-Trichloroethane	BDL	1.0	ug/l	8260B	07/03/11	1
Trichloroethene	BDL	1.0	ug/l	8260B	07/03/11	1
Trichlorofluoromethane	BDL	5.0	ug/l	8260B	07/03/11	1
1,2,3-Trichloropropane	BDL	2.5	ug/l	8260B	07/03/11	1
1,2,4-Trimethylbenzene	22.	1.0	ug/l	8260B	07/03/11	1
1,2,3-Trimethylbenzene	5.1	1.0	ug/l	8260B	07/03/11	1
1,3,5-Trimethylbenzene	4.5	1.0	ug/l	8260B	07/03/11	1
Vinyl chloride	BDL	1.0	ug/l	8260B	07/03/11	1
Xylenes, Total	82.	3.0	ug/l	8260B	07/03/11	1
Surrogate Recovery						
Toluene-d8	103.		% Rec.	8260B	07/03/11	1
Dibromofluoromethane	107.		% Rec.	8260B	07/03/11	1
a,a,a-Trifluorotoluene	102.		% Rec.	8260B	07/03/11	1
4-Bromofluorobenzene	110.		% Rec.	8260B	07/03/11	1
TPH (GC/FID) High Fraction	3200	100	ug/l	DROWM/8015	07/07/11	1
Surrogate recovery(%)						
Triacontane	80.1		% Rec.	DROWM/8015	07/07/11	1

BDL - Below Detection Limit
Det. Limit - Practical Quantitation Limit(PQL)
Note:
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Reported: 07/14/11 09:50 Printed: 07/14/11 11:57

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REPORT OF ANALYSIS

July 14,2011

Chris Loch
Carlson Professional Services, Inc.
248 Apollo Dr: Suite 100
Lino Lakes, MN 55014

ESC Sample # : L524215-09

Date Received : July 02, 2011
Description : Sinclair Oil #22020

Site ID : MAPLEWOOD, MN

Sample ID : GP-2W

Project # : 3327-00

Collected By : Chris Loch
Collection Date : 06/29/11 12:05

Parameter	Result	Det. Limit	Units	Method	Date	Dil.
WI DNR						
Gasoline (C6-C10)	BDL	100	ug/l	GROWM/8015	07/08/11	1
Surrogate recovery-%						
a,a,a-Trifluorotoluene(PID)	103.		% Rec.	8021	07/08/11	1
Volatile Organics						
Acetone	BDL	50.	ug/l	8260B	07/03/11	1
Acrolein	BDL	50.	ug/l	8260B	07/03/11	1
Acrylonitrile	BDL	10.	ug/l	8260B	07/03/11	1
Allyl chloride	BDL	5.0	ug/l	8260B	07/03/11	1
Benzene	BDL	1.0	ug/l	8260B	07/03/11	1
Bromobenzene	BDL	1.0	ug/l	8260B	07/03/11	1
Bromodichloromethane	BDL	1.0	ug/l	8260B	07/03/11	1
Bromoform	BDL	1.0	ug/l	8260B	07/03/11	1
Bromomethane	BDL	5.0	ug/l	8260B	07/03/11	1
n-Butylbenzene	BDL	1.0	ug/l	8260B	07/03/11	1
sec-Butylbenzene	BDL	1.0	ug/l	8260B	07/03/11	1
tert-Butylbenzene	BDL	1.0	ug/l	8260B	07/03/11	1
Carbon tetrachloride	BDL	1.0	ug/l	8260B	07/03/11	1
Chlorobenzene	BDL	1.0	ug/l	8260B	07/03/11	1
Chlorodibromomethane	BDL	1.0	ug/l	8260B	07/03/11	1
Chloroethane	BDL	5.0	ug/l	8260B	07/03/11	1
2-Chloroethyl vinyl ether	BDL	50.	ug/l	8260B	07/03/11	1
Chloroform	BDL	5.0	ug/l	8260B	07/03/11	1
Chloromethane	BDL	2.5	ug/l	8260B	07/03/11	1
2-Chlorotoluene	BDL	1.0	ug/l	8260B	07/03/11	1
4-Chlorotoluene	BDL	1.0	ug/l	8260B	07/03/11	1
1,2-Dibromo-3-Chloropropane	BDL	5.0	ug/l	8260B	07/03/11	1
1,2-Dibromoethane	BDL	1.0	ug/l	8260B	07/03/11	1
Dibromomethane	BDL	1.0	ug/l	8260B	07/03/11	1
1,2-Dichlorobenzene	BDL	1.0	ug/l	8260B	07/03/11	1
1,3-Dichlorobenzene	BDL	1.0	ug/l	8260B	07/03/11	1
1,4-Dichlorobenzene	BDL	1.0	ug/l	8260B	07/03/11	1
Dichlorodifluoromethane	BDL	5.0	ug/l	8260B	07/03/11	1
Dichlorofluoromethane	BDL	5.0	ug/l	8260B	07/03/11	1
1,1-Dichloroethane	BDL	1.0	ug/l	8260B	07/03/11	1
1,2-Dichloroethane	BDL	1.0	ug/l	8260B	07/03/11	1
1,1-Dichloroethene	BDL	1.0	ug/l	8260B	07/03/11	1
cis-1,2-Dichloroethene	BDL	1.0	ug/l	8260B	07/03/11	1
trans-1,2-Dichloroethene	BDL	1.0	ug/l	8260B	07/03/11	1
1,2-Dichloropropane	BDL	1.0	ug/l	8260B	07/03/11	1
1,1-Dichloropropene	BDL	1.0	ug/l	8260B	07/03/11	1
1,3-Dichloropropane	BDL	1.0	ug/l	8260B	07/03/11	1
cis-1,3-Dichloropropene	BDL	1.0	ug/l	8260B	07/03/11	1

BDL - Below Detection Limit
Det. Limit - Practical Quantitation Limit(PQL)

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REPORT OF ANALYSIS

July 14,2011

Chris Loch
Carlson Professional Services, Inc.
248 Apollo Dr: Suite 100
Lino Lakes, MN 55014

ESC Sample # : L524215-09

Date Received : July 02, 2011
Description : Sinclair Oil #22020

Site ID : MAPLEWOOD, MN

Sample ID : GP-2W

Project # : 3327-00

Collected By : Chris Loch
Collection Date : 06/29/11 12:05

Parameter	Result	Det. Limit	Units	Method	Date	Dil.
trans-1,3-Dichloropropene	BDL	1.0	ug/l	8260B	07/03/11	1
2,2-Dichloropropane	BDL	1.0	ug/l	8260B	07/03/11	1
Di-isopropyl ether	BDL	1.0	ug/l	8260B	07/03/11	1
Ethylbenzene	BDL	1.0	ug/l	8260B	07/03/11	1
Ethyl ether	BDL	1.0	ug/l	8260B	07/03/11	1
Hexachloro-1,3-butadiene	BDL	1.0	ug/l	8260B	07/03/11	1
Isopropylbenzene	BDL	1.0	ug/l	8260B	07/03/11	1
p-Isopropyltoluene	BDL	1.0	ug/l	8260B	07/03/11	1
2-Butanone (MEK)	BDL	10.	ug/l	8260B	07/03/11	1
Methylene Chloride	BDL	5.0	ug/l	8260B	07/03/11	1
2-Hexanone	BDL	10.	ug/l	8260B	07/03/11	1
4-Methyl-2-pentanone (MIBK)	BDL	10.	ug/l	8260B	07/03/11	1
Methyl tert-butyl ether	BDL	1.0	ug/l	8260B	07/03/11	1
Naphthalene	BDL	5.0	ug/l	8260B	07/03/11	1
n-Propylbenzene	BDL	1.0	ug/l	8260B	07/03/11	1
Styrene	BDL	1.0	ug/l	8260B	07/03/11	1
1,1,1,2-Tetrachloroethane	BDL	1.0	ug/l	8260B	07/03/11	1
1,1,2,2-Tetrachloroethane	BDL	1.0	ug/l	8260B	07/03/11	1
1,1,2-Trichloro-1,2,2-trifluoro	BDL	1.0	ug/l	8260B	07/03/11	1
Tetrachloroethene	BDL	1.0	ug/l	8260B	07/03/11	1
Tetrahydrofuran	BDL	5.0	ug/l	8260B	07/03/11	1
Toluene	BDL	5.0	ug/l	8260B	07/03/11	1
1,2,3-Trichlorobenzene	BDL	1.0	ug/l	8260B	07/03/11	1
1,2,4-Trichlorobenzene	BDL	1.0	ug/l	8260B	07/03/11	1
1,1,1-Trichloroethane	BDL	1.0	ug/l	8260B	07/03/11	1
1,1,2-Trichloroethane	BDL	1.0	ug/l	8260B	07/03/11	1
Trichloroethene	BDL	1.0	ug/l	8260B	07/03/11	1
Trichlorofluoromethane	BDL	5.0	ug/l	8260B	07/03/11	1
1,2,3-Trichloropropane	BDL	2.5	ug/l	8260B	07/03/11	1
1,2,4-Trimethylbenzene	BDL	1.0	ug/l	8260B	07/03/11	1
1,2,3-Trimethylbenzene	BDL	1.0	ug/l	8260B	07/03/11	1
1,3,5-Trimethylbenzene	BDL	1.0	ug/l	8260B	07/03/11	1
Vinyl chloride	BDL	1.0	ug/l	8260B	07/03/11	1
Xylenes, Total	BDL	3.0	ug/l	8260B	07/03/11	1
Surrogate Recovery						
Toluene-d8	104.		% Rec.	8260B	07/03/11	1
Dibromofluoromethane	110.		% Rec.	8260B	07/03/11	1
a,a,a-Trifluorotoluene	104.		% Rec.	8260B	07/03/11	1
4-Bromofluorobenzene	95.2		% Rec.	8260B	07/03/11	1
TPH (GC/FID) High Fraction	BDL	130	ug/l	DROWM/8015	07/07/11	1.3
Surrogate recovery(%)						
Triacontane	81.9		% Rec.	DROWM/8015	07/07/11	1.3

BDL - Below Detection Limit
Det. Limit - Practical Quantitation Limit(PQL)
Note:
The reported analytical results relate only to the sample submitted.

Reported: 07/14/11 09:50 Printed: 07/14/11 11:57

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Est. 1970

REPORT OF ANALYSIS

July 14,2011

Chris Loch
Carlson Professional Services, Inc.
248 Apollo Dr: Suite 100
Lino Lakes, MN 55014

ESC Sample # : L524215-10

Date Received : July 02, 2011
Description : Sinclair Oil #22020

Site ID : MAPLEWOOD, MN

Sample ID : GP-3W

Project # : 3327-00

Collected By : Chris Loch
Collection Date : 06/29/11 13:15

Parameter	Result	Det. Limit	Units	Method	Date	Dil.
WI DNR						
Gasoline (C6-C10)	1100	100	ug/l	GROWM/8015	07/08/11	1
Surrogate recovery-%						
a,a,a-Trifluorotoluene(PID)	103.		% Rec.	8021	07/08/11	1
Volatile Organics						
Acetone	BDL	50.	ug/l	8260B	07/03/11	1
Acrolein	BDL	50.	ug/l	8260B	07/03/11	1
Acrylonitrile	BDL	10.	ug/l	8260B	07/03/11	1
Allyl chloride	BDL	5.0	ug/l	8260B	07/03/11	1
Benzene	BDL	1.0	ug/l	8260B	07/03/11	1
Bromobenzene	BDL	1.0	ug/l	8260B	07/03/11	1
Bromodichloromethane	BDL	1.0	ug/l	8260B	07/03/11	1
Bromoform	BDL	1.0	ug/l	8260B	07/03/11	1
Bromomethane	BDL	5.0	ug/l	8260B	07/03/11	1
n-Butylbenzene	4.9	1.0	ug/l	8260B	07/03/11	1
sec-Butylbenzene	5.0	1.0	ug/l	8260B	07/03/11	1
tert-Butylbenzene	BDL	1.0	ug/l	8260B	07/03/11	1
Carbon tetrachloride	BDL	1.0	ug/l	8260B	07/03/11	1
Chlorobenzene	BDL	1.0	ug/l	8260B	07/03/11	1
Chlorodibromomethane	BDL	1.0	ug/l	8260B	07/03/11	1
Chloroethane	BDL	5.0	ug/l	8260B	07/03/11	1
2-Chloroethyl vinyl ether	BDL	50.	ug/l	8260B	07/03/11	1
Chloroform	BDL	5.0	ug/l	8260B	07/03/11	1
Chloromethane	BDL	2.5	ug/l	8260B	07/03/11	1
2-Chlorotoluene	BDL	1.0	ug/l	8260B	07/03/11	1
4-Chlorotoluene	BDL	1.0	ug/l	8260B	07/03/11	1
1,2-Dibromo-3-Chloropropane	BDL	5.0	ug/l	8260B	07/03/11	1
1,2-Dibromoethane	BDL	1.0	ug/l	8260B	07/03/11	1
Dibromomethane	BDL	1.0	ug/l	8260B	07/03/11	1
1,2-Dichlorobenzene	BDL	1.0	ug/l	8260B	07/03/11	1
1,3-Dichlorobenzene	BDL	1.0	ug/l	8260B	07/03/11	1
1,4-Dichlorobenzene	BDL	1.0	ug/l	8260B	07/03/11	1
Dichlorodifluoromethane	BDL	5.0	ug/l	8260B	07/03/11	1
Dichlorofluoromethane	BDL	5.0	ug/l	8260B	07/03/11	1
1,1-Dichloroethane	BDL	1.0	ug/l	8260B	07/03/11	1
1,2-Dichloroethane	BDL	1.0	ug/l	8260B	07/03/11	1
1,1-Dichloroethene	BDL	1.0	ug/l	8260B	07/03/11	1
cis-1,2-Dichloroethene	BDL	1.0	ug/l	8260B	07/03/11	1
trans-1,2-Dichloroethene	BDL	1.0	ug/l	8260B	07/03/11	1
1,2-Dichloropropane	BDL	1.0	ug/l	8260B	07/03/11	1
1,1-Dichloropropene	BDL	1.0	ug/l	8260B	07/03/11	1
1,3-Dichloropropane	BDL	1.0	ug/l	8260B	07/03/11	1
cis-1,3-Dichloropropene	BDL	1.0	ug/l	8260B	07/03/11	1

BDL - Below Detection Limit
Det. Limit - Practical Quantitation Limit(PQL)

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REPORT OF ANALYSIS

July 14,2011

Chris Loch
Carlson Professional Services, Inc.
248 Apollo Dr: Suite 100
Lino Lakes, MN 55014

ESC Sample # : L524215-10

Date Received : July 02, 2011
Description : Sinclair Oil #22020

Site ID : MAPLEWOOD, MN

Sample ID : GP-3W

Project # : 3327-00

Collected By : Chris Loch
Collection Date : 06/29/11 13:15

Parameter	Result	Det. Limit	Units	Method	Date	Dil.
trans-1,3-Dichloropropene	BDL	1.0	ug/l	8260B	07/03/11	1
2,2-Dichloropropane	BDL	1.0	ug/l	8260B	07/03/11	1
Di-isopropyl ether	BDL	1.0	ug/l	8260B	07/03/11	1
Ethylbenzene	3.7	1.0	ug/l	8260B	07/03/11	1
Ethyl ether	BDL	1.0	ug/l	8260B	07/03/11	1
Hexachloro-1,3-butadiene	BDL	1.0	ug/l	8260B	07/03/11	1
Isopropylbenzene	5.0	1.0	ug/l	8260B	07/03/11	1
p-Isopropyltoluene	5.5	1.0	ug/l	8260B	07/03/11	1
2-Butanone (MEK)	BDL	10.	ug/l	8260B	07/03/11	1
Methylene Chloride	BDL	5.0	ug/l	8260B	07/03/11	1
2-Hexanone	BDL	10.	ug/l	8260B	07/03/11	1
4-Methyl-2-pentanone (MIBK)	BDL	10.	ug/l	8260B	07/03/11	1
Methyl tert-butyl ether	BDL	1.0	ug/l	8260B	07/03/11	1
Naphthalene	6.2	5.0	ug/l	8260B	07/03/11	1
n-Propylbenzene	11.	1.0	ug/l	8260B	07/03/11	1
Styrene	BDL	1.0	ug/l	8260B	07/03/11	1
1,1,1,2-Tetrachloroethane	BDL	1.0	ug/l	8260B	07/03/11	1
1,1,2,2-Tetrachloroethane	BDL	1.0	ug/l	8260B	07/03/11	1
1,1,2-Trichloro-1,2,2-trifluoro	BDL	1.0	ug/l	8260B	07/03/11	1
Tetrachloroethene	BDL	5.0	ug/l	8260B	07/03/11	1
Tetrahydrofuran	BDL	5.0	ug/l	8260B	07/03/11	1
Toluene	BDL	1.0	ug/l	8260B	07/03/11	1
1,2,3-Trichlorobenzene	BDL	1.0	ug/l	8260B	07/03/11	1
1,2,4-Trichlorobenzene	BDL	1.0	ug/l	8260B	07/03/11	1
1,1,1-Trichloroethane	BDL	1.0	ug/l	8260B	07/03/11	1
1,1,2-Trichloroethane	BDL	1.0	ug/l	8260B	07/03/11	1
Trichloroethene	BDL	5.0	ug/l	8260B	07/03/11	1
Trichlorofluoromethane	BDL	2.5	ug/l	8260B	07/03/11	1
1,2,3-Trichloropropane	100	1.0	ug/l	8260B	07/03/11	1
1,2,4-Trimethylbenzene	39.	1.0	ug/l	8260B	07/03/11	1
1,2,3-Trimethylbenzene	28.	1.0	ug/l	8260B	07/03/11	1
1,3,5-Trimethylbenzene	BDL	1.0	ug/l	8260B	07/03/11	1
Vinyl chloride	20.	3.0	ug/l	8260B	07/03/11	1
Xylenes, Total						
Surrogate Recovery						
Toluene-d8	105.		% Rec.	8260B	07/03/11	1
Dibromofluoromethane	115.		% Rec.	8260B	07/03/11	1
a,a,a-Trifluorotoluene	104.		% Rec.	8260B	07/03/11	1
4-Bromofluorobenzene	116.		% Rec.	8260B	07/03/11	1
TPH (GC/FID) High Fraction	750	100	ug/l	DROWM/8015	07/07/11	1
Surrogate recovery(%)						
Triacontane	85.2		% Rec.	DROWM/8015	07/07/11	1

BDL - Below Detection Limit
Det. Limit - Practical Quantitation Limit(PQL)
Note:
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REPORT OF ANALYSIS

July 14,2011

Chris Loch
Carlson Professional Services, Inc.
248 Apollo Dr: Suite 100
Lino Lakes, MN 55014

ESC Sample # : L524215-11

Date Received : July 02, 2011
Description : Sinclair Oil #22020

Site ID : MAPLEWOOD, MN

Sample ID : GP-4W

Project # : 3327-00

Collected By : Chris Loch
Collection Date : 06/29/11 14:40

Parameter	Result	Det. Limit	Units	Method	Date	Dil.
WI DNR Gasoline (C6-C10)	BDL	100	ug/l	GROWM/8015	07/08/11	1
Surrogate recovery-% a,a,a-Trifluorotoluene(PID)	103.		% Rec.	8021	07/08/11	1
Volatile Organics						
Acetone	BDL	50.	ug/l	8260B	07/03/11	1
Acrolein	BDL	50.	ug/l	8260B	07/03/11	1
Acrylonitrile	BDL	10.	ug/l	8260B	07/03/11	1
Allyl chloride	BDL	5.0	ug/l	8260B	07/03/11	1
Benzene	BDL	1.0	ug/l	8260B	07/03/11	1
Bromobenzene	BDL	1.0	ug/l	8260B	07/03/11	1
Bromodichloromethane	BDL	1.0	ug/l	8260B	07/03/11	1
Bromoform	BDL	1.0	ug/l	8260B	07/03/11	1
Bromomethane	BDL	5.0	ug/l	8260B	07/03/11	1
n-Butylbenzene	BDL	1.0	ug/l	8260B	07/03/11	1
sec-Butylbenzene	BDL	1.0	ug/l	8260B	07/03/11	1
tert-Butylbenzene	BDL	1.0	ug/l	8260B	07/03/11	1
Carbon tetrachloride	BDL	1.0	ug/l	8260B	07/03/11	1
Chlorobenzene	BDL	1.0	ug/l	8260B	07/03/11	1
Chlorodibromomethane	BDL	1.0	ug/l	8260B	07/03/11	1
Chloroethane	BDL	5.0	ug/l	8260B	07/03/11	1
2-Chloroethyl vinyl ether	BDL	50.	ug/l	8260B	07/03/11	1
Chloroform	BDL	5.0	ug/l	8260B	07/03/11	1
Chloromethane	BDL	2.5	ug/l	8260B	07/03/11	1
2-Chlorotoluene	BDL	1.0	ug/l	8260B	07/03/11	1
4-Chlorotoluene	BDL	1.0	ug/l	8260B	07/03/11	1
1,2-Dibromo-3-Chloropropane	BDL	5.0	ug/l	8260B	07/03/11	1
1,2-Dibromoethane	BDL	1.0	ug/l	8260B	07/03/11	1
Dibromomethane	BDL	1.0	ug/l	8260B	07/03/11	1
1,2-Dichlorobenzene	BDL	1.0	ug/l	8260B	07/03/11	1
1,3-Dichlorobenzene	BDL	1.0	ug/l	8260B	07/03/11	1
1,4-Dichlorobenzene	BDL	1.0	ug/l	8260B	07/03/11	1
Dichlorodifluoromethane	BDL	5.0	ug/l	8260B	07/03/11	1
Dichlorofluoromethane	BDL	5.0	ug/l	8260B	07/03/11	1
1,1-Dichloroethane	BDL	1.0	ug/l	8260B	07/03/11	1
1,2-Dichloroethane	BDL	1.0	ug/l	8260B	07/03/11	1
1,1-Dichloroethene	BDL	1.0	ug/l	8260B	07/03/11	1
cis-1,2-Dichloroethene	BDL	1.0	ug/l	8260B	07/03/11	1
trans-1,2-Dichloroethene	BDL	1.0	ug/l	8260B	07/03/11	1
1,2-Dichloropropane	BDL	1.0	ug/l	8260B	07/03/11	1
1,1-Dichloropropene	BDL	1.0	ug/l	8260B	07/03/11	1
1,3-Dichloropropane	BDL	1.0	ug/l	8260B	07/03/11	1
cis-1,3-Dichloropropene	BDL	1.0	ug/l	8260B	07/03/11	1

BDL - Below Detection Limit
Det. Limit - Practical Quantitation Limit(PQL)

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July 14,2011

Chris Loch
Carlson Professional Services, Inc.
248 Apollo Dr: Suite 100
Lino Lakes, MN 55014

ESC Sample # : L524215-11

Date Received : July 02, 2011
Description : Sinclair Oil #22020

Site ID : MAPLEWOOD, MN

Sample ID : GP-4W

Project # : 3327-00

Collected By : Chris Loch
Collection Date : 06/29/11 14:40

Parameter	Result	Det. Limit	Units	Method	Date	Dil.
trans-1,3-Dichloropropene	BDL	1.0	ug/l	8260B	07/03/11	1
2,2-Dichloropropane	BDL	1.0	ug/l	8260B	07/03/11	1
Di-isopropyl ether	BDL	1.0	ug/l	8260B	07/03/11	1
Ethylbenzene	BDL	1.0	ug/l	8260B	07/03/11	1
Ethyl ether	BDL	1.0	ug/l	8260B	07/03/11	1
Hexachloro-1,3-butadiene	BDL	1.0	ug/l	8260B	07/03/11	1
Isopropylbenzene	BDL	1.0	ug/l	8260B	07/03/11	1
p-Isopropyltoluene	BDL	1.0	ug/l	8260B	07/03/11	1
2-Butanone (MEK)	BDL	10.	ug/l	8260B	07/03/11	1
Methylene Chloride	BDL	5.0	ug/l	8260B	07/03/11	1
2-Hexanone	BDL	10.	ug/l	8260B	07/03/11	1
4-Methyl-2-pentanone (MIBK)	BDL	10.	ug/l	8260B	07/03/11	1
Methyl tert-butyl ether	BDL	1.0	ug/l	8260B	07/03/11	1
Naphthalene	BDL	5.0	ug/l	8260B	07/03/11	1
n-Propylbenzene	BDL	1.0	ug/l	8260B	07/03/11	1
Styrene	BDL	1.0	ug/l	8260B	07/03/11	1
1,1,1,2-Tetrachloroethane	BDL	1.0	ug/l	8260B	07/03/11	1
1,1,2,2-Tetrachloroethane	BDL	1.0	ug/l	8260B	07/03/11	1
1,1,2-Trichloro-1,2,2-trifluoro	BDL	1.0	ug/l	8260B	07/03/11	1
Tetrachloroethene	BDL	1.0	ug/l	8260B	07/03/11	1
Tetrahydrofuran	BDL	5.0	ug/l	8260B	07/03/11	1
Toluene	BDL	5.0	ug/l	8260B	07/03/11	1
1,2,3-Trichlorobenzene	BDL	1.0	ug/l	8260B	07/03/11	1
1,2,4-Trichlorobenzene	BDL	1.0	ug/l	8260B	07/03/11	1
1,1,1-Trichloroethane	BDL	1.0	ug/l	8260B	07/03/11	1
1,1,2-Trichloroethane	BDL	1.0	ug/l	8260B	07/03/11	1
Trichloroethene	BDL	1.0	ug/l	8260B	07/03/11	1
Trichlorofluoromethane	BDL	5.0	ug/l	8260B	07/03/11	1
1,2,3-Trichloropropane	BDL	2.5	ug/l	8260B	07/03/11	1
1,2,4-Trimethylbenzene	BDL	1.0	ug/l	8260B	07/03/11	1
1,2,3-Trimethylbenzene	BDL	1.0	ug/l	8260B	07/03/11	1
1,3,5-Trimethylbenzene	BDL	1.0	ug/l	8260B	07/03/11	1
Vinyl chloride	BDL	1.0	ug/l	8260B	07/03/11	1
Xylenes, Total	BDL	3.0	ug/l	8260B	07/03/11	1
Surrogate Recovery						
Toluene-d8	103.		% Rec.	8260B	07/03/11	1
Dibromofluoromethane	110.		% Rec.	8260B	07/03/11	1
a,a,a-Trifluorotoluene	104.		% Rec.	8260B	07/03/11	1
4-Bromofluorobenzene	101.		% Rec.	8260B	07/03/11	1
TPH (GC/FID) High Fraction	BDL	100	ug/l	DROWM/8015	07/07/11	1
Surrogate recovery(%)						
Triacontane	74.2		% Rec.	DROWM/8015	07/07/11	1

BDL - Below Detection Limit
Det. Limit - Practical Quantitation Limit(PQL)
Note:
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July 14, 2011

Chris Loch
Carlson Professional Services, Inc.
248 Apollo Dr: Suite 100
Lino Lakes, MN 55014

ESC Sample # : L524215-12

Date Received : July 02, 2011
Description : Sinclair Oil #22020

Site ID : MAPLEWOOD, MN

Sample ID : GP-5W

Project # : 3327-00

Collected By : Chris Loch
Collection Date : 06/29/11 15:30

Parameter	Result	Det. Limit	Units	Method	Date	Dil.
WI DNR Gasoline (C6-C10)	450	100	ug/l	GROWM/8015	07/08/11	1
Surrogate recovery-% a,a,a-Trifluorotoluene(PID)	108.		% Rec.	8021	07/08/11	1
Volatile Organics						
Acetone	BDL	50.	ug/l	8260B	07/03/11	1
Acrolein	BDL	50.	ug/l	8260B	07/03/11	1
Acrylonitrile	BDL	10.	ug/l	8260B	07/03/11	1
Allyl chloride	BDL	5.0	ug/l	8260B	07/03/11	1
Benzene	BDL	1.0	ug/l	8260B	07/03/11	1
Bromobenzene	BDL	1.0	ug/l	8260B	07/03/11	1
Bromodichloromethane	BDL	1.0	ug/l	8260B	07/03/11	1
Bromoform	BDL	1.0	ug/l	8260B	07/03/11	1
Bromomethane	BDL	5.0	ug/l	8260B	07/03/11	1
n-Butylbenzene	1.2	1.0	ug/l	8260B	07/03/11	1
sec-Butylbenzene	3.0	1.0	ug/l	8260B	07/03/11	1
tert-Butylbenzene	BDL	1.0	ug/l	8260B	07/03/11	1
Carbon tetrachloride	BDL	1.0	ug/l	8260B	07/03/11	1
Chlorobenzene	BDL	1.0	ug/l	8260B	07/03/11	1
Chlorodibromomethane	BDL	1.0	ug/l	8260B	07/03/11	1
Chloroethane	BDL	5.0	ug/l	8260B	07/03/11	1
2-Chloroethyl vinyl ether	BDL	50.	ug/l	8260B	07/03/11	1
Chloroform	BDL	5.0	ug/l	8260B	07/03/11	1
Chloromethane	BDL	2.5	ug/l	8260B	07/03/11	1
2-Chlorotoluene	BDL	1.0	ug/l	8260B	07/03/11	1
4-Chlorotoluene	BDL	1.0	ug/l	8260B	07/03/11	1
1,2-Dibromo-3-Chloropropane	BDL	5.0	ug/l	8260B	07/03/11	1
1,2-Dibromoethane	BDL	1.0	ug/l	8260B	07/03/11	1
Dibromomethane	BDL	1.0	ug/l	8260B	07/03/11	1
1,2-Dichlorobenzene	BDL	1.0	ug/l	8260B	07/03/11	1
1,3-Dichlorobenzene	BDL	1.0	ug/l	8260B	07/03/11	1
1,4-Dichlorobenzene	BDL	1.0	ug/l	8260B	07/03/11	1
Dichlorodifluoromethane	BDL	5.0	ug/l	8260B	07/03/11	1
Dichlorofluoromethane	BDL	5.0	ug/l	8260B	07/03/11	1
1,1-Dichloroethane	BDL	1.0	ug/l	8260B	07/03/11	1
1,2-Dichloroethane	BDL	1.0	ug/l	8260B	07/03/11	1
1,1-Dichloroethene	BDL	1.0	ug/l	8260B	07/03/11	1
cis-1,2-Dichloroethene	BDL	1.0	ug/l	8260B	07/03/11	1
trans-1,2-Dichloroethene	BDL	1.0	ug/l	8260B	07/03/11	1
1,2-Dichloropropane	BDL	1.0	ug/l	8260B	07/03/11	1
1,1-Dichloropropene	BDL	1.0	ug/l	8260B	07/03/11	1
1,3-Dichloropropane	BDL	1.0	ug/l	8260B	07/03/11	1
cis-1,3-Dichloropropene	BDL	1.0	ug/l	8260B	07/03/11	1

BDL - Below Detection Limit
Det. Limit - Practical Quantitation Limit(PQL)

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Est. 1970

REPORT OF ANALYSIS

July 14, 2011

Chris Loch
Carlson Professional Services, Inc.
248 Apollo Dr: Suite 100
Lino Lakes, MN 55014

ESC Sample # : L524215-12

Date Received : July 02, 2011
Description : Sinclair Oil #22020

Site ID : MAPLEWOOD, MN

Sample ID : GP-5W

Project # : 3327-00

Collected By : Chris Loch
Collection Date : 06/29/11 15:30

Parameter	Result	Det. Limit	Units	Method	Date	Dil.
trans-1,3-Dichloropropene	BDL	1.0	ug/l	8260B	07/03/11	1
2,2-Dichloropropane	BDL	1.0	ug/l	8260B	07/03/11	1
Di-isopropyl ether	BDL	1.0	ug/l	8260B	07/03/11	1
Ethylbenzene	BDL	1.0	ug/l	8260B	07/03/11	1
Ethyl ether	BDL	1.0	ug/l	8260B	07/03/11	1
Hexachloro-1,3-butadiene	BDL	1.0	ug/l	8260B	07/03/11	1
Isopropylbenzene	5.8	1.0	ug/l	8260B	07/03/11	1
p-Isopropyltoluene	BDL	1.0	ug/l	8260B	07/03/11	1
2-Butanone (MEK)	BDL	10.	ug/l	8260B	07/03/11	1
Methylene Chloride	BDL	5.0	ug/l	8260B	07/03/11	1
2-Hexanone	BDL	10.	ug/l	8260B	07/03/11	1
4-Methyl-2-pentanone (MIBK)	BDL	10.	ug/l	8260B	07/03/11	1
Methyl tert-butyl ether	BDL	1.0	ug/l	8260B	07/03/11	1
Naphthalene	BDL	5.0	ug/l	8260B	07/03/11	1
n-Propylbenzene	12.	1.0	ug/l	8260B	07/03/11	1
Styrene	BDL	1.0	ug/l	8260B	07/03/11	1
1,1,1,2-Tetrachloroethane	BDL	1.0	ug/l	8260B	07/03/11	1
1,1,2,2-Tetrachloroethane	BDL	1.0	ug/l	8260B	07/03/11	1
1,1,2-Trichloro-1,2,2-trifluoro	BDL	1.0	ug/l	8260B	07/03/11	1
Tetrachloroethene	BDL	1.0	ug/l	8260B	07/03/11	1
Tetrahydrofuran	BDL	5.0	ug/l	8260B	07/03/11	1
Toluene	BDL	5.0	ug/l	8260B	07/03/11	1
1,2,3-Trichlorobenzene	BDL	1.0	ug/l	8260B	07/03/11	1
1,2,4-Trichlorobenzene	BDL	1.0	ug/l	8260B	07/03/11	1
1,1,1-Trichloroethane	BDL	1.0	ug/l	8260B	07/03/11	1
1,1,2-Trichloroethane	BDL	1.0	ug/l	8260B	07/03/11	1
Trichloroethene	BDL	1.0	ug/l	8260B	07/03/11	1
Trichlorofluoromethane	BDL	5.0	ug/l	8260B	07/03/11	1
1,2,3-Trichloropropane	BDL	2.5	ug/l	8260B	07/03/11	1
1,2,4-Trimethylbenzene	45.	1.0	ug/l	8260B	07/03/11	1
1,2,3-Trimethylbenzene	4.7	1.0	ug/l	8260B	07/03/11	1
1,3,5-Trimethylbenzene	2.6	1.0	ug/l	8260B	07/03/11	1
Vinyl chloride	BDL	1.0	ug/l	8260B	07/03/11	1
Xylenes, Total	BDL	3.0	ug/l	8260B	07/03/11	1
Surrogate Recovery						
Toluene-d8	102.		% Rec.	8260B	07/03/11	1
Dibromofluoromethane	107.		% Rec.	8260B	07/03/11	1
a,a,a-Trifluorotoluene	102.		% Rec.	8260B	07/03/11	1
4-Bromofluorobenzene	99.5		% Rec.	8260B	07/03/11	1
TPH (GC/FID) High Fraction	530	100	ug/l	DROWM/8015	07/07/11	1
Surrogate recovery(%)						
Triacontane	75.5		% Rec.	DROWM/8015	07/07/11	1

BDL - Below Detection Limit
Det. Limit - Practical Quantitation Limit(PQL)
Note:
The reported analytical results relate only to the sample submitted.

.
Reported: 07/14/11 09:50 Printed: 07/14/11 11:57

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Est. 1970

REPORT OF ANALYSIS

July 14, 2011

Chris Loch
Carlson Professional Services, Inc.
248 Apollo Dr: Suite 100
Lino Lakes, MN 55014

ESC Sample # : L524215-14

Date Received : July 02, 2011
Description :

Site ID : MAPLEWOOD, MN

Sample ID : MEOH BLANK

Project # : 3327-00

Collected By : Chris Loch
Collection Date : 06/29/11 15:30

Parameter	Result	Det. Limit	Units	Method	Date	Dil.
PVOCGRO	BDL	0.025	mg/kg	8021	07/03/11	50
Benzene	BDL	0.25	mg/kg	8021	07/03/11	50
Toluene	BDL	0.025	mg/kg	8021	07/03/11	50
Ethylbenzene	BDL	0.050	mg/kg	8021	07/03/11	50
m&p-Xylene	BDL	0.025	mg/kg	8021	07/03/11	50
o-Xylene	BDL	0.050	mg/kg	8021	07/03/11	50
Methyl tert-butyl ether	BDL	0.25	mg/kg	8021	07/03/11	50
Naphthalene	BDL	0.050	mg/kg	8021	07/03/11	50
1,3,5-Trimethylbenzene	BDL	0.050	mg/kg	8021	07/03/11	50
1,2,4-Trimethylbenzene	BDL	5.0	mg/kg	8015	07/03/11	50
Gasoline (C6-C10)						
Surrogate recovery-%	99.5		% Rec.	8021	07/03/11	50
a,a,a-Trifluorotoluene(PID)						

BDL - Below Detection Limit
Det. Limit - Practical Quantitation Limit(PQL)
Note:
The reported analytical results relate only to the sample submitted.

Reported: 07/14/11 09:50 Printed: 07/14/11 11:57

Attachment A
List of Analytes with QC Qualifiers

Sample Number	Work Group	Sample Type	Analyte	Run ID	Qualifier
L524215-08	WG544010	SAMP	TPH (GC/FID) High Fraction	R1752409	J4V9
	WG543959	SAMP	2-Chloroethyl vinyl ether	R1749891	J3
	WG543959	SAMP	Styrene	R1749891	J4
L524215-09	WG544010	SAMP	TPH (GC/FID) High Fraction	R1752409	J4V9
	WG543959	SAMP	Styrene	R1749891	J4
L524215-10	WG544010	SAMP	TPH (GC/FID) High Fraction	R1752409	J4V9
	WG543959	SAMP	Styrene	R1749891	J4
L524215-11	WG544010	SAMP	TPH (GC/FID) High Fraction	R1752409	J4V9
	WG543959	SAMP	Styrene	R1749891	J4
L524215-12	WG544010	SAMP	TPH (GC/FID) High Fraction	R1752409	J4V9
	WG543959	SAMP	Styrene	R1749891	J4

Attachment B
Explanation of QC Qualifier Codes

Qualifier	Meaning
J3	The associated batch QC was outside the established quality control range for precision.
J4	The associated batch QC was outside the established quality control range for accuracy.
V9	(ESC) - Additional QC Info: Please refer to the Case Narrative provided with the report.

Qualifier Report Information

ESC utilizes sample and result qualifiers as set forth by the EPA Contract Laboratory Program and as required by most certifying bodies including NELAC. In addition to the EPA qualifiers adopted by ESC, we have implemented ESC qualifiers to provide more information pertaining to our analytical results. Each qualifier is designated in the qualifier explanation as either EPA or ESC. Data qualifiers are intended to provide the ESC client with more detailed information concerning the potential bias of reported data. Because of the wide range of constituents and variety of matrices incorporated by most EPA methods,it is common for some compounds to fall outside of established ranges. These exceptions are evaluated and all reported data is valid and useable "unless qualified as 'R' (Rejected)."

Definitions

Accuracy - The relationship of the observed value of a known sample to the true value of a known sample. Represented by percent recovery and relevant to samples such as: control samples, matrix spike recoveries, surrogate recoveries, etc.

Precision - The agreement between a set of samples or between duplicate samples. Relates to how close together the results are and is represented by Relative Percent Differrence.

Surrogate - Organic compounds that are similar in chemical composition, extraction, and chromotography to analytes of interest. The surrogates are used to determine the probable response of the group of analytes that are chemically related to the surrogate compound. Surrogates are added to the sample and carried through all stages of preparation and analyses.

TIC - Tentatively Identified Compound: Compounds detected in samples that are not target compounds, internal standards, system monitoring compounds, or surrogates.

~~Carlson Professional Services, Inc.~~
248 Apollo Dr. Suite 100
Lino Lakes,MN 55014

Billing information:
Accounts Payable
248 Apollo Dr: Suite 100
Lino Lakes,MN 55014

Analysis/Container/Preservative — B070

Chain of Custody — Page 1 of 2

ESC L-A-B S-C-I-E-N-C-E-S
12065 Lebanon Road
Mt. Juliet, TN 37122
Phone: (800) 767-5859
Phone: (615) 758-5858
Fax: (615) 758-5859

Report to: Chris Loch
Email: cloch@carlsonpsi.com
Project Description: Sinclair Oil #22020
City/State Collected: MAPLEWOOD, MN
Phone: ~~(763) 489-7900~~ 952-346-3913
FAX: (763) 489-7959
Client Project #: 3327-00
Lab Project #: CARPROLLMN-SINCLAIR
Collected by (print): Chris Loch
Site/Facility ID#: MAPLEWOOD, MN
P.O.#: 3327-00
Collected by (signature):
Immediately Packed on Ice N ___ Y X

Rush? (Lab MUST Be Notified)
___ Same Day 200%
___ Next Day.....100%
___ Two Day.....50%
___ Three Day.....25%

Date Results Needed
Email? ___No X Yes
FAX? ___No ___Yes

(lab use only)
Acctnum: CARROLLMN
Template/Prelogin: T72271/P359812
Cooler #: 2@2.2
Shipped Via: FedEx Ground

Sample ID	Comp/Grab	Matrix*	Depth	Date	Time	No. of Cntrs	DROWM 1L-Amb-Add HCl	DROWM 60mlAmb/MeCl/Syr	GRAIN SIZE 1L-Clr-NoPres	GROWM 40mlAmb HCl	PYOCGRO 60mlAmb/MeOH/Syr	TS 4ozClr-NoPres	V8260/465 40mlAmb-HCl	Remarks/Contaminant	Sample # (lab only)
GP-1 (10-12')	Grab	SS	10-12'	6/29/11	4:30	4		X			X	X		PID = 72,500 (Hot)	-01
GP-1 (30-32')		SS	30-32'		5:00	4		X			X	X		PID = 0.0 ppm	-02
GP-2 (14-16')		SS	14-16'		11:50	4		X			X	X		PID = 0.0 ppm	-03
GP-3 (6-8')		SS	6-8'		12:35	4		X			X	X		PID = 1,079 ppm (Odor)	-04
GP-3 (14-16')		SS	14-16'		1:10	4		X			X	X		PID = 0.0 ppm	-05
GP-4 (12-14')		SS	12-14'		2:30	4		X			X	X		PID = 0.0 ppm	-06
GP-5 (10-12')		SS	10-12'		3:20	4		X			X	X		PID = 0.0 ppm	-07
		SS				4		X			X	X			-08
GP-1W		GW			5:10	6	X			X			X	STRONG ODOR	-09

*Matrix: SS - Soil GW - Groundwater WW - WasteWater DW - Drinking Water OT - Other_____

pH _____ Temp _____

Remarks:

Flow _____ Other _____

8700 4659 0984 / 8700 4659 0968

Relinquished by: (Signature)	Date:	Time:	Received by: (Signature)
	7/1/11	9:00	
Relinquished by: (Signature)	Date:	Time:	Received by: (Signature)
Relinquished by: (Signature)	Date:	Time:	Received for lab by: (Signature)
			C. Goo

Samples returned via: ☐ UPS ☑ FedEx ☐ Courier ☐ ____
Temp: 3.1°C Bottles Received: 63 of 16
Date: 7.2.11 Time: 0900

Condition: (lab use only)
COC Seal Intact: ___Y ___N ___NA
pH Checked: NCF:

~~Carlson Professional Services, Inc.~~
248 Apollo Dr: Suite 100
Lino Lakes,MN 55014

Billing information:
Accounts Payable
248 Apollo Dr: Suite 100
Lino Lakes,MN 55014

Report to: **Chris Loch**
Email: **cloch@carlsonpsi.com**

Project Description: **Sinclair Oil #22020**
City/State Collected: MAPLEWOOD, MN

Phone: ~~(763) 489-7900~~ 952-346-3913
FAX: (763) 489-7959
Client Project #: 3327-00
Lab Project #: CARPROLLMN-SINCLAIR

Collected by (print): CHRIS LOCH
Site/Facility ID#: MAPLEWOOD, MN
P.O.#: 3327-00

Collected by (signature):
Immediately Packed on Ice N ___ (Y) X

Rush? (Lab MUST Be Notified)
___ Same Day 200%
___ Next Day.....100%
___ Two Day.....50%
___ Three Day.....25%

Date Results Needed
Email? ___No X Yes
FAX? ___No ___Yes

Sample ID	Comp/Grab	Matrix*	Depth	Date	Time	No. of Cntrs	DROWM 1L-Amb-Add HCl <2	DROWM 60mlAmb/MeCl/Syr	GRAIN SIZE 1L-Clr-NoPres	GROWM 40mlAmb HCl	PVOCGRO 60mlAmb/MeOH/Syr	TS 4ozClr-NoPres	V8260/465 40mlAmb-HCl	Remarks/Contaminant / Sample # (lab use only)
GP-2W	—	GW		6/29/11	12:05	6	X			X			X	No Odor -09
GP-3W	—	GW			1:15	6	X			X			X	SLIGHT ODOR -10
GP-4W	—	GW			2:40	6	X			X			X	-11
GP-5W	—	GW			3:30	6	X			X			X	-12
GP-2 (16-20')	Comp	SS	16-20'		11:40	1			X					
GP-3 (16-20')	Comp	SS	16-20'		12:50	1			X					
GP-4 (12-16')	Comp	SS	12-16'		2:20	1			X					
MEOH BLANK	—	OT	NA	6/29/11	3:30	1				[illegible]	X			

*Matrix: **SS** - Soil **GW** - Groundwater **WW** - WasteWater **DW** - Drinking Water **OT** - Other MEOH

Remarks:

pH _____ Temp _____
Flow _____ Other _____

Analysis/Container/Preservative

Chain of Custody
Page 2 of 2

ESC LAB SCIENCES
12065 Lebanon Road
Mt. Juliet, TN 37122
Phone: (800) 767-5859
Phone: (615) 758-5858
Fax: (615) 758-5859

(lab use only)
Acctnum: CARPROLLMN
Template/Prelogin: T72271/P359812
Cooler #: 1 of 2
Shipped Via: FedEX Ground
L524425

Relinquished by: (Signature)	Date:	Time:	Received by: (Signature)
	7/1/11	9:00	
Relinquished by: (Signature)	Date:	Time:	Received by: (Signature)
Relinquished by: (Signature)	Date:	Time:	Received for lab by: (Signature)
			7.1.11 0900

Samples returned via: ☐ UPS ☑ FedEx ☐ Courier ☐ ____
Temp: 3.1 Bottles Received: 63+16
COC Seal Intact: ___Y ___N ___NA
pH Checked: NCF:

Condition: (lab use only)

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Tax I.D. 62-0814289

Est. 1970

Chris Loch
Carlson Professional Services, Inc.
248 Apollo Dr: Suite 100
Lino Lakes, MN 55014

Report Summary

Monday July 11, 2011

Report Number: L524196
Samples Received: 07/02/11
Client Project: 3327-00

Description: Sinclair Oil #22020

The analytical results in this report are based upon information supplied by you, the client, and are for your exclusive use. If you have any questions regarding this data package, please do not hesitate to call.

Entire Report Reviewed By: John Hawkins

John Hawkins , ESC Representative

Laboratory Certification Numbers

A2LA - 1461-01, AIHA - 100789, AL - 40660, CA - I-2327, CT - PH-0197, FL - E87487
GA - 923, IN - C-TN-01, KY - 90010, KYUST - 0016, NC - ENV375/DW21704, ND - R-140
NJ - TN002,NJ NELAP - TN002, SC - 84004, TN - 2006, VA - 00109, WV - 233
AZ - 0612, MN - 047-999-395, NY - 11742, WI - 998093910, NV - TN000032008A,
TX - T104704245, OK-9915

Accreditation is only applicable to the test methods specified on each scope of accreditation held by ESC Lab Sciences.
Note: The use of the preparatory EPA Method 3511 is not approved or endorsed by the CA ELAP.

Where applicable, sampling conducted by ESC is performed per guidance provided in laboratory standard operating procedures: 060302, 060303, and 060304.

ESC
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Est. 1970

REPORT OF ANALYSIS

July 11, 2011

Chris Loch
Carlson Professional Services, Inc.
248 Apollo Dr: Suite 100
Lino Lakes, MN 55014

ESC Sample # : L524196-01

Date Received : July 02, 2011
Description : Sinclair Oil #22020

Site ID : MAPLEWOOD, MN

Sample ID : VP-1 4FT

Project # : 3327-00

Collected By : Chris Loch
Collection Date : 06/29/11 13:15

Parameter	Cas#	Mol Wght	RDL1	RDL2	ppbv	ug/m3	Method	Date	Dil.
Volatile Organics									
Acetone	67-64-1	58.1	25.0	59.0	< 25.	< 59.	TO-15	07/08/11	20
Allyl chloride	107-05-1	76.53	4.00	13.0	< 4.0	< 13.	TO-15	07/08/11	20
Benzene	71-43-2	78.1	4.00	13.0	< 4.0	< 13.	TO-15	07/08/11	20
Benzyl Chloride	100-44-7	127	4.00	21.0	< 4.0	< 21.	TO-15	07/08/11	20
Bromodichloromethane	75-27-4	164	4.00	27.0	< 4.0	< 27.	TO-15	07/08/11	20
Bromoform	75-25-2	253	12.0	120.	< 12.	< 120	TO-15	07/08/11	20
Bromomethane	74-83-9	94.9	4.00	16.0	< 4.0	< 16.	TO-15	07/08/11	20
1,3-Butadiene	106-99-0	54.1	40.0	89.0	< 40.	< 89.	TO-15	07/08/11	20
Carbon disulfide	75-15-0	76.1	4.00	12.0	< 4.0	< 12.	TO-15	07/08/11	20
Carbon tetrachloride	56-23-5	154	4.00	25.0	< 4.0	< 25.	TO-15	07/08/11	20
Chlorobenzene	108-90-7	113	4.00	18.0	< 4.0	< 18.	TO-15	07/08/11	20
Chloroethane	75-00-3	64.5	4.00	11.0	< 4.0	< 11.	TO-15	07/08/11	20
Chloroform	67-66-3	119	4.00	19.0	< 4.0	< 19.	TO-15	07/08/11	20
Chloromethane	74-87-3	50.5	4.00	8.30	< 4.0	< 8.3	TO-15	07/08/11	20
2-Chlorotoluene	95-49-8	126	4.00	21.0	< 4.0	< 21.	TO-15	07/08/11	20
Cyclohexane	110-82-7	84.2	4.00	14.0	16.	55.	TO-15	07/08/11	20
Dibromochloromethane	124-48-1	208	4.00	34.0	< 4.0	< 34.	TO-15	07/08/11	20
1,2-Dibromoethane	106-93-4	188	4.00	31.0	< 4.0	< 31.	TO-15	07/08/11	20
1,2-Dichlorobenzene	95-50-1	147	4.00	24.0	< 4.0	< 24.	TO-15	07/08/11	20
1,3-Dichlorobenzene	541-73-1	147	4.00	24.0	< 4.0	< 24.	TO-15	07/08/11	20
1,4-Dichlorobenzene	106-46-7	147	4.00	24.0	< 4.0	< 24.	TO-15	07/08/11	20
1,2-Dichloroethane	107-06-2	99	4.00	16.0	< 4.0	< 16.	TO-15	07/08/11	20
1,1-Dichloroethane	75-34-3	98	4.00	16.0	< 4.0	< 16.	TO-15	07/08/11	20
1,1-Dichloroethene	75-35-4	96.9	4.00	16.0	< 4.0	< 16.	TO-15	07/08/11	20
cis-1,2-Dichloroethene	156-59-2	96.9	4.00	16.0	< 4.0	< 16.	TO-15	07/08/11	20
trans-1,2-Dichloroethene	156-60-5	96.9	4.00	16.0	< 4.0	< 16.	TO-15	07/08/11	20
1,2-Dichloropropane	78-87-5	113	4.00	18.0	< 4.0	< 18.	TO-15	07/08/11	20
cis-1,3-Dichloropropene	10061-01-5	111	4.00	18.0	< 4.0	< 18.	TO-15	07/08/11	20
trans-1,3-Dichloropropene	10061-02-6	111	4.00	18.0	< 4.0	< 18.	TO-15	07/08/11	20
1,4-Dioxane	123-91-1	88.1	4.00	14.0	< 4.0	< 14.	TO-15	07/08/11	20
Ethanol	64-17-5	46.1	12.6	24.0	< 13.	< 24.	TO-15	07/08/11	20
Ethylbenzene	100-41-4	106	4.00	17.0	< 4.0	< 17.	TO-15	07/08/11	20
4-Ethyltoluene	622-96-8	120	4.00	20.0	< 4.0	< 20.	TO-15	07/08/11	20
Trichlorofluoromethane	75-69-4	137.4	4.00	22.0	< 4.0	< 22.	TO-15	07/08/11	20
Dichlorodifluoromethane	75-71-8	120.92	4.00	20.0	< 4.0	< 20.	TO-15	07/08/11	20
1,1,2-Trichlorotrifluoroethane	76-13-1	187.4	4.00	31.0	< 4.0	< 31.	TO-15	07/08/11	20
1,2-Dichlorotetrafluoroethane	76-14-2	171	4.00	28.0	< 4.0	< 28.	TO-15	07/08/11	20
Heptane	142-82-5	100	4.00	16.0	27.	110	TO-15	07/08/11	20
Hexachloro-1,3-butadiene	87-68-3	261	12.6	130.	< 13.	< 130	TO-15	07/08/11	20
n-Hexane	110-54-3	86.2	4.00	14.0	36.	130	TO-15	07/08/11	20
Isopropylbenzene	98-82-8	120.2	4.00	20.0	< 4.0	< 20.	TO-15	07/08/11	20
Methylene Chloride	75-09-2	84.9	4.00	14.0	< 4.0	< 14.	TO-15	07/08/11	20
Methyl Butyl Ketone	591-78-6	100	25.0	100.	< 25.	< 100	TO-15	07/08/11	20

RDL1 = ppbv , RDL2 = ug/m3
Note:
Units are based on (STP) - Standard Temperature and Pressure

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REPORT OF ANALYSIS

July 11, 2011

Chris Loch
Carlson Professional Services, Inc.
248 Apollo Dr: Suite 100
Lino Lakes, MN 55014

ESC Sample # : L524196-01

Date Received : July 02, 2011
Description : Sinclair Oil #22020

Site ID : MAPLEWOOD, MN

Sample ID : VP-1 4FT

Project # : 3327-00

Collected By : Chris Loch
Collection Date : 06/29/11 13:15

Parameter	Cas#	Mol Wght	RDL1	RDL2	ppbv	ug/m3	Method	Date	Dil.
2-Butanone (MEK)	78-93-3	72.1	25.0	74.0	< 25.	< 74.	TO-15	07/08/11	20
4-Methyl-2-pentanone (MIBK)	108-10-1	100.1	25.0	100.	< 25.	< 100	TO-15	07/08/11	20
Methyl methacrylate	80-62-6	100.12	4.00	16.0	< 4.0	< 16.	TO-15	07/08/11	20
MTBE	1634-04-4	88.1	4.00	14.0	< 4.0	< 14.	TO-15	07/08/11	20
Naphthalene	91-20-3	128	12.6	66.0	< 13.	< 66.	TO-15	07/08/11	20
2-Propanol	67-63-0	60.1	25.0	61.0	< 25.	< 61.	TO-15	07/08/11	20
Propene	115-07-1	42.1	8.00	14.0	23.	40.	TO-15	07/08/11	20
Styrene	100-42-5	104	4.00	17.0	< 4.0	< 17.	TO-15	07/08/11	20
1,1,2,2-Tetrachloroethane	79-34-5	168	4.00	27.0	< 4.0	< 27.	TO-15	07/08/11	20
Tetrachloroethylene	127-18-4	166	4.00	27.0	130	880	TO-15	07/08/11	20
Tetrahydrofuran	109-99-9	72.1	4.00	12.0	< 4.0	< 12.	TO-15	07/08/11	20
Toluene	108-88-3	92.1	4.00	15.0	< 4.0	< 15.	TO-15	07/08/11	20
1,2,4-Trichlorobenzene	120-82-1	181	12.6	93.0	< 13.	< 93.	TO-15	07/08/11	20
1,1,1-Trichloroethane	71-55-6	133	4.00	22.0	< 4.0	< 22.	TO-15	07/08/11	20
1,1,2-Trichloroethane	79-00-5	133	4.00	22.0	< 4.0	< 22.	TO-15	07/08/11	20
Trichloroethylene	79-01-6	131	4.00	21.0	< 4.0	< 21.	TO-15	07/08/11	20
1,2,4-Trimethylbenzene	95-63-6	120	4.00	20.0	< 4.0	< 20.	TO-15	07/08/11	20
1,3,5-Trimethylbenzene	108-67-8	120	4.00	20.0	< 4.0	< 20.	TO-15	07/08/11	20
2,2,4-Trimethylpentane	540-84-1	114.22	4.00	19.0	42.	200	TO-15	07/08/11	20
Vinyl chloride	75-01-4	62.5	4.00	10.0	< 4.0	< 10.	TO-15	07/08/11	20
Vinyl Bromide	593-60-2	106.95	4.00	17.0	< 4.0	< 17.	TO-15	07/08/11	20
Vinyl acetate	108-05-4	86.1	4.00	14.0	< 4.0	< 14.	TO-15	07/08/11	20
m&p-Xylene	1330-20-7	106	8.00	35.0	< 8.0	< 35.	TO-15	07/08/11	20
o-Xylene	95-47-6	106	4.00	17.0	< 4.0	< 17.	TO-15	07/08/11	20
TPH (GC/MS) Low Fraction	8006-61-9	101	1000	4100	4900	20000	TO-15	07/08/11	20
1,4-Bromofluorobenzene	460-00-4				99.97	% Rec.			

RDL1 = ppbv , RDL2 = ug/m3
Note:
Units are based on (STP) - Standard Temperature and Pressure
The reported analytical results relate only to the sample submitted.
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REPORT OF ANALYSIS

July 11, 2011

Chris Loch
Carlson Professional Services, Inc.
248 Apollo Dr: Suite 100
Lino Lakes, MN 55014

ESC Sample # : L524196-02

Date Received : July 02, 2011
Description : Sinclair Oil #22020

Site ID : MAPLEWOOD, MN

Sample ID : VP-2 6FT

Project # : 3327-00

Collected By : Chris Loch
Collection Date : 06/29/11 13:55

Parameter	Cas#	Mol Wght	RDL1	RDL2	ppbv	ug/m3	Method	Date	Dil.
Volatile Organics									
Acetone	67-64-1	58.1	2.50	5.90	34.	81.	TO-15	07/08/11	2
Allyl chloride	107-05-1	76.53	0.400	1.30	< 0.40	< 1.3	TO-15	07/08/11	2
Benzene	71-43-2	78.1	0.400	1.30	3.3	11.	TO-15	07/08/11	2
Benzyl Chloride	100-44-7	127	0.400	2.10	< 0.40	< 2.1	TO-15	07/08/11	2
Bromodichloromethane	75-27-4	164	0.400	2.70	< 0.40	< 2.7	TO-15	07/08/11	2
Bromoform	75-25-2	253	1.20	12.0	< 1.2	< 12.	TO-15	07/08/11	2
Bromomethane	74-83-9	94.9	0.400	1.60	< 0.40	< 1.6	TO-15	07/08/11	2
1,3-Butadiene	106-99-0	54.1	4.00	8.90	6.3	14.	TO-15	07/08/11	2
Carbon disulfide	75-15-0	76.1	0.400	1.20	6.2	19.	TO-15	07/08/11	2
Carbon tetrachloride	56-23-5	154	0.400	2.50	< 0.40	< 2.5	TO-15	07/08/11	2
Chlorobenzene	108-90-7	113	0.400	1.80	< 0.40	< 1.8	TO-15	07/08/11	2
Chloroethane	75-00-3	64.5	0.400	1.10	< 0.40	< 1.1	TO-15	07/08/11	2
Chloroform	67-66-3	119	0.400	1.90	< 0.40	< 1.9	TO-15	07/08/11	2
Chloromethane	74-87-3	50.5	0.400	0.830	1.7	3.5	TO-15	07/08/11	2
2-Chlorotoluene	95-49-8	126	0.400	2.10	< 0.40	< 2.1	TO-15	07/08/11	2
Cyclohexane	110-82-7	84.2	0.400	1.40	0.60	2.1	TO-15	07/08/11	2
Dibromochloromethane	124-48-1	208	0.400	3.40	< 0.40	< 3.4	TO-15	07/08/11	2
1,2-Dibromoethane	106-93-4	188	0.400	3.10	< 0.40	< 3.1	TO-15	07/08/11	2
1,2-Dichlorobenzene	95-50-1	147	0.400	2.40	< 0.40	< 2.4	TO-15	07/08/11	2
1,3-Dichlorobenzene	541-73-1	147	0.400	2.40	< 0.40	< 2.4	TO-15	07/08/11	2
1,4-Dichlorobenzene	106-46-7	147	0.400	2.40	< 0.40	< 2.4	TO-15	07/08/11	2
1,2-Dichloroethane	107-06-2	99	0.400	1.60	< 0.40	< 1.6	TO-15	07/08/11	2
1,1-Dichloroethane	75-34-3	98	0.400	1.60	< 0.40	< 1.6	TO-15	07/08/11	2
1,1-Dichloroethene	75-35-4	96.9	0.400	1.60	< 0.40	< 1.6	TO-15	07/08/11	2
cis-1,2-Dichloroethene	156-59-2	96.9	0.400	1.60	< 0.40	< 1.6	TO-15	07/08/11	2
trans-1,2-Dichloroethene	156-60-5	96.9	0.400	1.60	< 0.40	< 1.6	TO-15	07/08/11	2
1,2-Dichloropropane	78-87-5	113	0.400	1.80	< 0.40	< 1.8	TO-15	07/08/11	2
cis-1,3-Dichloropropene	10061-01-5	111	0.400	1.80	< 0.40	< 1.8	TO-15	07/08/11	2
trans-1,3-Dichloropropene	10061-02-6	111	0.400	1.80	< 0.40	< 1.8	TO-15	07/08/11	2
1,4-Dioxane	123-91-1	88.1	0.400	1.40	< 0.40	< 1.4	TO-15	07/08/11	2
Ethanol	64-17-5	46.1	1.26	2.40	3.4	6.4	TO-15	07/08/11	2
Ethylbenzene	100-41-4	106	0.400	1.70	0.59	2.6	TO-15	07/08/11	2
4-Ethyltoluene	622-96-8	120	0.400	2.00	0.63	3.1	TO-15	07/08/11	2
Trichlorofluoromethane	75-69-4	137.4	0.400	2.20	0.70	3.9	TO-15	07/08/11	2
Dichlorodifluoromethane	75-71-8	120.92	0.400	2.00	0.67	3.3	TO-15	07/08/11	2
1,1,2-Trichlorotrifluoroethane	76-13-1	187.4	0.400	3.10	< 0.40	< 3.1	TO-15	07/08/11	2
1,2-Dichlorotetrafluoroethane	76-14-2	171	0.400	2.80	< 0.40	< 2.8	TO-15	07/08/11	2
Heptane	142-82-5	100	0.400	1.60	1.2	4.9	TO-15	07/08/11	2
Hexachloro-1,3-butadiene	87-68-3	261	1.26	13.0	< 1.3	< 13.	TO-15	07/08/11	2
n-Hexane	110-54-3	86.2	0.400	1.40	1.9	6.7	TO-15	07/08/11	2
Isopropylbenzene	98-82-8	120.2	0.400	2.00	< 0.40	< 2.0	TO-15	07/08/11	2
Methylene Chloride	75-09-2	84.9	0.400	1.40	< 0.40	< 1.4	TO-15	07/08/11	2
Methyl Butyl Ketone	591-78-6	100	2.50	10.0	< 2.5	< 10.	TO-15	07/08/11	2

RDL1 = ppbv , RDL2 = ug/m3
Note:
Units are based on (STP) - Standard Temperature and Pressure

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REPORT OF ANALYSIS

July 11, 2011

Chris Loch
Carlson Professional Services, Inc.
248 Apollo Dr: Suite 100
Lino Lakes, MN 55014

ESC Sample # : L524196-02

Date Received : July 02, 2011
Description : Sinclair Oil #22020

Site ID : MAPLEWOOD, MN

Sample ID : VP-2 6FT

Project # : 3327-00

Collected By : Chris Loch
Collection Date : 06/29/11 13:55

Parameter	Cas#	Mol Wght	RDL1	RDL2	ppbv	ug/m3	Method	Date	Dil.
2-Butanone (MEK)	78-93-3	72.1	2.50	7.40	8.5	25.	TO-15	07/08/11	2
4-Methyl-2-pentanone (MIBK)	108-10-1	100.1	2.50	10.0	< 2.5	< 10.	TO-15	07/08/11	2
Methyl methacrylate	80-62-6	100.12	0.400	1.60	1.1	4.5	TO-15	07/08/11	2
MTBE	1634-04-4	88.1	0.400	1.40	< 0.40	< 1.4	TO-15	07/08/11	2
Naphthalene	91-20-3	128	1.26	6.60	< 1.3	< 6.6	TO-15	07/08/11	2
2-Propanol	67-63-0	60.1	2.50	6.10	< 2.5	< 6.1	TO-15	07/08/11	2
Propene	115-07-1	42.1	0.800	1.40	32.	55.	TO-15	07/08/11	2
Styrene	100-42-5	104	0.400	1.70	0.46	2.0	TO-15	07/08/11	2
1,1,2,2-Tetrachloroethane	79-34-5	168	0.400	2.70	< 0.40	< 2.7	TO-15	07/08/11	2
Tetrachloroethylene	127-18-4	166	0.400	2.70	< 0.40	< 2.7	TO-15	07/08/11	2
Tetrahydrofuran	109-99-9	72.1	0.400	1.20	< 0.40	< 1.2	TO-15	07/08/11	2
Toluene	108-88-3	92.1	0.400	1.50	2.4	9.0	TO-15	07/08/11	2
1,2,4-Trichlorobenzene	120-82-1	181	1.26	9.30	< 1.3	< 9.3	TO-15	07/08/11	2
1,1,1-Trichloroethane	71-55-6	133	0.400	2.20	2.0	11.	TO-15	07/08/11	2
1,1,2-Trichloroethane	79-00-5	133	0.400	2.20	< 0.40	< 2.2	TO-15	07/08/11	2
Trichloroethylene	79-01-6	131	0.400	2.10	< 0.40	< 2.1	TO-15	07/08/11	2
1,2,4-Trimethylbenzene	95-63-6	120	0.400	2.00	3.9	19.	TO-15	07/08/11	2
1,3,5-Trimethylbenzene	108-67-8	120	0.400	2.00	1.4	6.9	TO-15	07/08/11	2
2,2,4-Trimethylpentane	540-84-1	114.22	0.400	1.90	< 0.40	< 1.9	TO-15	07/08/11	2
Vinyl chloride	75-01-4	62.5	0.400	1.00	< 0.40	< 1.0	TO-15	07/08/11	2
Vinyl Bromide	593-60-2	106.95	0.400	1.70	< 0.40	< 1.7	TO-15	07/08/11	2
Vinyl acetate	108-05-4	86.1	0.400	1.40	< 0.40	< 1.4	TO-15	07/08/11	2
m&p-Xylene	1330-20-7	106	0.800	3.50	1.5	6.5	TO-15	07/08/11	2
o-Xylene	95-47-6	106	0.400	1.70	0.72	3.1	TO-15	07/08/11	2
TPH (GC/MS) Low Fraction	8006-61-9	101	100.	410.	590	2400	TO-15	07/08/11	2
1,4-Bromofluorobenzene	460-00-4				98.13	% Rec.	TO-15	07/08/11	

RDL1 = ppbv , RDL2 = ug/m3
Note:
Units are based on (STP) - Standard Temperature and Pressure
The reported analytical results relate only to the sample submitted.

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REPORT OF ANALYSIS

July 11, 2011

Chris Loch
Carlson Professional Services, Inc.
248 Apollo Dr: Suite 100
Lino Lakes, MN 55014

ESC Sample # : L524196-03

Date Received : July 02, 2011
Description : Sinclair Oil #22020

Site ID : MAPLEWOOD, MN

Sample ID : VP-3 6FT

Project # : 3327-00

Collected By : Chris Loch
Collection Date : 06/29/11 14:55

Parameter	Cas#	Mol Wght	RDL1	RDL2	ppbv	ug/m3	Method	Date	Dil.
Volatile Organics									
Acetone	67-64-1	58.1	10.0	24.0	16.	38.	TO-15	07/08/11	8
Allyl chloride	107-05-1	76.53	1.60	5.00	< 1.6	< 5.0	TO-15	07/08/11	8
Benzene	71-43-2	78.1	1.60	5.10	3.0	9.6	TO-15	07/08/11	8
Benzyl Chloride	100-44-7	127	1.60	8.30	< 1.6	< 8.3	TO-15	07/08/11	8
Bromodichloromethane	75-27-4	164	1.60	11.0	< 1.6	< 11.	TO-15	07/08/11	8
Bromoform	75-25-2	253	4.80	50.0	< 4.8	< 50.	TO-15	07/08/11	8
Bromomethane	74-83-9	94.9	1.60	6.20	< 1.6	< 6.2	TO-15	07/08/11	8
1,3-Butadiene	106-99-0	54.1	16.0	35.0	< 16.	< 35.	TO-15	07/08/11	8
Carbon disulfide	75-15-0	76.1	1.60	5.00	1.9	5.9	TO-15	07/08/11	8
Carbon tetrachloride	56-23-5	154	1.60	10.0	< 1.6	< 10.	TO-15	07/08/11	8
Chlorobenzene	108-90-7	113	1.60	7.40	< 1.6	< 7.4	TO-15	07/08/11	8
Chloroethane	75-00-3	64.5	1.60	4.20	< 1.6	< 4.2	TO-15	07/08/11	8
Chloroform	67-66-3	119	1.60	7.80	< 1.6	< 7.8	TO-15	07/08/11	8
Chloromethane	74-87-3	50.5	1.60	3.30	< 1.6	< 3.3	TO-15	07/08/11	8
2-Chlorotoluene	95-49-8	126	1.60	8.20	< 1.6	< 8.2	TO-15	07/08/11	8
Cyclohexane	110-82-7	84.2	1.60	5.50	< 1.6	< 5.5	TO-15	07/08/11	8
Dibromochloromethane	124-48-1	208	1.60	14.0	< 1.6	< 14.	TO-15	07/08/11	8
1,2-Dibromoethane	106-93-4	188	1.60	12.0	< 1.6	< 12.	TO-15	07/08/11	8
1,2-Dichlorobenzene	95-50-1	147	1.60	9.60	< 1.6	< 9.6	TO-15	07/08/11	8
1,3-Dichlorobenzene	541-73-1	147	1.60	9.60	< 1.6	< 9.6	TO-15	07/08/11	8
1,4-Dichlorobenzene	106-46-7	147	1.60	9.60	< 1.6	< 9.6	TO-15	07/08/11	8
1,2-Dichloroethane	107-06-2	99	1.60	6.50	< 1.6	< 6.5	TO-15	07/08/11	8
1,1-Dichloroethane	75-34-3	98	1.60	6.40	< 1.6	< 6.4	TO-15	07/08/11	8
1,1-Dichloroethene	75-35-4	96.9	1.60	6.30	< 1.6	< 6.3	TO-15	07/08/11	8
cis-1,2-Dichloroethene	156-59-2	96.9	1.60	6.30	< 1.6	< 6.3	TO-15	07/08/11	8
trans-1,2-Dichloroethene	156-60-5	96.9	1.60	6.30	< 1.6	< 6.3	TO-15	07/08/11	8
1,2-Dichloropropane	78-87-5	113	1.60	7.40	< 1.6	< 7.4	TO-15	07/08/11	8
cis-1,3-Dichloropropene	10061-01-5	111	1.60	7.30	< 1.6	< 7.3	TO-15	07/08/11	8
trans-1,3-Dichloropropene	10061-02-6	111	1.60	7.30	< 1.6	< 7.3	TO-15	07/08/11	8
1,4-Dioxane	123-91-1	88.1	1.60	5.80	< 1.6	< 5.8	TO-15	07/08/11	8
Ethanol	64-17-5	46.1	5.04	9.50	< 5.0	< 9.5	TO-15	07/08/11	8
Ethylbenzene	100-41-4	106	1.60	6.90	< 1.6	< 6.9	TO-15	07/08/11	8
4-Ethyltoluene	622-96-8	120	1.60	7.90	< 1.6	< 7.9	TO-15	07/08/11	8
Trichlorofluoromethane	75-69-4	137.4	1.60	9.00	< 1.6	< 9.0	TO-15	07/08/11	8
Dichlorodifluoromethane	75-71-8	120.92	1.60	7.90	< 1.6	< 7.9	TO-15	07/08/11	8
1,1,2-Trichlorotrifluoroethane	76-13-1	187.4	1.60	12.0	< 1.6	< 12.	TO-15	07/08/11	8
1,2-Dichlorotetrafluoroethane	76-14-2	171	1.60	11.0	< 1.6	< 11.	TO-15	07/08/11	8
Heptane	142-82-5	100	1.60	6.50	< 1.6	< 6.5	TO-15	07/08/11	8
Hexachloro-1,3-butadiene	87-68-3	261	5.04	54.0	< 5.0	< 54.	TO-15	07/08/11	8
n-Hexane	110-54-3	86.2	1.60	5.60	2.7	9.5	TO-15	07/08/11	8
Isopropylbenzene	98-82-8	120.2	1.60	7.90	< 1.6	< 7.9	TO-15	07/08/11	8
Methylene Chloride	75-09-2	84.9	1.60	5.60	< 1.6	< 5.6	TO-15	07/08/11	8
Methyl Butyl Ketone	591-78-6	100	10.0	41.0	< 10.	< 41.	TO-15	07/08/11	8

RDL1 = ppbv , RDL2 = ug/m3
Note:
Units are based on (STP) - Standard Temperature and Pressure
The reported analytical results relate only to the sample submitted.

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REPORT OF ANALYSIS

July 11, 2011

Chris Loch
Carlson Professional Services, Inc.
248 Apollo Dr: Suite 100
Lino Lakes, MN 55014

ESC Sample # : L524196-03

Date Received : July 02, 2011
Description : Sinclair Oil #22020

Site ID : MAPLEWOOD, MN

Sample ID : VP-3 6FT

Project # : 3327-00

Collected By : Chris Loch
Collection Date : 06/29/11 14:55

Parameter	Cas#	Mol Wght	RDL1	RDL2	ppbv	ug/m3	Method	Date	Dil.
2-Butanone (MEK)	78-93-3	72.1	10.0	29.0	< 10.	< 29.	TO-15	07/08/11	8
4-Methyl-2-pentanone (MIBK)	108-10-1	100.1	10.0	41.0	< 10.	< 41.	TO-15	07/08/11	8
Methyl methacrylate	80-62-6	100.12	1.60	6.60	< 1.6	< 6.6	TO-15	07/08/11	8
MTBE	1634-04-4	88.1	1.60	5.80	< 1.6	< 5.8	TO-15	07/08/11	8
Naphthalene	91-20-3	128	5.04	26.0	< 5.0	< 26.	TO-15	07/08/11	8
2-Propanol	67-63-0	60.1	10.0	25.0	< 10.	< 25.	TO-15	07/08/11	8
Propene	115-07-1	42.1	3.20	5.50	74.	130	TO-15	07/08/11	8
Styrene	100-42-5	104	1.60	6.80	< 1.6	< 6.8	TO-15	07/08/11	8
1,1,2,2-Tetrachloroethane	79-34-5	168	1.60	11.0	< 1.6	< 11.	TO-15	07/08/11	8
Tetrachloroethylene	127-18-4	166	1.60	11.0	< 1.6	< 11.	TO-15	07/08/11	8
Tetrahydrofuran	109-99-9	72.1	1.60	4.70	< 1.6	< 4.7	TO-15	07/08/11	8
Toluene	108-88-3	92.1	1.60	6.00	2.4	9.0	TO-15	07/08/11	8
1,2,4-Trichlorobenzene	120-82-1	181	5.04	37.0	< 5.0	< 37.	TO-15	07/08/11	8
1,1,1-Trichloroethane	71-55-6	133	1.60	8.70	< 1.6	< 8.7	TO-15	07/08/11	8
1,1,2-Trichloroethane	79-00-5	133	1.60	8.70	< 1.6	< 8.7	TO-15	07/08/11	8
Trichloroethylene	79-01-6	131	1.60	8.60	< 1.6	< 8.6	TO-15	07/08/11	8
1,2,4-Trimethylbenzene	95-63-6	120	1.60	7.90	< 1.6	< 7.9	TO-15	07/08/11	8
1,3,5-Trimethylbenzene	108-67-8	120	1.60	7.90	< 1.6	< 7.9	TO-15	07/08/11	8
2,2,4-Trimethylpentane	540-84-1	114.22	1.60	7.50	< 1.6	< 7.5	TO-15	07/08/11	8
Vinyl chloride	75-01-4	62.5	1.60	4.10	< 1.6	< 4.1	TO-15	07/08/11	8
Vinyl Bromide	593-60-2	106.95	1.60	7.00	< 1.6	< 7.0	TO-15	07/08/11	8
Vinyl acetate	108-05-4	86.1	1.60	5.60	< 1.6	< 5.6	TO-15	07/08/11	8
m&p-Xylene	1330-20-7	106	3.20	14.0	< 3.2	< 14.	TO-15	07/08/11	8
o-Xylene	95-47-6	106	1.60	6.90	< 1.6	< 6.9	TO-15	07/08/11	8
TPH (GC/MS) Low Fraction	8006-61-9	101	400.	1700	< 400	< 1700	TO-15	07/08/11	8
1,4-Bromofluorobenzene	460-00-4				97.27	% Rec.	TO-15	07/08/11	8

RDL1 = ppbv , RDL2 = ug/m3
Note:
Units are based on (STP) - Standard Temperature and Pressure

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REPORT OF ANALYSIS

July 11, 2011

Chris Loch
Carlson Professional Services, Inc.
248 Apollo Dr: Suite 100
Lino Lakes, MN 55014

ESC Sample # : L524196-04

Date Received : July 02, 2011
Description : Sinclair Oil #22020

Site ID : MAPLEWOOD, MN

Sample ID : VP-4 6FT

Project # : 3327-00

Collected By : Chris Loch
Collection Date : 06/29/11 15:40

Parameter	Cas#	Mol Wght	RDL1	RDL2	ppbv	ug/m3	Method	Date	Dil.
Volatile Organics									
Acetone	67-64-1	58.1	5000	12000	< 5000	< 12000	TO-15	07/08/11	4000
Allyl chloride	107-05-1	76.53	800.	2500	< 800	< 2500	TO-15	07/08/11	4000
Benzene	71-43-2	78.1	800.	2600	970	3100	TO-15	07/08/11	4000
Benzyl Chloride	100-44-7	127	800.	4200	< 800	< 4200	TO-15	07/08/11	4000
Bromodichloromethane	75-27-4	164	800.	5400	< 800	< 5400	TO-15	07/08/11	4000
Bromoform	75-25-2	253	2400	25000	< 2400	< 25000	TO-15	07/08/11	4000
Bromomethane	74-83-9	94.9	800.	3100	< 800	< 3100	TO-15	07/08/11	4000
1,3-Butadiene	106-99-0	54.1	8000	18000	< 8000	< 18000	TO-15	07/08/11	4000
Carbon disulfide	75-15-0	76.1	800.	2500	< 800	< 2500	TO-15	07/08/11	4000
Carbon tetrachloride	56-23-5	154	800.	5000	< 800	< 5000	TO-15	07/08/11	4000
Chlorobenzene	108-90-7	113	800.	3700	< 800	< 3700	TO-15	07/08/11	4000
Chloroethane	75-00-3	64.5	800.	2100	< 800	< 2100	TO-15	07/08/11	4000
Chloroform	67-66-3	119	800.	3900	< 800	< 3900	TO-15	07/08/11	4000
Chloromethane	74-87-3	50.5	800.	1700	< 800	< 1700	TO-15	07/08/11	4000
2-Chlorotoluene	95-49-8	126	800.	4100	< 800	< 4100	TO-15	07/08/11	4000
Cyclohexane	110-82-7	84.2	800.	2800	5300	18000	TO-15	07/08/11	4000
Dibromochloromethane	124-48-1	208	800.	6800	< 800	< 6800	TO-15	07/08/11	4000
1,2-Dibromoethane	106-93-4	188	800.	6200	< 800	< 6200	TO-15	07/08/11	4000
1,2-Dichlorobenzene	95-50-1	147	800.	4800	< 800	< 4800	TO-15	07/08/11	4000
1,3-Dichlorobenzene	541-73-1	147	800.	4800	< 800	< 4800	TO-15	07/08/11	4000
1,4-Dichlorobenzene	106-46-7	147	800.	4800	< 800	< 4800	TO-15	07/08/11	4000
1,2-Dichloroethane	107-06-2	99	800.	3200	< 800	< 3200	TO-15	07/08/11	4000
1,1-Dichloroethane	75-34-3	98	800.	3200	< 800	< 3200	TO-15	07/08/11	4000
1,1-Dichloroethene	75-35-4	96.9	800.	3200	< 800	< 3200	TO-15	07/08/11	4000
cis-1,2-Dichloroethene	156-59-2	96.9	800.	3200	< 800	< 3200	TO-15	07/08/11	4000
trans-1,2-Dichloroethene	156-60-5	96.9	800.	3200	< 800	< 3200	TO-15	07/08/11	4000
1,2-Dichloropropane	78-87-5	113	800.	3700	< 800	< 3700	TO-15	07/08/11	4000
cis-1,3-Dichloropropene	10061-01-5	111	800.	3600	< 800	< 3600	TO-15	07/08/11	4000
trans-1,3-Dichloropropene	10061-02-6	111	800.	3600	< 800	< 3600	TO-15	07/08/11	4000
1,4-Dioxane	123-91-1	88.1	800.	2900	< 800	< 2900	TO-15	07/08/11	4000
Ethanol	64-17-5	46.1	2520	4800	< 2500	< 4800	TO-15	07/08/11	4000
Ethylbenzene	100-41-4	106	800.	3500	9800	42000	TO-15	07/08/11	4000
4-Ethyltoluene	622-96-8	120	800.	3900	3400	17000	TO-15	07/08/11	4000
Trichlorofluoromethane	75-69-4	137.4	800.	4500	< 800	< 4500	TO-15	07/08/11	4000
Dichlorodifluoromethane	75-71-8	120.92	800.	4000	< 800	< 4000	TO-15	07/08/11	4000
1,1,2-Trichlorotrifluoroethane	76-13-1	187.4	800.	6100	< 800	< 6100	TO-15	07/08/11	4000
1,2-Dichlorotetrafluoroethane	76-14-2	171	800.	5600	< 800	< 5600	TO-15	07/08/11	4000
Heptane	142-82-5	100	800.	3300	8100	33000	TO-15	07/08/11	4000
Hexachloro-1,3-butadiene	87-68-3	261	2520	27000	< 2500	< 27000	TO-15	07/08/11	4000
n-Hexane	110-54-3	86.2	800.	2800	6000	21000	TO-15	07/08/11	4000
Isopropylbenzene	98-82-8	120.2	800.	3900	810	4000	TO-15	07/08/11	4000
Methylene Chloride	75-09-2	84.9	800.	2800	< 800	< 2800	TO-15	07/08/11	4000
Methyl Butyl Ketone	591-78-6	100	5000	20000	< 5000	< 20000	TO-15	07/08/11	4000

RDL1 = ppbv , RDL2 = ug/m3
Note:
Units are based on (STP) - Standard Temperature and Pressure

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REPORT OF ANALYSIS

July 11, 2011

Chris Loch
Carlson Professional Services, Inc.
248 Apollo Dr: Suite 100
Lino Lakes, MN 55014

ESC Sample # : L524196-04

Date Received : July 02, 2011
Description : Sinclair Oil #22020

Site ID : MAPLEWOOD, MN

Sample ID : VP-4 6FT

Project # : 3327-00

Collected By : Chris Loch
Collection Date : 06/29/11 15:40

Parameter	Cas#	Mol Wght	RDL1	RDL2	ppbv	ug/m3	Method	Date	Dil.
2-Butanone (MEK)	78-93-3	72.1	5000	15000	< 5000	< 15000	TO-15	07/08/11	4000
4-Methyl-2-pentanone (MIBK)	108-10-1	100.1	5000	20000	< 5000	< 20000	TO-15	07/08/11	4000
Methyl methacrylate	80-62-6	100.12	800.	3300	< 800	< 3300	TO-15	07/08/11	4000
MTBE	1634-04-4	88.1	800.	2900	< 800	< 2900	TO-15	07/08/11	4000
Naphthalene	91-20-3	128	2520	13000	< 2500	< 13000	TO-15	07/08/11	4000
2-Propanol	67-63-0	60.1	5000	12000	< 5000	< 12000	TO-15	07/08/11	4000
Propene	115-07-1	42.1	1600	2800	< 1600	< 2800	TO-15	07/08/11	4000
Styrene	100-42-5	104	800.	3400	< 800	< 3400	TO-15	07/08/11	4000
1,1,2,2-Tetrachloroethane	79-34-5	168	800.	5500	< 800	< 5500	TO-15	07/08/11	4000
Tetrachloroethylene	127-18-4	166	800.	5400	< 800	< 5400	TO-15	07/08/11	4000
Tetrahydrofuran	109-99-9	72.1	800.	2400	< 800	< 2400	TO-15	07/08/11	4000
Toluene	108-88-3	92.1	800.	3000	12000	45000	TO-15	07/08/11	4000
1,2,4-Trichlorobenzene	120-82-1	181	2520	19000	< 2500	< 19000	TO-15	07/08/11	4000
1,1,1-Trichloroethane	71-55-6	133	800.	4400	< 800	< 4400	TO-15	07/08/11	4000
1,1,2-Trichloroethane	79-00-5	133	800.	4400	< 800	< 4400	TO-15	07/08/11	4000
Trichloroethylene	79-01-6	131	800.	4300	< 800	< 4300	TO-15	07/08/11	4000
1,2,4-Trimethylbenzene	95-63-6	120	800.	3900	10000	49000	TO-15	07/08/11	4000
1,3,5-Trimethylbenzene	108-67-8	120	800.	3900	4300	21000	TO-15	07/08/11	4000
2,2,4-Trimethylpentane	540-84-1	114.22	800.	3700	15000	70000	TO-15	07/08/11	4000
Vinyl chloride	75-01-4	62.5	800.	2000	< 800	< 2000	TO-15	07/08/11	4000
Vinyl Bromide	593-60-2	106.95	800.	3500	< 800	< 3500	TO-15	07/08/11	4000
Vinyl acetate	108-05-4	86.1	800.	2800	< 800	< 2800	TO-15	07/08/11	4000
m&p-Xylene	1330-20-7	106	1600	6900	36000	160000	TO-15	07/08/11	4000
o-Xylene	95-47-6	106	800.	3500	11000	48000	TO-15	07/08/11	4000
TPH (GC/MS) Low Fraction	8006-61-9	101	200000	830000	490000	2000000	TO-15	07/08/11	4000
1,4-Bromofluorobenzene	460-00-4				96.66	% Rec.	TO-15	07/08/11	4000

RDL1 = ppbv , RDL2 = ug/m3
Note:
Units are based on (STP) - Standard Temperature and Pressure
The reported analytical results relate only to the sample submitted.

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Chain of Custody Page 1 of 1

Carlson Professional Services, Inc.
248 Apollo Dr: Suite 100
Lino Lakes,MN 55014

Billing information:
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Lino Lakes,MN 55014

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12065 Lebanon Road
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Phone: (615) 758-5858
Fax: (615) 758-5859

L524196

Report to: Chris Loch

Email: cloch@carlsonpsi.com

Project Description: Sinclair Oil #22020

City/State Collected: MAPLEWOOD, MN

Phone: ~~(763) 489-7900~~ 952-346-3913
FAX: (763) 489-7959

Client Project #: 3327-00

Lab Project #: CARPROLLMN-SINCLAIR

Collected by (print): Chris Loch

Site/Facility ID#: MAPLEWOOD, MN

P.O.#: 3327-00

Collected by (signature): [signature]

Immediately Packed on Ice N ___ Y ___ N/A

Rush? (Lab MUST Be Notified)
___ Same Day 200%
___ Next Day............100%
___ Two Day............50%
___ Three Day............25%

Date Results Needed
Email? ___No X Yes
FAX? ___No ___Yes

Acctnum: CARPROLLMN (lab use only)
Template/Prelogin: T72272/ P359813
Cooler #: 6-22-11 MC
Shipped Via: FedEX Ground
~~L524195~~ L524196

Analysis/Container/Preservative: TO-15LC Summa

Sample ID	Comp/Grab	Matrix*	Depth	Date	Time	No. of Cntrs	TO-15LC Summa	Remarks/Contaminant	Sample # (lab only)
VP-1 (4')	Comp	Air	4'	6/29/11	1:15	1	X	PID = 10.2 ppm	-01
VP-2 (6')	Comp	Air	6'	↓	1:55	1	X	PID = 0.0 ppm	-02
VP-3 (6')	Comp	Air	6'	↓	2:55	1	X	PID = 0.0 ppm	-03
VP-4 (6')	Comp	Air	6'	↓	3:40	1	X	PID = 20.3 ppm	-04
		Air				1	X		

*Matrix: SS - Soil GW - Groundwater WW - WasteWater DW - Drinking Water OT - Other________

pH ________ Temp ________
Flow ________ Other ________

Remarks:

870049590951

Relinquished by: (Signature)	Date:	Time:	Received by: (Signature)	Samples returned via: ☐ UPS ☒ FedEx ☐ Courier ☐ ____	Condition: (lab use only) ok
[signature]	7/1/11	9:00	[signature]	Temp: Amb. Bottles Received: 4	COC Seal Intact: ___Y ___N ✓ NA
Relinquished by: (Signature)	Date:	Time:	Received by: (Signature)		pH Checked: NCF:
Relinquished by: (Signature)	Date:	Time:	Received for lab by: (Signature) [signature]	Date: 7-2-11 Time: 9:00	

METHODS and PROCEDURES

Soil Borings

Borings were drilled in accordance with Minnesota Department of Health (MDH) Well Construction Code (Minnesota Rules 4725). Drilling services were provided by a licensed and registered well contractor in the State of Minnesota.

Direct Push Soil Borings

Prior to starting intrusive work, underground utilities were located through the Gopher One-Call State System. Soil borings were advanced by direct push technology. This method utilizes a truck mounted drill rig which employs a hydraulically-powered probe that utilizes static force and percussion to advance sampling tools into the subsurface for the collection of soil and ground water samples. Soil samples were collected continuously using a 2-inch ID by 4-foot stainless steel "Macro-Core® Sampler".

Soil Classification

Soil samples were manually and visually classified by a Carlson field geologist according to methods outlined in ASTM D2488 and entered onto a field boring log. In general, soil cuttings were thin spread at the surface, in the vicinity in which they were generated.

Field Screening

To determine if contamination was present in soil, visual and olfactory observations, as well as vapor monitoring using a photoionization detector (PID), were conducted. Organic vapors were monitored in soils using MPCA bag headspace methods. The sample was shaken, placed in a warm environment to allow organic vapors to develop and readings were recorded on the field boring logs. Vapor monitoring was also conducted to ensure that atmospheric conditions were sufficient to provide a safe working environment.

Decontamination

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

Water Level Measurements

As necessary, water level measurements were obtained using an electronic water level indicator within boreholes while or after well casings were installed. Water level measurements were measured from either the ground surface in the case of soil borings, or the top of casing (highest point) in the case of monitoring well sampling.

The ground water elevation for each monitoring well was measured after allowing the wells to stabilize for at least 48 hours following well development. All measurements were made using an electronic water level indicator and were measured to the nearest 0.01 foot. These measurements were taken from the top of casing (TOC) for each well. Measurements taken while drilling were made to the nearest 0.1 foot.

Borehole Abandonment

Each direct push borehole was sealed by backfilling with granular bentonite, which was placed and hydrated in 2-foot lifts. Each borehole was then topped off with compacted soil. Each location was marked with a flag for future reference.

Soil Sampling

The sampling surface was kept as clean as practical to minimize the potential for contamination of samples. A clean and dry sheet of relatively inert plastic (i.e. trash bag) was placed on the working surface. If materials used in the sampling process were set down, they were placed on a clean portion of the plastic sheet instead of a non-sterile surface. A clean pair of latex or nitrile gloves was used at the onset of sampling activities at each new sampling point. Sampling personnel kept their hands as clean as practical and replaced gloves if they became soiled while performing sampling activities. Furthermore, sampling personnel took care not to touch the inside of sampling containers, inside of bottle caps or the rim of sample containers. If contact occurred, sample containers were replaced. Care was also exercised to minimize the potential for airborne contamination of samples during collection.

Soil samples submitted to a fixed-base laboratory for chemical analysis were collected directly from the acetate sleeves while drilling. Samples were field preserved (as required) and placed into clean, laboratory supplied sample containers. Each sample container was uniquely numbered and labeled using indelible ink. Additional information on the label included the analytical parameters(s), preservatives(s), sampling personnel, date and time of sample collection and the project number. The label was then directly affixed to the appropriate sample container. The samples were immediately prepared for shipment to the fixed-base laboratory and placed on ice and maintained at a temperature of 4° C. A chain-of-custody was also initiated and kept with the samples until custody was relinquished to the laboratory.

Ground Water Sampling - Soil Borings

At select locations, ground water samples were obtained from direct push borings completed during this investigation. Ground water samples collected from boreholes were obtained through a temporary 1-inch diameter by 10 foot long PVC screen attached to a PVC riser. Purging and sampling was completed using a check valve and dedicated tubing. The water sample was collected from the terminal end of the tubing, so as to ensure minimal volatilization of the sample. The sample was immediately given to the appropriate

field staff and prepared for shipment to the fixed-base laboratory. General sampling procedures were conducted as described in Section 2.2. Purge water was discharged on the ground, away from the soil boring.

Soil Vapor sampling

Soil vapor samples were collected from boreholes advanced across the Site using dirent-push technology to a depth ranging from three to twelve feet below grade. An expendable screen with polyethylene tubing was then inserted into the hole. At least two volumes of air was removed from the sampling point and tubing. The soil vapor samples were collected by attaching the top end of the tubing to the Summa Canister, which was instrumented with a regulator gauge. The initial vacuum gauge reading was recorded and subsequent readings were conducted to identify when the canister was full. Subsequent to sample collection, a PID reading was collected from each sample tubing and recorded for laboratory confirmation. Soil vapor sampling was conducted in accordance with MPCA Guidance Document 4-01a "*Vapor Intrusion Assessments Performed during Site Investigations*".

The Summa canisters were carefully labeled with the name of the sampler, date, time, initial/final vacuum gauge readings and PID readings from the sample tubing. This information was recorded on a chain-of-custody from. Samples were placed in a box with bubble wrap and delivered to a certified laboratory in accordance with chain-of-custody procedures.

Decontamination

New expendable screens, disposable tubing and other sampling equipment were used for each sampling location to minimize the potential for cross-contamination.

Laboratory Analysis

A number of soil and/or ground water samples were collected from selected soil borings and submitted to a fixed-base laboratory for chemical analysis. All samples were prepared and analyzed in accordance with MDH and/or Environmental Protection Agency (EPA) methods and procedures.

Collected soil vapor samples were submitted to a MPCA certified, fixed based laboratory and analyzed using the Environmental Protection Agency (EPA) TO-15 method for compounds in the Minnesota Soil Gas List. To minimize cross contamination of samples, clean disposable gloves, sampling Summa canisters, vacuum gauges, tubing and fittings were used. Summa canisters received from the laboratory are tracked and tagged to make sure "clean" canisters are used.

Quality Assurance/Quality Control

As a quality assurance/quality control (QA/QC) measure, both field and laboratory samples were analyzed in an effort to evaluate procedures being used. For soil and ground

water samples submitted to the fixed-base laboratory, one duplicate sample was collected per 10 samples and submitted for analysis. An equipment blank, consisting of de-ionized rinse water that was ran through the sampling equipment, was also collected during each ground water sampling event to determine if cross-contamination had occurred between sampling locations. A trip blank accompanied the samples that were analyzed for VOCs. Laboratory QA/QC included method blanks, surrogate spikes and/or matrix spikes/ matrix spike duplicates (MS/MSD).

After the data were received from the laboratory, the individual reports were reviewed for accuracy and completeness to make sure that specific data quality objectives had been met (i.e., comparing results from duplicate samples, verification that holding times were met, reviewing detection limits, trip/ equipment blank results, etc.).

Vapor Receptor Survey

A walking survey was conducted and potential receptors were identified within 500 feet of the Site. Basements, Sumps, man ways and other subsurface utility structures were identified and incorporated into the Vapor Receptor survey. Local utility departments, municipalities and fire departments were contacted. Requests for knowledge of petroleum vapor complaints or reports were made as well as efforts to contact residence, business and/or property owners.

During the walking survey as vapor monitoring points were identified, vapor was sampled via inert poly tubing, using a PID/LEL meter. Tubing was slowly inserted into the sewer grates or through holes in man way covers. Readings were allowed to stabilize and were collected at varying depths within the structure. Total depth and orientation/type of each structure was collected and noted in the field. Receptor surveys were mailed to each property owner within 500 feet of the Site, and documented within the LSI Report. Receptor surveys were conducted in accordance with MPCA Guidance Document 4-02 "*Potential Receptor Surveys and Risk Evaluation Procedures at Petroleum Release Sites.*"

Sinclair #22020 - MPCA Leak #17952

Hazen

Sample	C	D10 (mm)	D10 (cm)	D10^2 (cm^2)	K (cm/s)	K (ft/day)
GP-2 (16-20')			0	0	0	0
GP-3 (16-20')			0	0	0	0
GP-4 (12-16')			0	0	0	0
			0	0	0	0
			0	0	0	0
			0	0	0	0

Krumbein and Monk

Sample	phi 95	phi 95 (mm)	phi 84	phi 84 (mm)	phi 50	phi 50 (mm)	phi 16	phi 16 (mm)	phi 5	phi 5 (mm)
GP-2 (16-20')	-4.169925001	18	-0.678071905	1.6	2.395928676	0.19	4.96578	0.032	9.96578	0.001
GP-3 (16-20')	-1.584962501	3	1	0.5	2.473931188	0.18	4.71786	0.038	9.96578	0.001
GP-4 (12-16')	0.074000581	0.95	1.64385619	0.32	3.058893689	0.12	5.15843	0.028	9.96578	0.001
	#NUM!	0	#NUM!	0	#NUM!	0	#NUM!	0	#NUM!	0
	#NUM!		#NUM!		#NUM!		#NUM!		#NUM!	
	#NUM!		#NUM!		#NUM!		#NUM!		#NUM!	

	GM	Theta	k (darcies)	K (m/s)	K (cm/s)	K (ft/day)
GP-2 (16-20')	0.607333333	3.11912121	4.71106815	5.79771E-06	0.000579771	1.643419406
GP-3 (16-20')	0.239333333	0.56989394	20.63443693	2.53939E-05	0.002539393	7.198162498
GP-4 (12-16')	0.156	0.21678788	13.92279978	1.71342E-05	0.00171342	4.856860191
0	0	0	0	0	0	0
0	0	0	0	0	0	0
	0	0	0	0	0	0

K(high) =	7.19816
K(low) =	1.64342
b(high) =	5
b(low) =	4

K(avg.)=	4.57
b(avg.)=	4.5

T(High)	22.83073683
T(Low)	18.26458946

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12065 Lebanon Rd.
Mt. Juliet, TN 37122
(615) 758-5858
1-800-767-5859
Fax (615) 758-5859

Tax I.D. 62-0814289

Est. 1970

Chris Loch
Carlson Professional Services, Inc.
248 Apollo Dr: Suite 100
Lino Lakes, MN 55014

Report Summary

Wednesday July 20, 2011

Report Number: L524222
Samples Received: 07/02/11
Client Project: 3327-00

Description: Sinclair Oil #22020

The analytical results in this report are based upon information supplied by you, the client, and are for your exclusive use. If you have any questions regarding this data package, please do not hesitate to call.

Entire Report Reviewed By: John Hawkins

John Hawkins , ESC Representative

Laboratory Certification Numbers

A2LA - 1461-01, AIHA - 100789, AL - 40660, CA - I-2327, CT - PH-0197, FL - E87487
GA - 923, IN - C-TN-01, KY - 90010, KYUST - 0016, NC - ENV375/DW21704, ND - R-140
NJ - TN002,NJ NELAP - TN002, SC - 84004, TN - 2006, VA - 00109, WV - 233
AZ - 0612, MN - 047-999-395, NY - 11742, WI - 998093910, NV - TN000032008A,
TX - T104704245, OK-9915

Accreditation is only applicable to the test methods specified on each scope of accreditation held by ESC Lab Sciences.
Note: The use of the preparatory EPA Method 3511 is not approved or endorsed by the CA ELAP.

Where applicable, sampling conducted by ESC is performed per guidance provided in laboratory standard operating procedures: 060302, 060303, and 060304.

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Tax I.D. 62-0814289

Est. 1970

REPORT OF ANALYSIS

July 20, 2011

Chris Loch
Carlson Professional Services, Inc.
248 Apollo Dr: Suite 100
Lino Lakes, MN 55014

ESC Sample # : L524222-01

Date Received : July 02, 2011
Description : Sinclair Oil #22020

Site ID : MAPLEWOOD, MN

Sample ID : GP-2 16-20FT

Project # : 3327-00

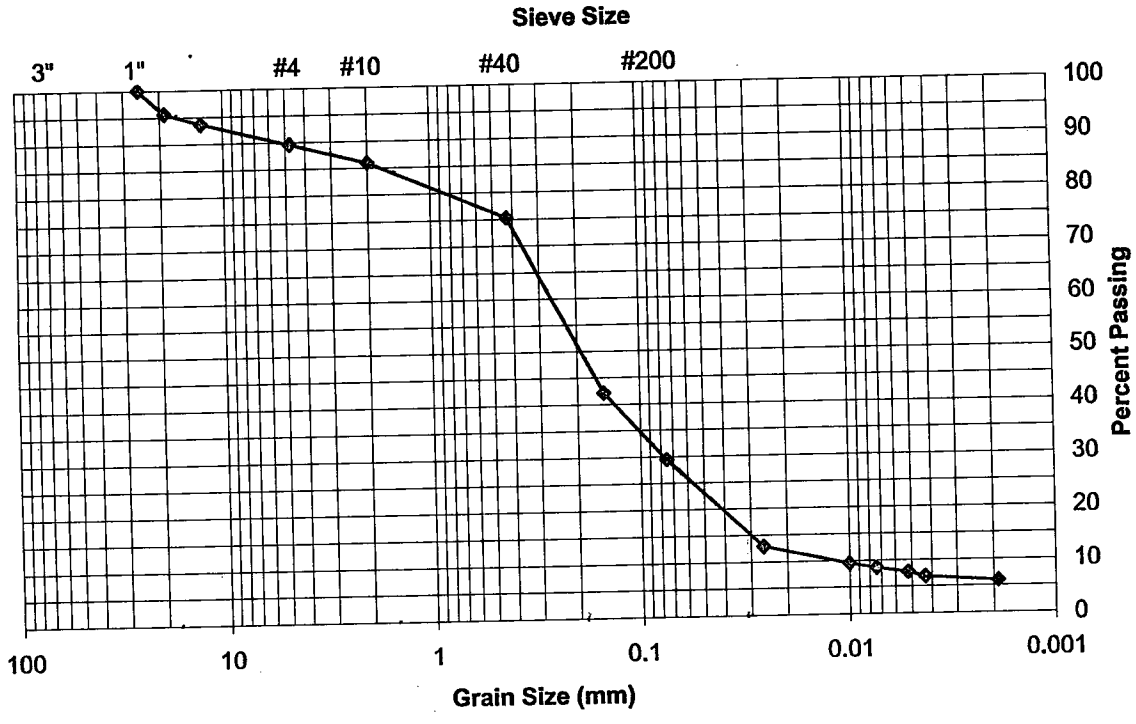
Collected By : Chris Loch
Collection Date : 06/29/11 11:40

Parameter	Result	Det. Limit	Units	Method	Date	Dil.
Grain Size Determination	ATTACH TO COC			ASTM D422	07/20/11	1

BDL - Below Detection Limit
Det. Limit - Practical Quantitation Limit(PQL)
Note:
The reported analytical results relate only to the sample submitted.

Reported: 07/20/11 15:32 Printed: 07/20/11 16:46
L524222-01 (GRAIN SIZE) - subcontracted to Beaver Engr

GRAIN SIZE DISTRIBUTION REPORT
ASTM D 422



PERCENT PASSING

SAMPLE ID	Seive Sizes for Mechanical Analysis								Diameters for Hydrometer Analysis (mm)					
	1.0(in)	0.75(in)	0.50(in)	#4	#10	#40	#100	#200	0.026	0.01	0.007	0.0052	0.004	0.002
L 524222-01	100	96	94	90	86	75	42	29	13	9	9	8	7	6
	10%			60%					22%			8%		
LAB ID J 3790	GRAVEL			SAND					SILT			CLAY		

BEAVER ENGINEERING

PROJECT: ENVIRONMENTAL SCIENCE
S 14810

PROJECT NUMBER: 11-6295

DATE: JULY 20, 2011

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1-800-767-5859
Fax (615) 758-5859

Tax I.D. 62-0814289

Est. 1970

REPORT OF ANALYSIS

July 20, 2011

Chris Loch
Carlson Professional Services, Inc.
248 Apollo Dr: Suite 100
Lino Lakes, MN 55014

ESC Sample # : L524222-02

Date Received : July 02, 2011
Description : Sinclair Oil #22020

Site ID : MAPLEWOOD, MN

Sample ID : GP-3 16-20FT

Project # : 3327-00

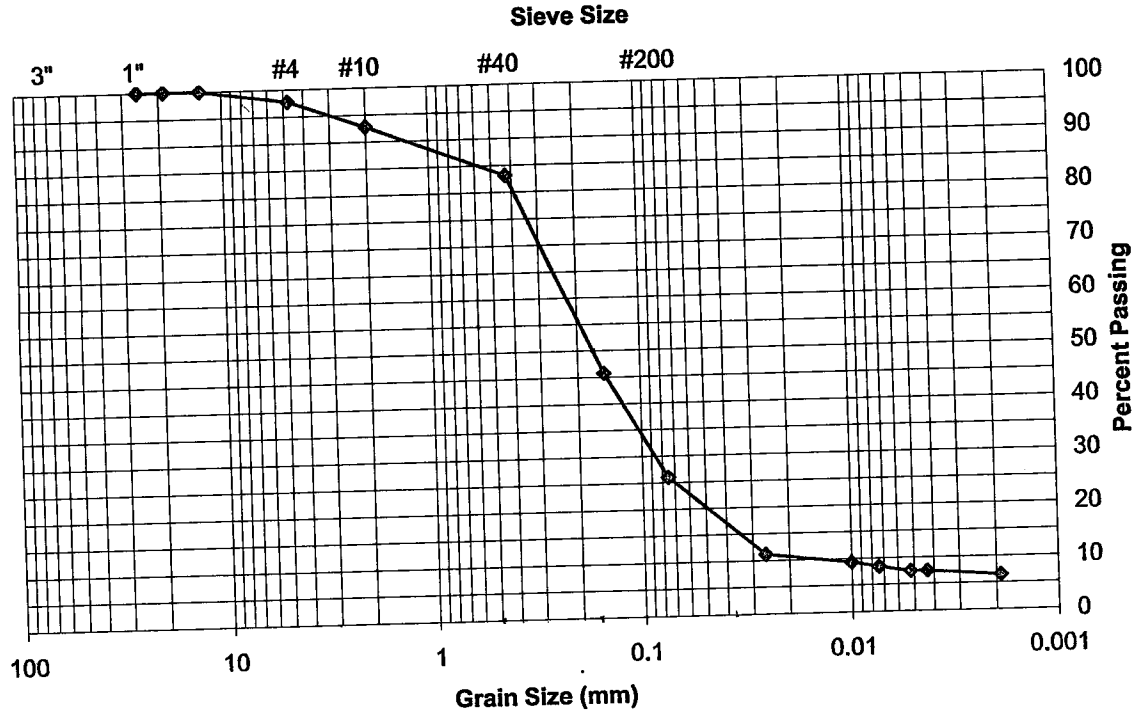
Collected By : Chris Loch
Collection Date : 06/29/11 12:50

Parameter	Result	Det. Limit	Units	Method	Date	Dil.
Grain Size Determination	ATTACH TO COC			ASTM D422	07/20/11	1

BDL - Below Detection Limit
Det. Limit - Practical Quantitation Limit(PQL)
Note:
The reported analytical results relate only to the sample submitted.

Reported: 07/20/11 15:32 Printed: 07/20/11 16:46
L524222-02 (GRAIN SIZE) - subcontracted to Beaver Engr

GRAIN SIZE DISTRIBUTION REPORT
ASTM D 422



PERCENT PASSING

SAMPLE ID	Seive Sizes for Mechanical Analysis								Diameters for Hydrometer Analysis (mm)					
	1.0(in)	0.75(in)	0.50(in)	#4	#10	#40	#100	#200	0.026	0.01	0.007	0.0052	0.004	0.002
L 524222-02	100	100	100	98	93	83	46	26	11	9	8	7	7	6
LAB ID J 3791	2%			72%					19%			7%		
	GRAVEL			SAND					SILT			CLAY		

BEAVER ENGINEERING

PROJECT: ENVIRONMENTAL SCIENCE
S 14810

PROJECT NUMBER: 11-6295

DATE: JULY 20, 2011

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Est. 1970

REPORT OF ANALYSIS

July 20, 2011

Chris Loch
Carlson Professional Services, Inc.
248 Apollo Dr: Suite 100
Lino Lakes, MN 55014

ESC Sample # : L524222-03

Date Received : July 02, 2011
Description : Sinclair Oil #22020

Site ID : MAPLEWOOD, MN

Sample ID : GP-4 12-16FT

Project # : 3327-00

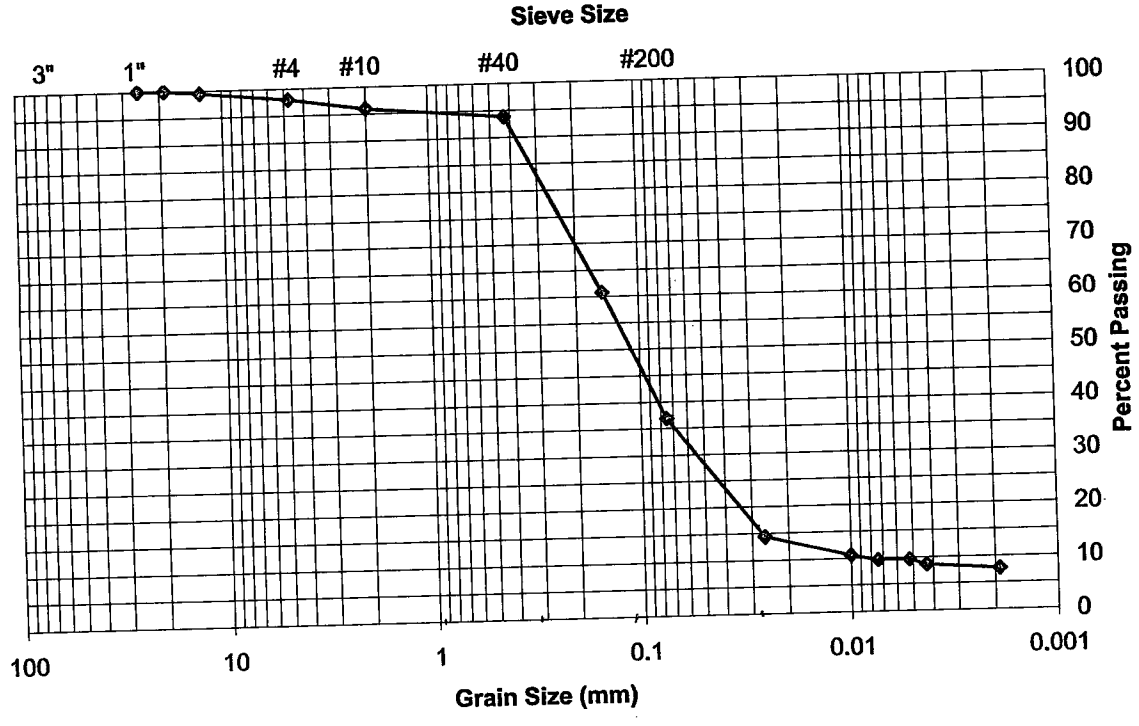
Collected By : Chris Loch
Collection Date : 06/29/11 14:20

Parameter	Result	Det. Limit	Units	Method	Date	Dil.
Grain Size Determination	ATTACH TO COC			ASTM D422	07/20/11	1

BDL - Below Detection Limit
Det. Limit - Practical Quantitation Limit(PQL)
Note:
The reported analytical results relate only to the sample submitted.

Reported: 07/20/11 15:32 Printed: 07/20/11 16:46
L524222-03 (GRAIN SIZE) - subcontracted to Beaver Engr

GRAIN SIZE DISTRIBUTION REPORT
ASTM D 422



PERCENT PASSING

SAMPLE ID	Selve Sizes for Mechanical Analysis								Diameters for Hydrometer Analysis (mm)					
	1.0(in)	0.75(in)	0.50(in)	#4	#10	#40	#100	#200	0.026	0.01	0.007	0.0052	0.004	0.002
L 524222-03	100	100	99	98	96	94	61	37	14	11	10	10	9	8
	2%			61%					27%			10%		
LAB ID J 3792	GRAVEL			SAND					SILT			CLAY		

BEAVER ENGINEERING

PROJECT:	ENVIRONMENTAL SCIENCE
	S 14810
PROJECT NUMBER:	11-6295
DATE:	JULY 20, 2011

Chain of Custody Page 1 of 2

B070

ESC LAB SCIENCES
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Phone: (615) 758-5858
Fax: (615) 758-5859

L524222

Carlson Professional Services, Inc.
248 Apollo Dr: Suite 100
Lino Lakes, MN 55014

Billing information:
Accounts Payable
248 Apollo Dr: Suite 100
Lino Lakes, MN 55014

Report to: Chris Loch
Email: cloch@carlsonpsi.com
Project Description: Sinclair Oil #22020
City/State Collected: MAPLEWOOD, MN
Phone: ~~(763) 489-7900~~ 952-346-3913
FAX: (763) 489-7959
Client Project #: 3327-00
Lab Project #: CARPROLLMN-SINCLAIR
Collected by (print): Chris Loch
Site/Facility ID#: MAPLEWOOD, MN
P.O.#: 3327-00
Collected by (signature): [signature]
Immediately Packed on Ice N ___ Y X

Rush? (Lab MUST Be Notified)
___ Same Day 200%
___ Next Day 100%
___ Two Day 50%
___ Three Day 25%

Date Results Needed
Email? __No X Yes
FAX? __No __Yes

Account: CARPROLLMN (lab use only)
Template/Prelogin: T72271/P359812
Cooler #:
Shipped Via: FedEX Ground
L524215

Sample ID	Comp/Grab	Matrix*	Depth	Date	Time	No. of Cntrs	DROWM 1L-Amb-Add HCl	DROWM 60mlAmb/MeCl/Syr	GRAIN SIZE 1LClr-NoPres	GROWM 40mlAmb HCl	PVOCGRO 60mlAmb/MeOH/Syr	TS 4ozClr-NoPres	V8260/465 40mlAmb-HCl	Remarks/Contaminant	Sample # (lab only)
GP-1 (10-12')	GRAB	SS	10-12'	6/29/11	4:30	4		X			X	X		PID = 22,500 (HOT)	-01
GP-1 (30-32')	↓	SS	30-32'	↓	5:00	4		X			X	X		PID = 0.0 ppm	-02
~~GP-2 (14-16')~~		SS	14-16'		11:50	45		X			X	X		PID = 0.0 ppm	-03
GP-3 (6-8')		SS	6-8'		12:35	45		X			X	X		PID = 1,079 ppm (ODOR)	-04
GP-3 (14-16')		SS	14-16'		1:10	4		X			X	X		PID = 0.0 ppm	-05
GP-4 (12-14')		SS	12-14'		2:30	4		X			X	X		PID = 0.0 ppm	-06
GP-5 (10-12')		SS	10-12'		3:20	4		X			X	X		PID = 0.0 ppm	-07
		SS				4		X			X	X			-08
GP-1W	—	GW			5:10	6	X			X			X	STRONG ODOR	-08/-09

*Matrix: SS - Soil GW - Groundwater WW - WasteWater DW - Drinking Water OT - Other ______

pH ______ Temp ______
Flow ______ Other ______

Remarks:

8700 4659 0984 / 8700 4659 0962

Relinquished by: (Signature)	Date:	Time:	Received by: (Signature)	Samples returned via: ☐ UPS ☑ FedEx ☐ Courier ☐ ____	Condition: (lab use only)
[signature]	7/1/11	9:00	[signature]	Temp:	Bottles Received: 63 of 46	OK
Relinquished by: (Signature)	Date:	Time:	Received by: (Signature)		COC Seal Intact: __Y __N __NA
Relinquished by: (Signature)	Date:	Time:	Received for lab by: (Signature) C.9G	Date: 7-2-11 Time: 0900	pH Checked: NCF:

Chain of Custody Page 2 of 2

Carlson Professional Services, Inc. 248 Apollo Dr: Suite 100 Lino Lakes, MN 55014	Billing information: Accounts Payable 248 Apollo Dr: Suite 100 Lino Lakes, MN 55014
Report to: Chris Loch	Email: cloch@carlsonpsi.com
Project Description: Sinclair Oil #22020	City/State Collected: MAPLEWOOD, MN
Phone: ~~(763) 489-7900~~ 952-346-3913 FAX: (763) 489-7959	Client Project #: 3327-00 / Lab Project #: CARPROLLMN-SINCLAIR
Collected by (print): CHRIS LOCH	Site/Facility ID#: MAPLEWOOD, MN / P.O.#: 3327-00
Collected by (signature): [signature] Immediately Packed on Ice N ___ Y X	Rush? (Lab MUST Be Notified) ___ Same Day ....200% ___ Next Day ....100% ___ Two Day ....50% ___ Three Day ....25% Date Results Needed Email? ___No X Yes FAX? ___No ___Yes

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Mt. Juliet, TN 37122
Phone: (800) 767-5859
Phone: (615) 758-5858
Fax: (615) 758-5859

L524222

Acctnum: CARPROLLMN (lab use only)
Template/Prelogin: T72271/P359812
Cooler #:
Shipped Via: FedEx Ground

Analysis/Container/Preservative

Sample ID	Comp/Grab	Matrix*	Depth	Date	Time	No. of Cntrs	DROWMAL-Amb-Add HCl 2	DROWM 60mlAmb/MeCl/Syr	GRAIN SIZE 1L-Clr-NoPres	GROWM 40mlAmb HCl	PVOCGRO 60mlAmb/MeOH/Syr	TS 4ozClr-NoPres	V8260/465 40mlAmb-HCl	Remarks/Contaminant	Sample # (lab only)
GP-2W	—	GW		6/29/11	12:05	6	X			X			X	No Odor	-09
GP-3W	—	GW		↓	1:15	6	X			X			X	Slight Odor	-10
GP-4W	—	GW		↓	2:40	6	X			X			X		-11
GP-5W	—	GW		↓	3:30	6	X			X			X		-12
GP-2 (16-20')	Comp	SS	16-20'	↓	11:40	1			X						-01
GP-3 (16-20')	Comp	SS	16-20'	↓	12:50	1			X						-02
GP-4 (12-16')	Comp	SS	12-16'	↓	2:20	1			X						-03
MEOH BLANK	—	OT	NA	6/29/11	3:30	1				~~X~~	~~X~~				

*Matrix: SS - Soil GW - Groundwater WW - WasteWater DW - Drinking Water OT - Other MEOH

pH ________ Temp ________

Flow ________ Other ________

Remarks:

Relinquished by: (Signature)	Date:	Time:	Received by: (Signature)	Samples returned via: ☐ UPS ☑ FedEx ☐ Courier ☐ ____	Condition: OK (lab use only)
[signature]	7/1/11	9:00	[signature]		
Relinquished by: (Signature)	Date:	Time:	Received by: (Signature)	Temp: 3.1° / Bottles Received: 63+1B	COC Seal Intact: ___Y ___N ___NA
Relinquished by: (Signature)	Date:	Time:	Received for lab by: (Signature) C. [signature]	Date: 7-2-11 / Time: 0900	pH Checked: / NCF:

Well Log Report - 00270268

Minnesota Unique Well No. **270268**

County: Ramsey
Quad: St Paul East
Quad ID: 103A

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

Entry Date: 09/02/2009
Update Date: 09/02/2009
Received Date:

Well Name

Township Range Dir Section Subsections Elevation 887 ft. 7.5 minute topographic map (+/- 5 feet)

29 22 W 18 DCCDBD **Elevation Method**

Well Depth: 184 ft.
Depth Completed: 184 ft.
Date Well Completed:

Drilling Method –

Drilling Fluid: –

Well Hydrofractured? ☐ Yes ☐ No
From Ft. to Ft.

Well Address
1699 AGATE ST NE
MAPLEWOOD MN 55117

Geological Material	Color	Hardness	From	To
GLACIAL DRIFT			0	78
PLATTEVILLE LIMESTONE			78	103
GLENWOOD SHALE			103	110
ST. PETER SANDSTONE			110	184

Use

Casing Type Steel (black or low carbon) **Joint** No Information **Drive Shoe?** ☐ Yes ☐ No **Above/Below** ft.

Casing Diameter	Weight	Hole Diameter
3 in. to 172 ft.	lbs./ft.	

Open Hole from 172 ft. to 184 ft.

Screen NO **Make** **Type**

Diameter	Slot/Gauze	Length	Set Between

Static Water Level
80 ft. from Land surface Date Measured 09/02/2009

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

Well Head Completion
Pitless adapter manufacturer Model
☐ Casing Protection ☐ 12 in. above grade
☐ At-grade (Environmental Wells and Borings ONLY)

REMARKS
GAMMA LOGGED 9-2-2009. LOGGED FOR JOHN JOHNSON & MDH.

Grouting Information Well Grouted? ☐ Yes ☐ No

Located by: Minnesota Geological Survey
Method: Digitization (Screen) - Map (1:24,000)
Unique Number Verification: Information from owner
Input Date: 09/02/2009
System: *UTM - Nad83, Zone15, Meters*
X: 492572 **Y:** 4982115

Nearest Known Source of Contamination
_feet _direction _type
Well disinfected upon completion? ☐ Yes ☐ No

Pump ☐ Not Installed Date Installed
Manufacturer's name Model number __ HP _ Volts
Length of drop Pipe _ft. Capacity _g.p.m Type Material

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

Borehole Geophysics Yes
First Bedrock Platteville
Last Strat St.Peter
Aquifer St.Peter
Depth to Bedrock 78 ft.

Well Contractor Certification
Minnesota Geological Survey (License Business Name) MGS (Lic. Or Reg. No.) (Name of Driller)

County Well Index Online Report

270268

Printed 7/22/2011
HE-01205-07

Minnesota Unique Well No.
247034

County Ramsey
Quad St Paul East
Quad ID 103A

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

Entry Date 01/28/1992
Update Date 04/22/1999
Received Date

Well Name 130 KINGSTON AVE.
Township Range Dir Section Subsections Elevation 890 ft.
29 22 W 18 DCCBCD **Elevation Method** 7.5 minute topographic map (+/- 5 feet)

Well Depth 200 ft. **Depth Completed** 200 ft. **Date Well Completed**

Drilling Method –

Drilling Fluid –

Well Hydrofractured? ☐ Yes ☐ No From Ft. to Ft.

Well Address
130 KINGSTON AV
MAPLEWOOD MN

Use Domestic

Geological Material	Color	Hardness	From	To
GLACIAL DRIFT			0	87
PLATTEVILLE LIMESTONE			87	113
GLENWOOD SHALE			113	118
ST. PETER SANDSTONE			118	200

Casing Type Steel (black or low carbon) **Joint** No Information **Drive Shoe?** ☐ Yes ☐ No **Above/Below** ft.

Casing Diameter	Weight	Hole Diameter
3 in. to 181 ft.	lbs./ft.	

Open Hole from 181 ft. to 200 ft.

Screen NO **Make** **Type**
Diameter **Slot/Gauze** **Length** **Set Between**

Static Water Level
89 ft. from Land surface Date Measured 10/02/1991

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

Well Head Completion
Pitless adapter manufacturer Model
☐ Casing Protection ☐ 12 in. above grade
☐ At-grade (Environmental Wells and Borings ONLY)

REMARKS
GAMMA LOGGED 10-2-1991.

Grouting Information Well Grouted? ☐ Yes ☐ No

Located by: Minnesota Geological Survey
Method: Digitized - scale 1:24,000 or larger (Digitizing Table)
Unique Number Verification: Information from owner
Input Date: 07/19/1996
System: *UTM - Nad83, Zone15, Meters* **X:** 492483 **Y:** 4982147

Nearest Known Source of Contamination
_feet _direction _type
Well disinfected upon completion? ☐ Yes ☐ No

Pump ☐ Not Installed Date Installed
Manufacturer's name Model number__ HP_ Volts
Length of drop Pipe _ft. Capacity _g.p.m Type Material

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

Borehole Geophysics Yes
First Bedrock Platteville
Last Strat St.Peter
Aquifer St.Peter
Depth to Bedrock 87 ft.

Well Contractor Certification
Minnesota Geological Survey | MGS
License Business Name | Lic. Or Reg. No. | Name of Driller

County Well Index Online Report

247034

Printed 7/22/2011
HE-01205-07

Carlson McCain

RECEIVED
JUL 20 2011
Maplewood
Public Works

ENVIRONMENTAL • ENGINEERING • LAND SURVEYING

July 18, 2011

Public Works Director
City of Maplewood Public/Water Works Department
1902 County Road B2 East
Maplewood, Minnesota 55109

Re: Water Supply Confirmation
Addresses Connected to City Utilities

To Whom It May Concern:

Carlson Professional Services, Inc. (Carlson) is currently conducting an environmental Limited Site Investigation (LSI) for the former Sinclair #22020 station store located at 223 East Larpenteur Avenue in Maplewood, Minnesota (Site). The LSI was conducted to define vertical and horizontal potential subsurface soil contamination and potential groundwater impacts from an historical release at the Site. As part of our investigation, we are required by the Minnesota Pollution Control Agency (MPCA) to confirm that the Site and surrounding properties are/are not connected to the City of Maplewood public water and sewer services.

Enclosed is a list of the addresses of concern for our investigation. We would like to request that the City of Maplewood confirm that each property is/is not connected to City water and sewer services. Responding **YES** (address is served by City of Maplewood water and sewer services) or **NO** (address is not served by City of Maplewood water and sewer services) placed/circled next to each property address would suffice the MPCA requirements. In addition, construction and depth of public service utilities to the Site home would help out. Also, please state if there are any plans for groundwater development within 1/2 mile of the Site. Please add your name, title and telephone number on the attached page and return it to us in the enclosed self-addressed-stamped envelope.

We greatly appreciate your time and effort for this task. We are hoping to receive confirmation by July 26, 2011. You can send or email the documentation. If you have any questions, you may contact me at 952-346-3913 or cloch@carlsonpsi.com.

Sincerely,

Christopher J. Loch
Staff Hydrogeologist/Project Manager

Enclosure

Sinclair #22020 – Maplewood, MN

Addresses of Concern

1. 223 East Larpenteur Ave, Maplewood, MN (Subject Site) — (Yes) / No
2. 1734 Adolphus Street (Champs), Maplewood, MN — (Yes) / No
3. 191 East Larpenteur Ave, Maplewood, MN — (Yes) / No
4. 181 East Larpenteur Ave, Maplewood, MN — Yes / No
5. 196 East Larpenteur Ave, Maplewood, MN — Yes / No
6. 200 East Larpenteur Ave, Maplewood, MN → City of Saint Paul

Are there any plans for groundwater development within ½ of the Site? Yes / (No)

If so, please explain:

Information about construction, depth, and diameter of water and sewer service lines:

See attached.

Please state your name, title and phone number:

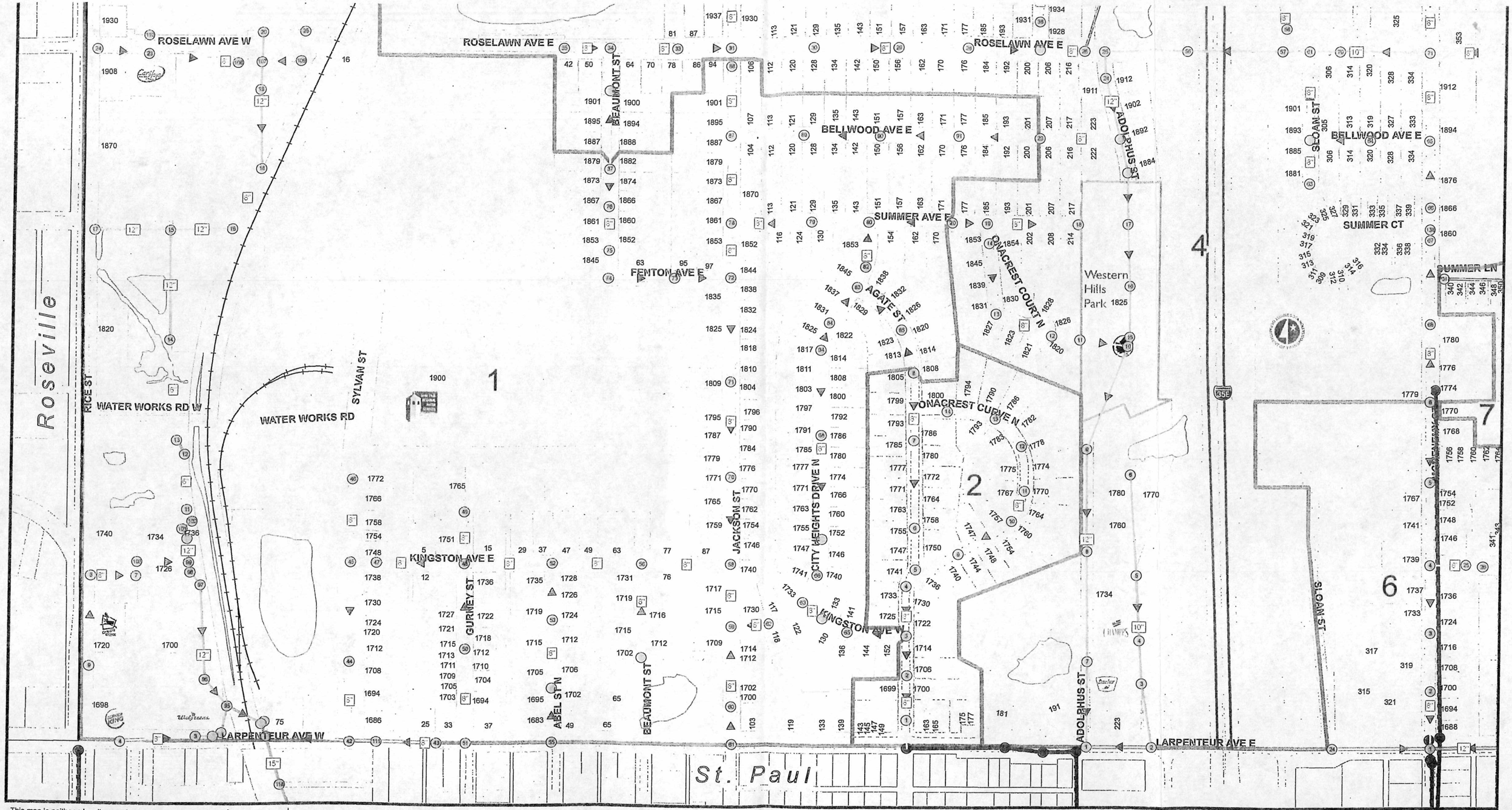
Michael Thompson

MAPLEWOOD
Together We Can

MICHAEL THOMPSON, P.E.
CITY ENGINEER/DEPUTY DIRECTOR OF PUBLIC WORKS
MICHAEL.THOMPSON@CI.MAPLEWOOD.MN.US

OFFICE: 651 - 249-2403 FAX: 651 - 249-2409

CITY OF MAPLEWOOD • 1902 COUNTY ROAD B EAST • MAPLEWOOD, MN 55109



- Water
- Streams
- Parks City
- Golf Courses
- Open Space
- Parks County
- Parks Regional

Sanitary Sewer Pipe

Diameter (inches)

- > 8
- 8
- 9 - 14
- 15 - 18
- > 18

- Manholes
- Gate Valves
- Lift Stations
- Flow Arrows
- Abandoned Pipe Forcemains
- Private Sanitary Manholes
- Private Sanitary Pipe

Met Council Structures

- Meter
- Interceptors
- Lift Station
- Manholes

34 Sewer Districts

Pipe Diameter 8"

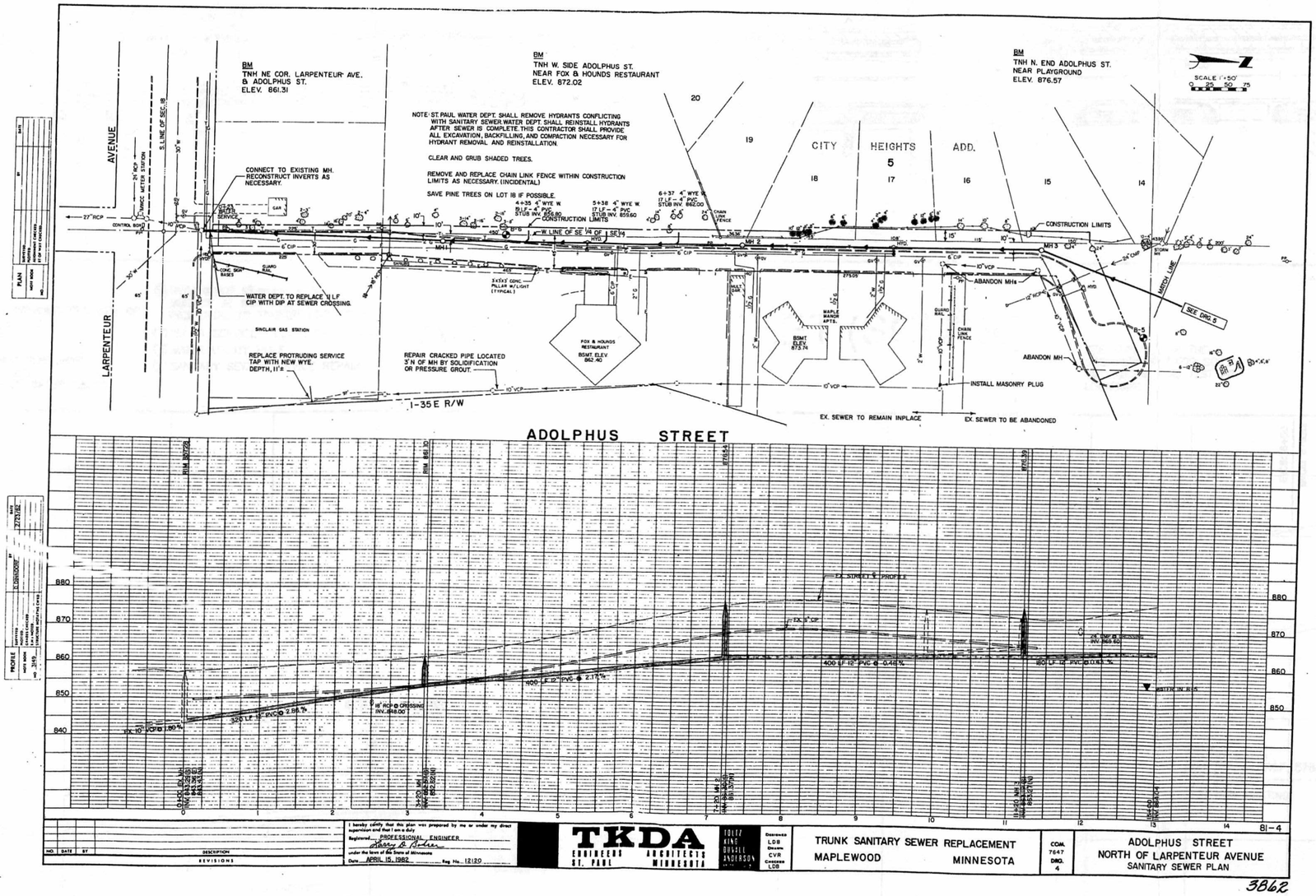
Maplewood Sanitary Sewer System

MAPLEWOOD
Together We Can

Reference Map

S 18-29-22

Page #02



NO.	DATE	BY	DESCRIPTION
			REVISIONS

I hereby certify that this plan was prepared by me or under my direct supervision and that I am a duly Registered PROFESSIONAL ENGINEER under the laws of the State of Minnesota. Date APRIL 15, 1982 Reg No. 12129 — Larry D. Baker

TKDA ENGINEERS ST. PAUL ARCHITECTS MINNESOTA

JOLTZ KING DUVALL ANDERSON

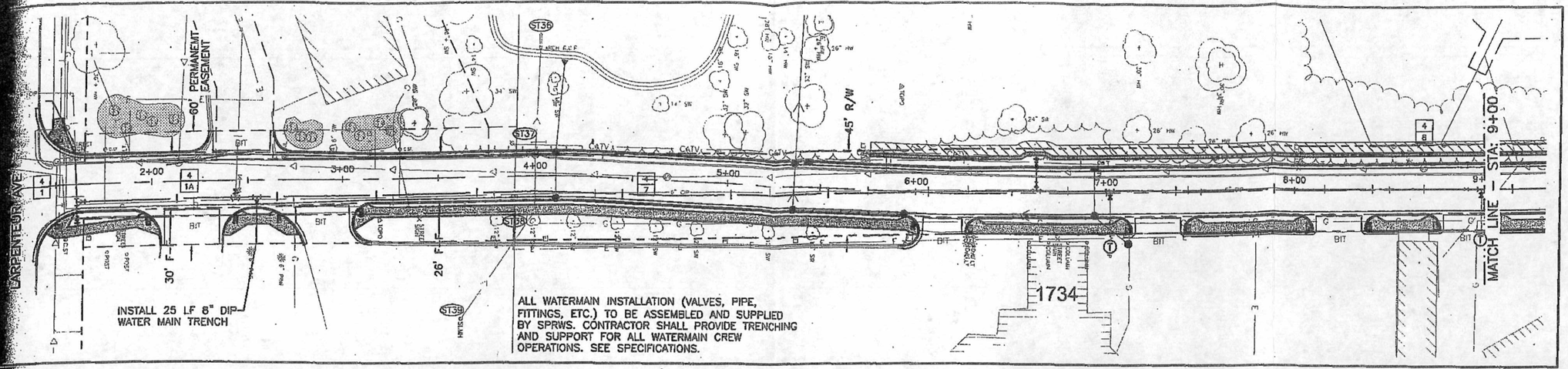
Designed LDB Drawn CVR Checked LDB

TRUNK SANITARY SEWER REPLACEMENT
MAPLEWOOD MINNESOTA

COM. 7647 DRG. 4

ADOLPHUS STREET
NORTH OF LARPENTEUR AVENUE
SANITARY SEWER PLAN

3862



EXISTING CASTINGS TO PROPOSED ELEVATIONS PER CITY OF STANDARD SPECIFICATIONS & DETAILS.
18 FOR VARIOUS WORK SCHEDULES.

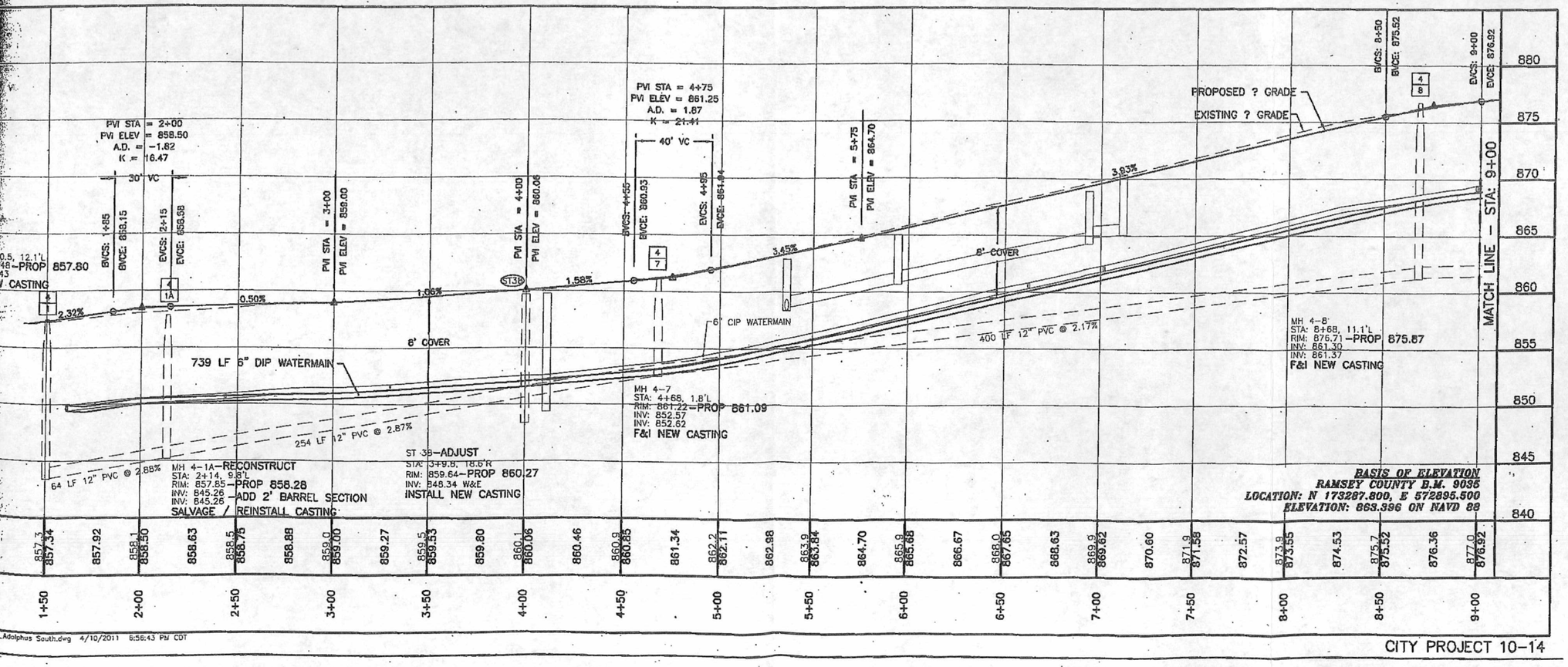
TOR TO COORDINATE WITH SPRWS FOR TEMPORARY TO CHAMPS AND APARTMENT COMPLEX.
D TAKE EXTRA PRECAUTION TO PROTECT WATER TEMPS.

- (W) RECONNECT EXISTING WATER SERVICE AT NEW MAIN LOCATION INCIDENTAL TO TRENCH EXCAVATION
- (T) WATER SERVICE TRENCH EXCAVATION
- (H) WATER UTILITY HOLE
- (S) SANITARY SEWER SERVICE REPAIR

ADOLPHUS STREET (SOUTH)

SEE APPENDIX IN THE SPECIFICATIONS FOR SOILS INFORMATION AND TEST PIT LOCATIONS

0 30 60
1" = 30' FULL SIZE
1" = 60' HALF SIZE



CITY PROJECT 10-14

City of Maplewood
DEPARTMENT OF PUBLIC WORKS
ENGINEERING DIVISION
1902 East County Road B
Maplewood, Minnesota 55109
(651) 249-2400 FAX (651) 249-2409

I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.
STEVEN L. KUMMER, P.E.
DATE 4/6/2011 LICENSE NO. 44286

DESIGNED SLK
DRAWN AJE/NAB/JDK
CHECKED RKL

ADOLPHUS STREET (S.)

SANITARY AND WATER

REVISION	DESCRIPTION	DATE

RECORD DRAWING
BY
DATE

CARD NUMBER

SHEET NO.
87

NAME: Jennifer Tillman

ADDRESS: 196 Carpenter Ave E
St. Paul, Mn 55117

PHONE NUMBER: 651 489 2784

1. Are you currently hooked up to the city water supply (*circle one*)? (*YES*) *NO*

2. To the best of your knowledge, does your property have an active private water well? *(circle one)* *YES* (*NO*)

   If YES, Please supply as much information about the well as possible:

   Date installed: _____

   Depth (below ground surface) the well is completed to: _____

   Diameter of well casing: _____

   Use (irrigation/industrial/primary water supply): _____

3. To the best of my knowledge, the property does (does not *(circle one)* have an abandoned water well. If so, supply as much information about the abandoned well as possible.

4. Does your property have a sump or pit where natural water accumulates? *(Circle one)* (*YES*) *NO*

5. Do you have a basement? *(Circle one)* (*YES*) *NO*

6. Have you noticed any unusual petroleum odors on your property especially in basements or underground structures (if present)? *(Circle one)* *YES* (*NO*)

   If YES, please describe where and when you identified the vapors.