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: Leak000**18571** Date: **February 27, 2014**

Responsible Party Information

Name: **Mayo Clinic Health Care Systems** Phone #: **(952) 758-8196**

Mailing Address: **301 Second Street NE**

City: **New Prague** Zip Code: **55071**

Alternate Contact (if any) for Responsible Party: **Mr. Clay Brister** Phone #: **same**

Leak Site Information

Leak Site Name: **Queen of Peace Hospital** Phone #: **same**

Mailing Address: **301 Second Street NE**

City: **New Prague** Zip Code: **55071**

County: **Scott**

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
Jeffrey G. Vosburgh		

Name and Title of Report Reviewer(s)	Signature	Date Signed

Name(s) of Field Technician(s): **Jeffrey G. Vosburgh**

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Emergency and High Priority Sites

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

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

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

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

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

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

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

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

Section 1: Site Assessment

Site and Release Information

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

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

The site is situated in a mixture of both commercial and residential structures located just north of the downtown area of New Prague approximately two blocks (Figure 1). The site lies in a relatively flat area of topography with 3rd Street NE bounding the site to the north, Columbus Avenue/Highway 15 to the east, 2nd Street NE to the south and 1st Avenue SE to the west. The closest hydrologic features are located northeast of the site approximately 2,000 feet and to the west approximately 2,500 feet (Figure 1). These features are two small un-named lakes located northeast and an intermittent stream located west. The lake features appear to be remnants of an oxbow of the stream that flows from the north to the south west of the site (Figure 1).

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.

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

There are no leak sites within 500 feet of the site according to the MPCA website (http://pca-gis02.pca.state.mn.us/prp/index.html).

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

The release at this site was reported following the removal of two USTs on October 11, 2012. Removed from a single excavation were a 10,000 gallon fuel oil tank and a 1,000 gallon diesel fuel tank (Figure 3). The former tank basin was located just north of the former emergency room entrance on the north side of the hospital. These tanks were installed in 1963 according to MPCA database (Table 1). A 1,000 gallon diesel tank was removed from the excavation which was present in order to provide fuel for a back up generator. The 10,000 gallon UST appeared to be leaking as is shown on Table 1 of the excavation report (Appendix A). Small holes were found in the tank shell following removal. Field personnel were unable however, to determine if the holes were exposed when iron scale was knocked free during the removal process. Tank removal observations did show fuel impacts to the native clay soils near the base of the excavation. Soil samples collected at the base of the excavation did not show any DRO impacts and only one low level GRO detection in the sample locations (Section E-Excavation Report/Appendix A). Headspace sampling showed somewhat moderate to high headspace readings in the sidewalls and backfill materials of the tank excavation. A 6,000 gallon AST was installed over the former tank basin to be used to store fuel oil and was used as a backup heat source. A 500 gallon tank was installed in 2005 according to the MPCA data base and the onsite facilities personnel. This AST was installed to replace the 1,000 gallon UST for diesel fuel for the backup generator.

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

The release appears to be related to spills that occurred when the fuel oil or diesel fuel tanks were filled with product over time.

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

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

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: Total volume removed: cubic yards

Volume of total soil removed that was petroleum saturated: cubic yards

Soil treatment method:
☐ Land treatment
☐ Thermal treatment
☐ Composting/Biopiling
☐ Other
Name and location of treatment facility:

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*.

A total of four probes were advanced at the site on June 5, 2012. The first probe was advanced through the west side of the former tank basin where the 10,000 gallon tank and dispenser were located (Figure 3). The second probe (GP-2) was advanced northeast of the tank basin, the third (GP-3) west of the basin and the final probe (GP-4) south of the tank basin. One soil gas vapor sample (SV-1-8') was also completed near GP-4 to determine if there was a soil gas vapor plume associated with the site that may have migrated towards the building in this direction (Figure 3). Soil impacts were encountered in only the first probe completed through the former tank basin with one positive OVM reading at 14 feet in depth. This reading was 41 ppm as recorded on the OVM and appeared to be related to fuel oil impacts. Due to the absence of soil impacts in the perimeter probes, there were no additional probes completed to delineate impacts at this site.

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

Three soil samples were collected and analyzed for grain size. The results of the grain size analysis can be found in Appendix I. Of the samples collected, one was collected from GP-1 at 16.0 feet, one from GP-2 at 15.8 feet and the third from GP-3 at 9.5 feet. Of the samples submitted only one graph crossed the d_{10} fraction and this value was used along with the Hazen grain size method to estimate the hydraulic conductivity for the site.

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.

A total of four probes were advanced as part of this LSI ranging from 24 to 36 feet below ground surface (bgs-Boring Logs/Appendix E). The stratigraphy encountered in the probes appears to be consistent with the geology recorded on area well logs (Appendix K). In general, surficial geology encountered consisted of approximately four feet of brown silty clay fill materials. This clay fill is underlain by brown silty clay with distinct rust mottles to approximately seventeen feet in depth. Underlying the brown silty clay materials were gray clays of stiff consistency absent of any mottling. These gray clays were encountered to the extent of the drilling at the site advanced to 36 feet bgs.

The soil materials present at the site are characterized as stagnation moraine deposits from the Alexandria Moraine Association according to a Quaternary Geologic Map of Minnesota by Hobbs and Goebel. These ground moraine deposits are approximately 150 feet thick and overlie cretaceous age bedrock. This first bedrock encountered according to area logs is shale which overlies a sandstone and limestone bedrock unit. These bedrock units are used for area wells including the municipal wells which are drilled to depths ranging from 398 to 652 bgs.

The subject site lies just north of downtown New Prague and is supplied drinking water by six municipal wells. These wells are located both northwest and southeast of the site at distances less that ½ mile. The subject site is found to be located within the drinking water supply management area (DWSMA) for the original city wells located south of the site (http://pca-gis02.pca.state.mn.us/prp/index.html). The aquifer sensitivity is found to be low and even though the site is present within the DWSMA these wells do not appear to be at risk from soil impacts encountered at the site.

Groundwater was present in three of the temporary wells completed for the LSI. Groundwater appears to come from discontinuous sand layers present from approximately 9.5 to 15.9 feet below ground surface (bgs). Aside from these sand laminations the probes were absent of any other water bearing units. Groundwater levels measured 9.25 feet in GP-1, 15.91 in GP-2 and 11.14 feet in GP-3 (Table 6). Groundwater when removed from the temporary well was very slow to recover indicating limited groundwater capacity in these probes completed at the site.

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

The MPCA web site (http://pca-gis02.pca.state.mn.us/prp/index.html) was visited to obtain the DWSMA for the six municipal wells in the area. The municipal wells according to well logs are found both southeast and northwest of the site. The MDH CWI was then utilized to determine the location of wells within ½ mile of the subject site. Three private wells were found within ½ mile of the site. These wells included two for the New Prague Creamery and one for John Yackley. There was also one found for an elevator and the rest of the well logs obtained were from the municipal wells.

Two of these municipal wells were newer and we could not obtain well logs from our version of the CWI (Table 16-Figure 7). The MPCA PRP website was also utilized to locate additional wells for the area. No additional wells were found within ½ mile of the site. It does not appear based on the data reviewed that area wells would be jeopardized by either soil or groundwater contamination from the site. The site is located within the DWSMA for the city for the municipal wells to the southeast, but again there is a low risk of impacts to these wells based on the data collected for this LSI.

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

Table 6 shows the water levels in the four Geoprobe borings completed as temporary wells where groundwater was found within only three of the four probes. Three quarter inch diameter PVC casing and screen were inserted into each probe hole upon removing the push probe rods to serve as temporary wells. Groundwater was present in three of the four temporary wells at levels that varied by more than six feet thus a flow direction could not be determined.

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.

The site area is underlain by seventeen feet of brown clay that overlies gray clays to the extent of our probes or 36 feet bgs as was shown in the deepest probe advanced at the site. Two sand seams or laminations were found in two of the four probes completed for this LSI. These sand seams were found in GP-2 at 15.8 feet and in GP-3 at 9.5 feet. Mottling was observed in brown clays and in the form of bright rust colored mottles from 6 to 12 feet in depth.

Given the grain size data and groundwater collection data gathered for this LSI, it appears that groundwater would be more abundant in periods of high precipitation given the soil types and the absence of abundant moisture observed during the drilling. Mottling observed indicates the past presence of groundwater at levels that vary as much as 10 feet. Of the three grain size samples sent for analysis only one crossed the d_{10} fraction. This sample was used along with Hazen Grain size approximation to estimate the hydraulic conductivity. Based on the approximation using only this sample, it would appear that the soils meet the criteria of an aquifer. Using all the data collected including the other two samples collected for grain size and the absence of continuous sand lenses or layers, it does not appear that the soils at this site meet the criteria of an aquifer. Additionally, the UST basin was backfilled with coarse fill materials and was not capped with any clay materials therefore this basin would be acting as a receptor collecting and holding groundwater during periods of high moisture.

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.

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 impacts were found in the native soils in the tank basin following removal of the 10,000 gallon fuel oil and 1,000 gallon diesel tank (Excavation Report/Appendix A). A release was reported and a subsequent LSI was performed to determine the extent and magnitude of soil impacts at the site. Four probes were completed with the first being located in the former basin (GP-1) and the others around the perimeter in the three directions possible. The probe (GP-1) completed in the tank basin was the only probe of the four that showed soil impacts. Soil impacts were present at 13.2 feet bgs with the only/highest OVM reading of 41.0 ppm recorded (Table 2). The soil impacts appear confined to the former tank basin based on the absence of any soil impacts encountered in the perimeter probes (Figure 3). Soil samples collected for laboratory analysis following tank removal did not show soil impacts with the exception of a GRO detection under the diesel tank (Appendix A). This analytical result was reported at 14 ppm along with low level Benzene, Ethylbenzene and Xylenes in this sample and the adjacent sample (See Analytical Table-Excavation Report/Appendix A). In probes completed around the former UST basin, soil samples were collected near the contact between the brown and gray clay units (Table 3). The absence of soil impacts were confirmed by soil sample analysis of samples collected from each of the soil probes at the soil groundwater interface (Table 3). Based on this information, it does not appear that there is a soil contaminant plume outside the tank basin area.

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? feet

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

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

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

During the advancement of the soil probes, field evidence (stained soils, petroleum odors, positive OVM readings) of soil contamination was observed in only one of the four probes completed for this LSI (Figure 3). The impacts were encountered as described above at 13.2 feet bgs. Soil samples collected for laboratory analysis confirm the absence of soil impacts both in the native soils in the tank basin and around the perimeter of the former tank basin.

Groundwater was encountered in three of the four temporary wells completed for this LSI. Groundwater impacts were not encountered in groundwater samples from the probe completed in the tank basin or in the two temporary wells (GP-2 and GP-3) completed outside the tank basin (Table7). The site is a hospital facility within the city limits of New Prague, MN, approximately one block north of the downtown area (Figure 1). The municipal wells are present northwest and southeast of the site. The site lies within the DWSMA for the wells to the southeast but do not appear to be at risk from impacts present at this site. One private well, two commercial and one industrial well were found within ½ mile of the site when conducting the well search. Based on the information gathered as part of this LSI, the wells found around the site do not appear to be at risk from any impacts.

If *YES*, the **Aquifer Determination** is not necessary as part of the LSI.
If *NO*, complete the **Aquifer Determination** section below.

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

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

Aquifer Determination

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

1.23 Calculate an average hydraulic conductivity value (K). K = **0.02 cm/sec or 55.6** ft/day

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

Three soil samples were collected and analyzed for grain-size. The results of the grain size analysis can be found in Appendix I.

GP-1	**16.0 feet**	**d_{10} = Did not cross the d_{10}.**
GP-2	**15.8 feet**	**d_{10} = Did not cross the d_{10}.**
GP-3	**9.5 feet**	**d_{10} = Crossed the d_{10} at 0.14 mm.**

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

Both the high and low thicknesses of the sand laminations were used which was two inches thick in both GP-2 at 15.8' and GP-3 at 9.5'.

T_{High} = **9.26** ft^2/day
T_{Low} = **9.26** ft^2/day

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

Aquifer Characterization

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

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.

Groundwater samples were collected from three of the four temporary wells from groundwater that averaged 12.1 feet below grade (Table 6). Three groundwater samples were collected along with a field duplicate and do not show groundwater impacts in the former tank basin, or the two probes north and west of the basin where groundwater was encountered. In the samples collected, analytical results did not show any VOC compounds or DRO detections above the laboratory detection limits.

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

In groundwater samples collected from three of the four temporary wells there were no VOC detections from any of the groundwater samples collected at the site that included the field duplicate.

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.

QA/QC included equipment decontamination between sampling points, the use of dedicated screens, calibration of field equipment, immediate groundwater collection and preservation, placing samples immediately in coolers, recording sampling data and appropriate trip and field blanks were collected along with field duplicates.

1.35 Laboratory certification number: **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.

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

Extent and Recovery of Free Product

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

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

Section 2: Risk Assessment

Well Receptors

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

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

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

If *NO*, please explain.

While on site completing the LSI, the properties within 500 feet of the site were visited to visually determine if any private wells were present on surrounding properties. Post cards were also sent to properties within 500 feet of the site and the data is presented on Table 15 of this report. None of the returned post cards noted the presence of a private well. We did receive post cards that did indicate the presence of basements and sump pumps. Additionally, all of the surrounding properties were found to be hooked up to municipal water supplies as confirmed by city officials.

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

We did not encounter any limitations with this investigation.

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).

The subject site lies just north of the downtown area of New Prague approximately one block in an area that transitions from downtown buildings to a residential area (Figure 1). The municipal wells were found to be located both northwest and southeast of the site (Figure 7). There were five municipal wells, two commercial, one private and one industrial well found within ½ mile of the site. Logs were available for all of these wells found during the well search. Construction details, geology and other data can be found in Appendix K and is summarized on Table 16. All of the wells are bedrock wells drilled through the 150 feet of overlying drift into Cambrian age bedrock. The only exception to this is the industrial well installed for an elevator shaft completed within quaternary clay deposits.

In general, the well logs indicate that the area is underlain by ground moraine materials to approximately 150 feet in depth where Cambrian Age bedrock is present. It appears that the clay layers within the moraine materials may provide protection for the area wells but all of the area wells are found to be at least 150 feet into the bedrock. This was confirmed by the source water assessment for New Prague (Appendix L). There does not appear to be a risk to the drinking water aquifer given the depth (~150 plus feet) and the absence of groundwater impacts at the site (Table 7).

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

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

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

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

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: **Bruce Reimers** Title: **Water Superintendent** Telephone: **952-758-1142**

Surface Water Receptors

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

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

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

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

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

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

Name of receiving water:
Plume width, (W):
Plume thickness, (H):
Hydraulic conductivity, (K):
Horizontal gradient, (dh/dl):
Discharge, (Q) = H*W*K*(dh/dl)/1440

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.

The primary utility at risk from soil impacts found in the UST is the storm sewer located north of the former basin area (Figure 3). This utility is six feet bgs used to drain the roof of the building and flows from the northeast to the southwest north of the tank basin. The storm sewer trench although at risk, does not cut across the former tank basin. This utility is shown on the cross section (Figures 4 and 4a) and the location of soil impacts from the past presence of the fuel oil tank. There also are fiber optic, oxygen and natural gas lines in the area of the former tank basin (figure 3). These do not to be at risk based on the headspace data gather from the UST removal that show soil impacts greater than 40 inches bgs (Appendix A). The sanitary sewer (two lines) & water services (two lines) enter the subject building from the north, east and south of the building as shown on the site detail map (Figure 3). None of these appear to be at risk from impacts from the soil impacts left in place in the former UST basin based on the soil boring and distance to each of these utilities.

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

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

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

If *YES*, describe:

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

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

Vapor migration accumulation is not a risk given the absence of any positive OVM readings in the native soils or in any of the probes located outside the former tank basin (Table 2/Figure 3). We surveyed the storm manholes and catch basins around the former basin using an OVM and explosimeter. No readings were detected on either instrument at thos locations surveyed. It is our opinion that there is low risk to the utilities around the site based on the absence of soil impacts found in soil probes completed outside the tank basin as part of this LSI.

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*

The vapor intrusion assessment included the completion of one soil gas vapor probe (Figure 3). This was completed between the tank basin and the hospital building. Low level analytical detections do not indicate a risk to the building based on the results of this probe.

If *NO*, explain why.

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

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

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

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

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

If *YES*, describe your proposal for additional vapor intrusion sampling.
If *NO*, explain why.

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

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

Site Conceptual Model Discussion

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

The subject site lies just north of the downtown area of New Prague approximately one block in an area that transitions from downtown buildings to a residential area (Figure 1). Soil impacts were found via headspace sampling performed during the UST removal and soil analytical samples showed relatively clean samples at the base of the excavation. One AST was installed over the top of the former basin. Four probes were completed as part of the LSI and site soils were found to be brown clay overlying gray clays to the extent of our probes. Sand seams or laminations were found in two of the four probes completed for this LSI. Mottling was observed in brown clays and not within the underlying gray clays. Groundwater was encountered in three of the four temporary wells completed for this LSI. Groundwater impacts were not encountered in groundwater samples from the probe completed in the tank basin or in the two temporary wells (GP-2 and GP-3) completed outside the tank basin (Table7). The site lies within the DWSMA for the wells to the southeast but do not appear to be at risk from impacts present at this site. One private well, two commercial and one industrial well were found within ½ mile of the site when conducting the well search. Based on the information gathered as part of this LSI, the wells found around the site do not appear to be at risk from any impacts this site.

The one utility found to be most at risk from impacts at the site is the storm sewer line present just north of the former basin. This storm sewer line is six feet bgs and flows from the northeast corner of the building to the southwest joining a storm line in Church Street (Figure 3). This storm sewer line acts to collect water from the roof drains from the hospital building. There is communication, natural gas and oxygen supply lines also located near the tank basin but these are at low risk based on the results of this LSI. The sanitary sewer and water services enter the subject building from the north, east and south of the building as shown on the site detail map. None of these appear to be at risk from impacts from the soil impacts left in place in the former UST basin. The storm sewer trench although at risk, does not cut across the former tank basin. This utility is shown on the cross section (Figures 4 and 4a) and the location of soil impacts from the past presence of the diesel tank. A soil gas vapor sample (SV-1-8') was also completed near GP-4 to determine if there was a soil gas vapor plume associated with the site that may have migrated towards the building in this direction (Figure 3). The analytical report does not suggest soil gas vapor contaminants in this location.

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

Section 3: Site Management Decision

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

3.1 Recommendation for site:

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

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

Four Geoprobe borings were completed as part of this LSI in response to the UST removal at the site (Figure 3). Soil impacts were observed only in the former tank basin during UST removal and the subsequent probes did not encounter any impacted soils. Soil analytical results confirmed the absence of any soil impacts (Table 3). Additionally, groundwater impacts were not encountered in any of the three groundwater samples that included a sample from the former basin (Table 7). The absence of any soil or groundwater impacts suggest no risk to municipal or area wells including surface water receptors. Based on the information collected from this investigation, we are recommending file 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.

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.

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.

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	10,000	Fuel Oil	1963	Removed	Poor
002	Steel	UST	1,000	Diesel	1963	Removed	Good
003	Steel	AST	500	Diesel	1997	In Use	Good
004	Steel	AST	6,000	Fuel Oil	2013	In Use	Good

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

Table 2
Results of Soil Headspace Screening

Depth (ft)	Soil Boring ID									
	GP-1	GP-2	GP-3	GP-4						
0-2	0	0	0	0						
2-4	0	0	0	0						
4-6	0	0	0	0						
6-8	0	0	0	0						
8-10	0	0	0	0						
10-12	0	0	0	0						
12-14	41	0	0	0						
14-16	*0	*0	*0	*0						
16-18	0	0	0	0						
18-20	0	0	0	0						
20-22	0	0	0	0						
22-24	0	0	0	0						
24-26	0									
26-28	0									
28-30	0									
30-32	0									
32-34	0									
34-36	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:

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	14.3	06/05/12	<0.031	<0.31	<0.031	<0.092	<0.061	<6.1	<9.8	Fixed
GP-2	15.8	06/05/12	<0.029	<0.29	<0.029	<0.088	<0.059	<5.9	<9.7	Fixed
GP-3	13.2	06/05/12	<0.032	<0.32	<0.032	<0.096	<0.064	<6.4	<9.9	Fixed
GP-4	15.1	06/05/12	<0.031	<0.31	<0.031	<0.093	<0.062	<6.2	<9.8	Fixed

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

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

Boring ID	Sampled Depth (ft)	Date Sampled	1,2,4 Tri-methyl-benzene	Naptha-Lene						Lab Type[2]

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

Table 5
Contaminated Surface Soil Results

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

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

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

	Soil Boring									
	GP-1	GP-2	GP-3	GP-4						
Static Water Level Depth[1] (ft)	9.25	15.91	11.14	Dry						
Sampled Depth (ft)	10.0	16.0	11.4							
Sampling Method[2]	Tubing with check valve	Tubing with check valve	Tubing with check valve	Tubing with 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:

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	06/05/12		<1.0	<5.0	<1.0	<3.0	<1.0	NA	<100	Fixed
GP-2	06/05/12		<1.0	<5.0	<1.0	<3.0	<1.0	NA	<100	Fixed
GP-3	06/05/12		<1.0	<5.0	<1.0	<3.0	<1.0	NA	<100	Fixed
Field Dupl.	06/05/12		<1.0	<5.0	<1.0	<3.0	<1.0	NA	<100	Fixed
Lab Blank	06/15/12		<1.0	<5.0	<1.0	<3.0	<1.0	NA	NA	Fixed
HRL[3]			2.0	200	50.0	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/groundwater/hrltable.html for list of current HRLs.
Add additional rows as needed.
Notes:

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

Boring ID	Date Sampled	Sampled Depth (ft)	n-Butyl benzene	Sec-Butyl benzene	p-Iso propyl toluene	Naph-thalene	1,2,4 Tri-methyl benzene	1,2,3 Tri-methyl benzene	1,3,5 Tri-methyl benzene	Lab Type[2]
HRL[3]										

[1] Report results in µg/L. Use less than symbols to show detection limit.

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

Table 9
Monitoring Well Completion Information[1]

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

[1] Include well construction diagrams and MDH well logs in Section 6.
Add additional rows as needed.
Notes: (location and elevation of benchmark)
[1] Describe the methods used to measure water levels in Section 6.
Add additional rows as needed.
Notes:

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

Well Number	Date Sampled	Benzene	Toluene	Ethyl-benzene	Xylenes	MTBE	GRO	DRO	Lab Type[2]

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

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

Well Number	Date Sampled								Lab Type[2]

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

Table 13
Natural Attenuation Parameters

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

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

Table 14
Free Product Recovery

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

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

Table 15
Properties Located within 500 feet of the Release Source

Prop ID[1]	Property Address	Distance From Site (ft)	Water Supply Well			Public Water Supply		Base-ment (Y/N)	Sump (Y/N)	Possible Petroleum Sources (Y/N)	Comments (including property use)
			Well Present (Y/N)	How Determined[2]	Well Use[3]	Utilized (Y/N)	Confirmed by City (Y/N)				
1	405 1st Ave. N	400	N	Assumed		Y	Y	N	N	N	Residence
2	402-412 Church Ave.	325	N	Visual		Y	Y	N	N	N	Townhomes
3	407 Church Ave. N	375	N	Postcard		Y	Y	Y	N	N	Residence
4	410 Columbus Ave. N	375	N	Postcard		Y	Y	Y	N	N	Residence
5	411 Columbus Ave. N	500	N	Postcard		Y	Y	Y	N	N	Residence
6	404 1st Ave. NE	500	N	Postcard		Y	Y	Y	Y	N	Residence
7	109 3rd St. NE	475	N	Pers. Contact		Y	Y	Y	N	N	Residence
8	111 3rd St. NE	400	N	Postcard		Y	Y	Y	Y	N	Residence
9	201 3rd St. NE	300	N	Postcard		Y	Y	Y	Y	N	Residence
10	203 3rd St. NE	225	N	Postcard		Y	Y	Y	Y	N	Residence
11	205 3rd St. NE	200	N	Assumed		Y	Y	N	N	N	Residence
12	405 Church Ave. N	300	N	Assumed		Y	Y	N	N	N	Residence
13	406 Columbus Ave. N	325	N	Postcard		Y	Y	Y	Y	N	Residence
14	406 Columbus Ave. N	400	N	Postcard		Y	Y	Y	N	N	Residence
15	301 3rd St. NE	150	N	Postcard		Y	Y	Y	Y	N	Residence
16	303 3rd St. NE	150	N	Postcard		Y	Y	Y	Y	N	Residence
17	305 3rd St. NE	175	N	Postcard		Y	Y	Y	Y	N	Residence
18	407 Columbus Ave. N	375	N	Assumed		Y	Y	N	N	N	Residence
19	? 4th St. NE	500	N	Assumed		Y	Y	N	N	N	Residence
20	401 Columbus Ave. N	325	N	Postcard		Y	Y	Y	N	N	Residence
21	403 Columbus Ave. N	300	N	Pers. Contact		Y	Y	Y	N	N	Residence
22	Part of 19	300	N	Assumed		Y	Y	N	N	N	Residence
23	108 3rd St. NE	450	N	Postcard		Y	Y	Y	N	N	Residence
24	308 1st Ave. NE	375	N	Postcard		Y	Y	Y	Y	N	Residence
25	109 2nd St. NE	425	N	Postcard		Y	Y	Y	N	N	Residence
26	111 2nd St. NE	350	N	Assumed		Y	Y	N	N	N	Residence
27	210 1st Ave. NE	450	N	Postcard		Y	Y	Y	N	N	Residence

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)				
28	Part of 35	100	N	Pers. Contact		N	Y	N	N	N	Clinic Parking
29	Part of 35	200	N	Pers. Contact		N	Y	N	N	N	Vacant
30	201 2nd St. NE	250	N	Assumed		Y	Y	N	N	N	Residence
31	203 2nd St. NE	100	N	Assumed		Y	Y	N	N	N	Residence
32	Part of 35	150	N	Pers. Contact		Y	Y	Y	Y	N	Clinic
33	Part of 35	150	N	Pers. Contact		Y	Y	Y	Y	N	Clinic
34	Part of 35		N	Pers. Contact		Y	Y	Y	Y	N	Subject Site
35	301 2nd St. NE	50	N	Pers. Contact		Y	Y	Y	Y	N	Clinic
36	Part of 35	275	N	Pers. Contact		Y	Y	Y	Y	N	Clinic
37	Part of 35	250	N	Pers. Contact		Y	Y	Y	Y	N	Clinic
38	Part of 35	300	N	Pers. Contact		Y	Y	Y	Y	N	Clinic
39	307 2nd St. NE	450	N	Assumed		Y	Y	N	N	N	Residence
40	211 1st Ave. NE	350	N	Postcard		Y	Y	Y	N	N	Residence
41	209 1st Ave. NE	400	N	Postcard		Y	Y	Y	N	N	Residence
42	207 1st Ave. NE	450	N	Assumed		Y	Y	N	N	N	Residence
43	205 1st Ave. NE	500	N	Postcard		Y	Y	Y	N	N	Residence
44	202 Church Ave. N	300	N	Pers. Contact		Y	Y	Y	Y	N	Church
45	Part of 44	425	N	Pers.		N	Y	N	N	N	Park

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)				
				Contact							
46	Part of 44	475	N	Pers. Contact		Y	Y	Y	Y	N	Church Rectory
47	Part of 44	300	N	Pers. Contact		Y	Y	Y	Y	N	Church School
48	209 Columbus Ave. N	350	N	Postcard		Y	Y	Y	N	N	Residence
49	207 Columbus Ave. N	425	N	Postcard		Y	Y	Y	N	N	Residence
50	205 Columbus Ave. N	475	N	Postcard		Y	Y	Y	N	N	Residence
51	308 2nd St. NE	500	N	Assumed		Y	Y	N	N	N	Residence

[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.

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)
	178545	975 ± 5	376	Unknown	125	MTPL	Domestic	Yackley Residence	0.3 mi W
	215706	975 ± 5	306	Unknown	85	CRFN	Commercial	New Prague-Cream	0.4 mi W
	240052	995 ± 5	582	167	153	MTPL	Municipal	New Prague # 1	0.1 mi S
	240053	995 ± 5	400	Unk.	Unk.	MTPL	Municipal	New Prague # 2	0.1 mi S
	240054	995 ± 5	398	153	155	MTPL	Municipal	New Prague # 3	0.12 mi SE
	257593	978 ± 5	401	161	Unk	MTPL	Commercial	New Prague-Cream	0.4 mi W
	433280	964 ± 5	652	288	187	CMTS	Municipal	New Prague # 4	0.45 mi NW
	674898	965 ± 5	27	27	Unk	Quat	Industrial	Elevator	0.45 mi N

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

Add additional rows as needed.

Notes:

Table 17
Surface Water Receptor Information

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

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

Table 18
Utility Receptor Information

Utility ID[1]	Description	Construction Material	Depth to Top of Structure	Diameter	Flow Direction (for liquids)	Year Installed	Backfill Material	Distance to Water Table
1	On Site Sanitary Service-North Side	CVP	8 feet	6 inches	East	1940's	Native clays	One to eight feet above based on LSI average water levels
2	On Site Water Service-North Side	DIP	8 feet	4 inches	South	1940's	Native clays	One to eight feet above based on LSI average water levels
3	Water Main-3rd Street East	DIP	8 feet	4 inches	East	1940's	Native clays	One to eight feet above based on LSI average water levels
4	On Site Water Service-East Side	DIP	8 feet	6 inches	West	1940's	Native clays	One to eight feet above based on LSI average water levels
5	Storm Sewer On site	RCP	6 Feet	4 & 10 inches	West	1940's	Native clays	Three to eleven feet above based on LSI average water levels
6	Storm Sewer-Church Street & Church & 3rd St. Intersection	RCP	6 Feet	10 inches	South	1940's	Native clays	Three to eleven feet above based on LSI average water levels
7	On Site Sanitary Service -South Side	CVP	8 Feet	6 inches		1940's	Native clays	One to eight feet above based on LSI average water levels

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

Utility ID[1]	Name, title, and telephone number for public entity contacted to obtain information or other source of information
	Glen Sticha, Public Works Director, 952-758-4401

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

Table 19
Vapor Survey Results

Location ID[1]	Description[2]	Monitoring Date	PID Reading (ppm)	Percent of the LEL[3]
1	Storm Manhole-Courtyard	6/5/12	0.0	0
2	Storm Manhole-Church St.	6/5/12	0.0	0
3	Storm Catch Basins-Church St.	6/5/12	0.0	0

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

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

Sample ID[2]	**SV-1**										
Date	**06/05/12**										
Depth (feet)	**8'**										
PID (ppm)											
COMPOUNDS	**Result**	**Report Limit**	**Result**	**Report Limit**	**Result**	**Report Limit**	**Result**	**Report Limit**	**Result**	**Report Limit**	**Intrusion Screening Value[3]**
1,3 Butadiene	<4.4	4.4									0.3 MDH
Acetone	260	30.0									400-EPA
Carbon disulfide	2.6	0.62									700-MDH
n-Hexane	<0.71	0.71									2,000-MDH
Cyclohexane	2.4	0.69									6,000-EPA
1,1,1-Trichloroethane	<1.1	1.1									5,000-EPA
Benzene	3.8	0.64									4.5-MDH
Heptane	9.4	0.82									
Trichloroethylene	<1.1	1.1									3.0-MDH
Toluene	23.0	0.75									5,000-EPA
Tetrachloroethylene	<1.4	1.4									20-MDH
Ethylbenzene	6.5	0.87									1,000-EPA
M&P-Xylene	17.0	1.7									100-EPA
O-Xylene	6.1	0.87									100-EPA
1,3,5 Trimethylbenzene	1.6	0.98									6.0-EPA
1,2,4 Trimethylbenzene	6.9	0.98									7.0-EPA
Benzyl Chloride	<1.1	1.1									0.2-CEPA

[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:

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*.

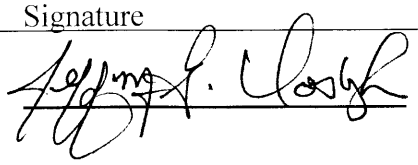
Web pages and phone numbers

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/groundwater/hrltable.html
MDH DW hotline	**1-800-818-9318**
Petrofund Web Page	http://www.state.mn.us/cgi-bin/portal/mn/jsp/content.do?id=-536881377&agency=Commerce
Petrofund Phone	**651-215-1775 or 1-800-638-0418**
State Duty Officer	**651-649-5451 or 1-800-422-0798**

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
Jeffrey G. Vosburgh		2/27/14

Name and Title of Report Reviewer(s)	Signature	Date Signed

Name(s) of Field Technician(s): **Jeffrey G. Vosburgh**

Company and mailing address: **Apex Environmental, Inc.**
60801 County Highway 46
Parkers Prairie, MN 56361

Phone: **(218) 338-5947**

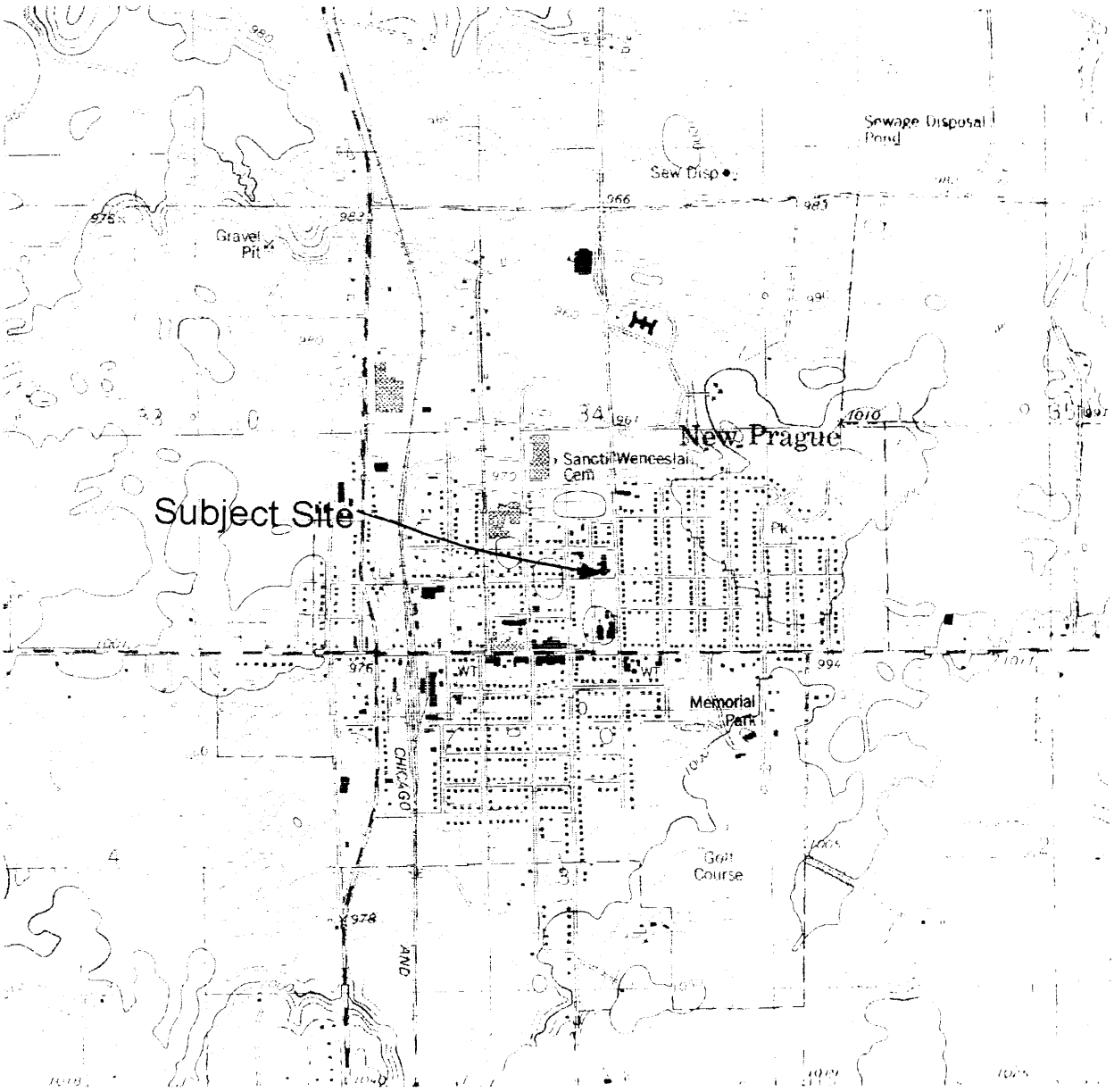
Fax: **(218) 338-5049**

Project Manager E-mail Address: **apexpp@hotmail.com**

Phone:

Fax:

NEW PRAGUE QUADRANGLE
MINNESOTA
7.5 MINUTE SERIES (TOPOGRAPHIC)



SCALE 1:24 000

1 MILE
7000 FEET
1 KILOMETER

CONTOUR INTERVAL 10 FEET
NATIONAL GEODETIC VERTICAL DATUM OF 1929

Figure 1 Site Location Map		Apex Environmental	
Queen of Peace Hospital			
301 2nd St. NE New Prague, MN MPCA Leak ID# 18571		KSV	JGV	012-12

Google earth

feet 100
meters 50

Figure 2
Aerial Photo

Queen of Peace Hospital

301 2nd St. NE
New Prague, MN
MPCA Leak ID# 18571

Apex Environmental

JGV	KSV	012-12

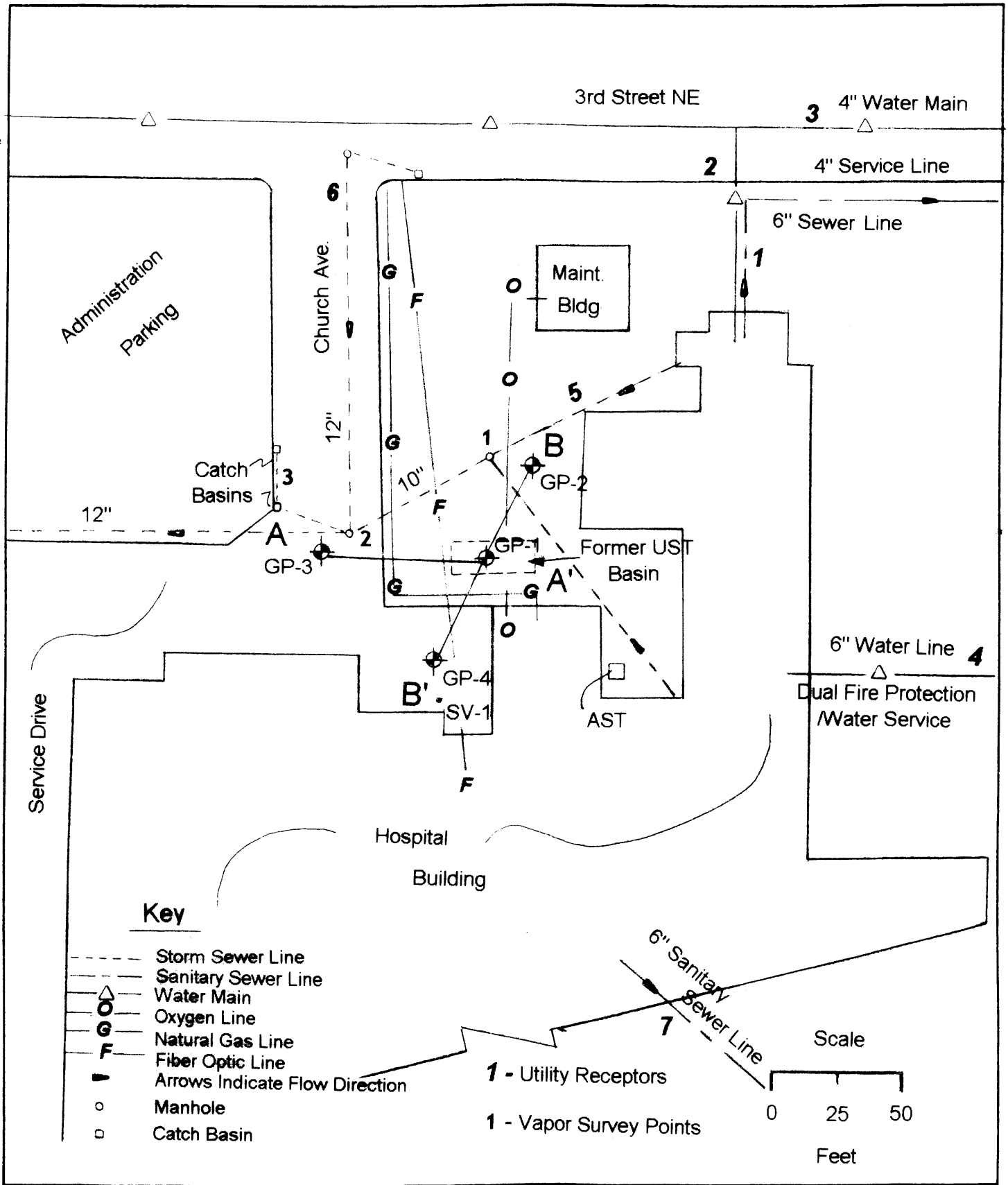


Figure 3
Site Detail Map

Queen of Peace Hospital

301 2nd St. NE
New Prague, MN
MPCA Leak ID# 18571

Apex Environmental

JGV	KSV	012-12

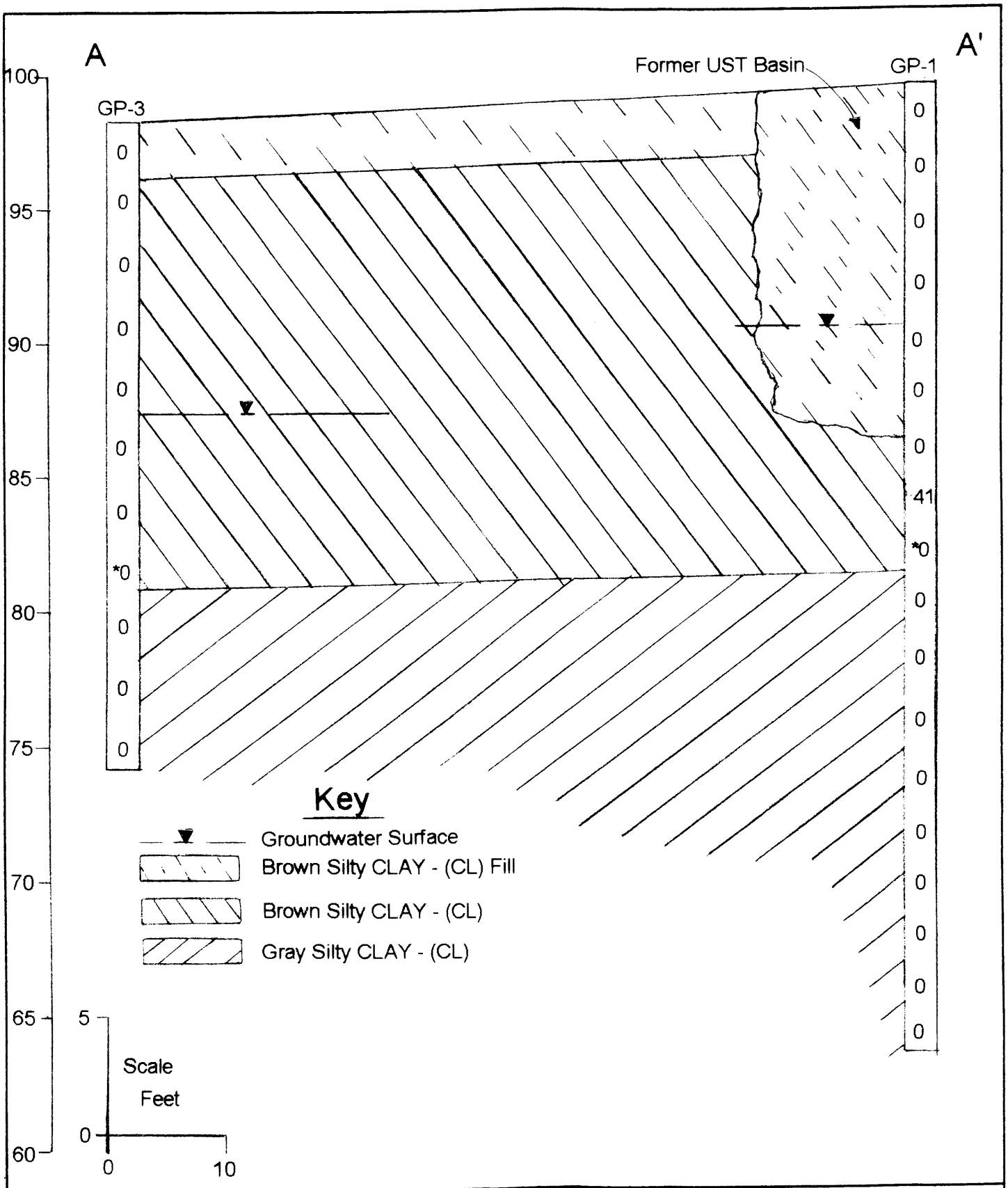


Figure 4
Geologic Cross Section
A A'

Queen of Peace Hospital

301 2nd St. NE
New Prague, MN
MPCA Leak ID# 18571

Apex Environmental

JGV	KSV	012-12

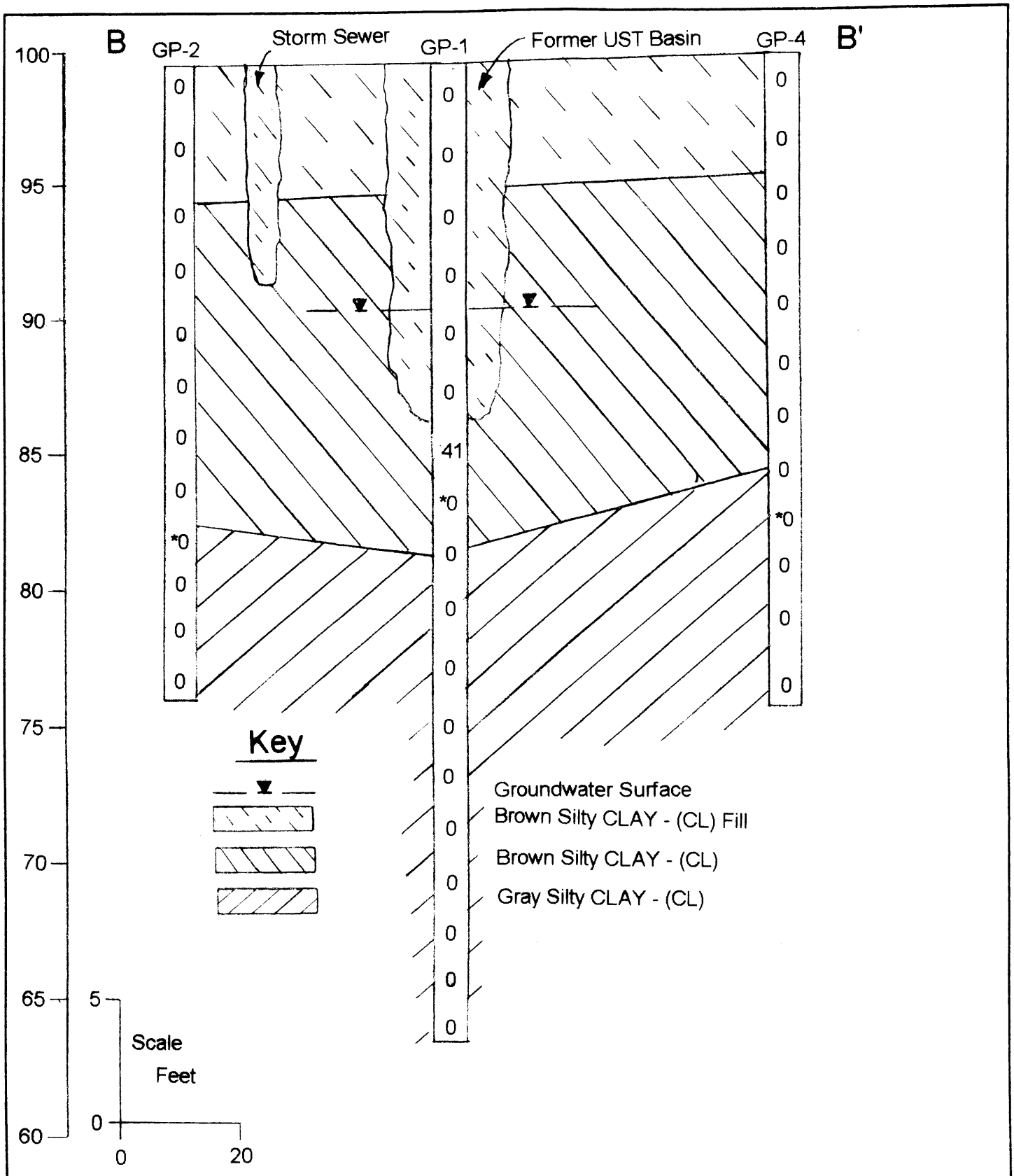


Figure 4a
Geologic Cross Section

B B'

Queen of Peace Hospital

301 2nd St. NE
New Prague, MN
MPCA Leak ID# 18571

Apex Environmental

JGV	KSV	012-12

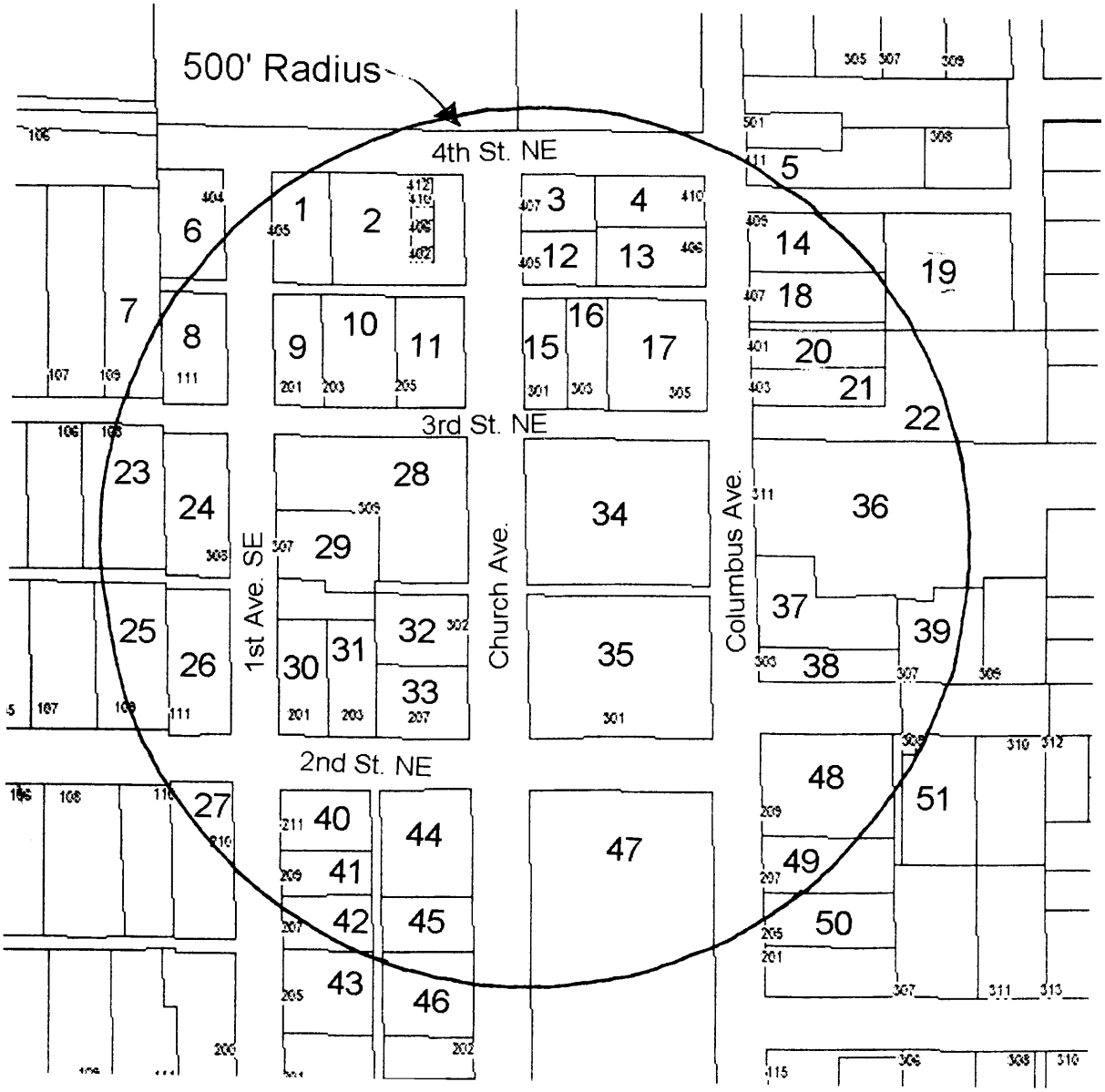


Figure 6
Potential Receptor Map

Queen of Peace Hospital

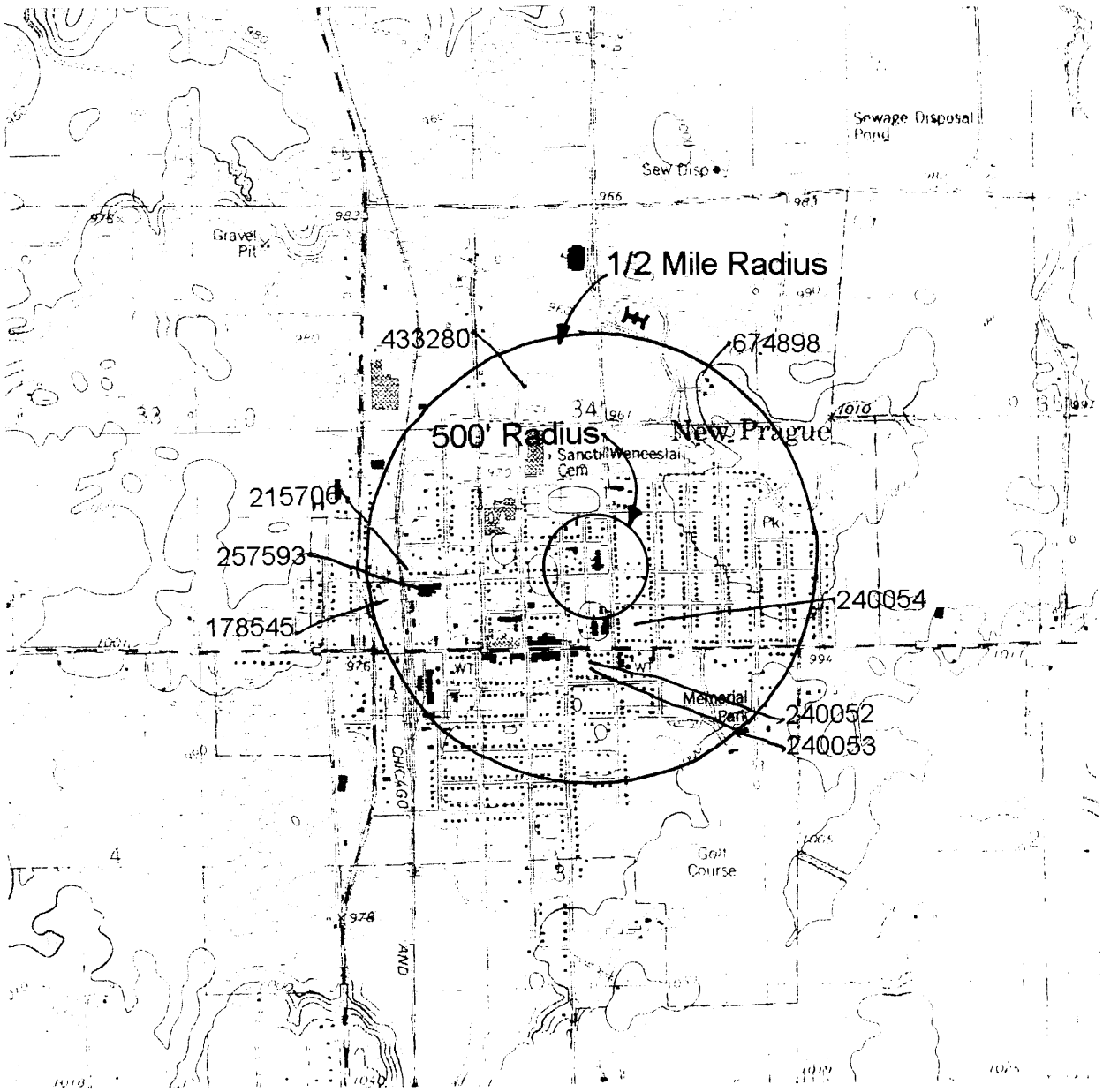
301 2nd St. NE
New Prague, MN
MPCA Leak ID# 18571

N

Apex Environmental

KSV	JGV	012-12

NEW PRAGUE QUADRANGLE
MINNESOTA
7.5 MINUTE SERIES (TOPOGRAPHIC)



SCALE 1:24 000

1 0 1 MILE

1000 0 1000 2000 3000 4000 5000 6000 7000 FEET

1 0 1 KILOMETER

CONTOUR INTERVAL 10 FEET
NATIONAL GEODETIC VERTICAL DATUM OF 1929

Figure 7 Well Receptor Map	N	Apex Environmental	
Queen of Peace Hospital			
301 2nd St. NE New Prague, MN MPCA Leak ID# 18571		KSV	JGV	012-12

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

EXCAVATION REPORT WORKSHEET FOR PETROLEUM RELEASE SITES

Guidance Document 3-02

Complete the information below to document excavation and treatment of petroleum contaminated soil. Conduct excavations in accordance with Guidance Document 3-01 *Excavation of Petroleum Contaminated Soil*. Please attach any available preliminary site investigation reports to this excavation report, and attach additional pages if necessary. Please type or print clearly. Do not revise or delete text or questions from this report form.

The excavation worksheet 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:
MPCA Site ID#: LEAK 18571
Queen Of Peace Hospital
Street: **301 Second Street NE**
City, Zip: **New Prague, MN 56071**
County: **Scott**

B. Tank Owner/Operator:
Contact: **Mr. Clay Brister**
Street/Box: **Mayo Clinic Health System**
Street: **301 Second Street NE**
City, Zip: **New Prague, MN 56071**
Telephone: 952-758-8196

C. Excavating Contractor:
Zahl Equipment Co
Contact: **Pat Arntzen**
Telephone: **507-387-4478**
Tank Contractor Certification Number: **99**

D. Consultant:
Apex Environmental Inc
Contact: **Mr. Jerald Erickson**
Street/Box: **96 Cedar Lane**
City, Zip: **Madison Lake, Mn 56063**
Telephone: **(507) 340-1113**

E. Others on-site during site work (e.g., fire marshal, local officials, MPCA staff, etc.):

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: **October 12, 2011 # 122476**

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

Work Performed	Date
10,000 gallon fuel oil, and 1000 gallon diesel tank removal assessment	**October 11, 2011**

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.)

The site is a hospital, located in a residential area, on the north side of downtown New Prague. The site is bordered by residential property on the west, north and east sides, and Church property to the south.

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

Table 1.

Tank #	UST or AST	Capacity (gallons)	Contents (product type)	Year installed	Tank Status*	Condition of Tank
1	UST	10,000	Fuel oil	1980	Removed Oct. 2011	leaking
2	UST	1,000	Diesel	1980	Removed Oct. 2011	Not leaking
3	AST	1,000	Diesel	1996	Active	Not leaking

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

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.
Piping drained at removal.

D. Identify and describe the source or suspected source(s) of the release or contamination encountered, and how the release or contamination was discovered. **Leaking tank discovered upon removal.**

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

F. Historic contamination present (unknown origin?) (Yes or No): **No**

G. When did the release occur? (if known): **Unknown**

H. Describe source of on-site drinking water. **City Water Well**

PART IV: EXCAVATION INFORMATION

A. Dimensions of UST excavation(s): Length: **25'** Width: **12'** Depth: **13'**
Length: **10'** Width: **8'** Depth: **8'**

B. Original tank backfill material (sand, gravel, etc.): **clay**

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

D. Quantity of contaminated soil removed for treatment (cubic yards): **0**
(Indicate on the site map where the petroleum contaminated soil was excavated)

How many cubic yards of the removed soil was petroleum saturated? **0**
(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 Soli*, please document MPCA staff approval.]

E. Were new tanks and/or piping and dispensers installed? **no** If yes, what volume of contaminated soil was excavated to accommodate the installation of the new tanks and piping? **none**

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 6.3 in Guidance Document 3-01 *Excavation of Petroleum Contaminated Soil.* **None**

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** At what depth? **13 feet**

H. If ground water was not encountered during the excavation, what is the expected depth of ground water? **15 feet**

I. Additional investigation is necessary at sites that have visual or other evidence of contamination remaining in the suspected source area, with sandy or silty sand soil [Unified Soil Classification System/American Society for Testing Materials] and where the water table is within 25 feet of the ground surface. See Table 6.2 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. **Soil classifications in the area are predominantly clays.**.

K. If ground water was encountered or if a soil boring was conducted, was there evidence of ground water contamination? **yes** 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.* **Ground water in contact with petroleum contaminated soil.**

L. Was bedrock encountered in the excavation? **No** At what depth?

M. Were other unique conditions associated with this site? **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 collected from designated points within the tank basin. A grab soil sample was collected from the middle of the soil contained in the excavator. The soil sample was then immediately placed into a container and sealed for headspace screening analysis. The soil was screened with a photoionization device (PID). The maximum PID values detected were recorded in a field log corresponding to the sample location. Headspace measurements were completed following Minnesota Pollution Control Agency guidance (May 2000). The PID used was an organic vapor monitor (OVM) photo ionization detector equipped with a 10.2 eV lamp. This instrument was calibrated at the beginning of the day, using ambient air as a zero gas and 100 parts per million (ppm) isobutylene in air as the calibration gas. This calibration procedure was followed to allow direct readings of benzene (in ppm on a volume basis).**

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
R1-2'	clay	0	R3-2'	sand	0
R1-6'	clay	0	R3-6'	sand	0
R1-10'	clay	132	R3-8'	clay	0
B1-12'	clay	285			
			S1-12'	clay	148
R2-2'	clay	0	S2-6'	clay	0
R2-6'	clay	0	S3-6'	clay	0
R2-10'	clay	123	S4-6'	clay	0
B2-12'	clay	154	S5-12'	clay	168
			S6-12'	clay	257

C. Was the "removed soil" placed back into the excavation basin? **Yes**
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 Investigations Performed During Remedial Investigations*).

D. Briefly describe the soil analytical sampling and handling procedures used:
Soil samples for laboratory analysis were collected using a "grab" method and represent samples from the designated soil interval. The soil samples were collected by Apex. The samples were collected by "grabbing" a soil sample from the excavator, while wearing single-use latex gloves. The soil samples were immediately packed into an appropriate soil sample jar. The sample jars were prepared and received from the laboratory prior to starting the field activities. The single-use gloves were discarded and replaced with new gloves after each sample was obtained. The sample jars were sealed, labeled, and immediately placed on ice in a cooler chest. Chain of custody and sampling documentation were kept for the samples submitted for laboratory analysis. The chain of custody form accompanied these samples at all times. The sampling documentation was kept in the field file. Once completed, the chain of custody documentation was sealed in the cooler for delivery to the laboratory. The sampling documentation was given to the Apex project manager for inclusion in the site file. Upon receipt of the samples, the laboratory completed the chain of custody and returned the documentation with the final laboratory report. The final report was sent to the Apex project manager.

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/ DRO	Benzene mg/kg	Ethyl-benzene mg/kg	Toluene mg/kg	Xylene mg/kg	MTBE mg/kg	Lead
BS-1-13'	**BDL-GRO BDL-DRO**	**0.050**	**0.034**	**BDL**	**0.10**	**BDL**	-
BS-2-13'	**14-GRO BDL-DRO**	**0.038**	**0.038**	**BDL**	**0.11**	**BDL**	-
BS-3-8'	**BDL -GRO BDL-DRO**	**BDL**	**BDL**	**BDL**	**BDL**	**BDL**	-

Note: Attach copies of laboratory reports and chain of custody forms. BDL= Below Detection Limits

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 (or former location) of all present and former tanks, piping, and dispensers;
   b. Location of other structures (buildings, canopies, etc.);
   c. Adjacent city, township, or county roadways;
   d. Final extent and depth of excavation;
   e. 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.
   f. North arrow, bar scale and map legend.
   g. Provide location of any on-site water wells. If on-site water wells exist, please provide well logs and/or construction diagrams.
   h. 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.

Removed tanks showed signs of leakage. Ground water was present in the tank basin at 12 feet BGL. Soil classifications in the area are predominantly clays. Per MPCA guidance, we have recommended further assessment of the site, because of the potential impacts to the ground water at the site.

PART VIII: SOIL TREATMENT INFORMATION

A. Soil treatment method used (thermal, land application, composting, other). If you choose "other" specify treatment method: **None**

B. Location of treatment site/facility: ***None***

C. Date MPCA approved soil treatment (if thermal treatment was used after May 1, 1991, indicate date that the MPCA permitted thermal treatment facility agreed to accept soil): **not applicable**

D. Identify the location of stockpiled contaminated soil: **None**

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:
Jerald E. Erickson, Project Manager		November 5, 2011

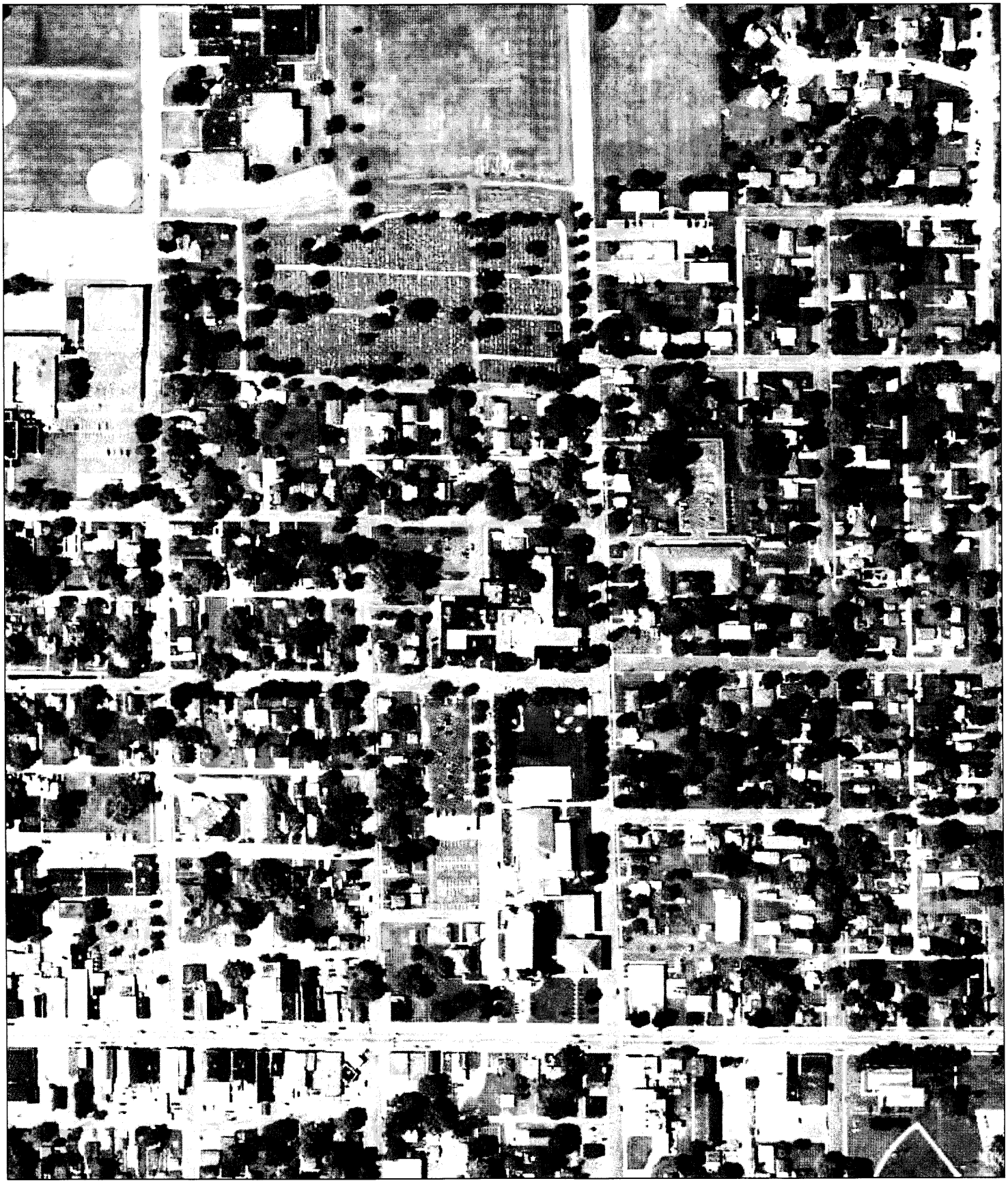
Company and mailing address:

Company:	**Apex Environmental Inc.**
Street/Box:	**96 Cedar Lane**
City, Zip:	**Madison Lake, Mn 56063**
Telephone:	**(507) 340-1113**
Fax:	**507-243-3277**

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://data.pca.state.mn.us/pca/emplsearch.html
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.commerce.state.mn.us/mainpf.htm
PetroFund Phone	**651-297-1119**, or **1-800-638-0418**
State Duty Officer	**651-649-5451 or 1-800-422-0798**



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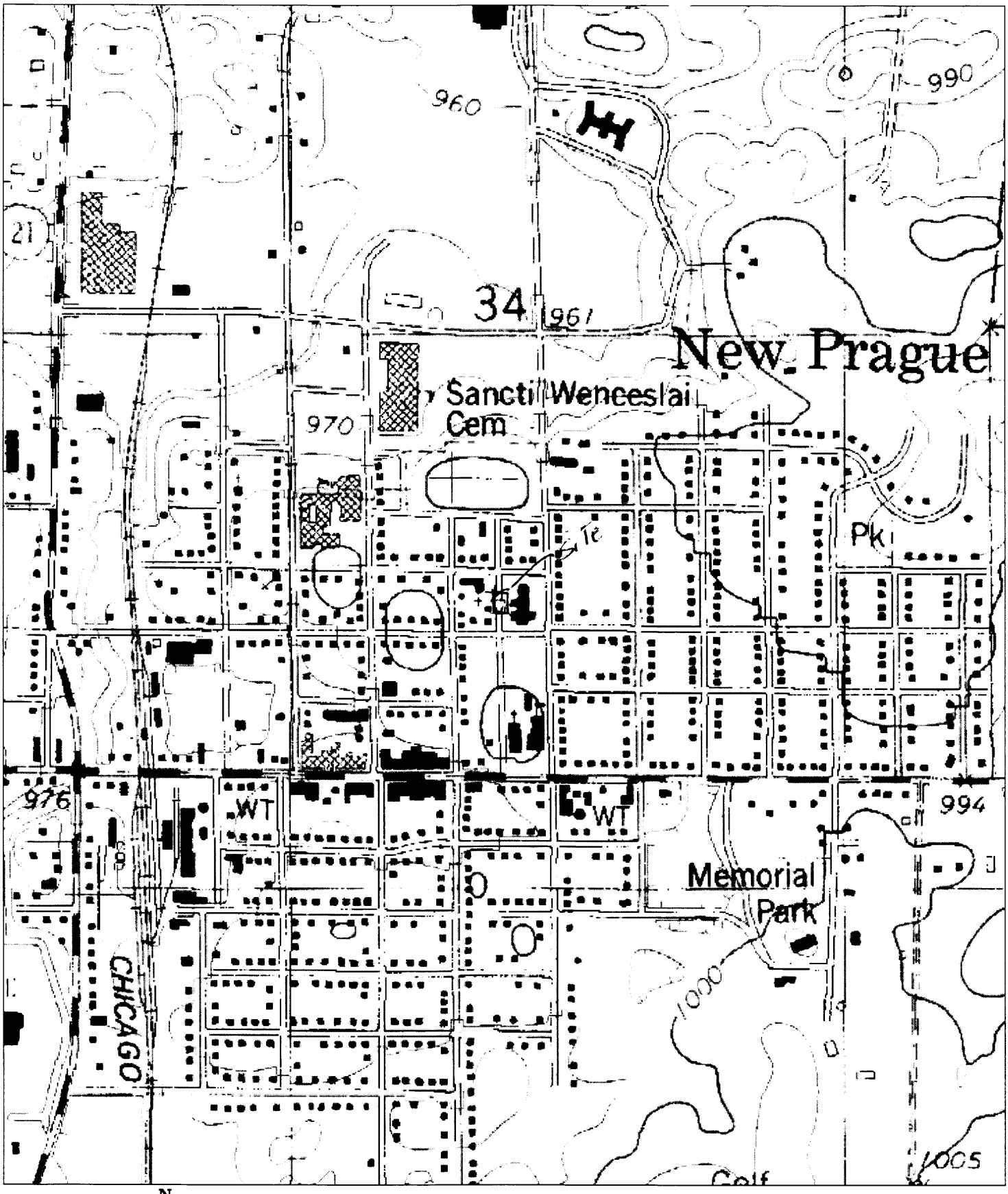
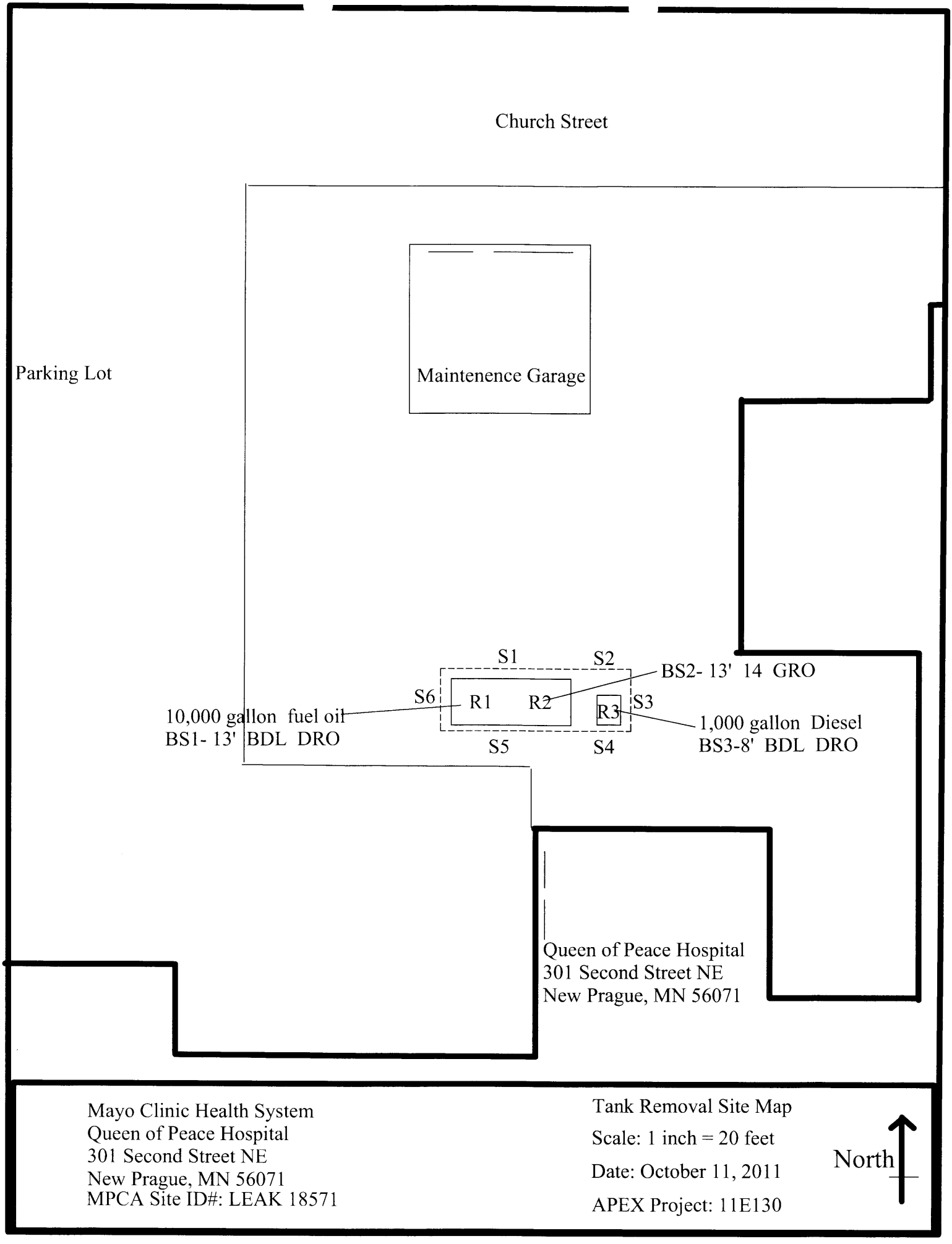
Queen Of Peace Hospital
Mayo Clinic Health System
301 Second Street NE
New Prague, MN 56071
MPCA Site ID#: LEAK 18571



Queen Of Peace Hospital
Mayo Clinic Health System
301 Second Street NE
New Prague, MN 56071
MPCA Site ID#: LEAK 18571


Church Street
Parking Lot
Maintenence Garage
S1
S2
S6
R1
R2
R3
S3
S5
S4
BS2- 13' 14 GRO
10,000 gallon fuel oil
BS1- 13' BDL DRO
1,000 gallon Diesel
BS3-8' BDL DRO
Queen of Peace Hospital
301 Second Street NE
New Prague, MN 56071
Mayo Clinic Health System
Queen of Peace Hospital
301 Second Street NE
New Prague, MN 56071
MPCA Site ID#: LEAK 18571
Tank Removal Site Map
Scale: 1 inch = 20 feet
Date: October 11, 2011
APEX Project: 11E130
North

ESC
L·A·B S·C·I·E·N·C·E·S
YOUR LAB OF CHOICE

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

Mr. Jerry Erickson
Apex Environmental Inc. - Madison Lake
96 Cedar Lane
Madison Lake, MN 56063

Report Summary

Monday October 17, 2011

Report Number: L540832
Samples Received: 10/11/11
Client Project: 11E130

Description: Queen of Peace Hospital

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, PA - 68-02979

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

Tax I.D. 62-0814289

Est. 1970

REPORT OF ANALYSIS

Mr. Jerry Erickson
Apex Environmental Inc. - Madison L
96 Cedar Lane
Madison Lake, MN 56063

October 17,2011

ESC Sample # : L540832-01

Site ID :

Project # : 11E130

Date Received : October 11, 2011
Description : Queen of Peace Hospital

Sample ID : B51 13FT

Collected By : Jerald Erickson
Collection Date : 10/10/11 13:30

Parameter	Dry Result	Det. Limit	Units	Method	Date	Dil.
Total Solids	79.		%	2540G	10/17/11	1
PVOCGRO						
Benzene	0.050	0.031	mg/kg	8021	10/13/11	49.5
Toluene	BDL	0.31	mg/kg	8021	10/13/11	49.5
Ethylbenzene	0.034	0.031	mg/kg	8021	10/13/11	49.5
m&p-Xylene	0.10	0.062	mg/kg	8021	10/13/11	49.5
o-Xylene	0.053	0.031	mg/kg	8021	10/13/11	49.5
Methyl tert-butyl ether	BDL	0.062	mg/kg	8021	10/13/11	49.5
Naphthalene	0.49	0.31	mg/kg	8021	10/13/11	49.5
1,3,5-Trimethylbenzene	BDL	0.062	mg/kg	8021	10/13/11	49.5
1,2,4-Trimethylbenzene	0.21	0.062	mg/kg	8021	10/13/11	49.5
Gasoline (C6-C10)	BDL	6.2	mg/kg	8015	10/13/11	49.5
Surrogate recovery-%						
a,a,a-Trifluorotoluene(PID)	103.		% Rec.	8021	10/13/11	49.5
TPH (GC/FID) High Fraction	BDL	11.	mg/kg	DROWM/8015M	10/12/11	1.06
Surrogate recovery(%)						
Triacontane	95.3		% Rec.	DROWM/8015M	10/12/11	1.06

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: 10/17/11 15:04 Printed: 10/17/11 17:11

ESC
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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

REPORT OF ANALYSIS

Mr. Jerry Erickson
Apex Environmental Inc. - Madison L
96 Cedar Lane
Madison Lake, MN 56063

October 17,2011

ESC Sample # : L540832-02

Site ID :

Project # : 11E130

Date Received : October 11, 2011
Description : Queen of Peace Hospital

Sample ID : B52 13FT

Collected By : Jerald Erickson
Collection Date : 10/10/11 15:00

Parameter	Dry Result	Det. Limit	Units	Method	Date	Dil.
Total Solids	79.		%	2540G	10/17/11	1
PVOCGRO						
Benzene	0.038	0.035	mg/kg	8021	10/13/11	56
Toluene	BDL	0.35	mg/kg	8021	10/13/11	56
Ethylbenzene	0.038	0.035	mg/kg	8021	10/13/11	56
m&p-Xylene	0.11	0.071	mg/kg	8021	10/13/11	56
o-Xylene	0.054	0.035	mg/kg	8021	10/13/11	56
Methyl tert-butyl ether	BDL	0.071	mg/kg	8021	10/13/11	56
Naphthalene	1.1	0.35	mg/kg	8021	10/13/11	56
1,3,5-Trimethylbenzene	0.072	0.071	mg/kg	8021	10/13/11	56
1,2,4-Trimethylbenzene	0.36	0.071	mg/kg	8021	10/13/11	56
Gasoline (C6-C10)	14.	7.1	mg/kg	8015	10/13/11	56
Surrogate recovery-%						
a,a,a-Trifluorotoluene(PID)	102.		% Rec.	8021	10/13/11	56
TPH (GC/FID) High Fraction	BDL	10.	mg/kg	DROWM/8015M	10/12/11	1
Surrogate recovery(%)						
Triacontane	101.		% Rec.	DROWM/8015M	10/12/11	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: 10/17/11 15:04 Printed: 10/17/11 17:11

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

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Est. 1970

REPORT OF ANALYSIS

Mr. Jerry Erickson
Apex Environmental Inc. - Madison L
96 Cedar Lane
Madison Lake, MN 56063

October 17,2011

ESC Sample # : L540832-03

Site ID :

Project # : 11E130

Date Received : October 11, 2011
Description : Queen of Peace Hospital

Sample ID : B52 8FT

Collected By : Jerald Erickson
Collection Date : 10/10/11 16:20

Parameter	Dry Result	Det. Limit	Units	Method	Date	Dil.
Total Solids	78.		%	2540G	10/17/11	1
PVOCGRO						
Benzene	BDL	0.033	mg/kg	8021	10/13/11	51.5
Toluene	BDL	0.33	mg/kg	8021	10/13/11	51.5
Ethylbenzene	BDL	0.033	mg/kg	8021	10/13/11	51.5
m&p-Xylene	BDL	0.066	mg/kg	8021	10/13/11	51.5
o-Xylene	BDL	0.033	mg/kg	8021	10/13/11	51.5
Methyl tert-butyl ether	BDL	0.066	mg/kg	8021	10/13/11	51.5
Naphthalene	BDL	0.33	mg/kg	8021	10/13/11	51.5
1,3,5-Trimethylbenzene	BDL	0.066	mg/kg	8021	10/13/11	51.5
1,2,4-Trimethylbenzene	BDL	0.066	mg/kg	8021	10/13/11	51.5
Gasoline (C6-C10)	BDL	6.6	mg/kg	8015	10/13/11	51.5
Surrogate recovery-%						
a,a,a-Trifluorotoluene(PID)	103.		% Rec.	8021	10/13/11	51.5
TPH (GC/FID) High Fraction	BDL	10.	mg/kg	DROWM/8015M	10/12/11	1
Surrogate recovery(%)						
Triacontane	93.9		% Rec.	DROWM/8015M	10/12/11	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: 10/17/11 15:04 Printed: 10/17/11 17:11

Company Name/Address:

Apex Environmental Inc. - Madison Lake

96 Cedar Lane
Madison Lake.MN 56063

Billing Information:

Mr. Jerry Erickson
96 Cedar Lane

Madison Lake,MN 56063

Analysis/Container/Preservative

Chain of Custody
Page ___ of ___

ESC
LAB SCIENCES
12065 Lebanon Road
Mt. Juliet, TN 37122
Phone: (800) 767-5859
Phone: (615) 758-5858
Fax: (615) 758-5859

Report to:

Email to:

Project Description: Sacred Heart Hospital

City/Sate Collected: New Prague, MN

Phone: (507) 340-1113
FAX: (507) 243-3277

Client Project #:

ESC Key:

Collected by: (print) Jerald Erickson

Site/Facility ID#:

P.O.#:

Collected by (signature):

Immediately Packed on Ice N ___ (Y)

Rush? (Lab MUST Be Notified)
___ Same Day. 200%
___ Next Day. 100%
___ Two Day. 50%
___ Three Day. 25%

Date Results Needed:

Email? __No__Yes
FAX? __No__Yes

CoCode APEXMLMN (lab use on.

Template/Prelogin

Shipped Via:

Sample ID	Comp/Grab	Matrix*	Depth	Date	Time	No. of Cntrs	1080	GRO - DRO - TX-1005	Soil Sample Moisture					Remarks/Contaminant	Sample # (lab only)
BC pond	grab	SC		10/10/11	1130	4	2	1	1						
SS2-13					300	4	2	1	1						
SS3-8'					420	4	2	1	1						

*Matrix: **SS** - Soil/Solid **GW** - Groundwater **WW** - WasteWater **DW** - Drinking Water **OT** - Other_____

pH _____ Temp _____

Remarks:

Flow _____ Other _____

Relinquished by: (Signature)	Date:	Time:	Received by: (Signature)	Samples returned via: ☐ UPS ☒ FedEx ☐ Courier ☐ _____	Condition: (lab use only)	
Jerald Erickson	10-11-11	4pm				
Relinquished by: (Signature)	Date:	Time:	Received by: (Signature)	Temp:	Bottles Received:	CoC Seals Intact ___ Y ___ N ___ NA
Relinquished by: (Signature)	Date:	Time:	Received for lab by: (Signature)	Date:	Time:	pH Checked: NCF:

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: **LEAK00018571**
Site Name: New **Queen of Peace Hospital**
Data Collection Date: **October 11, 2011**
Name of Person Who Collected Data: **Jerald E. Erickson**
Organization Name: **Apex Environmental, Inc.**
Organization Type: **Environmental Consultant**

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

Point Description: **Former Tank Basin**
Collection Method: **On-Line Map Interpolation – Pca.state.mn.us/backyard/neighborhood.html**

Datum (circle/highlight): WGS84 **NAD83**

1) Longitude **N**	Latitude **W**
2) Longitude (dd.dddddd): 93. 5744	Latitude (dd.dddddd): 44. 5465
3) UTM - X (Easting):	UTM - Y (Northing):
UTM Zone: **15**	

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: **Queen of Peace Hospital** MPCA Site ID#: LEAK000 **18571**

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 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 ☐ Submersible turbine pump ☐ Delivery problem

☐ Other (specify): _____

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

Apex Environmental, Inc. 60801 Cty Hwy 46 Parkers Prairie, Minnesota 56361		BOREHOLE / WELL LOG	Boring Number: GP-1
		Client: Mayo Clinic Health Systems Site:Queen of Peace Hospital	Sheet: 1 of 1
Date Started: 6/5/2012	Date Finished: 6/5/2012	Location:301 Second Street, New Prague, MN 56071 Surface Elevation-99.55'	
Sampler: JGV		Drill Rig Co/ Sampling Method: Bergerson Caswell, Inc-Geoprobe, 4 foot barrel length	Borehole Diameter: 2"

SAMPLE LOG					BOREHOLE LOG		Temp Well Log
Sample Number	PID (ppm)	Lab	Re-covery "	Depth (feet)	Symbol	Geologic Description	Well Description-3/4"
				0	SM	**SAND-black with silt & organics, backfill.**	
				1		Slight odor.	
	0			2			
				3			
1CS	0		48	4			
				5			
	0			6			
				7			
2CS	0		47	8			
				9	▼	Water level at 9.25 feet from top or riser at 3.0 hours.	
	0			10			
				11		No odor.	
3CS	0		46	12			
				13	13.2'		
	41	*		14	CL	**SILTY CLAY-dark brown faint tan mottling, stiff.**	
				15		No odor.	
4CS	0		47	16		PVC screen set from 10-20 feet	
				17			
	0			18	18.1'		
				19	CL	**SILTY CLAY-gray no mottling, stiff.**	
5CS	0		48	20		No odor.	
				21			
	0			22			
				23			
6CS	0		48	24		No odor.	
				25			
	0			26			
				27			
7CS	0			28		No odor.	
				29			
	0			30			
				31			
8CS	0			32		No odor.	
				33			
	0			34			
				35			
9CS	0			36		No odor.	
				37		End of probe at 36.0 feet, borehole backfilled with	
				38		bentonite slurry to groundsurface capped with class 5.	

Apex Environmental, Inc. 60801 Cty Hwy 46 Parkers Prairie, Minnesota 56361	BOREHOLE / WELL LOG	Boring Number: GP-2
	Client: Mayo Clinic Health Systems Site:Queen of Peace Hospital	Sheet: 1 of 1

Date Started:	Date Finished:	Location:301 Second Street, New Prague, MN 56071
6/5/2012	6/5/2012	Surface Elevation-99.57'

Sampler:	Drill Rig Co/ Sampling Method:	Borehole Diameter:
JGV	Bergerson Caswell, Inc-Geoprobe, 4 foot barrel length	2"

SAMPLE LOG					BOREHOLE LOG		Temp Well Log
Sample Number	PID (ppm)	Lab	Re-covery "	Depth (feet)	Symbol	Geologic Description	Well Description-3/4"
				0	CL	**CLAY, brown with silt, medium, fill.**	
				1		No odor.	
	0			2			
				3			
1CS	0		48	4			
				5	5.3'		
	0			6	CL	**SILTY CLAY-Pale brown, distinct rust mottles.**	
				7		No odor.	
2CS	0		47	8			
				9			
	0			10			
				11			
3CS	0		46	12			
				13			
	0			14		PVC screen set from 14-24 feet	
				15		Wet sand layer 2 inches thick at 15.8'.	
4CS	0	*	47	16	▼	Dry while drilling, 15.91 at 16 hours following completion.	
				17	17.2'		
	0			18	CL	**SILTY CLAY-gray, absent mottling, stiff.**	
				19		No odor.	
5CS	0		48	20			
				21			
	0			22			
				23			
6CS	0		48	24		No odor.	
				25		End of probe at 24.0 feet, borehole backfilled with bentonite slurry to groundsurface capped with class 5.	
				26			
				27			
				28			

Apex Environmental, Inc. 60801 Cty Hwy 46 Parkers Prairie, Minnesota 56361		BOREHOLE / WELL LOG	Boring Number: GP-3
		Client: Mayo Clinic Health Systems Site:Queen of Peace Hospital	Sheet: 1 of 1
Date Started: 6/5/2012	Date Finished: 6/5/2012	Location:301 Second Street, New Prague, MN 56071 Surface Elevation-98.19'	
Sampler: JGV		Drill Rig Co/ Sampling Method: Bergerson Caswell, Inc-Geoprobe, 4 foot barrel length	Borehole Diameter: 2"

SAMPLE LOG					BOREHOLE LOG		Temp Well Log
Sample Number	PID (ppm)	Lab	Re-covery "	Depth (feet)	Symbol	Geologic Description	Well Description-3/4"
				0	CL	**CLAY, brown with silt, medium, fill.**	
				1		No odor.	
	0			2	2.0'		
				3	CL	**SILTY CLAY-Brown, distinct rust mottles.**	
1CS	0		48	4		No odor.	
				5			
	0			6			
				7		No odor.	
2CS	0		47	8			
				9			
	0			10		Wet sand layer 2 inches thick at 9.5'.	
				11	▼	Water level at 11.14 feet from top or riser at 3.0 hours.	
3CS	0		46	12			
				13			
	0	*		14			
				15		PVC screen set from 14-24 feet	
4CS	0		48	16			
				17	17.4'		
	0			18	CL	**SILTY CLAY-gray, absent mottling, stiff.**	
				19		No odor.	
5CS	0		48	20			
				21			
	0			22			
				23			
6CS	0		47	24		No odor.	
				25		End of probe at 24.0 feet, borehole backfilled with bentonite slurry to groundsurface capped with class 5.	
				26			
				27			

Apex Environmental, Inc. 60801 Cty Hwy 46 Parkers Prairie, Minnesota 56361		BOREHOLE / WELL LOG	Boring Number: GP-4
		Client: Mayo Clinic Health Systems Site:Queen of Peace Hospital	Sheet: 1 of 1
Date Started: 6/5/2012	Date Finished: 6/5/2012	Location:301 Second Street, New Prague, MN 56071 Surface Elevation-99.67'	
Sampler: JGV		Drill Rig Co/ Sampling Method: Bergerson Caswell, Inc-Geoprobe, 4 foot barrel length	Borehole Diameter: 2"

SAMPLE LOG					BOREHOLE LOG		Temp Well Log
Sample Number	PID (ppm)	Lab	Re-covery "	Depth (feet)	Symbol	Geologic Description	Well Description-3/4"
				0	CL	**CLAY, brown with silt, medium, fill.**	
				1		No odor.	
	0			2			
				3			
1CS	0		47	4	4.3'		
				5	CL	**SILTY CLAY-Pale brown, distinct rust mottles.**	
	0			6		No odor.	
				7			
2CS	0		48	8			
				9			
	0			10			
				11			
3CS	0		48	12		No odor.	
				13			
	0			14			
				15	15.2'		
4CS	0	*	47	16	CL	**SILTY CLAY-gray, absent mottling, stiff.**	
				17		No odor.	
	0			18		PVC screen set from 14-24 feet	
				19		Dry while drilling and at 16 hours.	
5CS	0		48	20			
				21			
	0			22			
				23			
6CS	0		48	24		No odor.	
				25		End of probe at 24.0 feet, borehole backfilled with bentonite slurry to groundsurface capped with class 5.	
				26			
				27			

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Jeff Vosburgh
Apex Environmental Inc - Parkers Prairie
60801 Cty Hwy 46
Parkers Prairie, MN 56361

Report Summary

Friday June 15, 2012

Report Number: L579475
Samples Received: 06/08/12
Client Project: 012-12-AXN

Description: Queen of Peace Hospital

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 - 01157CA, CT - PH-0197, FL - E87487, GA - 923, IN - C-TN-01, KY - 90010, KYUST - 0016, NC - ENV375/DW21704/BIO041, ND - R-140. NJ - TN002, NJ NELAP - TN002, SC - 84004, TN - 2006, VA - 460132, WV - 233, AZ - 0612, MN - 047-999-395, NY - 11742, WI - 998093910, NV - TN000032011-1, TX - T104704245-11-3, OK - 9915, PA - 68-02979

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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REPORT OF ANALYSIS

Jeff Vosburgh
Apex Environmental Inc - Parkers Pr
60801 Cty Hwy 46
Parkers Prairie, MN 56361

June 15,2012

ESC Sample # : L579475-01

Date Received : June 08, 2012
Description : Queen of Peace Hospital

Site ID : 18571

Sample ID : GP-1 14.3 FT

Project # : 012-12-AXN

Collected By : Jeffrey Vosburgh
Collection Date : 06/05/12 10:05

Parameter	Dry Result	Det. Limit	Units	Method	Date	Dil.
Total Solids	81.6	0.100	%	2540G	06/13/12	1
PVOCGRO						
Benzene	BDL	0.031	mg/kg	8021	06/09/12	50
Toluene	BDL	0.31	mg/kg	8021	06/09/12	50
Ethylbenzene	BDL	0.031	mg/kg	8021	06/09/12	50
m&p-Xylene	BDL	0.061	mg/kg	8021	06/09/12	50
o-Xylene	BDL	0.031	mg/kg	8021	06/09/12	50
Methyl tert-butyl ether	BDL	0.061	mg/kg	8021	06/09/12	50
Naphthalene	BDL	0.31	mg/kg	8021	06/09/12	50
1,3,5-Trimethylbenzene	BDL	0.061	mg/kg	8021	06/09/12	50
1,2,4-Trimethylbenzene	BDL	0.061	mg/kg	8021	06/09/12	50
Gasoline (C6-C10)	BDL	6.1	mg/kg	8015	06/09/12	50
Surrogate recovery-%						
a,a,a-Trifluorotoluene(PID)	104.		% Rec.	8021	06/09/12	50
TPH (GC/FID) High Fraction	BDL	9.8	mg/kg	DROWM/8015M	06/14/12	1
Surrogate recovery(%)						
Triacontane	73.3		% Rec.	DROWM/8015M	06/14/12	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: 06/15/12 11:08 Printed: 06/15/12 11:15

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REPORT OF ANALYSIS

Jeff Vosburgh
Apex Environmental Inc - Parkers Pr
60801 Cty Hwy 46
Parkers Prairie, MN 56361

June 15,2012

ESC Sample # : L579475-02

Date Received : June 08, 2012
Description : Queen of Peace Hospital

Site ID : 18571

Sample ID : GP-2 15.8 FT

Project # : 012-12-AXN

Collected By : Jeffrey Vosburgh
Collection Date : 06/05/12 11:20

Parameter	Dry Result	Det. Limit	Units	Method	Date	Dil.
Total Solids	84.1	0.100	%	2540G	06/13/12	1
PVOCGRO						
Benzene	BDL	0.029	mg/kg	8021	06/09/12	49.5
Toluene	BDL	0.29	mg/kg	8021	06/09/12	49.5
Ethylbenzene	BDL	0.029	mg/kg	8021	06/09/12	49.5
m&p-Xylene	BDL	0.059	mg/kg	8021	06/09/12	49.5
o-Xylene	BDL	0.029	mg/kg	8021	06/09/12	49.5
Methyl tert-butyl ether	BDL	0.059	mg/kg	8021	06/09/12	49.5
Naphthalene	BDL	0.29	mg/kg	8021	06/09/12	49.5
1,3,5-Trimethylbenzene	BDL	0.059	mg/kg	8021	06/09/12	49.5
1,2,4-Trimethylbenzene	BDL	0.059	mg/kg	8021	06/09/12	49.5
Gasoline (C6-C10)	BDL	5.9	mg/kg	8015	06/09/12	49.5
Surrogate recovery-%						
a,a,a-Trifluorotoluene(PID)	102.		% Rec.	8021	06/09/12	49.5
TPH (GC/FID) High Fraction	BDL	9.7	mg/kg	DROWM/8015M	06/14/12	1.02
Surrogate recovery(%)						
Triacontane	76.1		% Rec.	DROWM/8015M	06/14/12	1.02

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

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REPORT OF ANALYSIS

Jeff Vosburgh
Apex Environmental Inc - Parkers Pr
60801 Cty Hwy 46
Parkers Prairie, MN 56361

June 15,2012

ESC Sample # : L579475-03

Date Received : June 08, 2012
Description : Queen of Peace Hospital

Site ID : 18571

Sample ID : GP-3 13.2 FT

Project # : 012-12-AXN

Collected By : Jeffrey Vosburgh
Collection Date : 06/05/12 13:36

Parameter	Dry Result	Det. Limit	Units	Method	Date	Dil.
Total Solids	80.7	0.100	%	2540G	06/13/12	1
PVOCGRO						
Benzene	BDL	0.032	mg/kg	8021	06/09/12	51.5
Toluene	BDL	0.32	mg/kg	8021	06/09/12	51.5
Ethylbenzene	BDL	0.032	mg/kg	8021	06/09/12	51.5
m&p-Xylene	BDL	0.064	mg/kg	8021	06/09/12	51.5
o-Xylene	BDL	0.032	mg/kg	8021	06/09/12	51.5
Methyl tert-butyl ether	BDL	0.064	mg/kg	8021	06/09/12	51.5
Naphthalene	BDL	0.32	mg/kg	8021	06/09/12	51.5
1,3,5-Trimethylbenzene	BDL	0.064	mg/kg	8021	06/09/12	51.5
1,2,4-Trimethylbenzene	BDL	0.064	mg/kg	8021	06/09/12	51.5
Gasoline (C6-C10)	BDL	6.4	mg/kg	8015	06/09/12	51.5
Surrogate recovery-%						
a,a,a-Trifluorotoluene(PID)	103.		% Rec.	8021	06/09/12	51.5
TPH (GC/FID) High Fraction	BDL	9.9	mg/kg	DROWM/8015M	06/14/12	1
Surrogate recovery(%)						
Triacontane	64.3		% Rec.	DROWM/8015M	06/14/12	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

Jeff Vosburgh
Apex Environmental Inc - Parkers Pr
60801 Cty Hwy 46
Parkers Prairie, MN 56361

June 15,2012

ESC Sample # : L579475-04

Date Received : June 08, 2012
Description : Queen of Peace Hospital

Site ID : 18571

Sample ID : GP-4 15.1 FT

Project # : 012-12-AXN

Collected By : Jeffrey Vosburgh
Collection Date : 06/05/12 14:51

Parameter	Dry Result	Det. Limit	Units	Method	Date	Dil.
Total Solids	81.2	0.100	%	2540G	06/13/12	1
PVOCGRO						
Benzene	BDL	0.031	mg/kg	8021	06/09/12	50
Toluene	BDL	0.31	mg/kg	8021	06/09/12	50
Ethylbenzene	BDL	0.031	mg/kg	8021	06/09/12	50
m&p-Xylene	BDL	0.062	mg/kg	8021	06/09/12	50
o-Xylene	BDL	0.031	mg/kg	8021	06/09/12	50
Methyl tert-butyl ether	BDL	0.062	mg/kg	8021	06/09/12	50
Naphthalene	BDL	0.31	mg/kg	8021	06/09/12	50
1,3,5-Trimethylbenzene	BDL	0.062	mg/kg	8021	06/09/12	50
1,2,4-Trimethylbenzene	BDL	0.062	mg/kg	8021	06/09/12	50
Gasoline (C6-C10)	BDL	6.2	mg/kg	8015	06/09/12	50
Surrogate recovery-%						
a,a,a-Trifluorotoluene(PID)	102.		% Rec.	8021	06/09/12	50
TPH (GC/FID) High Fraction	BDL	9.8	mg/kg	DROWM/8015M	06/14/12	1
Surrogate recovery(%)						
Triacontane	68.9		% Rec.	DROWM/8015M	06/14/12	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

Jeff Vosburgh
Apex Environmental Inc - Parkers Pr
60801 Cty Hwy 46
Parkers Prairie, MN 56361

June 15,2012

ESC Sample # : L579475-05

Site ID : 18571

Project # : 012-12-AXN

Date Received : June 08, 2012
Description : Queen of Peace Hospital

Sample ID : GP-1

Collected By : Jeffrey Vosburgh
Collection Date : 06/05/12 10:50

Parameter	Result	Det. Limit	Units	Method	Date	Dil.
Volatile Organics						
Acetone	BDL	50.	ug/l	8260B	06/08/12	1
Acrolein	BDL	50.	ug/l	8260B	06/08/12	1
Acrylonitrile	BDL	10.	ug/l	8260B	06/08/12	1
Allyl chloride	BDL	5.0	ug/l	8260B	06/08/12	1
Benzene	BDL	1.0	ug/l	8260B	06/08/12	1
Bromobenzene	BDL	1.0	ug/l	8260B	06/08/12	1
Bromochloromethane	BDL	1.0	ug/l	8260B	06/08/12	1
Bromodichloromethane	BDL	1.0	ug/l	8260B	06/08/12	1
Bromoform	BDL	1.0	ug/l	8260B	06/08/12	1
Bromomethane	BDL	5.0	ug/l	8260B	06/08/12	1
n-Butylbenzene	BDL	1.0	ug/l	8260B	06/08/12	1
sec-Butylbenzene	BDL	1.0	ug/l	8260B	06/08/12	1
tert-Butylbenzene	BDL	1.0	ug/l	8260B	06/08/12	1
Carbon tetrachloride	BDL	1.0	ug/l	8260B	06/08/12	1
Chlorobenzene	BDL	1.0	ug/l	8260B	06/08/12	1
Chlorodibromomethane	BDL	1.0	ug/l	8260B	06/08/12	1
Chloroethane	BDL	5.0	ug/l	8260B	06/08/12	1
2-Chloroethyl vinyl ether	BDL	50.	ug/l	8260B	06/08/12	1
Chloroform	BDL	5.0	ug/l	8260B	06/08/12	1
Chloromethane	BDL	2.5	ug/l	8260B	06/08/12	1
2-Chlorotoluene	BDL	1.0	ug/l	8260B	06/08/12	1
4-Chlorotoluene	BDL	1.0	ug/l	8260B	06/08/12	1
1,2-Dibromo-3-Chloropropane	BDL	5.0	ug/l	8260B	06/08/12	1
1,2-Dibromoethane	BDL	1.0	ug/l	8260B	06/08/12	1
Dibromomethane	BDL	1.0	ug/l	8260B	06/08/12	1
1,2-Dichlorobenzene	BDL	1.0	ug/l	8260B	06/08/12	1
1,3-Dichlorobenzene	BDL	1.0	ug/l	8260B	06/08/12	1
1,4-Dichlorobenzene	BDL	1.0	ug/l	8260B	06/08/12	1
Dichlorodifluoromethane	BDL	5.0	ug/l	8260B	06/08/12	1
1,1-Dichloroethane	BDL	1.0	ug/l	8260B	06/08/12	1
1,2-Dichloroethane	BDL	1.0	ug/l	8260B	06/08/12	1
1,1-Dichloroethene	BDL	1.0	ug/l	8260B	06/08/12	1
cis-1,2-Dichloroethene	BDL	1.0	ug/l	8260B	06/08/12	1
trans-1,2-Dichloroethene	BDL	1.0	ug/l	8260B	06/08/12	1
1,2-Dichloropropane	BDL	1.0	ug/l	8260B	06/08/12	1
1,1-Dichloropropene	BDL	1.0	ug/l	8260B	06/08/12	1
1,3-Dichloropropane	BDL	1.0	ug/l	8260B	06/08/12	1
cis-1,3-Dichloropropene	BDL	1.0	ug/l	8260B	06/08/12	1
trans-1,3-Dichloropropene	BDL	1.0	ug/l	8260B	06/08/12	1
2,2-Dichloropropane	BDL	1.0	ug/l	8260B	06/08/12	1
Di-isopropyl ether	BDL	1.0	ug/l	8260B	06/08/12	1
Ethylbenzene	BDL	1.0	ug/l	8260B	06/08/12	1
Ethyl ether	BDL	1.0	ug/l	8260B	06/08/12	1

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

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REPORT OF ANALYSIS

Jeff Vosburgh
Apex Environmental Inc - Parkers Pr
60801 Cty Hwy 46
Parkers Prairie, MN 56361

June 15,2012

ESC Sample # : L579475-05

Site ID : 18571

Project # : 012-12-AXN

Date Received : June 08, 2012
Description : Queen of Peace Hospital

Sample ID : GP-1

Collected By : Jeffrey Vosburgh
Collection Date : 06/05/12 10:50

Parameter	Result	Det. Limit	Units	Method	Date	Dil.
Hexachloro-1,3-butadiene	BDL	1.0	ug/l	8260B	06/08/12	1
Isopropylbenzene	BDL	1.0	ug/l	8260B	06/08/12	1
p-Isopropyltoluene	BDL	1.0	ug/l	8260B	06/08/12	1
2-Butanone (MEK)	BDL	10.	ug/l	8260B	06/08/12	1
Methylene Chloride	BDL	5.0	ug/l	8260B	06/08/12	1
2-Hexanone	BDL	10.	ug/l	8260B	06/08/12	1
4-Methyl-2-pentanone (MIBK)	BDL	10.	ug/l	8260B	06/08/12	1
Methyl tert-butyl ether	BDL	1.0	ug/l	8260B	06/08/12	1
Naphthalene	BDL	5.0	ug/l	8260B	06/08/12	1
n-Propylbenzene	BDL	1.0	ug/l	8260B	06/08/12	1
Styrene	BDL	1.0	ug/l	8260B	06/08/12	1
1,1,1,2-Tetrachloroethane	BDL	1.0	ug/l	8260B	06/08/12	1
1,1,2,2-Tetrachloroethane	BDL	1.0	ug/l	8260B	06/08/12	1
1,1,2-Trichlorotrifluoroethane	BDL	1.0	ug/l	8260B	06/08/12	1
Tetrachloroethene	BDL	1.0	ug/l	8260B	06/08/12	1
Tetrahydrofuran	BDL	5.0	ug/l	8260B	06/08/12	1
Toluene	BDL	5.0	ug/l	8260B	06/08/12	1
1,2,3-Trichlorobenzene	BDL	1.0	ug/l	8260B	06/08/12	1
1,2,4-Trichlorobenzene	BDL	1.0	ug/l	8260B	06/08/12	1
1,1,1-Trichloroethane	BDL	1.0	ug/l	8260B	06/08/12	1
1,1,2-Trichloroethane	BDL	1.0	ug/l	8260B	06/08/12	1
Trichloroethene	BDL	1.0	ug/l	8260B	06/08/12	1
Trichlorofluoromethane	BDL	5.0	ug/l	8260B	06/08/12	1
1,2,3-Trichloropropane	BDL	2.5	ug/l	8260B	06/08/12	1
1,2,4-Trimethylbenzene	BDL	1.0	ug/l	8260B	06/08/12	1
1,2,3-Trimethylbenzene	BDL	1.0	ug/l	8260B	06/08/12	1
1,3,5-Trimethylbenzene	BDL	1.0	ug/l	8260B	06/08/12	1
Vinyl chloride	BDL	1.0	ug/l	8260B	06/08/12	1
Xylenes, Total	BDL	3.0	ug/l	8260B	06/08/12	1
Surrogate Recovery						
Toluene-d8	104.		% Rec.	8260B	06/08/12	1
Dibromofluoromethane	99.0		% Rec.	8260B	06/08/12	1
4-Bromofluorobenzene	98.3		% Rec.	8260B	06/08/12	1
TPH (GC/FID) High Fraction	BDL	100	ug/l	DROWM/8015	06/11/12	1
Surrogate recovery(%)						
Triacontane	97.6		% Rec.	DROWM/8015	06/11/12	1

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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Reported: 06/15/12 11:08 Printed: 06/15/12 11:15

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REPORT OF ANALYSIS

Jeff Vosburgh
Apex Environmental Inc - Parkers Pr
60801 Cty Hwy 46
Parkers Prairie, MN 56361

June 15,2012

ESC Sample # : L579475-06

Date Received : June 08, 2012
Description : Queen of Peace Hospital

Site ID : 18571

Sample ID : GP-2

Project # : 012-12-AXN

Collected By : Jeffrey Vosburgh
Collection Date : 06/06/12 08:20

Parameter	Result	Det. Limit	Units	Method	Date	Dil.
Volatile Organics						
Acetone	BDL	50.	ug/l	8260B	06/09/12	1
Acrolein	BDL	50.	ug/l	8260B	06/09/12	1
Acrylonitrile	BDL	10.	ug/l	8260B	06/09/12	1
Allyl chloride	BDL	5.0	ug/l	8260B	06/09/12	1
Benzene	BDL	1.0	ug/l	8260B	06/09/12	1
Bromobenzene	BDL	1.0	ug/l	8260B	06/09/12	1
Bromochloromethane	BDL	1.0	ug/l	8260B	06/09/12	1
Bromodichloromethane	BDL	1.0	ug/l	8260B	06/09/12	1
Bromoform	BDL	1.0	ug/l	8260B	06/09/12	1
Bromomethane	BDL	5.0	ug/l	8260B	06/09/12	1
n-Butylbenzene	BDL	1.0	ug/l	8260B	06/09/12	1
sec-Butylbenzene	BDL	1.0	ug/l	8260B	06/09/12	1
tert-Butylbenzene	BDL	1.0	ug/l	8260B	06/09/12	1
Carbon tetrachloride	BDL	1.0	ug/l	8260B	06/09/12	1
Chlorobenzene	BDL	1.0	ug/l	8260B	06/09/12	1
Chlorodibromomethane	BDL	1.0	ug/l	8260B	06/09/12	1
Chloroethane	BDL	5.0	ug/l	8260B	06/09/12	1
2-Chloroethyl vinyl ether	BDL	50.	ug/l	8260B	06/09/12	1
Chloroform	BDL	5.0	ug/l	8260B	06/09/12	1
Chloromethane	BDL	2.5	ug/l	8260B	06/09/12	1
2-Chlorotoluene	BDL	1.0	ug/l	8260B	06/09/12	1
4-Chlorotoluene	BDL	1.0	ug/l	8260B	06/09/12	1
1,2-Dibromo-3-Chloropropane	BDL	5.0	ug/l	8260B	06/09/12	1
1,2-Dibromoethane	BDL	1.0	ug/l	8260B	06/09/12	1
Dibromomethane	BDL	1.0	ug/l	8260B	06/09/12	1
1,2-Dichlorobenzene	BDL	1.0	ug/l	8260B	06/09/12	1
1,3-Dichlorobenzene	BDL	1.0	ug/l	8260B	06/09/12	1
1,4-Dichlorobenzene	BDL	1.0	ug/l	8260B	06/09/12	1
Dichlorodifluoromethane	BDL	5.0	ug/l	8260B	06/09/12	1
1,1-Dichloroethane	BDL	1.0	ug/l	8260B	06/09/12	1
1,2-Dichloroethane	BDL	1.0	ug/l	8260B	06/09/12	1
1,1-Dichloroethene	BDL	1.0	ug/l	8260B	06/09/12	1
cis-1,2-Dichloroethene	BDL	1.0	ug/l	8260B	06/09/12	1
trans-1,2-Dichloroethene	BDL	1.0	ug/l	8260B	06/09/12	1
1,2-Dichloropropane	BDL	1.0	ug/l	8260B	06/09/12	1
1,1-Dichloropropene	BDL	1.0	ug/l	8260B	06/09/12	1
1,3-Dichloropropane	BDL	1.0	ug/l	8260B	06/09/12	1
cis-1,3-Dichloropropene	BDL	1.0	ug/l	8260B	06/09/12	1
trans-1,3-Dichloropropene	BDL	1.0	ug/l	8260B	06/09/12	1
2,2-Dichloropropane	BDL	1.0	ug/l	8260B	06/09/12	1
Di-isopropyl ether	BDL	1.0	ug/l	8260B	06/09/12	1
Ethylbenzene	BDL	1.0	ug/l	8260B	06/09/12	1
Ethyl ether	BDL	1.0	ug/l	8260B	06/09/12	1

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

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REPORT OF ANALYSIS

Jeff Vosburgh
Apex Environmental Inc - Parkers Pr
60801 Cty Hwy 46
Parkers Prairie, MN 56361

June 15,2012

ESC Sample # : L579475-06

Site ID : 18571

Project # : 012-12-AXN

Date Received : June 08, 2012
Description : Queen of Peace Hospital

Sample ID : GP-2

Collected By : Jeffrey Vosburgh
Collection Date : 06/06/12 08:20

Parameter	Result	Det. Limit	Units	Method	Date	Dil.
Hexachloro-1,3-butadiene	BDL	1.0	ug/l	8260B	06/09/12	1
Isopropylbenzene	BDL	1.0	ug/l	8260B	06/09/12	1
p-Isopropyltoluene	BDL	1.0	ug/l	8260B	06/09/12	1
2-Butanone (MEK)	BDL	10.	ug/l	8260B	06/09/12	1
Methylene Chloride	BDL	5.0	ug/l	8260B	06/09/12	1
2-Hexanone	BDL	10.	ug/l	8260B	06/09/12	1
4-Methyl-2-pentanone (MIBK)	BDL	10.	ug/l	8260B	06/09/12	1
Methyl tert-butyl ether	BDL	1.0	ug/l	8260B	06/09/12	1
Naphthalene	BDL	5.0	ug/l	8260B	06/09/12	1
n-Propylbenzene	BDL	1.0	ug/l	8260B	06/09/12	1
Styrene	BDL	1.0	ug/l	8260B	06/09/12	1
1,1,1,2-Tetrachloroethane	BDL	1.0	ug/l	8260B	06/09/12	1
1,1,2,2-Tetrachloroethane	BDL	1.0	ug/l	8260B	06/09/12	1
1,1,2-Trichlorotrifluoroethane	BDL	1.0	ug/l	8260B	06/09/12	1
Tetrachloroethene	BDL	1.0	ug/l	8260B	06/09/12	1
Tetrahydrofuran	BDL	5.0	ug/l	8260B	06/09/12	1
Toluene	BDL	5.0	ug/l	8260B	06/09/12	1
1,2,3-Trichlorobenzene	BDL	1.0	ug/l	8260B	06/09/12	1
1,2,4-Trichlorobenzene	BDL	1.0	ug/l	8260B	06/09/12	1
1,1,1-Trichloroethane	BDL	1.0	ug/l	8260B	06/09/12	1
1,1,2-Trichloroethane	BDL	1.0	ug/l	8260B	06/09/12	1
Trichloroethene	BDL	1.0	ug/l	8260B	06/09/12	1
Trichlorofluoromethane	BDL	5.0	ug/l	8260B	06/09/12	1
1,2,3-Trichloropropane	BDL	2.5	ug/l	8260B	06/09/12	1
1,2,4-Trimethylbenzene	BDL	1.0	ug/l	8260B	06/09/12	1
1,2,3-Trimethylbenzene	BDL	1.0	ug/l	8260B	06/09/12	1
1,3,5-Trimethylbenzene	BDL	1.0	ug/l	8260B	06/09/12	1
Vinyl chloride	BDL	1.0	ug/l	8260B	06/09/12	1
Xylenes, Total	BDL	3.0	ug/l	8260B	06/09/12	1
Surrogate Recovery						
Toluene-d8	98.5		% Rec.	8260B	06/09/12	1
Dibromofluoromethane	108.		% Rec.	8260B	06/09/12	1
4-Bromofluorobenzene	103.		% Rec.	8260B	06/09/12	1
TPH (GC/FID) High Fraction	BDL	100	ug/l	DROWM/8015	06/11/12	1
Surrogate recovery(%)						
Triacontane	99.8		% Rec.	DROWM/8015	06/11/12	1

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

Jeff Vosburgh
Apex Environmental Inc - Parkers Pr
60801 Cty Hwy 46
Parkers Prairie, MN 56361

June 15,2012

ESC Sample # : L579475-07

Date Received : June 08, 2012
Description : Queen of Peace Hospital

Site ID : 18571

Sample ID : GP-3

Project # : 012-12-AXN

Collected By : Jeffrey Vosburgh
Collection Date : 06/05/12 00:00

Parameter	Result	Det. Limit	Units	Method	Date	Dil.
Volatile Organics						
Acetone	BDL	50.	ug/l	8260B	06/09/12	1
Acrolein	BDL	50.	ug/l	8260B	06/09/12	1
Acrylonitrile	BDL	10.	ug/l	8260B	06/09/12	1
Allyl chloride	BDL	5.0	ug/l	8260B	06/09/12	1
Benzene	BDL	1.0	ug/l	8260B	06/09/12	1
Bromobenzene	BDL	1.0	ug/l	8260B	06/09/12	1
Bromochloromethane	BDL	1.0	ug/l	8260B	06/09/12	1
Bromodichloromethane	BDL	1.0	ug/l	8260B	06/09/12	1
Bromoform	BDL	1.0	ug/l	8260B	06/09/12	1
Bromomethane	BDL	5.0	ug/l	8260B	06/09/12	1
n-Butylbenzene	BDL	1.0	ug/l	8260B	06/09/12	1
sec-Butylbenzene	BDL	1.0	ug/l	8260B	06/09/12	1
tert-Butylbenzene	BDL	1.0	ug/l	8260B	06/09/12	1
Carbon tetrachloride	BDL	1.0	ug/l	8260B	06/09/12	1
Chlorobenzene	BDL	1.0	ug/l	8260B	06/09/12	1
Chlorodibromomethane	BDL	1.0	ug/l	8260B	06/09/12	1
Chloroethane	BDL	5.0	ug/l	8260B	06/09/12	1
2-Chloroethyl vinyl ether	BDL	50.	ug/l	8260B	06/09/12	1
Chloroform	BDL	5.0	ug/l	8260B	06/09/12	1
Chloromethane	BDL	2.5	ug/l	8260B	06/09/12	1
2-Chlorotoluene	BDL	1.0	ug/l	8260B	06/09/12	1
4-Chlorotoluene	BDL	1.0	ug/l	8260B	06/09/12	1
1,2-Dibromo-3-Chloropropane	BDL	5.0	ug/l	8260B	06/09/12	1
1,2-Dibromoethane	BDL	1.0	ug/l	8260B	06/09/12	1
Dibromomethane	BDL	1.0	ug/l	8260B	06/09/12	1
1,2-Dichlorobenzene	BDL	1.0	ug/l	8260B	06/09/12	1
1,3-Dichlorobenzene	BDL	1.0	ug/l	8260B	06/09/12	1
1,4-Dichlorobenzene	BDL	1.0	ug/l	8260B	06/09/12	1
Dichlorodifluoromethane	BDL	5.0	ug/l	8260B	06/09/12	1
1,1-Dichloroethane	BDL	1.0	ug/l	8260B	06/09/12	1
1,2-Dichloroethane	BDL	1.0	ug/l	8260B	06/09/12	1
1,1-Dichloroethene	BDL	1.0	ug/l	8260B	06/09/12	1
cis-1,2-Dichloroethene	BDL	1.0	ug/l	8260B	06/09/12	1
trans-1,2-Dichloroethene	BDL	1.0	ug/l	8260B	06/09/12	1
1,2-Dichloropropane	BDL	1.0	ug/l	8260B	06/09/12	1
1,1-Dichloropropene	BDL	1.0	ug/l	8260B	06/09/12	1
1,3-Dichloropropane	BDL	1.0	ug/l	8260B	06/09/12	1
cis-1,3-Dichloropropene	BDL	1.0	ug/l	8260B	06/09/12	1
trans-1,3-Dichloropropene	BDL	1.0	ug/l	8260B	06/09/12	1
2,2-Dichloropropane	BDL	1.0	ug/l	8260B	06/09/12	1
Di-isopropyl ether	BDL	1.0	ug/l	8260B	06/09/12	1
Ethylbenzene	BDL	1.0	ug/l	8260B	06/09/12	1
Ethyl ether	BDL	1.0	ug/l	8260B	06/09/12	1

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

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REPORT OF ANALYSIS

Jeff Vosburgh
Apex Environmental Inc - Parkers Pr
60801 Cty Hwy 46
Parkers Prairie, MN 56361

June 15,2012

ESC Sample # : L579475-07

Site ID : 18571

Project # : 012-12-AXN

Date Received : June 08, 2012
Description : Queen of Peace Hospital

Sample ID : GP-3

Collected By : Jeffrey Vosburgh
Collection Date : 06/05/12 00:00

Parameter	Result	Det. Limit	Units	Method	Date	Dil.
Hexachloro-1,3-butadiene	BDL	1.0	ug/l	8260B	06/09/12	1
Isopropylbenzene	BDL	1.0	ug/l	8260B	06/09/12	1
p-Isopropyltoluene	BDL	1.0	ug/l	8260B	06/09/12	1
2-Butanone (MEK)	BDL	10.	ug/l	8260B	06/09/12	1
Methylene Chloride	BDL	5.0	ug/l	8260B	06/09/12	1
2-Hexanone	BDL	10.	ug/l	8260B	06/09/12	1
4-Methyl-2-pentanone (MIBK)	BDL	10.	ug/l	8260B	06/09/12	1
Methyl tert-butyl ether	BDL	1.0	ug/l	8260B	06/09/12	1
Naphthalene	BDL	5.0	ug/l	8260B	06/09/12	1
n-Propylbenzene	BDL	1.0	ug/l	8260B	06/09/12	1
Styrene	BDL	1.0	ug/l	8260B	06/09/12	1
1,1,1,2-Tetrachloroethane	BDL	1.0	ug/l	8260B	06/09/12	1
1,1,2,2-Tetrachloroethane	BDL	1.0	ug/l	8260B	06/09/12	1
1,1,2-Trichlorotrifluoroethane	BDL	1.0	ug/l	8260B	06/09/12	1
Tetrachloroethene	BDL	1.0	ug/l	8260B	06/09/12	1
Tetrahydrofuran	BDL	5.0	ug/l	8260B	06/09/12	1
Toluene	BDL	5.0	ug/l	8260B	06/09/12	1
1,2,3-Trichlorobenzene	BDL	1.0	ug/l	8260B	06/09/12	1
1,2,4-Trichlorobenzene	BDL	1.0	ug/l	8260B	06/09/12	1
1,1,1-Trichloroethane	BDL	1.0	ug/l	8260B	06/09/12	1
1,1,2-Trichloroethane	BDL	1.0	ug/l	8260B	06/09/12	1
Trichloroethene	BDL	1.0	ug/l	8260B	06/09/12	1
Trichlorofluoromethane	BDL	5.0	ug/l	8260B	06/09/12	1
1,2,3-Trichloropropane	BDL	2.5	ug/l	8260B	06/09/12	1
1,2,4-Trimethylbenzene	BDL	1.0	ug/l	8260B	06/09/12	1
1,2,3-Trimethylbenzene	BDL	1.0	ug/l	8260B	06/09/12	1
1,3,5-Trimethylbenzene	BDL	1.0	ug/l	8260B	06/09/12	1
Vinyl chloride	BDL	1.0	ug/l	8260B	06/09/12	1
Xylenes, Total	BDL	3.0	ug/l	8260B	06/09/12	1
Surrogate Recovery						
Toluene-d8	102.		% Rec.	8260B	06/09/12	1
Dibromofluoromethane	98.8		% Rec.	8260B	06/09/12	1
4-Bromofluorobenzene	100.		% Rec.	8260B	06/09/12	1
TPH (GC/FID) High Fraction	BDL	100	ug/l	DROWM / 80	06/12/12	1
Surrogate recovery(%)						
Triacontane	73.6		% Rec.	DROWM / 80	06/12/12	1

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

Jeff Vosburgh
Apex Environmental Inc - Parkers Pr
60801 Cty Hwy 46
Parkers Prairie, MN 56361

June 15,2012

ESC Sample # : L579475-08

Date Received : June 08, 2012
Description : Queen of Peace Hospital

Site ID : 18571

Sample ID : FIELD DUPLICATE

Project # : 012-12-AXN

Collected By : Jeffrey Vosburgh
Collection Date : 06/05/12 00:00

Parameter	Result	Det. Limit	Units	Method	Date	Dil.
Volatile Organics						
Acetone	BDL	50.	ug/l	8260B	06/09/12	1
Acrolein	BDL	50.	ug/l	8260B	06/09/12	1
Acrylonitrile	BDL	10.	ug/l	8260B	06/09/12	1
Allyl chloride	BDL	5.0	ug/l	8260B	06/09/12	1
Benzene	BDL	1.0	ug/l	8260B	06/09/12	1
Bromobenzene	BDL	1.0	ug/l	8260B	06/09/12	1
Bromochloromethane	BDL	1.0	ug/l	8260B	06/09/12	1
Bromodichloromethane	BDL	1.0	ug/l	8260B	06/09/12	1
Bromoform	BDL	1.0	ug/l	8260B	06/09/12	1
Bromomethane	BDL	5.0	ug/l	8260B	06/09/12	1
n-Butylbenzene	BDL	1.0	ug/l	8260B	06/09/12	1
sec-Butylbenzene	BDL	1.0	ug/l	8260B	06/09/12	1
tert-Butylbenzene	BDL	1.0	ug/l	8260B	06/09/12	1
Carbon tetrachloride	BDL	1.0	ug/l	8260B	06/09/12	1
Chlorobenzene	BDL	1.0	ug/l	8260B	06/09/12	1
Chlorodibromomethane	BDL	1.0	ug/l	8260B	06/09/12	1
Chloroethane	BDL	5.0	ug/l	8260B	06/09/12	1
2-Chloroethyl vinyl ether	BDL	50.	ug/l	8260B	06/09/12	1
Chloroform	BDL	5.0	ug/l	8260B	06/09/12	1
Chloromethane	BDL	2.5	ug/l	8260B	06/09/12	1
2-Chlorotoluene	BDL	1.0	ug/l	8260B	06/09/12	1
4-Chlorotoluene	BDL	1.0	ug/l	8260B	06/09/12	1
1,2-Dibromo-3-Chloropropane	BDL	5.0	ug/l	8260B	06/09/12	1
1,2-Dibromoethane	BDL	1.0	ug/l	8260B	06/09/12	1
Dibromomethane	BDL	1.0	ug/l	8260B	06/09/12	1
1,2-Dichlorobenzene	BDL	1.0	ug/l	8260B	06/09/12	1
1,3-Dichlorobenzene	BDL	1.0	ug/l	8260B	06/09/12	1
1,4-Dichlorobenzene	BDL	1.0	ug/l	8260B	06/09/12	1
Dichlorodifluoromethane	BDL	5.0	ug/l	8260B	06/09/12	1
1,1-Dichloroethane	BDL	1.0	ug/l	8260B	06/09/12	1
1,2-Dichloroethane	BDL	1.0	ug/l	8260B	06/09/12	1
1,1-Dichloroethene	BDL	1.0	ug/l	8260B	06/09/12	1
cis-1,2-Dichloroethene	BDL	1.0	ug/l	8260B	06/09/12	1
trans-1,2-Dichloroethene	BDL	1.0	ug/l	8260B	06/09/12	1
1,2-Dichloropropane	BDL	1.0	ug/l	8260B	06/09/12	1
1,1-Dichloropropene	BDL	1.0	ug/l	8260B	06/09/12	1
1,3-Dichloropropane	BDL	1.0	ug/l	8260B	06/09/12	1
cis-1,3-Dichloropropene	BDL	1.0	ug/l	8260B	06/09/12	1
trans-1,3-Dichloropropene	BDL	1.0	ug/l	8260B	06/09/12	1
2,2-Dichloropropane	BDL	1.0	ug/l	8260B	06/09/12	1
Di-isopropyl ether	BDL	1.0	ug/l	8260B	06/09/12	1
Ethylbenzene	BDL	1.0	ug/l	8260B	06/09/12	1
Ethyl ether	BDL	1.0	ug/l	8260B	06/09/12	1

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

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REPORT OF ANALYSIS

Jeff Vosburgh
Apex Environmental Inc - Parkers Pr
60801 Cty Hwy 46
Parkers Prairie, MN 56361

June 15,2012

ESC Sample # : L579475-08

Date Received : June 08, 2012
Description : Queen of Peace Hospital

Site ID : 18571

Sample ID : FIELD DUPLICATE

Project # : 012-12-AXN

Collected By : Jeffrey Vosburgh
Collection Date : 06/05/12 00:00

Parameter	Result	Det. Limit	Units	Method	Date	Dil.
Hexachloro-1,3-butadiene	BDL	1.0	ug/l	8260B	06/09/12	1
Isopropylbenzene	BDL	1.0	ug/l	8260B	06/09/12	1
p-Isopropyltoluene	BDL	1.0	ug/l	8260B	06/09/12	1
2-Butanone (MEK)	BDL	10.	ug/l	8260B	06/09/12	1
Methylene Chloride	BDL	5.0	ug/l	8260B	06/09/12	1
2-Hexanone	BDL	10.	ug/l	8260B	06/09/12	1
4-Methyl-2-pentanone (MIBK)	BDL	10.	ug/l	8260B	06/09/12	1
Methyl tert-butyl ether	BDL	1.0	ug/l	8260B	06/09/12	1
Naphthalene	BDL	5.0	ug/l	8260B	06/09/12	1
n-Propylbenzene	BDL	1.0	ug/l	8260B	06/09/12	1
Styrene	BDL	1.0	ug/l	8260B	06/09/12	1
1,1,1,2-Tetrachloroethane	BDL	1.0	ug/l	8260B	06/09/12	1
1,1,2,2-Tetrachloroethane	BDL	1.0	ug/l	8260B	06/09/12	1
1,1,2-Trichlorotrifluoroethane	BDL	1.0	ug/l	8260B	06/09/12	1
Tetrachloroethene	BDL	1.0	ug/l	8260B	06/09/12	1
Tetrahydrofuran	BDL	5.0	ug/l	8260B	06/09/12	1
Toluene	BDL	5.0	ug/l	8260B	06/09/12	1
1,2,3-Trichlorobenzene	BDL	1.0	ug/l	8260B	06/09/12	1
1,2,4-Trichlorobenzene	BDL	1.0	ug/l	8260B	06/09/12	1
1,1,1-Trichloroethane	BDL	1.0	ug/l	8260B	06/09/12	1
1,1,2-Trichloroethane	BDL	1.0	ug/l	8260B	06/09/12	1
Trichloroethene	BDL	1.0	ug/l	8260B	06/09/12	1
Trichlorofluoromethane	BDL	5.0	ug/l	8260B	06/09/12	1
1,2,3-Trichloropropane	BDL	2.5	ug/l	8260B	06/09/12	1
1,2,4-Trimethylbenzene	BDL	1.0	ug/l	8260B	06/09/12	1
1,2,3-Trimethylbenzene	BDL	1.0	ug/l	8260B	06/09/12	1
1,3,5-Trimethylbenzene	BDL	1.0	ug/l	8260B	06/09/12	1
Vinyl chloride	BDL	1.0	ug/l	8260B	06/09/12	1
Xylenes, Total	BDL	3.0	ug/l	8260B	06/09/12	1
Surrogate Recovery						
Toluene-d8	99.0		% Rec.	8260B	06/09/12	1
Dibromofluoromethane	106.		% Rec.	8260B	06/09/12	1
4-Bromofluorobenzene	103.		% Rec.	8260B	06/09/12	1
TPH (GC/FID) High Fraction	BDL	100	ug/l	DROWM / 80	06/12/12	1
Surrogate recovery(%)						
Triacontane	54.6		% Rec.	DROWM / 80	06/12/12	1

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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Reported: 06/15/12 11:08 Printed: 06/15/12 11:15

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REPORT OF ANALYSIS

Jeff Vosburgh
Apex Environmental Inc - Parkers Pr
60801 Cty Hwy 46
Parkers Prairie, MN 56361

June 15,2012

ESC Sample # : L579475-09

Date Received : June 08, 2012
Description : Queen of Peace Hospital

Site ID : 18571

Sample ID : TRIP BLANK

Project # : 012-12-AXN

Collected By : Jeffrey Vosburgh
Collection Date : 06/05/12 00:00

Parameter	Result	Det. Limit	Units	Method	Date	Dil.
Volatile Organics						
Acetone	BDL	50.	ug/l	8260B	06/08/12	1
Acrolein	BDL	50.	ug/l	8260B	06/08/12	1
Acrylonitrile	BDL	10.	ug/l	8260B	06/08/12	1
Allyl chloride	BDL	5.0	ug/l	8260B	06/08/12	1
Benzene	BDL	1.0	ug/l	8260B	06/08/12	1
Bromobenzene	BDL	1.0	ug/l	8260B	06/08/12	1
Bromochloromethane	BDL	1.0	ug/l	8260B	06/08/12	1
Bromodichloromethane	BDL	1.0	ug/l	8260B	06/08/12	1
Bromoform	BDL	1.0	ug/l	8260B	06/08/12	1
Bromomethane	BDL	5.0	ug/l	8260B	06/08/12	1
n-Butylbenzene	BDL	1.0	ug/l	8260B	06/08/12	1
sec-Butylbenzene	BDL	1.0	ug/l	8260B	06/08/12	1
tert-Butylbenzene	BDL	1.0	ug/l	8260B	06/08/12	1
Carbon tetrachloride	BDL	1.0	ug/l	8260B	06/08/12	1
Chlorobenzene	BDL	1.0	ug/l	8260B	06/08/12	1
Chlorodibromomethane	BDL	1.0	ug/l	8260B	06/08/12	1
Chloroethane	BDL	5.0	ug/l	8260B	06/08/12	1
2-Chloroethyl vinyl ether	BDL	50.	ug/l	8260B	06/08/12	1
Chloroform	BDL	5.0	ug/l	8260B	06/08/12	1
Chloromethane	BDL	2.5	ug/l	8260B	06/08/12	1
2-Chlorotoluene	BDL	1.0	ug/l	8260B	06/08/12	1
4-Chlorotoluene	BDL	1.0	ug/l	8260B	06/08/12	1
1,2-Dibromo-3-Chloropropane	BDL	5.0	ug/l	8260B	06/08/12	1
1,2-Dibromoethane	BDL	1.0	ug/l	8260B	06/08/12	1
Dibromomethane	BDL	1.0	ug/l	8260B	06/08/12	1
1,2-Dichlorobenzene	BDL	1.0	ug/l	8260B	06/08/12	1
1,3-Dichlorobenzene	BDL	1.0	ug/l	8260B	06/08/12	1
1,4-Dichlorobenzene	BDL	1.0	ug/l	8260B	06/08/12	1
Dichlorodifluoromethane	BDL	5.0	ug/l	8260B	06/08/12	1
1,1-Dichloroethane	BDL	1.0	ug/l	8260B	06/08/12	1
1,2-Dichloroethane	BDL	1.0	ug/l	8260B	06/08/12	1
1,1-Dichloroethene	BDL	1.0	ug/l	8260B	06/08/12	1
cis-1,2-Dichloroethene	BDL	1.0	ug/l	8260B	06/08/12	1
trans-1,2-Dichloroethene	BDL	1.0	ug/l	8260B	06/08/12	1
1,2-Dichloropropane	BDL	1.0	ug/l	8260B	06/08/12	1
1,1-Dichloropropene	BDL	1.0	ug/l	8260B	06/08/12	1
1,3-Dichloropropane	BDL	1.0	ug/l	8260B	06/08/12	1
cis-1,3-Dichloropropene	BDL	1.0	ug/l	8260B	06/08/12	1
trans-1,3-Dichloropropene	BDL	1.0	ug/l	8260B	06/08/12	1
2,2-Dichloropropane	BDL	1.0	ug/l	8260B	06/08/12	1
Di-isopropyl ether	BDL	1.0	ug/l	8260B	06/08/12	1
Ethylbenzene	BDL	1.0	ug/l	8260B	06/08/12	1
Ethyl ether	BDL	1.0	ug/l	8260B	06/08/12	1

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

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REPORT OF ANALYSIS

Jeff Vosburgh
Apex Environmental Inc - Parkers Pr
60801 Cty Hwy 46
Parkers Prairie, MN 56361

June 15,2012

ESC Sample # : L579475-09

Date Received : June 08, 2012
Description : Queen of Peace Hospital

Site ID : 18571

Sample ID : TRIP BLANK

Project # : 012-12-AXN

Collected By : Jeffrey Vosburgh
Collection Date : 06/05/12 00:00

Parameter	Result	Det. Limit	Units	Method	Date	Dil.
Hexachloro-1,3-butadiene	BDL	1.0	ug/l	8260B	06/08/12	1
Isopropylbenzene	BDL	1.0	ug/l	8260B	06/08/12	1
p-Isopropyltoluene	BDL	1.0	ug/l	8260B	06/08/12	1
2-Butanone (MEK)	BDL	10.	ug/l	8260B	06/08/12	1
Methylene Chloride	BDL	5.0	ug/l	8260B	06/08/12	1
2-Hexanone	BDL	10.	ug/l	8260B	06/08/12	1
4-Methyl-2-pentanone (MIBK)	BDL	10.	ug/l	8260B	06/08/12	1
Methyl tert-butyl ether	BDL	1.0	ug/l	8260B	06/08/12	1
Naphthalene	BDL	5.0	ug/l	8260B	06/08/12	1
n-Propylbenzene	BDL	1.0	ug/l	8260B	06/08/12	1
Styrene	BDL	1.0	ug/l	8260B	06/08/12	1
1,1,1,2-Tetrachloroethane	BDL	1.0	ug/l	8260B	06/08/12	1
1,1,2,2-Tetrachloroethane	BDL	1.0	ug/l	8260B	06/08/12	1
1,1,2-Trichlorotrifluoroethane	BDL	1.0	ug/l	8260B	06/08/12	1
Tetrachloroethene	BDL	1.0	ug/l	8260B	06/08/12	1
Tetrahydrofuran	BDL	5.0	ug/l	8260B	06/08/12	1
Toluene	BDL	5.0	ug/l	8260B	06/08/12	1
1,2,3-Trichlorobenzene	BDL	1.0	ug/l	8260B	06/08/12	1
1,2,4-Trichlorobenzene	BDL	1.0	ug/l	8260B	06/08/12	1
1,1,1-Trichloroethane	BDL	1.0	ug/l	8260B	06/08/12	1
1,1,2-Trichloroethane	BDL	1.0	ug/l	8260B	06/08/12	1
Trichloroethene	BDL	1.0	ug/l	8260B	06/08/12	1
Trichlorofluoromethane	BDL	5.0	ug/l	8260B	06/08/12	1
1,2,3-Trichloropropane	BDL	2.5	ug/l	8260B	06/08/12	1
1,2,4-Trimethylbenzene	BDL	1.0	ug/l	8260B	06/08/12	1
1,2,3-Trimethylbenzene	BDL	1.0	ug/l	8260B	06/08/12	1
1,3,5-Trimethylbenzene	BDL	1.0	ug/l	8260B	06/08/12	1
Vinyl chloride	BDL	1.0	ug/l	8260B	06/08/12	1
Xylenes, Total	BDL	3.0	ug/l	8260B	06/08/12	1
Surrogate Recovery						
Toluene-d8	101.		% Rec.	8260B	06/08/12	1
Dibromofluoromethane	104.		% Rec.	8260B	06/08/12	1
4-Bromofluorobenzene	97.0		% Rec.	8260B	06/08/12	1

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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Reported: 06/15/12 11:08 Printed: 06/15/12 11:15

Attachment A
List of Analytes with QC Qualifiers

Sample Number	Work Group	Sample Type	Analyte	Run ID	Qualifier
L579475-05	WG596979	SAMP	Acrolein	R2207173	J3

Attachment B
Explanation of QC Qualifier Codes

Qualifier	Meaning
J3	The associated batch QC was outside the established quality control range for precision.

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.

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Parkers Prairie, MN 56361

Quality Assurance Report
Level II

L579475

June 15, 2012

Laboratory Blank

Analyte	Result	Units	% Rec	Limit	Batch	Date Analyzed
TPH (GC/FID) High Fraction	< .1	ppm			WG597058	06/11/12 09:31
Triacontane		% Rec.	103.8	50-150	WG597058	06/11/12 09:31
TPH (GC/FID) High Fraction	< .1	ppm			WG597209	06/12/12 06:11
Triacontane		% Rec.	62.14	50-150	WG597209	06/12/12 06:11
1,2,4-Trimethylbenzene	< .001	mg/kg			WG596996	06/09/12 14:25
1,3,5-Trimethylbenzene	< .001	mg/kg			WG596996	06/09/12 14:25
Benzene	< .0005	mg/kg			WG596996	06/09/12 14:25
Ethylbenzene	< .0005	mg/kg			WG596996	06/09/12 14:25
Gasoline (C6-C10)	< .1	mg/kg			WG596996	06/09/12 14:25
m&p-Xylene	< .001	mg/kg			WG596996	06/09/12 14:25
Methyl tert-butyl ether	< .001	mg/kg			WG596996	06/09/12 14:25
Naphthalene	< .005	mg/kg			WG596996	06/09/12 14:25
o-Xylene	< .0005	mg/kg			WG596996	06/09/12 14:25
Toluene	< .005	mg/kg			WG596996	06/09/12 14:25
a,a,a-Trifluorotoluene(PID)		% Rec.	102.6	80-120	WG596996	06/09/12 14:25
1,1,1,2-Tetrachloroethane	< .001	mg/l			WG596979	06/08/12 18:14
1,1,1-Trichloroethane	< .001	mg/l			WG596979	06/08/12 18:14
1,1,2,2-Tetrachloroethane	< .001	mg/l			WG596979	06/08/12 18:14
1,1,2-Trichloroethane	< .001	mg/l			WG596979	06/08/12 18:14
1,1,2-Trichlorotrifluoroethane	< .001	mg/l			WG596979	06/08/12 18:14
1,1-Dichloroethane	< .001	mg/l			WG596979	06/08/12 18:14
1,1-Dichloroethene	< .001	mg/l			WG596979	06/08/12 18:14
1,1-Dichloropropene	< .001	mg/l			WG596979	06/08/12 18:14
1,2,3-Trichlorobenzene	< .001	mg/l			WG596979	06/08/12 18:14
1,2,3-Trichloropropane	< .001	mg/l			WG596979	06/08/12 18:14
1,2,3-Trimethylbenzene	< .001	mg/l			WG596979	06/08/12 18:14
1,2,4-Trichlorobenzene	< .001	mg/l			WG596979	06/08/12 18:14
1,2,4-Trimethylbenzene	< .001	mg/l			WG596979	06/08/12 18:14
1,2-Dibromo-3-Chloropropane	< .005	mg/l			WG596979	06/08/12 18:14
1,2-Dibromoethane	< .001	mg/l			WG596979	06/08/12 18:14
1,2-Dichlorobenzene	< .001	mg/l			WG596979	06/08/12 18:14
1,2-Dichloroethane	< .001	mg/l			WG596979	06/08/12 18:14
1,2-Dichloropropane	< .001	mg/l			WG596979	06/08/12 18:14
1,3,5-Trimethylbenzene	< .001	mg/l			WG596979	06/08/12 18:14
1,3-Dichlorobenzene	< .001	mg/l			WG596979	06/08/12 18:14
1,3-Dichloropropane	< .001	mg/l			WG596979	06/08/12 18:14
1,4-Dichlorobenzene	< .001	mg/l			WG596979	06/08/12 18:14
2,2-Dichloropropane	< .001	mg/l			WG596979	06/08/12 18:14
2-Butanone (MEK)	< .01	mg/l			WG596979	06/08/12 18:14
2-Chloroethyl vinyl ether	< .05	mg/l			WG596979	06/08/12 18:14
2-Chlorotoluene	< .001	mg/l			WG596979	06/08/12 18:14
2-Hexanone	< .01	mg/l			WG596979	06/08/12 18:14
4-Chlorotoluene	< .001	mg/l			WG596979	06/08/12 18:14
4-Methyl-2-pentanone (MIBK)	< .01	mg/l			WG596979	06/08/12 18:14
Acetone	< .05	mg/l			WG596979	06/08/12 18:14
Acrolein	< .025	mg/l			WG596979	06/08/12 18:14
Acrylonitrile	< .01	mg/l			WG596979	06/08/12 18:14
Allyl chloride	< .005	mg/l			WG596979	06/08/12 18:14
Benzene	< .001	mg/l			WG596979	06/08/12 18:14
Bromobenzene	< .001	mg/l			WG596979	06/08/12 18:14
Bromochloromethane	< .001	mg/l			WG596979	06/08/12 18:14
Bromodichloromethane	< .001	mg/l			WG596979	06/08/12 18:14
Bromoform	< .001	mg/l			WG596979	06/08/12 18:14

* Performance of this Analyte is outside of established criteria.
For additional information, please see Attachment A 'List of Analytes with QC Qualifiers.'

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Quality Assurance Report
Level II

L579475

June 15, 2012

Laboratory Blank

Analyte	Result	Units	% Rec	Limit	Batch	Date Analyzed
Bromomethane	< .005	mg/l			WG596979	06/08/12 18:14
Carbon tetrachloride	< .001	mg/l			WG596979	06/08/12 18:14
Chlorobenzene	< .001	mg/l			WG596979	06/08/12 18:14
Chlorodibromomethane	< .001	mg/l			WG596979	06/08/12 18:14
Chloroethane	< .005	mg/l			WG596979	06/08/12 18:14
Chloroform	< .005	mg/l			WG596979	06/08/12 18:14
Chloromethane	< .0025	mg/l			WG596979	06/08/12 18:14
cis-1,2-Dichloroethene	< .001	mg/l			WG596979	06/08/12 18:14
cis-1,3-Dichloropropene	< .001	mg/l			WG596979	06/08/12 18:14
Di-isopropyl ether	< .001	mg/l			WG596979	06/08/12 18:14
Dibromomethane	< .001	mg/l			WG596979	06/08/12 18:14
Dichlorodifluoromethane	< .005	mg/l			WG596979	06/08/12 18:14
Ethyl ether	< .001	mg/l			WG596979	06/08/12 18:14
Ethylbenzene	< .001	mg/l			WG596979	06/08/12 18:14
Hexachloro-1,3-butadiene	< .001	mg/l			WG596979	06/08/12 18:14
Isopropylbenzene	< .001	mg/l			WG596979	06/08/12 18:14
Methyl tert-butyl ether	< .001	mg/l			WG596979	06/08/12 18:14
Methylene Chloride	< .005	mg/l			WG596979	06/08/12 18:14
n-Butylbenzene	< .001	mg/l			WG596979	06/08/12 18:14
n-Propylbenzene	< .001	mg/l			WG596979	06/08/12 18:14
Naphthalene	< .005	mg/l			WG596979	06/08/12 18:14
p-Isopropyltoluene	< .001	mg/l			WG596979	06/08/12 18:14
sec-Butylbenzene	< .001	mg/l			WG596979	06/08/12 18:14
Styrene	< .001	mg/l			WG596979	06/08/12 18:14
tert-Butylbenzene	< .001	mg/l			WG596979	06/08/12 18:14
Tetrachloroethene	< .001	mg/l			WG596979	06/08/12 18:14
Tetrahydrofuran	< .005	mg/l			WG596979	06/08/12 18:14
Toluene	< .005	mg/l			WG596979	06/08/12 18:14
trans-1,2-Dichloroethene	< .001	mg/l			WG596979	06/08/12 18:14
trans-1,3-Dichloropropene	< .001	mg/l			WG596979	06/08/12 18:14
Trichloroethene	< .001	mg/l			WG596979	06/08/12 18:14
Trichlorofluoromethane	< .005	mg/l			WG596979	06/08/12 18:14
Vinyl chloride	< .001	mg/l			WG596979	06/08/12 18:14
Xylenes, Total	< .003	mg/l			WG596979	06/08/12 18:14
4-Bromofluorobenzene		% Rec.	98.42	82-120	WG596979	06/08/12 18:14
Dibromofluoromethane		% Rec.	99.72	82-126	WG596979	06/08/12 18:14
Toluene-d8		% Rec.	99.40	92-112	WG596979	06/08/12 18:14
Total Solids	< .1	%			WG597382	06/13/12 11:26
TPH (GC/FID) High Fraction	< 4	ppm			WG597269	06/14/12 14:51
Triacontane		% Rec.	70.13	50-150	WG597269	06/14/12 14:51

Duplicate

Analyte	Units	Result	Duplicate	RPD	Limit	Ref Samp	Batch
Total Solids	%	83.0	81.7	1.13	5	L579455-02	WG597382

Laboratory Control Sample

Analyte	Units	Known Val	Result	% Rec	Limit	Batch
TPH (GC/FID) High Fraction	mg/l	1	0.880	88.0	75-115	WG597058
Triacontane				100.1	50-150	WG597058
TPH (GC/FID) High Fraction	mg/l	1	1.01	101.	75-115	WG597209
Triacontane				77.15	50-150	WG597209

* Performance of this Analyte is outside of established criteria.
For additional information, please see Attachment A 'List of Analytes with QC Qualifiers.'

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Quality Assurance Report
Level II

L579475

June 15, 2012

		Laboratory Control Sample				
Analyte	Units	Known Val	Result	% Rec	Limit	Batch
1,2,4-Trimethylbenzene	mg/kg	.05	0.0463	92.7	80-120	WG596996
1,3,5-Trimethylbenzene	mg/kg	.05	0.0464	92.9	80-120	WG596996
Benzene	mg/kg	.05	0.0443	88.6	76-113	WG596996
Ethylbenzene	mg/kg	.05	0.0432	86.5	78-115	WG596996
Gasoline (C6-C10)	mg/kg	.5	0.465	93.0	80-120	WG596996
m&p-Xylene	mg/kg	.1	0.0918	91.8	81-120	WG596996
Methyl tert-butyl ether	mg/kg	.05	0.0445	89.0	37-145	WG596996
Naphthalene	mg/kg	.05	0.0496	99.2	80-120	WG596996
o-Xylene	mg/kg	.05	0.0454	90.7	79-115	WG596996
Toluene	mg/kg	.05	0.0451	90.1	76-114	WG596996
a,a,a-Trifluorotoluene(PID)				104.1	80-120	WG596996
1,1,1,2-Tetrachloroethane	mg/l	.025	0.0246	98.3	77-128	WG596979
1,1,1-Trichloroethane	mg/l	.025	0.0233	93.3	71-126	WG596979
1,1,2,2-Tetrachloroethane	mg/l	.025	0.0263	105.	78-130	WG596979
1,1,2-Trichloroethane	mg/l	.025	0.0235	94.0	81-121	WG596979
1,1,2-Trichlorotrifluoroethane	mg/l	.025	0.0237	94.7	53-143	WG596979
1,1-Dichloroethane	mg/l	.025	0.0240	96.0	73-123	WG596979
1,1-Dichloroethene	mg/l	.025	0.0206	82.3	54-134	WG596979
1,1-Dichloropropene	mg/l	.025	0.0224	89.6	67-127	WG596979
1,2,3-Trichlorobenzene	mg/l	.025	0.0249	99.4	77-130	WG596979
1,2,3-Trichloropropane	mg/l	.025	0.0220	87.9	68-130	WG596979
1,2,3-Trimethylbenzene	mg/l	.025	0.0229	91.5	77-126	WG596979
1,2,4-Trichlorobenzene	mg/l	.025	0.0254	102.	76-127	WG596979
1,2,4-Trimethylbenzene	mg/l	.025	0.0223	89.2	77-129	WG596979
1,2-Dibromo-3-Chloropropane	mg/l	.025	0.0247	98.9	55-142	WG596979
1,2-Dibromoethane	mg/l	.025	0.0228	91.3	78-124	WG596979
1,2-Dichlorobenzene	mg/l	.025	0.0233	93.2	82-121	WG596979
1,2-Dichloroethane	mg/l	.025	0.0229	91.7	69-128	WG596979
1,2-Dichloropropane	mg/l	.025	0.0253	101.	77-121	WG596979
1,3,5-Trimethylbenzene	mg/l	.025	0.0228	91.3	78-127	WG596979
1,3-Dichlorobenzene	mg/l	.025	0.0236	94.4	77-127	WG596979
1,3-Dichloropropane	mg/l	.025	0.0225	89.9	78-117	WG596979
1,4-Dichlorobenzene	mg/l	.025	0.0226	90.5	79-117	WG596979
2,2-Dichloropropane	mg/l	.025	0.0252	101.	63-130	WG596979
2-Butanone (MEK)	mg/l	.125	0.115	92.4	58-144	WG596979
2-Chloroethyl vinyl ether	mg/l	.125	0.117	93.3	26-172	WG596979
2-Chlorotoluene	mg/l	.025	0.0236	94.4	78-123	WG596979
2-Hexanone	mg/l	.125	0.118	94.2	62-144	WG596979
4-Chlorotoluene	mg/l	.025	0.0230	91.9	78-122	WG596979
4-Methyl-2-pentanone (MIBK)	mg/l	.125	0.113	90.7	58-147	WG596979
Acetone	mg/l	.125	0.110	88.0	49-153	WG596979
Acrolein	mg/l	.125	0.121	96.6	10-181	WG596979
Acrylonitrile	mg/l	.125	0.112	89.6	53-153	WG596979
Benzene	mg/l	.025	0.0230	91.9	72-119	WG596979
Bromobenzene	mg/l	.025	0.0227	90.8	76-121	WG596979
Bromochloromethane	mg/l	.025	0.0225	90.0	79-124	WG596979
Bromodichloromethane	mg/l	.025	0.0234	93.8	75-127	WG596979
Bromoform	mg/l	.025	0.0249	99.5	61-136	WG596979
Bromomethane	mg/l	.025	0.0198	79.2	42-172	WG596979
Carbon tetrachloride	mg/l	.025	0.0228	91.3	63-129	WG596979
Chlorobenzene	mg/l	.025	0.0231	92.4	78-123	WG596979
Chlorodibromomethane	mg/l	.025	0.0241	96.3	73-128	WG596979
Chloroethane	mg/l	.025	0.0217	86.7	52-164	WG596979
Chloroform	mg/l	.025	0.0239	95.8	76-122	WG596979
Chloromethane	mg/l	.025	0.0238	95.3	50-141	WG596979
cis-1,2-Dichloroethene	mg/l	.025	0.0239	95.6	75-121	WG596979
cis-1,3-Dichloropropene	mg/l	.025	0.0237	94.6	74-124	WG596979

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Apex Environmental Inc - Parkers Prairie
Jeff Vosburgh
60801 Cty Hwy 46

Parkers Prairie, MN 56361

Quality Assurance Report
Level II

L579475

June 15, 2012

Laboratory Control Sample

Analyte	Units	Known Val	Result	% Rec	Limit	Batch
Di-isopropyl ether	mg/l	.025	0.0241	96.4	66-129	WG596979
Dibromomethane	mg/l	.025	0.0233	93.2	77-124	WG596979
Dichlorodifluoromethane	mg/l	.025	0.0289	116.	33-173	WG596979
Ethyl ether	mg/l	.025	0.0224	89.6	56-144	WG596979
Ethylbenzene	mg/l	.025	0.0235	94.0	77-124	WG596979
Hexachloro-1,3-butadiene	mg/l	.025	0.0238	95.2	71-134	WG596979
Isopropylbenzene	mg/l	.025	0.0233	93.2	74-126	WG596979
Methyl tert-butyl ether	mg/l	.025	0.0229	91.7	67-127	WG596979
Methylene Chloride	mg/l	.025	0.0216	86.3	67-122	WG596979
n-Butylbenzene	mg/l	.025	0.0235	93.9	74-130	WG596979
n-Propylbenzene	mg/l	.025	0.0232	92.8	77-125	WG596979
Naphthalene	mg/l	.025	0.0243	97.4	70-134	WG596979
p-Isopropyltoluene	mg/l	.025	0.0238	95.3	77-132	WG596979
sec-Butylbenzene	mg/l	.025	0.0240	96.0	77-130	WG596979
Styrene	mg/l	.025	0.0241	96.3	69-145	WG596979
tert-Butylbenzene	mg/l	.025	0.0242	96.6	76-131	WG596979
Tetrachloroethene	mg/l	.025	0.0239	95.7	69-131	WG596979
Tetrahydrofuran	mg/l	.025	0.0227	90.6	41-147	WG596979
Toluene	mg/l	.025	0.0221	88.3	75-114	WG596979
trans-1,2-Dichloroethene	mg/l	.025	0.0223	89.4	63-127	WG596979
trans-1,3-Dichloropropene	mg/l	.025	0.0230	92.0	69-124	WG596979
Trichloroethene	mg/l	.025	0.0221	88.6	69-131	WG596979
Trichlorofluoromethane	mg/l	.025	0.0232	92.9	53-161	WG596979
Vinyl chloride	mg/l	.025	0.0222	88.9	55-142	WG596979
Xylenes, Total	mg/l	.075	0.0679	90.6	77-123	WG596979
4-Bromofluorobenzene				98.42	82-120	WG596979
Dibromofluoromethane				97.60	82-126	WG596979
Toluene-d8				100.7	92-112	WG596979
Total Solids	%	50	50.0	100.	85-115	WG597382
TPH (GC/FID) High Fraction	mg/kg	40	30.0	75.0	70-120	WG597269
Triacontane				69.08	50-150	WG597269

Laboratory Control Sample Duplicate

Analyte	Units	Result	Ref	%Rec	Limit	RPD	Limit	Batch
TPH (GC/FID) High Fraction	mg/l	0.951	0.880	95.0	75-115	7.81	20	WG597058
Triacontane				104.0	50-150			WG597058
TPH (GC/FID) High Fraction	mg/l	0.968	1.01	97.0	75-115	4.21	20	WG597209
Triacontane				69.24	50-150			WG597209
1,2,4-Trimethylbenzene	mg/kg	0.0457	0.0463	91.0	80-120	1.46	20	WG596996
1,3,5-Trimethylbenzene	mg/kg	0.0461	0.0464	92.0	80-120	0.790	20	WG596996
Benzene	mg/kg	0.0445	0.0443	89.0	76-113	0.510	20	WG596996
Ethylbenzene	mg/kg	0.0436	0.0432	87.0	78-115	0.750	20	WG596996
Gasoline (C6-C10)	mg/kg	0.460	0.465	92.0	80-120	1.13	20	WG596996
m&p-Xylene	mg/kg	0.0906	0.0918	91.0	81-120	1.27	20	WG596996
Methyl tert-butyl ether	mg/kg	0.0448	0.0445	90.0	37-145	0.610	24	WG596996
Naphthalene	mg/kg	0.0492	0.0496	98.0	80-120	0.910	20	WG596996
o-Xylene	mg/kg	0.0452	0.0454	90.0	79-115	0.230	20	WG596996
Toluene	mg/kg	0.0452	0.0451	90.0	76-114	0.250	20	WG596996
a,a,a-Trifluorotoluene(PID)				103.9	80-120			WG596996

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Quality Assurance Report
Level II

L579475

June 15, 2012

		Laboratory Control Sample				Duplicate		
Analyte	Units	Result	Ref	%Rec	Limit	RPD	Limit	Batch
1,1,1,2-Tetrachloroethane	mg/l	0.0231	0.0246	92.0	77-128	6.07	20	WG596979
1,1,1-Trichloroethane	mg/l	0.0241	0.0233	96.0	71-126	3.37	20	WG596979
1,1,2,2-Tetrachloroethane	mg/l	0.0226	0.0263	90.0	78-130	15.3	20	WG596979
1,1,2-Trichloroethane	mg/l	0.0218	0.0235	87.0	81-121	7.70	20	WG596979
1,1,2-Trichlorotrifluoroethane	mg/l	0.0201	0.0237	80.0	53-143	16.4	20	WG596979
1,1-Dichloroethane	mg/l	0.0243	0.0240	97.0	73-123	1.32	20	WG596979
1,1-Dichloroethene	mg/l	0.0200	0.0206	80.0	54-134	2.71	20	WG596979
1,1-Dichloropropene	mg/l	0.0223	0.0224	89.0	67-127	0.430	20	WG596979
1,2,3-Trichlorobenzene	mg/l	0.0236	0.0249	94.0	77-130	5.25	20	WG596979
1,2,3-Trichloropropane	mg/l	0.0199	0.0220	79.0	68-130	10.1	20	WG596979
1,2,3-Trimethylbenzene	mg/l	0.0220	0.0229	88.0	77-126	4.12	20	WG596979
1,2,4-Trichlorobenzene	mg/l	0.0237	0.0254	95.0	76-127	6.83	20	WG596979
1,2,4-Trimethylbenzene	mg/l	0.0212	0.0223	85.0	77-129	5.01	20	WG596979
1,2-Dibromo-3-Chloropropane	mg/l	0.0222	0.0247	89.0	55-142	10.8	20	WG596979
1,2-Dibromoethane	mg/l	0.0220	0.0228	88.0	78-124	3.67	20	WG596979
1,2-Dichlorobenzene	mg/l	0.0225	0.0233	90.0	82-121	3.50	20	WG596979
1,2-Dichloroethane	mg/l	0.0237	0.0229	95.0	69-128	3.58	20	WG596979
1,2-Dichloropropane	mg/l	0.0246	0.0253	98.0	77-121	2.74	20	WG596979
1,3,5-Trimethylbenzene	mg/l	0.0212	0.0228	85.0	78-127	7.26	20	WG596979
1,3-Dichlorobenzene	mg/l	0.0218	0.0236	87.0	77-127	7.81	20	WG596979
1,3-Dichloropropane	mg/l	0.0210	0.0225	84.0	78-117	6.82	20	WG596979
1,4-Dichlorobenzene	mg/l	0.0211	0.0226	84.0	79-117	6.79	20	WG596979
2,2-Dichloropropane	mg/l	0.0255	0.0252	102.	63-130	1.27	20	WG596979
2-Butanone (MEK)	mg/l	0.118	0.115	94.0	58-144	2.36	20	WG596979
2-Chloroethyl vinyl ether	mg/l	0.135	0.117	108.	26-172	14.5	22	WG596979
2-Chlorotoluene	mg/l	0.0211	0.0236	84.0	78-123	11.3	20	WG596979
2-Hexanone	mg/l	0.102	0.118	82.0	62-144	14.3	20	WG596979
4-Chlorotoluene	mg/l	0.0216	0.0230	86.0	78-122	5.97	20	WG596979
4-Methyl-2-pentanone (MIBK)	mg/l	0.111	0.113	89.0	58-147	1.84	20	WG596979
Acetone	mg/l	0.102	0.110	81.0	49-153	7.87	21	WG596979
Acrolein	mg/l	0.109	0.121	87.0	10-181	10.2	30	WG596979
Acrylonitrile	mg/l	0.114	0.112	91.0	53-153	1.60	20	WG596979
Benzene	mg/l	0.0229	0.0230	92.0	72-119	0.160	20	WG596979
Bromobenzene	mg/l	0.0216	0.0227	86.0	76-121	4.77	20	WG596979
Bromochloromethane	mg/l	0.0232	0.0225	93.0	79-124	2.94	20	WG596979
Bromodichloromethane	mg/l	0.0241	0.0234	96.0	75-127	2.64	20	WG596979
Bromoform	mg/l	0.0221	0.0249	88.0	61-136	12.0	20	WG596979
Bromomethane	mg/l	0.0195	0.0198	78.0	42-172	1.40	20	WG596979
Carbon tetrachloride	mg/l	0.0227	0.0228	91.0	63-129	0.680	20	WG596979
Chlorobenzene	mg/l	0.0222	0.0231	89.0	78-123	3.78	20	WG596979
Chlorodibromomethane	mg/l	0.0234	0.0241	94.0	73-128	2.65	20	WG596979
Chloroethane	mg/l	0.0225	0.0217	90.0	52-164	3.80	20	WG596979
Chloroform	mg/l	0.0239	0.0239	95.0	76-122	0.350	20	WG596979
Chloromethane	mg/l	0.0233	0.0238	93.0	50-141	2.38	20	WG596979
cis-1,2-Dichloroethene	mg/l	0.0229	0.0239	91.0	75-121	4.43	20	WG596979
cis-1,3-Dichloropropene	mg/l	0.0235	0.0237	94.0	74-124	0.570	20	WG596979
Di-isopropyl ether	mg/l	0.0246	0.0241	98.0	66-129	2.21	20	WG596979
Dibromomethane	mg/l	0.0230	0.0233	92.0	77-124	1.38	20	WG596979
Dichlorodifluoromethane	mg/l	0.0270	0.0289	108.	33-173	6.92	20	WG596979
Ethyl ether	mg/l	0.0230	0.0224	92.0	56-144	2.81	20	WG596979
Ethylbenzene	mg/l	0.0206	0.0235	82.0	77-124	13.1	20	WG596979
Hexachloro-1,3-butadiene	mg/l	0.0224	0.0238	90.0	71-134	6.00	20	WG596979
Isopropylbenzene	mg/l	0.0213	0.0233	85.0	74-126	8.77	20	WG596979
Methyl tert-butyl ether	mg/l	0.0241	0.0229	96.0	67-127	4.97	20	WG596979
Methylene Chloride	mg/l	0.0224	0.0216	90.0	67-122	3.68	20	WG596979
n-Butylbenzene	mg/l	0.0219	0.0235	88.0	74-130	7.02	20	WG596979
n-Propylbenzene	mg/l	0.0214	0.0232	86.0	77-125	7.89	20	WG596979
Naphthalene	mg/l	0.0233	0.0243	93.0	70-134	4.19	20	WG596979

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Quality Assurance Report
Level II

L579475

June 15, 2012

		Laboratory Control Sample Duplicate						
Analyte	Units	Result	Ref	%Rec	Limit	RPD	Limit	Batch
p-Isopropyltoluene	mg/l	0.0216	0.0238	86.0	77-132	9.62	20	WG596979
sec-Butylbenzene	mg/l	0.0218	0.0240	87.0	77-130	9.67	20	WG596979
Styrene	mg/l	0.0229	0.0241	92.0	69-145	4.92	20	WG596979
tert-Butylbenzene	mg/l	0.0221	0.0242	88.0	76-131	8.83	20	WG596979
Tetrachloroethene	mg/l	0.0219	0.0239	87.0	69-131	8.98	20	WG596979
Tetrahydrofuran	mg/l	0.0213	0.0227	85.0	41-147	6.30	22	WG596979
Toluene	mg/l	0.0225	0.0221	90.0	75-114	1.80	20	WG596979
trans-1,2-Dichloroethene	mg/l	0.0222	0.0223	89.0	63-127	0.820	20	WG596979
trans-1,3-Dichloropropene	mg/l	0.0236	0.0230	94.0	69-124	2.58	20	WG596979
Trichloroethene	mg/l	0.0216	0.0221	86.0	69-131	2.53	20	WG596979
Trichlorofluoromethane	mg/l	0.0227	0.0232	91.0	53-161	2.45	20	WG596979
Vinyl chloride	mg/l	0.0222	0.0222	89.0	55-142	0.200	20	WG596979
Xylenes, Total	mg/l	0.0643	0.0679	86.0	77-123	5.43	20	WG596979
4-Bromofluorobenzene				95.65	82-120			WG596979
Dibromofluoromethane				100.1	82-126			WG596979
Toluene-d8				99.65	92-112			WG596979
TPH (GC/FID) High Fraction	mg/kg	32.9	30.0	82.0	70-120	9.10	23	WG597269
Triacontane				77.58	50-150			WG597269

		Matrix Spike						
Analyte	Units	MS Res	Ref Res	TV	% Rec	Limit	Ref Samp	Batch
1,2,4-Trimethylbenzene	mg/kg	2.37	0	.05	94.8	80-120	L579475-01	WG596996
1,3,5-Trimethylbenzene	mg/kg	2.38	0	.05	95.0	80-120	L579475-01	WG596996
Benzene	mg/kg	2.25	0	.05	90.0	32-137	L579475-01	WG596996
Ethylbenzene	mg/kg	2.20	0	.05	87.8	10-150	L579475-01	WG596996
Gasoline (C6-C10)	mg/kg	23.3	0	.5	93.4	80-120	L579475-01	WG596996
m&p-Xylene	mg/kg	4.67	0	.1	93.3	14-141	L579475-01	WG596996
Methyl tert-butyl ether	mg/kg	2.12	0	.05	85.0	24-151	L579475-01	WG596996
Naphthalene	mg/kg	2.52	0	.05	101.	80-120	L579475-01	WG596996
o-Xylene	mg/kg	2.29	0	.05	91.8	10-157	L579475-01	WG596996
Toluene	mg/kg	2.29	0	.05	91.6	20-142	L579475-01	WG596996
a,a,a-Trifluorotoluene(PID)					104.3	80-120		WG596996
1,1,1,2-Tetrachloroethane	mg/l	0.0264	0	.025	106.	71-130	L579475-05	WG596979
1,1,1-Trichloroethane	mg/l	0.0271	0	.025	108.	58-137	L579475-05	WG596979
1,1,2,2-Tetrachloroethane	mg/l	0.0283	0	.025	113.	64-149	L579475-05	WG596979
1,1,2-Trichloroethane	mg/l	0.0266	0	.025	106.	73-128	L579475-05	WG596979
1,1,2-Trichlorotrifluoroethane	mg/l	0.0268	0	.025	107.	36-159	L579475-05	WG596979
1,1-Dichloroethane	mg/l	0.0270	0	.025	108.	58-133	L579475-05	WG596979
1,1-Dichloroethene	mg/l	0.0249	0	.025	99.5	32-152	L579475-05	WG596979
1,1-Dichloropropene	mg/l	0.0271	0	.025	108.	50-140	L579475-05	WG596979
1,2,3-Trichlorobenzene	mg/l	0.0243	0	.025	97.1	68-135	L579475-05	WG596979
1,2,3-Trichloropropane	mg/l	0.0270	0	.025	108.	74-137	L579475-05	WG596979
1,2,3-Trimethylbenzene	mg/l	0.0244	0	.025	97.5	67-133	L579475-05	WG596979
1,2,4-Trichlorobenzene	mg/l	0.0258	0	.025	103.	67-133	L579475-05	WG596979
1,2,4-Trimethylbenzene	mg/l	0.0261	0	.025	104.	62-141	L579475-05	WG596979
1,2-Dibromo-3-Chloropropane	mg/l	0.0286	0	.025	114.	55-148	L579475-05	WG596979
1,2-Dibromoethane	mg/l	0.0272	0	.025	109.	71-129	L579475-05	WG596979
1,2-Dichlorobenzene	mg/l	0.0251	0	.025	100.	75-125	L579475-05	WG596979
1,2-Dichloroethane	mg/l	0.0275	0	.025	110.	59-135	L579475-05	WG596979
1,2-Dichloropropane	mg/l	0.0279	0	.025	112.	68-126	L579475-05	WG596979
1,3,5-Trimethylbenzene	mg/l	0.0255	0	.025	102.	67-136	L579475-05	WG596979
1,3-Dichlorobenzene	mg/l	0.0267	0	.025	107.	69-131	L579475-05	WG596979
1,3-Dichloropropane	mg/l	0.0265	0	.025	106.	70-122	L579475-05	WG596979
1,4-Dichlorobenzene	mg/l	0.0240	0	.025	96.1	70-123	L579475-05	WG596979

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Quality Assurance Report
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June 15, 2012

L579475

Analyte	Units	Matrix Spike MS Res	Ref Res	TV	% Rec	Limit	Ref Samp	Batch
2,2-Dichloropropane	mg/l	0.0285	0	.025	114.	51-141	L579475-05	WG596979
2-Butanone (MEK)	mg/l	0.159	0	.125	127.	51-149	L579475-05	WG596979
2-Chloroethyl vinyl ether	mg/l	0.125	0	.125	100.	10-161	L579475-05	WG596979
2-Chlorotoluene	mg/l	0.0258	0	.025	103.	65-133	L579475-05	WG596979
2-Hexanone	mg/l	0.150	0	.125	120.	58-148	L579475-05	WG596979
4-Chlorotoluene	mg/l	0.0269	0	.025	107.	67-129	L579475-05	WG596979
4-Methyl-2-pentanone (MIBK)	mg/l	0.148	0	.125	118.	53-154	L579475-05	WG596979
Acetone	mg/l	0.194	0	.125	155.*	34-146	L579475-05	WG596979
Acrolein	mg/l	0.159	0	.125	127.	10-189	L579475-05	WG596979
Acrylonitrile	mg/l	0.151	0	.125	121.	49-162	L579475-05	WG596979
Benzene	mg/l	0.0263	0	.025	105.	51-134	L579475-05	WG596979
Bromobenzene	mg/l	0.0259	0	.025	104.	64-130	L579475-05	WG596979
Bromochloromethane	mg/l	0.0265	0	.025	106.	67-131	L579475-05	WG596979
Bromodichloromethane	mg/l	0.0265	0	.025	106.	67-132	L579475-05	WG596979
Bromoform	mg/l	0.0268	0	.025	107.	59-137	L579475-05	WG596979
Bromomethane	mg/l	0.0253	0	.025	101.	23-177	L579475-05	WG596979
Carbon tetrachloride	mg/l	0.0269	0	.025	108.	49-140	L579475-05	WG596979
Chlorobenzene	mg/l	0.0263	0	.025	105.	69-126	L579475-05	WG596979
Chlorodibromomethane	mg/l	0.0279	0	.025	112.	68-130	L579475-05	WG596979
Chloroethane	mg/l	0.0262	0	.025	105.	32-177	L579475-05	WG596979
Chloroform	mg/l	0.0266	0	.025	106.	64-130	L579475-05	WG596979
Chloromethane	mg/l	0.0284	0	.025	114.	27-155	L579475-05	WG596979
cis-1,2-Dichloroethene	mg/l	0.0265	0	.025	106.	54-137	L579475-05	WG596979
cis-1,3-Dichloropropene	mg/l	0.0285	0	.025	114.	63-127	L579475-05	WG596979
Di-isopropyl ether	mg/l	0.0276	0	.025	110.	58-133	L579475-05	WG596979
Dibromomethane	mg/l	0.0279	0	.025	112.	68-131	L579475-05	WG596979
Dichlorodifluoromethane	mg/l	0.0320	0	.025	128.	16-188	L579475-05	WG596979
Ethyl ether	mg/l	0.0271	0	.025	108.	47-147	L579475-05	WG596979
Ethylbenzene	mg/l	0.0256	0	.025	102.	64-135	L579475-05	WG596979
Hexachloro-1,3-butadiene	mg/l	0.0244	0	.025	97.7	64-140	L579475-05	WG596979
Isopropylbenzene	mg/l	0.0260	0	.025	104.	62-134	L579475-05	WG596979
Methyl tert-butyl ether	mg/l	0.0281	0	.025	112.	55-136	L579475-05	WG596979
Methylene Chloride	mg/l	0.0268	0	.025	107.	52-130	L579475-05	WG596979
n-Butylbenzene	mg/l	0.0250	0	.025	100.	62-142	L579475-05	WG596979
n-Propylbenzene	mg/l	0.0264	0	.025	106.	62-137	L579475-05	WG596979
Naphthalene	mg/l	0.0246	0	.025	98.3	65-140	L579475-05	WG596979
p-Isopropyltoluene	mg/l	0.0260	0	.025	104.	64-142	L579475-05	WG596979
sec-Butylbenzene	mg/l	0.0266	0	.025	106.	67-139	L579475-05	WG596979
Styrene	mg/l	0.0276	0	.025	110.	58-152	L579475-05	WG596979
tert-Butylbenzene	mg/l	0.0273	0	.025	109.	66-139	L579475-05	WG596979
Tetrachloroethene	mg/l	0.0275	0	.025	110.	56-139	L579475-05	WG596979
Tetrahydrofuran	mg/l	0.0298	0	.025	119.	32-163	L579475-05	WG596979
Toluene	mg/l	0.0264	0	.025	106.	61-126	L579475-05	WG596979
trans-1,2-Dichloroethene	mg/l	0.0257	0	.025	103.	45-137	L579475-05	WG596979
trans-1,3-Dichloropropene	mg/l	0.0281	0	.025	112.	59-130	L579475-05	WG596979
Trichloroethene	mg/l	0.0269	0	.025	108.	40-155	L579475-05	WG596979
Trichlorofluoromethane	mg/l	0.0262	0	.025	105.	35-177	L579475-05	WG596979
Vinyl chloride	mg/l	0.0271	0	.025	108.	32-159	L579475-05	WG596979
Xylenes, Total	mg/l	0.0774	0	.075	103.	64-133	L579475-05	WG596979
4-Bromofluorobenzene					103.8	82-120		WG596979
Dibromofluoromethane					103.2	82-126		WG596979
Toluene-d8					101.2	92-112		WG596979

Analyte	Units	Matrix Spike Duplicate MSD	Ref	%Rec	Limit	RPD	Limit	Ref Samp	Batch
1,2,4-Trimethylbenzene	mg/kg	2.47	2.37	98.7	80-120	4.01	20	L579475-01	WG596996
1,3,5-Trimethylbenzene	mg/kg	2.46	2.38	98.5	80-120	3.66	20	L579475-01	WG596996
Benzene	mg/kg	2.34	2.25	93.7	32-137	4.04	39	L579475-01	WG596996

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Parkers Prairie, MN 56361

Quality Assurance Report
Level II

L579475

June 15, 2012

Analyte	Units	Matrix Spike MSD	Duplicate Ref	%Rec	Limit	RPD	Limit	Ref Samp	Batch
Ethylbenzene	mg/kg	2.29	2.20	91.5	10-150	4.14	44	L579475-01	WG596996
Gasoline (C6-C10)	mg/kg	23.6	23.3	94.4	80-120	1.15	20	L579475-01	WG596996
m&p-Xylene	mg/kg	4.85	4.67	97.0	14-141	3.79	44	L579475-01	WG596996
Methyl tert-butyl ether	mg/kg	2.24	2.12	89.6	24-151	5.30	37	L579475-01	WG596996
Naphthalene	mg/kg	2.66	2.52	106.	80-120	5.41	20	L579475-01	WG596996
o-Xylene	mg/kg	2.39	2.29	95.6	10-157	4.13	44	L579475-01	WG596996
Toluene	mg/kg	2.38	2.29	95.3	20-142	4.00	42	L579475-01	WG596996
a,a,a-Trifluorotoluene(PID)				104.2	80-120				WG596996
1,1,1,2-Tetrachloroethane	mg/l	0.0256	0.0264	102.	71-130	2.98	20	L579475-05	WG596979
1,1,1-Trichloroethane	mg/l	0.0269	0.0271	107.	58-137	0.790	20	L579475-05	WG596979
1,1,2,2-Tetrachloroethane	mg/l	0.0265	0.0283	106.	64-149	6.31	20	L579475-05	WG596979
1,1,2-Trichloroethane	mg/l	0.0245	0.0266	97.8	73-128	8.33	20	L579475-05	WG596979
1,1,2-Trichlorotrifluoroethane	mg/l	0.0269	0.0268	108.	36-159	0.500	21	L579475-05	WG596979
1,1-Dichloroethane	mg/l	0.0277	0.0270	111.	58-133	2.35	20	L579475-05	WG596979
1,1-Dichloroethene	mg/l	0.0244	0.0249	97.6	32-152	1.91	20	L579475-05	WG596979
1,1-Dichloropropene	mg/l	0.0265	0.0271	106.	50-140	2.15	20	L579475-05	WG596979
1,2,3-Trichlorobenzene	mg/l	0.0246	0.0243	98.2	68-135	1.13	20	L579475-05	WG596979
1,2,3-Trichloropropane	mg/l	0.0236	0.0270	94.3	74-137	13.5	20	L579475-05	WG596979
1,2,3-Trimethylbenzene	mg/l	0.0239	0.0244	95.6	67-133	2.02	20	L579475-05	WG596979
1,2,4-Trichlorobenzene	mg/l	0.0248	0.0258	99.2	67-133	3.84	20	L579475-05	WG596979
1,2,4-Trimethylbenzene	mg/l	0.0242	0.0261	96.7	62-141	7.85	20	L579475-05	WG596979
1,2-Dibromo-3-Chloropropane	mg/l	0.0256	0.0286	102.	55-148	10.8	22	L579475-05	WG596979
1,2-Dibromoethane	mg/l	0.0254	0.0272	102.	71-129	6.88	20	L579475-05	WG596979
1,2-Dichlorobenzene	mg/l	0.0233	0.0251	93.1	75-125	7.64	20	L579475-05	WG596979
1,2-Dichloroethane	mg/l	0.0270	0.0275	108.	59-135	1.62	20	L579475-05	WG596979
1,2-Dichloropropane	mg/l	0.0268	0.0279	107.	68-126	4.07	20	L579475-05	WG596979
1,3,5-Trimethylbenzene	mg/l	0.0239	0.0255	95.6	67-136	6.34	20	L579475-05	WG596979
1,3-Dichlorobenzene	mg/l	0.0247	0.0267	98.8	69-131	7.60	20	L579475-05	WG596979
1,3-Dichloropropane	mg/l	0.0250	0.0265	100.	70-122	5.64	20	L579475-05	WG596979
1,4-Dichlorobenzene	mg/l	0.0231	0.0240	92.5	70-123	3.85	20	L579475-05	WG596979
2,2-Dichloropropane	mg/l	0.0296	0.0285	118.	51-141	3.57	20	L579475-05	WG596979
2-Butanone (MEK)	mg/l	0.144	0.159	115.	51-149	10.1	22	L579475-05	WG596979
2-Chloroethyl vinyl ether	mg/l	0.140	0.125	112.	10-161	11.2	40	L579475-05	WG596979
2-Chlorotoluene	mg/l	0.0248	0.0258	99.1	65-133	4.06	20	L579475-05	WG596979
2-Hexanone	mg/l	0.127	0.150	102.	58-148	16.3	24	L579475-05	WG596979
4-Chlorotoluene	mg/l	0.0244	0.0269	97.6	67-129	9.59	20	L579475-05	WG596979
4-Methyl-2-pentanone (MIBK)	mg/l	0.132	0.148	106.	53-154	11.0	21	L579475-05	WG596979
Acetone	mg/l	0.156	0.194	125.	34-146	21.6	22	L579475-05	WG596979
Acrolein	mg/l	0.111	0.159	89.1	10-189	35.1*	30	L579475-05	WG596979
Acrylonitrile	mg/l	0.135	0.151	108.	49-162	11.4	20	L579475-05	WG596979
Benzene	mg/l	0.0261	0.0263	104.	51-134	0.670	20	L579475-05	WG596979
Bromobenzene	mg/l	0.0241	0.0259	96.5	64-130	7.19	20	L579475-05	WG596979
Bromochloromethane	mg/l	0.0256	0.0265	102.	67-131	3.42	20	L579475-05	WG596979
Bromodichloromethane	mg/l	0.0250	0.0265	100.	67-132	5.83	20	L579475-05	WG596979
Bromoform	mg/l	0.0248	0.0268	99.2	59-137	7.92	20	L579475-05	WG596979
Bromomethane	mg/l	0.0235	0.0253	93.9	23-177	7.39	21	L579475-05	WG596979
Carbon tetrachloride	mg/l	0.0270	0.0269	108.	49-140	0.180	20	L579475-05	WG596979
Chlorobenzene	mg/l	0.0248	0.0263	99.1	69-126	6.17	20	L579475-05	WG596979
Chlorodibromomethane	mg/l	0.0263	0.0279	105.	68-130	5.82	20	L579475-05	WG596979
Chloroethane	mg/l	0.0251	0.0262	100.	32-177	4.10	21	L579475-05	WG596979
Chloroform	mg/l	0.0264	0.0266	106.	64-130	0.770	20	L579475-05	WG596979
Chloromethane	mg/l	0.0279	0.0284	111.	27-155	1.88	20	L579475-05	WG596979
cis-1,2-Dichloroethene	mg/l	0.0262	0.0265	105.	54-137	1.07	20	L579475-05	WG596979
cis-1,3-Dichloropropene	mg/l	0.0255	0.0285	102.	63-127	11.0	20	L579475-05	WG596979
Di-isopropyl ether	mg/l	0.0273	0.0276	109.	58-133	1.25	20	L579475-05	WG596979
Dibromomethane	mg/l	0.0261	0.0279	104.	68-131	6.69	20	L579475-05	WG596979
Dichlorodifluoromethane	mg/l	0.0324	0.0320	130.	16-188	1.37	22	L579475-05	WG596979

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Quality Assurance Report
Level II

June 15, 2012

L579475

Analyte	Units	Matrix Spike MSD	Ref	Duplicate %Rec	Limit	RPD	Limit	Ref Samp	Batch
Ethyl ether	mg/l	0.0275	0.0271	110.	47-147	1.44	20	L579475-05	WG596979
Ethylbenzene	mg/l	0.0242	0.0256	96.6	64-135	5.90	20	L579475-05	WG596979
Hexachloro-1,3-butadiene	mg/l	0.0233	0.0244	93.3	64-140	4.62	20	L579475-05	WG596979
Isopropylbenzene	mg/l	0.0244	0.0260	97.6	62-134	6.19	20	L579475-05	WG596979
Methyl tert-butyl ether	mg/l	0.0274	0.0281	110.	55-136	2.75	20	L579475-05	WG596979
Methylene Chloride	mg/l	0.0269	0.0268	108.	52-130	0.240	20	L579475-05	WG596979
n-Butylbenzene	mg/l	0.0243	0.0250	97.3	62-142	2.96	20	L579475-05	WG596979
n-Propylbenzene	mg/l	0.0249	0.0264	99.7	62-137	5.67	20	L579475-05	WG596979
Naphthalene	mg/l	0.0246	0.0246	98.6	65-140	0.280	20	L579475-05	WG596979
p-Isopropyltoluene	mg/l	0.0244	0.0260	97.5	64-142	6.37	20	L579475-05	WG596979
sec-Butylbenzene	mg/l	0.0249	0.0266	99.6	67-139	6.57	20	L579475-05	WG596979
Styrene	mg/l	0.0258	0.0276	103.	58-152	6.96	20	L579475-05	WG596979
tert-Butylbenzene	mg/l	0.0256	0.0273	102.	66-139	6.40	20	L579475-05	WG596979
Tetrachloroethene	mg/l	0.0264	0.0275	106.	56-139	4.06	20	L579475-05	WG596979
Tetrahydrofuran	mg/l	0.0341	0.0298	136.	32-163	13.5	23	L579475-05	WG596979
Toluene	mg/l	0.0251	0.0264	100.	61-126	5.05	20	L579475-05	WG596979
trans-1,2-Dichloroethene	mg/l	0.0256	0.0257	102.	45-137	0.510	20	L579475-05	WG596979
trans-1,3-Dichloropropene	mg/l	0.0260	0.0281	104.	59-130	7.83	20	L579475-05	WG596979
Trichloroethene	mg/l	0.0254	0.0269	102.	40-155	5.60	20	L579475-05	WG596979
Trichlorofluoromethane	mg/l	0.0274	0.0262	110.	35-177	4.71	23	L579475-05	WG596979
Vinyl chloride	mg/l	0.0256	0.0271	102.	32-159	5.65	21	L579475-05	WG596979
Xylenes, Total	mg/l	0.0736	0.0774	98.1	64-133	5.09	20	L579475-05	WG596979
4-Bromofluorobenzene				98.17	82-120				WG596979
Dibromofluoromethane				106.8	82-126				WG596979
Toluene-d8				101.7	92-112				WG596979

Batch number /Run number / Sample number cross reference

WG597058: R2204695: L579475-05 06
WG597209: R2206355: L579475-07 08
WG596996: R2206839: L579475-01 02 03 04
WG596979: R2207173: L579475-05 06 07 08 09
WG597382: R2208596: L579475-01 02 03 04
WG597269: R2211093: L579475-01 02 03 04

* * Calculations are performed prior to rounding of reported values.
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Quality Assurance Report
Level II

L579475

June 15, 2012

The data package includes a summary of the analytic results of the quality control samples required by the SW-846 or CWA methods. The quality control samples include a method blank, a laboratory control sample, and the matrix spike/matrix spike duplicate analysis. If a target parameter is outside the method limits, every sample that is effected is flagged with the appropriate qualifier in Appendix B of the analytic report.

Method Blank - an aliquot of reagent water carried through the entire analytic process. The method blank results indicate if any possible contamination exposure during the sample handling, digestion or extraction process, and analysis. Concentrations of target analytes above the reporting limit in the method blank are qualified with the "B" qualifier.

Laboratory Control Sample - is a sample of known concentration that is carried through the digestion/extraction and analysis process. The percent recovery, expressed as a percentage of the theoretical concentration, has statistical control limits indicating that the analytic process is "in control". If a target analyte is outside the control limits for the laboratory control sample or any other control sample, the parameter is flagged with a "J4" qualifier for all effected samples.

Matrix Spike and Matrix Spike Duplicate - is two aliquots of an environmental sample that is spiked with known concentrations of target analytes. The percent recovery of the target analytes also has statistical control limits. If any recoveries that are outside the method control limits, the sample that was selected for matrix spike/matrix spike duplicate analysis is flagged with either a "J5" or a "J6". The relative percent difference (%RPD) between the matrix spike and the matrix spike duplicate recoveries is all calculated. If the RPD is above the method limit, the effected samples are flagged with a "J3" qualifier.

A064

Chain of Custody Page ___ of ___

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60801 Ctv Hwv 46
Parkers Prairie.MN 56361

Billing Information:
Jeff Vosburgh
60801 Cty Hwy 46
Parkers Prairie,MN 56361
(QPH)

Report to: SAME AS ABOVE
Email to:

Project Description: QUEEN of PEACE HOSPITAL
City/State Collected: NEW PRAGUE, MN

Phone: (218) 338-5947
FAX: (218) 338-5049

Client Project #: 012-12-AXN
ESC Key:

Collected by: (print) JEFFREY Vosburgh
Site/Facility ID#: 18571
P.O.#:

Collected by (signature):
Immediately Packed on Ice N ___ Y

Rush? (Lab MUST Be Notified)
___ Same Day..... 200%
___ Next Day..... 100%
___ Two Day..... 50%
___ Three Day..... 25%

Date Results Needed:
Email? __No__Yes
FAX? __No__Yes

Analysis/Container/Preservative

CoCode APEXPPMN (lab use only)
Template/Prelogin
Shipped Via:

Sample ID	Comp/Grab	Matrix*	Depth	Date	Time	No. of Cntrs	BETX	DRO	VOC				Remarks/Contaminant	Sample # (lab only)
GP-1 14.3	GRAB	SS	—	6/5/12	10:05	3	X	X						L579475-01
GP-2 15.8		SS			11:20	3	X	X						02
GP-3 13.2		SS			1:36	3	X	X						03
GP-4 15.1		SS			2:51	3	X	X						04
GP-1 G/W		GW		6/5/12	10:50	4		X	X					05
GP-2 G/W		GW		6/6/12	8:20 AM	4		X	X					06
GP-3 G/W		GW		6/5/12		4		X	X					07
FIELD DUPLICATE		GW		—	—	4		X	X					08
TRIP BLANK	—	—		—	—	1			X					09

*Matrix: **SS** - Soil/Solid **GW** - Groundwater **WW** - WasteWater **DW** - Drinking Water **OT** - Other_____

pH _____ Temp _____

Remarks:

9446 7875 9064 Flow _____ Other _____

Relinquished by: (Signature)	Date:	Time:	Received by: (Signature)
	6/7/12	1:20	
Relinquished by: (Signature)	Date:	Time:	Received by: (Signature)
Relinquished by: (Signature)	Date:	Time:	Received for lab by: (Signature)

Samples returned via: ☐ UPS ☑ FedEx ☐ Courier ☐ _____

Temp: 3.1°C | Bottles Received: 29

Date: 6/8/12 | Time: 0900

Condition: OK (lab use only) TD

CoC Seals Intact ✓ Y ___ N ___ NA

pH Checked: | NCF:

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Jeff Vosburgh
Apex Environmental Inc - Parkers Prairie
60801 Cty Hwy 46
Parkers Prairie, MN 56361

Report Summary

Tuesday June 12, 2012

Report Number: L579284
Samples Received: 06/08/12
Client Project: 012-12-AXN

Description: Queen of Peace Hospital

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 - 01157CA, CT - PH-0197, FL - E87487, GA - 923, IN - C-TN-01, KY - 90010, KYUST - 0016, NC - ENV375/DW21704/BIO041, ND - R-140. NJ - TN002, NJ NELAP - TN002, SC - 84004, TN - 2006, VA - 460132, WV - 233, AZ - 0612, MN - 047-999-395, NY - 11742, WI - 998093910, NV - TN000032011-1, TX - T104704245-11-3, OK - 9915, PA - 68-02979

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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REPORT OF ANALYSIS

Jeff Vosburgh
Apex Environmental Inc - Parkers Pr
60801 Cty Hwy 46
Parkers Prairie, MN 56361

June 12, 2012

ESC Sample # : L579284-01

Date Received : June 08, 2012
Description : Queen of Peace Hospital

Site ID : 18571

Sample ID : SV-1 8FT

Project # : 012-12-AXN

Collected By : Jeffery G. Vosburgh
Collection Date : 06/05/12 13:53

Parameter	Cas#	Mol Wght	RDL1	RDL2	ppbv	ug/m3	Method	Date	Dil.
Volatile Organics									
Acetone	67-64-1	58.1	12.5	30.0	110	260	TO-15	06/12/12	10
Allyl chloride	107-05-1	76.53	0.200	0.630	< 0.20	< 0.63	TO-15	06/08/12	1
Benzene	71-43-2	78.1	0.200	0.640	1.2	3.8	TO-15	06/08/12	1
Benzyl Chloride	100-44-7	127	0.200	1.00	< 0.20	< 1.0	TO-15	06/08/12	1
Bromodichloromethane	75-27-4	164	0.200	1.30	< 0.20	< 1.3	TO-15	06/08/12	1
Bromoform	75-25-2	253	0.600	6.20	< 0.60	< 6.2	TO-15	06/08/12	1
Bromomethane	74-83-9	94.9	0.200	0.780	< 0.20	< 0.78	TO-15	06/08/12	1
1,3-Butadiene	106-99-0	54.1	2.00	4.40	< 2.0	< 4.4	TO-15	06/08/12	1
Carbon disulfide	75-15-0	76.1	0.200	0.620	0.83	2.6	TO-15	06/08/12	1
Carbon tetrachloride	56-23-5	154	0.200	1.30	< 0.20	< 1.3	TO-15	06/08/12	1
Chlorobenzene	108-90-7	113	0.200	0.920	< 0.20	< 0.92	TO-15	06/08/12	1
Chloroethane	75-00-3	64.5	0.200	0.530	< 0.20	< 0.53	TO-15	06/08/12	1
Chloroform	67-66-3	119	0.200	0.970	< 0.20	< 0.97	TO-15	06/08/12	1
Chloromethane	74-87-3	50.5	0.200	0.410	< 0.20	< 0.41	TO-15	06/08/12	1
2-Chlorotoluene	95-49-8	126	0.200	1.00	< 0.20	< 1.0	TO-15	06/08/12	1
Cyclohexane	110-82-7	84.2	0.200	0.690	0.69	2.4	TO-15	06/08/12	1
Dibromochloromethane	124-48-1	208	0.200	1.70	< 0.20	< 1.7	TO-15	06/08/12	1
1,2-Dibromoethane	106-93-4	188	0.200	1.50	< 0.20	< 1.5	TO-15	06/08/12	1
1,2-Dichlorobenzene	95-50-1	147	0.200	1.20	< 0.20	< 1.2	TO-15	06/08/12	1
1,3-Dichlorobenzene	541-73-1	147	0.200	1.20	< 0.20	< 1.2	TO-15	06/08/12	1
1,4-Dichlorobenzene	106-46-7	147	0.200	1.20	< 0.20	< 1.2	TO-15	06/08/12	1
1,2-Dichloroethane	107-06-2	99	0.200	0.810	< 0.20	< 0.81	TO-15	06/08/12	1
1,1-Dichloroethane	75-34-3	98	0.200	0.800	< 0.20	< 0.80	TO-15	06/08/12	1
1,1-Dichloroethene	75-35-4	96.9	0.200	0.790	< 0.20	< 0.79	TO-15	06/08/12	1
cis-1,2-Dichloroethene	156-59-2	96.9	0.200	0.790	< 0.20	< 0.79	TO-15	06/08/12	1
trans-1,2-Dichloroethene	156-60-5	96.9	0.200	0.790	< 0.20	< 0.79	TO-15	06/08/12	1
1,2-Dichloropropane	78-87-5	113	0.200	0.920	< 0.20	< 0.92	TO-15	06/08/12	1
cis-1,3-Dichloropropene	10061-01-5	111	0.200	0.910	< 0.20	< 0.91	TO-15	06/08/12	1
trans-1,3-Dichloropropene	10061-02-6	111	0.200	0.910	< 0.20	< 0.91	TO-15	06/08/12	1
1,4-Dioxane	123-91-1	88.1	0.200	0.720	< 0.20	< 0.72	TO-15	06/08/12	1
Ethanol	64-17-5	46.1	0.630	1.20	6.9	13.	TO-15	06/08/12	1
Ethylbenzene	100-41-4	106	0.200	0.870	1.5	6.5	TO-15	06/08/12	1
4-Ethyltoluene	622-96-8	120	0.200	0.980	0.43	2.1	TO-15	06/08/12	1
Trichlorofluoromethane	75-69-4	137.4	0.200	1.10	0.33	1.9	TO-15	06/08/12	1
Dichlorodifluoromethane	75-71-8	120.92	2.00	9.90	37.	180	TO-15	06/12/12	10
1,1,2-Trichlorotrifluoroethane	76-13-1	187.4	0.200	1.50	< 0.20	< 1.5	TO-15	06/08/12	1
1,2-Dichlorotetrafluoroethane	76-14-2	171	0.200	1.40	< 0.20	< 1.4	TO-15	06/08/12	1
Heptane	142-82-5	100	0.200	0.820	2.3	9.4	TO-15	06/08/12	1
Hexachloro-1,3-butadiene	87-68-3	261	0.630	6.70	< 0.63	< 6.7	TO-15	06/08/12	1
n-Hexane	110-54-3	86.2	0.200	0.710	< 0.20	< 0.71	TO-15	06/08/12	1
Isopropylbenzene	98-82-8	120.2	0.200	0.980	< 0.20	< 0.98	TO-15	06/08/12	1
Methylene Chloride	75-09-2	84.9	0.200	0.690	< 0.20	< 0.69	TO-15	06/08/12	1
Methyl Butyl Ketone	591-78-6	100	1.25	5.10	1.9	7.8	TO-15	06/08/12	1

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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Reported: 06/12/12 13:55 Printed: 06/12/12 14:26

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REPORT OF ANALYSIS

Jeff Vosburgh
Apex Environmental Inc - Parkers Pr
60801 Cty Hwy 46
Parkers Prairie, MN 56361

June 12, 2012

ESC Sample # : L579284-01

Site ID : 18571

Project # : 012-12-AXN

Date Received : June 08, 2012
Description : Queen of Peace Hospital

Sample ID : SV-1 8FT

Collected By : Jeffery G. Vosburgh
Collection Date : 06/05/12 13:53

Parameter	Cas#	Mol Wght	RDL1	RDL2	ppbv	ug/m3	Method	Date	Dil.
2-Butanone (MEK)	78-93-3	72.1	12.5	37.0	17.	50.	TO-15	06/12/12	10
4-Methyl-2-pentanone (MIBK)	108-10-1	100.1	1.25	5.10	1.6	6.6	TO-15	06/08/12	1
Methyl methacrylate	80-62-6	100.12	0.200	0.820	< 0.20	< 0.82	TO-15	06/08/12	1
MTBE	1634-04-4	88.1	0.200	0.720	< 0.20	< 0.72	TO-15	06/08/12	1
Naphthalene	91-20-3	128	0.630	3.30	< 0.63	< 3.3	TO-15	06/08/12	1
2-Propanol	67-63-0	60.1	1.25	3.10	1.6	3.9	TO-15	06/08/12	1
Propene	115-07-1	42.1	0.630	1.10	15.	26.	TO-15	06/08/12	1
Styrene	100-42-5	104	0.200	0.850	1.5	6.4	TO-15	06/08/12	1
1,1,2,2-Tetrachloroethane	79-34-5	168	0.200	1.40	< 0.20	< 1.4	TO-15	06/08/12	1
Tetrachloroethylene	127-18-4	166	0.200	1.40	< 0.20	< 1.4	TO-15	06/08/12	1
Tetrahydrofuran	109-99-9	72.1	0.200	0.590	< 0.20	< 0.59	TO-15	06/08/12	1
Toluene	108-88-3	92.1	0.200	0.750	6.0	23.	TO-15	06/08/12	1
1,2,4-Trichlorobenzene	120-82-1	181	0.630	4.70	< 0.63	< 4.7	TO-15	06/08/12	1
1,1,1-Trichloroethane	71-55-6	133	0.200	1.10	< 0.20	< 1.1	TO-15	06/08/12	1
1,1,2-Trichloroethane	79-00-5	133	0.200	1.10	< 0.20	< 1.1	TO-15	06/08/12	1
Trichloroethylene	79-01-6	131	0.200	1.10	< 0.20	< 1.1	TO-15	06/08/12	1
1,2,4-Trimethylbenzene	95-63-6	120	0.200	0.980	1.4	6.9	TO-15	06/08/12	1
1,3,5-Trimethylbenzene	108-67-8	120	0.200	0.980	0.33	1.6	TO-15	06/08/12	1
2,2,4-Trimethylpentane	540-84-1	114.22	0.200	0.930	0.25	1.2	TO-15	06/08/12	1
Vinyl chloride	75-01-4	62.5	0.200	0.510	< 0.20	< 0.51	TO-15	06/08/12	1
Vinyl Bromide	593-60-2	106.95	0.200	0.870	< 0.20	< 0.87	TO-15	06/08/12	1
Vinyl acetate	108-05-4	86.1	0.200	0.700	< 0.20	< 0.70	TO-15	06/08/12	1
m&p-Xylene	1330-20-7	106	0.400	1.70	4.0	17.	TO-15	06/08/12	1
o-Xylene	95-47-6	106	0.200	0.870	1.4	6.1	TO-15	06/08/12	1
TPH (GC/MS) Low Fraction	8006-61-9	101	50.0	210.	140	580	TO-15	06/08/12	1
1,4-Bromofluorobenzene	460-00-4				96.59	% Rec.	TO-15	06/08/12	1

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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Reported: 06/12/12 13:55 Printed: 06/12/12 14:26

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Parkers Prairie, MN 56361

Quality Assurance Report
Level II

L579284

June 12, 2012

Laboratory Blank

Analyte	Result	Units	% Rec	Limit	Batch	Date Analyzed
1,1,1-Trichloroethane	< .2	ppb			WG596917	06/08/12 13:11
1,1,2,2-Tetrachloroethane	< .2	ppb			WG596917	06/08/12 13:11
1,1,2-Trichloroethane	< .2	ppb			WG596917	06/08/12 13:11
1,1,2-Trichlorotrifluoroethane	< .2	ppb			WG596917	06/08/12 13:11
1,1-Dichloroethane	< .2	ppb			WG596917	06/08/12 13:11
1,1-Dichloroethene	< .2	ppb			WG596917	06/08/12 13:11
1,2,4-Trichlorobenzene	< .63	ppb			WG596917	06/08/12 13:11
1,2,4-Trimethylbenzene	< .2	ppb			WG596917	06/08/12 13:11
1,2-Dibromoethane	< .2	ppb			WG596917	06/08/12 13:11
1,2-Dichlorobenzene	< .2	ppb			WG596917	06/08/12 13:11
1,2-Dichloroethane	< .2	ppb			WG596917	06/08/12 13:11
1,2-Dichloropropane	< .2	ppb			WG596917	06/08/12 13:11
1,2-Dichlorotetrafluoroethane	< .2	ppb			WG596917	06/08/12 13:11
1,3,5-Trimethylbenzene	< .2	ppb			WG596917	06/08/12 13:11
1,3-Butadiene	< 2	ppb			WG596917	06/08/12 13:11
1,3-Dichlorobenzene	< .2	ppb			WG596917	06/08/12 13:11
1,4-Dichlorobenzene	< .2	ppb			WG596917	06/08/12 13:11
1,4-Dioxane	< .2	ppb			WG596917	06/08/12 13:11
2,2,4-Trimethylpentane	< .2	ppb			WG596917	06/08/12 13:11
2-Chlorotoluene	< .2	ppb			WG596917	06/08/12 13:11
2-Propanol	< 1.25	ppb			WG596917	06/08/12 13:11
4-Ethyltoluene	< .2	ppb			WG596917	06/08/12 13:11
4-Methyl-2-pentanone (MIBK)	< 1.25	ppb			WG596917	06/08/12 13:11
Allyl chloride	< .2	ppb			WG596917	06/08/12 13:11
Benzene	< .2	ppb			WG596917	06/08/12 13:11
Benzyl Chloride	< .2	ppb			WG596917	06/08/12 13:11
Bromodichloromethane	< .2	ppb			WG596917	06/08/12 13:11
Bromoform	< .6	ppb			WG596917	06/08/12 13:11
Bromomethane	< .2	ppb			WG596917	06/08/12 13:11
Carbon disulfide	< .2	ppb			WG596917	06/08/12 13:11
Carbon tetrachloride	< .2	ppb			WG596917	06/08/12 13:11
Chlorobenzene	< .2	ppb			WG596917	06/08/12 13:11
Dibromochloromethane	< .2	ppb			WG596917	06/08/12 13:11
Chloroethane	< .2	ppb			WG596917	06/08/12 13:11
Chloroform	< .2	ppb			WG596917	06/08/12 13:11
Chloromethane	< .2	ppb			WG596917	06/08/12 13:11
cis-1,2-Dichloroethene	< .2	ppb			WG596917	06/08/12 13:11
cis-1,3-Dichloropropene	< .2	ppb			WG596917	06/08/12 13:11
Cyclohexane	< .2	ppb			WG596917	06/08/12 13:11
Ethanol	< .63	ppb			WG596917	06/08/12 13:11
Ethylbenzene	< .2	ppb			WG596917	06/08/12 13:11
Heptane	< .2	ppb			WG596917	06/08/12 13:11
Hexachloro-1,3-butadiene	< .63	ppb			WG596917	06/08/12 13:11
Isopropylbenzene	< .2	ppb			WG596917	06/08/12 13:11
m&p-Xylene	< .4	ppb			WG596917	06/08/12 13:11
Methyl Butyl Ketone	< 1.25	ppb			WG596917	06/08/12 13:11
Methyl methacrylate	< .2	ppb			WG596917	06/08/12 13:11
MTBE	< .2	ppb			WG596917	06/08/12 13:11
Methylene Chloride	< .2	ppb			WG596917	06/08/12 13:11
n-Hexane	< .2	ppb			WG596917	06/08/12 13:11
Naphthalene	< .63	ppb			WG596917	06/08/12 13:11
o-Xylene	< .2	ppb			WG596917	06/08/12 13:11
Propene	< .4	ppb			WG596917	06/08/12 13:11
Styrene	< .2	ppb			WG596917	06/08/12 13:11
Tetrachloroethylene	< .2	ppb			WG596917	06/08/12 13:11
Tetrahydrofuran	< .2	ppb			WG596917	06/08/12 13:11
Toluene	< .2	ppb			WG596917	06/08/12 13:11
TPH (GC/MS) Low Fraction	< 50	ppb			WG596917	06/08/12 13:11
trans-1,2-Dichloroethene	< .2	ppb			WG596917	06/08/12 13:11

* Performance of this Analyte is outside of established criteria.
For additional information, please see Attachment A 'List of Analytes with QC Qualifiers.'

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Parkers Prairie, MN 56361

Quality Assurance Report
Level II

L579284

June 12, 2012

Laboratory Blank

Analyte	Result	Units	% Rec	Limit	Batch	Date Analyzed
trans-1,3-Dichloropropene	< .2	ppb			WG596917	06/08/12 13:11
Trichloroethylene	< .2	ppb			WG596917	06/08/12 13:11
Trichlorofluoromethane	< .2	ppb			WG596917	06/08/12 13:11
Vinyl acetate	< .2	ppb			WG596917	06/08/12 13:11
Vinyl Bromide	< .2	ppb			WG596917	06/08/12 13:11
Vinyl chloride	< .2	ppb			WG596917	06/08/12 13:11
1,4-Bromofluorobenzene		% Rec.	89.23	60-140	WG596917	06/08/12 13:11
2-Butanone (MEK)	< 1.25	ppb			WG597265	06/11/12 16:52
Acetone	< 1.25	ppb			WG597265	06/11/12 16:52
Dichlorodifluoromethane	< .2	ppb			WG597265	06/11/12 16:52
1,4-Bromofluorobenzene		% Rec.	84.29	60-140	WG597265	06/11/12 16:52

Laboratory Control Sample

Analyte	Units	Known Val	Result	% Rec	Limit	Batch
1,1,1-Trichloroethane	ppb	3.75	3.73	99.6	70-130	WG596917
1,1,2,2-Tetrachloroethane	ppb	3.75	4.09	109.	70-130	WG596917
1,1,2-Trichloroethane	ppb	3.75	3.88	103.	70-130	WG596917
1,1,2-Trichlorotrifluoroethane	ppb	3.75	3.73	99.4	70-130	WG596917
1,1-Dichloroethane	ppb	3.75	3.48	92.8	70-130	WG596917
1,1-Dichloroethene	ppb	3.75	3.48	92.7	70-130	WG596917
1,2,4-Trichlorobenzene	ppb	3.75	4.24	113.	54-153	WG596917
1,2,4-Trimethylbenzene	ppb	3.75	4.32	115.	70-130	WG596917
1,2-Dibromoethane	ppb	3.75	3.92	105.	70-130	WG596917
1,2-Dichlorobenzene	ppb	3.75	4.32	115.	70-130	WG596917
1,2-Dichloroethane	ppb	3.75	3.58	95.4	70-130	WG596917
1,2-Dichloropropane	ppb	3.75	3.58	95.4	70-130	WG596917
1,2-Dichlorotetrafluoroethane	ppb	3.75	3.67	97.9	70-130	WG596917
1,3,5-Trimethylbenzene	ppb	3.75	4.27	114.	70-130	WG596917
1,3-Butadiene	ppb	3.75	3.76	100.	70-130	WG596917
1,3-Dichlorobenzene	ppb	3.75	4.27	114.	70-130	WG596917
1,4-Dichlorobenzene	ppb	3.75	4.34	116.	70-130	WG596917
2,2,4-Trimethylpentane	ppb	3.75	3.71	98.9	70-130	WG596917
2-Chlorotoluene	ppb	3.75	4.25	113.	70-130	WG596917
2-Propanol	ppb	3.75	3.33	88.8	70-130	WG596917
4-Ethyltoluene	ppb	3.75	4.16	111.	70-130	WG596917
4-Methyl-2-pentanone (MIBK)	ppb	3.75	3.41	91.0	36-158	WG596917
Allyl chloride	ppb	3.75	3.45	92.1	70-130	WG596917
Benzene	ppb	3.75	3.69	98.3	70-130	WG596917
Benzyl Chloride	ppb	3.75	4.29	114.	70-130	WG596917
Bromodichloromethane	ppb	3.75	3.71	98.9	70-130	WG596917
Bromoform	ppb	3.75	4.39	117.	70-130	WG596917
Bromomethane	ppb	3.75	3.97	106.	70-130	WG596917
Carbon disulfide	ppb	3.75	3.61	96.2	70-130	WG596917
Carbon tetrachloride	ppb	3.75	3.66	97.5	70-130	WG596917
Chlorobenzene	ppb	3.75	3.92	105.	70-130	WG596917
Dibromochloromethane	ppb	3.75	3.98	106.	70-130	WG596917
Chloroethane	ppb	3.75	4.02	107.	70-130	WG596917
Chloroform	ppb	3.75	3.62	96.6	70-130	WG596917
Chloromethane	ppb	3.75	3.47	92.4	70-130	WG596917
cis-1,2-Dichloroethene	ppb	3.75	3.55	94.7	70-130	WG596917
cis-1,3-Dichloropropene	ppb	3.75	3.66	97.6	70-130	WG596917
Cyclohexane	ppb	3.75	3.24	86.3	70-130	WG596917
Ethanol	ppb	3.75	3.71	99.0	70-130	WG596917
Ethylbenzene	ppb	3.75	3.82	102.	70-130	WG596917
Heptane	ppb	3.75	3.49	93.1	70-130	WG596917
Hexachloro-1,3-butadiene	ppb	3.75	4.34	116.	50-149	WG596917

* Performance of this Analyte is outside of established criteria.
For additional information, please see Attachment A 'List of Analytes with QC Qualifiers.'

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Quality Assurance Report
Level II

L579284

June 12, 2012

Analyte	Units	Laboratory Control Sample Known Val	Result	% Rec	Limit	Batch
Isopropylbenzene	ppb	3.75	4.12	110.	70-130	WG596917
m&p-Xylene	ppb	7.5	7.74	103.	70-130	WG596917
Methyl Butyl Ketone	ppb	3.75	3.40	90.7	38-153	WG596917
Methyl methacrylate	ppb	3.75	3.66	97.6	70-130	WG596917
MTBE	ppb	3.75	3.80	101.	70-130	WG596917
Methylene Chloride	ppb	3.75	3.17	84.5	70-130	WG596917
n-Hexane	ppb	3.75	3.50	93.5	70-130	WG596917
Naphthalene	ppb	3.75	3.71	98.8	54-154	WG596917
o-Xylene	ppb	3.75	3.94	105.	70-130	WG596917
Propene	ppb	3.75	3.25	86.7	70-130	WG596917
Styrene	ppb	3.75	4.13	110.	70-130	WG596917
Tetrachloroethylene	ppb	3.75	4.00	107.	70-130	WG596917
Tetrahydrofuran	ppb	3.75	3.67	97.9	70-130	WG596917
Toluene	ppb	3.75	3.85	103.	70-130	WG596917
TPH (GC/MS) Low Fraction	ppb	150	146.	97.4	70-130	WG596917
trans-1,2-Dichloroethene	ppb	3.75	3.47	92.6	70-130	WG596917
trans-1,3-Dichloropropene	ppb	3.75	3.85	103.	70-130	WG596917
Trichloroethylene	ppb	3.75	3.72	99.3	70-130	WG596917
Trichlorofluoromethane	ppb	3.75	3.98	106.	70-130	WG596917
Vinyl acetate	ppb	3.75	3.79	101.	70-130	WG596917
Vinyl Bromide	ppb	3.75	3.95	105.	70-130	WG596917
Vinyl chloride	ppb	3.75	3.79	101.	70-130	WG596917
1,4-Bromofluorobenzene				103.5	60-140	WG596917
2-Butanone (MEK)	ppb	3.75	3.90	104.	70-130	WG597265
Acetone	ppb	3.75	3.45	91.9	70-130	WG597265
Dichlorodifluoromethane	ppb	3.75	3.71	99.0	70-130	WG597265
1,4-Bromofluorobenzene				98.93	60-140	WG597265

Analyte	Units	Laboratory Control Sample Duplicate Result	Ref	%Rec	Limit	RPD	Limit	Batch
1,1,1-Trichloroethane	ppb	3.78	3.73	101.	70-130	1.23	25	WG596917
1,1,2,2-Tetrachloroethane	ppb	4.19	4.09	112.	70-130	2.47	25	WG596917
1,1,2-Trichloroethane	ppb	3.99	3.88	106.	70-130	2.81	25	WG596917
1,1,2-Trichlorotrifluoroethane	ppb	3.81	3.73	102.	70-130	2.19	25	WG596917
1,1-Dichloroethane	ppb	3.59	3.48	96.0	70-130	3.18	25	WG596917
1,1-Dichloroethene	ppb	3.53	3.48	94.0	70-130	1.53	25	WG596917
1,2,4-Trichlorobenzene	ppb	4.32	4.24	115.	54-153	1.89	25	WG596917
1,2,4-Trimethylbenzene	ppb	4.41	4.32	118.	70-130	1.89	25	WG596917
1,2-Dibromoethane	ppb	4.05	3.92	108.	70-130	3.21	25	WG596917
1,2-Dichlorobenzene	ppb	4.43	4.32	118.	70-130	2.36	25	WG596917
1,2-Dichloroethane	ppb	3.70	3.58	98.0	70-130	3.22	25	WG596917
1,2-Dichloropropane	ppb	3.75	3.58	100.	70-130	4.86	25	WG596917
1,2-Dichlorotetrafluoroethane	ppb	3.76	3.67	100.	70-130	2.45	25	WG596917
1,3,5-Trimethylbenzene	ppb	4.42	4.27	118.	70-130	3.31	25	WG596917
1,3-Butadiene	ppb	3.88	3.76	103.	70-130	2.95	25	WG596917
1,3-Dichlorobenzene	ppb	4.36	4.27	116.	70-130	2.05	25	WG596917
1,4-Dichlorobenzene	ppb	4.44	4.34	118.	70-130	2.25	25	WG596917
2,2,4-Trimethylpentane	ppb	3.68	3.71	98.0	70-130	0.860	25	WG596917
2-Chlorotoluene	ppb	4.37	4.25	116.	70-130	2.60	25	WG596917
2-Propanol	ppb	3.47	3.33	92.0	70-130	4.14	25	WG596917
4-Ethyltoluene	ppb	4.30	4.16	114.	70-130	3.31	25	WG596917
4-Methyl-2-pentanone (MIBK)	ppb	3.61	3.41	96.0	36-158	5.59	25	WG596917
Allyl chloride	ppb	3.46	3.45	92.0	70-130	0.130	25	WG596917
Benzene	ppb	3.80	3.69	101.	70-130	2.94	25	WG596917
Benzyl Chloride	ppb	4.36	4.29	116.	70-130	1.59	25	WG596917
Bromodichloromethane	ppb	3.86	3.71	103.	70-130	4.05	25	WG596917

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Quality Assurance Report
Level II

L579284

June 12, 2012

		Laboratory Control Sample				Duplicate		
Analyte	Units	Result	Ref	%Rec	Limit	RPD	Limit	Batch
Bromoform	ppb	4.54	4.39	121.	70-130	3.29	25	WG596917
Bromomethane	ppb	4.07	3.97	108.	70-130	2.42	25	WG596917
Carbon disulfide	ppb	3.63	3.61	97.0	70-130	0.670	25	WG596917
Carbon tetrachloride	ppb	3.73	3.66	99.0	70-130	1.89	25	WG596917
Chlorobenzene	ppb	4.04	3.92	108.	70-130	2.98	25	WG596917
Dibromochloromethane	ppb	4.12	3.98	110.	70-130	3.53	25	WG596917
Chloroethane	ppb	4.18	4.02	111.	70-130	3.99	25	WG596917
Chloroform	ppb	3.71	3.62	99.0	70-130	2.40	25	WG596917
Chloromethane	ppb	3.53	3.47	94.0	70-130	1.86	25	WG596917
cis-1,2-Dichloroethene	ppb	3.61	3.55	96.0	70-130	1.71	25	WG596917
cis-1,3-Dichloropropene	ppb	3.86	3.66	103.	70-130	5.24	25	WG596917
Cyclohexane	ppb	3.37	3.24	90.0	70-130	4.01	25	WG596917
Ethanol	ppb	3.35	3.71	89.0	70-130	10.3	25	WG596917
Ethylbenzene	ppb	3.91	3.82	104.	70-130	2.35	25	WG596917
Heptane	ppb	3.66	3.49	98.0	70-130	4.71	25	WG596917
Hexachloro-1,3-butadiene	ppb	4.44	4.34	118.	50-149	2.31	25	WG596917
Isopropylbenzene	ppb	4.25	4.12	113.	70-130	3.04	25	WG596917
m&p-Xylene	ppb	7.91	7.74	105.	70-130	2.08	25	WG596917
Methyl Butyl Ketone	ppb	3.60	3.40	96.0	38-153	5.60	25	WG596917
Methyl methacrylate	ppb	3.66	3.66	97.0	70-130	0.100	25	WG596917
MTBE	ppb	3.93	3.80	105.	70-130	3.37	25	WG596917
Methylene Chloride	ppb	3.29	3.17	88.0	70-130	3.68	25	WG596917
n-Hexane	ppb	3.52	3.50	94.0	70-130	0.300	25	WG596917
Naphthalene	ppb	3.75	3.71	100.	54-154	1.26	26	WG596917
o-Xylene	ppb	4.01	3.94	107.	70-130	1.75	25	WG596917
Propene	ppb	3.39	3.25	90.0	70-130	4.28	25	WG596917
Styrene	ppb	4.17	4.13	111.	70-130	1.04	25	WG596917
Tetrachloroethylene	ppb	4.10	4.00	109.	70-130	2.40	25	WG596917
Tetrahydrofuran	ppb	3.65	3.67	97.0	70-130	0.480	25	WG596917
Toluene	ppb	3.99	3.85	106.	70-130	3.46	25	WG596917
TPH (GC/MS) Low Fraction	ppb	140.	146.	93.0	70-130	4.12	25	WG596917
trans-1,2-Dichloroethene	ppb	3.55	3.47	95.0	70-130	2.16	25	WG596917
trans-1,3-Dichloropropene	ppb	4.02	3.85	107.	70-130	4.24	25	WG596917
Trichloroethylene	ppb	3.83	3.72	102.	70-130	2.73	25	WG596917
Trichlorofluoromethane	ppb	4.05	3.98	108.	70-130	1.75	25	WG596917
Vinyl acetate	ppb	3.80	3.79	101.	70-130	0.420	25	WG596917
Vinyl Bromide	ppb	4.10	3.95	109.	70-130	3.69	25	WG596917
Vinyl chloride	ppb	3.83	3.79	102.	70-130	0.990	25	WG596917
1,4-Bromofluorobenzene				102.8	60-140			WG596917
2-Butanone (MEK)	ppb	3.75	3.90	100.	70-130	3.96	25	WG597265
Acetone	ppb	3.34	3.45	89.0	70-130	3.24	25	WG597265
Dichlorodifluoromethane	ppb	3.56	3.71	95.0	70-130	4.17	25	WG597265
1,4-Bromofluorobenzene				97.05	60-140			WG597265

Batch number /Run number / Sample number cross reference

WG596917: R2204957: L579284-01
WG597265: R2206536: L579284-01

* * Calculations are performed prior to rounding of reported values.
* Performance of this Analyte is outside of established criteria.
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Quality Assurance Report
Level II

L579284

June 12, 2012

The data package includes a summary of the analytic results of the quality control samples required by the SW-846 or CWA methods. The quality control samples include a method blank, a laboratory control sample, and the matrix spike/matrix spike duplicate analysis. If a target parameter is outside the method limits, every sample that is effected is flagged with the appropriate qualifier in Appendix B of the analytic report.

Method Blank - an aliquot of reagent water carried through the entire analytic process. The method blank results indicate if any possible contamination exposure during the sample handling, digestion or extraction process, and analysis. Concentrations of target analytes above the reporting limit in the method blank are qualified with the "B" qualifier.

Laboratory Control Sample - is a sample of known concentration that is carried through the digestion/extraction and analysis process. The percent recovery, expressed as a percentage of the theoretical concentration, has statistical control limits indicating that the analytic process is "in control". If a target analyte is outside the control limits for the laboratory control sample or any other control sample, the parameter is flagged with a "J4" qualifier for all effected samples.

Matrix Spike and Matrix Spike Duplicate - is two aliquots of an environmental sample that is spiked with known concentrations of target analytes. The percent recovery of the target analytes also has statistical control limits. If any recoveries that are outside the method control limits, the sample that was selected for matrix spike/matrix spike duplicate analysis is flagged with either a "J5" or a "J6". The relative percent difference (%RPD) between the matrix spike and the matrix spike duplicate recoveries is all calculated. If the RPD is above the method limit, the effected samples are flagged with a "J3" qualifier.

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Billing Information:

Jeff Vosburgh
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Analysis/Container/Preservative

Chain of Custody
Page ___ of ___

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Report to: SAME AS ABOVE

Email to:

Project Description: QUEEN of PEACE HOSPITAL

City/State Collected: NEW PRAGUE, MN

Phone: (218) 338-5947
FAX: (218) 338-5049

Client Project #: 012-12-AXN

ESC Key:

Collected by: (print) JEFFREY G VOSBURGH

Site/Facility ID#: 18571

P.O.#:

Collected by (signature):

Immediately Packed on Ice (N) ___ Y

Rush? (Lab MUST Be Notified)
____ Same Day.....200%
____ Next Day.....100%
____ Two Day.....50%
____ Three Day.....25%

Date Results Needed:

Email? __No__Yes
FAX? __No__Yes

CoCode APEXPPMN (lab use only)

Template/Prelogin

Shipped Via:

Sample ID	Comp/Grab	Matrix*	Depth	Date	Time	No. of Cntrs	TO-15 (SUMA)	Remarks/Contaminant	Sample # (lab only)
SV-1 8'	GRAB	AIR	—	6/5/12	1:53	1	X		L579284-01

*Matrix: **SS** - Soil/Solid **GW** - Groundwater **WW** - WasteWater **DW** - Drinking Water **OT** - Other_____

pH _____ Temp _____

Remarks: 5274 8790 9325

Flow _____ Other _____

Relinquished by: (Signature)	Date:	Time:	Received by: (Signature)	Samples returned via: ☐ UPS ☐ FedEx ☐ Courier ☐ _____	Condition: (lab use only)
	6/5/12	1:30			OK
Relinquished by: (Signature)	Date:	Time:	Received by: (Signature)	Temp: 4.0 / Bottles Received: 1	CoC Seals Intact ✓ Y ___ N ___ NA
Relinquished by: (Signature)	Date:	Time:	Received for lab by: (Signature)	Date: 06-08-12 / Time: 0800	pH Checked: / NCF:

Appendix G
Methodologies and Procedures

STANDARD OPERATING PROCEDURE
FOR
FIELD SCREENING SOIL SAMPLES

The Field screening techniques for soils are as follows: (1) Visual Examination; (2) Headspace Organic Vapor Screening; and, (3) we will also observe for **incidental** odor. The results of these three screening procedures mav be used to screen soil samples for possible contamination.

Visual Examination: A visual examination of the soil sample will include noting any discoloration of the soil or visible oiliness or tar.

Odor: The sampler will note odor **onlv** if noticed incidentally while handling the soil sample. Samplers will **not** unduly expose themselves to sample odors. Odor will be described as light, moderate, or strong and appropriate description of the type and odor, if evident.

Headspace Organic Vapor Screening: The headspace organic vapor screening method will be used in the field to screen soils suspected to contain volatile organic compounds. The screen method is intended to be used in conjunction with other "real time" observations.

The following equipment is required to conduct headspace organic vapor screening: a photoionization detector (PID); clean new pint-size baggies with a ziplock top; a log book or record sheet, and the appropriate personal protective equipment necessary for collection and handling of soil samples as described in the Project Health and Safety Plan (PHASP). The meter shall be calibrated daily or more frequently if suspect data is obtained (see SOP for PID operation.

The following will be used for conducting headspace organic vapor screening:

1. Soil samples collected from hand auger, surface soil excavations or backhoe bucket subsamples will be collected immediately after exposing fresh soil. Soil samples collected from split spoons or acetate liners will be collected immediately after opening the sampling device.

2. Half fill a clean baggie with the sample to be analyzed using a stainless steel spoon or by hand(s) wearing a clean new disposable vinyl or latex glove. Quickly seal the baggie.

3. Agitate the baggie for approximately 15 seconds, breaking up the soil as much as possible.

4. Allow headspace development for approximately 5-10 minutes. The sample should be kept in a shaded area out of direct sunlight. Ambient temperature during headspace development should be recorded.

When ambient temperatures are below 50° F, headspace development should be conducted inside a heated vehicle or building.

5. Agitate the baggie for an additional approximate 15 seconds, further breaking up the soil.

6. Quickly puncture the baggie seal with the sampling probe to a point about one-half of the headspace depth. Exercise care to avoid uptake of water droplets or soil particles.

7. Record the highest meter response as the headspace concentration. The maximum response will likely occur between zero to five seconds, if meter readings are erratic note this in the logbook, denoting which headspace sample the note applies to.

STANDARD OPERATING PROCEDURE
FOR
COLLECTION OF SOIL SAMPLES
FOR LABORATORY ANALYSES

All sampling tools including picks, shovels, stainless steel spoons and scoops will be cleaned before use and between samples in the following manner: (1) Clean with tap water and Alconox, using a brush if necessary to remove particulate matter and films. (2) Rinse with tap water; and (3) rinse with deionized water. To prevent sample cross-contamination, the sampler will discard the outer pair of sample gloves and put on a clean new pair of either latex or vinyl disposable gloves between each sample event.

Note: Soil sample collection should follow field screening of the soil sample interval. The sampler should carefully follow guidance given in the Health and Safety Plan regarding exposure to contaminants that may exist in soil samples.

Collecting Volitile Organic Samples (Cut Syringe or Hand Method)

The following procedure applies to the collection of soil for volatile analysis from the following samplers: a backhoe bucket, Geoprobe Macrocore or large bore sampler or split spoon.

1. Collect a large sample from the sampler directly from the fresh soil surface using the criteria identified below, **prior** to homogenizing for other analyses.
   a) If sample recovery is 80% or greater in the sampler and the material is uniform collect the sample from the center of the recovered material in the sampler.
   b) If sample recovery is less than 80% collect the sample approximately 2 inches from the bottom of the recovered material.
   c) If there is an area in the recovered material in the sampler which has visible staining or observed incidental odors, collect the sample from this area.
   d) If there is an observed strata change within the soil recovered in the sampler collect the sample from the base of the upper strata.
   c) If groundwater is encountered in the sampler collect the soil sample from the material just above the saturated material.
2. Using either a cut syringe or a hand wearing a clean new disposable glove, weigh 25 grams of a representative soil sample on a field balance. If the sample is collected by hand skip to step number 4. If the sample is collected with a cut syringe continue with step 2. Once a weight/volume estimate has been established, discard the soil and collect untouhed soil, from the same sample source. Proceed to step number 3.
3. Using a cut syringe, place the predetermined volume (as determined in step number 2) of soil in a laboratory-provided sample container.

4. Add a pre-determined volume, as provided by the laboratory, of methanol to the sample jar.
5. Wipe the jar lip and screw threads to remove soi and provide a good sealing surface, and immediately screw on the lid.
6. Complete the information on the sample container label and place the sample container in a water tight bag.
7. Cool the sample to approximately 4°C immediately after collection, by placing the sample in a cooler with ice.

Soil Sampling

To collect continuous soil samples, a core sample barrel 54 inches in length, will be attached to the leading end of the probe rods. The sampler will be advanced at four foot vertical intervals to collect a continuous soil sample 1.5 inches in diameter. The continuous barrel sampler and probe rods will be advanced allowing soil to enter a plastic inner sleeve as the sampler is driven. The barrel sampler is then retracted, the plastic sleeve removed and submitted to APEX Environmental's on-site geologist for soils classification, headspace analysis and sample collection for on-site chemical analysis.

Soil Classification

As samples are obtained in the field, visual and manual classification by their crew chief in accordance with ASTM:D2487-84 and ASTM:D2488 will be conducted. Representative portions of these samples will then be returned to the laboratory for further examination and verification of the field classification. Logs of the borings indicating the depth and identification of the various strata, water level information and pertinent information regarding the method of maintaining and advancing the drill holes will be attached.

Soil Sample Collection

The soil samples for field screening will be collected in laboratory cleaned, glass soil jars with teflon-lined lids. The soil samples obtained for laboratory analysis will be collected in laboratory cleaned, four ounce glass jars with teflon-lined lids.

Soil Sample Screening

The soil samples will be screened for the presence of organic vapors as indications of hydrocarbon contamination using an OVM Model 580b Photoionization Detector (PID) equipped with a 10.6 eV lamp. This instrument provides readings which are parts per million equivalents of the calibration gas. The lower detectable limit is approximately 1 ppm. The soil samples will be collected and screened according to the Polyethylene Bag Method recommended by the MPCA.

Groundwater Sample Collection

To collect groundwater samples, the lead probe rod will have either a retractable drive point at the tip or a slotted (0.020" vertical slots) probe rod similar to a well screen. The retractable drive point or slotted screened section is driven below the water table, if a retractable drive point is used the rods are retracted approximately two inches to disengage the drive point exposing the end of the probe rods to the water bearing soils. Clean polyethylene tubing is inserted into the probe rods and connected to a hand actuated vacuum pump to collect a groundwater sample. New, clean polyethylene tubing is used at each sample location. Groundwater samples collected in the polyethylene tubing will be emptied into clean, VOA glass vials, having Teflon@-lined caps, labeled, and will be placed in a cooler on ice.

PRELIMINARY INSPECTION AND MEASUREMENTS

Water Level Measurements

Static water levels are measured in each well immediately prior to pumping or bailing. During initial static water level measurements, a minimum of two water level measurements are made at each well. If there is poor agreement between the first and second static water level measurements (i.e., a difference of more than 0.01 feet), data are reevaluated for measurement errors, unsuspected pumping that may be causing transient changes in gradient, etc. If the discrepancy cannot be rectified, a third static water level measurement is made at each questionable sampling point to assess the true water level, verify non-steady state conditions, etc.

Water level probes are decontaminated between water level measurements in different wells. Water levels are measured with an electric water level indicator and recorded to the nearest 0.01 foot. The water level probe is lowered into the well until the indicator lamp lights and/or a tone sounds indicating contact with the water surface.

Depth to water is measured from a point marked on the top of the innermost well casing (riser). Where a measuring point has not been marked at the top of the casing, the measuring point is assumed to be at the north side of the inner casing. When reporting absolute water level elevation, this measurement is converted to water level elevation (MSL) from the surveyed elevation of the top of well casing.

FIELD WATER QUALITY MEASUREMENTS

Specific conductance, pH, temperature, dissolved oxygen (DO) is measured in the field immediately before sample collection. Calibration information and all measurements are recorded on the GSIF in the field.

General care, maintenance, calibration procedures, and operation of each measurement device also follows manufacturers specifications as detailed in the instruction/owner's manual for each device. Where there are differences in procedures, as defined in this document compared to manuals accompanying measurement devices, the procedures in this document will take precedence.

WELL PURGING AND STABILIZATION

Before sampling a well for dissolved phase constituents, an appropriate volume of water is evacuated to ensure that collected samples contain fresh formation water. While the well is being purged, water quality parameters described in "Field Water Quality Measurements", and the quantity of water evacuated is recorded on the GSIF.

Sampling personnel do not touch the inside of sampling containers, inside of bottle caps or rims of sample containers. If contact occurs, sample containers are replaced.

At the well, bottles are labeled and the field personnel fill out chain-of-custody forms according to "Documentation of Sampling Event". To prevent sample bottle misidentification, no sampling-point specific information such as "well name" is completed in advance. Chain-of-custody information is completed before leaving the sampling point. Laboratory prepared bottles assures quality control.

The order of filling water sample bottles for laboratory analysis is as follows:

1. Miscellaneous Parameters (GRO,DRO)

2. VOC

The sample water discharge tube is held as close as possible, but not contacting the sample container. Sampling personnel shield the sampling container from wind and airborne dust while filling. When strong winds, heavy rain, or dusty conditions are present, additional measures are implemented to prevent background interference.

Volatile Organic Compounds

New factory clean 100 ml glass vials with Teflon septum covers are filled while minimizing turbulence, entrapment of air and overfilling. The vials are not rinsed in the field but are filled completely leaving a positive meniscus at the top of the vial.

Hydrochloric acid specifically prepared and analyzed by the manufacturer (IChem Scientific) is used to preserve volatile organics samples. The acid is added to vials by the manufacturer in advance of sampling. Extra caution is exercised to minimize overfilling.

FIELD QUALITY CONTROL SAMPLES

Sample blanks are collected for detection of background or method contamination. Replicate samples are collected to evaluate variability in analytical methods. QA/QC samples are collected at sampling points suspected of having higher contamination concentrations to provide Trip Blanks, pre-filled 100 ml vials will accompany each cooler containing VOC samples. A field equipment/methods blank sample is collected sometime during the first day of each sampling event (round of sampling) and at every tenth sampling point.

Field Duplicate Samples

Field duplicate samples of actual ground water are collected for all sample parameter types. Duplicate samples are collected by sequentially filling containers, as soon as practical after the primary sample, with a water stream that is as steady and continuous as practical. The

WATER QUALITY MONITORING PROTOCOL

INTRODUCTION

This document defines standard procedures used for water quality measurements and for collecting and handling samples obtained from all required monitoring sites. The laboratory project manager or the field services coordinator, if required by unforeseen circumstances, may approve deviations from the written procedures as described below. When prior approvals are not possible, records of deviations from the established procedures conducted in the field require documentation on the groundwater sampling information form (GSIF) and evaluation to determine if resampling is necessary.

GROUNDWATER SAMPLING PROCEDURES

Properly identify the monitoring point before starting field procedures.

Sample in the order specified in the site-specific protocol. Protocol dictates the sampling order to eliminate the risk of cross contamination. Conceptually the sampling order progresses from the least contaminated to the most contaminated monitoring point.

All sampling vehicles are parked at least 25 feet from the monitoring point with engines off before field procedures commence. No sampling is conducted in close proximity of operating heavy equipment or in any conditions unfavorable to representative sample collection.

Wells are inspected for obvious defects or damage and the observations are noted on the appropriate field form.

Static water depth is measured to the nearest +/- 0.01 foot from the top of the inner well casing using an intrinsically safe, electronic water level indicator. The water level indicator probe is lowered slowly down the well casing until the red indicator lights and/or the audio alarm sounds. Raise the probe up until the indicators go off and then lower the probe again just until the indicators give a full detection signal. The depth is read from the measuring tape lead at its intersection with the top of the inner well casing. Record the result on the appropriate field sheet.

Following static water level measurement, continue to lower the water level probe to the bottom of well and record the total depth of well on the appropriate field sheet. Clean the water level indicator probe and measuring tape prior to moving to the next monitoring point.

Calculate the water volume in the well. Subtract the static water level from the total depth of the well and record the volume on the field form. The volume is determined by multiplying the height of the water column by the following factors:

- 2" casing: height (ft) x 0.16 gallons/foot
- 3" casing: height (ft) x 0.37 gallons/foot

Purging of wells is performed using either the stabilization test method or the recovery test method depending on the yield of the well. These tests determine the amount of pumping or bailing required for collection of a representative sample. The same pump used for purging is used for sampling. Pumping rate is continuous and sampling immediately follows purging. The pump is removed immediately after sample collection and the water level measured. Any non-continuous purging is noted on the field form. The purge rate is determined from the draw down characteristics of each well. Sampling rates for all wells should not exceed 100 ml/min. Stabilization times and results are recorded on a stabilization test field form (see Appendix I).

The stabilization test method is performed on wells that have a high yield or that recover very quickly. Either a pump or bailer evacuates the water from the well. If the well recovers rapidly the stabilization test is performed by measuring pH, temperature, and conductivity each time one well volume has been removed. A minimum of three well volumes must be removed before sample collection.

Disposable bailers with new retrieval line are used to stabilize and sample some groundwater wells. All bailer line is kept away from potential contamination sources outside the well including well casings, ground surface and sampling personnel. Powderless latex or nitrile sampling gloves are worn while purging and sampling with bailers. The gloves are discarded after each well is sampled. The bailer must enter the water gently to avoid turbulence or volatilization from the sample. The first three bailer volumes are discarded as rinse water. Teflon bailers are also used to sample some wells after stabilization with a submersible pump.

Methodologies including the sample collection order used for groundwater monitoring are designed to minimize the potential for cross contamination and provide the highest quality analytical results possible.

Samples for organic analyses are collected first. Three volatile organic compound (VOC) sample vials are filled at each sampling, point with water as soon as it reaches the surface. The sample collection is conducted as carefully as possible to avoid any agitation of the water, which could cause volatilization from the sample. The vial must have a positive meniscus before tightening the lid to assure the vial is headspace free (no air bubbles). After the lid is tightened the vial is inverted and tapped to check for entrapped air bubbles. The three individual sample vials are placed in a *Nasco WHIRL-PAK®,* (or equivalent) plastic bag. The VOC samples are transported to the laboratory in a dedicated cooler at 4° C.

After all sample collection is complete the vented inner well casing (riser pipe) cap is replaced and the outer protective well casing cover is re-locked.

Any discrepancies or deviations from standard procedures are documented on the appropriate field form for the monitoring point.

The Geopump is used for purging and sampling all monitoring wells. Well evacuation is continuous during purging and sampling. The same pump is used for both purging and sampling at each individual well.

Field water quality parameters are measured for stabilization after each well volume is purged. One well volume is defined as the water column volume equal to the depth of the static water column inside the well times the volume of the well casing per foot. The typical two inch monitoring well has a volume of 0.1632 gal/ft. The following target criteria for three consecutive measurements (one water-column volume apart) is used to demonstrate stabilization:

- Dissolved Oxvgen ± 0.5 mg/L
- Temperature ± 0.1 degrees Celsius
- Specific conductance (temperature corrected EC) ± 5%

Samples for laboratory analysis are collected immediately following purging of a minimum of three water column volumes and stabilization of field water quality parameters. If field parameters do not stabilize, after approximately five water column volumes, the field staff will check operator procedures, equipment functioning and well construction information for potential problems. In particular, field staff will verify that water withdrawal is from the appropriate depth to evacuate the well.

MONITORING WELL SAMPLE COLLECTION

A Geopump pump system is used for purging and sample collection. Groundwater is flushed through the in-line filter for at least two minutes before filling sample bottles.

Filling Sample Containers

Individual sample bottles remain closed until they are ready for sample collection. The area surrounding the wellhead is kept as clean as practical to minimize the potential for contamination of samples.

To minimize airborne contamination, containers are filled upwind from engine exhaust sources including vehicles or generators that are left running during sample collection. If conditions are dusty, it is necessary to shield the sample collection area from windborne contamination.

Clean pairs of disposable, powderless latex gloves are used from the onset of sampling activities at each new sampling point. Sampling personnel keep their hands as clean as practical and replace gloves as necessary while performing sampling activities.

Field Duplicate Samples

Field duplicate samples of actual ground water are collected for all sample parameter types. Duplicate samples are collected by sequentially filling containers, as soon as practical after the primary sample, with a water stream that is as steady and continuous as practical. The sequence number (first, second, etc.) and time filled are listed in the field notebook and on the Chain-of-Custody Record in the same manner as primary samples. One field duplicate sample is collected for every site.

DOCUMENTATION OF SAMPLING EVENT

This sampling protocol includes the use of GSIF. The forms are designed for documentation of field activities and collection of field data. They also provide a means to verify whether protocol was followed during essential steps in the groundwater sampling event. Protocol verification requires that all entries on the forms are completed before leaving the sampling point.

Sample Identification

The CoC Records are completed as described previously in the Documentation of Sampling Event section. All primary and QA/QC samples collected at a given sampling point over a discrete interval of time are assigned the same sample event ID #. This number is used to link that set of containers together and associate them with all of the information contained on the Reort of Analysis. All QA/QC samples are collected in the same type of container as the corresponding primary samples. All QA/QC samples are assigned identification aliases on the sample bottle label and on the chain-of-custody form.

Field Blank Samples

Methods that are used for preparing field blank samples are described below.

VOC Trip Blanks are filled and sealed by Apex with laboratory controlled HPLC grade organic-free water. The 100 ml blank sample vials are transported with the actual sample vials in the same cooler so that the blanks are exposed to the same conditions. The blanks remain sealed until they are analyzed with the actual VOC samples they have accompanied.

The CoC is a three-part (carbonless copy) form. When samples are transferred to an analytical laboratory, the laboratory will receive only the laboratory part(s) of the form.

Label information is completed at the sampling point when the sample is collected with the following exceptions. For containers receiving preservatives in advance, the laboratory staff labels "analyses required" and "preservation method" on the sample labels. For containers

receiving preservatives in the field, "preservation method" is labeled when the individual sample container is filled.

Chain-of-Custody Documentation

A Chain-of-Custody (CoC) Record is completed in the field at the time of sampling. A copy will accompany each set of samples (cooler) shipped to the laboratory.

Each time responsibility for custody of the samples changes, the new and previous custodians will sign the record and denote the date and time. The receiving laboratory makes a copy of the signed CoC record. The final signed CoC is submitted with analytical results in the Sampling and Analysis Report.

Signatures in ink are required for change sample custody on the CoC. One or more signatures are entered to identify the person or persons who are collecting the samples. Each time the custody of a sample or group of samples is transferred, a signature, date and time is entered to document the transfer. A sample is considered in custody if it is in any of the following conditions:

- In actual physical possession.
- In view, after being in physical possession.
- In physical possession and secured (locked) against tampering.
- In a secured area, restricted from unauthorized personnel.

A secured area such as a locked storage shed or vehicle specified in the "comments" column, are approved temporary storage facilities. When using such an area, the time, date, and location of the secured area is recorded in the "relinquished by" space. The time at which an individual regains custody is recorded in the "received by" space on the form.

Chain-of-Custody During Shipping

When samples are shipped, the person sealing the shipping container enters the time, date and their signature on the CoC. The laboratory part of the CoC is transported in the container with the samples. The first page is transferred to site project manager. A post office receipt, bill-of-lading or similar document from the shipper is retained as part of the permanent CoC documentation.

The receiving laboratory is notified in advance of chain-of-custody procedures required for each group of samples. The laboratory is required to sign the appropriate blank on the CoC at the time of receipt. A copy of the original signed CoC record is returned to the project manager.

EQUIPMENT DECONTAMINATION

All sampling equipment is laboratory decontaminated before use in the field. All equipment is stored to preclude contact with any possible source of contamination before transport to the landfill.

All sampling related equipment undergoes the appropriate field decontamination procedures before re-used. Field decontamination is performed immediately prior to the purging/sampling procedure as close to the sampling site as possible without impacting the sampling zone.

Strict adherence to cleaning and decontamination procedures is essential for valid sample collection. Depending on the type of exposure to contamination and their intended use, some equipment may require solvent, steam, or acid cleaning.

SAMPLING AND PURGING EQUIPMENT

Teflon Bailers

Apex uses teflon bailers for certain volatile organic compounds (VOC) sample collection. Galtec, Inc., Johnson Screens and ISCO, Inc. manufacture Teflon bailers used by Apex. The bailers are 1.66 inches in diameter, 1 to 4 feet long, and have ball check-valve inlets with V-notch tops. Volume capacities range from 250 ml to 1000 ml.

Only new or laboratory pre-cleaned bailers are used for one monitoring point each day. Cleaning procedures include cleaning in the laboratory with a Liquinox detergent solution, hot tap water, and industrial strength cylindrical brushes. The bailers are then rinsed with three volumes of de-ionized water, immersed in isopropyl alcohol and then rinsed thoroughly again with three volumes of de-ionized water. After the final rinse, the bailers are dried at 103° C in an air-dry oven for a minimum of 20 minutes. After drying, bailers are wrapped in new aluminum foil until use.

Bailer Line

Bailer line consists of nylon cord, lightweight rope or braided stainless steel line for down riggers. Line contact with the ground or other dirty surfaces is prevented. Nylon bailer line is disposable and used only once. Stainless steel leaders are used between the bailers and the down-rigger line. Each sampling point uses a separate leader. Cleaning procedures for stainless steel lines and leaders are the same as for Teflon bailers.

Geopump Peristaltic Pump System

Apex is equipped with a Geopump Peristaltic Pump. The Geopump is designed for single and multi-stage pressure or vacuum pumping of liquids from wells with limited or slow yields. The pump operates by mechanical peristalsis so the sample only comes in contact with the tubing. this allows for sample integrity. The pump system incorporates vary lengths of disposable silicone discharge tubing stored in new, disposable polyethylene packages.

Cleaning the Geopump Peristaltic Pump system in a controlled laboratory area uses the following steps:

1. The outside of the pump is cleaned with a hot water pressure rinse.

2. The interiors of the pump and discharge line are cleaned with soapy tap water (Alconox solution).

3. The pump and discharge lines are rinsed with clean tap water, followed by a deionized water rinse.

4. The equipment is air dried after completion of the final rinse

5. The pump is transported in a dedicated PVC case.

6. In addition, if the PVC transport case undergoes the same decontamination process as the pump before reuse.

7. Visual verification of soapy residue and/or other potential contamination removal follows each decontamination step.

Transported and storage of all pump equipment is performed to minimize the potential for contamination. Pump system field procedures minimize cross-contamination and avoids surface or ambient air contamination from entering wells. When necessary, the pump system field cleaning consists of the following:

- All parts of the pump system that contact groundwater or the inner well casing are cleaned with an Alconox solution applied with a scrub brush or with a steam cleaner inside and out.

- The water source for cleaning is of potable water quality.

- After the washing procedure, the pumping equipment is rinsed three (3) times with clean, potable water.

- A final rinse follows using de-ionized water.

- Visual inspection follows each step of the field decontamination cycle to ensure that contamination from soapy residue, etc. have been removed before insertion of the pumping system into a subsequent well.

Water Level Indicators

Static groundwater levels and depths are measured at the monitoring well locations before purging and sampling procedures commence. Static water level measurements are conducted using a Solinist Model 12454 electronic meter providing intrinsically safe measurements to

0.01 ft. A built-in sensitivity control allows adjustment for varying conductivity conditions. The probe is made of stainless steel and attached to flat tape of stranded stainless steel coated with polyethylene. Before each sampling event, the stainless steel probes and measuring tape are decontaminated in the laboratory.

Laboratory cleaning is accomplished using a solution that contains 5 parts HCL, 3 parts isopropyl alcohol, and 92 parts de-ionized water. After cleaning, the probes and measuring tape are rinsed at least three (3) times with de-ionized water and air dried. In the field, the probe and measuring tape are cleaned thoroughly with de-ionized water and dried with disposable towels after every measurement.

Hana Water Quality Meter

The Hana Water Quality Meter is an electronic instrument for simultaneous multi-parameter measurement of water quality. The Hana measures four different parameters of water samples: pH, conductivity, dissolved oxygen, and temperature. All four parameters are measured simultaneously. These parameters may be stored in memory, printed, or viewed on the LCD of the instrument.

Calibration of the Hana is either manual or automatic. The 4-parameter auto-calibration procedure should be sufficient for most measurement operations. Manual calibration is more accurate and is used for laboratory precision calibration prior to fieldwork. The auto-calibration is utilized in the field to update the instrument as necessary (every three hours minimum).

FIELD PROCEDURE QUALITY ASSURANCE

Commonly background or cross-contamination can compromise water samples integrity. Some examples include:

- Improper storage or transport of equipment.
- Contaminating equipment or sample bottles on site by setting them on or near potential contamination sources such as uncovered ground, a vehicle, or vehicle exhaust.
- Handling bottles or equipment with dirty hands or gloves.
- Inadequate cleaning of well purging or sampling equipment.

Special care is required to prevent cross-contamination of sampling equipment, sample bottles, or anything else that could potentially compromise the integrity of samples. Field personnel should assume that contamination exists in soil and vegetation near sampling points, wash water, etc. The following precautions minimize the potential for cross-contamination:

- Minimizing the amount of rinse water left on washed materials.
- Minimizing the time sample containers are exposed to airborne dust or volatile contaminants in ambient air.
- Avoid placing any sampling equipment directly on the ground.

All field crew will wear new clean gloves made of appropriately inert material.

Only new clean gloves are used while handling equipment with potential for contact with samples.

Gloves are replaced if they become soiled and between each sampling site.

SOIL GAS SAMPLING

SOP#: 2042
DATE: 06/01/96
REV. #: 0.0

1.0 SCOPE AND APPLICATION

Soil gas monitoring provides a quick means of waste site evaluation. Using this method, underground contamination can be identified, and the source, extent, and movement of the pollutants can be traced.

This standard operating procedure (SOP) outlines the methods used by U.S. EPA/ERT in installing soil gas wells; measuring organic vapor levels in the soil gas using a Photoionization Detector (PID), Flame Ionization Detector (FID) and/or other air monitoring devices; and sampling the soil gas using Tedlar bags, Tenax sorbent tubes, and/or Summa canisters.

These are standard (i.e., typically applicable) operating procedures which may be varied or changed as required, dependent on site conditions, equipment limitations or limitations imposed by the procedure. In all instances, the ultimate procedures employed should be documented and associated with the final report.

Mention of trade names or commercial products does not constitute U.S. EPA endorsement or recommendation for use.

2.0 METHOD SUMMARY

A 3/8" diameter hole is driven into the ground to a depth of four to five feet using a commercially available slam bar. Soil gas can also be sampled at other depths by the use of a longer bar or bar attachments. A 1/4" O.D. stainless steel probe is inserted into the hole. The hole is then sealed around the top of the probe using modeling clay. The gas contained in the interstitial spaces of the soil is sampled by pulling the sample through the probe using an air sampling pump. The sample may be stored in Tedlar bags, drawn through sorbent cartridges, or analyzed directly using a direct reading instrument. The air sampling pump is not used for Summa canister sampling of soil gas. Sampling is achieved by soil gas equilibration with the evacuated Summa canister.

Other field air monitoring devices, such as the combustible gas indicator (MSA CGI/02 Meter, Model 260) and the Organic Vapor Analyzer (Foxboro OVA, Model 128), can also be used dependent on specific site conditions. Measurement of soil temperature using a temperature probe may also be desirable. Bagged samples are usually analyzed in a field laboratory using a portable Photovac GC.

Power driven sampling probes may be utilized when soil conditions make sampling by hand unfeasible (i.e., frozen ground, very dense clays, pavement, etc.). Commercially available soil gas sampling probes (hollow, 1/2 = O.D. steel probes) can be driven to the desired depth using a power hammer (e.g., Bosch Demolition Hammer or Geoprobe™). Samples can be drawn through the probe itself, or through Teflon tubing inserted through the probe and attached to the probe point. Samples are collected and analyzed as described above.

3.0 SAMPLE PRESERVATION, CONTAINERS, HANDLING, AND STORAGE

3.1 Tedlar Bags

Soil gas samples are generally contained in 1.0-L Tedlar bags. Bagged samples are best stored in dark plastic bags placed in coolers to protect the bags from any damage that may occur in the field or in transit. In addition, coolers insure the integrity of the samples by keeping them at a cool temperature and out of direct sunlight. Samples should be analyzed as soon as possible, preferably within 24 - 48 hours.

3.2 Tenax Tubes

Bagged samples can also be drawn onto Tenax or

other sorbent tubes to undergo lab GC/MS analysis. If Tenax tubes are to be utilized, special care must be taken to avoid contamination. Handling of the tubes should be kept to a minimum and only while wearing nylon or other lint-free gloves. After sampling, each tube should be stored in a clean, sealed culture tube; the ends packed with clean glass wool to protect the sorbent tube from breakage. The culture tubes should be kept cool and wrapped in aluminum foil to prevent any photodegradation of samples (see Section 7.4.).

3.3 Summa Canisters

The Summa canisters used for soil gas sampling have a 6 liter sample capacity and are certified clean by GC/MS analysis before being utilized in the field. After sampling is completed, they are stored and shipped in travel cases.

4.0 INTERFERENCES AND POTENTIAL PROBLEMS

4.1 PID Measurements

A number of factors can affect the response of a PID (such as the HNu PI 101). High humidity can cause lamp fogging and decreased sensitivity. This can be significant when soil moisture levels are high, or when a soil gas well is actually in groundwater. High concentrations of methane can cause a downscale deflection of the meter. High and low temperature, electrical fields, FM radio transmission, and naturally occurring compounds, such as terpenes in wooded areas, will also affect instrument response.

Other field screening instruments can be affected by interferences. Consult the manufacturers manuals.

4.2 FID Measurements

A number of factors can affect the response of an FID (such as the OVA model 128). High humidity can cause the FID to flame out or not ignite at all. This can be significant when soil moisture levels are high, or when a soil gas well is actually in groundwater. The FID can only read organic based compounds (they must contain carbon in the molecular structure). The FID also responds poorly to hydrocarbons and halogenated hydrocarbons (such as gasoline, propane fuel). High and low temperature, electrical fields and FM radio transmission will also affect instrument response.

4.3 Factors Affecting Organic Concentrations in Soil Gas

Concentrations in soil gas are affected by dissolution, adsorption, and partitioning. Partitioning refers to the ratio of component found in a saturated vapor above an aqueous solution to the amount in the solution; this can, in theory, be calculated using the Henry's Law constants. Contaminants can also be adsorbed onto inorganic soil components or "dissolved" in organic components. These factors can result in a lowering of the partitioning coefficient.

Soil "tightness" or amount of void space in the soil matrix, will affect the rate of recharging of gas into the soil gas well.

Existence of a high, or perched, water table, or of an impermeable underlying layer (such as a clay lens or layer of buried slag) may interfere with sampling of the soil gas. Knowledge of site geology is useful in such situations, and can prevent inaccurate sampling.

4.4 Soil Probe Clogging

A common problem with this sampling method is soil probe clogging. A clogged probe can be identified by using an in-line vacuum gauge or by listening for the sound of the pump laboring. This problem can usually be eliminated by using a wire cable to clear probe (see Section 7.1.3.).

4.5 Underground Utilities

Prior to selecting sample locations, an underground utility search is recommended. The local utility companies can be contacted and requested to mark the locations of their underground lines. Sampling plans can then be drawn up accordingly. Each sample location should also be screened with a metal detector or magnetometer to verify that no underground pipes or drums exist.

5.0 EQUIPMENT/APPARATUS

5.1 Slam Bar Method

- C Slam Bar (1 per sampling team).
- C Soil gas probes, stainless steel tubing, 1/4" O.D., 5 ft length.
- C Flexible wire or cable used for clearing the

tubing during insertion into the well.

- C "Quick Connect" fittings to connect sampling probe tubing, monitoring instruments, and Gilian pumps to appropriate fittings on vacuum box.
- C Modeling clay.
- C Vacuum box for drawing a vacuum around Tedlar bag for sample collection (1 per sampling team).
- C Gilian pump Model HFS113A adjusted to approximately 3.0 L/min (1 to 2 per sample team).
- C 1/4" Teflon tubing, 2 ft to 3 ft lengths, for replacement of contaminated sample line.
- C 1/4" Tygon tubing, to connect Teflon tubing to probes and quick connect fittings.
- C Tedlar bags, 1.0 L, at least 1 bag per sample point.
- C Soil Gas Sampling labels, field data sheets, logbook, etc.
- C PID/FID, or other field air monitoring devices, (1 per sampling team).
- C Ice chest, for carrying equipment and for protection of samples (2 per sampling team).
- C Metal detector or magnetometer, for detecting underground utilities/pipes/drums (1 per sampling team).
- C Photovac GC, for field-lab analysis of bagged samples.
- C Summa canisters (plus their shipping cases) for sample, storage and transportation.
- C Large dark plastic garbage bags

5.2 Power Hammer Method

- C Bosch demolition hammer.
- C 1/2" O.D. steel probes, extensions, and points.
- C Dedicated aluminum sampling points.
- C Teflon tubing, 1/4".
- C "Quick Connect" fittings to connect sampling probe tubing, monitoring instruments, and Gilian pumps to appropriate fittings on vacuum box.
- C Modeling clay.
- C Vacuum box for drawing a vacuum around Tedlar bag for sample collection (1 per sampling team).
- C Gilian pump Model HFS113A adjusted to approximately 3.0 L/min (1 to 2 per sample team).
- C 1/4" Teflon tubing, 2 ft to 3 ft lengths, for replacement of contaminated sample line.
- C 1/4" Tygon tubing, to connect Teflon tubing to probes and quick connect fittings.
- C Tedlar bags, 1.0 L, at least 1 bag per sample point.
- C Soil Gas Sampling labels, field data sheets, logbook, etc.
- C HNu Model P1101, or other field air monitoring devices, (1 per sampling team).
- C Ice chest, for carrying equipment and for protection of samples (2 per sampling team).
- C Metal detector or magnetometer, for detecting underground utilities/pipes/drums (1 per sampling team).
- C Photovac GC, for field-lab analysis of bagged samples.
- C Summa canisters (plus their shipping cases) for sample, storage and transportation.
- C Generator w/extension cords.
- C High lift jack assembly for removing probes.

5.3 Geoprobe™ Method

The Geoprobe is a hydraulically-operated sampling device mounted in a customized four-wheel drive vehicle. The sampling device can be deployed from the truck and positioned over a sample location. The base of the sampling device is positioned on the ground. The weight of the vehicle is hydraulically raised on the base. As the weight of the vehicle is transferred to the probe, the probe is pushed into the ground. A built-in hammer mechanism allows the probe to be driven past some dense stratigraphic horizons. When the probe reaches the sample depth, up to 50 feet under favorable geologic situations, samples can be collected.

Soil gas can be collected from specific depths in two general ways. One method involves withdrawing a sample directly from the probe rods, after evacuating a sufficient volume of air from the probe rods. The other method involves collecting a sample through tubing attached by an adaptor to the bottom probe rod section. Correctly used, this method provides more reliable results. Manufacturer's instructions and the SOP for the Model 5400 Geoprobe™ Operation should be followed when using this method.

6.0 REAGENTS

- C PID/FID or calibration gases for field air monitoring devices (such as methane and

isobutylene).

- C Deionized organic-free water, for decontamination.
- C Methanol, HPLC grade, for decontamination.
- C Ultra-zero grade compressed air, for field blanks.
- C Standard gas preparations for Photovac GC calibration and Tedlar bag spikes.
- C Propane Torch (for decontamination of steel probes)

7.0 PROCEDURES

7.1 Soil Gas Well Installation

1. Initially a hole slightly deeper than the desired depth is made. For sampling up to 5 feet, a 5-ft single piston slam bar is used. For deeper depths, a piston slam bar with threaded 4-foot-long extensions can be used. Other techniques can be used, so long as holes are of narrow diameter and no contamination is introduced.

2. After the hole is made, the slam bar is carefully withdrawn to prevent collapse of the walls of the hole. The soil gas probe is then inserted.

3. It is necessary to prevent plugging of the probe, especially for deeper holes. A metal wire or cable, slightly longer than the probe, is placed in the probe prior to inserting into the hole. The probe is inserted to full depth, then pulled up three to six inches, then cleared by moving the cable up and down. The cable is removed before sampling.

4. The top of the sample hole is sealed at the surface against ambient air infiltration by using modeling clay molded around the probe at the surface of the hole.

5. If conditions preclude hand installation of the soil gas wells, the power driven system may be employed. The generator powered demolition hammer is used to drive the probe to the desired depth (up to 12 Ft may be attained with extensions). The probe is pulled up 1-3 inches if the retractable point is used. No clay is needed to seal the hole. After sampling, the probe is retrieved using the high lift jack assembly.

6. If semi-permanent soil gas wells are required, the dedicated aluminum probe points are used. These points are inserted into the bottom of the power driven probe and attached to the Teflon tubing. The probe is inserted as in step 5. When the probe is removed, the point and Teflon tube remain in the hole, which may be sealed by backfilling with clean sand, soil, or bentonite.

7.2 Screening with Field Instruments

1. The well volume must be evacuated prior to sampling. Connect the Gilian pump, adjusted to 3.0 L/min, to the sample probe using a section of Teflon tubing as a connector. The pump is turned on, and a vacuum is pulled through the probe for approximately 15 seconds. Longer time is required for sample wells of greater depths.

2. After evacuation, the monitoring instrument(s) (i.e. HNu or OVA) is connected to the probe using a Teflon connector. When the reading is stable, or peaks, the reading is recorded on soil gas data sheets.

3. Of course, readings may be above or below the range set on the field instruments. The range may be reset, or the response recorded as a greater than or less than figure. Recharge rate of the well with soil gas must be considered when resampling at a different range setting.

7.3 Tedlar Bag Sampling

1. Follow step 7.2.1 to evacuate well volume. If air monitoring instrument screening was performed prior to sample taking, evacuation is not necessary.

2. Use the vacuum box and sampling train (Figure 1) to take the sample. The sampling train is designed to minimize the introduction of contaminants and losses due to adsorption. All wetted parts are either Teflon or stainless steel. The vacuum is drawn indirectly to avoid contamination from sample pumps.

3. The Tedlar bag is placed inside the vacuum box, and attached to the sampling port. The sample probe is attached to the sampling port via Teflon tubing and a "Quick Connect" fitting.

4. A vacuum is drawn around the outside of the bag, using a Gilian pump connected to the vacuum box evacuation port, via Tygon tubing and a "Quick Connect" fitting. The vacuum causes the bag to inflate, drawing the sample.

5. Break the vacuum by removing the Tygon line from the pump. Remove the bagged sample from the box and close valve. Record data on data sheets or in logbooks. Record the date, time, sample location ID, and the PID/FID instrument reading(s) on sample bag label.

CAUTION: Labels should not be pasted directly onto the bags, nor should bags be labeled directly using a marker or pen. Inks and adhesive may diffuse through the bag material, contaminating the sample. Place labels on the edge of the bags, or tie the labels to the metal eyelets provided on the bags. Markers with inks containing volatile organics (i.e., permanent ink markers) should not be used.

Chain of Custody Sheets must accompany all samples submitted to the field laboratory for analysis.

7.4 Tenax Tube Sampling

Samples collected in Tedlar bags may be adsorbed onto Tenax tubes for further analysis by GC/MS.

7.4.1 Additional Apparatus

A. Syringe with a luer-lock tip capable of drawing a soil gas or air sample from a Tedlar bag onto a Tenax/CMS sorbent tube. The syringe capacity is dependent upon the volume of sample begin drawn onto the sorbent tube.

B. Adapters for fitting the sorbent tube between the Tedlar bag and the sampling syringe. The adapter attaching the Tedlar bag to the sorbent tube consists of a reducing union (1/4" to 1/16" O.D. -- Swagelok cat. # SS-400-6-ILV or equivalent) with a length of 1/4" O.D. Teflon tubing replacing the nut on the 1/6" (Tedlar bag) side. A 1/4" I.D. silicone O-ring replaces the ferrules in the nut on the 1/4" (sorbent tube) side of the union.

The adapter attaching the sampling syringe to the sorbent tube consists of a reducing union (1/4" to 1/16" O.D. -- Swagelok Cat. # SS-400-6-ILV or equivalent) with a 1/4" I.D. silicone O-ring replacing the ferrules in the nut on the 1/4" (sorbent tube) side and the needle of a luer-lock syringe needle inserted into the 1/16" side. (Held in place with a 1/16" ferrule.) The luer-lock end of the needle can be attached to the sampling syringe. It is useful to have a luer-lock on/off valve situated between the syringe and the needle.

C. Two-stage glass sampling cartridge (1/4" O.D. x 1/8" I.D. x 5 1/8") contained in a flame-sealed tube (Manufacturer: Supelco Custom Tenax/Spherocarb Tubes) containing two sorbent sections retained by glass wool:

Front section: 150 mg of Tenax-GC
Back section: 150 mg of CMS (Carbonized Molecular Sieve)

These tubes are prepared and cleaned in accordance with EPA Method EMSL/RTP-SOP-EMD-013 by the vendor. The vendor sends ten tubes per lot made to the REAC GC/MS Laboratory and they are tested for cleanliness, precision, and reproductability.

D. Teflon-capped culture tubes or stainless steel tube containers for sorbent tube storage and shipping. These containers should be conditioned by baking at 120 degrees C for at least two hours. The culture tubes should contain a glass wool plug to prevent sorbent tube breakage during transport. Reconditioning of the containers should occur between uses or after extended periods of disuse (i.e., two weeks or more).

E. Nylon gloves or lint-free cloth. (Hewlett Packard Part # 8650-0030 or equivalent.)

7.4.2 Sample Collection

Handle sorbent tubes with care, using nylon gloves (or other lint-free material) to avoid contamination.

Immediately before sampling, break one end of the sealed tube and remove the Tenax cartridge.

Connect the valve on the Tedlar bag to the sorbent tube adapter. Connect the sorbent tube to the sorbent tube adapter with the Tenax (white granular) side of the tube facing the Tedlar bag. Connect the sampling syringe assembly to the CMS (black) side of the sorbent tube. Fittings on the adapters should be finer-tight. Open the valve on the Tedlar bag. Open the on/off valve of the sampling syringe. Depending on work plan stipulations, at least 10% of the soil gas samples analyzed by this GC method must be submitted for confirmational GC/MS analysis (according to modified methods TO-1 [Tenax absorbent] and TO-2 [Carbon Molecular Sieve (CMS) absorbent]). Each soil gas sample must be absorbed on replicate Tenax/CMS tubes. The volume absorbed on a Tenax/CMS tube is dependent on the total concentration of the compounds measured by the photovac/GC or other applicable GC:

Total Concentration (ppm)	Sample Volume (mL)
>10	Use Serial Dilution
10	10 - 50
5	20-100
1	100-250

After sampling, remove the tube from the sampling train with gloves or a clean cloth. DO NOT LABEL OR WRITE ON THE TENAX/CMS TUBE.

Place the sorbent tube in a conditioned stainless steel tube holder or culture tube. Culture tube caps should be sealed with Teflon tape.

7.4.3 Sample Labeling

Each sample tube container (not tube) must be labeled with the site name, sample station number, date sampled, and volume sampled.

Chain of custody sheets must accompany all samples to the laboratory.

7.4.4 Quality Assurance (QA)

Before field use, a QA check should be performed on each batch of sorbent tubes by analyzing a tube by thermal desorption/cryogenic trapping GC/MS.

At least one blank sample must be submitted with each set of samples collected at a site. This trip blank must be treated the same as the sample tubes except no sample will be drawn through the tube.

Sample tubes should be stored out of UV light (i.e., sunlight) and kept on ice until analysis. Samples should be taken in duplicate, when possible.

7.5 Summa Canister Sampling

1. Follow step 7.2.1 to evacuate well volume. If PID/FID readings were taken prior to taking a sample, evacuation is not necessary.

2. Attach a certified clean, evacuated 6-liter Summa canister via the 1/4" Teflon tubing.

3. Open valve on Summa canister. The soil gas sample is drawn into the canister by pressure equilibration. The approximate sampling time for a 6 liter canister is 20 minutes.

4. Site name, sample location, number, and date must be recorded on a chain of custody form and on a blank tag attached to the canister.

8.0 CALCULATIONS

8.1 Field Screening Instruments

Instrument readings are usually read directly from the meter. In some cases, the background level at the soil gas station may be subtracted:

Final Reading = Sample Reading - Background

8.2 Photovac GC Analysis

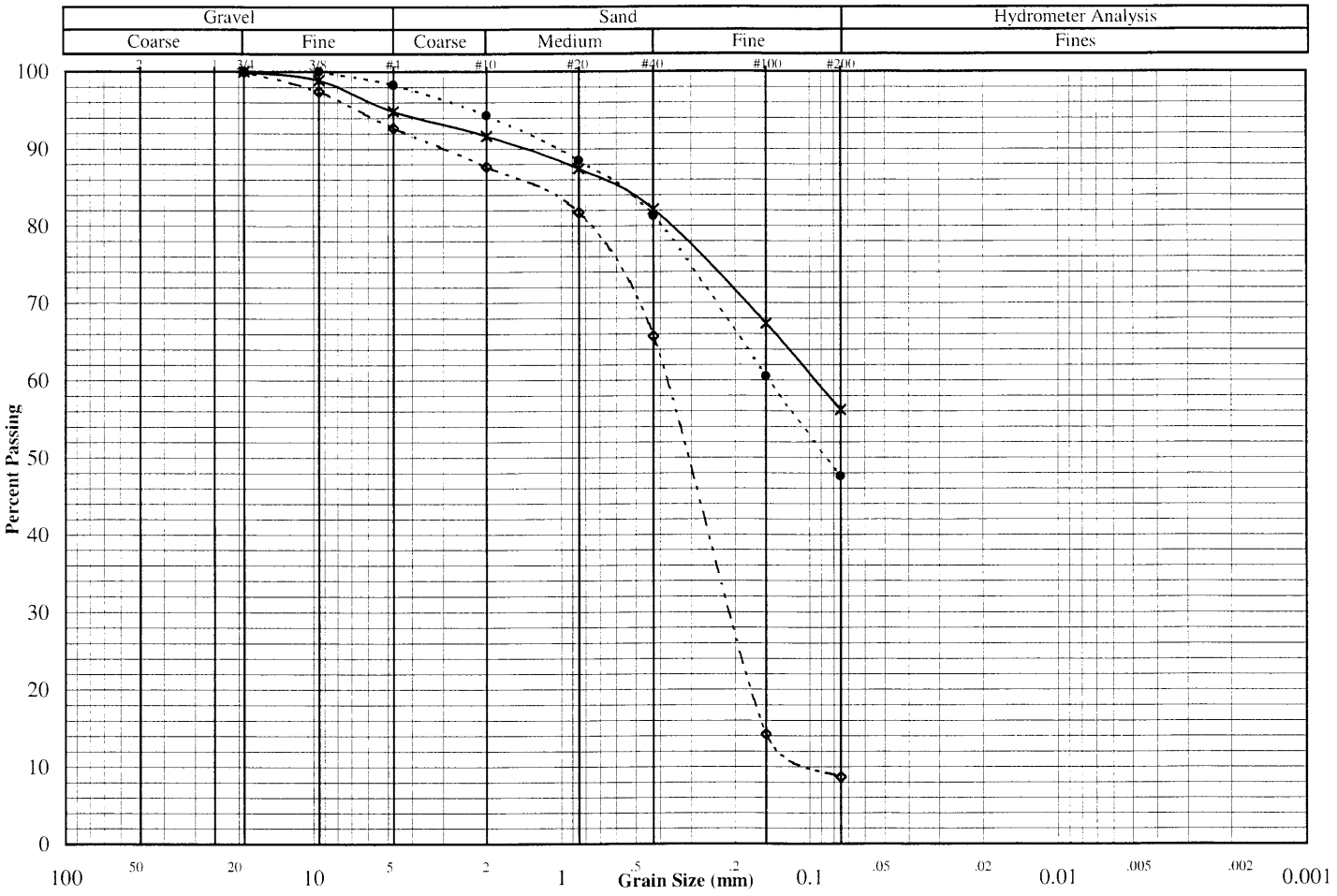
Calculations used to determine concentrations of individual components by Photovac GC analysis are beyond the scope of this SOP and are covered in ERT SOP #2109, *Photovac GC Analysis for Soil Water and Air/Soil Gas*.

Grain Size Distribution ASTM D422

Job No. : **8519**

Project:	Queen of Peace Hospital - New Prague, MN	Test Date:	6/22/12
Reported To:	Apex Environmental	Report Date:	6/26/12

	Location / Boring No.	Sample No.	Depth (ft)	Sample Type	Soil Classification
*	GP-1		16	Bag	Sandy Lean Clay with a little gravel (CL)
●	GP-2		15.8	Bag	Clayey Sand (SC)
◇	GP-3		9.5	Bag	Sand with silt and a little gravel (SP-SM)



Other Tests	*	●	◇
Liquid Limit			
Plastic Limit			
Plasticity Index			
Water Content	22.8	23.5	19.5
Dry Density (pcf)			
Specific Gravity			
Porosity			
Organic Content			
pH			
Shrinkage Limit			
Penetrometer			
Qu (psf)			

(* = assumed)

Percent Passing	*	●	◇
Mass (g)	730.9	570.6	833.2
2"			
1.5"			
1"			
3/4"	100.0		100.0
3/8"	98.9	100.0	97.4
#4	94.8	98.3	92.7
#10	91.7	94.3	87.7
#20	87.4	88.5	81.8
#40	82.2	81.3	65.7
#100	67.3	60.5	14.2
#200	56.2	47.6	8.7

	*	●	◇
D_{60}			
D_{30}			
D_{10}			
C_U			
C_C			

Remarks:

2401 W 66th Street

SOIL ENGINEERING TESTING, INC.

Richfield, Minnesota 55423-2031

Unique No. 00178545

MINNESOTA DEPARTMENT OF HEALTH

WELL AND BORING RECORD

Minnesota Statutes Chapter 1031

Update Date 1991/08/18

Entry Date 1988/02/11

County Name Scott

Township Name	Township	Range	Dir	Section	Subsection
	113	23	W	34	CCB

Well Name YACKLEY JOHN J

Well Depth		Depth Completed		Date Well Completed
376	ft	376	ft	1981/04/03

Drilling Method

Drilling Fluid

Well Hydrofractured? Yes No

From ft to ft

Use Domestic

Casing Drive Shoe? Yes N Hole Diameter

Screen Open Hole From ft to ft

Make Type

Static Water Level 125 ft from Land surface Date 1981/04/03

PUMPING LEVEL (below land surface)

ft after hrs pumping g.p.m

Well Head Completion

Pitless adapter mfr Model

Casing Protection 12 in above grade

At-grade(Environmental Wells and Borings ONLY)

Grouting Information Well grouted? ✔ Yes No

Nearest Known Source of Contamination

75 ft direction type

Well disinfected upon completion? Yes No

Pump Not Installed Date Installed

Mfr name

Model HP Volts

Drop Pipe Length ft Capacity g.p.m

Type

Any not in use and not sealed well(s) on property? Yes No

Was a variance granted from the MDH for this Well? Yes No

USGS Quad New Prague Elevation

Aquifer Alt Id

Well CONTRACTOR CERTIFICATION Lic. Or Reg. No

License Business Name

Name of Driller

Report Copy

Unique No. 00215706

MINNESOTA DEPARTMENT OF HEALTH

WELL AND BORING RECORD

Minnesota Statutes Chapter 1031

Update Date 2003/05/21

Entry Date 1989/03/31

County Name Scott

Township Name	Township	Range	Dir	Section	Subsection
	113	23	W	34	CCBDCA

Well Name NEW PRAGUE CREAMERY

#Name?

#Name?

Well Depth 306 ft | Depth Completed 306 ft | Date Well Completed

Drilling Method Non-specified Rotary

Drilling Fluid

Well Hydrofractured? Yes No

From ft to ft

Use Public Supply/non comm -non-transient

Casing Drive Shoe? Yes N Hole Diameter

GEOLOGICAL MATERIAL	COLOR	HARDNESS	FROM	TO
DRIFT			0	230
SANDSTONE	WHITE		230	306

Screen

Open Hole From ft to ft

Make Type

Static Water Level 85 ft from Land surface Date

PUMPING LEVEL (below land surface)

ft after hrs pumping g p m

Well Head Completion

Pitless adapter mfr Model

Casing Protection 12 in above grade

At-grade(Environmental Wells and Borings ONLY)

Grouting Information Well grouted? Yes No

Nearest Known Source of Contamination

ft direction type

Well disinfected upon completion? Yes No

Pump Not Installed Date Installed

Mfr name

Model HP Volts

Drop Pipe Length ft Capacity g p m

Type

Any not in use and not sealed well(s) on property? Yes No

Was a variance granted from the MDH for this Well? Yes No

Well CONTRACTOR CERTIFICATION Lic Or Reg No MGS

License Business Name

Name of Driller

REMARKS, ELEVATION, SOURCE OF DATA, etc.

M G S BULLETIN 31

USGS Quad New Prague Elevation 975

Aquifer CFRN Alt Id 5700082S01

Report Copy

Unique No. 240052

MINNESOTA DEPARTMENT OF HEALTH

WELL AND BORING RECORD

Minnesota Statutes Chapter 1031

Update Date 2003/05/21

Entry Date 2003/04/11

County Name Lesueur

Township Name	Township	Range	Dir	Section	Subsection
	112	23	W	3	ABBAAB

Well Name NEW PRAGUE #1

Well Depth 582 ft | Depth Completed 582 ft | Date Well Completed

Drilling Method

Drilling Fluid

Well Hydrofractured? Yes No

From ft to ft

Use Community Supply (municipal)

Casing Drive Shoe? Yes N Hole Diameter

Casing Diameter 10 in to 167 ft

Weight(lbs/ft)

Screen

Open Hole From ft to ft

Make

Type

Static Water Level 153 ft from Land surface Date

PUMPING LEVEL (below land surface)

ft after hrs pumping g p m

Well Head Completion

Pitless adapter mfr Model

Casing Protection 12 in above grade

At-grade(Environmental Wells and Borings ONLY)

Grouting Information Well grouted? Yes No

Nearest Known Source of Contamination

ft direction type

Well disinfected upon completion? Yes No

Pump Not Installed Date Installed

Mfr name

Model HP Volts

Drop Pipe Length ft Capacity g p m

Type

Any not in use and not sealed wells on property? Yes No

Was a variance granted from the MDH for this Well? Yes No

Well CONTRACTOR CERTIFICATION Lic Or Reg No

License Business Name

Name of Driller

REMARKS, ELEVATION, SOURCE OF DATA, etc.

GAMMA LOGGED 12/30/87

USGS Quad

Aquifer

Elevation 995

Alt Id 1400013S01

Report Copy

HE-01205-06 (Rev. 9/96)

Unique No. 00240053

MINNESOTA DEPARTMENT OF HEALTH

WELL AND BORING RECORD

Minnesota Statutes Chapter 1031

Update Date 2003/05/21

Entry Date 2003/04/22

County Name

Township Name Township Range Dir Section Subsection

WELL #2

Well Name

Well Depth ft | Depth Completed ft | Date Well Completed

Drilling Method

Drilling Fluid | Well Hydrofractured? Yes No | From ft to ft

Use Community Supply (municipal)

Casing | Drive Shoe? Yes N | Hole Diameter

Screen | Open Hole From ft to ft

Make | Type

Static Water Level ft from Date

PUMPING LEVEL (below land surface)

ft after hrs pumping g p m

Well Head Completion

Pitless adapter mfr | Model

Casing Protection | 12 in above grade

At-grade(Environmental Wells and Borings ONLY)

Grouting Information | Well grouted? Yes No

Nearest Known Source of Contamination

ft direction type

Well disinfected upon completion? Yes No

Pump | Not Installed | Date Installed

Mfr name

Model | HP | Volts

Drop Pipe Length ft | Capacity g p m

Type

Any not in use and not sealed well(s) on property? Yes No

Was a variance granted from the MDH for this Well? Yes No

Well CONTRACTOR CERTIFICATION | Lic Or Reg No

License Business Name

Name of Driller

USGS Quad

Aquifer

Elevation

Alt Id

Report Copy

Unique No. 00240054

MINNESOTA DEPARTMENT OF HEALTH

WELL AND BORING RECORD

Minnesota Statutes Chapter 1031

Update Date 2003/05/21

Entry Date 1989/12/28

County Name Scott

Township Name	Township	Range	Dir	Section	Subsection
	113	23	W	34	DCCDBB

Well Depth 398 ft | Depth Completed 398 ft | Date Well Completed 1948/00/00

Well Name NEW PRAGUE 3

Drilling Method

Contact's Name NEW PRAGUE 3

#Name?

#Name?

Drilling Fluid

Well Hydrofractured? Yes No

From ft to ft

Use Community Supply (municipal)

Casing Drive Shoe? Yes N Hole Diameter

GEOLOGICAL MATERIAL	COLOR	HARDNESS	FROM	TO
DRIFT			0	146
SHALE + LIMEROCK			146	190
SHALE + LIMEROCK			190	330
SANDROCK			330	368
SANDROCK + SHALE			368	398

Casing Diameter Weight(lbs/ft)

16 in to 153 ft

Screen N

Make

Open Hole From 153 ft to 398 ft

Type

Static Water Level 155 ft from Land surface Date /19/48

PUMPING LEVEL (below land surface)

221 ft after hrs pumping 500 g p m

Well Head Completion

Pitless adapter mfr Model

Casing Protection 12 in above grade

At-grade(Environmental Wells and Borings ONLY)

Grouting Information Well grouted? Yes No

Nearest Known Source of Contamination

ft direction type

Well disinfected upon completion? Yes No

Pump Not Installed Date Installed

Mfr name

Model HP 0 Volts

Drop Pipe Length ft Capacity g p m

Type

Any not in use and not sealed well(s) on property? Yes No

Was a variance granted from the MDH for this Well? Yes No

USGS Quad New Prague Elevation 995

Aquifer MTPL Alt Id 79-6297

Well CONTRACTOR CERTIFICATION Lic Or Reg No 27022

License Business Name

Name of Driller

Report Copy

Minnesota Unique Well No.
257593

County Scott
Quad New Prague
Quad ID 90D

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

Entry Date 11/13/2007
Update Date 11/16/2007
Received Date

Well Name NEW PRAGUE CREAMERY NO.2
Township Range Dir Section Subsections Elevation 978 ft.
113 23 W 34 CCACDC **Elevation Method** 7.5 minute topographic map (+/- 5 feet)

Well Depth	Depth Completed	Date Well Completed
401 ft.	401 ft.	

Drilling Method Cable Tool

Drilling Fluid --

Well Hydrofractured? ☐ Yes ☐ No From Ft. to Ft.

Use

Casing Type Steel (black or low carbon) **Joint** No Information **Drive Shoe?** ☐ Yes ☐ No **Above/Below** 1 ft.

Geological Material	Color	Hardness	From	To
GLACIAL DRIFT			0	160
ST. LAWRENCE FORMATION			160	194
FRANCONIA FORMATION			194	329
IRONTON-GALESVILLE FORMATIONS			329	396
EAU CLAIRE FORMATION			396	401

Casing Diameter	Weight	Hole Diameter
8 in. to 161 ft.	lbs./ft.	

Open Hole from 161 ft. to 401 ft.

Screen NO **Make** **Type**

Diameter	Slot/Gauze	Length	Set Between

Static Water Level
ft. from Date Measured

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, CALIPER, & MULTI TOOL LOGGED 11-13-2007. LOGGED FOR ROGER HARTMANN.
SEALING NO. H-263225.

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: 11/13/2007
System: *UTM - Nad83, Zone15, Meters*
X: 453842 Y: 4932642

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 St.Lawrence Formation
Last Strat Eau Claire Formation
Aquifer Multiple
Depth to Bedrock 160 ft.

Well Contractor Certification
Minnesota Geological Survey — License Business Name
MGS — Lic. Or Reg. No.
Name of Driller

County Well Index Online Report **257593** Printed 1/11/2014
HE-01205-07

Unique No. 00433280

MINNESOTA DEPARTMENT OF HEALTH

WELL AND BORING RECORD

Minnesota Statutes Chapter 1031

Update Date 2003/05/21

Entry Date 1990/06/29

County Name Scott

Township Name	Township	Range	Dir	Section	Subsection
	113	23	W	34	BDCAAD

Well Depth 652 ft | Depth Completed 652 ft | Date Well Completed 1988/10/16

Well Name NEW PRAGUE 4

Drilling Method

Drilling Fluid

Well Hydrofractured? Yes No

From ft to ft

Well Owner's Name CITY OF NEW PRAGUE
#Name?
#Name?

Use Community Supply (municipal)

Contact's Name CITY OF NEW PRAGUE
#Name?
#Name?

Casing Drive Shoe? ✔ Yes N Hole Diameter

in to 240 ft

Casing Diameter Weight(lbs/ft) in to 652 ft

30 in to 288 ft 118

18 in to 485 ft 94

GEOLOGICAL MATERIAL	COLOR	HARDNESS	FROM	TO
CLAY			0	134
SAND + GRAVEL + CLAY			134	193
SHALE			193	303
SHALE + SANDSTONE			303	361
SHALE			361	371
SHALE			371	439
SANDSTONE + SHALE			439	449
SANDSTONE + SHALE			449	456
SANDSTONE	GRAY		456	540
SANDSTONE	TAN		540	607
SANDSTONE	YELLO		607	630
SANDSTONE	RED		630	650
SHALE	RED		650	652

Screen N Open Hole From 228 ft to 452 ft

Make Type

Static Water Level 187 ft. from Land surface Date 1988/09/09

PUMPING LEVEL (below land surface)

234 ft after 4 hrs pumping 1200 g p m

Well Head Completion

Pitless adapter mfr BAKER Model

Casing Protection 12 in above grade

At-grade(Environmental Wells and Borings ONLY)

Grouting Information Well grouted? ✔ Yes No

Material	From	To (ft.)	Amount(yds/bags)	
G	0	485	40	Y

Nearest Known Source of Contamination

100 ft direction N type

Well disinfected upon completion? Yes No

Pump Not Installed Date Installed Y

Mfr name GRUNDFOS

Model P-8841WO HP 60 Volts 460

Drop Pipe Length 252 ft Capacity g p m

Type S

Any not in use and not sealed well(s) on property? Yes No

Was a variance granted from the MDH for this Well? Yes No

REMARKS, ELEVATION, SOURCE OF DATA, etc.

GAMMA LOGGED 7-7-88

M G S NO 2809

USGS Quad New Prague Elevation 964

Aquifer CMTS Alt Id 79-629

Well CONTRACTOR CERTIFICATION Lic Or Reg No 62012

License Business Name

Name of Driller KEYS, G

Report Copy

HE-01205-06 (Rev. 9/96)

Minnesota Unique Well No.
674898

County Scott
Quad New Prague
Quad ID 90D

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

Entry Date 09/26/2002
Update Date 09/29/2005
Received Date

Well Name FRANA & SONS INC

Township Range Dir Section Subsections Elevation 965 ft. 7.5 minute topographic map (+/- 5 feet)

113 23 W 34 ACBBCD **Elevation Method**

Well Depth	Depth Completed	Date Well Completed
27 ft.	25 ft.	04/25/2002

Drilling Method Cable Tool

Well Address
1001 COLUMBUS AV N
NEW PRAGUE MN

Drilling Fluid --

Well Hydrofractured? Yes No From Ft. to Ft.

Use Elevator

Geological Material	Color	Hardness	From	To
CLAY	BROWN	MEDIUM	0	14
CLAY	GRAY	SOFT	14	27

Casing Type Steel (black or low carbon) **Joint** Welded **Drive Shoe?** Yes No **Above/Below** ft.

Casing Diameter	Weight	Hole Diameter
16 in. to 27 ft	62.58 lbs./ft.	

Open Hole from ft. to ft.

Screen Make Type

Diameter	Slot/Gauze	Length	Set Between

Static Water Level
ft. from Date Measured

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
PIT 4' BELOW GRADE

Grouting Information Well Grouted? Yes No

Grout Material: Neat Cement from 25 to 27 ft 2 bags

Located by: Minnesota Geological Survey **Method:** Digitization (Screen) Map (1:24,000)

Unique Number Verification: Address verification **Input Date:** 07/21/2005

System: *UTM - Nad83, Zone15, Meters* X: 454493 Y: 4933535

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

First Bedrock

Last Strat clay-gray

Aquifer

Depth to Bedrock ft.

Well Contractor Certification

Midwest Drilling	L0004	STANGRET, S
License Business Name	Lic. Or Reg. No.	Name of Driller

County Well Index Online Report **674898** Printed 2/17/2014
HE-01205-07

Apex Environmental

January 9, 2014

To: Property Owners within 500 feet of the Mayo Clinic Health property, in New Prague, MN

From: Jeff Vosburgh at Apex Environmental, Inc.

I am an environmental consultant, conducting an investigation at the above referenced site in New Prague, Minnesota. As part of the investigation, I am required to contact property owners within 500 feet of the subject site. Since there has been a petroleum release at this site, we are inquiring to the existence of any nearby private wells and basements. Enclosed please find a self-addressed, stamped post card. If would please check yes or no on the back of the card, as to whether you do or do not have a private well, basement or sump pump, and mail this card back to me, I would sincerely appreciate it. If you do not respond to this request, we will assume that you do not have either a private well, basement or sump pump. If you should have any questions regarding this request please call me at (218) 338-5947.

Sincerely,

Jeffrey G. Vosburgh
Geologist

Pc: Mr. Clay Brister – Mayo Clinic Health System
Mr. Allen Dotson – MPCA Project Manager, St. Paul, MN

APEX ENVIRONMENTAL · 60801 Cty Hwy 46 · Parkers Prairie, MN 56361 · Phone (218) 338-5947 · Fax (218) 338-5049

ID Number: 1400013

Facility Contact:
Bruce Reimers
(952) 758-1142
New Prague
New Prague Water Superintendent
c/o Mr. Bruce Reimers
New Prague City Hall
118 Central Avenue North
New Prague, MN 56071

MDH Contact:
Pat Bailey
(507) 206-2741
18 Woodlake Drive Southeast
Rochester, MN 55904
pat.bailey@state.mn.us

Status of the Source Water Protection Plan:

The water supply system is implementing the wellhead protection plan that has been approved by the Minnesota Department of Health under Minnesota Rules 4720.

Source Water Protection Area: - Click Map1 to view SWPA map(s).

Yes - A Source Water Protection Area has been designated for this well.

Description of the source water - The water supply for New Prague is obtained from 6 primary wells. Well depth (in feet), well status, aquifer(s) used, and sensitivity of the source(s) of drinking water are listed in the following table.

Unique Well No	Well ID	Depth	Well Use	Aquifer	Aquifer Sensitivity	*Well Sensitivity	SWPA
00240052	Well #1	555	Primary	Bedrock	Low	See (2)	Yes
00240053	Well #2	400	Primary	Bedrock	Low	See (2)	Yes
00240054	Well #3	398	Primary	Bedrock	Low	See (2)	Yes
00433280	Well #4	652	Primary	Bedrock	Low	See (2)	Yes
00680502	Well #5	424	Primary	Bedrock	Low	See (2)	Yes
00749843	Well #6	640	Primary	Bedrock	Low	See (2)	No

Well construction assessment - The water wells used by the New Prague meet current standards for construction and maintenance. These factors do not contribute to the susceptibility of the source water to contamination.

Well Sensitivity - Well sensitivity refers to the integrity of the well due to its construction and maintenance. It is based on the results of the well construction assessment. It can be one of the following:

(1) The well is susceptible to contamination because it does not meet current construction standards or

no information about well construction is available, regardless of aquifer sensitivity.
(2) The well is not susceptible because it meets well construction standards and does not present a pathway for contamination to readily enter the water supply.

Aquifer Sensitivity - Aquifer sensitivity refers to the degree of geological protection afforded the aquifer(s) used by the public water supply.

Low - The bedrock aquifer is covered by one or more layers of fine-grained material that probably protect it from potential sources of contamination.

Source Water Susceptibility - Source water susceptibility refers to the likelihood that a contaminant will reach the source of drinking water. It reflects the results of assessing well sensitivity, aquifer sensitivity, and water quality data.

Low - The source of drinking water is covered by one or more layers of fine-grained material that probably protect it from potential sources of contamination.

Contaminants of concern - The following statement summarizes the potential contaminants for which a source of drinking water may be at risk:

None of the contaminants regulated under the federal Safe Drinking Water Act for this public water supply system have been detected in the source water. A listing of these contaminants can be found at http://www.epa.gov/safewater.

Last Date when data was updated: 12/30/2013