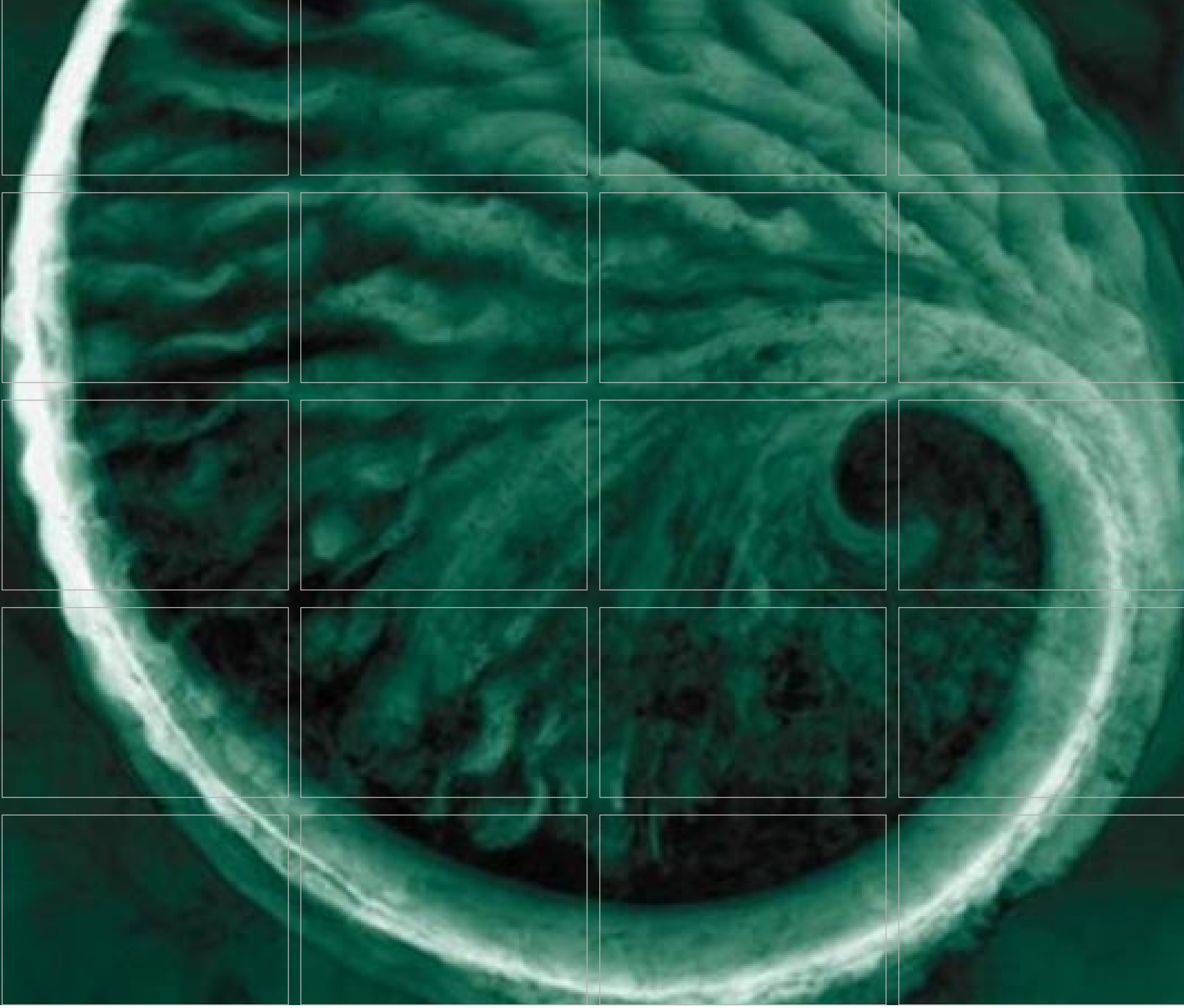

Focused Site Investigation Report
Remedial Objectives Report
Remedial Action Plan
Remedial Action Completion Report

507 East Washington Street Site
Former Champaign MGP – Champaign, Illinois

May 2021

ERM Project No. 0529307

The business of sustainability

ERM

Focused Site Investigation Report
Remedial Objectives Report
Remedial Action Plan
Remedial Action Completion Report

507 East Washington Street Site

Former Champaign MGP
LPC: 0190100008
Champaign, Illinois

May 2021

Prepared for:

AMEREN SERVICES
ST. LOUIS, MISSOURI

Prepared by:

ENVIRONMENTAL RESOURCES MANAGEMENT
ROLLING MEADOWS, ILLINOIS

ERM Project No. 0529307

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EXECUTIVE SUMMARY

Ameren Illinois Company (Ameren) performed a focused site investigation in 2008 on several properties surrounding a former manufactured gas plant (MGP) property located in Champaign, Illinois. Site investigation activities were performed to evaluate environmental conditions at these properties, and to characterize the soil and groundwater in accordance with 35 Illinois Administrative Code (IAC) Section 740. The property located at 507 East Washington Street (the "Site") was among the properties investigated in 2008. An Off-Site Investigation Report (OSIR) was prepared and submitted to the Illinois Environmental Protection Agency (IEPA) on August 22, 2008. The OSIR outlined the approach used to evaluate and delineate the extent of subsurface impact beyond the boundaries of the former Champaign MGP property, which included the 507 East Washington Site. The IEPA reviewed and approved the OSIR (with revisions) on September 26, 2008.

This combined Focused Site Investigation Report (SIR), Remedial Objectives Report (ROR), Remedial Action Plan (RAP), and Remedial Action Completion Report (RACR) pertains only to possibly MGP-related constituents and only to the property at 507 East Washington Street. The Site has been enrolled in the IEPA Site Remediation Program (SRP) along with the former Champaign MGP property located at 308 N. 5th Street, under the State ID 0190100008. Ameren is the current owner and remedial applicant for the Site located at 507 East Washington Street.

As indicated above, site investigation activities were performed on the property in May 2008. The activities consisted of direct-push sampling, groundwater monitoring well installation, and soil gas sampling. Five probeholes were advanced on the Site for sample collection purposes. A total of 16 soil samples were collected from the five probeholes and analyzed for benzene, toluene, ethylbenzene, xylene (BTEX), polycyclic aromatic hydrocarbons (PAHs), cyanide, arsenic, chromium, and lead. Subsurface soil impact exceeding the project remediation objectives (ROs) for the construction worker soil inhalation and the soil component of groundwater ingestion exposure pathways were identified on the property.

One, two-inch diameter PVC groundwater monitoring well was installed on the property to a depth of 15 feet below ground surface (bgs) during the 2008 investigation activities. Groundwater samples have been collected from this monitoring well on a quarterly basis since December of 2008. To date, no groundwater impact has been identified on the property.

A vacant, single family residence was located on the property in 2008. Soil gas sampling was performed on the property in October 2008 by the RAM Group of Gannett Fleming, Inc. (RAM Group). Three soil gas samples were collected: one on the west side, one on the east side, and one on the south side of the residence. Soil gas samples were analyzed for volatile organic compounds (VOCs), naphthalene and a leak detection compound. No exceedances of the indoor inhalation ROs were identified during the soil gas sampling event at the property.

In 2009, the single family residence was demolished following Ameren's purchase of the property. The property is currently a vacant lot.

No remediation activities are proposed for the property at 507 East Washington Street. Ameren has elected to address the subsurface soil impact through the use of institutional controls. Ameren intends to exclude the potential exposure pathways and therefore meet the requirements for a Focused No Further Remediation (NFR) through the implementation of institutional controls, as presented in this report.

PSC Industrial Outsourcing, L.P. (PSC), and its predecessor companies, has been the environmental consultant for Ameren Illinois at the former Champaign MGP since work started in the 1990's. In May of 2020, Environmental Resources Management, Inc. (ERM) was hired as the consultant to complete the report submittal process for the Site. The site investigation activities described in this report, and the data generated during the various phases of investigation were compiled by PSC. ERM has used the available information provided by PSC to prepare this report.

1.0 *INTRODUCTION*

Ameren Illinois Company (Ameren) performed a focused site investigation in 2008 on several properties surrounding a former manufactured gas plant (MGP) located in Champaign, Illinois. Site investigation activities were performed to evaluate environmental conditions at these properties, and to characterize the soil and groundwater in accordance with 35 Illinois Administrative Code (IAC) Section 740. The property located at 507 East Washington Street (the "Site"), as illustrated on Figure 1-1, was among the properties investigated in 2008. An Off-Site Investigation Report (OSIR) was prepared by PSC and submitted to the Illinois Environmental Protection Agency (IEPA) on August 22, 2008. The OSIR outlined the approach used to evaluate and delineate the extent of subsurface impact beyond the boundaries of the former Champaign MGP property, which included the East Washington Site. The IEPA reviewed and approved the OSIR (with revisions) on September 26, 2008.

The constituents of concern (COCs) identified during the focused site investigation and report preparation activities are presented in Table 1-1. The Site has been enrolled in the IEPA Site Remediation Program (SRP) along with the former Champaign MGP site located at 308 N. 5th Street, under the State ID 0190100008. Ameren is the current owner and remedial applicant for both of these properties.

This combined Focused Site Investigation Report (SIR), Remedial Objectives Report (ROR), Remedial Action Plan (RAP), and Remedial Action Completion Report (RACR) pertains only to the 507 East Washington Street Site. The report was prepared on behalf of Ameren to present the results of the investigation performed on the property at the Site. This report also presents the remediation objectives (ROs) for the Site, the methods Ameren has selected to meet the project ROs, and the measures used to meet the requirements for a Focused No Further Remediation (NFR).

2.0 PROPERTY INFORMATION

The following section presents information relative to property setting, history, previous activities, and geologic and hydrogeological information for the Site located at 507 East Washington Street.

2.1 PROPERTY SETTING

The Site consists of a 0.19-acre lot located within the city limits of Champaign, Illinois, in the northeast quarter of the southwest quarter of Section 7, Township 19 North, Range 9 East of the Third Principal Meridian (Figure 2-1). The property is currently a vacant lot that formerly contained a single family residence. This residential building was demolished in 2009 following Ameren's purchase of the property. The Site is currently a grass-covered lot.

Washington Street borders the property to the north, and a Norfolk-Southern railroad right-of-way borders the property to the south. The former Champaign MGP is located immediately south of the railroad right-of-way. The adjacent properties to the west contain single family residences followed by Fifth Street, and the properties to the east contain single family residences followed by Sixth Street. Figure 2-2 shows the property boundaries and the layout of the surrounding properties. Figure 2-2 also identifies the remediation site boundary for the 507 East Washington Street Site.

2.2 LEGAL DESCRIPTION

The legal description for the property at 507 East Washington Street is as follows:

> *"Lot 3 in Block 29 of Seminary Addition to Urbana, now part of the City of Champaign, less the railroad right-of-way through said Lot, as per plat recorded in Deed Record "T" at Page 30, situated in Champaign County, Illinois."*

2.3 HISTORICAL PROPERTY USES

The summary of historical property uses was developed from Sanborn Fire Insurance Maps (Sanborn Maps), Brown's Directory of American Gas Companies (Brown's Directories), Ameren historical files, and aerial photographs. Copies of the Sanborn Maps, Brown's Directories, and aerial photographs are included in Appendix A – Historical Information.

The Site appeared on the 1915 Sanborn map as a single family dwelling. A garage located south of the residence appeared on the 1924 Sanborn Map. The property appeared unchanged on the 1951 Sanborn Map. A single family residence was located on the property in aerial photographs from 1993 through 2008. The residence was demolished after Ameren purchased the property in 2009.

Adjacent Properties

The adjacent properties along Washington Street to the north, east, and west have also consisted of residential dwellings since approximately 1915. A bulk oil station was located at the southwest corner of North 5th Street and East Washington Street, and south of the railroad tracks, from 1915 through 1951 according to Sanborn maps. No Sanborn maps were available after 1951. The bulk oil station is not shown on aerial photographs from 1993 through 2014. The bulk oil station was located approximately 120 feet west-northwest of the MGP Site, and approximately 300 feet west of the 507 Washington Street property.

The Cleveland, Cincinnati, Chicago & St. Louis Railroad and the Wabash Railroad operated rail lines to the south of the Site from 1887 through 1951. A single rail line is depicted in aerial photographs from 1993 to the present. This rail line is currently operated by Norfolk-Southern Railroad.

Former MGP Property

Historical information relative to the former MGP located south of the Site indicates that gas was manufactured at the MGP as early as 1869 and continued through 1933. Gas was produced by coal carbonization, oil gasification, and carbureted water gas methods during various periods of operation. Past Site features included the former gas plant and associated buildings, three tar wells, two gas holders (GH-1 and GH-2), and two oil tanks located on the northern portion of the MGP. The former booster house, a third gas holder (GH-3), three purifiers, and seven oil tanks were located on the southern portion of the MGP property (see the Sanborn Maps in Appendix A).

After gas manufacturing operations ceased in 1933, the plant was maintained for stand-by production purposes until about 1955. Plant facilities were demolished between 1955 and 1960, with the exception of the booster house. Although the MGP property remained vacant, Illinois Power, a predecessor of Ameren Illinois, maintained ownership of the property until 1979 when it was sold to the American Legion. Illinois Power repurchased the MGP property from the American Legion in 1991 after preliminary environmental investigations indicated the presence of MGP-related impacts on the MGP property. The property is currently owned by Ameren Illinois. The booster house was demolished in December 2008 prior to the remediation of the MGP.

Remediation activities were conducted on the former MGP property between 2009 through 2017. These activities consisted of the excavation and disposal of impacted soil. Almost the entire MGP property was excavated to depths ranging from 16 to 28 feet below ground surface (bgs) during remedial activities conducted between 2009 and 2011. Approximately 187,000 tons of impacted soil were removed from the MGP property and replaced with non-impacted backfill. Backfill consisted of silty clay soil or CA6 crushed limestone. Subsequent remedial actions were completed on the MGP property to address remaining impacted soils, which included an In-Situ Chemical Oxidation (ISCO) treatment performed in 2013 and removal of additional soil along the western property boundary in 2017.

2.4 REGIONAL GEOLOGICAL AND HYDROLOGICAL SETTING

The City of Champaign lies within Champaign County in East Central Illinois. Champaign is part of the Bloomington Ridge Plain in the Till Plains section of the Central Lowland physiographic region of Illinois. The landscape is characterized by widely spaced continental glacial moraines with nearly featureless ground moraine plains. The geology beneath Champaign County has been summarized as 100 to 400 feet of Wisconsinan, Illinoian, and Kansan glacial drift deposited on Paleozoic bedrock which dips eastward and southward toward the Illinois Basin.

Groundwater resources in Champaign County come from three aquifers within the Wisconsinan, Illinoian, and Kansan glacial deposits. The aquifers were named the Wedron, Glasford and Banner aquifers by Kempton et al (1982), after the glacial formation in which each is encountered. Within Champaign County, however, the aquifers have simply been defined as the upper, middle, and lower sand and gravel aquifers.

The upper sand and gravel aquifers found in the Wisconsinan Wedron Formation beneath Champaign County occur as isolated pockets or lenses of sand and gravel in the Champaign and Urbana Moraines, or outwash sand and gravel near the front of the moraines. Throughout Champaign County, wells completed in these isolated sands and gravels vary in depth from about 25 to 100 feet bgs. Water table elevations range from 650 feet (NAVD88 elevation) in eastern Champaign County to about 750 feet northwest of Champaign.

The middle sand and gravel aquifers found in the Illinoian Glasford Formation occur as fairly continuous layers in the Radnor and Vandalia Till Members. The top of the middle aquifer ranges from about 125 to 175 feet bgs near Champaign/Urbana, while the bottom ranges between 175 and 200 feet bgs. The water level elevations of wells finished in the middle aquifer range from about 630 feet around Champaign/Urbana, to about 720 feet in the northwest part of the County. The direction of flow appears to be towards the southwest (Sanderson and Zewde, 1976).

The lower sand and gravel aquifer encountered in the Kansan Banner Formation occurs as thick sand and gravel deposits of the Mahomet bedrock valley. The lower aquifer can be up to 150 feet thick, depending on proximity to the main channel of the Mahomet bedrock valley. The top of the Mahomet Sand is fairly consistent at an elevation of 500 feet, and the average width of the valley is about 12 miles in Champaign County. This deposit is composed of clean sand and gravel, although the deposit becomes siltier towards the valley margins.

The Paleozoic bedrock beneath the glacial deposits provides only small amounts of water from sandstone and limestone beds of the Pennsylvanian formations. The groundwater in Mississippian and older bedrock is too deep or mineralized to be considered a good source of water.

2.5 PRIVATE AND PUBLIC DRINKING WATER WELLS IN VICINITY

There are no public water supply wells within a one-half mile radius of the Site. The Illinois American Water Company (IAWC) supplies water from wells in the west well field located about three miles west of the Site. These wells average about 310 feet in total depth, and have between 50 and 100 feet of well screen. The wells in the west field produce water from the Mahomet Sand Member. IAWC also has water wells in the north well field located about one mile northeast of the Site. These wells average about 210 feet deep, with screens ranging from 10 to 50 feet in length. These wells produce water from the middle sand and gravel aquifer contained in the Glasford Formation.

2.6 SUBSURFACE GEOLOGY

The major geologic units present at the Site and across the investigation area, in descending order, are the surficial fill layer, the weathered and unweathered till units of the Wedron Formation, Upper Glasford Formation, and the sand member of the Lower Glasford Formation. Below the Glasford formations are the Upper and Middle Banner formations, beneath which is the bedrock at an estimated depth of 290 feet bgs in the vicinity of the Site.

2.6.1 *Upper Fill Material*

The upper two to five feet of soil across the Site consists of brown to dark brown silty clay with roots and gravel. Wood and brick fragments are also present in the silty clay unit in portions of the Site. Fill material containing gravel, cinders, and brick fragments are present on the southernmost property boundary adjacent to the railroad right-of-way.

2.6.2 *Silty Clay Unit*

On the Site, a silty clay unit presumed to be part of the weathered till is present below the fill material beginning at a depth of two to six feet bgs and extending to a depth of 12 to 16 feet bgs. The silty clay unit consists of a yellowish tan to yellowish brown material with traces of sand. The silty clay is a low plasticity material.

2.6.3 *Weathered Till Unit*

The weathered till unit is continuous beneath the study area, including the Site, and is believed to be part of the Batestown Till Member of the Wisconsinan Wedron Formation. The Weathered Till Unit was contacted at various depths during site investigation activities, averaging 10 to 15 feet thick beneath the Site.

The weathered till unit is comprised of brown to gray, silty clay with some oxidation evident along clay fractures. A number of minor sand and silty sand layers were also encountered. However, these sand layers are laterally discontinuous. The distinction between the weathered and underlying unweathered till units was often difficult to distinguish.

2.6.4 *Unweathered Till Unit*

The unweathered till unit is also believed to be part of the Batestown Till Member of the Wisconsinan Wedron Formation. This unit is generally differentiated from the overlying weathered till unit by its gray color and lack of weathering along fractures. The top of the unweathered till was encountered at depths ranging from 12 to 16 feet bgs. Sand and gravel layers were also encountered within the unweathered till unit. However, these layers were also not laterally continuous beneath the Site. The base of the unweathered till was generally encountered at a depth of 30 to 35 feet bgs across the Champaign MGP project area.

2.6.5 *Lower Silty Sand Unit*

Three deep boreholes drilled on the former MGP property adjacent to the south of the Site, encountered alternating thick sand, silty sand, and gravel units from approximately 30 feet bgs to approximately 100 feet bgs; a sand unit from approximately 100 feet bgs to 145 feet bgs; and alternating layers of sand and silt to boring terminations at approximately 175 feet bgs. The deeper deposits are believed to be the upper units of the Illinoisan Glasford Formation. However, the actual contact between the Wedron (unweathered till unit) and Glasford Formations (sandy units associated with the regional aquifer) was not delineated due to the similarities between these two geological units, and the rotary wash drilling method used in the deeper boreholes, hence the actual thickness of these two units at the Site is undefined.

2.7 *HYDROGEOLOGIC CONDITIONS*

There are three groundwater zones present in the investigation area, two of which are currently being monitored. The three zones are referred to as the shallow groundwater system, the intermediate groundwater system, and the deep groundwater system. Based upon the hydraulic conductivity testing results and the characteristics of these groundwater systems, the shallow groundwater system is classified as Class II groundwater, and the intermediate and deep groundwater systems are classified as Class I groundwater. Additional information regarding hydraulic conductivity testing is presented in Section 2.7.4 of this report.

Groundwater hydrology investigation activities completed as part of the Champaign MGP project investigation consisted of sampling the monitoring wells that had been installed during previous investigations prior to 2008, and the installation and sampling of 13 additional wells on the properties surrounding the former Champaign MGP during the off-site investigation completed in 2008. One shallow groundwater monitoring well, UMW-119, was installed on the subject Site during the investigation completed in 2008. The following sections describe the groundwater systems identified during investigation activities.

2.7.1 *Shallow Groundwater System*

The shallow groundwater system is an unconfined water-bearing zone with the saturation depth (water table) found in the surficial fill layer or the uppermost till unit. Nineteen monitoring wells, with screens set to intersect the shallow groundwater table, are located on the Champaign MGP and surrounding properties, and are monitored on a quarterly basis.

Groundwater in the shallow system beneath the Site generally flows to the north. The configuration of the shallow water table based upon the data collected during the April 2020 groundwater sampling event is shown on Figure 2-3. The depth to the shallow groundwater system typically ranges from 3 to 10 feet bgs across the study area. Groundwater was measured at a depth of 3.68 feet bgs in monitoring well UMW-119 during the April 2020 sampling event. Five additional shallow monitoring wells are located on or adjacent to the Washington Street properties north of the railroad tracks, as shown on Figure 2-3. The shallow groundwater system is classified as Class II – General Resource Groundwater.

2.7.2 *Intermediate Groundwater System*

Nine monitoring wells, located on and around the former Champaign MGP, are currently used to monitor the intermediate groundwater unit. There are no intermediate groundwater monitoring wells on the subject Site. However, monitoring well UMW-300 is located in the Washington Street right-of-way immediately north of the Site. The intermediate groundwater monitoring wells were installed with 10-foot screens to depths of 45 to 47 feet bgs to intersect the intermediate groundwater system. Based on information from the previous groundwater monitoring events, groundwater in the intermediate system beneath the property generally flows to the southeast. The intermediate potentiometric surface contour map from the April 2020 sampling event is provided as Figure 2-4. The depth to the top of the sand unit containing the intermediate groundwater system typically ranges from 30 to 35 feet bgs. Groundwater was measured at a depth of 26.65 feet bgs in intermediate monitoring well UMW-300 during the April 2020 sampling event.

2.7.3 *Deep Groundwater System*

Three deep wells were installed during previous investigations of the former Champaign MGP, and were monitored between 1992 and 1998. None of the deep wells were installed on the East Washington Street Site. The deep groundwater system is a sand and gravel zone within the Lower Glasford Formation beginning at a depth of about 151 feet bgs, and extending to a depth greater than 177 feet bgs. The sand and gravel layers encountered in this zone were much thicker and laterally continuous than the silty sand and sand units encountered in the weathered and unweathered till units. The water levels for the three wells screened in this zone stabilized at depths of approximately 120 feet bgs, and exhibited a regional gradient to the west-southwest. These three deep wells were abandoned in 1999.

2.7.4 *Aquifer Parameters*

Field hydraulic conductivity tests were performed on the shallow groundwater system by Burlington Environmental Inc. in 1990. The reporting indicated that a mean hydraulic conductivity was 1.6×10^{-4} centimeters per second (cm/sec) was observed at that time.

In 1997, IEPA began the classification of groundwater to prioritize groundwater bodies for the protection of the environment. According to 35 IAC Part 620, any geological material with a hydraulic conductivity of less than 1×10^{-4} cm/sec, and which does not meet the provisions of Section 620.210 (Class I), Section 620.230 (Class III), or Section 620.240 (Class IV), meets the definition of a Class II – General Resource Groundwater.

In 2011, it was determined that the hydraulic conductivity of the shallow ground water system would be measured and calculated in accordance IEPA guidance. At that time, only two of the groundwater monitoring wells in which hydraulic conductivity testing was historically performed in 1990 still existed. Therefore, additional field hydraulic conductivity testing was conducted in June 2011. In-situ permeability tests were performed on five shallow monitoring wells – UMW-102, UMW-107, UMW-108, UMW-109, and UMW-116.

These monitoring wells were tested by the variable head ("slug") test method. The test methods utilized were modifications of the slug test method described by Cooper et al. (1967), whereby a solid slug is lowered or raised into the saturated portion of the well column, and the resulting change in water level is measured over time. The slug tests were conducted using PVC slugs secured by ropes, and water levels were recorded using Aquistar PT2X Smart Sensors (PT2X) transducer dataloggers. In most cases, multiple tests were performed on each well to provide corroborating data, and because of the inherent variability in groundwater level recoveries when a slug is inserted versus removed from a well. However, not all of the tested wells had multiple tests and/or analyses because of very low permeability or limitations associated with low groundwater levels and well construction.

A laptop computer was used to download the data from the dataloggers, and the data was analyzed using AQTESOLV™ for Windows (Version 4.50.002), an aquifer test analysis software package developed by HYDROSOLVE. Two analytical methods were utilized on the data: the Bouwer-Rice method (1976) for unconfined aquifers, and the KGS model with Skin for unconfined aquifers (Hyder et al., 1994).

The hydraulic conductivity results of the June 2011 testing ranged from a low of 2.6×10^{-6} cm/sec to a high of 9.6×10^{-5} cm/sec, with a geometric mean value of 3.1×10^{-5} cm/sec.

Therefore, based on the testing performed, the groundwater within the shallow aquifer system in the vicinity of the Site meets the definition of a Class II – General Resource Groundwater. Additional information regarding this field hydraulic conductivity testing can be found in the *Groundwater Monitoring Update – Quarter 2, 2011 Sampling Event and Shallow Groundwater Classification Field Hydraulic Conductivity Testing* report dated August 18, 2011 (PSC, 2011).

Based on hydraulic conductivity testing performed in the intermediate groundwater system, this zone is classified as Class I groundwater. Slug testing was performed in four intermediate wells (UMW-301, UMW-302, UMW-303, and UMW-304) during the off-site investigations, which indicated horizontal hydraulic conductivity values that ranged from 2.80×10^{-2} centimeters per second to 8.63×10^{-2} cm/sec. The mean hydraulic conductivity calculated using data from the four intermediate wells was 4.85×10^{-2} cm/sec. These hydraulic conductivity data were presented in the 2008 OSIR.

2.8 FUTURE PROPERTY USES

As mentioned previously, the Site is currently a vacant residential lot containing one groundwater monitoring well and a concrete driveway from the former residence. Ameren does not anticipate changes to the property use.

3.0 ENFORCEMENT ACTIONS

No enforcement actions have taken place or are known to be pending for the East Washington Street Site. The property was one of several that were investigated and included in the 2008 OSIR for the former Champaign MGP Site that was previously submitted to the IEPA. The Site was also evaluated for vapor intrusion before the residence was demolished, the results of which were presented in the *Evaluation of Soil Gas Data Collected at Residential Properties near Former MGP Site, Champaign, Illinois* (RAM, 2008) prepared by RAM Group.

4.0 SITE INVESTIGATION ACTIVITIES

As required in IAC Section 740.435(b)(4), the following sections provide documentation of the field activities that were performed to characterize the Site during investigation activities. Site investigation activities were performed in May 2008 to delineate impact beyond the property boundary of the former Champaign MGP. This section describes the investigation activities completed on the Site located at 507 East Washington Street. Additional information from the May 2008 investigation was presented in the 2008 OSIR.

4.1 DIRECT-PUSH SAMPLING

PSC performed soil sampling at the Site using a track-mounted GeoProbe™ rig with MacroCore samplers. Five probeholes were advanced to a depth of 30 feet bgs on the property at the locations illustrated on Figure 4-1. Each of the five probeholes were continuously sampled, and the soil cores were recovered in disposable acetate liners.

Following recovery, the filled acetate liners were placed on a level surface and opened. The recovered soil was screened in the field for visible impact, odors, and volatile organics using a photoionization detector (PID). Subsurface lithology and soil conditions were noted for the recovered samples. Field observations and PID readings were recorded on Records of Subsurface Exploration (Appendix B). More detail of the sample screening procedures is provided in Section 4.3 of this report.

Sampling equipment was decontaminated between sample intervals with an Alconox® wash and potable water rinse. The water source for decontamination was the Champaign public water supply. The MacroCore™ sampler and probe rods were decontaminated between each probehole location using a high-pressure wash.

Decontamination fluids were containerized in a 1,000-gallon poly tank staged on the former Champaign MGP. Unused portions of samples from the probeholes were placed within a rolloff container. Following the completion of investigation activities, the containerized decontamination fluids and soil cuttings and other solid materials in the roll-off were managed for off-site disposal, as discussed in Section 4.10.

4.2 MONITORING WELL INSTALLATION

Upon completion of direct-push sampling and evaluation of the field screening data, a shallow groundwater monitoring well (UMW-119) was installed near the center of the Site, as shown on Figure 4-1. The monitoring well was installed using a track-mounted GeoProbe™ rig with 4.25-inch hollow stem augers, and constructed as a two-inch diameter monitoring well installed to a depth of 15 feet bgs. The well was constructed with 10 feet of 0.010-inch machine-slotted PVC well screen from five to 15 feet bgs to straddle the shallow groundwater system. The well was completed with Schedule 40 PVC riser.

Sand pack was placed around the annular space of the well to a depth of approximately one foot above the top of the well screen. A bentonite clay seal was placed above the sand pack, and the well was completed with a flush-mount well protector set with pre-mix concrete at ground surface. The boring log (B-849) associated with this well is included in Appendix B.

4.3 SOIL SAMPLE SCREENING, COLLECTION AND HANDLING

Sixteen discrete soil samples were collected from five probehole locations installed on the property during the May 2008 investigation activities. The following sections provide a description of the methods used for sample screening, collection, and handling.

4.3.1 Sample Screening Procedures

As stated above, continuous soil sampling was performed at each probehole location. Recovered soil samples from the MacroCore™ system were placed on a flat-lying surface where the acetate liner containing the sample was removed and opened. The field geologist screened the recovered soil for evidence of impact using a calibrated PID, for indications of visible staining, and for the presence of odors. Screening with the PID was done at one-foot intervals to identify the most likely interval of impact. PID readings were recorded on the Records of Subsurface Exploration (Appendix B).

In addition to screening soil samples for indications of impact, the field geologist also recorded the following information for the characterization of subsurface conditions:

- sample interval and sample recovery;
- stratum thickness and depth;
- lithologic description of material;

- color and approximate grain size;
- visual soil classification by the Unified Soil Classification System (ASTM D2487 and 2488);
- moisture conditions and presence of water; and
- sample stiffness, hardness, and/or plasticity.

Based on field screening methods, samples with the highest observed level of impact were selected for laboratory analysis. Discrete soil samples were typically retained and analyzed representing materials within the zero to three-foot depth interval, the three to 10-foot depth interval, and the greater than 10-foot depth interval.

4.3.2 *Sample Handling Procedures*

Sixteen discrete soil samples were submitted for laboratory analysis. The field geologist used disposable nitrile gloves when handling the samples. To minimize the potential for cross-contamination, the gloves were discarded between sample intervals. Soil within selected zones of impact was placed directly into sample jars provided by the laboratory.

Sampling procedures for benzene, toluene, ethylbenzene, xylene (BTEX) analysis followed USEPA Method 5035. A portion of the soil from the selected interval was retained using a Teflon syringe provided by the laboratory. After collection of the sample, the soil was immediately placed in 40- milliliter (ml) sample vials provided by the laboratory. Each 40-ml vial contained the appropriate quantity of methanol or sodium bisulfate as pre-measured by the laboratory. Each jar was immediately labeled, sealed and placed into a cooler with ice.

Sampling procedures for polycyclic aromatic hydrocarbons (PAHs), cyanide and metals analyses followed USEPA SW 846. Soil from the selected intervals for sampling was placed in glass sample jars provided by the laboratory. Soil was placed in the jar with minimal disturbance and to provide the laboratory with sufficient quantities for laboratory analysis. Labels were affixed to each sample jar, which were then immediately sealed and placed in a cooler with ice.

4.3.3 *Sample Identification for Chemical Analysis*

All soil samples were given specific identifications based upon the sample location and depth. The samples were labeled in the field by the on-site geologist or field technician, and the corresponding identifications were entered on chain of custody records. The sample identification label and the chain of custody records included the following information:

- name of collector;
- date and time of collection;
- location;
- sample identification; and
- requested analyses.

4.4 MONITORING WELL DEVELOPMENT

After installation and prior to well purging and sampling, the monitoring well was developed to remove fine particles within the sand pack, well screen, and the well. The well was developed using a submersible Whale™ pump and disposable tubing. Water was purged until water quality parameters stabilized. A groundwater sample was collected from the well approximately two weeks following well installation.

4.5 GROUNDWATER SAMPLE COLLECTION AND HANDLING

Groundwater samples from the monitoring wells at the Site have been collected on a quarterly basis since well installation in 2008. The following sections discuss the groundwater sampling procedures and methods.

4.5.1 Groundwater Sampling Procedures

At the start of sampling, the depth to groundwater was measured with an electronic water level indicator (EWLI) to the nearest 0.01-foot. Groundwater level measurements were used to establish an estimated flow direction and gradient. Prior to collection of the groundwater samples, the monitoring well was purged using low-flow procedures using a dedicated QED™ bladder pump and dedicated tubing. Groundwater quality parameters were measured and recorded during purging, which included temperature, pH, conductivity, turbidity, oxidation-reduction potential (ORP), and dissolved oxygen (DO). These groundwater quality measurements were obtained using a water quality instrument fitted with a flow-through cell connected to the discharge side of a pump.

Groundwater samples were placed in sample containers provided by the laboratory immediately following recovery. The samples collected for BTEX analysis were placed in 40-ml vials with a premeasured amount of hydrochloric acid preservative. Samples for PAH analysis were placed in unpreserved, one-liter amber bottles. Samples for cyanide were collected in 500-ml bottles preserved with sodium hydroxide. Following sample collection, the samples were labeled and placed in a cooler of ice and delivered to the laboratory under proper chain-of-custody procedures.

4.5.2 Sample Identification for Chemical Analysis

All groundwater samples were given specific identifications based upon the well location, and were labeled in the field by the on-site geologist or field technician. The corresponding identification was entered on chain of custody records. The sample identification label and the chain of custody records included the following information:

- name of collector;
- date and time of collection;
- location;
- sample identification; and
- requested analyses.

4.6 LABORATORY ANALYSES

Soil and groundwater samples were analyzed for the set of parameters necessary to meet the requirements for a Focused NFR for the Site as provided in IAC Section 740.430. The list of constituents for analysis of soil and groundwater and their applicable analytical methods, are summarized in Table 1-1.

Samples generated during the site investigation activities conducted at the Site and the Champaign MGP Site were submitted to Teklab, Inc. located in Collinsville, Illinois (Teklab). Teklab has been accredited in accordance with the National Environmental Laboratory Accreditation Program (NELAP) and the Illinois Environmental Laboratory Accreditation Program (IL ELAP).

4.6.1 Soil Sample Analyses

Soil samples were analyzed for BTEX using USEPA Method 8260, PAHs using USEPA Method 8270-SIM, total and amenable cyanide using USEPA Method 9012, and arsenic, chromium, and lead using USEPA Method 6010.

4.6.2 Groundwater Sample Analyses

Groundwater samples were analyzed for BTEX using USEPA Method 8260, PAHs using USEPA Method 8270-SIM, arsenic, chromium, lead using Method 6010, and total cyanide using USEPA Method 9014.

During the 2018 second quarter groundwater sampling event, and subsequent quarterly groundwater sampling events, barium, cadmium, mercury, selenium and silver were added to the analysis list for the metals samples submitted to the analytical laboratory for analysis. These additional metals were analyzed using USEPA Methods 6010 and 7470.

4.7 *SOIL GAS SAMPLING*

Soil gas sampling was performed at the Site on October 15, 2008 by RAM Group. The following information is summarized from the *Evaluation of Soil Gas Data Collected at Residential Properties near Former MGP Site, Champaign, Illinois* prepared by RAM Group (RAM, 2008). A copy of the report is included in Appendix C.

A vacant, single family home existed on the property at the time of sampling. Three soil gas samples were collected; one on the west side, one on the east side, and one on the south side of the residential building within 3.5 feet of the foundation. Small diameter steel rods were installed using a GeoProbe® 550B track-mounted rig operated by Soil Essentials, Inc. The rods were advanced until the desired depths were reached. Hydrated bentonite was placed around the rods at the ground surface to plug the borehole annulus.

Soil gas samples were collected in one-liter SUMMA canisters (batch certified) using post-run tubing (PRT) methods. Teflon tubing was attached to the PRT adapter and pushed down inside the steel rods, seated, and threaded into an expendable point holder. A Swagelok® three-way valve and disposable syringe were connected to the tubing, and the steel rods were pulled up approximately 6 to 8 inches to dislodge the rods from the expendable point for sampling. Paper towels wetted with difluoroethane as a leak detection compound were placed around the steel rods at the ground surface seal and where the tubing exited the steel rods.

The initial vacuum of each one-liter SUMMA canister was recorded prior to sampling. Purge calculations were completed to determine the volume of air to be removed from the tubing prior to sampling. The tubing was purged using the disposable syringe and three-way valve. The SUMMA canisters were then connected to the three-way valve and the samples were collected until the final vacuum of the canisters were approximately five inches of mercury. The samples were shipped overnight to Air Toxics, Ltd. in Folsom, California for analysis.

4.8 *FIELD DOCUMENTATION*

Field activities were recorded on daily field reports. Information recorded on daily field reports included:

- beginning and ending times for daily activities;
- beginning and ending times for advancing each probehole or borehole location;

- field conditions and observations;
- refusals or offsets required to continue drilling;
- delays, difficulties, and problem conditions; and
- sequence of daily activities.

Records of Subsurface Exploration were recorded for each probehole or borehole advanced. Field copies of the Records of Subsurface Exploration are maintained with the project file. Information on Records of Subsurface Exploration included:

- borehole/probehole location and identification;
- sampling system, sample interval, and sample recovery;
- soil lithologic description, USCS symbol, and soil conditions (stiffness, moisture content, etc.);
- PID readings and observations for impact; and
- administrative information (driller, geologist, etc.).

4.9 DECONTAMINATION PROCEDURES

Equipment and materials used in direct-push sampling, drilling, sampling, and monitoring well construction were decontaminated prior to use at the Site. In addition, all non-disposable sampling and monitoring equipment was decontaminated between uses, and between sampling and monitoring locations. Equipment was washed using a laboratory-grade detergent followed by a clean-water rinse.

Heavy equipment such as the drill augers, probe rods, samplers, and the internal drill rods were decontaminated using a hot water, high-pressure washer. Decontamination fluids were collected and containerized in the wastewater storage tank staged on the Champaign MGP property for subsequent offsite disposal by Heritage Environmental Services.

4.10 INVESTIGATION DERIVED WASTE HANDLING

Decontamination fluids collected during the investigation was containerized in a 1,000-gallon poly tank staged on the former Champaign MGP property. Unused portions of samples from the probeholes, soil cuttings from drilling, and other solid wastes generated during the investigation were placed within a roll-off container. Following the completion of investigation activities, the contents of the wastewater storage tank and roll-off container were managed for disposal at off-site facilities. Management of the investigation derived wastes is discussed in greater detail in the 2008 OSIR.

5.0 INVESTIGATION RESULTS

The following sections provide a summary of the laboratory analytical results and a comparison to the Tiered Approach to Corrective Action (TACO) Tier 1 ROs outlined in IAC Section 742. The evaluation of subsurface hydrogeologic conditions and subsurface impact is based on investigation data derived from the 2008 activities, as well as subsequent quarterly groundwater monitoring.

5.1 SOIL SAMPLE ANALYTICAL RESULTS

The subsections below summarize soil sample analytical results for the sixteen samples collected from the 507 East Washington Street Site. Soil samples were analyzed for BTEX, PAHs, select RCRA metals, and cyanide. The analytical results were compared to the Tier 1 ROs presented in Table 5-1. The soil sample analytical data is presented in Table 5-2. Figure 5-1 illustrates the soil sample locations and depths that were in exceedance of the Tier 1 ROs. Copies of the laboratory analytical datasheets are provided in Appendix D.

5.1.1 BTEX Constituents

Sixteen soil samples were collected and analyzed for BTEX using USEPA Method 8260. One or more BTEX constituents were detected in all sixteen soil samples. The highest levels of benzene and total BTEX were identified in the soil samples obtained from depths greater than 10 feet bgs. Soil samples with BTEX concentrations exceeding Tier 1 ROs were identified in three of the five sample locations: B-846, B-847 and B-849.

5.1.2 PAH Constituents

Sixteen soil samples were collected and analyzed for PAHs using USEPA Method 8270 SIM. One or more PAH constituents were detected in thirteen of the sixteen samples analyzed. The only constituent with concentrations greater than a Tier 1 ROs was naphthalene, which occurred in samples collected from boring locations B-803, B-846, B-847 and B-849.

5.1.3 Inorganic Constituents

Six soil samples were collected and analyzed for arsenic, chromium, lead, and total cyanide. Metals were detected in all six soil samples collected, and total cyanide was detected in two of the soil samples. However, none of the detected inorganic compounds exceeded the respective Tier 1 ROs.

5.2 *SOIL GAS ANALYTICAL RESULTS*

The analytical results for the three soil gas samples collected at the Site are presented in Table 5-3. The results were compared to the residential soil gas objectives listed in Table H from Appendix B of IAC 35, Part 742. The comparison indicated that none of the compounds exceeded the indoor inhalation ROs. Additional information is provided in the *Evaluation of Soil Gas Data Collected at Residential Properties near Former MGP Site, Champaign, Illinois* (RAM, 2008) included in Appendix C.

5.3 *GROUNDWATER ANALYTICAL RESULTS*

For purposes of this evaluation, groundwater data from the quarterly groundwater sampling conducted in April 2020, in association with the Champaign MGP property, was utilized. The quarterly groundwater sampling being conducted for the Champaign MGP property includes Well UMW-119, which is located on the Site. To evaluate groundwater in the surrounding area of the Site, sampling results from offsite wells UMW-111 (north of the Site boundary), wells UMW-120 and UMW-102 (east of the Site), wells UMW-109 and UMW-118 (west of the Site), and wells UMW-125 and UMW-127 (south of the Site) were examined. The locations of the onsite well and surrounding offsite wells are shown in Figure 4-1.

Groundwater samples were analyzed for BTEX, PAHs, and cyanide. Arsenic, chromium, and lead were also sampled during the December 2008 quarterly groundwater sampling event for the MGP property. Because arsenic, chromium, and lead were not detected at levels above the Tier 1 ROs for groundwater in the December 2008 sampling event, they were removed from the list of analysis during future quarterly sampling events. However, starting with the second quarter groundwater sampling event in 2018, the list of metals selected for analysis was expanded to include the eight RCRA metals.

The sample analytical data were compared to the Illinois TACO ROs for Class II Groundwater Ingestion and the Tier 1 Groundwater Inhalation Diffusion & Advection at Residential Sites. Groundwater samples from monitoring well UMW-119 did not indicate the presence of BTEX nor PAHs in groundwater. Concentrations have also not exceeded the Class II Groundwater Objectives since installation of the well in 2008. Table 5-4 presents the quarterly groundwater analytical data for UMW-119 from the second quarter of 2018 through the second quarter of 2020. There were no detections of BTEX or PAHs in this period. During this period, barium and cyanide have been the only inorganic constituents detected and the concentrations are below Class II Groundwater Ingestion and the Tier 1 Groundwater Inhalation Diffusion & Advection at Residential Sites. It is noted, that although, not applicable, the concentrations are also below Class I Groundwater Standards.

Table 5-5 presents the groundwater analytical data for the samples collected in April 2020 for the onsite well and offsite surrounding wells. With the exception of Well UMW-127, BTEX and PAHs were not detected in groundwater in the surrounding offsite wells, including those to the south of the Site, in the direction of the former MGP Site. Well UMW-127 is located to the southeast, approximately 180 feet from the southeast corner of the Site, upon the property of the former MGP Site. This well indicated the presence of benzene, acenapthene, and naphthalene, but at concentrations one to four orders of magnitude below Class II Groundwater Objectives. Due to the northwest and southeast groundwater flow directions in the shallow and intermediate groundwater, respectively, at the former MGP Site, it is not likely that the constituents detected in Well UMW-127 would impact the Site. Inorganics (barium, cyanide, and chromium) were detected in one or more of the surrounding offsite wells; however, none of the samples collected from surrounding wells exceeded Class II Groundwater Objectives for inorganic constituents.

Additional information pertaining to groundwater beneath the former Champaign MGP and surrounding properties is available in the Groundwater Monitoring Updates submitted quarterly to the IEPA. Copies of the laboratory analytical datasheets for monitoring well UMW-119 from the first year of sampling (March 2009 to March 2010) and the most recent 2 years of sampling (June 2018 to April 2020) are included in Appendix E.

6.0 EXPOSURE PATHWAY EVALUATION

The following sections present an evaluation of the soil ingestion, soil inhalation, soil component of groundwater ingestion, and indoor inhalation exposure pathways as they pertain to the Site. Residential, industrial/commercial, and construction worker exposure scenarios were evaluated for the soil ingestion and soil inhalation exposure pathways. Tables 6-1 through 6-3 summarize the analytical data comparison to the Tier 1 ROs or the IEPA-accepted background levels for the exposure pathways, and identify the sample locations that exceed the ROs. The following sections also contain a discussion on the extent of impact with respect to the applicable exposure pathways.

6.1 SOIL INGESTION EXPOSURE PATHWAY

The soil sample analytical results were compared to the Tier 1 ROs for the soil ingestion pathway for residential exposure (0-3 feet bgs), commercial/industrial exposure (0-3 feet bgs), and construction worker exposure scenarios (all depths examined). None of the soil samples collected from the Site have constituents with concentrations that exceed applicable Tier 1 ROs for the soil ingestion exposure pathways; therefore, the soil ingestion exposure pathway is not a concern at this Site. The comparison of analytical results to the soil ingestion ROs is presented in Table 6-1.

6.2 SOIL INHALATION EXPOSURE PATHWAY

The soil sample analytical results were compared to the Tier 1 ROs for the soil inhalation pathway for residential exposure, commercial/industrial exposure, and construction worker exposure scenarios. This evaluation is presented in Table 6-2. None of the constituents observed to a depth of 10 feet bgs exceeded residential or commercial/industrial soil inhalation Tier 1 ROs; therefore, the soil inhalation exposure pathway for residential or commercial land use is not a concern at this Site.

For the construction worker exposure scenario, which evaluated samples collected at all depths, six of the 16 samples exceeded Tier 1 ROs for the construction worker soil inhalation exposure pathway scenario. One of the six samples was collected from the 3 to 10-foot depth interval; the remaining five samples were collected from depths from 16 to 23 feet bgs. The four COCs identified to exceed the construction worker soil inhalation exposure pathway ROs included benzene, ethylbenzene, total xylenes, and naphthalene. These exceedances indicate that the soil inhalation pathway for a construction worker is a concern and is to be further evaluated in the Tier 2 evaluation presented in Section 7.

The extent of impact for the soil inhalation exposure pathway for samples collected in the 3 to 10-foot depth interval is illustrated on Figure 6-1. The extent of impact for the soil inhalation exposure pathway for samples collected in the greater than 10-foot depth interval is illustrated on Figure 6-2.

6.2.1 *Residential Exposure*

No constituents were identified in soil, from the ground surface to 3 feet bgs and from 3 feet bgs to 10 feet bgs, at levels that exceed Tier 1 ROs for residential properties. Benzene was identified at levels that exceed the Tier 1 RO (0.8 mg/kg) for residential property use in samples B-846 (20.0-21.0 feet bgs), B-847 (22.0-23.0 feet bgs) and B-849 (16.0-17.0 feet bgs) - at concentrations of 3.16 milligrams per kilogram (mg/kg), 1.44 mg/kg, and 1.2 mg/kg, respectively – however, these were in soil below the residential Tier 1 exposure depths of 3 feet bgs (ingestion) and 10 feet bgs (inhalation), therefore, no exposure or risk is anticipated via the residential soil ingestion or inhalation pathways.

6.2.2 *Commercial or Industrial Exposure*

This property is currently zoned as residential property. For informational purposes, it is noted that no constituents observed in soil from the ground surface to 10 feet bgs exceeded commercial/industrial Tier 1 ROs for the soil ingestion or inhalation pathways. A benzene concentration in sample B-846 (20.0-21.0 feet bgs) was 3.16 mg/kg, as compared to the Tier 1 RO of 1.6 mg/kg. However, the depth of this concentration was greater than 10 feet bgs, therefore no exposure would be anticipated to occur.

6.2.3 *Construction Worker Exposure*

Soil sample B-803 (21.0-22.0 feet bgs) was reported to contain a naphthalene concentration that exceeded the Tier 1 RO for inhalation for the construction worker exposure pathway. The naphthalene concentration was 13.0 mg/kg, in comparison to the Tier 1 RO of 1.8 mg/kg.

Soil sample B-846 (8.5-9.5 feet bgs) contained total xylenes and naphthalene concentrations exceeding the Tier 1 ROs for inhalation for construction worker exposure. The total xylenes concentration was 8.82 mg/kg, compared to the Tier 1 RO of 5.6 mg/kg. The naphthalene concentration was 5.44 mg/kg, compared to the Tier 1 RO of 1.8 mg/kg.

Soil sample B-846 (10.0-11.0 feet bgs) also contained a naphthalene concentration that exceeded the Tier 1 RO for construction worker exposure, with a concentration of 12.4 mg/kg.

Ethylbenzene, total xylenes, and naphthalene concentrations exceeded the Tier 1 ROs for construction worker exposure in sample B-847 (22.0-23.0 feet bgs). The ethylbenzene concentration was 62.8 mg/kg, compared to the Tier 1 RO of 58 mg/kg. The total xylenes concentration was 75.6 mg/kg, compared to the Tier 1 RO for total xylenes of 5.6 mg/kg. The naphthalene concentration in B-847 (29.0-30.0 feet bgs) was 13.8 mg/kg, in comparison to the Tier 1 RO of 1.8 mg/kg.

Total xylenes and naphthalene concentrations also exceeded the Tier 1 ROs for construction worker exposure in sample B-849 (16.0-17.0 feet bgs). The concentrations were 5.64 mg/kg and 5.37 mg/kg, respectively.

6.3 SOIL COMPONENT OF GROUNDWATER INGESTION PATHWAY

The soil sample analytical results were compared to the Tier 1 ROs for the soil component of groundwater ingestion exposure pathway. As discussed previously, there are two groundwater systems currently monitored in the area of the Site. Based on the hydraulic conductivity testing results and the characteristics of the groundwater systems, the shallow groundwater system, typically encountered at 3 to 10 feet bgs in the area of the Site, is classified as Class II groundwater, and the intermediate groundwater system, typically encountered at 30 to 35 feet bgs, is classified as Class I groundwater. The soil component of groundwater ingestion analytical data comparison to the Class II ROs is presented in Table 6-3.

The unweathered till (silty clay) described in Section 2.6.4 is the hydraulic barrier that separates the shallow and intermediate groundwater systems. Soil samples collected from depths of less than 30 feet bgs were compared to the Class II ROs. The intermediate groundwater is located in the underlying sand unit; the upper elevation of this aquifer at the Site is not known. To be conservative, it is assumed that the intermediate aquifer is associated with the top of the sand unit observed at an approximate depth of 35 feet bgs. Soil samples were not collected at depths greater than 30 feet bgs.

Soil samples collected during the 2008 site investigation did not include analysis for pH. Therefore, to evaluate the soil component of groundwater ingestion exposure pathway for metals, the most conservative ROs from

Appendix B: Tables C and D were used for comparison to the concentrations of arsenic, chromium, and lead in the soil samples collected and analyzed.

Based upon comparison to these objectives, five of the sixteen soil samples collected contained concentrations of COCs that exceeded the Tier 1 ROs for the soil component of the groundwater ingestion pathway. The two constituents of concern that were identified were benzene and ethylbenzene.

The extent of impact for the soil component of the groundwater ingestion exposure pathway is illustrated on Figure 6-3.

6.3.1 Exceedance of Class II Objectives

The benzene concentrations in samples B-846 (8.5-9.5 feet bgs), B-846 (10.0-11.0 feet bgs), B-846 (20.0-21.0 feet bgs), B-847 (22.0-23.0 feet bgs), and B-849 (16.0-17.0 feet bgs) exceeded the Class II objectives for the soil component of groundwater ingestion. The reported concentrations were 0.438 mg/kg, 0.205 mg/kg, 3.16 mg/kg, 1.44 mg/kg and 1.21 mg/kg, respectively, compared to the Class II RO of 0.17 mg/kg.

An ethylbenzene concentration of 62.8 mg/kg exceeded the Class II RO of 19 mg/kg at sample location B-847 (22.0-23.0 feet bgs). No other samples were identified to exceed the Class II objectives for the soil component of groundwater ingestion exposure pathway.

Table 6-3 provides a summary of the analytical results compared to the Class II ROs.

The exceedances of benzene and ethylbenzene as compared to the Class II ROs indicate that the Soil Component to Groundwater pathway is a concern and is to be further evaluated in the Tier 2 evaluation presented in Section 7.

6.4 INDOOR INHALATION EXPOSURE PATHWAY

Soil gas sampling was performed on October 15, 2008, at the Site. Three soil gas samples were collected during the event. The sample locations are illustrated on Figure 6-4. The samples were analyzed for volatile organic compounds, naphthalene, and 1,1-difluoroethane (leak detection chemical). The soil gas analytical data from the three samples were compared to the Soil Gas ROs for the Indoor Inhalation Exposure Route – Diffusion and Advection provided in 35 IAC Part 742, Appendix B, Table H. The comparison indicated that the soil gas concentrations did not exceed the soil gas ROs; therefore, the indoor inhalation pathway is not a concern at this Site. Table 5-3 provides a summary of the soil gas analytical results compared to the ROs.

6.5 *SOIL SATURATION AND SOIL ATTENUATION CAPACITY EVALUATION*

The concentrations of organic COCs detected in the soil samples collected from the Site were compared to the soil saturation limits in 35 IAC Part 742 Appendix A, Table A for constituents with melting points less than 30ºC. The comparison of analytical results to the soil saturation limits is presented in Table 6-4. The only constituents with melting points less than 30ºC are benzene, ethylbenzene, toluene, and total xylenes. The soil analytical results for these four parameters were all below the respective soil saturation limit ROs.

In accordance with 35 IAC Part 742.305(b), the sum of the organic COCs was calculated for each of the sixteen soil samples collected. The sum of the organic compounds was then compared to the natural organic carbon fraction (*foc*) default values provided in Part 742.215 to evaluate soil attenuation capacity. The default value of 6,000 mg/kg for soil within the top meter and 2,000 mg/kg for soils below one meter were used. The comparison is presented in Table 6-4. None of the samples were found to exceed the default soil attenuation capacity values.

6.6 *GROUNDWATER INGESTION EXPOSURE PATHWAY*

Groundwater samples collected onsite were analyzed for BTEX, PAHs, total cyanide, and total RCRA metals over the last nine quarterly groundwater sampling events. No BTEX or PAHs were detected in the groundwater sampling conducted. Barium and cyanide were detected and the analytical results were compared to the Section 742.Appendix B: Table E Tier I Groundwater ROs for the Class II Groundwater Component of the Groundwater Ingestion Route. Neither barium nor cyanide exceeded Class II Groundwater Ingestion ROs for the Site; therefore, the groundwater ingestion pathway is not a concern at this Site.

Although not applicable, the evaluation also noted that these constituents did not exceed Class I Groundwater Ingestion ROs.

To evaluate groundwater in the immediate area of the Site and the potential for future migration of contaminants onto the Site, groundwater samples collected from offsite wells were also examined. As discussed in

Section 5.3, with the exception of Well UMW-127, BTEX and PAHs were not detected in groundwater in the surrounding offsite wells. Well UMW-127, located to the southeast of the Site, indicated the presence of benzene, acenapthene, and naphthalene, but at concentrations below Class II Groundwater Objectives and the groundwater flow direction in the area of this well is not towards the Site. Inorganics (barium, cyanide, and chromium) were detected in one or more of the surrounding offsite wells; however, none of the samples collected from surrounding wells exceeded Class II Groundwater Objectives; therefore, groundwater ingestion is not a pathway of concern at this Site.

The groundwater analytical results for monitoring well UMW-119 obtained for the previous two years are provided on Table 5-4. The April 2020 groundwater analytical results for wells in the surrounding area are provided on Table 5-5. Quarterly groundwater reports for previous sampling events completed at the former Champaign MGP and adjacent properties are accessible through the IEPA.

6.7 HORIZONTAL AND VERTICAL EXTENT OF IMPACT

Subsurface soil impact is present across a portion of the Site. Soil samples collected during the site investigation were identified to exceed Tier 1 ROs for:

1) the construction worker soil inhalation pathway, and
2) the soil component of groundwater ingestion exposure pathways.

A summary of the Tier 1 exceedances by location and exposure route is provided on Table 6-5.

6.7.1 0-10 foot Depth Interval

The soil samples with concentrations exceeding the Tier 1 ROs for the construction worker inhalation and soil component of groundwater ingestion were primarily at depths greater than 10 feet bgs. The only exception was the soil sample collected at probehole location B-846 from a depth of 8.5 to 9.5 feet bgs where total xylene and naphthalene were detected at concentrations exceeding the Tier 1 ROs for soil inhalation for the construction worker exposure pathway. Benzene was the only COC in the sample exceeding the Tier 1 RO for the soil component of the groundwater ingestion exposure pathway. All other COCs in samples collected from the upper 10 feet of soil on the Site were below the other applicable exposure pathway Tier 1 ROs.

6.7.2 *Greater than 10 foot Depth Interval*

In the depth interval between 10 and 20 feet bgs, only two samples obtained at the Site had concentrations reported above a Tier 1 RO. These samples included B-846 at a depth of 10 to 11 feet bgs, and B-849 at a depth of 16-17 feet bgs. Tier 1 ROs for the construction worker inhalation exposure pathway and the soil component of the groundwater ingestion exposure pathway for Class II groundwater were exceeded in these samples. Benzene was detected above the numeric RO for the residential inhalation exposure pathway in the sample from B-849; however, this depth is greater than 10 feet bgs and soil gas sampling has been conducted at this Site and indicated no exceedances of Tier 1 ROs for soil gas for the residential exposure pathway.

The majority of the soil impact at the Site was observed at or below a depth of 20 feet bgs, generally confined to a discrete interval between 20 and 23 feet bgs. Impacts were observed in samples collected from probehole locations B-803 (21-22 feet bgs), B-846 (20-21 feet bgs), and B-847 (22-23 feet bgs). The Tier 1 ROs were exceeded for the construction worker inhalation exposure pathway and the soil component of the groundwater ingestion exposure pathway for Class II groundwater.

Samples collected from locations B-803 and B-847 at a depth of 29 to 30 feet bgs, which were collected below the samples discussed in the previous paragraph where impacts were identified, did not exceed Tier 1 ROs for any of the COCs.

The probehole locations where the COCs were reported at concentrations exceeding Tier 1 ROs are shown on Figures 6-1 through 6-3.

6.8 *RECOGNIZED ENVIRONMENTAL CONDITIONS*

The recognized environmental conditions (RECs) on the Site located at 507 East Washington Street consist of the soil impacts encountered during the site investigation activities completed in 2008. The impacts observed indicated that the Construction Worker Soil Inhalation pathway and the Soil Component to Groundwater Ingestion pathway were pathways of concern in a Tier 1 evaluation and will be evaluated further in Section 7.

The source of impacts encountered at intermediate or greater depths, where the Tier 1 RO exceedances were observed, is not known. No operations associated with the former Champaign MGP Site were conducted on the 507 East Washington Street Site.

7.0 TIER 2 EVALUATION

As permitted in IAC Sections 742.600 and 742.900, Tier 2 evaluations have been performed using site-specific input parameters to establish Tier 2 ROs for the East Washington Street Site. At this time, Ameren has elected to perform Tier 2 evaluations for the construction worker soil inhalation exposure pathway for outdoor air, and Tier 2 evaluations for the soil component of groundwater ingestion pathway. The following sections summarize the Tier 2 evaluation results.

7.1 SOIL INHALATION

Tier 2 ROs for the soil inhalation exposure pathway were calculated using the SSL equations provided in 35 IAC Part 742, Appendix C, Table A. Tier 2 ROs were calculated for benzene, ethylbenzene, toluene, and total xylenes. Although the residential and industrial/commercial scenarios did not present a pathway of concern for soil inhalation, for informational purposes, Tier 2 ROs for carcinogenic compounds were calculated using the S6 and S7 equations for residential, industrial/commercial, and construction worker exposures. The Tier 2 ROs for non-carcinogenic compounds were calculated using the S4 and S5 equations for residential, industrial/commercial and construction worker exposures. The calculated ROs are included in Table 7-1. The input parameters for the Tier 2 calculations consisted of the default values provided in 35 IAC Part 742 Appendix C, Table B. The Tier 2 calculations and input parameters are included in Appendix F.

7.2 SOIL COMPONENT OF GROUNDWATER INGESTION

Two COCs were identified to exceed Tier 1 ROs for the soil component of groundwater ingestion exposure pathway; benzene and ethylbenzene. Tier 2 evaluations were performed using the S17 through S25 equations for the calculation of Tier 2 ROs for the COCs without the inclusion of migration through the groundwater phase. A summary of the calculated Tier 2 ROs is provided in Table 7-1.

Concentrations of the COCs were identified to exceed the calculated Tier 2 ROs developed using the SSL equations. The shallow groundwater at the Site flows in general to the north, towards residential areas north of the Site, and the intermediate groundwater flows in general to the southeast, under the railroad property and back onto the former Champaign MGP property to the south. As the exact depth at which the contribution to the intermediate aquifer begins is not known, to be conservative in calculating the migration of constituents, it is assumed that exceeding concentrations contribute to the shallow groundwater, which flows to the north. Further Tier 2 evaluations were performed incorporating the migration of the constituents through the groundwater phase. The calculations were performed using the SSL / R26 equations described 35 IAC Part 742.715 in order to model a projected migration distance through groundwater. The use of the Tier 2 equations incorporates a migration distance for the constituent to attenuate in the shallow groundwater zone. There is currently no groundwater impact on the East Washington Street Site. Table 7-2 provides a summary of the estimated distances required for each constituent to attenuate to their respective groundwater quality standard. Figure 7-1 depicts the distances required for attenuation. The Tier 2 calculation worksheets are provided in Appendix F.

7.2.1 *Surface Water*

A distance to meet surface water quality criteria for the soil component of groundwater ingestion exposure pathway was also calculated for the Site. The nearest surface water in the vicinity of the Site is Boneyard Creek, located approximately 1,700 feet west-southwest of the Site at its nearest point. The Tier 2 calculation worksheets are provided in Appendix F. The maximum calculated distance for this exposure pathway was 63 feet.

7.3 *ANALYTICAL DATA COMPARISON TO TIER 2 REMEDIATION OBJECTIVES*

The soil analytical results from the site investigation were compared to the calculated Tier 2 ROs. Concentrations of COCs that exceeded Tier 2 ROs were identified to exceed the construction worker soil inhalation and soil component of groundwater ingestion exposure pathways. This comparison is presented on Tables 7-3 and 7-4. The sample locations that exceed Tier 2 ROs are identified on Figure 7-2.

7.3.1 *Construction Worker Soil Inhalation (Outdoor Air)*

Five samples contained naphthalene and total xylenes concentrations that exceeded the Tier 2 ROs for soil inhalation for the construction worker exposure. These five samples are identified on Table 7-3 and are as follows: B-803 (21.0-22.0 feet bgs), B-846 (8.5-9.5 feet bgs), B-846 (10.0-11.0 feet bgs), B-847 (22.0-23.0 feet bgs), and B-849 (16.0-17.0 feet bgs).

The exceedances of naphthalene and total xylenes in subsurface soil will be addressed through exclusion of the pathway, as discussed in Section 8.

7.3.2 *Soil Component of Groundwater Ingestion*

Two COCs, benzene and ethylbenzene, exceed the calculated Tier 2 ROs for the soil component of groundwater ingestion exposure pathway.

Benzene was reported at concentrations exceeding the RO for Class II groundwater in five soil samples as shown Table 7-4, to include: B-846 (8.5-9.5 feet bgs), B-846 (10.0-11.0 feet bgs), B-846 (20.0-21.0 feet bgs), B-847 (22.0-23.0 feet bgs), and B-849 (16.0-17.0 feet bgs). The calculated Tier 2 value of 0.071 mg/kg for benzene was less than the Tier 1 RO of 0.17 mg/kg, the Tier 1 value was used for the comparison.

Ethylbenzene, at a concentration of 62.8 mg/kg in sample B-847 (22.0-23.0 feet bgs) exceeds the Tier 2 RO of 49.29 mg/kg. No other COCs exceed the Tier 2 ROs.

7.3.3 *Soil Component to Groundwater Ingestion – Migration Calculation*

Concentrations of benzene and ethylbenzene exceed the Tier 2 RO for the soil component to the groundwater ingestion pathway. Tier 2 evaluations were performed to calculate the modeled downgradient migration distance from the location of soil impact. The results of the Tier 2 migration calculations are summarized in Table 7-2. The maximum calculated migration distance for benzene is 86 feet. The calculated migration distance for ethylbenzene is 13 feet. These distances are shown in Figure 7-1.

8.0 PROPOSED PATHWAY EXCLUSION

Ameren intends to obtain a Focused NFR letter for the Site located at 507 East Washington Street. Exposure pathways will be excluded through the use of Tier 2 evaluations and institutional controls. No soil excavation will be performed on this Site. The following sections provide descriptions of how the COCs for each exposure pathway will be addressed in order to meet the requirements for receipt of a Focused NFR letter.

8.1 SOIL INGESTION EXPOSURE PATHWAY

The analytical data collected during the site investigation activities indicate that there are no COCs on the East Washington Street Site with concentrations that exceed the Tier 1 ROs for soil ingestion. Therefore, no actions are necessary to exclude this exposure pathway.

8.2 SOIL INHALATION EXPOSURE PATHWAY

Five soil samples collected from the Site were found to exceed the Tier 2 ROs for the soil inhalation exposure pathway for the construction worker scenario. One of the samples was in the 3 to 10-foot depth interval, and the remaining samples were at depths greater than 10 feet bgs. None of the soil samples collected in the upper three feet of soil exceeded their respective ROs . The following subsections describe how the exposure pathway will be addressed for each depth interval.

8.2.1 Soil Impact from 3 to 10 Feet

One soil sample collected from a depth of 8.5 to 9.5 feet bgs exceeded the Tier 2 ROs for the soil inhalation exposure pathway in the upper 10 feet of soil. The sample contained a naphthalene concentration exceeding the ROs for construction worker exposure. The exceedance will be addressed through the incorporation of an institutional control. The institutional control will require notification to construction workers of the presence of COCs and the potential for exposure, should construction activities take place within the impacted area. Additional details regarding the notification are provided in Section 9 of this report.

8.2.2 *Soil Impact Below 10 Feet*

Five soil samples collected at depths below 10 feet bgs exceeded the Tier 2 ROs for the soil inhalation exposure pathway. These samples contained concentrations of COCs that exceeded ROs for construction worker exposure, as described in Section 6.2 of this report. The impacted soil at depths greater than 10 feet bgs will be excluded by institutional control requiring construction worker notification. The institutional control will require notification to construction workers of the presence of COCs and the potential for exposure should construction activities take place within the impacted area.

8.3 *INDOOR INHALATION EXPOSURE PATHWAY*

The analytical data from soil gas sampling performed on the Site indicate that there are no COCs exceeding the ROs for the indoor inhalation exposure pathway. Additionally, as presented in Table 5-5, groundwater collected from the wells screened in the shallow aquifer indicated no exceedance of the indoor inhalation ROs listed in 35 IAC Part 742, Table H. Benzene, ethylbenzene, and naphthalene were detected at concentrations that would exceed the diffusion and advection groundwater indoor inhalation ROs (Table H); however, these samples were at depths of up to 30 feet bgs and there is a shallow aquifer body between these concentrations and any future buildings if migration were to occur. Therefore, no further actions are necessary to exclude this exposure pathway.

8.4 *SOIL COMPONENT OF GROUNDWATER INGESTION EXPOSURE PATHWAY*

Five soil samples were identified to exceed Tier 2 ROs onsite for the soil component of groundwater ingestion exposure pathway, as discussed in Section 6.3 of this report. However, no BTEX or PAHs, including benzene and ethylbenzene, have been detected in groundwater below the Site or in the adjacent areas, indicating that migration to groundwater from soil at the Site is not occurring. There have been no industrial activities at this or the neighboring former MGP property for more than 30 years. As no BTEX or PAHs have been detected in groundwater onsite, migration of constituents in groundwater in the area of the Site is not significant and the Tier 2 calculation of migration distance is an overestimation.

Regardless, assuming factors would change and migration from soil to groundwater would become a significant pathway in the future, the nearest point of compliance is estimated to be 100 feet from the source and, as the Tier 2 modeling indicates, benzene and ethylbenzene will meet groundwater objectives prior to reaching compliance points. Due to the above factors, no remedial action is required to address the Soil Component to Groundwater Pathway.

Although the data does not indicate that it is required, Ameren will voluntarily implement a groundwater restriction upon the Site, as discussed in Section 8.

8.5 GROUNDWATER INGESTION EXPOSURE PATHWAY

Groundwater monitoring has been performed on the East Washington Street Site since 2008. None of the samples collected from the monitoring well located on the property (UMW-119) have concentrations of COCs that exceed the Class II groundwater ROs. Further, none of the groundwater monitoring wells located on the adjacent Washington Street properties to the north of the former Champaign MGP property have concentrations of COCs exceeding groundwater ingestion objectives. And no BTEX or PAHs have been detected in groundwater at or north of the Site. Therefore, no further actions are necessary to exclude this exposure pathway. However, Ameren is electing to implement a restriction against the installation of drinking water wells on the Site to be protective.

9.0 SPECIAL CONDITIONS

The use of institutional controls (construction worker notification) will be implemented in order to obtain a Focused NFR letter for the Site. No surface soil impact (0 to 3 feet bgs) was identified, and only one soil sample within the 3 to 10 foot depth interval was identified to exceed Tier 1 ROs for construction worker exposure. Soil impact in exceedance of Tier 1 ROs for soil component of groundwater ingestion and construction worker exposure were identified at depths greater than 10 feet bgs. No soil excavation will be necessary at the property to meet the requirements to obtain a Focused NFR letter. However, the following special conditions are required for site closure.

9.1 INSTITUTIONAL CONTROLS

Institutional controls will be required for the Focused NFR letter for the East Washington Street Site. The institutional control to be implemented to achieve a Focused NFR letter will be for the notification of construction workers for potential exposure to subsurface impact. In addition, although not required by the investigation findings and Tier 2 evaluation, Ameren will implement a deed notice restricting the installation of drinking water wells on the Site.

The following subsections provide additional information about each of the institutional controls.

9.1.1 Construction Worker Notification

Soil samples with concentrations of COCs above Tier 1 ROs for the soil inhalation exposure pathway for the construction workers scenario were identified on the property. Therefore, compliance with construction worker notification and Occupational Safety and Health Administration (OSHA) worker protection standards will be applicable for the property. An institutional control will be required to ensure that construction workers are notified of conditions at the property that exceeded worker protection ROs, and that any future construction activities are conducted in accordance with applicable OSHA regulations pursuant to 29 CFR 1910.120. The construction worker notification will be required for any subsurface work that will be performed within the property boundaries at a depth of three feet or greater. Figure 9-1 illustrates the area that will require construction worker notification. Appendix G presents the planned ELUC for the Site.

9.1.2 *Groundwater Environmental Land Use Control*

To provide additional assurance in the event that migration of constituents from the soil to the groundwater would occur in the future and to further address the exceedance of the soil component of groundwater ingestion pathway ROs, groundwater at the remediation site will be prohibited from drinking water use. Ameren will implement an Environmental Land Use Control (ELUC) on the Site to prohibit the use of groundwater from beneath the Site for drinking water uses. Ameren will use the standard ELUC format developed by the IEPA.

10.0 SUMMARY AND CONCLUSIONS

Site investigation activities were performed on the Ameren Site located at 507 East Washington Street in Champaign, Illinois. COCs were identified to exceed Tier 1 ROs in subsurface soils for the construction worker inhalation pathway and the soil component to groundwater ingestion pathway. No groundwater or indoor inhalation impact was identified during the site investigation activities. Tier 2 ROs for the soil inhalation and soil component of groundwater ingestion exposure pathways were calculated for the COCs. Concentrations of COCs exceeding the Tier 2 ROs were identified. Based on the results of these investigations, Ameren has elected to address the reported exceedances through the use of the following specific elements:

- Construction worker notification; and
- Self-implementation of an environmental land use control to prohibit groundwater use at the Site.

The soil inhalation exposure pathway and the soil component of groundwater ingestion pathway are effectively excluded through the use of the institutional controls. No exceedances of the ROs for the soil ingestion or groundwater ingestion exposure pathway were identified.

Ameren has met the requirements to address constituents (BTEX, PAHs, and heavy metals) possibly associated with the former Champaign MGP Site to the south of the Site boundary by investigating the Site and will be implementing institutional controls to control exposure to Site impacts. Therefore, no removal or treatment of the impacted media is considered necessary. Ameren is requesting a Focused NFR letter be issued for the property located at 507 East Washington Street.

11.0 REFERENCES

PSC. (2008). *Off-Site Investigation Report (OSIR)*

PSC. (2011). *Groundwater Monitoring Update – Quarter 2, 2011 Sampling Event and Shallow Groundwater Classification Field Hydraulic Conductivity Testing*

RAM. (2008). *Evaluation of Soil Gas Data Collected at Residential Properties near Former MGP Site, Champaign, Illinois*

12.0 *LICENSED PROFESSIONAL ENGINEER REVIEW*

For those portions of the work performed before my involvement:

I have reviewed documentation of the prior site investigation activities and believe the documentation is suitable for compliance with 35 Ill. Adm. Code 740.

For those portions of the work performed after my involvement:

I attest that all the site investigation and proposed remedial actions, since my involvement, which are subject of this plan(s) or report(s) were performed under my direction, and this document and all attachments were prepared under my direction or reviewed by me, and to the best of my knowledge and belief, the work described in the plan and report has been designed or completed in accordance with the Illinois Environmental Protection Act (415 ILCS 5), 35 Ill. Adm. Code 740, and generally accepted engineering practices or principles of professional geology, and the information presented is accurate and complete.

Name: Alan Joseph Cork

Signature:

Illinois Licensed Professional Engineer

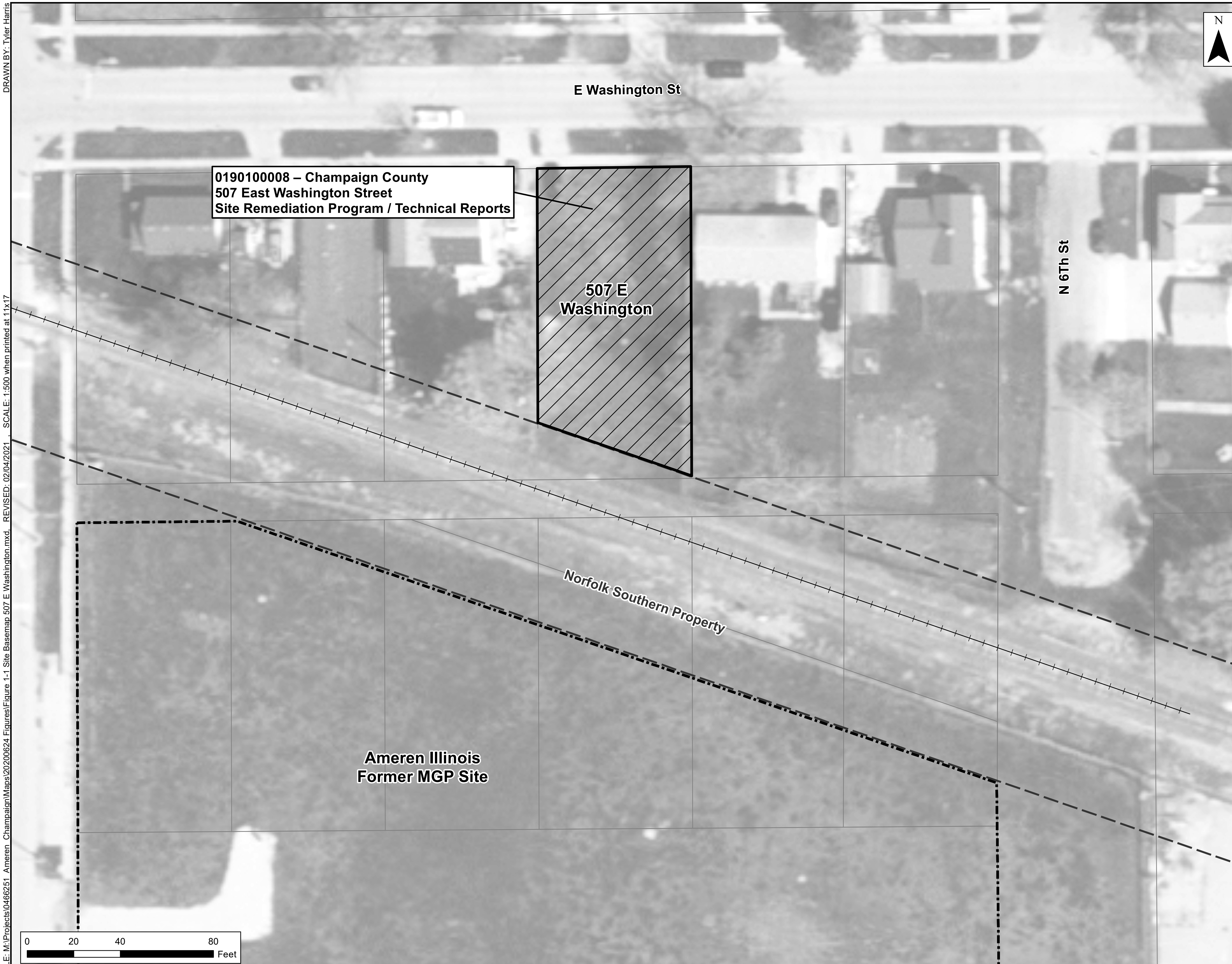
ALAN JOSEPH CORK
LICENSED
062-053938
ILLINOIS
PROFESSIONAL ENGINEER

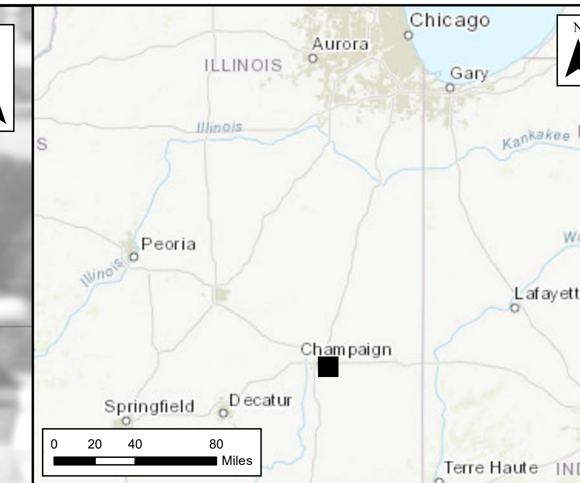
Date: 5/21/2021

License No. 062-053938

Expiration Date 11/30/2021

Figures





Legend

- Ameren MGP Property Boundary
- Remediation Site Area
- Norfolk Southern Property
- Railroad Centerline
- Parcel Lot Line

Notes:

Parcel ID: 46-21-07-330-005
Area = 0.19 Acres

Figure 1-1
Site Base Map
Ameren Services
507 E Washington St
Champaign, Illinois

Environmental Resources Management
www.erm.com

DRAWN BY: Tyler Harris
FILE: M:\Projects\0466251 Ameren Champaign\Maps\20200624 Figures\Figure 1-1 Site Basemap 507 E Washington.mxd, REVISED: 02/04/2021, SCALE: 1:500 when printed at 11x17

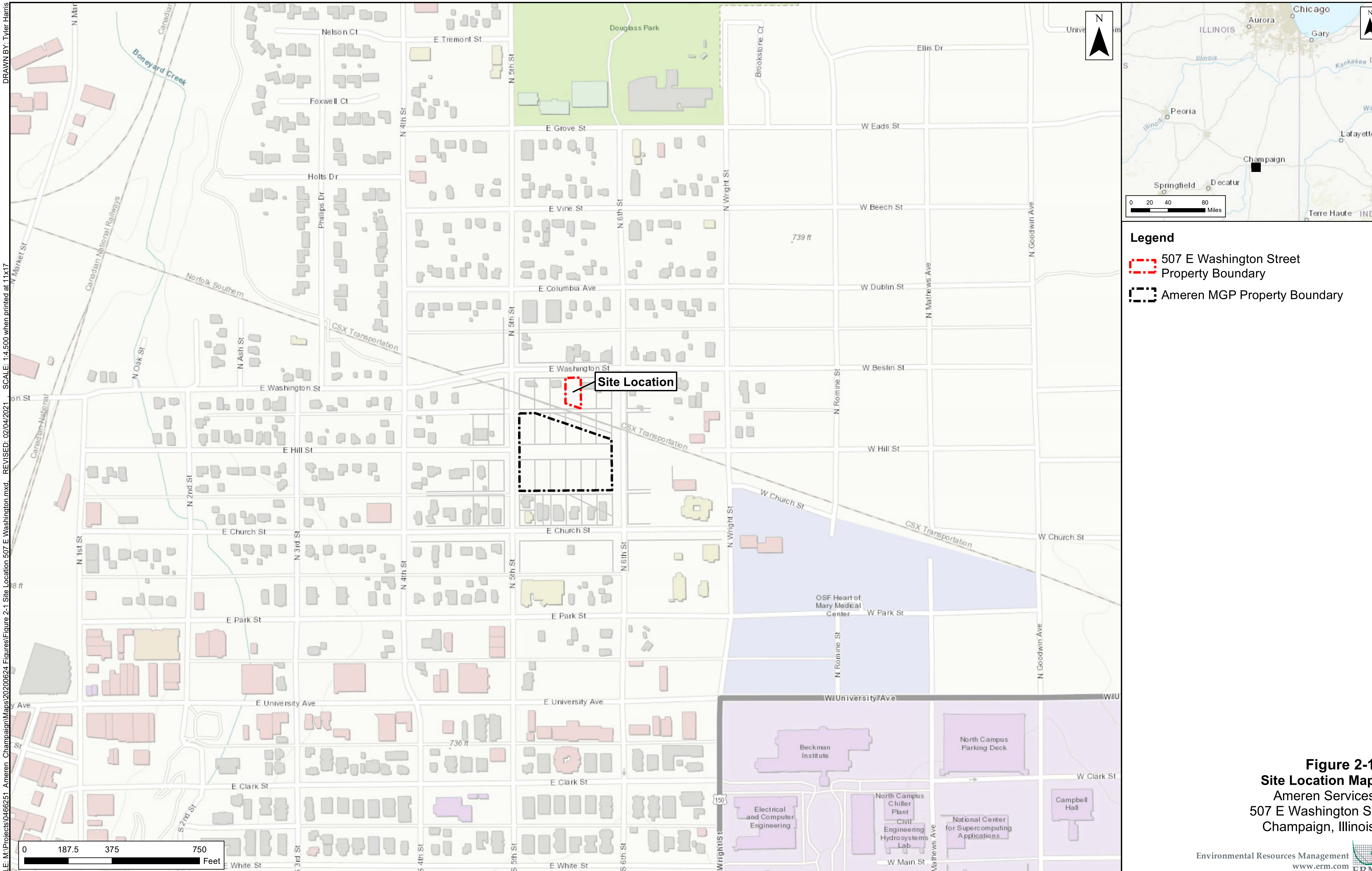
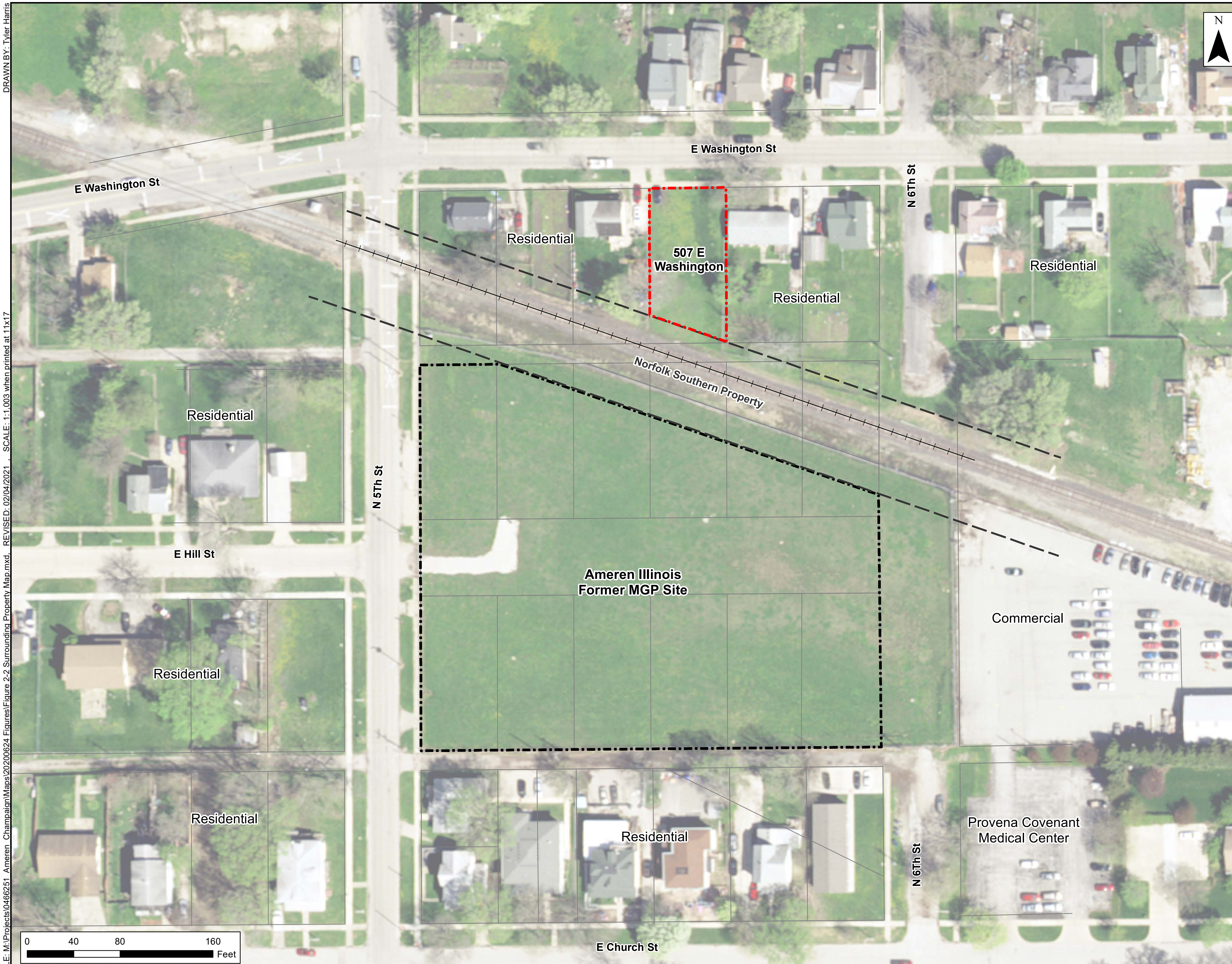
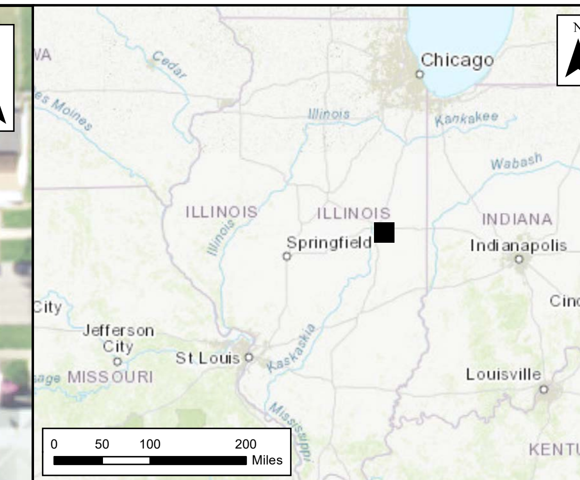


Figure 2-1
Site Location Map
Ameren Services
507 E Washington St
Champaign, Illinois

DRAWN BY: Tyler Harris

FILE: M:\Projects\0466251 Ameren Champaign\Maps\20200624 Figures\Figure 2-1 Site Location 507 E Washington.mxd REVISED: 02/04/2021 SCALE: 1:4,500 when printed at 11x17





Legend

- Ameren MGP Property Boundary
- 507 E Washington Street Property Boundary
- Norfolk Southern Property
- Parcel Lot Line
- Railroad Centerline

Figure 2-2
Surrounding Property Map
Ameren Services
507 E Washington St
Champaign, Illinois

Environmental Resources Management
www.erm.com

DRAWN BY: Tyler Harris

FILE: M:\Projects\0466251_Ameren_Champaign\Maps\20200624_Figures\Figure 2-2 Surrounding Property Map.mxd, REVISED: 02/04/2021 SCALE: 1:1,003 when printed at 11x17

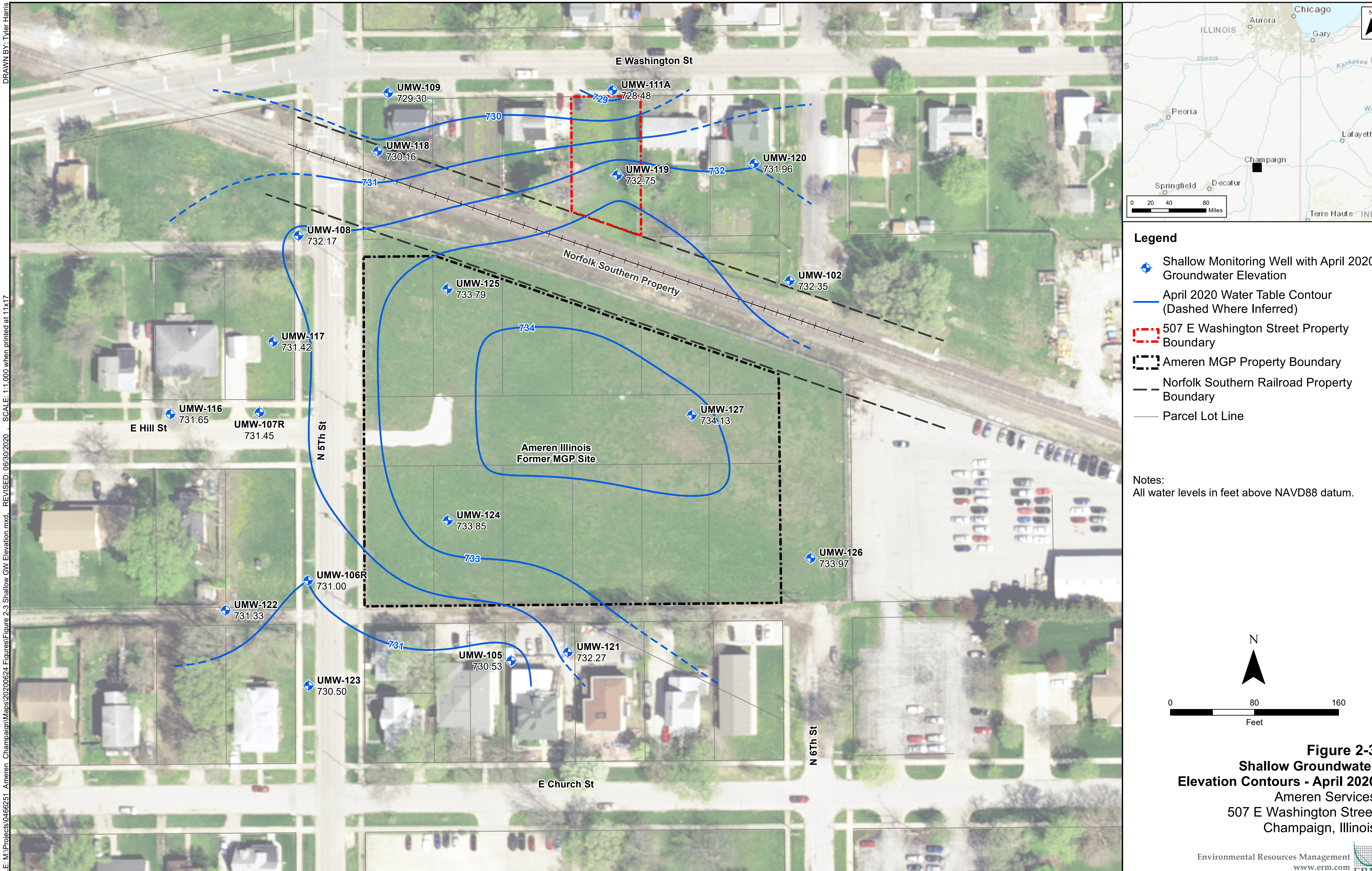


Figure 2-3
Shallow Groundwater Elevation Contours - April 2020
Ameren Services
507 E Washington Street
Champaign, Illinois

Environmental Resources Management
www.erm.com
ERM

Sources: IDOT - 2017 Orthoimagery; ESRI - World Topographic Map

FILE: M:\Projects\0466251 Ameren Champaign\Maps\20200624 Figures\Figure 2-3 Shallow GW Elevation.mxd, REVISED: 06/30/2020, SCALE: 1:1,000 when printed at 11x17, DRAWN BY: Tyler Harris

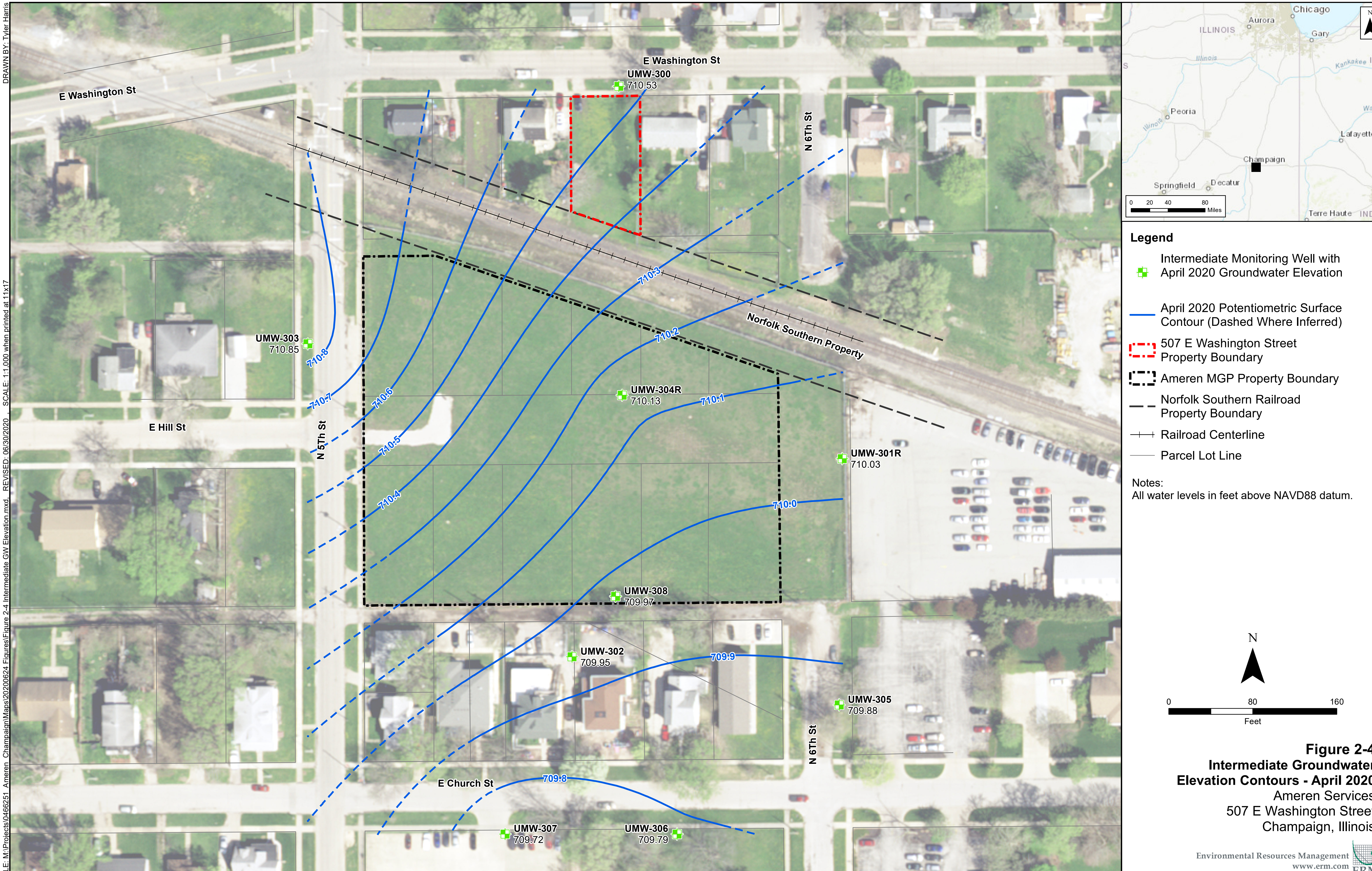


Figure 2-4
Intermediate Groundwater Elevation Contours - April 2020
Ameren Services
507 E Washington Street
Champaign, Illinois

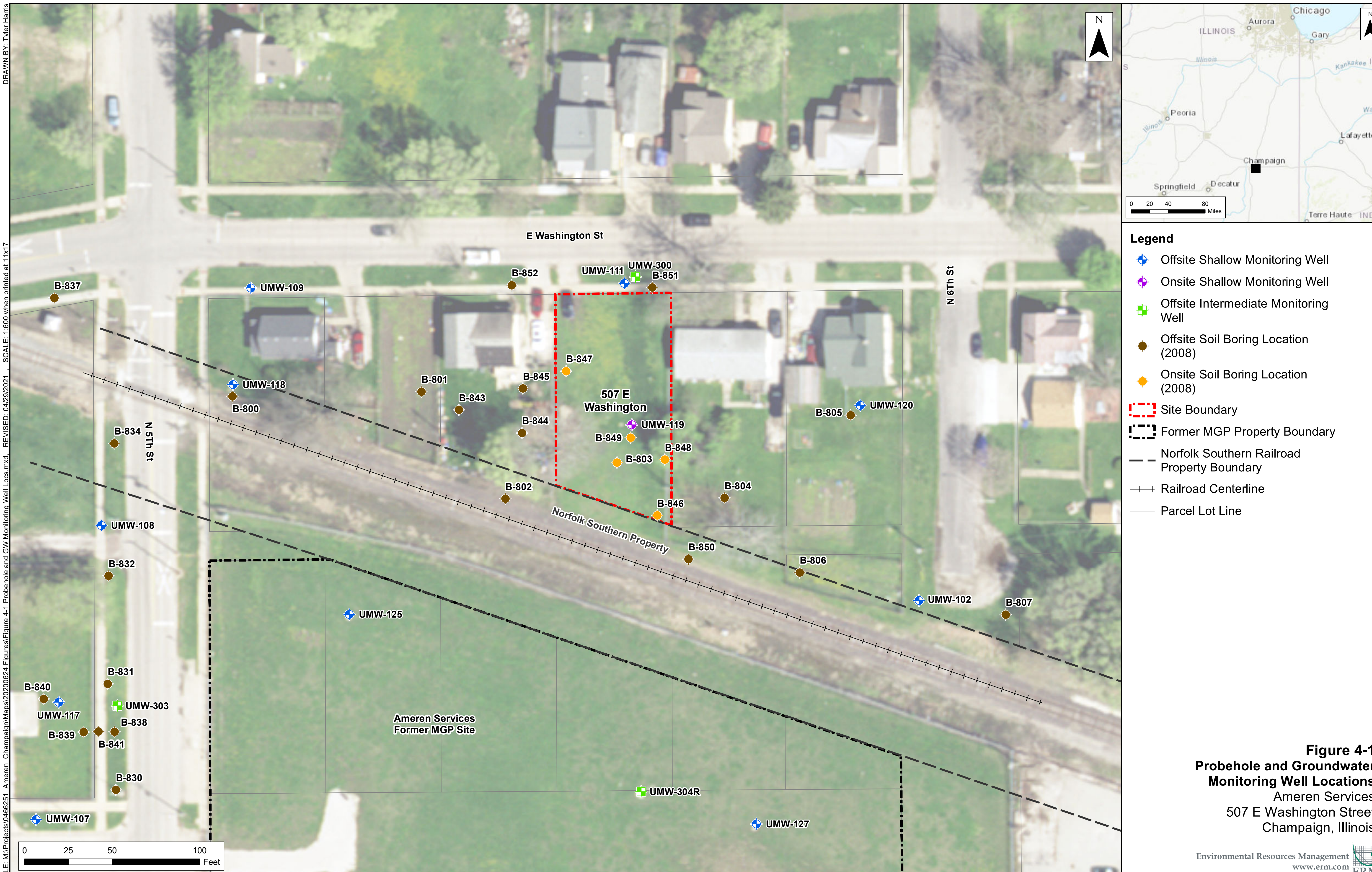
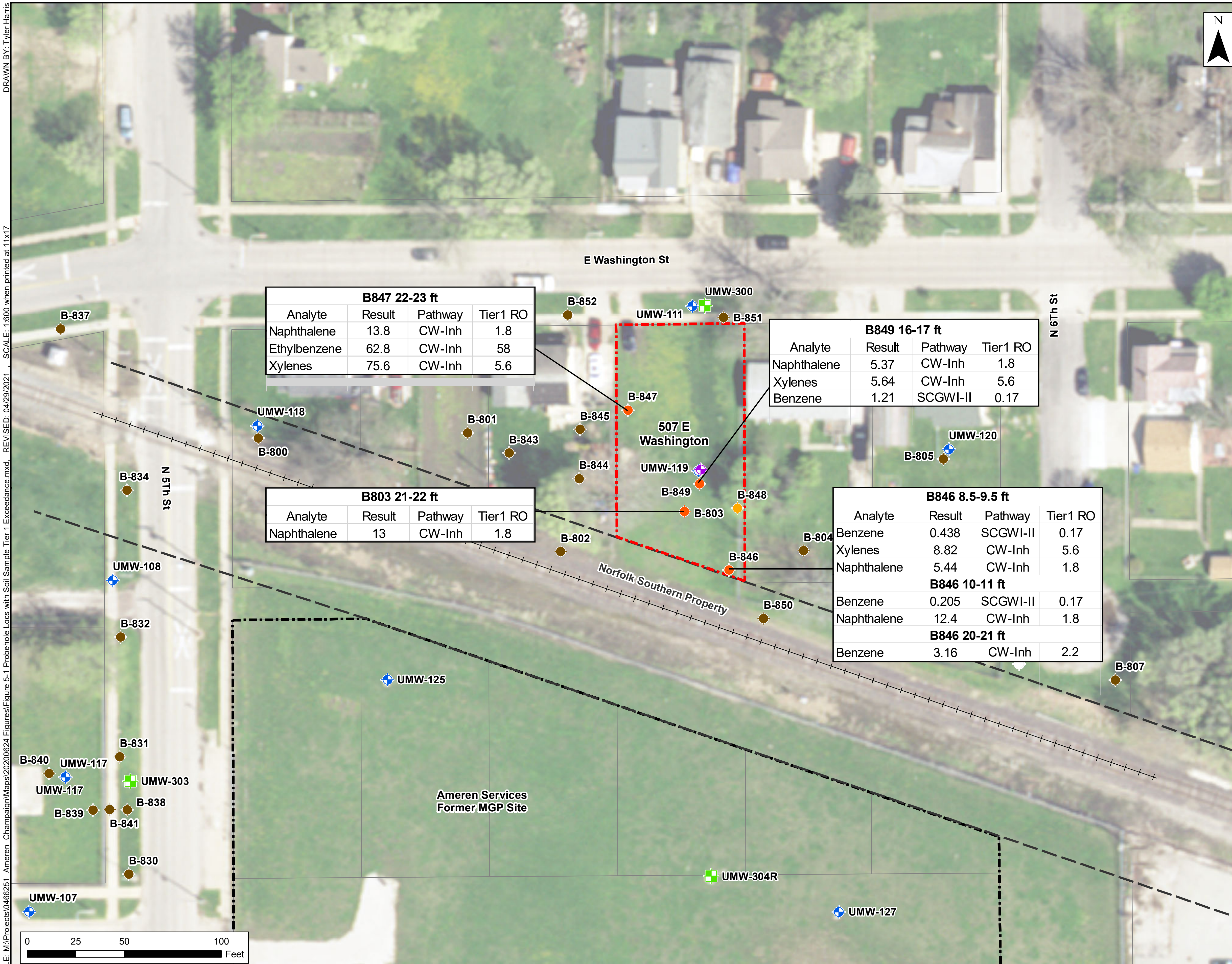


Figure 4-1
Probehole and Groundwater Monitoring Well Locations
Ameren Services
507 E Washington Street
Champaign, Illinois

DRAWN BY: Tyler Harris

FILE: M:\Projects\0466251_Ameren_Champaign\Maps\20200624 Figures\Figure 4-1 Probehole and GW Monitoring Well Locs.mxd. REVISED: 04/29/2021 SCALE: 1:600 when printed at 11x17

Sources: IDOT - 2017 Orthoimagery; ESRI - World Topographic Map

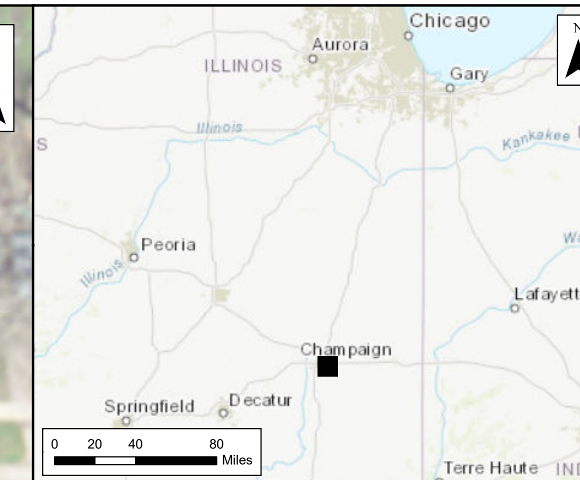


B847 22-23 ft			
Analyte	Result	Pathway	Tier1 RO
Naphthalene	13.8	CW-Inh	1.8
Ethylbenzene	62.8	CW-Inh	58
Xylenes	75.6	CW-Inh	5.6

B849 16-17 ft			
Analyte	Result	Pathway	Tier1 RO
Naphthalene	5.37	CW-Inh	1.8
Xylenes	5.64	CW-Inh	5.6
Benzene	1.21	SCGWI-II	0.17

B803 21-22 ft			
Analyte	Result	Pathway	Tier1 RO
Naphthalene	13	CW-Inh	1.8

B846 8.5-9.5 ft			
Analyte	Result	Pathway	Tier1 RO
Benzene	0.438	SCGWI-II	0.17
Xylenes	8.82	CW-Inh	5.6
Naphthalene	5.44	CW-Inh	1.8
B846 10-11 ft			
Benzene	0.205	SCGWI-II	0.17
Naphthalene	12.4	CW-Inh	1.8
B846 20-21 ft			
Benzene	3.16	CW-Inh	2.2



Legend

- Onsite Soil Boring (2008) with Sample Exceeding Tier 1 Remediation Objective
- Offsite Soil Boring Location (2008)
- Onsite Soil Boring Location (2008)
- Onsite Shallow Monitoring Well
- Offsite Shallow Monitoring Well
- Offsite Intermediate Monitoring Well
- Site Boundary
- Former MGP Property Boundary
- Norfolk Southern Railroad Property Boundary
- Railroad Centerline
- Parcel Lot Line

Notes:

Tier 1 RO: IEPA TACO Tier 1 Remediation Objectives (ROs)
CW-Inh: Construction Worker Inhalation Exposure Pathway
SCGWI-I/II: Soil Component of Groundwater Ingestion Exposure Pathway, Class 1 or Class 2 groundwater

Figure 5-1
Probehole Locations with Soil Samples Exceeding Tier 1 Remediation Objectives
Ameren Services
507 E Washington Street
Champaign, Illinois

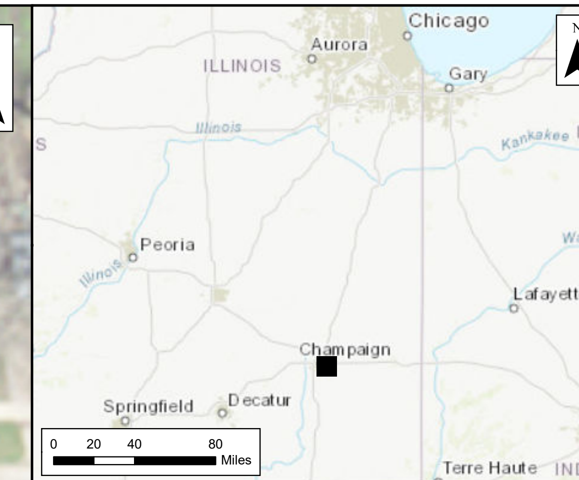
Environmental Resources Management
www.erm.com
ERM

Sources: IDOT - 2017 Orthoimagery; ESRI - World Topographic Map

FILE: M:\Projects\0466251 Ameren Champaign\Maps\20200624 Figures\Figure 5-1 Probehole Locs with Soil Sample Tier 1 Exceedance.mxd, REVISED: 04/29/2021, SCALE: 1:600 when printed at 11x17

DRAWN BY: Tyler Harris

B846 8.5-9.5 ft			
Analyte	Result	Pathway	Tier1 RO
Xylenes	8.82	CW-Inh	5.6
Naphthalene	5.44	CW-Inh	1.8



Legend

- Onsite Soil Boring (2008) with Sample Exceeding Tier 1 Remediation Objective
- Onsite Soil Boring Location (2008)
- Onsite Shallow Monitoring Well
- Offsite Soil Boring Location (2008)
- Offsite Shallow Monitoring Well
- Offsite Intermediate Monitoring Well
- Site Boundary
- Former MGP Property Boundary
- Norfolk Southern Railroad Property Boundary
- Railroad Centerline
- Parcel Lot Line

Notes:

Tier 1 RO: IEPA TACO Tier 1 Remediation Objectives (ROs)

CW-Inh: Construction Worker Inhalation Exposure Pathway

Figure 6-1
Sample Location with Soil Samples Exceeding Tier 1 Remediation Objective for Soil Inhalation 3 to 10 Feet BGS
Ameren Services
507 E Washington Street
Champaign, Illinois

Environmental Resources Management
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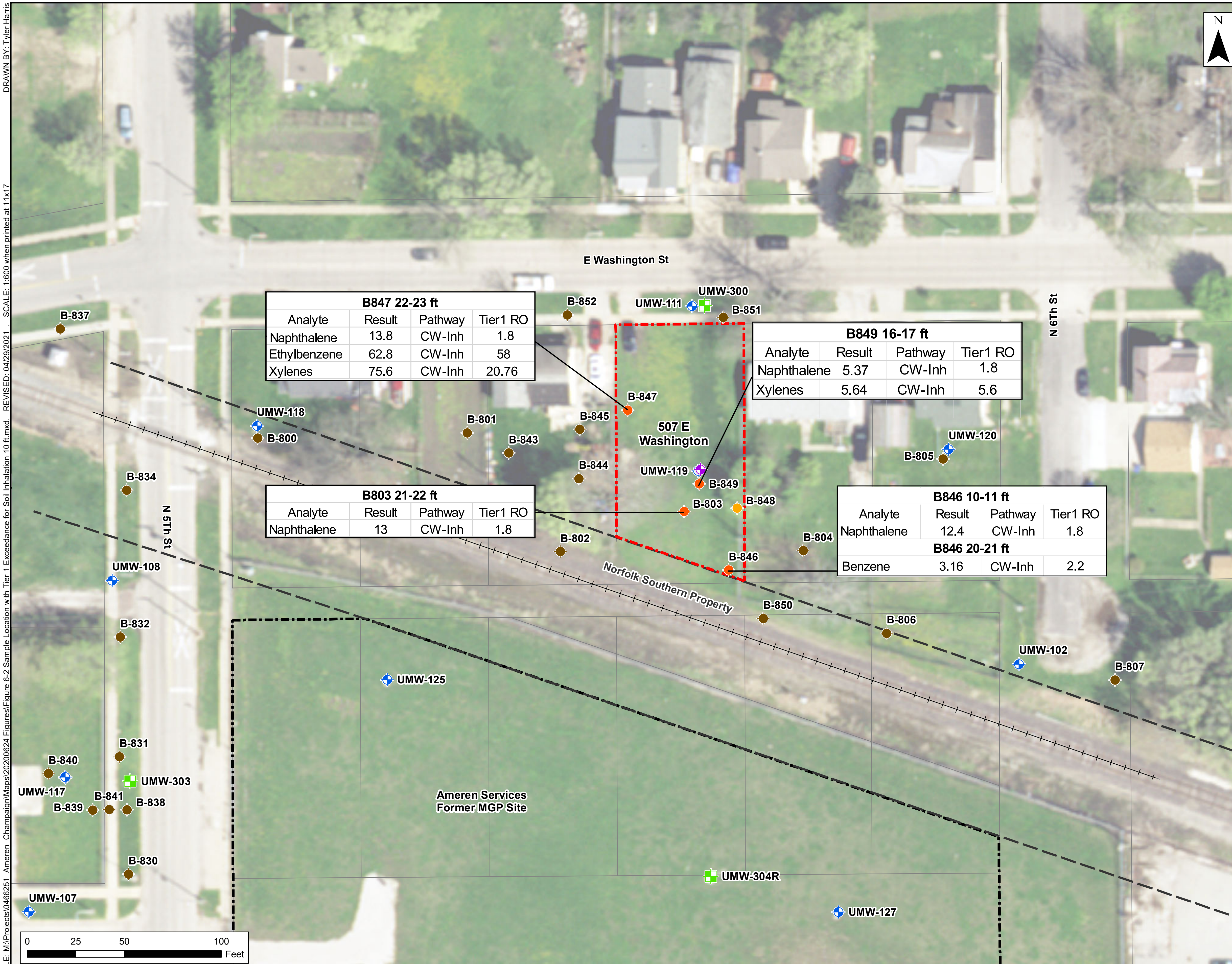
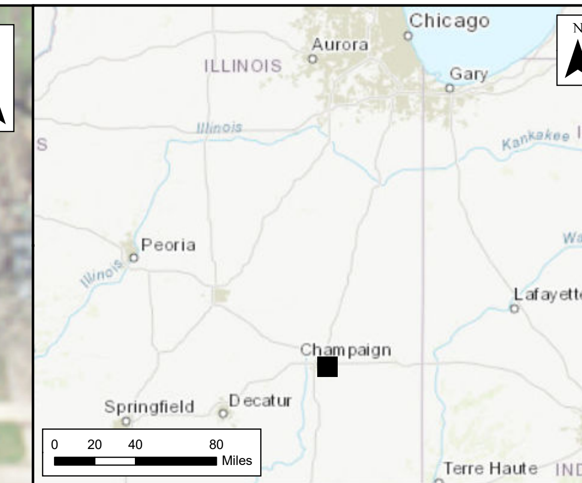
Sources: IDOT - 2017 Orthoimagery; ESRI - World Topographic Map

FILE: M:\Projects\0466251 Ameren Champaign\Maps\20200624 Figures\Figure 6-1 Sample Location with Tier 1 Exceedance for Soil Inhalation.mxd, REVISED: 04/29/2021 SCALE: 1:600 when printed at 11x17 DRAWN BY: Tyler Harris





Legend

- Onsite Soil Boring (2008) with Sample Exceeding Tier 1 Remediation Objective
- Onsite Soil Boring Location (2008)
- Onsite Shallow Monitoring Well
- Offsite Soil Boring Location (2008)
- Offsite Shallow Monitoring Well
- Offsite Intermediate Monitoring Well
- Site Boundary
- Former MGP Property Boundary
- Norfolk Southern Railroad Property Boundary
- Railroad Centerline
- Parcel Lot Line

Notes:

Tier 1 RO: IEPA TACO Tier 1 Remediation Objectives (ROs)

CW-Inh: Construction Wokery Inhalation Exposure Pathway

Figure 6-2
Sample Locations with Soil Samples Exceeding Tier 1 Remediation Objective for Soil Inhalation >10 Feet BGS
Ameren Services
507 E Washington Street
Champaign, Illinois

Environmental Resources Management
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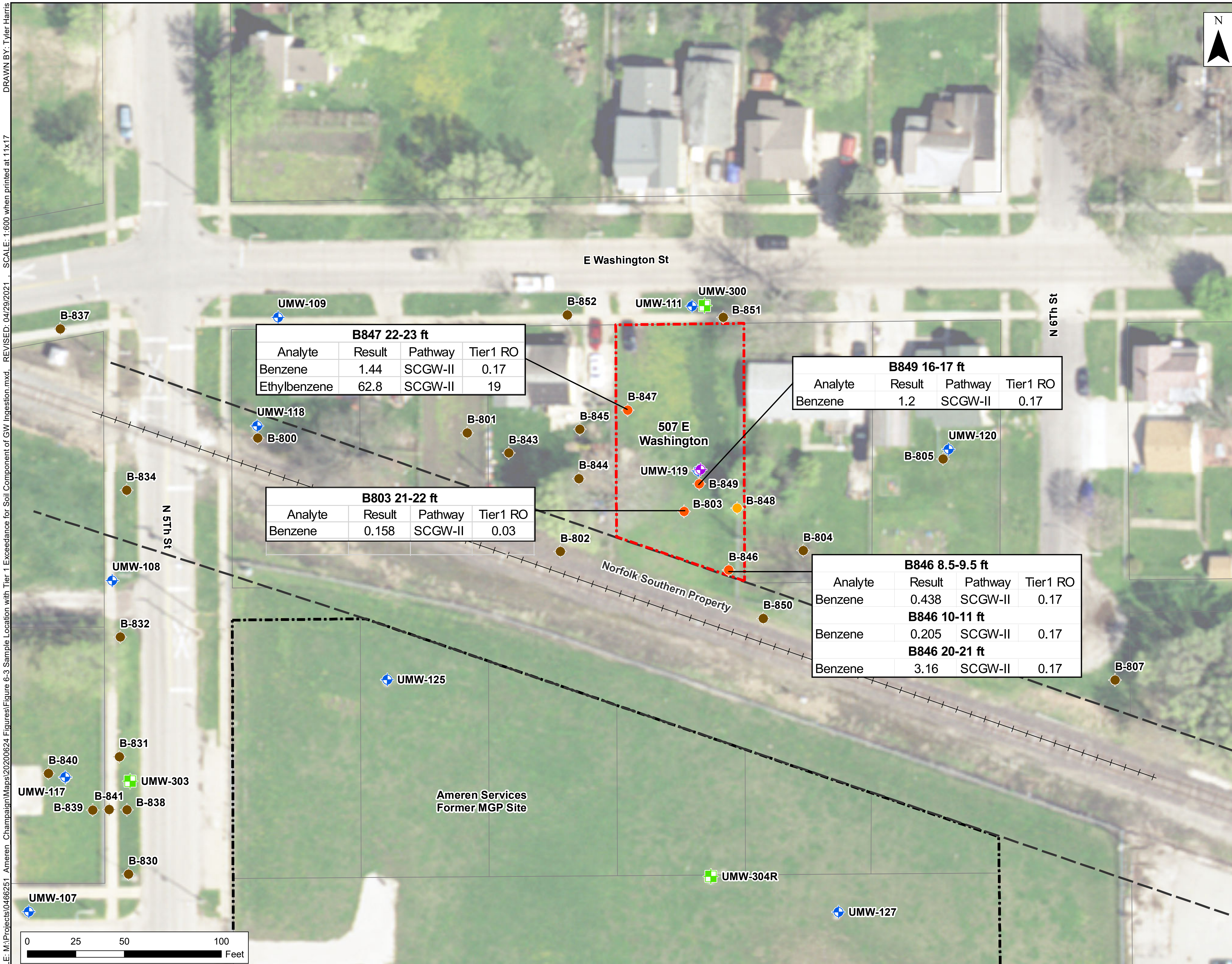
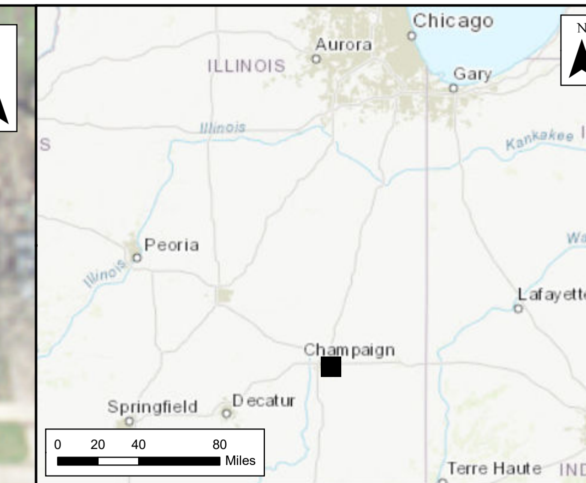
ERM

Sources: IDOT - 2017 Orthoimagery; ESRI - World Topographic Map

FILE: M:\Projects\0466251 Ameren Champaign\Maps\20200624 Figures\Figure 6-2 Sample Location with Tier 1 Exceedance for Soil Inhalation 10 ft.mxd, REVISED: 04/29/2021 , SCALE: 1:600 when printed at 11x17

DRAWN BY: Tyler Harris





Legend

- Onsite Soil Boring (2008) with Sample Exceeding Tier 1 Remediation Objective
- Onsite Soil Boring Location (2008)
- Onsite Shallow Monitoring Well
- Offsite Soil Boring Location (2008)
- Offsite Shallow Monitoring Well
- Offsite Intermediate Monitoring Well
- Site Boundary
- Former MGP Property Boundary
- Norfolk Southern Railroad Property Boundary
- Railroad Centerline
- Parcel Lot Line

Notes:

Tier 1 RO: IEPA TACO Tier 1 Remediation Objectives (ROs)

SCGWI-I/II: Soil Component of Groundwater Ingestion Exposure Pathway, Class 1 or Class 2 groundwater

Figure 6-3
Sample Locations with Soil Samples Exceeding Tier 1 Remediation Objective for Soil Component of Groundwater Ingestion
Ameren Services
507 E Washington Street
Champaign, Illinois

Environmental Resources Management
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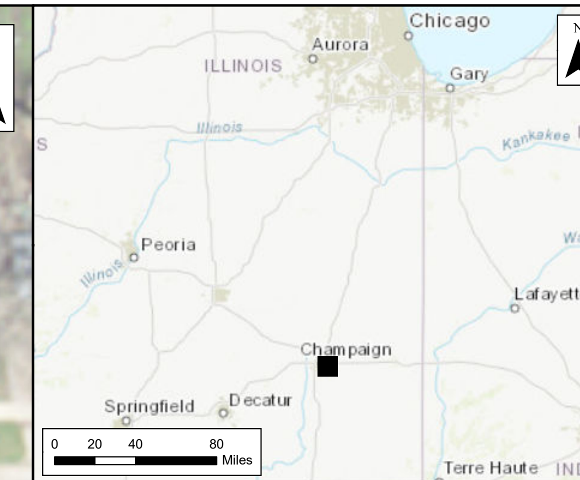
ERM

FILE: M:\Projects\0466251 Ameren Champaign\Maps\20200624 Figures\Figure 6-3 Sample Location with Tier 1 Exceedance for Soil Component of GW Ingestion.mxd, REVISED: 04/29/2021, SCALE: 1:600 when printed at 11x17, DRAWN BY: Tyler Harris

Sources: IDOT - 2017 Orthoimagery; ESRI - World Topographic Map



Legend

- Onsite Soil Vapor Sample Location
- Site Boundary
- Former MGP Property Boundary
- Norfolk Southern Railroad Property Boundary
- Former Building
- Railroad Centerline
- Parcel Lot Line

Figure 6-4
Soil Gas Sampling Locations
Ameren Services
507 E Washington Street
Champaign, Illinois

Environmental Resources Management
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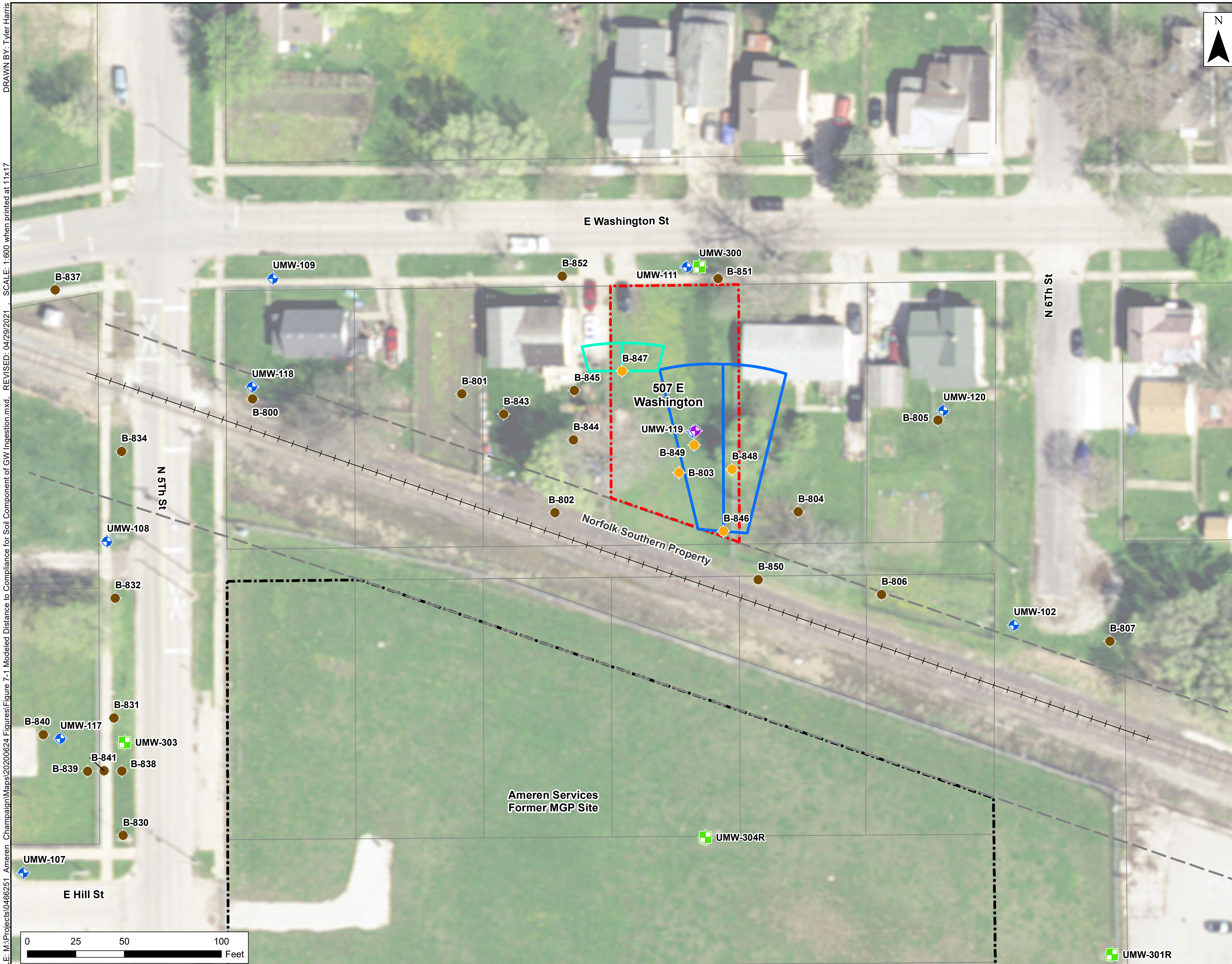
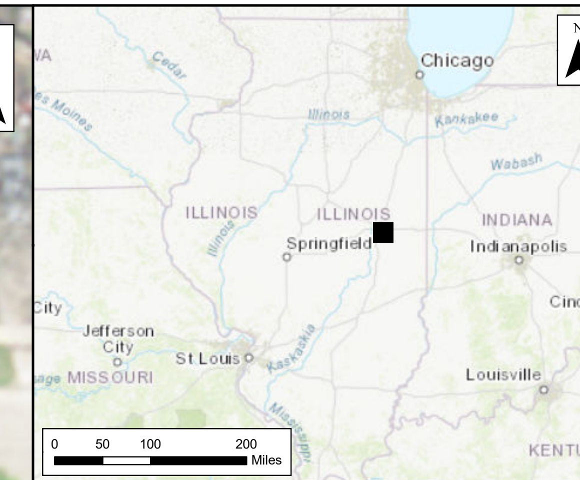
ERM

Sources: IDOT - 2017 Orthoimagery; ESRI - World Topographic Map

FILE: M:\Projects\0466251 Ameren Champaign\Maps\20200624 Figures\Figure 6-4 Soil Gas Sampling Locations.mxd, REVISED: 04/29/2021 , SCALE: 1:600 when printed at 11x17

DRAWN BY: Tyler Harris





Legend

Modeled Distance to Compliance for Soil Component of Groundwater Ingestion

- X = 13 ft
- X= 86 ft
- Onsite Soil Boring Location (2008)
- Onsite Shallow Monitoring Well
- Offsite Soil Boring Location (2008)
- Offsite Shallow Monitoring Well (Appoximately 20')
- Offsite Intermediate Monitoring Well (Appoximately 45')
- Site Boundary
- Former MGP Property Boundary
- Norfolk Southern Railroad Property Boundary
- Railroad Centerline
- Parcel Lot Line

Notes:

Tier 1 RO: IEPA TACO Tier 1 Remediation Objectives (ROs)

SCGWI-I/II: Soil Component of Groundwater Ingestion Exposure Pathway, Class 1 or Class 2 groundwater

Figure 7-1
Modeled Distance to Compliance for Soil Component of Groundwater Ingestion
February 2020
Ameren Services
Champaign, Illinois

Environmental Resources Management
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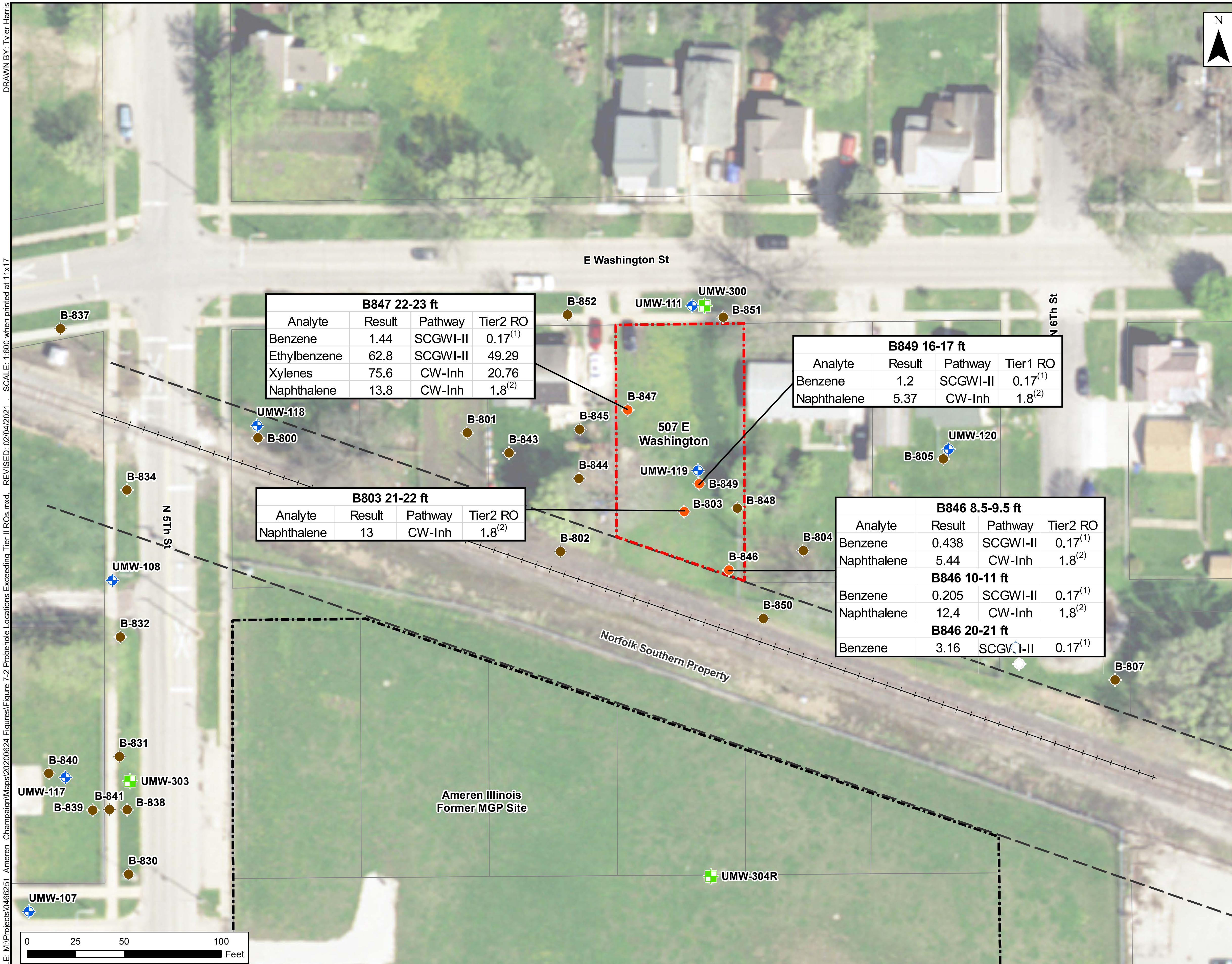
ERM

Sources: IDOT - 2017 Orthoimagery; ESRI - World Topographic Map

FILE: M:\Projects\0466251 Ameren Champaign\Maps\20200624 Figures\Figure 7-1 Modeled Distance to Compliance for Soil Component of GW Ingestion.mxd REVISED: 04/29/2021 SCALE: 1:600 when printed at 11x17 DRAWN BY: Tyler Harris

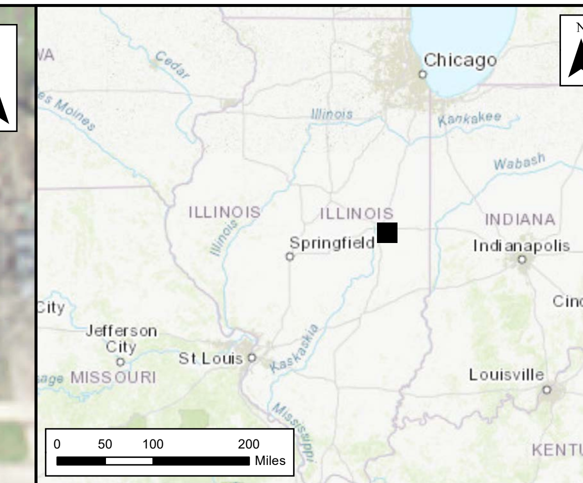


B847 22-23 ft			
Analyte	Result	Pathway	Tier2 RO
Benzene	1.44	SCGWI-II	0.17(1)
Ethylbenzene	62.8	SCGWI-II	49.29
Xylenes	75.6	CW-Inh	20.76
Naphthalene	13.8	CW-Inh	1.8(2)

B849 16-17 ft			
Analyte	Result	Pathway	Tier1 RO
Benzene	1.2	SCGWI-II	0.17(1)
Naphthalene	5.37	CW-Inh	1.8(2)

B803 21-22 ft			
Analyte	Result	Pathway	Tier2 RO
Naphthalene	13	CW-Inh	1.8(2)

B846 8.5-9.5 ft			
Analyte	Result	Pathway	Tier2 RO
Benzene	0.438	SCGWI-II	0.17(1)
Naphthalene	5.44	CW-Inh	1.8(2)
B846 10-11 ft			
Benzene	0.205	SCGWI-II	0.17(1)
Naphthalene	12.4	CW-Inh	1.8(2)
B846 20-21 ft			
Benzene	3.16	SCGWI-II	0.17(1)



Legend

- Soil Boring (2008) with Sample Exceeding Tier 2 Remediation Objective
- Soil Boring Location (2008)
- Shallow Monitoring Well
- Intermediate Monitoring Well
- 507 E Washington Street Property Boundary
- Ameren MGP Property Boundary
- Norfolk Southern Railroad Property Boundary
- Railroad Centerline
- Lotlines

Notes:

(1) Tier 1 RO used; higher than calculated Tier 2 value.
(2) Tier 1 RO used; Tier 2 RO cannot be calculated.

Tier 1 RO: IEPA TACO Tier 1 Remediation Objectives (ROs)

CW-Inh: Construction Worker Inhalation Exposure Pathway
SCGWI-I/II: Soil Component of Groundwater Ingestion Exposure Pathway, Class 1 or Class 2 groundwater

Figure 7-2
Probehole Locations Exceeding Tier 2 Remediation Objectives
February 2020
Ameren Services
Champaign, Illinois

Environmental Resources Management
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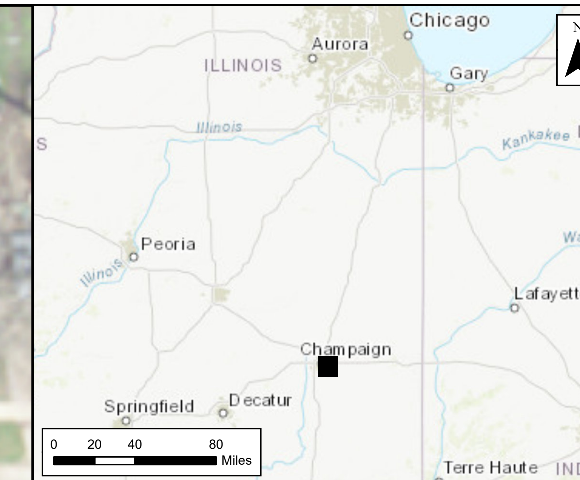
ERM

Sources: IDOT - 2017 Orthoimagery; ESRI - World Topographic Map

DRAWN BY: Tyler Harris

FILE: M:\Projects\0466251 Ameren Champaign\Maps\20200624 Figures\Figure 7-2 Probehole Locations Exceeding Tier II ROs.mxd   REVISED: 02/04/2021   SCALE: 1:600 when printed at 11x17



Legend

- Area Requiring Construction Worker Notification
- 507 E Washington Street Property Boundary
- Ameren MGP Property Boundary
- Norfolk Southern Railroad Property Boundary
- Railroad Centerline
- Lotlines

N

0 50 100
Feet

Figure 9-1
Area Requiring Construction Worker Notification
Ameren Services
507 E Washington Street
Champaign, Illinois

Environmental Resources Management
www.erm.com
ERM

Sources: IDOT - 2017 Orthoimagery; ESRI - World Topographic Map

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Tables

Table 1-1
Constituents of Concern - Focused Site Investigation
507 East Washington Street
Champaign, Illinois

Soil Sample Analyses			
Method 8260	*Method 8270-SIM*	*Method 6010*	*Method 9012*
Benzene	Acenaphthene	Arsenic	Cyanide
Toluene	Acenaphthylene	Chromium	Cyanide (amenable)
Ethylbenzene	Anthracene	Lead	
Xylene (total)	Benzo(a)anthracene		
	Benzo(a)pyrene		
	Benzo(b)fluoranthene		
	Benzo(ghi)perylene		
	Benzo(k)fluoranthene		
	Chrysene		
	Dibenzo(a,h)anthracene		
	Fluoranthene		
	Fluorene		
	Indeno(1,2,3-cd)pyrene		
	Naphthalene		
	Phenanthrene		
	Pyrene		
Groundwater Sample Analyses			
Method 8260	*Method 8270-SIM*	*Method 6010*	*Method 9012*
Benzene	Acenaphthene	Arsenic	Cyanide (total)
Toluene	Acenaphthylene	Chromium	
Ethylbenzene	Anthracene	Lead	
Xylene (total)	Benzo(a)anthracene		
	Benzo(a)pyrene		
	Benzo(b)fluoranthene		
	Benzo(ghi)perylene		
	Benzo(k)fluoranthene		
	Chrysene		
	Dibenzo(a,h)anthracene		
	Fluoranthene		
	Fluorene		
	Indeno(1,2,3-cd)pyrene		
	Naphthalene		
	Phenanthrene		
	Pyrene		

Table 5-1
Tier 1 Remediation Objectives
507 East Washington Street
Champaign, Illinois

CONSTITUENT	Soil Ingestion Residential	Soil Ingestion Industrial Commercial	Soil Ingestion Construction Worker	Soil Inhalation Residential	Soil Inhalation Commercial	Soil Inhalation Construction	Soil Component of Groundwater (Class II)	Soil Saturation Limit
Applicable Depths	0'-3'	0'-3'	All depths	0'-10'	0'-10'	All depths	All depths	All depths
Benzene	12	100	2,300	0.8	1.6	2.2	0.17	580
Ethylbenzene	7,800	200,000	20,000	400	400	58	19	150
Toluene	16,000	410,000	410,000	650	650	42	29	290
Xylene (total)	16,000	410,000	410,000	320	320	5.6	150	110
Acenaphthene	4,700	120,000	120,000	---	---	---	2,900	---
Acenaphthylene	2,300 (1)	61,000 (1)	61,000 (1)	---	---	---	420	---
Anthracene	23,000	610,000	610,000	---	---	---	59,000	---
Benzo(a)anthracene	1.8	8	170	---	---	---	8	---
Benzo(a)pyrene	2.1	2.1	17	---	---	---	82	---
Benzo(b)fluoranthene	2.1	8	170	---	---	---	25	---
Benzo(ghi)perylene	2,300 (1)	61,000 (1)	61,000 (1)	---	---	---	130,000	---
Benzo(k)fluoranthene	9	78	1,700	---	---	---	250	---
Chrysene	88	780	17,000	---	---	---	800	---
Dibenzo(a,h)anthracene	0.42	0.8	17	---	---	---	7.6	---
Fluoranthene	3,100	82,000	82,000	---	---	---	21,000	---
Fluorene	3,100	82,000	82,000	---	---	---	2,800	---
Indeno(1,2,3-cd)pyrene	1.6	8	170	---	---	---	69	---
Naphthalene	1,600	41,000	4,100	170	270	1.8	18	---
Phenanthrene	2,300 (1)	61,000 (1)	61,000 (1)	---	---	---	1,000	---
Pyrene	2,300	61,000	61,000	---	---	---	21,000	---
Arsenic	13	13	61	750	1,200	25,000	100	---
Chromium	230	6,100	4,100	270	420	690	---	---
Lead	400	800	700	---	---	---	300	---
Cyanide (amenable)	1,600	41,000	4,100	---	---	---	120	---
Cyanide (total)	---	---	---	---	---	---	120	---

Notes:

--- No ROs have been established by the IEPA for the listed constituent.
(1) Non-TACO or provisional ROs obtained from the IEPA.
All units are in milligrams per kilogram (mg/kg).
Tier 1 Soil Remediation Objectives for Residential Properties (742.Appendix B: Table A)
Tier 1 Soil Remediation Objectives for Industrial/Commercial Properties (742.Appendix B: Table B)
pH Specific Soil Remediation Objectives for Inorganics and Ionizing Organics for the Soil Component of the Groundwater Ingestion Route - Class I Groundwater (742.Appendix B: Tab
pH Specific Soil Remediation Objectives for Inorganics and Ionizing Organics for the Soil Component of the Groundwater Ingestion Route - Class II Groundwater (742 Appendix B: Ta
Soil Saturation Limits (C_{sat}) for Chemicals Whose Melting Point is Less Than 30˚C (742.Appendix A: Table A)
Concentrations of Inorganic Chemicals in Background Soils (742.Appendix A: Table G)
Concentrations of Polynuclear Aromatic Hydrocarbon Chemicals in Background Soils (742.Appendix A: Table H)

Table 5-2
Soil Sample Analytical Results
507 East Washington Street
Champaign, Illinois

CONSTITUENT	B-803 B803 (2.0-3.0 ft) 5/7/2008 2.0-3.0'	B-803 B803 (9.0-10.0') 5/7/2008 9.0-10.0	B-803 B803 (21.0-22.0') 5/7/2008 21.0-22.0	B-803 B803 (29.0-30.0') 5/7/2008 29.0-30.0	B-846 B846 (8.5-9.5') 5/7/2008 8.5-9.5	B-846 B846 (10.0-11.0') 5/7/2008 10.0-11.0	B-846 B846 (20.0-21.0') 5/7/2008 20.0-21.0	B-847 B847 (6.0-7.0') 5/7/2008 6.0-7.0	B-847 B847 (22.0-23.0') 5/7/2008 22.0-23.0	B-847 B847 (29.0-30.0') 5/7/2008 29.0-30.0	B-848 B848 (2.0-3.0 ft) 5/7/2008 2.0-3.0	B-848 B848 (9.0-10.0') 5/7/2008 9.0-10.0	B-848 B848 (13.0-14.0') 5/7/2008 13.0-14.0	B-849 B849 (0.0-1.0 ft) 5/7/2008 0.0-1.0	B-849 B849 (9.0-10.0') 5/7/2008 9.0-10.0	B-849 B849 (16.0-17.0') 5/7/2008 16.0-17.0
Benzene	0.0019	0.0008 J	0.158	0.0014	**0.438**	**0.205**	**3.16**	0.0027	**1.44**	0.0012	0.0013	0.0058	0.003	0.0012	0.0026	**1.21**
Ethylbenzene	0.0069	<0.0052	4.56	<0.0038	10.1	3.42	<0.0983	0.003 J	**62.8**	<0.0038	<0.0057	0.0039 J	0.0019 J	<0.0053	0.0021 J	6.24
Toluene	0.0039 J	<0.0052	0.32 J	0.002 J	<0.648	0.084 J	<0.0983	0.0068	12.40	0.0018 J	<0.0057	0.0117	0.006	0.0011 J	0.0057	0.89 J
Xylene (total)	0.0107	<0.0052	3.5	0.0013 J	**8.82**	2.9	<0.0983	0.0057	**75.6**	<0.0038	<0.0057	0.0072	0.0038 J	<0.0053	0.0046	**5.64**
Acenaphthene	0.008	0.026	2.96	<0.004	1.87	4.19	0.004	<0.004	0.95	<0.004	<0.008	<0.004	<0.004	<0.004	<0.004	0.665
Acenaphthylene	0.023	0.008	3.19	<0.004	0.312	0.808	<0.004	<0.004	4.73	<0.004	0.024	<0.004	<0.004	0.010	<0.004	1.55
Anthracene	0.023	0.018	2.54	<0.004	0.928	2.10	<0.004	<0.004	2.36	<0.004	0.011	<0.004	<0.004	0.006	<0.004	1.12
Benzo(a)anthracene	0.086	0.015	1.33	0.004	0.523	1.30	<0.004	0.004 J	1.29	<0.004	0.067	<0.004	<0.004	0.033	<0.004	0.67
Benzo(a)pyrene	0.105	0.012	1.24	<0.004	0.469	1.28	<0.004	<0.004	1.15	<0.004	0.089	<0.004	<0.004	0.039	<0.004	0.661
Benzo(b)fluoranthene	0.131	0.01	0.915	<0.004	0.356	0.979	<0.004	<0.004	0.905	<0.004	0.103	<0.004	<0.004	0.058	<0.004	0.52
Benzo(ghi)perylene	0.066	0.005	0.425	<0.004	0.173	0.471	<0.004	<0.004	0.356	<0.004	0.050	<0.004	<0.004	0.025	<0.004	0.227
Benzo(k)fluoranthene	0.045	<0.004	0.275	<0.004	0.109	0.29	<0.004	<0.004	0.258	<0.004	0.032	<0.004	<0.004	0.020	<0.004	0.161
Chrysene	0.096	0.014	1.3	<0.004	0.518	1.32	<0.004	<0.004	1.27	<0.004	0.075	<0.004	<0.004	0.043	<0.004	0.661
Dibenzo(a,h)anthracene	0.017	<0.004	0.119	<0.004	0.049	0.133	<0.004	<0.004	<0.190	<0.004	0.013	<0.004	<0.004	0.007	<0.004	0.065
Fluoranthene	0.173	0.025	2.74	0.004 J	1.08	2.47	<0.004	0.005	2.53	<0.004	0.091	<0.004	<0.004	0.062	<0.004	1.21
Fluorene	0.007	0.015	2.61	<0.004	0.941	1.91	<0.004	<0.004	2.5	<0.004	<0.008	<0.004	<0.004	<0.004	<0.004	1.07
Indeno(1,2,3-cd)pyrene	0.059	0.004 J	0.345	<0.004	0.142	0.381	<0.004	<0.004	0.3	<0.004	0.042	<0.004	<0.004	0.024	<0.004	0.187
Naphthalene	0.034	0.062	**13**	0.010	**5.44**	**12.4**	0.013	<0.004	**13.8**	0.012	0.014	<0.004	<0.004	0.006	<0.004	**5.37**
Phenanthrene	0.105	0.063	8.16	0.008	2.78	6.29	0.009	0.011	8.04	0.006	0.053	<0.004	<0.004	0.035	<0.004	3.54
Pyrene	0.171	0.037	4.13	0.005	1.61	3.94	0.005	0.006	3.79	<0.004	0.111	<0.004	<0.004	0.064	<0.004	1.84
Arsenic	5.49	2.0 J	5.41	---	---	---	---	---	---	---	---	---	---	2.0 J	5.59	5.88
Chromium	21.2	27.0	14.2	---	---	---	---	---	---	---	---	---	---	27.5	13.3	12.0
Lead	145.0	14.2	8.65	---	---	---	---	---	---	---	---	---	---	107.0	12.4	6.88
Cyanide (amenable)	<0.57	<0.61	<0.57	---	---	---	---	---	---	---	---	---	---	<0.60	<0.56	<0.54
Cyanide (total)	0.37 J	<0.61	<0.57	---	---	---	---	---	---	---	---	---	---	0.52 J	<0.56	<0.54

Notes:

All units are in milligrams per kilogram (mg/kg).
J — Constituent reported below laboratory detection limit - estimated value.
--- — The sample was not analyzed for the listed constituent.
<0.004 — The constituent was not detected at the laboratory reporting limit.

Constituent exceeds the Tier 1 Soil Component to GW Pathway RO
Constituent exceeds the Tier 1 Construction Worker Inhalation Patthway RO
Constituent exceeds the Tier 1 Soil Component to GW and Construction Worker Inhalation Pathway

Table 5-3
Soil Gas Analytical Results
507 East Washington Street
Champaign, Illinois

CONSTITUENT	Residential Soil Gas Objective (1) ($\mu g/m^3$)	VP507EWASH-1	VP507EWASH-2	VP507EWASH-3
Freon 12	---	< 6.2	9	< 6.0
Freon 114	---	< 8.8	< 8.6	< 8.4
Chloromethane	---	< 10	< 10	< 10
Vinyl Chloride	290	< 3.2	< 3.2	< 3.1
1,3-Butadiene	---	< 2.8	9.7	4
Bromomethane	---	< 4.9	< 4.8	< 4.7
Chloroethane	---	< 3.3	< 3.2	< 3.2
Freon 11	---	< 7.1	< 6.9	< 6.8
Ethanol	---	13	18	29
Freon 113	---	< 9.7	< 9.5	< 9.3
1,1-Dichloroethene	690,000	< 5.0	< 4.9	< 4.8
Acetone	750,000,000	120	180	230
2-Propanol	---	37	13	16
Carbon Disulfide	780,000	< 3.9	4.3	< 3.8
3-Chloropropene	---	< 16	< 15	< 15
Methylene Chloride	5,600	< 4.4	< 4.3	< 4.2
Methyl tert-butyl ether	3,700,000	< 4.6	< 4.4	< 4.4
trans-1,2-Dichloroethene	---	< 5.0	< 4.9	< 4.8
Hexane	---	8	14	14
1,1-Dichloroethane	690,000	< 5.1	< 5.0	< 4.9
2-Butanone (MEK)	6,400,000	21	40	56
cis-1,2-Dichloroethene	1,100,000,000	< 5.0	< 4.9	< 4.8
Tetrahydrofuran	---	< 3.7	< 3.6	< 3.6
Choroform	110	< 6.2	< 6.0	< 5.9
1,1,1-Trichloroethane	6,600,000	< 6.9	< 6.7	< 6.6
Cyclohexane	---	< 4.4	5.3	6.1
Carbon Tetrachloride	210	< 8.0	< 7.8	< 7.6
2,2,4-Trimethylpentane	---	6.9	11	15
Benzene	370	8	14	10
1,2-Dichloroethane	99	< 5.1	< 5.0	< 4.9
Heptane	---	12	20	19
Trichloroethene	1500	< 6.8	7.3	< 6.5
1,2-Dichloropropane	310	< 5.8	< 5.7	< 5.6
1,4-Dioxane	220	< 18	< 18	< 17
Bromodichloromethane	450,000,000	< 8.5	< 8.3	< 8.1
cis-1,3-Dichloropropene	900	< 5.7	< 5.6	< 5.5
4-Methyl-2-pentanone	---	< 5.2	< 5.0	< 5.4
Toluene	6,200,000	150	220	170
trans-1,3-Dichloropropene	900	< 5.7	< 5.6	< 5.5
1,1,2-Trichloroethane	170,000,000	< 6.9	< 6.7	< 6.6
Tetrachloroethene	550	< 8.6	< 8.4	< 8.2
2-Hexanone	---	< 21	< 20	< 20
Dibromochloromethane	---	< 11	< 10	< 10
1,2-Dibromoethane (EDB)	---	< 9.7	< 9.5	< 9.3
Chlorobenzene	69,000	< 5.8	< 5.7	< 5.6
Ethylbenzene	1300	44	61	57
m,p-xylene	130,000	180	240	230
o-xylene	120,000	83	110	110
Styrene	1,400,000	< 5.4	< 5.3	< 5.2
Bromoform	11,000	< 13	< 13	< 12
Cumene	600,000	< 6.2	8.3	7.9
1,1,2,2-Tetrachloroethane	---	< 8.7	< 8.5	< 8.3
Propylbenzene	---	27	34	34
4-Ethyltoluene	---	120	150	140
1,3,5-Trimethylbenzene	---	45	55	76
1,2,4-Trimethylbenzene	---	160	190	210
1,3-Dichlorobenzene	---	< 7.6	< 7.4	< 7.3
1,4-Dichlorobenzene	1,200,000	< 7.6	< 7.4	< 7.3
alpha-Chlorotoluene	---	< 6.5	< 6.4	< 6.3
1,2-Dichlorobenzene	290,000	< 7.6	< 7.4	< 7.3
1,2,4-Trichlorobenzene	5,400	< 38	< 37	< 36
Hexachlorobutadiene	---	< 54	< 53	< 52
Naphthalene	110	< 26	< 26	< 25

Notes:

$\mu g/m^3$	Micrograms per cubic meter.
<5.4	The constituent was not detected at the laboratory reporting limit.
(1)	Tier 1 Soil Gas and Groundwater Remediation Objectives for the Indoor Inhalation Exposure Route - Diffusion and Advection (742 Appendix B: Table H)
---	Tier 1 RO has been established by the IEPA for the listed constituent.
110	Constituent exceeds Tier 1 remedial objective.

Table 5-4
Groundwater Analytical Results - Monitoring Well UMW-119
June 2018 - April 2020
507 Washington Street
Champaign, Illinois

			Location Group	Shallow Wells (Class 2 Groundwater Ingestion)								
			Location ID	**UMW-119**	**UMW-119**	**UMW-119**	**UMW-119**	**UMW-119**	**UMW-119**	**UMW-119**	**UMW-119**	**UMW-119**
			Sample Date	**06/26/2018**	**09/17/2018**	**12/03/2018**	**3/5/2019**	**5/13/2019**	**8/19/2019**	**11/4/2019**	**2/11/2020**	**04/28/2020**
			Sample Type	**N**	**N**	**N**	**N**	**N**	**N**	**N**	**N**	**N**
Parameter/Analyte	**CLASS I GROUNDWATER INGESTION**	**CLASS II GROUNDWATER INGESTION**	**GW INHALATION DIFFUSION & ADVECTION RES**									
BTEX, mg/L												
Benzene	0.005	0.025	0.11	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005
Ethylbenzene	0.7	1	0.37	< 0.0020	< 0.0020	< 0.0020	< 0.0020	< 0.0020	< 0.0020	< 0.0020	< 0.0020	< 0.0020
Toluene	1	2.5	530	< 0.0020	< 0.0020	< 0.0020	< 0.0020	< 0.0020	< 0.0020	< 0.0020	< 0.0020	< 0.0020
Xylene, Total	10	10	30	< 0.0020	< 0.0020	< 0.0020	< 0.0020	< 0.0040	< 0.0040	< 0.0040	< 0.0040	< 0.0040
PAH, mg/L												
Acenaphthene	0.42	2.1	NS	< 0.000100	< 0.000100	< 0.000100	< 0.000100	< 0.000100	< 0.000100	< 0.000100	< 0.000100	< 0.000100
Acenaphthylene	0.21	1.05	NS	< 0.000100	< 0.000100	< 0.000100	< 0.000100	< 0.000100	< 0.000100	< 0.000100	< 0.000100	< 0.000100
Anthracene	2.1	10.5	NS	< 0.000100	< 0.000100	< 0.000100	0.000144	< 0.000100	< 0.000100	< 0.000100	< 0.000100	< 0.000300
Benzo(a)anthracene	0.00013	0.00065	NS	< 0.000100	< 0.000100	< 0.000100	< 0.000100	< 0.000100	< 0.000100	< 0.000100	< 0.000100	< 0.000100
Benzo(a)pyrene	0.0002	0.002	NS	< 0.000100	< 0.000100	< 0.000100	< 0.000100	< 0.000100	< 0.000100	< 0.000100	< 0.000100	< 0.000100
Benzo(b)fluoranthene	0.00018	0.0009	NS	< 0.000100	< 0.000100	< 0.000100	< 0.000100	< 0.000100	< 0.000100	< 0.000100	< 0.000100	< 0.000100
Benzo(g,h,i)perylene	0.21	1.05	NS	< 0.000100	< 0.000100	< 0.000100	< 0.000200	< 0.000200	< 0.000200	< 0.000200	< 0.000200	< 0.000200
Benzo(k)fluoranthene	0.00017	0.00085	NS	< 0.000100	< 0.000100	< 0.000100	< 0.000100	< 0.000100	< 0.000100	< 0.000100	< 0.000100	< 0.000100
Chrysene	0.0015	0.0075	NS	< 0.000100	< 0.000100	< 0.000100	< 0.000100	< 0.000100	< 0.000100	< 0.000100	< 0.000100	< 0.000100
Dibenzo(a,h)anthracene	0.0003	0.0015	NS	< 0.000100	< 0.000100	< 0.000100	< 0.000100	< 0.000100	< 0.000100	< 0.000100	< 0.000100	< 0.000100
Fluoranthene	0.28	1.4	NS	< 0.000200	< 0.000200	< 0.000200	< 0.000200	< 0.000200	< 0.000200	< 0.000200	< 0.000200	< 0.000300
Fluorene	0.28	1.4	NS	< 0.000100	< 0.000100	< 0.000100	< 0.000100	< 0.000100	< 0.000100	< 0.000100	< 0.000100	< 0.000200
Indeno(1,2,3-cd)pyrene	0.00043	0.00215	NS	< 0.000100	< 0.000100	< 0.000100	< 0.000100	< 0.000100	< 0.000100	< 0.000100	< 0.000100	< 0.000100
Naphthalene	0.14	0.22	0.075	< 0.000200	< 0.000200	< 0.000200	< 0.000200	< 0.000200	< 0.000200	< 0.000200	< 0.000200	< 0.000400
Phenanthrene	0.21	1.05	NS	< 0.000400	< 0.000400	< 0.000400	< 0.000400	< 0.000400	< 0.000400	< 0.000400	< 0.000400	< 0.000600
Pyrene	0.21	1.05	NS	< 0.000100	< 0.000100	< 0.000200	< 0.000200	< 0.000200	< 0.000200	< 0.000200	< 0.000200	< 0.000200
General Chemistry, mg/L												
Cyanide CN-	0.2	0.6	NS	0.036	0.033	0.026	0.031	0.027	0.035	0.033	0.033	0.032
Metals, mg/L												
Arsenic	0.05	0.2	NS	< 0.0250	< 0.0250	< 0.0250	< 0.0250	< 0.0250	< 0.0250	< 0.0250	< 0.0250	< 0.0250
Barium	2	2	NS	0.0890	0.102	0.0993	0.0950	0.0882	0.0927	0.0855	0.0844	0.0853
Cadmium	0.005	0.05	NS	< 0.0020	< 0.0020	< 0.0020	< 0.0020	< 0.0020	< 0.0020	< 0.0020	< 0.0020	< 0.0020
Chromium	0.1	1	NS	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050
Lead	0.0075	0.1	NS	< 0.0150	< 0.0075	< 0.0075	< 0.0075	< 0.0075	< 0.0075	< 0.0075	< 0.0075	< 0.0075
Mercury	0.002	0.01	0.053	< 0.00020	< 0.00020	< 0.00020	< 0.00020	< 0.00020	< 0.00020	< 0.00020	< 0.00020	< 0.00020
Selenium	0.05	0.05	NS	< 0.0400	< 0.0400	< 0.0400	< 0.0400	< 0.0400	< 0.0400	< 0.0400	< 0.0400	< 0.0400
Silver	0.05		NS	< 0.0070	< 0.0070	< 0.0070	< 0.0070	< 0.0070	< 0.0070	< 0.0070	< 0.0070	< 0.0070

Notes:
All values shown in milligrams per liter (mg/L)
< = Compound not detected at concentrations above the laboratory reporting detection limit.
The laboratory reporting detection limit is shown.
N = Normal Environmental Sample
NS = No Standard
Green highlight = Exceeds RO for Class II Groundwater Ingestion
Bold = Exceeds RO for Groundwater Inhalation - Diffusion and Advection for Residential
Qualifiers:
All analyses performed by TekLab.
CLASS I GROUNDWATER INGESTION = IEPA TACO Tier 1 CLASS I Groundwater Ingestion
CLASS II GROUNDWATER INGESTION = IEPA TACO Tier 1 CLASS II Groundwater Ingestion
GW INHALATION DIFFUSION & ADVECTION RES = IEPA TACO Tier 1 Groundwater Inhalation Diffusion & Advection at Residential Sites.
Non-TACO Class I and Class II Groundwater Objectives applied for Acenaphthylene, Benzo(g,h,i)perylene, and Phenanthrene. (Revision Date 3/31/2016)

Table 5-5
Groundwater Analytical Results - Onsite and Offsite Wells
April 2020 Quarterly Sampling Event
Ameren - Champaign MGP Site
Champaign, Illinois

		Location Group	Onsite	Offsite Wells (Class 2 Groundwater)						
		Location ID	UMW-119	UMW-102	UMW-109	UMW-111A	UMW-118	UMW-120	UMW-125	UMW-127
		Sample Date	04/28/2020	04/27/2020	04/28/2020	04/28/2020	04/28/2020	04/27/2020	04/30/2020	04/29/2020
		Sample Type	N	N	N	N	N	N	N	N
Parameter/Analyte	CLASS II GROUNDWATER INGESTION	GW INHALATION DIFFUSION & ADVECTION RES								
BTEX, mg/L										
Benzene	0.025	0.11	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	0.0019
Ethylbenzene	1	0.37	< 0.0020	< 0.0020	< 0.0020	< 0.0020	< 0.0020	< 0.0020	< 0.0020	< 0.0020
Toluene	2.5	530	< 0.0020	< 0.0020	< 0.0020	< 0.0020	< 0.0020	< 0.0020	< 0.0020	< 0.0020
Xylene, Total	10	30	< 0.0040	< 0.0040	< 0.0040	< 0.0040	< 0.0040	< 0.0040	< 0.0040	< 0.0040
PAH, mg/L										
Acenaphthene	2.1	NS	< 0.000100	< 0.000100	< 0.000100	< 0.000100	< 0.000100	< 0.000100	< 0.000100	0.000229
Acenaphthylene	1.05	NS	< 0.000100	< 0.000100	< 0.000100	< 0.000100	< 0.000100	< 0.000100	< 0.000100	< 0.000100
Anthracene	10.5	NS	< 0.000300	< 0.000300	< 0.000300	< 0.000300	< 0.000300	< 0.000300	< 0.000300	< 0.000300
Benzo(a)anthracene	0.00065	NS	< 0.000100	< 0.000100	< 0.000100	< 0.000100	< 0.000100	< 0.000100	< 0.000100	< 0.000100
Benzo(a)pyrene	0.002	NS	< 0.000100	< 0.000100 UJ	< 0.000100 UJ	< 0.000100 UJ	< 0.000100	< 0.000100	< 0.000100	< 0.000100
Benzo(b)fluoranthene	0.0009	NS	< 0.000100	< 0.000100	< 0.000100	< 0.000100	< 0.000100	< 0.000100	< 0.000100	< 0.000100
Benzo(g,h,i)perylene	1.05	NS	< 0.000200	< 0.000200	< 0.000200	< 0.000200	< 0.000200	< 0.000200	< 0.000200	< 0.000200
Benzo(k)fluoranthene	0.00085	NS	< 0.000100	< 0.000100	< 0.000100	< 0.000100	< 0.000100	< 0.000100	< 0.000100	< 0.000100
Chrysene	0.0075	NS	< 0.000100	< 0.000100	< 0.000100	< 0.000100	< 0.000100	< 0.000100	< 0.000100	< 0.000100
Dibenzo(a,h)anthracene	0.0015	NS	< 0.000100	< 0.000100	< 0.000100	< 0.000100	< 0.000100	< 0.000100	< 0.000100	< 0.000100
Fluoranthene	1.4	NS	< 0.000300	< 0.000300	< 0.000300	< 0.000300	< 0.000300	< 0.000300	< 0.000300	< 0.000300
Fluorene	1.4	NS	< 0.000200	< 0.000200	< 0.000200	< 0.000200	< 0.000200	< 0.000200	< 0.000200	< 0.000200
Indeno(1,2,3-cd)pyrene	0.00215	NS	< 0.000100	< 0.000100	< 0.000100	< 0.000100	< 0.000100	< 0.000100	< 0.000100	< 0.000100
Naphthalene	0.22	0.075	< 0.000400	< 0.000400	< 0.000400	< 0.000400	< 0.000400	< 0.000400	< 0.000400	0.00188 J+
Phenanthrene	1.05	NS	< 0.000600	< 0.000600	< 0.000600	< 0.000600	< 0.000600	< 0.000600	< 0.000600	< 0.000600
Pyrene	1.05	NS	< 0.000200	< 0.000200	< 0.000200	< 0.000200	< 0.000200	< 0.000200	< 0.000200	< 0.000200
General Chemistry, mg/L										
Cyanide CN-	0.6	NS	0.032	< 0.005	0.016	< 0.005	0.026	< 0.005	0.019	< 0.005
Metals, mg/L										
Arsenic	0.2	NS	< 0.0250	< 0.0250	< 0.0250	< 0.0250	< 0.0250	< 0.0250	< 0.0250	< 0.0250
Barium	2	NS	0.0853	0.0601	0.0892	0.0513	0.101	0.0645	0.0133	0.121
Cadmium	0.05	NS	< 0.0020	< 0.0020	< 0.0020	< 0.0020	< 0.0020	< 0.0020	< 0.0020	< 0.0020
Chromium	1	NS	< 0.0050	< 0.0050	0.0186	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050
Lead	0.1	NS	< 0.0075	< 0.0075	< 0.0075	< 0.0075	< 0.0075	< 0.0075	< 0.0075	< 0.0075
Mercury	0.01	0.053	< 0.00020	< 0.00020	< 0.00020	< 0.00020	< 0.00020	< 0.00020	< 0.00020	< 0.00020
Selenium	0.05	NS	< 0.0400	< 0.0400	< 0.0400	< 0.0400	< 0.0400	< 0.0400	< 0.0400	< 0.0400
Silver		NS	< 0.0070	< 0.0070	< 0.0070	< 0.0070	< 0.0070	< 0.0070	< 0.0070	< 0.0070

Notes:
All values shown in milligrams per liter (mg/L)
< = Compound not detected at concentrations above the laboratory reporting
NS = No Standard
Green highlight = Exceeds RO for Class II Groundwater Ingestion
Bold = Exceeds RO for Groundwater Inhalation - Diffusion and Advection for Residentia (No exceedances present)
Qualifiers:
UJ = Non-detect, estimated report limit
J+ = Detected Results are estimated with a high bias
All analyses performed by TekLab.
CLASS II GROUNDWATER INGESTION = IEPA TACO Tier 1 CLASS II Groundwater Ingestion
GW INHALATION DIFFUSION & ADVECTION RES = IEPA TACO Tier 1 Groundwater Inhalation
Diffusion & Advection at Residential Sites.
Non-TACO Class I and Class II Groundwater Objectives applied for Acenaphthylene, Benzo(g,h,i)perylene, and Phenanthrene. (Revision Date 3/31/2016)

Table 6-1
Tier 1 Soil Ingestion Exposure Pathway Evaluation
507 East Washington Street
Champaign, Illinois

CONSTITUENT	Soil Ingestion Residential	Soil Ingestion Commercial Industrial	Soil Ingestion Construction Worker	B-803 B803 (2.0-3.0 ft) 5/7/2008 2.0-3.0'	B-803 B803 (9.0-10.0') 5/7/2008 9.0-10.0	B-803 B803 (21.0-22.0') 5/7/2008 21.0-22.0	B-803 B803 (29.0-30.0') 5/7/2008 29.0-30.0	B-846 B846 (8.5-9.5') 5/7/2008 8.5-9.5	B-846 B846 (10.0-11.0') 5/7/2008 10.0-11.0	B-846 B846 (20.0-21.0') 5/7/2008 20.0-21.0	B-847 B847 (6.0-7.0') 5/7/2008 6.0-7.0	B-847 B847 (22.0-23.0') 5/7/2008 22.0-23.0	B-847 B847 (29.0-30.0') 5/7/2008 29.0-30.0	B-848 B848 (2.0-3.0 ft) 5/7/2008 2.0-3.0	B-848 B848 (9.0-10.0') 5/7/2008 9.0-10.0	B-848 B848 (13.0-14.0') 5/7/2008 13.0-14.0	B-849 B849 (0.0-1.0 ft) 5/7/2008 0.0-1.0	B-849 B849 (9.0-10.0') 5/7/2008 9.0-10.0	B-849 B849 (16.0-17.0') 5/7/2008 16.0-17.0
Applicable Depths and Scenarios	0'-3'	0'-3'	All depths	RES, C/I, CW	CW	CW	CW	CW	CW	CW	CW	CW	CW	RES, C/I, CW	CW	CW	RES, C/I, CW	CW	CW
Benzene	12	100	2,300	0.0019	0.0008 J	0.158	0.0014	0.438	0.205	3.16	0.0027	1.44	0.0012	0.0013	0.0058	0.003	0.0012	0.0026	1.21
Ethylbenzene	7,800	200,000	20,000	0.0069	<0.0052	4.56	<0.0038	10.1	3.42	<0.0983	0.003 J	62.8	<0.0038	<0.0057	0.0039 J	0.0019 J	<0.0053	0.0021 J	6.24
Toluene	16,000	410,000	410,000	0.0039 J	<0.0052	0.32 J	0.002 J	<0.648	0.084 J	<0.0983	0.0068	12.4	0.0018 J	<0.0057	0.0117	0.006	0.0011 J	0.0057	0.89 J
Xylene (total)	16,000	410,000	410,000	0.0107	<0.0052	3.5	0.0013 J	8.82	2.9	<0.0983	0.0057	75.6	<0.0038	<0.0057	0.0072	0.0038 J	<0.0053	0.0046	5.64
Acenaphthene	4,700	120,000	120,000	0.008	0.026	2.96	<0.004	1.87	4.19	0.004	<0.004	0.95	<0.004	<0.008	<0.004	<0.004	<0.004	<0.004	0.665
Acenaphthylene	2,300 (1)	61,000 (1)	61,000 (1)	0.023	0.008	3.19	<0.004	0.312	0.808	<0.004	<0.004	4.73	<0.004	0.024	<0.004	<0.004	0.010	<0.004	1.55
Anthracene	23,000	610,000	610,000	0.023	0.018	2.54	<0.004	0.928	2.10	<0.004	<0.004	2.36	<0.004	0.011	<0.004	<0.004	0.006	<0.004	1.12
Benzo(a)anthracene	1.8	8	170	0.086	0.015	1.33	0.004	0.523	1.30	<0.004	0.004 J	1.29	<0.004	0.067	<0.004	<0.004	0.033	<0.004	0.67
Benzo(a)pyrene	2.1	2.1	17	0.105	0.012	1.24	<0.004	0.469	1.28	<0.004	<0.004	1.15	<0.004	0.089	<0.004	<0.004	0.039	<0.004	0.661
Benzo(b)fluoranthene	2.1	8	170	0.131	0.01	0.915	<0.004	0.356	0.979	<0.004	<0.004	0.905	<0.004	0.103	<0.004	<0.004	0.058	<0.004	0.52
Benzo(ghi)perylene	2,300 (1)	61,000 (1)	61,000 (1)	0.066	0.005	0.425	<0.004	0.173	0.471	<0.004	<0.004	0.356	<0.004	0.050	<0.004	<0.004	0.025	<0.004	0.227
Benzo(k)fluoranthene	9	78	1,700	0.045	<0.004	0.275	<0.004	0.109	0.29	<0.004	<0.004	0.258	<0.004	0.032	<0.004	<0.004	0.020	<0.004	0.161
Chrysene	88	780	17,000	0.096	0.014	1.3	<0.004	0.518	1.32	<0.004	<0.004	1.27	<0.004	0.075	<0.004	<0.004	0.043	<0.004	0.661
Dibenzo(a,h)anthracene	0.42	0.8	17	0.017	<0.004	0.119	<0.004	0.049	0.133	<0.004	<0.004	<0.190	<0.004	0.013	<0.004	<0.004	0.007	<0.004	0.065
Fluoranthene	3,100	82,000	82,000	0.173	0.025	2.74	0.004 J	1.08	2.47	<0.004	0.005	2.53	<0.004	0.091	<0.004	<0.004	0.062	<0.004	1.21
Fluorene	3,100	82,000	82,000	0.007	0.015	2.61	<0.004	0.941	1.91	<0.004	<0.004	2.5	<0.004	<0.008	<0.004	<0.004	<0.004	<0.004	1.07
Indeno(1,2,3-cd)pyrene	1.6	8	170	0.059	0.004 J	0.345	<0.004	0.142	0.381	<0.004	<0.004	0.3	<0.004	0.042	<0.004	<0.004	0.024	<0.004	0.187
Naphthalene	1,600	41,000	4,100	0.034	0.062	13	0.010	5.44	12.4	0.013	<0.004	13.8	0.012	0.014	<0.004	<0.004	0.006	<0.004	5.37
Phenanthrene	2,300 (1)	61,000 (1)	61,000 (1)	0.105	0.063	8.16	0.008	2.78	6.29	0.009	0.011	8.04	0.006	0.053	<0.004	<0.004	0.035	<0.004	3.54
Pyrene	2,300	61,000	61,000	0.171	0.037	4.13	0.005	1.61	3.94	0.005	0.006	3.79	<0.004	0.111	<0.004	<0.004	0.064	<0.004	1.84
Arsenic	13	13	61	5.49	2.0 J	5.41	---	---	---	---	---	---	---	---	---	---	2.0 J	5.59	5.88
Chromium	230	6,100	4,100	21.2	27.0	14.2	---	---	---	---	---	---	---	---	---	---	27.5	13.3	12.0
Lead	400	800	700	145.0	14.2	8.65	---	---	---	---	---	---	---	---	---	---	107.0	12.4	6.88
Cyanide (amenable)	1,600	41,000	4,100	<0.57	<0.61	<0.57	---	---	---	---	---	---	---	---	---	---	<0.60	<0.56	<0.54
Cyanide (total)	---	---	---	0.37 J	<0.61	<0.57	---	---	---	---	---	---	---	---	---	---	0.52 J	<0.56	<0.54

Notes:

	All units are in milligrams per kilogram (mg/kg).
RES, C/I, CW	RES = Residential, C/I = Commercial/Industrial, CW - Construction Worker
(1)	Non-TACO or provisional ROs published by the IEPA.
---	The sample was not analyzed for the listed constituent.
62.8	Constituent exceeds one or more Tier 1 RO or IEPA background.
<0.004	The constituent was not detected at the laboratory reporting limit.
J	Constituent reported below laboratory detection limit - estimated value.
	Tier 1 Soil Remediation Objectives for Residential Properties (742.Appendix B.Table A)
	Tier 1 Soil Remediation Objectives for Industrial/Commercial Properties (742.Appendix B.Table B)

Table 6-2
Tier 1 Soil Inhalation Exposure Pathway Evaluation
507 East Washington Street
Champaign, Illinois

CONSTITUENT	Soil Inhalation Residential	Commercial Industrial	Construction Worker	B-803 B803 (2.0-3.0 ft) 5/7/2008 2.0-3.0'	B-803 B803 (9.0-10.0') 5/7/2008 9.0-10.0	B-803 B803 (21.0-22.0') 5/7/2008 21.0-22.0	B-803 B803 (29.0-30.0') 5/7/2008 29.0-30.0	B-846 B846 (8.5-9.5') 5/7/2008 8.5-9.5	B-846 B846 (10.0-11.0') 5/7/2008 10.0-11.0	B-846 B846 (20.0-21.0') 5/7/2008 20.0-21.0	B-847 B847 (6.0-7.0') 5/7/2008 6.0-7.0	B-847 B847 (22.0-23.0') 5/7/2008 22.0-23.0	B-847 B847 (29.0-30.0') 5/7/2008 29.0-30.0	B-848 B848 (2.0-3.0 ft) 5/7/2008 2.0-3.0	B-848 B848 (9.0-10.0') 5/7/2008 9.0-10.0	B-848 B848 (13.0-14.0') 5/7/2008 13.0-14.0	B-849 B849 (0.0-1.0 ft) 5/7/2008 0.0-1.0	B-849 B849 (9.0-10.0') 5/7/2008 9.0-10.0	B-849 B849 (16.0-17.0') 5/7/2008 16.0-17.0
Applicable Depths and Scenarios	0'-10'	0'-10'	All depths	RES, C/I, CW	RES, C/I, CW	CW	CW	RES, C/I, CW	CW	CW	RES, C/I, CW	CW	CW	RES, C/I, CW	RES, C/I, CW	CW	RES, C/I, CW	RES, C/I, CW	CW
Benzene	0.8	1.6	2.2	0.0019	0.0008 J	0.158	0.0014	0.438	0.205	*3.16*	0.0027	1.44	0.0012	0.0013	0.0058	0.003	0.0012	0.0026	1.21
Ethylbenzene	400	400	58	0.0069	<0.0052	4.56	<0.0038	10.1	3.42	<0.0983	0.003 J	62.8	<0.0038	<0.0057	0.0039 J	0.0019 J	<0.0053	0.0021 J	6.24
Toluene	650	650	42	0.0039 J	<0.0052	0.32 J	0.002 J	<0.648	0.084 J	<0.0983	0.0068	12.4	0.0018 J	<0.0057	0.0117	0.006	0.0011 J	0.0057	0.89 J
Xylene (total)	320	320	5.6	0.0107	<0.0052	3.5	0.0013 J	8.82	2.9	<0.0983	0.0057	75.6	<0.0038	<0.0057	0.0072	0.0038 J	<0.0053	0.0046	5.64
Acenaphthene	---	---	---	0.008	0.026	2.96	<0.004	1.87	4.19	0.004	<0.004	0.95	<0.004	<0.008	<0.004	<0.004	<0.004	<0.004	0.665
Acenaphthylene	---	---	---	0.023	0.008	3.19	<0.004	0.312	0.808	<0.004	<0.004	4.73	<0.004	0.024	<0.004	<0.004	0.010	<0.004	1.55
Anthracene	---	---	---	0.023	0.018	2.54	<0.004	0.928	2.10	<0.004	<0.004	2.36	<0.004	0.011	<0.004	<0.004	0.006	<0.004	1.12
Benzo(a)anthracene	---	---	---	0.086	0.015	1.33	0.004	0.523	1.30	<0.004	0.004 J	1.29	<0.004	0.067	<0.004	<0.004	0.033	<0.004	0.67
Benzo(a)pyrene	---	---	---	0.105	0.012	1.24	<0.004	0.469	1.28	<0.004	<0.004	1.15	<0.004	0.089	<0.004	<0.004	0.039	<0.004	0.661
Benzo(b)fluoranthene	---	---	---	0.131	0.01	0.915	<0.004	0.356	0.979	<0.004	<0.004	0.905	<0.004	0.103	<0.004	<0.004	0.058	<0.004	0.52
Benzo(ghi)perylene	---	---	---	0.066	0.005	0.425	<0.004	0.173	0.471	<0.004	<0.004	0.356	<0.004	0.050	<0.004	<0.004	0.025	<0.004	0.227
Benzo(k)fluoranthene	---	---	---	0.045	<0.004	0.275	<0.004	0.109	0.29	<0.004	<0.004	0.258	<0.004	0.032	<0.004	<0.004	0.020	<0.004	0.161
Chrysene	---	---	---	0.096	0.014	1.3	<0.004	0.518	1.32	<0.004	<0.004	1.27	<0.004	0.075	<0.004	<0.004	0.043	<0.004	0.661
Dibenzo(a,h)anthracene	---	---	---	0.017	<0.004	0.119	<0.004	0.049	0.133	<0.004	<0.004	<0.190	<0.004	0.013	<0.004	<0.004	0.007	<0.004	0.065
Fluoranthene	---	---	---	0.173	0.025	2.74	0.004 J	1.08	2.47	<0.004	0.005	2.53	<0.004	0.091	<0.004	<0.004	0.062	<0.004	1.21
Fluorene	---	---	---	0.007	0.015	2.61	<0.004	0.941	1.91	<0.004	<0.004	2.5	<0.004	<0.008	<0.004	<0.004	<0.004	<0.004	1.07
Indeno(1,2,3-cd)pyrene	---	---	---	0.059	0.004 J	0.345	<0.004	0.142	0.381	<0.004	<0.004	0.3	<0.004	0.042	<0.004	<0.004	0.024	<0.004	0.187
Naphthalene	170	270	1.8	0.034	0.062	13	0.010	5.44	12.40	0.013	<0.004	13.80	0.012	0.014	<0.004	<0.004	0.006	<0.004	5.37
Phenanthrene	---	---	---	0.105	0.063	8.16	0.008	2.78	6.29	0.009	0.011	8.04	0.006	0.053	<0.004	<0.004	0.035	<0.004	3.54
Pyrene	---	---	---	0.171	0.037	4.13	0.005	1.61	3.94	0.005	0.006	3.79	<0.004	0.111	<0.004	<0.004	0.064	<0.004	1.84
Arsenic	750	1,200	25,000	5.49	2.0 J	5.41	---	---	---	---	---	---	---	---	---	---	2.0 J	5.59	5.88
Chromium	270	420	690	21.2	27.0	14.2	---	---	---	---	---	---	---	---	---	---	27.5	13.3	12.0
Lead	---	---	---	145.0	14.2	8.65	---	---	---	---	---	---	---	---	---	---	107.0	12.4	6.88
Cyanide (amenable)	---	---	---	<0.57	<0.61	<0.57	---	---	---	---	---	---	---	---	---	---	<0.60	<0.56	<0.54
Cyanide (total)	---	---	---	0.37 J	<0.61	<0.57	---	---	---	---	---	---	---	---	---	---	0.52 J	<0.56	<0.54

Notes:

	All units are in milligrams per kilogram (mg/kg).
RES, C/I, CW	RES = Residential, C/I = Commercial/Industrial, CW - Construction Worker
(1)	Non-TACO or provisional ROs published by the IEPA.
---	No objectives have been published for the constituent, or no sample was submitted for analysis.
3.16	Shading indicates value exceeds Construction Worker Inhalation Tier 1 RO.
<0.004	The constituent was not detected at the laboratory reporting limit.
J	Constituent reported below laboratory detection limit - estimated value.

Table 6-3
Tier 1 Soil Component of Groundwater Ingestion Exposure Pathway Evaluation - Class II Objectives
507 East Washington Street
Champaign, Illinois

CONSTITUENT	*Soil Component to Groundwater* (Class II)	B-803 B803 (2.0-3.0 ft) 5/7/2008 2.0-3.0'	B-803 B803 (9.0-10.0') 5/7/2008 9.0-10.0	B-803 B803 (21.0-22.0') 5/7/2008 21.0-22.0	B-803 B803 (29.0-30.0') 5/7/2008 29.0-30.0	B-846 B846 (8.5-9.5') 5/7/2008 8.5-9.5	B-846 B846 (10.0-11.0') 5/7/2008 10.0-11.0	B-846 B846 (20.0-21.0') 5/7/2008 20.0-21.0	B-847 B847 (6.0-7.0') 5/7/2008 6.0-7.0	B-847 B847 (22.0-23.0') 5/7/2008 22.0-23.0	B-847 B847 (29.0-30.0') 5/7/2008 29.0-30.0	B-848 B848 (2.0-3.0 ft) 5/7/2008 2.0-3.0	B-848 B848 (9.0-10.0') 5/7/2008 9.0-10.0	B-848 B848 (13.0-14.0') 5/7/2008 13.0-14.0	B-849 B849 (0.0-1.0 ft) 5/7/2008 0.0-1.0	B-849 B849 (9.0-10.0') 5/7/2008 9.0-10.0	B-849 B849 (16.0-17.0') 5/7/2008 16.0-17.0
Benzene	0.17	0.0019	0.0008 J	0.158	0.0014	0.438	0.205	3.16	0.0027	1.44	0.0012	0.0013	0.0058	0.003	0.0012	0.0026	1.21
Ethylbenzene	19	0.0069	<0.0052	4.56	<0.0038	10.1	3.42	<0.0983	0.003 J	62.8	<0.0038	<0.0057	0.0039 J	0.0019 J	<0.0053	0.0021 J	6.24
Toluene	29	0.0039 J	<0.0052	0.32 J	0.002 J	<0.648	0.084 J	<0.0983	0.0068	12.4	0.0018 J	<0.0057	0.0117	0.006	0.0011 J	0.0057	0.89 J
Xylene (total)	150	0.0107	<0.0052	3.5	0.0013 J	8.82	2.9	<0.0983	0.0057	75.6	<0.0038	<0.0057	0.0072	0.0038 J	<0.0053	0.0046	5.64
Acenaphthene	2,900	0.008	0.026	2.96	<0.004	1.87	4.19	0.004	<0.004	0.95	<0.004	<0.008	<0.004	<0.004	<0.004	<0.004	0.665
Acenaphthylene	420	0.023	0.008	3.19	<0.004	0.312	0.808	<0.004	<0.004	4.73	<0.004	0.024	<0.004	<0.004	0.010	<0.004	1.55
Anthracene	59,000	0.023	0.018	2.54	<0.004	0.928	2.10	<0.004	<0.004	2.36	<0.004	0.011	<0.004	<0.004	0.006	<0.004	1.12
Benzo(a)anthracene	8	0.086	0.015	1.33	0.004	0.523	1.30	<0.004	0.004 J	1.29	<0.004	0.067	<0.004	<0.004	0.033	<0.004	0.67
Benzo(a)pyrene	82	0.105	0.012	1.24	<0.004	0.469	1.28	<0.004	<0.004	1.15	<0.004	0.089	<0.004	<0.004	0.039	<0.004	0.661
Benzo(b)fluoranthene	25	0.131	0.01	0.915	<0.004	0.356	0.979	<0.004	<0.004	0.905	<0.004	0.103	<0.004	<0.004	0.058	<0.004	0.52
Benzo(ghi)perylene	130,000	0.066	0.005	0.425	<0.004	0.173	0.471	<0.004	<0.004	0.356	<0.004	0.050	<0.004	<0.004	0.025	<0.004	0.227
Benzo(k)fluoranthene	250	0.045	<0.004	0.275	<0.004	0.109	0.29	<0.004	<0.004	0.258	<0.004	0.032	<0.004	<0.004	0.020	<0.004	0.161
Chrysene	800	0.096	0.014	1.3	<0.004	0.518	1.32	<0.004	<0.004	1.27	<0.004	0.075	<0.004	<0.004	0.043	<0.004	0.661
Dibenzo(a,h)anthracene	7.6	0.017	<0.004	0.119	<0.004	0.049	0.133	<0.004	<0.004	<0.190	<0.004	0.013	<0.004	<0.004	0.007	<0.004	0.065
Fluoranthene	21,000	0.173	0.025	2.74	0.004 J	1.08	2.47	<0.004	0.005	2.53	<0.004	0.091	<0.004	<0.004	0.062	<0.004	1.21
Fluorene	2,800	0.007	0.015	2.61	<0.004	0.941	1.91	<0.004	<0.004	2.5	<0.004	<0.008	<0.004	<0.004	<0.004	<0.004	1.07
Indeno(1,2,3-cd)pyrene	69	0.059	0.004 J	0.345	<0.004	0.142	0.381	<0.004	<0.004	0.3	<0.004	0.042	<0.004	<0.004	0.024	<0.004	0.187
Naphthalene	18	0.034	0.062	13	0.010	5.44	12.4	0.013	<0.004	13.8	0.012	0.014	<0.004	<0.004	0.006	<0.004	5.37
Phenanthrene	1,000	0.105	0.063	8.16	0.008	2.78	6.29	0.009	0.011	8.04	0.006	0.053	<0.004	<0.004	0.035	<0.004	3.54
Pyrene	21,000	0.171	0.037	4.13	0.005	1.61	3.94	0.005	0.006	3.79	<0.004	0.111	<0.004	<0.004	0.064	<0.004	1.84
Arsenic	100	5.49	2.0 J	5.41	---	---	---	---	---	---	---	---	---	---	2.0 J	5.59	5.88
Chromium	---	21.2	27.0	14.2	---	---	---	---	---	---	---	---	---	---	27.5	13.3	12.0
Lead	300	145.0	14.2	8.65	---	---	---	---	---	---	---	---	---	---	107.0	12.4	6.88
Cyanide (amenable)	120	<0.57	<0.61	<0.57	---	---	---	---	---	---	---	---	---	---	<0.60	<0.56	<0.54
Cyanide (total)	120	0.37 J	<0.61	<0.57	---	---	---	---	---	---	---	---	---	---	0.52 J	<0.56	<0.54

Notes:

	All units are in milligrams per kilogram (mg/kg).
(1)	The samples were not analyzed for pH; therefore, the most conservative objectives were used for comparison.
---	No objectives have been published for the constituent, or no sample was submitted for analysis.
62.8	Constituent exceeds the Tier 1 Soil Component to GW Pathway RO.
<0.004	The constituent was not detected at the laboratory reporting limit.
J	Constituent reported below laboratory detection limit - estimated value.

Table 6-4
Soil Saturation and Soil Attenuation Capacity Evaluation
507 East Washington Street
Champaign, Illinois

CONSTITUENT	Soil Saturation Limit	B-803 B803 (2.0-3.0 ft) 5/7/2008 2.0-3.0'	B-803 B803 (9.0-10.0') 5/7/2008 9.0-10.0	B-803 B803 (21.0-22.0') 5/7/2008 21.0-22.0	B-803 B803 (29.0-30.0') 5/7/2008 29.0-30.0	B-846 B846 (8.5-9.5') 5/7/2008 8.5-9.5	B-846 B846 (10.0-11.0') 5/7/2008 10.0-11.0	B-846 B846 (20.0-21.0') 5/7/2008 20.0-21.0	B-847 B847 (6.0-7.0') 5/7/2008 6.0-7.0	B-847 B847 (22.0-23.0') 5/7/2008 22.0-23.0	B-847 B847 (29.0-30.0') 5/7/2008 29.0-30.0	B-848 B848 (2.0-3.0 ft) 5/7/2008 2.0-3.0	B-848 B848 (9.0-10.0') 5/7/2008 9.0-10.0	B-848 B848 (13.0-14.0') 5/7/2008 13.0-14.0	B-849 B849 (0.0-1.0 ft) 5/7/2008 0.0-1.0	B-849 B849 (9.0-10.0') 5/7/2008 9.0-10.0	B-849 B849 (16.0-17.0') 5/7/2008 16.0-17.0
Benzene	580	0.0019	0.0008 J	0.158	0.0014	0.438	0.205	3.16	0.0027	1.44	0.0012	0.0013	0.0058	0.003	0.0012	0.0026	1.21
Ethylbenzene	150	0.0069	<0.0052	4.56	<0.0038	10.1	3.42	<0.0983	0.003 J	62.8	<0.0038	<0.0057	0.0039 J	0.0019 J	<0.0053	0.0021 J	6.24
Toluene	290	0.0039 J	<0.0052	0.32 J	0.002 J	<0.648	0.084 J	<0.0983	0.0068	12.4	0.0018 J	<0.0057	0.0117	0.006	0.0011 J	0.0057	0.89 J
Xylene (total)	110	0.0107	<0.0052	3.5	0.0013 J	8.82	2.9	<0.0983	0.0057	75.6	<0.0038	<0.0057	0.0072	0.0038 J	<0.0053	0.0046	5.64
Acenaphthene	---	0.008	0.026	2.96	<0.004	1.87	4.19	0.004	<0.004	0.95	<0.004	<0.008	<0.004	<0.004	<0.004	<0.004	0.665
Acenaphthylene	---	0.023	0.008	3.19	<0.004	0.312	0.808	<0.004	<0.004	4.73	<0.004	0.024	<0.004	<0.004	0.010	<0.004	1.55
Anthracene	---	0.023	0.018	2.54	<0.004	0.928	2.10	<0.004	<0.004	2.36	<0.004	0.011	<0.004	<0.004	0.006	<0.004	1.12
Benzo(a)anthracene	---	0.086	0.015	1.33	0.004	0.523	1.30	<0.004	0.004 J	1.29	<0.004	0.067	<0.004	<0.004	0.033	<0.004	0.67
Benzo(a)pyrene	---	0.105	0.012	1.24	<0.004	0.469	1.28	<0.004	<0.004	1.15	<0.004	0.089	<0.004	<0.004	0.039	<0.004	0.661
Benzo(b)fluoranthene	---	0.131	0.01	0.915	<0.004	0.356	0.979	<0.004	<0.004	0.905	<0.004	0.103	<0.004	<0.004	0.058	<0.004	0.52
Benzo(ghi)perylene	---	0.066	0.005	0.425	<0.004	0.173	0.471	<0.004	<0.004	0.356	<0.004	0.050	<0.004	<0.004	0.025	<0.004	0.227
Benzo(k)fluoranthene	---	0.045	<0.004	0.275	<0.004	0.109	0.29	<0.004	<0.004	0.258	<0.004	0.032	<0.004	<0.004	0.020	<0.004	0.161
Chrysene	---	0.096	0.014	1.3	<0.004	0.518	1.32	<0.004	<0.004	1.27	<0.004	0.075	<0.004	<0.004	0.043	<0.004	0.661
Dibenzo(a,h)anthracene	---	0.017	<0.004	0.119	<0.004	0.049	0.133	<0.004	<0.004	<0.190	<0.004	0.013	<0.004	<0.004	0.007	<0.004	0.065
Fluoranthene	---	0.173	0.025	2.74	0.004 J	1.08	2.47	<0.004	0.005	2.53	<0.004	0.091	<0.004	<0.004	0.062	<0.004	1.21
Fluorene	---	0.007	0.015	2.61	<0.004	0.941	1.91	<0.004	<0.004	2.5	<0.004	<0.008	<0.004	<0.004	<0.004	<0.004	1.07
Indeno(1,2,3-cd)pyrene	---	0.059	0.004 J	0.345	<0.004	0.142	0.381	<0.004	<0.004	0.3	<0.004	0.042	<0.004	<0.004	0.024	<0.004	0.187
Naphthalene	---	0.034	0.062	13	0.010	5.44	12.4	0.013	<0.004	13.8	0.012	0.014	<0.004	<0.004	0.006	<0.004	5.37
Phenanthrene	---	0.105	0.063	8.16	0.008	2.78	6.29	0.009	0.011	8.04	0.006	0.053	<0.004	<0.004	0.035	<0.004	3.54
Pyrene	---	0.171	0.037	4.13	0.005	1.61	3.94	0.005	0.006	3.79	<0.004	0.111	<0.004	<0.004	0.064	<0.004	1.84
	Soil Attenuation Capacity Default foc 0-3 feet / Default foc >3 feet																
Sum of Organic Compounds(1)	6,000 / 2,000	1.172	0.338	53.82	0.084	37.31	46.87	3.534	0.092	196.7	0.085	0.809	0.093	0.079	0.453	0.079	33.49

Notes

All units are in milligrams per kilogram (mg/kg).

foc Organic carbon fraction

<0.004 The constituent was not detected at the laboratory reporting limit.

J Constituent reported below laboratory detection limit - estimated value.

- - - No remediation objective has been established.

(1) Value shown is the sum of detected organic constituents.

62.8 Constituent exceeds either soil attenuation capacity or soil saturation limit.

Soil Saturation Limits (C_{sat}) for Chemicals Whose Melting Point is Less Than 30˚C (742.Appendix A: Table A)

Default values for foc: Determinationof Soil Attenuation Capacity (Section 742.215)

Table 6-5
Summary of Tier 1 Exceedances by Location
507 East Washington Street
Champaign, Illinois

Sample Location	Sample Depth	Analyte	Result (mg/kg)	Exposure Route	Tier 1 RO (mg/kg)
B803	21-22 ft	Naphthalene	13	CW-Inh	1.8
B846	8.5-9.5 ft	Benzene	0.438	Soil to GW (Class II)	0.17
		Naphthalene	5.44	CW-Inh	1.8
		Xylenes	8.82	CW-Inh	5.6
	10-11 ft	Benzene	0.205	Soil to GW (Class II)	0.17
		Naphthalene	12.4	CW-Inh	1.8
	20-21 ft	Benzene	3.16	CW-Inh	2.2
			3.16	Soil to GW (Class II)	0.17
B847	22-23 ft	Benzene	1.44	Soil to GW (Class II)	0.17
		Ethylbenzene	62.80	CW-Inh	58
			62.8	Soil to GW (Class II)	19
		Naphthalene	13.8	CW-Inh	1.8
		Xylenes	75.6	CW-Inh	5.6
B849	16-17 ft	Benzene	1.21	Soil to GW (Class II)	0.17
		Naphthalene	5.37	CW-Inh	1.8
		Xylenes	5.64	CW-Inh	5.6

Notes:

Construction Worker Inhalation (CW-Inh) ROs were taken from IEPA TACO Section 742 Appendix B Table B Tier 1 Soil Remediation Objectives for Industrial/Commercial Properties.

Soil Component of Groundwater Ingestion for Class II (Soil to GW Class II) ROs were taken from IEPA TACO Section 742 Appendix B Table A - Soil Remediation Objectives for Residential Properties

Table 7-1
Tier 2 Remediation Objectives
507 East Washington Street
Champaign, Illinois

CONSTITUENT	Tier 2 Objective Outdoor Inhalation Residential	Tier 2 Objective Outdoor Inhalation Industrial / Commercial	Tier 2 Objective Outdoor Inhalation Construction Worker	Tier 2 Objective Soil Component of Groundwater Ingestion
Benzene	2.69	5.15	7.24	0.071
Ethylbenzene	16,579	26,395	170.76	49.29
Toluene	264.53	99,155	641.46	36.7
Xylenes (total)	2,015	320	20.76	---
Naphthalene	---	---	---	15.07

Notes:

All units are in milligrams per kilogram (mg/kg).

1 Tier 2 values for carcinogenic compounds were calculated using the SSL-S6 and SSL-S7 equations (742, Appendix C, Table A)

2 Tier 2 values for non-carcinogenic compounds were calculated using the SSL-S4 and SSL-S5 equations (742, Appendix C, Table A)

--- Tier 2 remediation objective was not calculated for xylene.

--- Tier 2 remediation objective for the inhalation exposure pathway for naphthalene cannot be calculated. Inhalation Slope Factor (SFI) not provided in RBCA.

Table 7-2
Soil to Groundwater Migration Calculations
507 East Washington Street
Champaign, Illinois

Parameter	***CAS #***	***Maximum Concentration*** *(mg/kg)*	***Location***	***Source Width*** *(Parallel to GW flow in horizontal plane) (feet)*	***Source Width*** *(Perpendicular to GW flow in horizontal plane) (feet)*	***Distance from Source to Compliance Point 1*** *(feet)*	***Tier 1 Class I GW RO 1*** *(mg/L)*	***Class II GW RO for SCGW Pathway*** *(mg/L)*	***Distance from Source to Meet Tier 1 GW RO 2*** *(feet)*	***Calculated Ground Water Concentration at Distance X*** *(mg/L)*	***Calculated Ground Water Concentration at the Source*** *(mg/L)*
Benzene	71-43-2	3.16	B-846 (20-21')	90	66	100	0.005	0.025	86	0.025	0.70
Ethyl benzene	100-41-4	62.8	B-847 (22-23')	90	66	100	0.7	1.0	13	0.95	4.05

Key:

GW = Ground water
RO = Remediation objective
SCGW = Soil component of ground water
[1] TACO compounds ROs are from IEPA's TACO of July 15, 2013.
[2] Distance was varied until the Class I ground water RO for the SCGW pathway was met.
There is currently no groundwater impact on the property at 507 East Washington Street. Groundwater sample results are below Class II groundwater ingestion ROs. The source width in groundwater perpendicular to groundwater flow was measured from current property boundaries.

Table 7-3
Comparison to Tier 2 Remediation Objectives - Soil Inhalation
507 East Washington Street
Champaign, Illinois

	Residential *(0-3', 0-10')* (RES)	Commercial Industrial[1] *(0-3', 0-10')* (C/I)	Construction Worker [1] (all depths) (CW)	B-803 B803 (2.0-3.0') 5/7/2008 2.0-3.0'	B-803 B803 (9.0-10.0') 5/7/2008 9.0-10.0	B-803 B803 (21.0-22.0') 5/7/2008 21.0-22.0	B-803 B803 (29.0-30.0') 5/7/2008 29.0-30.0	B-846 B846 (8.5-9.5') 5/7/2008 8.5-9.5	B-846 B846 (10.0-11.0') 5/7/2008 10.0-11.0	B-846 B846 (20.0-21.0') 5/7/2008 20.0-21.0	B-847 B847 (22.0-23.0') 5/7/2008 22.0-23.0	B-847 B847 (29.0-30.0') 5/7/2008 29.0-30.0	B-848 B848 (2.0-3.0') 5/7/2008 2.0-3.0	B-848 B848 (9.0-10.0') 5/7/2008 9.0-10.0	B-848 B848 (13.0-14.0') 5/7/2008 13.0-14.0	B-849 B849 (0.0-1.0') 5/7/2008 0.0-1.0	B-849 B849 (9.0-10.0') 5/7/2008 9.0-10.0	B-849 B849 (16.0-17.0') 5/7/2008 16.0-17.0
CONSTITUENT			*Applicable Depth/Pathway*	RES, CW	RES, CW	CW	CW	RES, CW	CW	CW	CW	CW	RES, CW	RES, CW	CW	RES, CW	RES, CW	CW
Benzene	2.69	5.15	7.23	0.0019	0.0008	0.158	0.0014	0.438	0.205	3.16	1.44	0.0012	0.0013	0.0058	0.003	0.0012	0.0026	1.2
Ethylbenzene	16,579	170.76	170.76	0.0069	<0.0052	4.56	<0.0038	10.1	3.42	<0.0983	62.8	<0.0038	<0.0057	0.0039	0.0019	<0.0053	0.0021	6.24
Toluene	62,280	641.46	641.46	0.0039	<0.0052	0.32	0.002	<0.648	0.084	<0.0983	12.4	0.0018	<0.0057	0.0117	0.006	0.0011	0.0057	0.89
Xylene (total)	2,015	320 [2]	20.76	0.0107	<0.0052	3.5	0.0013	8.82	2.9	<0.0983	75.6	<0.0038	<0.0057	0.0072	0.0038	<0.0053	0.0046	5.64
Acenaphthene	-----	-----	-----	0.008	0.026	2.96	<0.004	1.87	4.19	0.004	0.95	<0.004	<0.008	<0.004	<0.004	<0.004	<0.004	0.665
Acenaphthylene	-----	-----	-----	0.023	0.008	3.19	<0.004	0.312	0.808	<0.004	4.73	<0.004	0.024	<0.004	<0.004	0.010	<0.004	1.55
Anthracene	-----	-----	-----	0.023	0.018	2.54	<0.004	0.928	2.10	<0.004	2.36	<0.004	0.011	<0.004	<0.004	0.006	<0.004	1.12
Benzo(a)anthracene	-----	-----	-----	0.086	0.015	1.33	0.004	0.523	1.30	<0.004	1.29	<0.004	0.067	<0.004	<0.004	0.033	<0.004	0.67
Benzo(a)pyrene	-----	-----	-----	0.105	0.012	1.24	<0.004	0.469	1.28	<0.004	1.15	<0.004	0.089	<0.004	<0.004	0.039	<0.004	0.661
Benzo(b)fluoranthene	-----	-----	-----	0.131	0.01	0.915	<0.004	0.356	0.979	<0.004	0.905	<0.004	0.103	<0.004	<0.004	0.058	<0.004	0.52
Benzo(ghi)perylene	-----	-----	-----	0.066	0.005	0.425	<0.004	0.173	0.471	<0.004	0.356	<0.004	0.050	<0.004	<0.004	0.025	<0.004	0.227
Benzo(k)fluoranthene	-----	-----	-----	0.045	<0.004	0.275	<0.004	0.109	0.29	<0.004	0.258	<0.004	0.032	<0.004	<0.004	0.020	<0.004	0.161
Chrysene	-----	-----	-----	0.096	0.014	1.3	<0.004	0.518	1.32	<0.004	1.27	<0.004	0.075	<0.004	<0.004	0.043	<0.004	0.661
Dibenzo(a,h)anthracene	-----	-----	-----	0.017	<0.004	0.119	<0.004	0.049	0.133	<0.004	<0.190	<0.004	0.013	<0.004	<0.004	0.007	<0.004	0.065
Fluoranthene	-----	-----	-----	0.173	0.025	2.74	0.004	1.08	2.47	<0.004	2.53	<0.004	0.091	<0.004	<0.004	0.062	<0.004	1.21
Fluorene	-----	-----	-----	0.007	0.015	2.61	<0.004	0.941	1.91	<0.004	2.5	<0.004	<0.008	<0.004	<0.004	<0.004	<0.004	1.07
Indeno(1,2,3-cd)pyrene	-----	-----	-----	0.059	0.004	0.345	<0.004	0.142	0.381	<0.004	0.3	<0.004	0.042	<0.004	<0.004	0.024	<0.004	0.187
Naphthalene	170[2]	270 [2]	1.8[2]	0.034	0.062	13	0.010	5.44	12.4	0.013	13.8	0.012	0.014	<0.004	<0.004	0.006	<0.004	5.37
Phenanthrene	-----	-----	-----	0.105	0.063	8.16	0.008	2.78	6.29	0.009	8.04	0.006	0.053	<0.004	<0.004	0.035	<0.004	3.54
Pyrene	-----	-----	-----	0.171	0.037	4.13	0.005	1.61	3.94	0.005	3.79	<0.004	0.111	<0.004	<0.004	0.064	<0.004	1.84

Notes:

	All units are in milligrams per kilogram (mg/kg).
(1)	As of Section 742.700(g) the lesser of the calculated soil inhalation value.
(2)	Tier 1 remediation objective used.
(0-3', 0-10')	Samples from 0-3' and 0-10' bgs evaluated for the particulate and volatile pathways, respectively
---	No RO was calculated for the constituent.
3.16	Bold indicates value exceeds Residential Inhalation Tier 2 RO.
3.16	Shading indicates value exceeds Construction Worker Inhalation Tier 2 RO.
<0.004	The constituent was not detected at the given detection limit

Table 7-4
Comparison to Tier 2 Remediation Objectives - Soil Component of Groundwater Ingestion
507 East Washington Street
Champaign, Illinois

CONSTITUENT	*Soil Component to Groundwater* Tier 2 RO	B-803 B803 (2.0-3.0') 5/7/2008 2.0-3.0'	B-803 B803 (9.0-10.0') 5/7/2008 9.0-10.0	B-803 B803 (21.0-22.0') 5/7/2008 21.0-22.0	B-803 B803 (29.0-30.0') 5/7/2008 29.0-30.0	B-846 B846 (8.5-9.5') 5/7/2008 8.5-9.5	B-846 B846 (10.0-11.0') 5/7/2008 10.0-11.0	B-846 B846 (20.0-21.0') 5/7/2008 20.0-21.0
Benzene	0.17 (1)	0.0019	0.0008	0.158	0.0014	0.438	0.205	3.16
Ethylbenzene	49.29	0.0069	<0.0052	4.56	<0.0038	10.1	3.42	<0.0983
Toluene	36.70	0.0039	<0.0052	0.32	0.002	<0.648	0.084	<0.0983
Xylene (total)	---	0.0107	<0.0052	3.5	0.0013	8.82	2.9	<0.0983
Naphthalene	15.07	0.034	0.062	13	0.010	5.44	12.4	0.013

CONSTITUENT	*Soil Component to Groundwater* Tier 2 RO	B-847 B847 (6.0-7.0') 5/7/2008 6.0-7.0	B-847 B847 (22.0-23.0') 5/7/2008 22.0-23.0	B-847 B847 (29.0-30.0') 5/7/2008 29.0-30.0	B-848 B848 (2.0-3.0') 5/7/2008 2.0-3.0	B-848 B848 (9.0-10.0') 5/7/2008 9.0-10.0	B-848 B848 (13.0-14.0') 5/7/2008 13.0-14.0	B-849 B849 (0.0-1.0') 5/7/2008 0.0-1.0	B-849 B849 (9.0-10.0') 5/7/2008 9.0-10.0	B-849 B849(16.0-17.0') 5/7/2008 16.0-17.0
Benzene	0.17 (1)	0.0027	1.44	0.0012	0.0013	0.0058	0.003	0.0012	0.0026	1.2
Ethylbenzene	49.29	0.003	62.8	<0.0038	<0.0057	0.0039	0.0019	<0.0053	0.0021	6.24
Toluene	36.70	0.0068	12.4	0.0018	<0.0057	0.0117	0.006	0.0011	0.0057	0.89
Xylene (total)	---	0.0057	75.6	<0.0038	<0.0057	0.0072	0.0038	<0.0053	0.0046	5.64
Naphthalene	15.07	<0.004	13.8	0.012	0.014	<0.004	<0.004	0.006	<0.004	5.37

Notes:

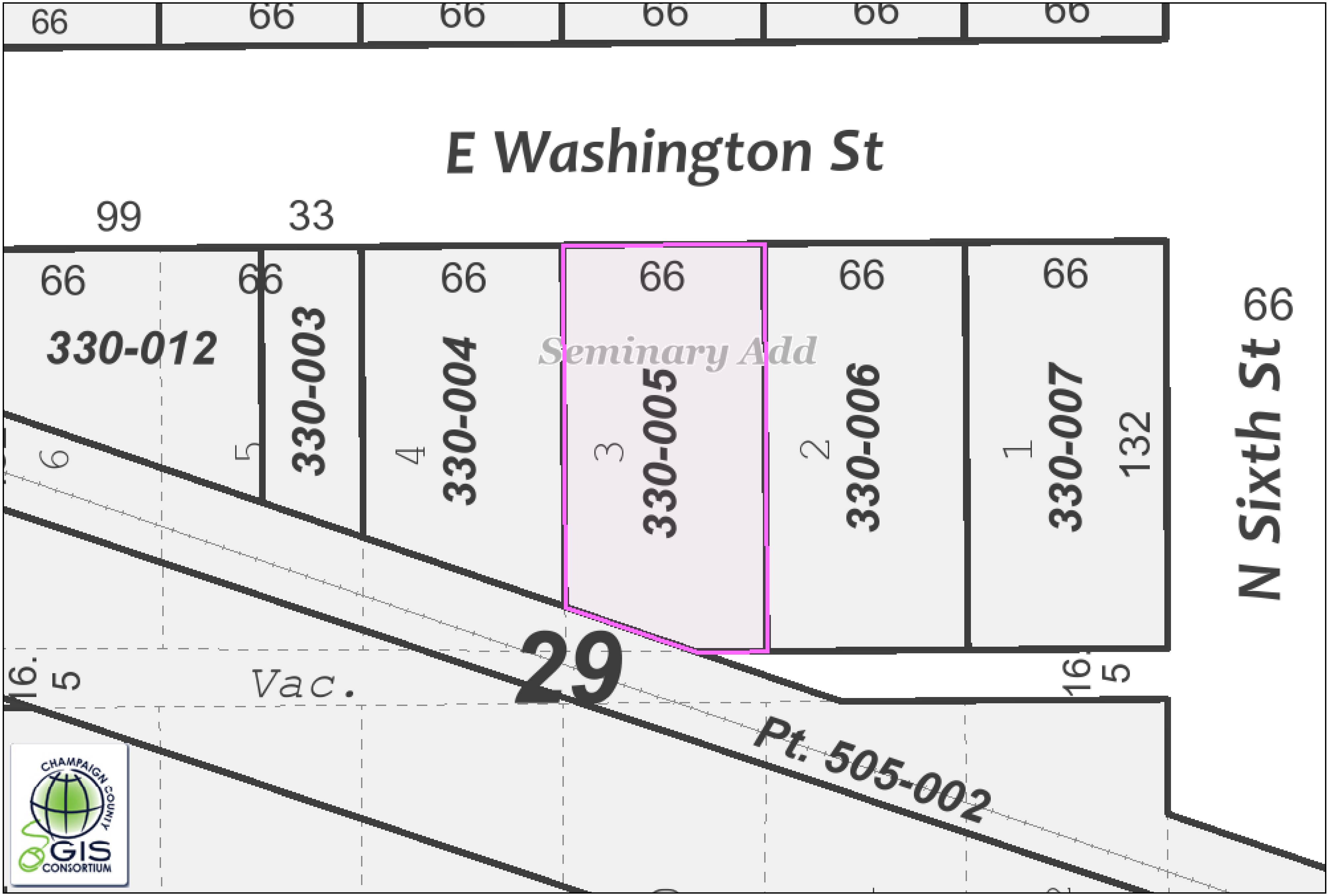
All units are in milligrams per kilogram (mg/kg).
(1) Tier 2 calculated RO value was below Tier 1 - the Tier 1 RO value was retained.
--- Tier 2 Remediation Objective was calculated for xylene. All concentrations reported below Class I/II remediation objective value.
62.8 Constituent exceeds the Tier 2 RO.
<0.004 The constituent was not detected at the given detection limit.

Appendix A

Historical Information

Sanborn Fire Insurance Maps
Brown's Directory Summary
Aerial Photographs

GIS Webmap Public Interface Champaign County, Illinois

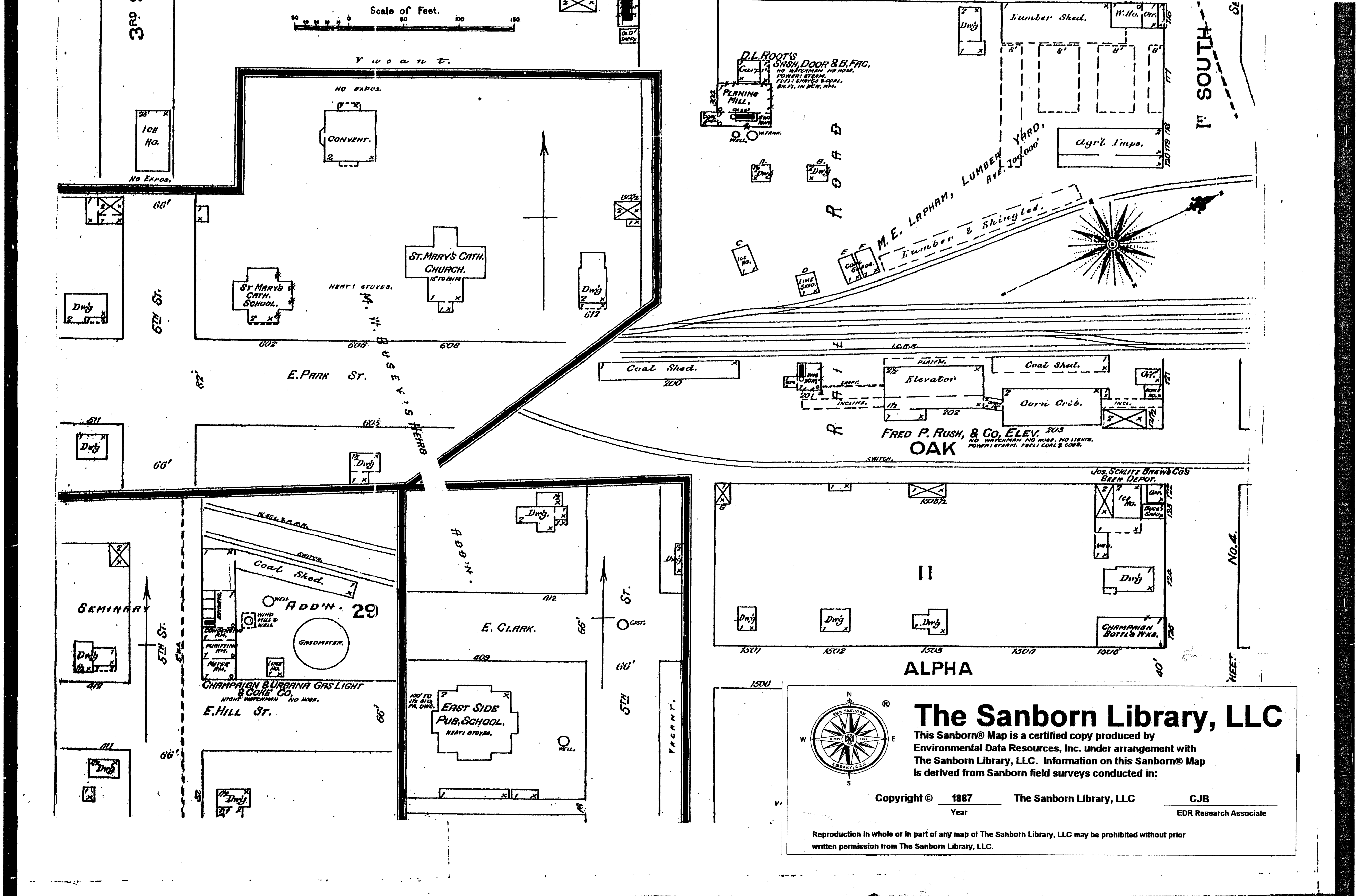


25
Feet

This map was prepared with geographic information system (GIS) data created by the Champaign County GIS Consortium (CCGISC), or other CCGISC member agency. These entities do not warrant or guarantee the accuracy or suitability of GIS data for any purpose. The GIS data within this map is intended to be used as a general index to spatial information and not intended for detailed, site-specific analysis or resolution of legal matters. Users assume all risk arising from the use or misuse of this map and information contained herein. The use of this map constitutes acknowledgement of this disclaimer.

NORTH

Date: Tuesday, January 12, 2021



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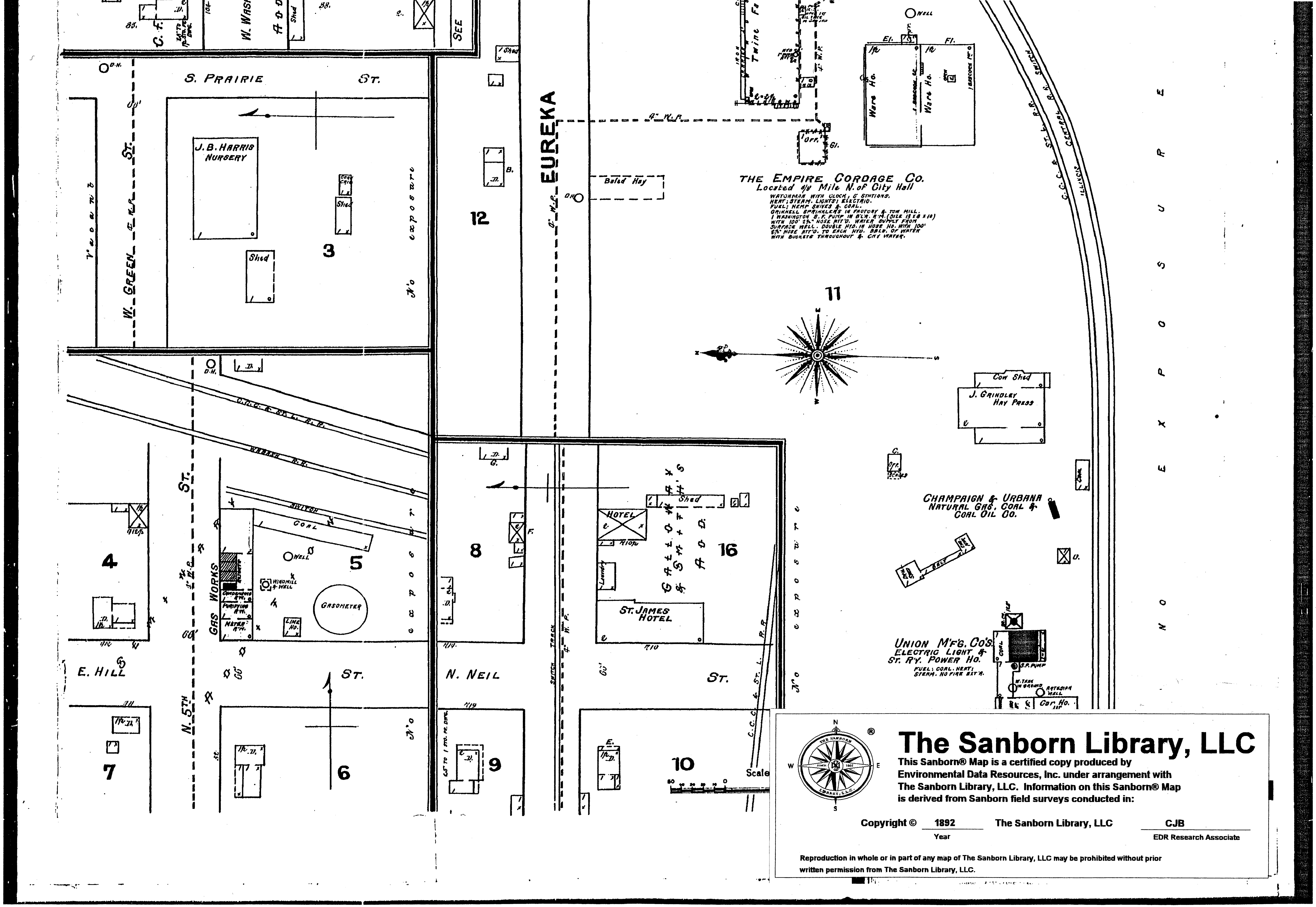
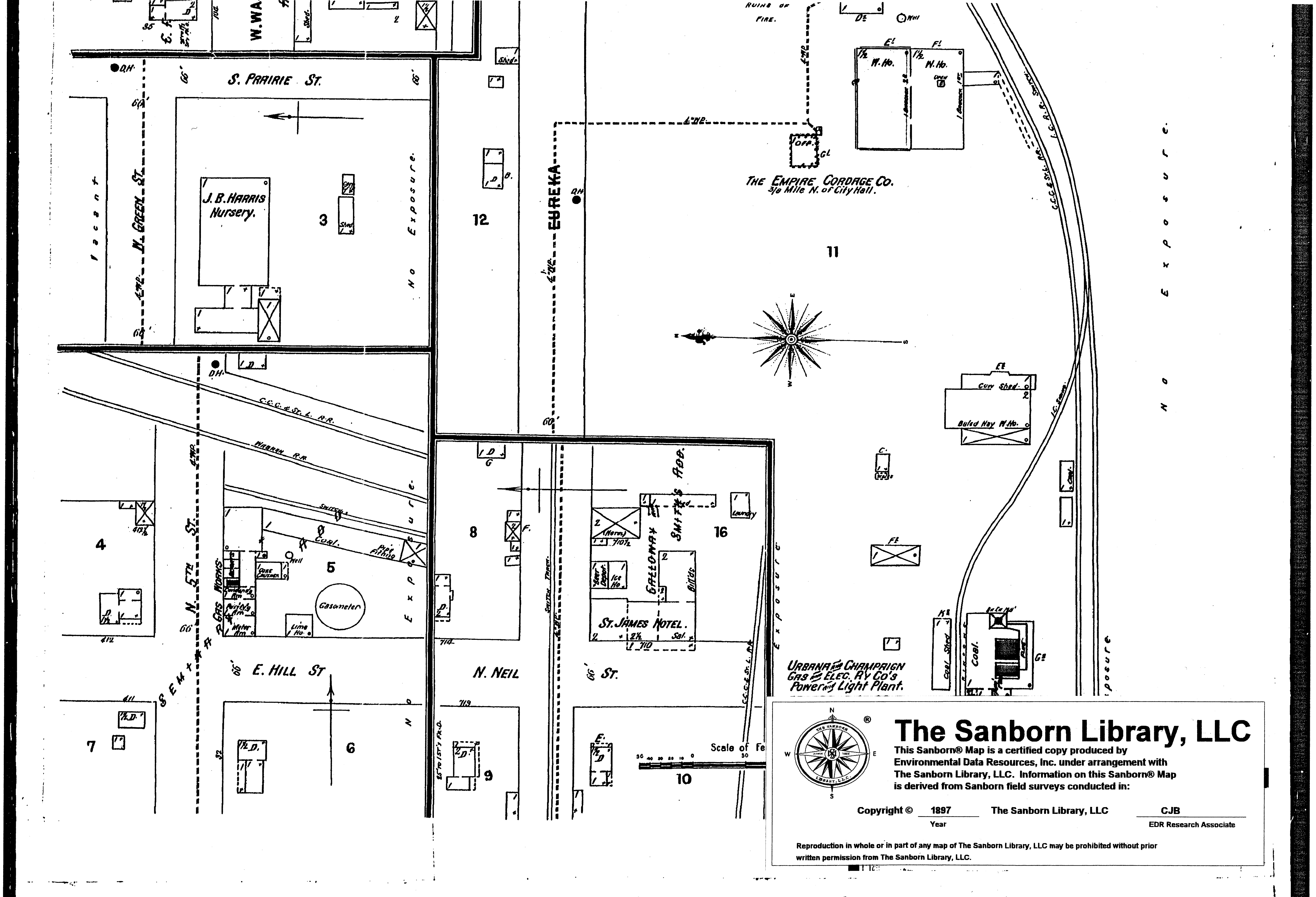
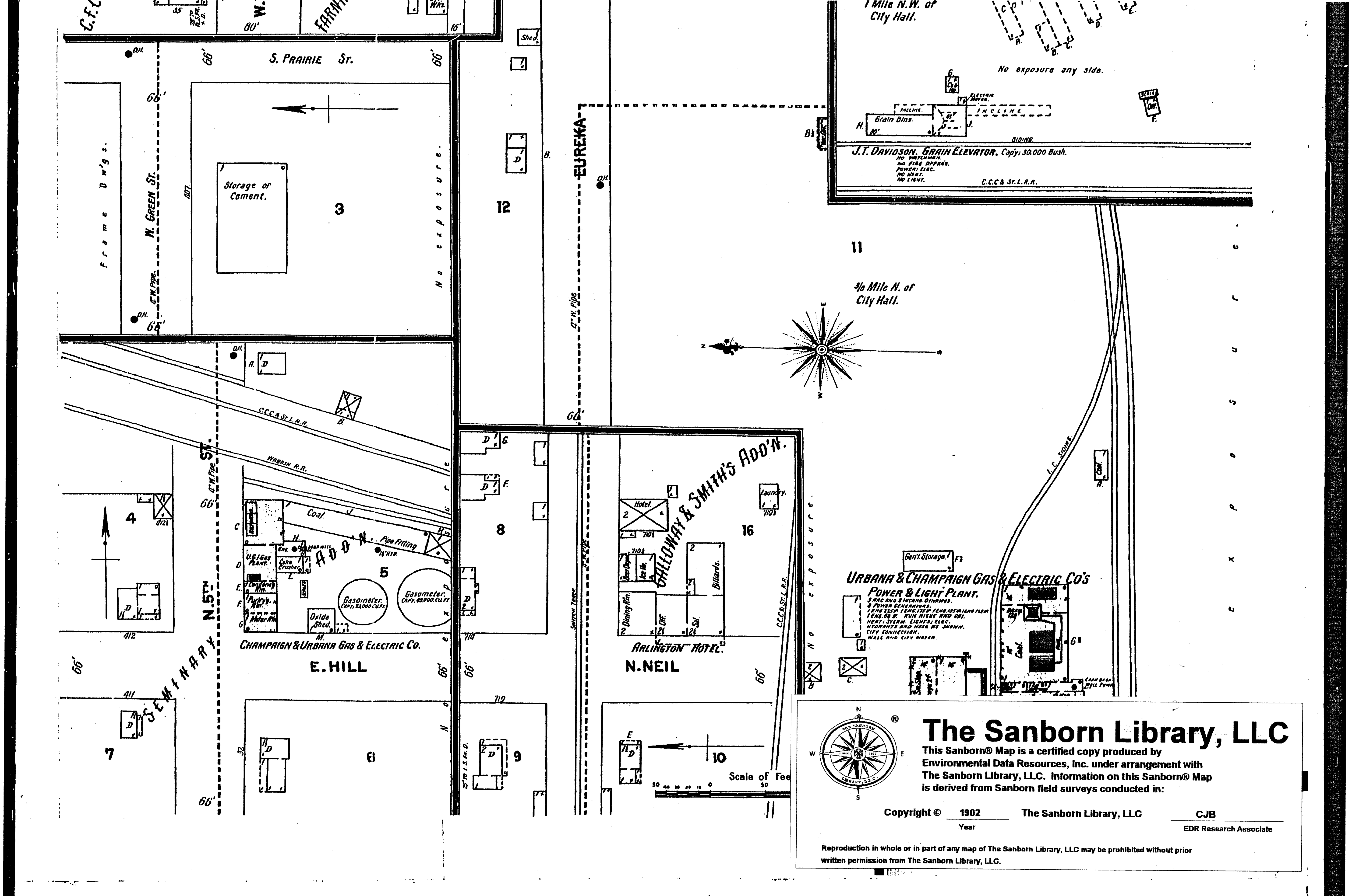
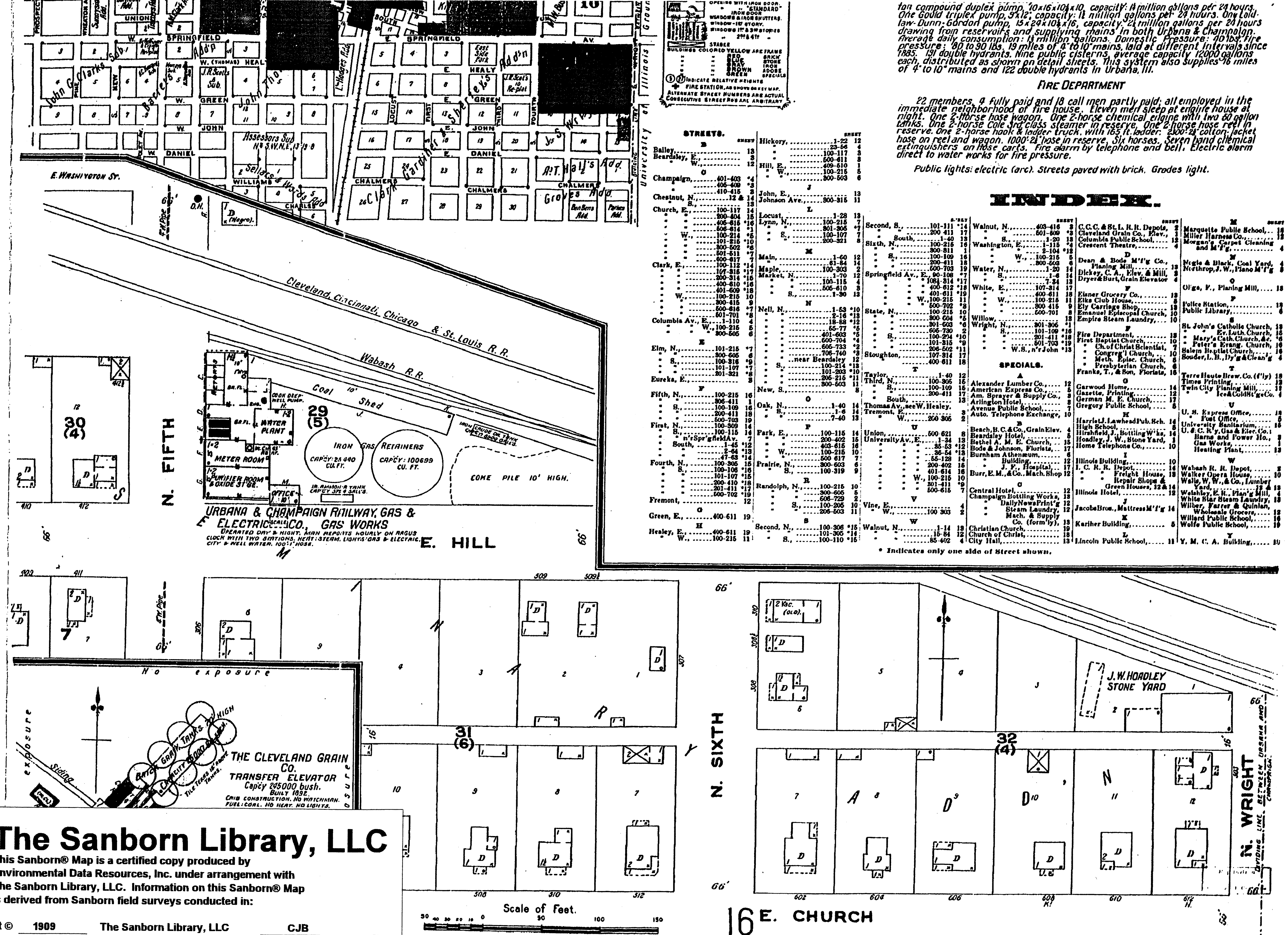
Year EDR Research Associate



S. PRAIRIE ST.
J. B. HARRIS NURSERY
Shed
3
W. GREEN ST.
12
EUREKA
Baled Hay
THE EMPIRE CORDAGE CO.
Located 4/8 Mile N. of City Hall
Ware Ho.
Off.
11
Cow Shed
J. GRINDLEY HAY PRESS
CHAMPAIGN & URBANA NATURAL GAS, COAL & COAL OIL CO.
UNION M'F'G. CO'S. ELECTRIC LIGHT & ST. R'Y. POWER HO.
Car Ho.
4
5
GAS WORKS
GASOMETER
Coal
Switch
WABASH R.R.
8
HOTEL
Shed
16
ST. JAMES HOTEL
SWITCH TRACK
E. HILL ST.
N. 5TH ST.
N. NEIL ST.
7
6
9
10
NO EXPOSURE
Scale


S. PRAIRIE ST.
N. GREEN ST.
Vacant
J. B. HARRIS Nursery.
No Exposure.
EUREKA
THE EMPIRE CORDAGE CO.
3/8 Mile N. of City Hall.
Ruins of Fire.
Off.
W. Ho.
C.C.C. & St. L. R.R.
WARREN R.R.
N. 5TH ST.
GAS WORKS
Gasometer
Lime Ho.
Coal.
Pipe Fitting
E. HILL ST.
N. NEIL ST.
ST. JAMES HOTEL.
Sal.
SMITH'S ADD.
GALLOWAY
Laundry
Ice Ho.
Baled Hay W. Ho.
Car Shed.
Coal Shed
Coal.
URBANA and CHAMPAIGN GAS and ELEC. RY Co's Power and Light Plant.
Exposure
3
4
5
6
7
8
9
10
11
12
16
Scale of Feet


S. PRAIRIE ST.
W. GREEN ST.
Frame Dw'gs.
Storage of Cement.
No exposure
EUREKA
1 Mile N.W. of City Hall.
No exposure any side.
Grain Bins.
Incline
J.T. DAVIDSON. GRAIN ELEVATOR. Capy: 30,000 Bush.
C.C.C.& St.L.R.R.
3/8 Mile N. of City Hall.
WABASH R.R.
N. 5TH ST.
SEMINARY
Coal
Pipe Fitting
Gasometer
Oxide Shed
CHAMPAIGN & URBANA GAS & ELECTRIC CO.
E. HILL
GALLOWAY & SMITH'S ADD'N.
Hotel
Laundry
Billiards
Dining Rm.
ARLINGTON HOTEL
N. NEIL
Gen'l. Storage
URBANA & CHAMPAIGN GAS & ELECTRIC CO'S POWER & LIGHT PLANT.
I.C. SIDING
Scale of Feet



...ton compound duplex pump, 10x16x10½x10, capacity: 4 million gallons per 24 hours. One Gould triplex pump, 5x12; capacity: 1½ million gallons per 24 hours. One Laidlaw-Dunn-Gordon pump, 15x24x10½x16, capacity: 2½ million gallons per 24 hours drawing from reservoirs and supplying mains in both Urbana & Champaign. Average daily consumption: 1½ million gallons. Domestic Pressure: 40 lbs. Fire pressure: 80 to 90 lbs. 19 miles of 4" to 10" mains, laid at different intervals since 1885. 191 double hydrants. Nine public cisterns, average capacity 12000 gallons each, distributed as shown on detail sheets. This system also supplies 16 miles of 4" to 10" mains and 122 double hydrants in Urbana, Ill.

FIRE DEPARTMENT

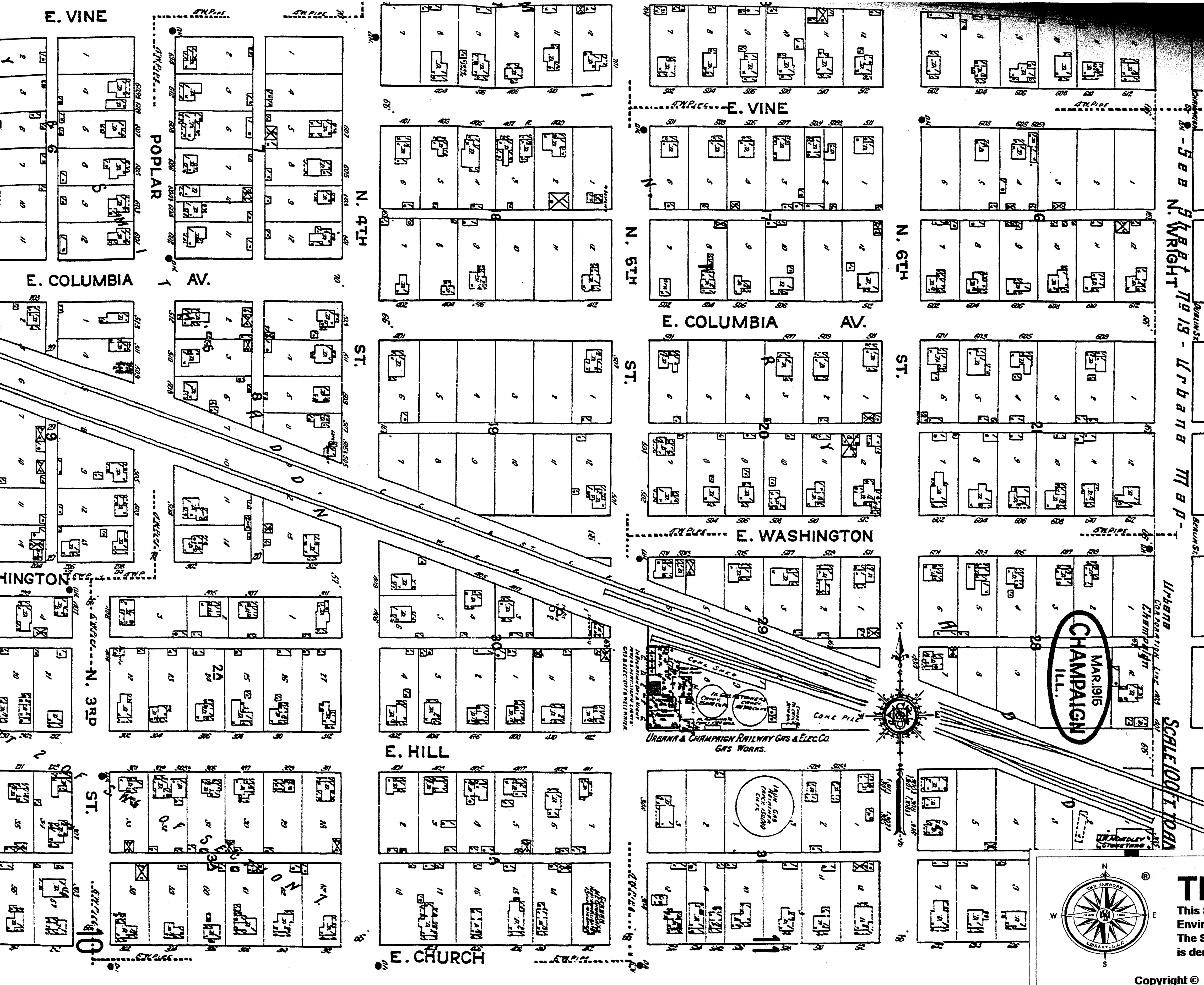
22 members, 4 fully paid and 18 call men partly paid; all employed in the immediate neighborhood of fire house. Eleven men sleep at engine house at night. One 2-horse hose wagon. One 2-horse chemical engine with two 60 gallon tanks. One 2-horse Cole 3rd class steamer in reserve. One 2-horse hose reel in reserve. One 2-horse hook & ladder truck, with 165 ft. ladder. 2300 2½ cotton-jacket hose on reel and wagon. 1000 2½ hose in reserve. Six horses. Seven hand chemical extinguishers on hose carts. Fire alarm by telephone and bell. Electric alarm direct to water works for fire pressure.

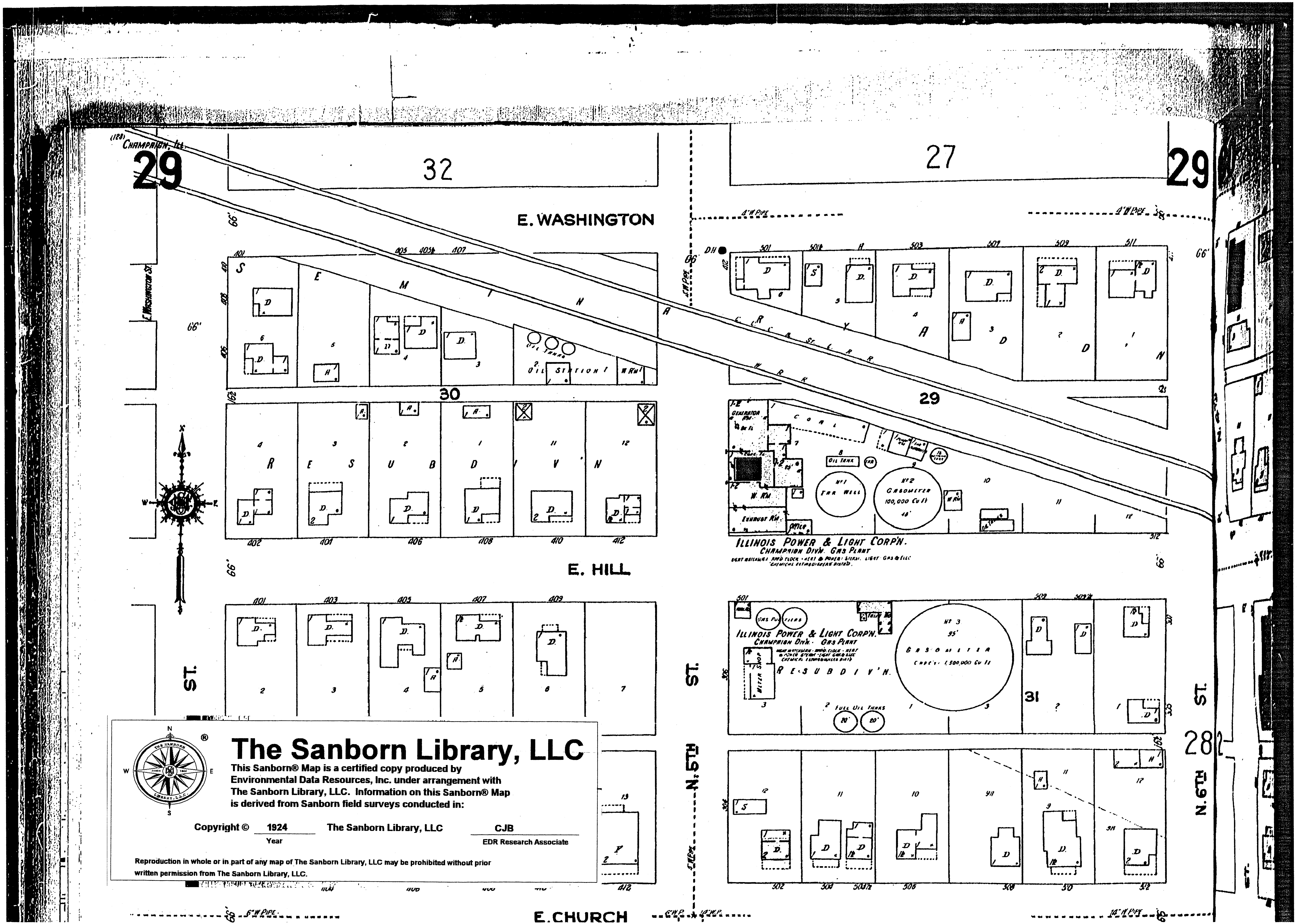
Public lights: electric (arc). Streets paved with brick. Grades light.

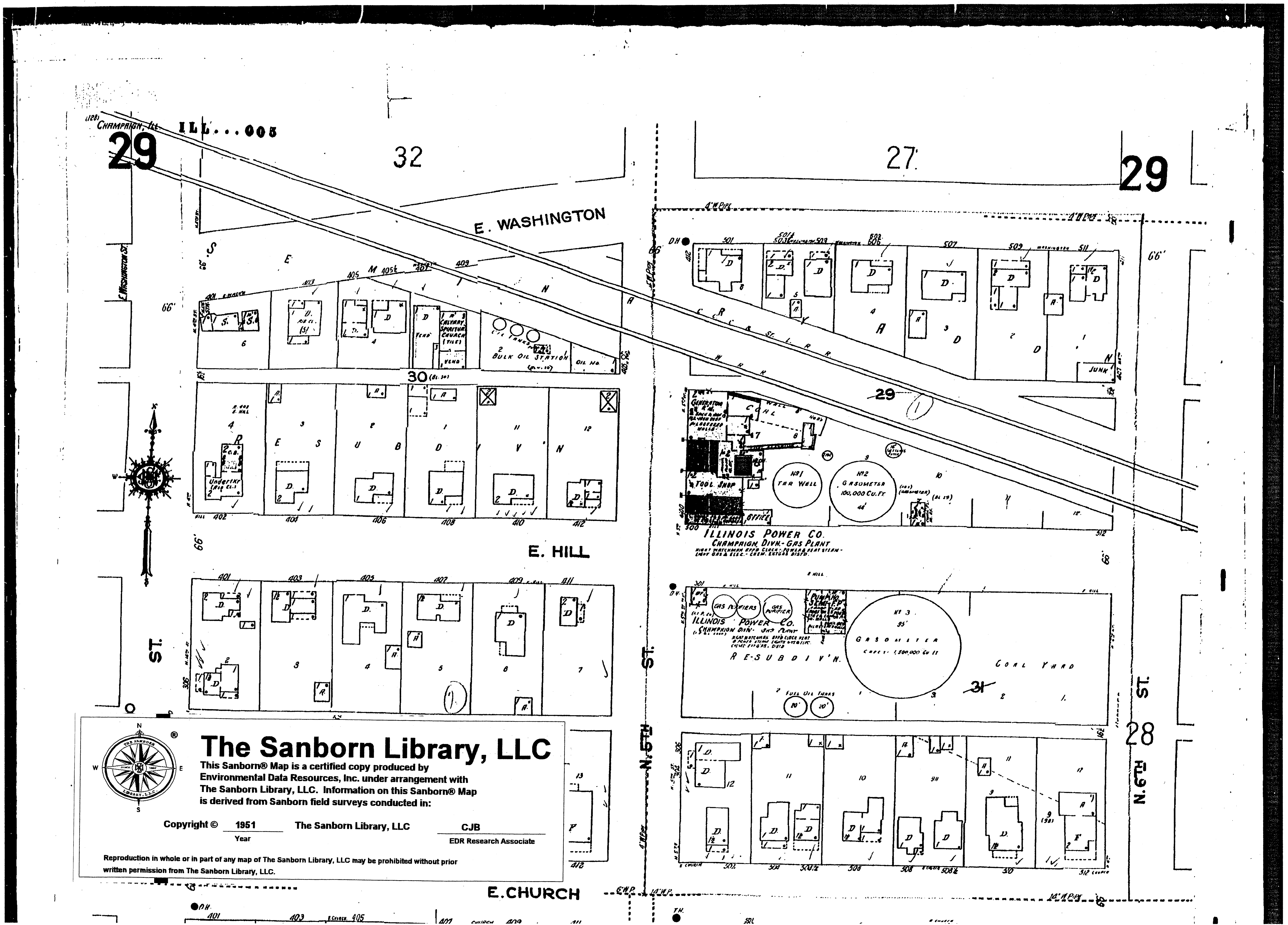
INDEX.

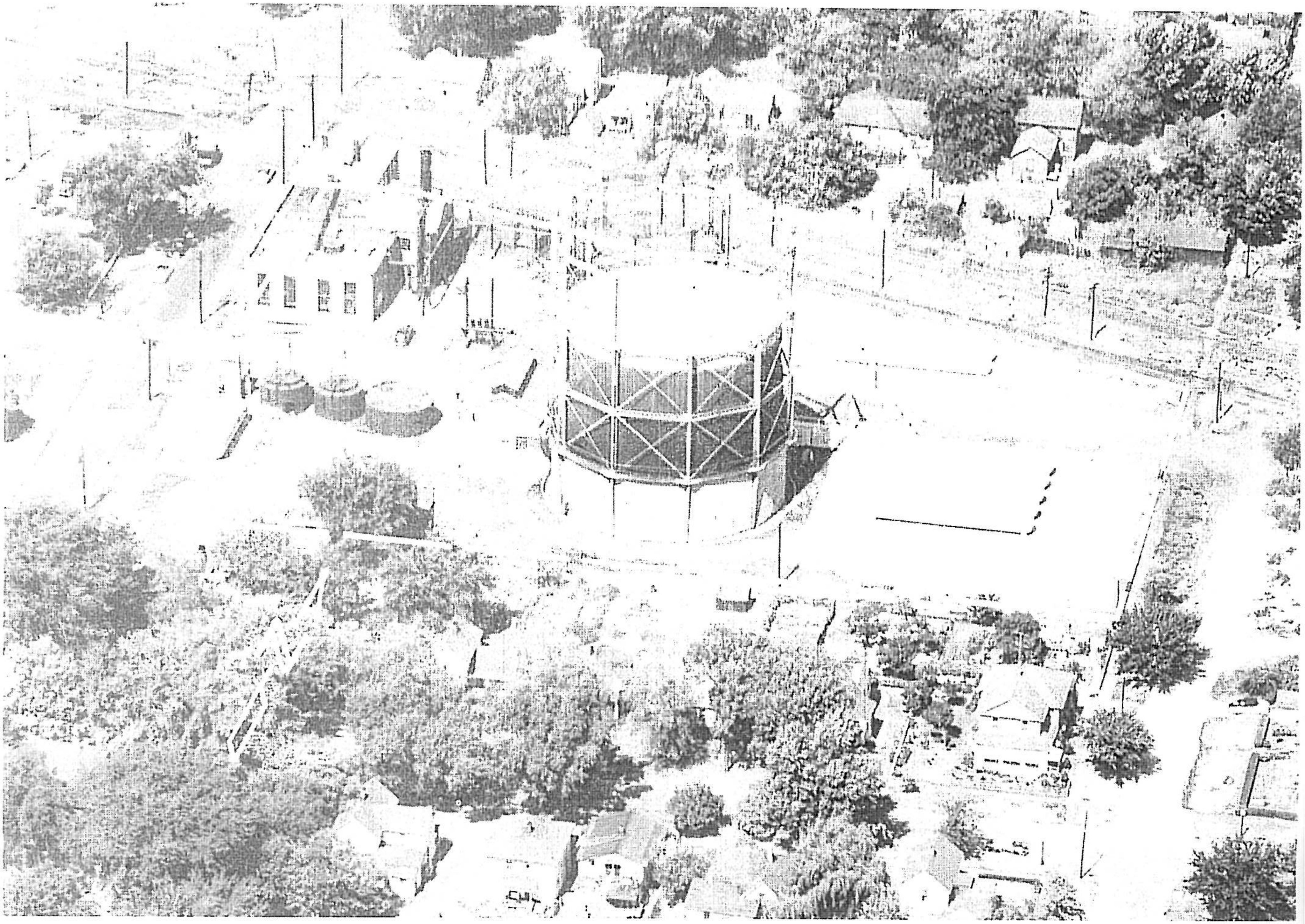
SPECIALS.

* Indicates only one side of Street shown.


E. VINE
POPLAR
E. COLUMBIA AV.
N. 4TH ST.
N. 5TH ST.
N. 6TH ST.
N. WRIGHT
E. WASHINGTON
N. 3RD
E. HILL
E. CHURCH
COAL SHED
COKE PILE
URBANA & CHAMPAIGN RAILWAY GAS & ELEC. CO.
GAS WORKS.
MAR. 1916
CHAMPAIGN
ILL.


CHAMPAIGN, ILL.
29
32
27
29
E. WASHINGTON
ILLINOIS POWER & LIGHT CORP'N.
CHAMPAIGN DIV'N. GAS PLANT
30
29
E. HILL
ILLINOIS POWER & LIGHT CORP'N.
CHAMPAIGN DIV'N. GAS PLANT
GASOMETER
RESUBDIV'N.
31
ST.
N. 5TH ST.
N. 6TH ST.
28
E. CHURCH


CHAMPAIGN, ILL.
ILL...005
29
32
27
29
E. WASHINGTON
BULK OIL STATION
CALVARY SPIRITUAL CHURCH
30
29
E. HILL
ILLINOIS POWER CO.
CHAMPAIGN DIVN.-GAS PLANT
TOOL SHOP
OFFICE
TAR WELL
GASOMETER 100,000 CU.FT.
JUNK
GAS PURIFIERS
RE-SUBDIV'N
GASOMETER
COAL YARD
31
ST.
N. 5TH ST.
N. 6TH ST.
28
E. CHURCH



BROWN'S DIRECTORY SUMMARY
Champaign MGP Site
Champaign, Illinois

Year	Company Name	Process Type/Name	Annual Production (cubic feet)	Gas Holder Capacity (cubic feet)	Gas Unaccounted For	Tar Produced (gals)	Tar Sold (gals)	Coke Produced (tons)	Coke Sold (tons)	Coke Used (tons)	Gas Oil Used (gals)	Notes
1887	Champaign & Urbana Gas Light Co.											
1888												
1889	Champaign & Urbana Gas Light Co.	Coal										
1890	Champaign & Urbana Gas Light & Coke Co.	Coal	6,000,000									
1891	Champaign & Urbana Gas Light & Coke Co.	Coal	6,000,000									
1892	Champaign & Urbana Gas Light & Coke Co.	Coal										
1893	Champaign & Urbana Gas Light & Coke Co.	Coal	6,000,000									
1894	Champaign & Urbana Gas Light & Coke Co.	Coal	6,000,000									
1895												
1896												
1897												
1898												
1899	Urbana & Champaign Gas & Elec. Co.	Coal	15,000,000									
1900	Urbana & Champaign Gas & Elec. Co.	Coal	22,000,000									
1901	Urbana & Champaign Gas & Elec. Co.	Coal	26,000,000									
1902	Urbana & Champaign Gas & Elec. Co.	Coal	26,000,000									
1903	Urbana & Champaign Gas & Elec. Co.	Coal	26,000,000									
1904	Urbana & Champaign Gas & Elec. Co.	Coal	26,000,000									
1905	Urbana & Champaign Gas & Elec. Co.	Coal	26,000,000									
1906	Urbana & Champaign Railway, Gas & Elec. Co.	Coal	35,000,000									
1907	Urbana & Champaing Railway, Gas & Elec. Co.	Coal & Oil	30,000,000									
1908	Urbana & Champaign Railway, Gas & Elec. Co.	Coal & Oil	40,000,000									
1909	Urbana & Champaign Railway, Gas & Elec. Co.	Coal & Oil	40,000,000									
1910	Urbana & Champaingn Railway, Gas & Elec. Co.	Coal & Oil	63,000,000	120,000	12.00%							1
1911	Urbana & Champaign Railway, Gas & Elec. Co.	Coal & Oil	50,000,000	500,000	15.00%							

Notes:

1. Annual Production is reported as sales; therefore, actual production estimated to be 12% higher
2. Controlled by Illinois Traction Co.
3. Annual production: Coal gas, 30,232,500 c.f.; oil gas, 100,687,000 c.f.
4. Annual production; Coal gas, 40,020,000 c.f.; oil gas, 102,800,000 c.f.
5. controlled by Danville, Champaign & Decatur Ry. & Lt. Co., which is controlled by the Illinois Traction Co.
6. Annual production; Coal gas, 14,818,500 c.f.; Water gas, 152,287,900 c.f.
7. Controlled by Danville, Champaign & Decatur Ry. & Lt. Co., which is controlled by the Illinois Power & Light Co.
8. Formerly Urbana and Champaign Railway Gas & Electric Co.
9. Gas holder capacity, 500,000 c.f.; relief, 100,000 c.f.
10. "Coke Used" is reported as "coal " used; water gas generator fuel , 6,034 tons
11. Gas purchased, 5,320,000 c.f. from Coal Gas Experimental Plant
12. Boiler fuel used; 2,787 tons Indiana screenings; 74,313 gals. Tar
13. Bituminous coal used as water gas generator fuel, 5,676 tons
14. Boiler fuel used, 1,628 tons coal; tar, 170,820 gal.
15. Bituminous coal used as water gas generator fuel
16. Subsidiary of North American Light & Power Co.
17. Carbureted water gas plant now shut down, serving natural gas
18. Gas purchased, 185,199,000 c.f. natural gas from Panhandle Illinois Pipe Line Co.

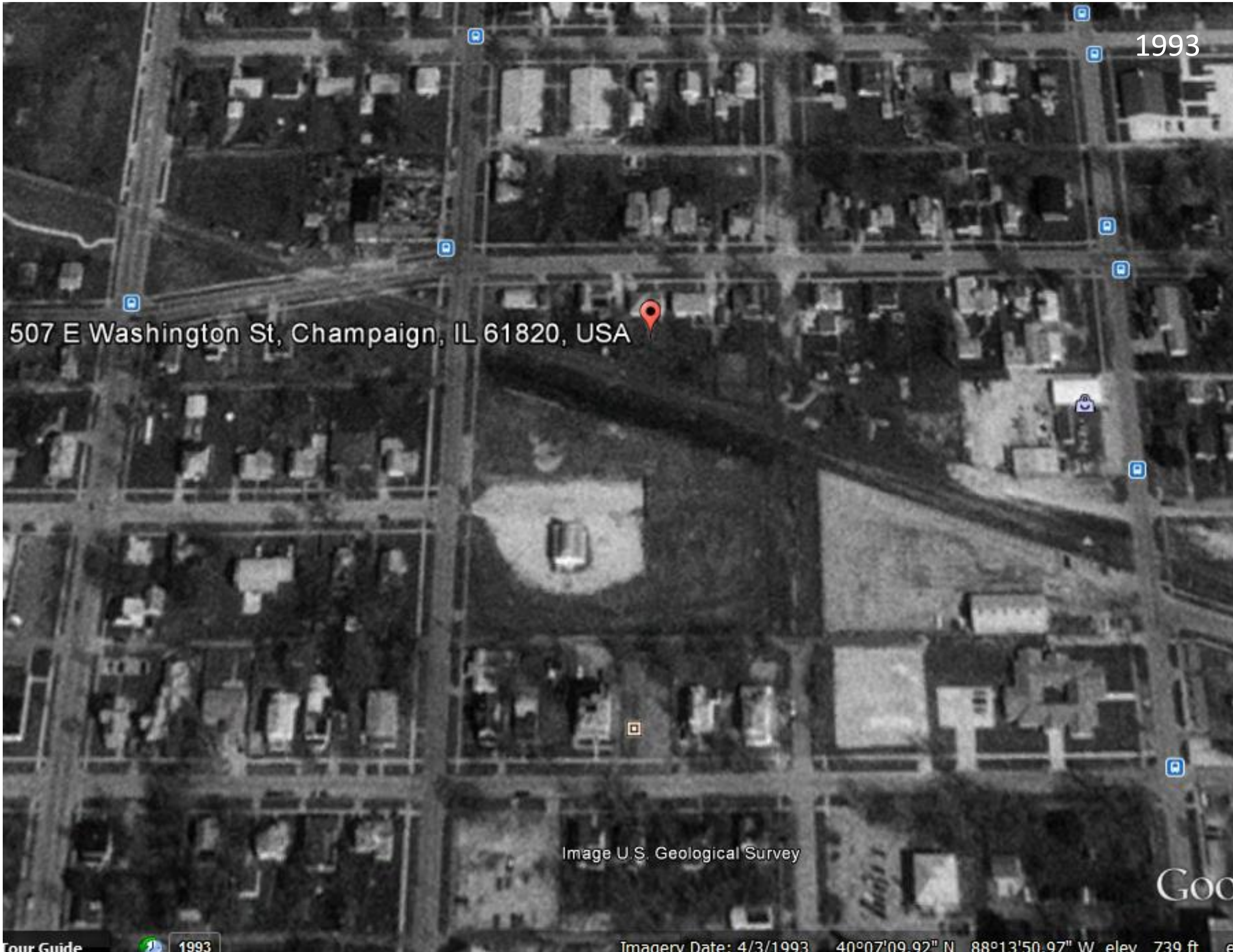
BROWN'S DIRECTORY SUMMARY

Champaign MGP Site
Champaign, Illinois

Year	Company Name	Process Type/Name	Annual Production (cubic feet)	Gas Holder Capacity (cubic feet)	Gas Unaccounted For	Tar Produced (gals)	Tar Sold (gals)	Coke Produced (tons)	Coke Sold (tons)	Coke Used (tons)	Gas Oil Used (gals)	Notes
1912	Urbana & Champaign Railway, Gas & Elec. Co.	Coal & Lowe	65,000,000	500,000	11.00%							
1913	Urbana & Champaign Railway, Gas & Elec. Co.	Coal & Lowe	76,016,000	500,000	10.00%							1
1914	Urbana & Champaign Railway, Gas & Elec. Co.	Coal & Lowe	76,016,000	500,000	10.00%							
1915	Urbana & Champaign Railway, Gas & Elec. Co.	Coal & Lowe	90,000,000	500,000	10.00%							1,2
1916	Urbana & Champaign Railway, Gas & Elec. Co.	Coal & Lowe	90,000,000	500,000	10.00%							1,2
1917	Urbana & Champaign Railway, Gas & Elec. Co.	Coal & Lowe	107,787,300	500,000	10.50%	34,864	34,864	2,074	2,074			1,2,3
1918	Urbana & Champaign Railway, Gas & Elec. Co.	Coal & Lowe	107,787,300	500,000	10.50%	34,864	34,864	2,074	2,074			1,2,3
1919	Urbana & Champaign Railway, Gas & Elec. Co.	Coal & Lowe	128,000,000	440,000	8.00%	75,000	75,000	2,060	2,060			1,2,4
1920	Urbana & Champaign Railway, Gas & Elec. Co.	Water & coal gas	125,089,460	440,000		110,394	110,394	920	920			1,5,6
1921	Urbana & Champaign Railway, Gas & Elec. Co.	Water & coal gas	181,990,000	440,000	10.80%							5
1922	Urbana & Champaign Railway, Gas & Elec. Co.	Water gas	194,652,800	440,000	6.90%		78,240				668,998	5
1923	Urbana & Champaign Railway, Gas & Elec. Co.	Water gas	218,306,200	600,000	11.10%		40,000				668,998	5
1924	Urbana & Champaign Railway, Gas & Elec. Co.	Water gas	218,306,200	600,000	11.10%		40,000				668,998	7
1925	Illinois Power & Light Corp.	Water gas	230,366,600	630,000	11.10%		73,000			4,847	734,534	8
1926	Illinois Power & Light Corp.	Water gas	258,387,500	600,000	11.30%	122,703	100,000			4,847	734,534	
1927	Illinois Power & Light Corp.	Water gas	298,543,000	600,000	18.31%	95,000				5,139	949,992	9,10
1928	Illinois Power & Light Corp.	Water gas	301,745,000	600,000	18.33%	191,400				5,139	945,918	9,10
1929	Illinois Power & Light Corp.	Water gas	397,465,000	600,000	13.45%	399,402				4,870	976,778	9,11
1930	Illinois Power & Light Corp.	CWG	338,722,000	600,000	14.89%	229,453				5,250	1,122,986	9,12
1931	Illinois Power & Light Corp.	CWG	336,360,00	600,000	15,94%	244,305				5,655	1,097,384	9,15,16
1932	Illinois Power & Light Corp.	CWG	338,769,000	600,000	15.10%	171,497				5,676	1,052,314	9,13,14
1933	Illinois Power & Light Corp.	CWG	58,841,000	600,000	13.80%	8,473				1,131	73,052	9, 16,17,18
1934	No Listing											
1935	No Listing											

Notes:

1. Annual Production is reported as sales; therefore, actual production estimated to be 12% higher
2. Controlled by Illinois Traction Co.
3. Annual production: Coal gas, 30,232,500 c.f.; oil gas, 100,687,000 c.f.
4. Annual production; Coal gas, 40,020,000 c.f.; oil gas, 102,800,000 c.f.
5. controlled by Danville, Champaign & Decatur Ry. & Lt. Co., which is controlled by the Illinois Traction Co.
6. Annual production; Coal gas, 14,818,500 c.f.; Water gas, 152,287,900 c.f.
7. Controlled by Danville, Champaign & Decatur Ry. & Lt. Co., which is controlled by the Illinois Power & Light Co.
8. Formerly Urbana and Champaign Railway Gas & Electric Co.
9. Gas holder capacity, 500,000 c.f.; relief, 100,000 c.f.
10. "Coke Used" is reported as "coal " used; water gas generator fuel , 6,034 tons
11. Gas purchased, 5,320,000 c.f. from Coal Gas Experimental Plant
12. Boiler fuel used; 2,787 tons Indiana screenings; 74,313 gals. Tar
13. Bituminous coal used as water gas generator fuel, 5,676 tons
14. Boiler fuel used, 1,628 tons coal; tar, 170,820 gal.
15. Bituminous coal used as water gas generator fuel
16. Subsidiary of North American Light & Power Co.
17. Carbureted water gas plant now shut down, serving natural gas
18. Gas purchased, 185,199,000 c.f. natural gas from Panhandle Illinois Pipe Line Co.


1993
507 E Washington St, Champaign, IL 61820, USA
Image U.S. Geological Survey
Tour Guide
1993
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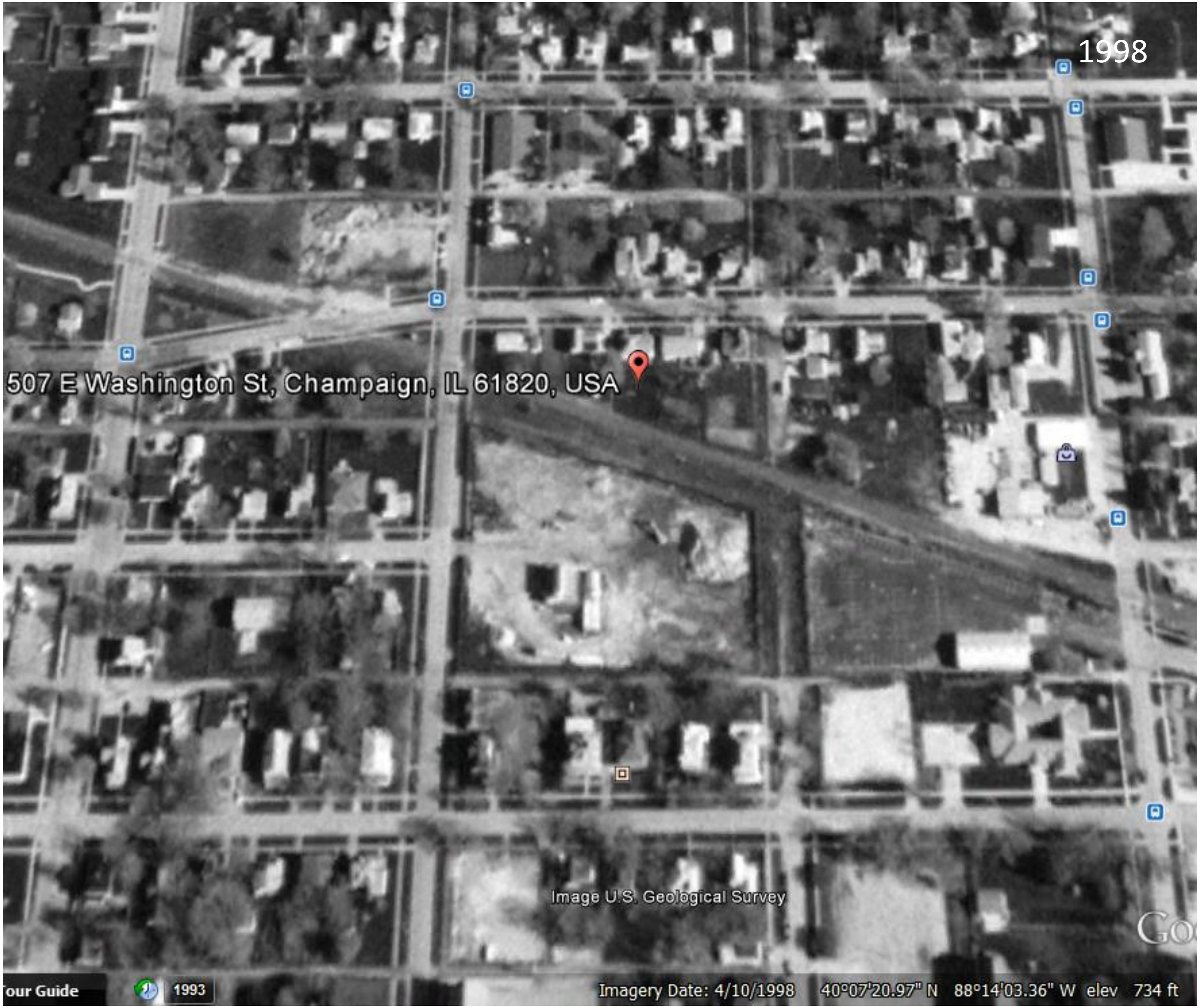
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507 E Washington St, Champaign, IL 61820, USA
Image U.S. Geological Survey
Tour Guide
1993
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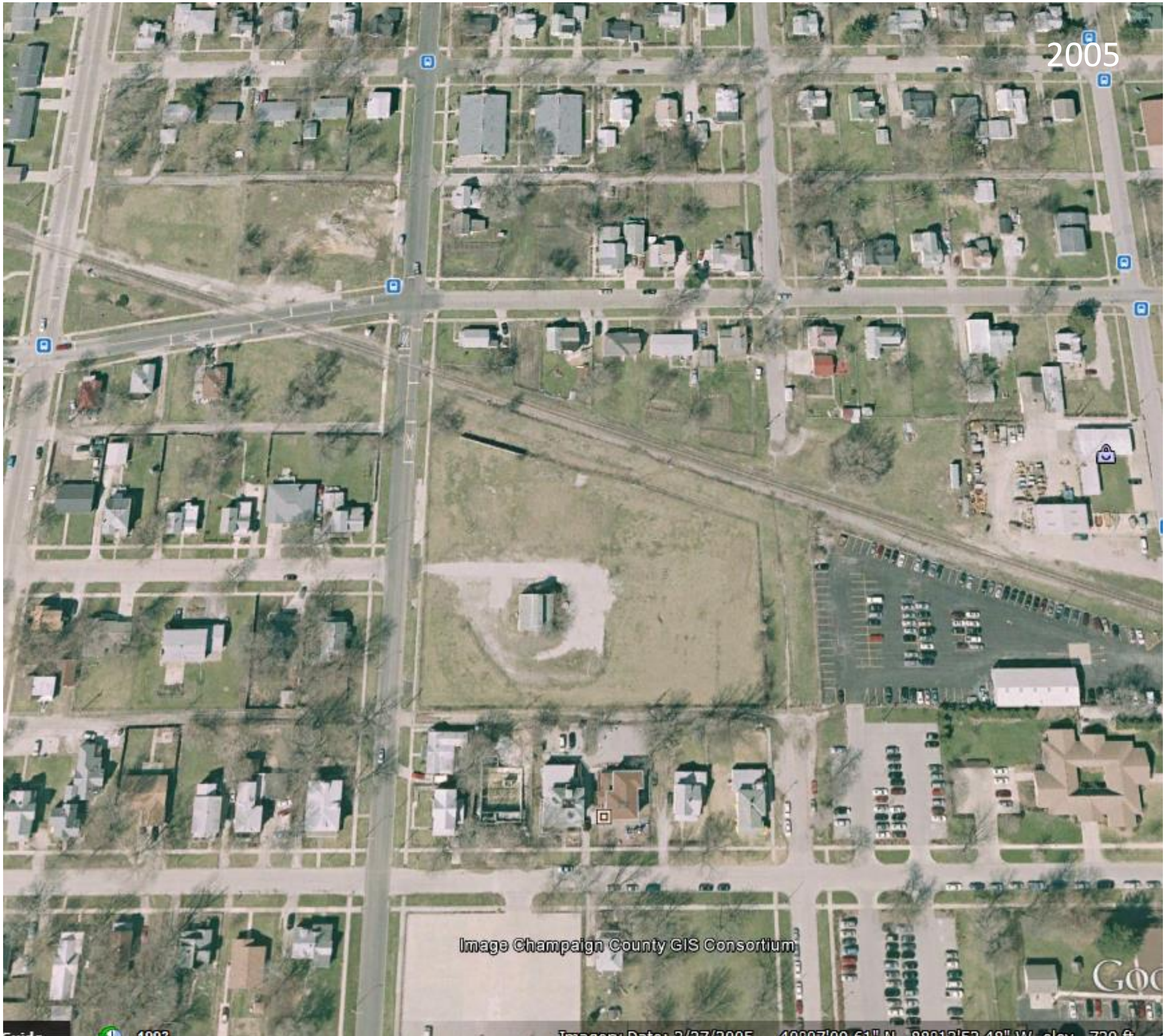
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Image Champaign County GIS Consortium
Guide
1993
Imagery Date: 3/27/2005
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DIGITALGLOBE®

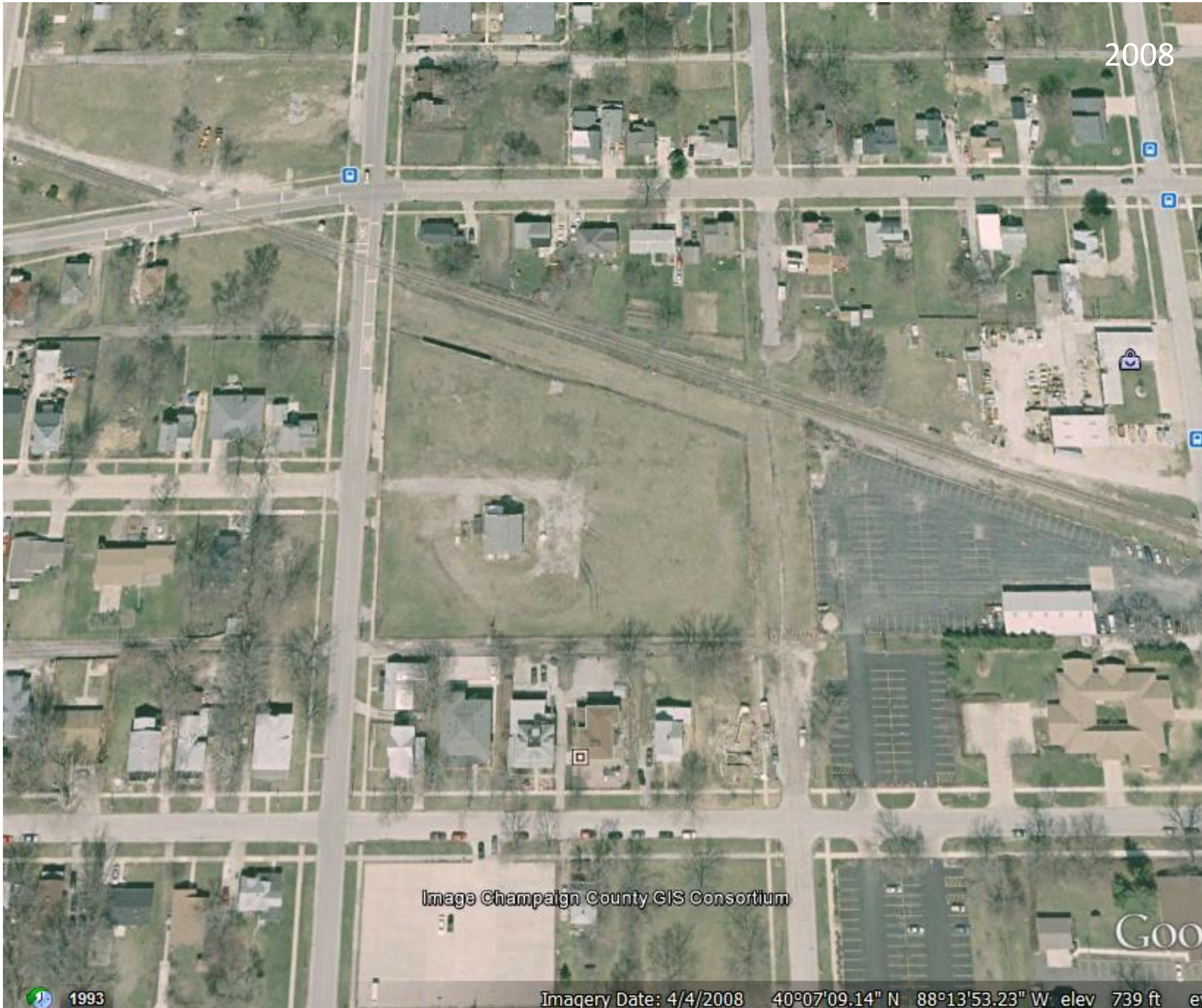
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Image Champaign County GIS Consortium
1993
Imagery Date: 4/4/2008
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88°13'53.23" W
elev
739 ft

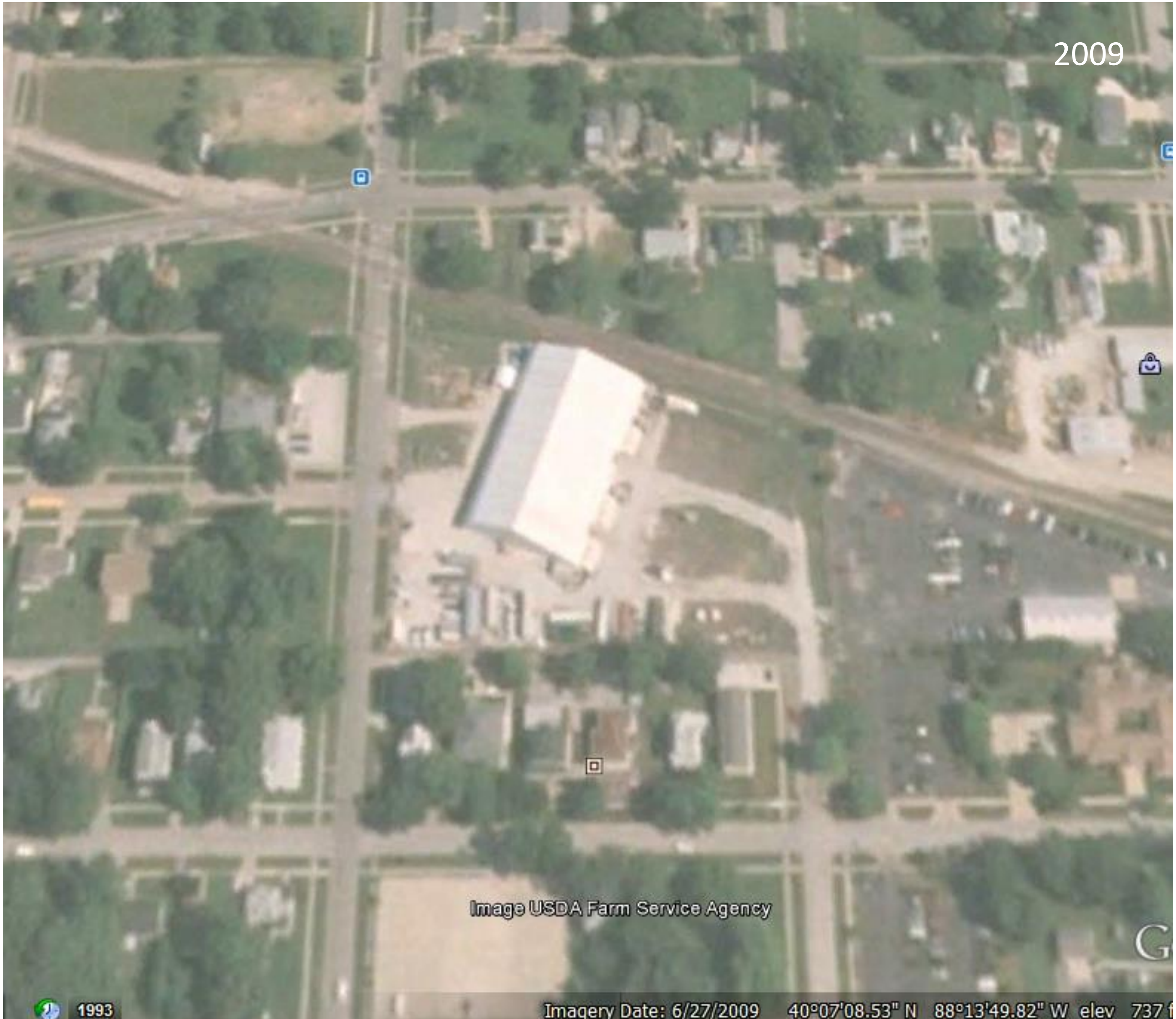
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Image USDA Farm Service Agency
1993
Imagery Date: 6/27/2009
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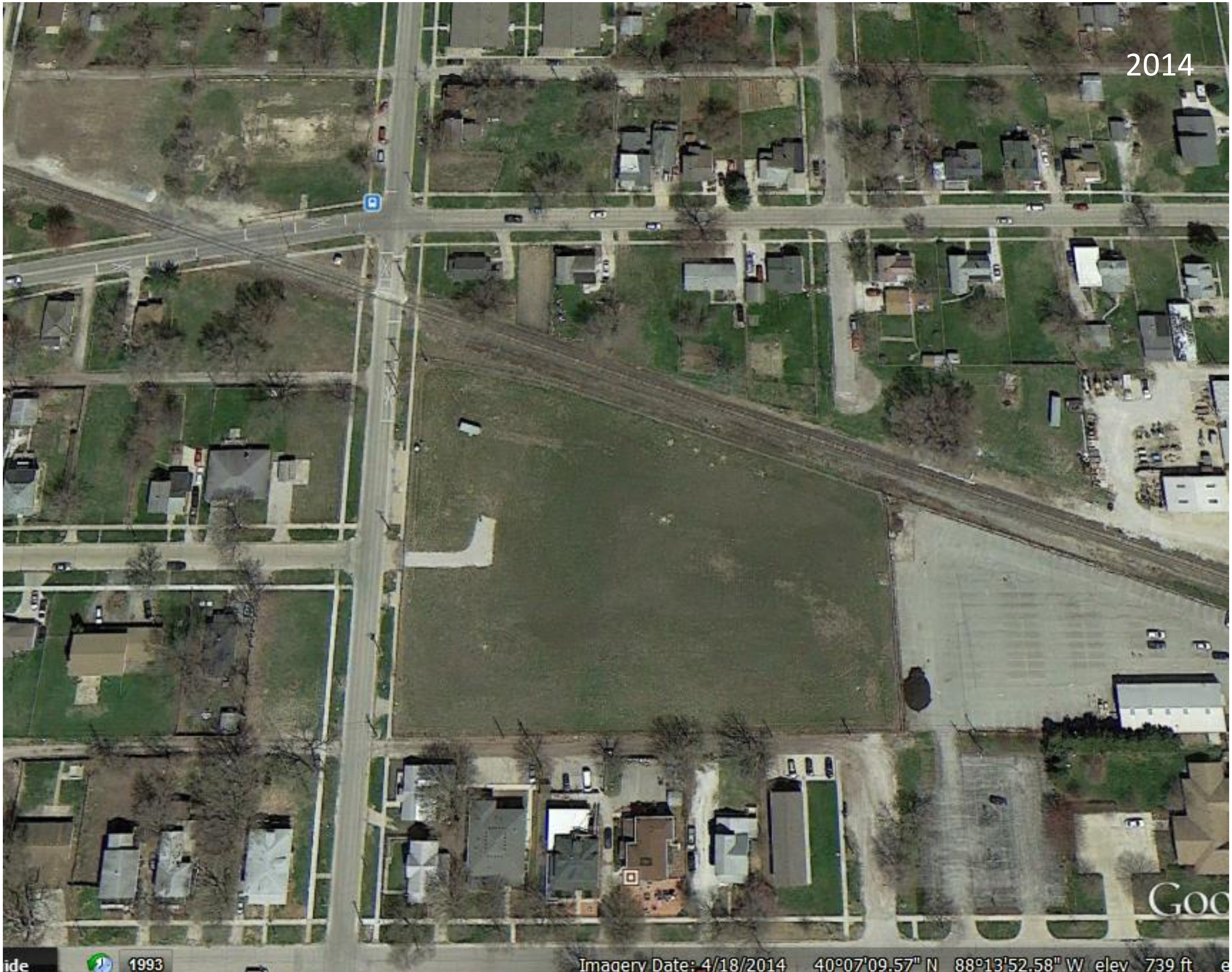
88°13'49.82" W
elev
737 f


2010
Image USDA Farm Service Agency
1993
Imagery Date: 6/23/2010 40°07'10.42" N 88°13'52.49" W elev 739 ft


2011
Image USDA Farm Service Agency
1993
Imagery Date: 9/14/2011 40°07'07.63" N 88°13'56.78" W elev 740 ft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1993
Imagery Date: 4/18/2014
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elev
739 ft

Appendix B

Records of Subsurface Exploration and Well Installation Records

RECORD OF SUBSURFACE EXPLORATION

BOREHOLE/MONITORING WELL/PROBEHOLE/TEST PIT ID:

B-803

Project Name: IP - Champaign Former MGP	Elevation: 736.51'	Datum:	
Project Number: 62403053	Coordinate X: 1012822.56	Coordinate Y: 1257598.06	
Location: Off-Site (North Center of Site)	Total Depth: 30.00'	Borehole Dia.: 2.00in	
Date Started: 05/07/08	Date Completed: 05/07/08	Section/Township/Range:	
Consultant: PSC	Drilled By: PSC		
Logged By: R. Huson	Drilling Method: GeoProbe		

Elevation (feet)	Depth (feet)	Sample No. (Depth Interval)	Recovery Percent	Recovery	Graphic Log	Water Level	USCS Code	Material Description	PID/OVM Reading (ppm)	Lab Sample
735		1 0-5	50				FI	Topsoil (FI)		2.0-3.0'
							CL	Silty CLAY with travel gravel; dark brown; no visible impact; medium stiff; no odor; dampl; (CL)		
730	5	2 5-10	100					Silty CLAY; yellowish gray to yellowish brown; no visible impact; soft; no odor; damp; (CL) - Slight coal tar-like odor; medium stiff; color change to yellow gray - Color change to gray/brownish gray with gravel; moderate odor		
725	10	3 10-14	100					Silty CLAY with sand and gravel; yellowish gray; no visible impact; soft; very slight odor; (CL) - color change to orangish gray; very slight odor	1.2 1.3 0.0	9.0-10.0'
720	15	4 14-18	100				TL	Silty CLAY with gravel and sand; yellowish gray; no visible impact; medium stiff; slight coal tar-like odor; damp; (CL) - color change to gray; coal tar-like odor - Strong coal tar-like odor	1.3 20.0	
715	20	5 18-22	100					- Coal tar-like substance at 21.0' - silty zone ~2.0" thick, wet - moderate odor - 22.4' sand layer (~1.0" thick) moderate coal tar-like odor	3.2 2.3 3.5 28.7 5.0 0.0	21.0-22.0'
710	25	6 22-26	100					- very slight coal tar-like odor		
		7 26-30	100					- no odor		29.0-30.0'
705	30							Termination of boring at 30.0' on 5/7/08		
700	35									
695	40									
690	45									
685	50									
680	55									

Remarks:

RECORD OF SUBSURFACE EXPLORATION

PSC

BOREHOLE/MONITORING WELL/PROBEHOLE/TEST PIT ID:

B-846

Project Name: IP - Champaign Former MGP		Elevation: 735.78'	Datum:
Project Number: 62403053		Coordinate X: 1012846.53	Coordinate Y: 1257567.34
Location: Off-Site (North Center of Site)		Total Depth: 30.00'	Borehole Dia.: 2.00in
Date Started: 05/07/08	Date Completed: 05/07/08	Section/Township/Range:	
Consultant: PSC	Drilled By: PSC		
Logged By: L. Hoosier	Drilling Method: GeoProbe		

Elevation (feet)	Depth (feet)	Sample No. (Depth Interval)	Recovery Percent	Recovery	Graphic Log	Water Level	USCS Code	Material Description	PID/OVM Reading (ppm)	Lab Sample
735		1 0-5	20				FI	No recovery 0.0-3.0'		
								Silty CLAY with gravel, cinders, and brick fragments; dark brown; no visible impact; medium stiff; no odor; damp; (FILL)		
730	5	2 5-10	100				CL	CLAY; greenish gray; no visible impact; soft; slight coal tar-like odor, moist; (CL)	0.9 0.7 1.3	
								- coal tar-like substance - strong odor	29.5	8.5-9.5'
725	10	3 10-14	100					SAND with some clay, gravel, and sand; brownish black; sheen; very soft; strong coal tar-like odor; wet - saturated; (SC)	10.7 4.8	10.0-11.0'
							TL	Silty CLAY with some gravel; light brownish gray; no visible impact; medium stiff; slight odor; moist; (TILL)	1.3 3.4 3.1	
720	15	4 14-18	100					Silty CLAY with some sand and gravel; greenish gray grading to gray; no visible impact; stiff; slight coal tar-like odor; damp; (TILL)	20.8 17.6 16.9	
		5 18-22	100					Silty CLAY with gravel and sand; gray; no visible impact; slight odor; moist; (TILL)	18.1 18.4	
715	20							- no odor	10.7 0.9	20.0-21.0'
		6 22-26	100					- 0.5" sand seam; moist	1.1	
710	25							- 1.5" sand seam; moist - at 25.10' 1.0" sand seam	0.9 0.8 0.7	
		7 26-30	100					Silty CLAY with some sand and gravel; gray; no visible impact; no odor; moist; (CL)	0.6	
705	30							- soft and moist		
								Termination of boring at 30.0' on 5/7/08		
700	35									
695	40									
690	45									
685	50									
680	55									

Remarks:

RECORD OF SUBSURFACE EXPLORATION

PSC

BOREHOLE/MONITORING WELL/PROBEHOLE/TEST PIT ID:

B-847

Project Name:	IP - Champaign Former MGP	Elevation: 737.12'	Datum:
Project Number:	62403053	Coordinate X: 1012794.16	Coordinate Y: 1257648.36
Location:	Off-Site (North Center of Site)	Total Depth: 30.00'	Borehole Dia.: 2.00in

Date Started: 05/07/08	Date Completed: 05/07/08	Section/Township/Range:
Consultant: PSC	Drilled By: PSC	
Logged By: R. Huson	Drilling Method: GeoProbe	

Elevation (feet)	Depth (feet)	Sample No. (Depth Interval)	Recovery Percent	Recovery	Graphic Log	Water Level	USCS Code	Material Description	PID/OVM Reading (ppm)	Lab Sample
		1 0-5	20				CL	Poor recovery		
735								Silty CLAY; yellowish brown; no visible impact; medium stiff; no odor; moist; (CL)		
	5	2 5-10	100					- wood fragments at 5.0'		
730								- silt layer, 3.0" thick; wet		6.0-7.0'
								Silty CLAY; yellowish gray; no visible impact; medium stiff; no odor; moist; (CL)		
	10	3 10-14	100							
725								- soft; wet		
		4 14-18	100					- faint odor from 14.0-`16.0'		
	15									
							TL	- 2.0" sand		
720								- no odor		
		5 18-22	100					Silty CLAY; gray; no visible impact; very stiff; no odor; damp; (TILL)	0.5	
								- 2.0-3.0" sand seam with coal tar-like substance (18.5-19.0')	21.6	
									86.6	
	20							- stiff clay		
								- 6.0" gravel seam with clay	10.5	
715		6 22-26	100					- 22.0-23.0' sand and gravel seam; coal tar-like substance, 5.0" wet-saturated; strong odor	60.1	22.0-23.0'
									22.9	
									12.6	
	25							- slight odor	8.4	
		7 26-30	100					Silty CLAY with gravel; gray; no visible impact; slight coal tar-like odor; (TILL)	6.0	
710									1.8	
								- slight odor	1.7	
									1.5	29.0-30.0'
	30							- very faint odor	1.3	
705								Termination of boring at 30.0' on 5/7/08		
	35									
700										
	40									
695										
	45									
690										
	50									
685										
	55									
680										

Remarks:

RECORD OF SUBSURFACE EXPLORATION

PSC

BOREHOLE/MONITORING WELL/PROBEHOLE/TEST PIT ID:

B-848

Project Name:	IP - Champaign Former MGP	Elevation: 736.27'	Datum:
Project Number:	62403053	Coordinate X: 1012858.91	Coordinate Y: 1257602.02
Location:	Off-Site (North Center of Site)	Total Depth: 30.00'	Borehole Dia.: 2.00in
Date Started: 05/07/08	Date Completed: 05/07/08	Section/Township/Range:	
Consultant: PSC	Drilled By: PSC		
Logged By: L. Hoosier	Drilling Method: GeoProbe		

Elevation (feet)	Depth (feet)	Sample No. (Depth Interval)	Recovery Percent	Recovery	Graphic Log	Water Level	USCS Code	Material Description	PID/OVM Reading (ppm)	Lab Sample
							FI	No recovery 0.0-2.0'		
								Silty CLAY some brick fragments, gravel, and roots; dark brown; medium stiff; no odor; moist; (FILL)		2.0-3.0'
							CL	Silty CLAY; brown grading to light brwon with red and orange mottling; no visible impact; soft; no odor; moist; (CL)	0.3 0.4	
								- very soft; trace sand; moist	0.3 0.4	9.0-10.0'
								10.0-12.0' - no recovery		
								Silty CLAY; light brownish yellow; no visible impact; very soft; no odor; wet; (CL)	0.3	
								- sand from 13.0-14.0'		13.0-14.0'
							TL	14.0-16.0' - no recovery		
								SAND with some silt; light gray; no visible impact; very soft; no odor; wet; (SC)		
								Silty CLAY with gravel; light brownish gray; no visible impact; medium stiff; no odor; moist; (TILL)		
								Silty CLAY with gravel; light brownish gray; no visible impact; medium stiff to stiff; no odor; moist; (TILL)	0.0	
								22.0-26.0' - no recovery		
								Silty CLAY with gravel; gray; no visible impact; medium stiff; no odor; damp; (TILL)		
								Termination of boring at 30.0' on 5/7/08		

Remarks:

RECORD OF SUBSURFACE EXPLORATION

BOREHOLE/MONITORING WELL/PROBEHOLE/TEST PIT ID:

B-849

Project Name: IP - Champaign Former MGP	Elevation: 737.29'
	Datum:
Project Number: 62403053	Coordinate X: 1012829.64
	Coordinate Y: 1257622.86
Location: Off-Site (North Center of Site)	Total Depth: 30.00'
	Borehole Dia.: 2.00in
Date Started: 05/07/08	Date Completed: 05/07/08
Consultant: PSC	Drilled By: PSC
Logged By: L. Hoosier	Drilling Method: GeoProbe
Section/Township/Range:	

Elevation (feet)	Depth (feet)	Sample No. (Depth Interval)	Recovery Percent	Recovery	Graphic Log	Water Level	USCS Code	Material Description	PID/OVM Reading (ppm)	Lab Sample
735		1 0-5	47				FI	Silty CLAY with trace roots and gravel; dark brown; no visible impact; medium stiff; no odor; moist; FI		0.0-1.0'
	5	2 5-10	80				CL	CLAY; light brown; no visible impact; soft; no odor; moist; CL - some orange mottling	0.7	
730								- medium stiff Sandy CLAY; light brown with orange mottling; no visible impact; very soft; no odor; wet; CL; sand seam at 8.5'	0.6 0.7	9.0-10.0'
	10	3 10-14	75					Sandy CLAY; light brown; no visible impact; very soft; no odor; wet-saturated	0.6	
725							TL	Silty CLAY with some gravel; light brown; no visible impact; medium stiff; no odor; moist; Tl - slight coal tar-like odor	0.7	
	15	4 14-18	100					- color grades to gray - coal tar-like substance, 16.0-17.0' - strong odor	0.6 0.7 1.0 27.2	16.0-17.0'
720		5 18-22	94					- strong odor at 18.0' Silty CLAY with some gravel; gray; no visible impact; stiff; slight odor; Tl 19.0' - SILT; gray; no visible impact; soft; no odor; wet; ML	5.6 2.2 1.4	
715	20	6 22-26	94					Silty CLAY with gravel; no visible impact; stiff; no odor; moist; Tl	1.8 0.8 0.6	
	25							- 0.5" sand seam; wet		
710		7 26-30	100					Sandy CLAY with some gravel; gray; no visible impact; stiff; no odor; damp; CL	0.7	
	30							- silty CLAY Termiation of boring at 30.0' on 5/7/08		
705										
	35									
700	40									
695	45									
690	50									
685	55									
680										

Remarks:

Appendix C

Evaluation of Soil Gas Data Collected at Residential Properties Near Former MGP Site, Champaign, Illinois

RAM GROUP *The Risk Assessment & Management Group of Gannett Fleming, Inc.*

December 10, 2008

Gregory W. Dunn, L.P.G.
Illinois Environmental Protection Agency (IEPA)
1021 North Grand Avenue East
P.O. Box 19276
Springfield, Illinois 62794-9276

RE: Evaluation of Soil Gas Data Collected at Residential Properties near Former MGP Site, Champaign, Illinois

Dear Mr. Dunn:

The Risk Assessment and Management Group of Gannett Fleming, Inc. (RAM Group) is submitting one original and two copies of the above referenced report to the IEPA on behalf of our client Ameren Services. The soil gas sampling fieldwork was performed on October 15, 2008.

Please call any of the following if you have questions or need clarification or additional documentation:

- Kendall Pickett, RAM Group – 713-784-5151
- Atul Salhotra, RAM Group – 713-784-5151
- Brian Martin, Ameren Services – (314) 554-2233

Sincerely,

Atul Salhotra

Atul M. Salhotra, Ph.D.
Principal Professional

Kendall Pickett

Kendall L. Pickett
Senior Geologist

cc: Cary Ware, Illinois Department of Public Health (1 copy)
Brian Martin, Ameren Services (2 copies)
Stuart Cravens, Kelron Environmental (4 copies)

Evaluation of Soil Gas Data Collected at Residential Properties near Former MGP Site Champaign, Illinois

Prepared for:

Ameren Services
One Ameren Plaza
1901 Chouteau Avenue
MC 602
St. Louis, MO 63103

Prepared by:

RAM Group of Gannett Fleming, Inc.
5433 Westheimer Road, Suite 725
Houston, TX 77056
Ph: (713) 784-5151 Fax: (713) 784-6105
e-mail: asalhotra@ramgp.com

December 2008

LIST OF TABLES

LIST OF FIGURES

LIST OF APPENDICES

ABBREVIATIONS

ATSDR	Agency for Toxic Substances and Disease Registry
CCV	Continuing Calibration Verification
COC	Chain of Custody
EPA	Environmental Protection Agency
GRI	Gas Research Institute
HASP	Health and Safety Plan
IDW	Investigation Derived Waste
IEPA	Illinois Environmental Protection Agency
IRIS	Integrated Risk Information System
LCS	Laboratory Control Sample
MGP	Manufactured Gas Plant
MRL	Minimal Risk Level
NHDES	New Hampshire Department of Environmental Services
OEHHA	Office of Environmental Health Hazard Assessment
OSWER	Office of Solid Waste and Emergency Response
PAH	Polycyclic Aromatic Hydrocarbons
PPE	Personal Protective Equipment
PRG	Preliminary Remediation Goal
PRT	Post Run Tubing
RfC	Reference Concentration
RL	Reporting Limit
RO	Remediation Objective
RPD	Relative Percent Difference
RSL	Regional Screening Level
SRC	Syracuse Research Corporation
TACO	Tiered Approach to Corrective Action Objectives
URF	Unit Risk Factor
WBEOH	Wisconsin Bureau of Environmental and Occupational Health

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Appendix B	Site Health & Safety Plan
Appendix C	Photographs
Appendix D	Field Sampling Forms
Appendix E	Basement Survey Forms
Appendix F	Laboratory Analytical Report and Chain of Custody Form
Appendix G	References for Selection of MGP Related Chemicals
Appendix H	Input Parameters to Develop the Tier 1 ROs for non-MGP Chemicals without TACO Tier 1 ROs
Appendix I	Possible Sources for 10 Other Non-MGP Chemicals without TACO Tier 1 ROs
Appendix J	Illinois Licensed Professional Engineer Review Letter

ABBREVIATIONS

ATSDR	Agency for Toxic Substances and Disease Registry
CCV	Continuing Calibration Verification
COC	Chain of Custody
EPA	Environmental Protection Agency
GRI	Gas Research Institute
HASP	Health and Safety Plan
IDW	Investigation Derived Waste
IEPA	Illinois Environmental Protection Agency
IRIS	Integrated Risk Information System
LCS	Laboratory Control Sample
MGP	Manufactured Gas Plant
MRL	Minimal Risk Level
NHDES	New Hampshire Department of Environmental Services
OEHHA	Office of Environmental Health Hazard Assessment
OSWER	Office of Solid Waste and Emergency Response
PAH	Polycyclic Aromatic Hydrocarbons
PPE	Personal Protective Equipment
PRG	Preliminary Remediation Goal
PRT	Post Run Tubing
RfC	Reference Concentration
RL	Reporting Limit
RO	Remediation Objective
RPD	Relative Percent Difference
RSL	Regional Screening Level
SRC	Syracuse Research Corporation
TACO	Tiered Approach to Corrective Action Objectives
URF	Unit Risk Factor
WBEOH	Wisconsin Bureau of Environmental and Occupational Health

This report presents the results of the soil gas sampling and basement survey event performed on October 15, 2008 at the following three residential properties near the former MGP site in Champaign, Illinois:

- 505 E. Washington Street
- 507 E. Washington Street
- 412 E. Hill Street

The soil gas sampling event consisted of the collection of nine soil gas samples (including one duplicate) and one ambient air sample from eight locations along the perimeter of the three residential properties. The samples were collected in SUMMA canisters using Geoprobe® post-run tubing (PRT) methods. Appropriate QA/QC samples were also collected.

The soil gas samples were compared to the draft Illinois Environmental Protection Agency (IEPA) Tiered Approach to Corrective Action Objectives (TACO) Tier 1 soil gas remediation objectives (ROs) for residential land use. The comparison indicated that the concentrations of none of the chemicals exceeded the Tier 1 ROs, and hence the residual soil and groundwater impacts from the former MGP are not of concern.

The Illinois Licensed Professional Engineer review letter is included in Appendix J.

1.1 SITE LOCATION

The former manufactured gas plant (MGP) site is located at 308 North Fifth Street in Champaign, Illinois. This investigation focused on the collection of soil gas samples to evaluate soil gas inhalation risk at three residential properties located to the north and west of the former MGP site.

The MGP site has been the subject of several previous investigations (PSC 2008). These investigations have resulted in the collection of soil and groundwater data, as well as site stratigraphy and hydrogeology.

Figure 1-1 shows the locations of the three residential properties, former MGP site boundary, railroad easement, and nearby streets. The former MGP site is mostly vacant with the former booster house building remaining and some poly tanks used to store investigation-derived wastewater. The former MGP site is fenced and access is restricted by locked gates.

1.2 SETTING

The residences are located within the city of Champaign, Illinois in Champaign County. The general area consists of mostly residential and some commercial properties.

Two of the subject residential properties are located to the north of the former MGP site and also north of an active railroad right-of-way that borders the former MGP site to the north. These homes are located at 505 East Washington (resident owner occupied and full time day-care facility in basement) and 507 East Washington (currently vacant). Each of the homes have basements that are partially below grade. The third residence is located at 412 East Hill (resident occupied) west of the former MGP site across N. Fifth Street and also has a basement that is partially below grade.

1.3 OBJECTIVE OF THIS REPORT

This report presents the results of the October 15, 2008 soil gas sampling event at the three residential properties. The objective of the sampling was to:

- Obtain nine soil gas samples (including one duplicate) near the three residences and one ambient air sample;
- Perform laboratory analysis of the soil gas and ambient air samples and duplicate for MGP related chemicals;
- Perform basement surveys at the three residences and interview occupants as available;

- Compile and evaluate the field and laboratory analysis data in regards to the potential for MGP chemicals to cause vapor inhalation concerns to the residences; and

- Document the results of the investigation in a formal report.

This investigation was performed in accordance with the RAM Group letter to Mr. Brian Martin dated August 21, 2008 (Appendix A).

1.4 OVERVIEW

The October 15, 2008 soil gas sampling event was performed by the RAM Group of Gannett Fleming, Inc. Geoprobe® services were provided by Soil Essentials, Inc. and laboratory analytical services were provided by Air Toxics, Ltd., both under subcontract to RAM Group.

Soil gas sampling and basement surveys were performed on October 15, 2008 at the following three residential properties in Champaign, Illinois:

- 505 E. Washington Street
- 507 E. Washington Street
- 412 E. Hill Street

The following personnel performed the soil gas sampling and basement surveys:

- Cory Johnson, Soil Essentials driller
- Keith Klemm, Gannett Fleming
- Kendall Pickett, RAM Group
- Stu Cravans, Kelron Environmental (basement survey at 412 E. Hill Street on October 22, 2008)

The following personnel were also present to observe activities:

- Brian Martin, Ameren
- Pete Szama, PSC
- Gregory Dunn, IEPA
- Andy Friereich, IEPA
- Student intern, IEPA
- Gina Jackson, District 1 Representative
- Matthew Miller, Gannett Fleming
- Grant Antonlini and another representative of the Champaign County Healthcare Consumers group

2.1 PRE-INVESTIGATION ACTIVITIES

2.1.1 Utilities Clearance

Soil Essentials, Inc., the drilling company, contacted the state utility locate service in Illinois (JULIE Locate) to coordinate marking of underground utilities at the surface on and near the three residential properties. Upon arrival at the site on October 15, 2008, paint markings and flags were present. RAM Group used these markings and site observations to avoid encountering subsurface utilities during sampling.

2.1.2 Daily Site Health & Safety Meetings

A field safety meeting was held on the morning of October 15, 2008 before any fieldwork was performed to review the site-specific health and safety plan prepared for this project (Appendix B).

2.2 SOIL GAS AND AMBIENT AIR SAMPLING

The weather conditions were overcast in the 60-70's ^{o}F with occasional rain showers throughout the day.

Based on the PSC *Off-Site Investigation Report, Former Manufactured Gas Plant, Champaign, Illinois, State ID 0190100008*, dated August 22, 2008, the soils in the vicinity of the site consist of glacial till of mostly tight silty clays in the upper 10 feet bgs and sandy sediments below 10 feet bgs. The water table has been measured at depths of 7 to 8 feet bgs.

2.2.1 Soil Gas Sampling and Analysis

Nine soil gas samples (including one duplicate) were collected from eight locations using hand and Geoprobe® sampling methods. The work plan called for soil gas samples to be collected from each boring, at approximately 6 ft bgs (approximately one foot below the bottom of the basement slab, estimated at 5 ft bgs and above the water table, estimated at 7-8 ft bgs) adjacent to three private residences. However, tight soils encountered in the soil column did not allow for gas collection at the designated depths, instead sampling was performed at depths where a more permeable soil layer was encountered. Specific depths are shown in Table 2-1. Small diameter steel rods were temporarily installed at each sample location by Soil Essentials. Extreme care was taken to prevent damage to the properties. Ground water was not encountered at any of the sample locations.

Soil gas samples were collected in 1-liter SUMMA canisters (batch certified) using Geoprobe® post-run tubing (PRT) methods. One duplicate soil gas sample was collected from a location at the 507 E. Washington Street property.

The sampling approach involved the use of small diameter steel rods that were advanced vertically by hand or using a Geoprobe® 550B track-mounted rig. Hydrated bentonite was placed around the rods where they entered the ground to plug the borehole annulus (Photograph 1, Appendix C). Teflon® tubing was attached to the PRT adapter and pushed down inside the rods, seated, and threaded into the expendable point holder. Next, a Swagelok® three-way valve and a gas-tight 60-mL disposable syringe were connected to the Teflon® tubing and the steel rods were pulled up approximately 6 to 8 inches to dislodge the rods from the expendable point.

A tracer test was performed using difluoroethane to check for the presence of leaks in the sampling system (i.e., short-circuiting). Household paper towels, wetted with difluoroethane, were wrapped around the steel rods at the ground surface/bentonite seal (to test for short-circuiting at the borehole annulus) and around the Teflon® tubing where the tubing exited the steel rods to test for short-circuiting across the O-ring seal in the PRT adapter.

The initial vacuum of each 1-L Summa canister was measured in the field prior to sampling using a liquid-filled vacuum gauge to confirm the vacuum was at least 27 inches of mercury (in Hg). The initial vacuum was recorded on the chain of custody (COC) and in the field log book. Purge volume calculations were performed and the tubing was purged prior to sample collection using a Swagelok® three-way valve and a gas-tight 60-mL disposable syringe. A 5-micron filter was installed on the canister inlet to prevent solids from entering and to restrict the soil gas flow rate into the canister. The 1-L Summa was then connected to the Swagelok® three-way valve and the sample was collected. Generally, the sampling duration was between 5 and 7 minutes with one exception (VP412EHILL-1 was sampled for 18 minutes) until the final vacuum in the canister was about 5 in Hg. The sample collection time, initial vacuum, and the final vacuum were recorded on the COC and in the field log book. A copy of the pertinent pages from the field logbook is presented in Appendix D.

The samples were shipped by overnight courier in containers sealed with custody seals to the Air Toxics, Ltd. laboratory in Folsom, California. The samples were analyzed for volatile organic compounds, naphthalene, and 1,1-difluoroethane (leak detection chemical) using EPA method TO-15 (modified).

After collection of each sample and withdrawal of the steel rods, the resulting borehole was filled with hydrated bentonite chips to the surface.

The sample locations at the following residential properties are shown on Figure 1-1.

2.2.1.1 505 E. Washington Street

This property was occupied by the residents and the basement was in operation as a day-care center with children and employees.

Two soil gas samples were collected, one on the south side (Sample ID #VP505EWASH-1) and one on the west side (Sample ID #VP505EWASH-2), both within 2.5 ft of the house. The small diameter steel rods were installed by hand using a slide hammer to push the rod to the desired sampling depths.

Sample #VP505EWASH-1 was collected at a depth of 5.5 feet below ground surface (ft bgs), and Sample #VP505EWASH-2 was collected at a depth of 4.5 ft bgs. Table 2-1 presents details of the soil gas samples.

Photographs 2-4 show sampling procedures at the VP505EWASH-2 location (Appendix C).

2.2.1.2 507 E. Washington Street

This property was vacant and we were informed by the client that the interior was in such disrepair that the home would likely have to be demolished. The basement did not appear to be used for habitation.

Three soil gas samples were collected, one on the west side (Sample ID #VP507EWASH-1), one on the south side (Sample ID #VP507EWASH-2), and one on the east side (Sample ID #VP507EWASH-3), all within 3.5 ft of the house. The small diameter steel rods were installed using a Geoprobe® 550B track-mounted rig to push the rod to the desired sampling depths.

The first attempt to collect Sample #VP507EWASH-1 was not successful and several attempts were made to collect soil gas at depths of 6 ft bgs, 5 ft bgs, and 4 ft bgs, but the soils were too tight. This location was about mid-way between the houses at 505 E. Washington Street and 507 E. Washington Street. Near the end of the day, a successful attempt was made to collect Sample #VP507EWASH-1 at a location adjacent to the house.

Sample #VP507EWASH-1 was collected at a depth of 3.5 ft bgs, Sample #VP507EWASH-2 was collected at a depth of 5.0 ft bgs, and Sample #VP507EWASH-3 was collected at a depth of 5.0 ft bgs. A duplicate soil gas sample was collected at 5.0 ft bgs from the #VP507EWASH-2 sample location and was labeled #VP507EWASH-F. Table 2-1 presents details of the soil gas samples.

2.2.1.3 412 E. Hill Street

Three soil gas samples were collected, one on the north side (Sample ID #VP412EHILL-1), one on the east side (Sample ID #VP412EHILL-2), and one on the south side (Sample ID #VP412EHILL-3), all within 3.5 ft of the house. The small diameter steel rods were installed using a Geoprobe® 550B track-mounted rig to push the rods to the desired sampling depths. Plywood sheets were used at this location to protect the lawn from damage by the rig.

Sample #VP412EHILL-1 was collected at a depth of 6.0 ft bgs, Sample #VP412EHILL-2 was collected at a depth of 3.8 ft bgs, and Sample #VP412EHILL-3 was collected at a depth of 4.5 ft bgs. Table 2-1 presents details of the soil gas samples.

Photographs 5-8 show sampling procedures at the VP412EHILL-3 sample location (Appendix C).

2.2.2 Ambient Air Sampling and Analysis

One ambient (outdoor) air sample was collected at the 507 E. Washington Street property in a 6-liter SUMMA canister to characterize the ambient air in the vicinity of the sampling locations during sampling. Figure 1-1 shows the location of this sample.

An ambient air sample was labeled VP507EWASH(AMBIENT) and was collected from just above ground surface near the #VP507EWASH-1 sample location. The sample location was conducted within 30 feet of a residential street (E. Washington Street), which is lightly traveled. The initial vacuum of the 6-L Summa canister was measured in the field prior to sampling using a liquid-filled vacuum gauge to confirm the pressure was at least 25 in Hg. The initial vacuum was recorded on COC and in the field log book. A 5-micron particulate filter was installed on the inlet to prevent solids from entering the canister and to restrict the sample flow rate. The sampling duration was about 18 minutes and the final vacuum in the canister was about 5 in Hg. The sample collection time, initial vacuum, and the final vacuum were recorded on the COC and in the field log book.

The samples were shipped by overnight courier in a container sealed with custody seals to the Air Toxics, Ltd. laboratory in Folsom, California. The samples were analyzed for volatile organic compounds and naphthalene using EPA method TO-15 (modified).

2.3 BASEMENT SURVEYS

The basement surveys consisted of a walk-through of the basement, documentation of observations on a form, and some photographs. Copies of the field forms are presented in Appendix E. Photographs are presented in Appendix C. The surveys of the 505 E. Washington Street and 507 E. Washington Street basements were performed on October 15, 2008 by Kendall Pickett of RAM Group. The survey of the 412 E. Hill Street basement was performed on October 22, 2008 by Stu Cravans of Kelron Environmental, as access was not available on October 15, 2008.

2.3.1 505 E. Washington Street

Much of the following information was provided by the resident and owner of the day-care business and documented on the Indoor Air Building Survey Form in Appendix E. The entry door is accessed from the backyard near the southeast corner of the house. The basement is used as an operating day-care and consists of a washroom, kitchen preparation area, day care area, bathroom, office, and a bedroom for a son of the resident. No crawl spaces were noted. There is reportedly a sump in the washroom that could not be observed due to storage of materials on top. The basement walls and floor slab are concrete with paneling and floor coverings and appear to be in good condition. The basement has not flooded in the past. The house is on central heat (natural gas) and central air conditioning (electric) and includes storm doors and storm windows. Various plumbing pipes enter the basement into the bathroom, washroom, and kitchen areas on the south and east sides of the basement. The layout of the basement is shown on Figure 2-1, which includes the approximate locations of the soil gas sampling locations. The basement extends approximately 3 feet above grade and 4 feet below grade with a footprint of approximately 38 ft (east-west by 28 ft (north-south).

Photograph 9 (Appendix C) shows the presence of oven cleaner and tire shine containers located inside the basement on the window sill. Other chemical products in the basement area include cleaning solvents, oven cleaners, floor wax, furniture/floor polish, air fresheners, glues, and paints. Also, the linoleum flooring is reportedly new.

The day care typically includes 16 children and 2 adults during the day, 10 children and 2 adults at night until midnight, and one adult resident in the bedroom at various times during day and night. The day care operates from about 6 AM to midnight, Monday-Friday. There are adult smokers in the house and basement. Dry cleaned clothes enter the house on a weekly basis. Pest control services are provided by professionals on a monthly basis. The resident noted foul odors outside at the end of June or July 2008, but did not provide specifics.

2.3.2 507 E. Washington Street

This home was not occupied; therefore, no occupants were interviewed. The basement survey was based on observations made during a walk-though of the basement and documented on the Indoor Air Building Survey Form in Appendix E.

The basement does not appear to have been used for habitation. It appears to have been used primarily for storage. The basement consisted of a slanted storm entry door accessed from the backyard, concrete floor slab, masonry brick walls below grade, and cinder block walls above grade. There were no floor, wall, or ceiling coverings. There are ledges that extend into the basement about 1.5 to 2 feet from most walls at a level of about 3 feet above the floor slab. There is one brick column and several temporary support posts holding first floor joists in place. Approximately 3 feet of the basement extended above grade and about 4.5 feet below grade below the building footprint of about 40 ft (east-west) by 28 ft (north-south), except for the crawl spaces.

The basement consists of a large open room that extends to the south, west, and north perimeter of the house footprint and contains a hot water heater (natural gas) and a central heat unit (natural gas) and duct work (system appears new), and an open sump. The sump contained water and trash. A small room is present to the east of the main room and extends to the east perimeter of the house footprint. There are two crawl spaces in the northeast and southeast corners of the basement. There are no floor drains or sinks/toilets. The main room contained discarded clothing, toys, cooking utensils, furniture, a ladder, books, plastic gasoline container, paint cans, files, mattress, 5-gallon plastic water bottles, and miscellaneous debris. Plumbing pipes enter the basement from the south and east walls and the electrical panel is on the south wall. The layout of the basement is shown on Figure 2-2, which includes the approximate locations of the soil gas sampling locations.

The walls have several openings due to deteriorated mortar between bricks, cinder blocks, and around window and door frames, as well as holes in the walls. The concrete floor slab is cracked and deteriorated in some areas thus exposing the underlying soil. The basement did not appear to prevent water infiltration and there was a musty odor.

Photographs 10-16 show various views inside the basement (Appendix C).

2.3.3 412 E. Hill Street

During the soil gas sampling activities on October 15, 2008, the resident would not allow access to the basement to perform a survey. Therefore, a representative of Kelron

Environmental returned on October 22, 2008 to perform the basement survey. Observations made during the survey and information provided by the tenant are documented on a form and diagram (Appendix E).

The owner of the property resides next door to the west. The house is wood frame with ½ basement and ½ crawl space. The first floor footprint is 36 ft (east-west) by 28 ft (north-south). The basement extends one foot above grade and about 5 feet below grade. The floor slab is concrete and walls are masonry brick with outer concrete facing. The floor was dry at the time of the reconnaissance. There is a sump with water that was reportedly sampled on September 15, 2008 and was non-detect for the constituents analyzed. There are no floor drains or sinks/toilets. Stairs enter the first floor near the center of the house. There is one window located at the south end of the east wall. There are three crawl spaces in the northeast corner and along the west wall of the basement with dirt floors. There is a forced air gas furnace and gas water heater located in the center of the basement. Cracks were noted along the floor/wall intersections. There is no basement or enclosed crawl space below the front porch (southeast corner of house). The layout of the basement is shown on Figure 2-3, which includes the approximate locations of the soil gas sampling locations.

2.4 SAMPLE ANALYSIS

Laboratory analysis was performed by Air Toxics Ltd. in Folsom, California. Air Toxics analyzed the soil gas samples using Method TO-15 GC/MS in full scan mode and included naphthalene and the leak detection chemical (1,1-difluoroethane). The ambient air sample was analyzed using the same method, but without the leak detection compound. The laboratory report and chain-of-custody form are included in Appendix F. Table 2-2 presents a summary of the laboratory analysis results.

2.5 DECONTAMINATION PROCEDURES

Personal Protective Equipment (PPE) and decontamination procedures are described in the site-specific health and safety plan (HASP) included in Appendix B. The following comments provide a general description of measures taken to mitigate cross contamination between soil gas sampling locations and from the natural environment.

The primary source of cross contamination from one sampling location to the next is the use of non-dedicated equipment. During this sampling event, 1.25-inch diameter rods with expendable point holder, Swagelok® components, valves, quick connects, adapters, syringes, and Teflon® tubing were used to obtain samples at each location. The Teflon® tubing and syringes were new and dedicated for each sample location and disposed after each use. The 1.25-inch diameter rods with expendable point holder, Swagelok® components, valves, quick connects, and adapters were decontaminated before use at each soil gas sampling point using an Alconox soap wash followed by a water rinse.

Contamination from the natural environment and other outside sources was controlled through the use of the following:

- Dedicated sampling equipment (new dedicated disposable Teflon® tubing and syringes for purging and sampling),

- Use of disposable Nitrile gloves,

- Use of custody seals and chain-of-custody protocols during delivery of samples to the laboratory.

2.6 INVESTIGATION DERIVED WASTE (IDW)

Investigative derived waste consisted of decon water and disposables. The decon water was placed in a poly tank inside the fenced, gated, and locked former MGP site for future disposal by Ameren. Disposables were contained in a plastic garbage bag and disposed in the trash.

2.7 QUALITY ASSURANCE AND CONTROL

2.7.1 Field Methods

Specific controls were implemented during the soil gas sampling activities to ensure sample quality and to avoid false positives or false negatives during data acquisition.

- The samples were collected in SUMMA canisters that were batch certified by Air Toxics, which included two 100% certified 1-liter SUMMA canisters out of the 10 SUMMA canisters used (nine 1-liter and one 6-liter). For batch certification, canisters are typically processed in the same manner and up to 6 canisters are placed in the oven at a time. One of the 6 canisters is 100% certified.

- SUMMA canister pressures were acceptable during this sampling event for the canisters used. According to Air Toxics, Ltd., the canister vacuum in the field should have a vacuum greater than 25-inches of mercury (Hg). Also, canisters should be returned to the lab with some vacuum remaining and the lab receipt vacuum reading should not vary from the final field vacuum reading by more than 7-inches Hg. These criteria were met as shown on Table 2-1.

- Leak detection compound was used during sampling. In five samples the leak detection compound (1,1-difluoroethane) was detected at very low concentrations that ranged from 15 to 27 ug/m^3. These results do not indicate leaks that could affect the data quality. Although, IEPA has not established criteria for the acceptable amount of leak detection compound in a sample, according to Air Toxics, Ltd. (personal communication), California Department of Toxic Substances Control and California Regional Water Quality control Board, Los Angeles Region (California EPA 2003) considers up to 10 ug/L (1.00E+04 ug/m^3) to be acceptable.

- Dedicated sampling equipment (new dedicated disposable Teflon® tubing and syringes for purging and sampling) was used.

- Use of disposable Nitrile gloves.

- Non-dedicated equipment was decontaminated between sampling locations.

- Chain-of-Custody protocols were followed including the use of custody seals.

- A "field duplicate" sample was collected (VP507EWASH-F) in a separate 1-liter SUMMA canister immediately following the collection of the original sample (VP507EWASH-2). The results between the original and "field duplicate" are comparable as can be seen in Table 2-3. Although, these are not strictly duplicate samples, the relative percent difference (RPD) between the concentrations for all chemicals was less than 25% except for benzene and toluene for which the RPD was 36.3% and 37.8%, respectively.

2.7.2 Laboratory Methods

A comparison of the chain-of-custody to the laboratory login confirmation revealed no discrepancies. Sampling dates, times, name of sampler, received date, analyses requested, initial and final canister vacuum were listed on the chain-of-custody form. According to the chain-of-custody, all samples were received at the laboratory on October 18, 2008 within three days of sample collection in good condition with custody seals intact.

Typical holding time for TO-15 analysis is 30 days. All samples were collected on October 15, 2008 and analyzed on October 29, 2008 within the holding time.

The Air Toxics report includes a narrative and various laboratory flags to qualify specific results if necessary. No issues were identified in the narrative. Three results were flagged in the Laboratory Control Sample (LCS):

- Bromomethane was Q-flagged
- MTBE was Q-flagged
- 1,1-Difluoroethane was NS-flagged

Based on discussions with Air Toxics' personnel, bromomethane and MTBE %-recoveries were slightly elevated; therefore, the results reported for these chemicals in each sample may be biased high. This means that the reported results may be higher than the actual sample concentrations. Since neither of these chemicals were detected in the samples submitted and are typically not MGP related, this does not affect the quality of the results.

The NS-flag for 1,1-difluoroethane means the LCS sample was not spiked for this compound, since this compound is not on the standard list of chemicals for the TO-15 method. This chemical was added to the analysis request on the Chain-of-Custody form since it was the leak detection chemical used in the field. This chemical was not detected in the laboratory blank and this chemical was spiked in the Continuing Calibration Verification (CCV) sample and met method retention requirements; therefore, this flag does not indicate that the results have been compromised.

Dilutions of the samples ranged from 2.42 to 2.53. This is within the standard range of dilutions due to the repressurization of the samples after receipt at the laboratory and was not due to high concentrations of any chemicals in the samples. Therefore, these dilutions are part of the standard method procedures and do not indicate an issue with the quality of the sample results.

The results of the lab blank, lab surrogates, and lab duplicate were within the method requirements.

Internal standard responses and retention times were within method limits for all field samples and quality control samples unless qualified or discussed in the lab narrative.

The initial and all continuing calibration verification standards were within method limits for all samples and quality control samples unless qualified or in the narratives.

The laboratory data passed the data usability review. It is our opinion that the data are reliable and can be used in the overall evaluation and management of the site.

3.1 INTRODUCTION

This chapter discusses the evaluation of soil gas samples described in Section 2.0 and presented in Table 2-2. The evaluation is presented in two parts. Section 3.2 evaluates the volatile chemicals potentially related to the operations of the former MGP and Section 3.3 evaluates volatile chemicals not related to the MGP operations. The evaluation is consistent with the Illinois Environmental Protection Agency's (IEPA's) draft 35 Ill. Adm. Code Part 742: Tiered Approach to Corrective Action (TACO).

3.2 EVALUATION OF MGP RELATED CHEMICALS

This section focuses on the MGP related chemicals.

3.2.1 Selection of MGP Related Chemicals

To select chemicals that are potentially associated with former MGP operations, the following references were reviewed:

- Gas Research Institute (GRI), 1996. Management of Manufactured Gas Plant Sites Vol I. (edited by Hayes, T.D., Linz, D.G., Nakles, D.V., and Leuschner, A.P.). Amherst Scientific Publishers, Amherst, MA.

- Hatheway, A., 2002. Geoenvironmental Protocol for Site and Waste Characterization of Former Manufactured Gas Plants: Worldwide Remediation Challenge in Semi-volatile Organic Wastes. Engineer. Geol. 64:317–338.

- New Hampshire Department of Environmental Services (NHDES), 2006. Environmental Fact Sheet, Manufactured Gas Plant Sites.

- Wisconsin Bureau of Environmental and Occupational Health (WBEOH), 2004. Health-based Guidelines for Air Management, Public Participation, and Risk Communication during the Excavation of Former Manufactured Gas Plants.

GRI (1996) classifies the potential chemicals in former MGP wastes as inorganics, metals, volatile aromatics, phenols, and polycyclic aromatic hydrocarbons (PAHs). Table 5-1 of GRI (1996) presenting chemicals at MGP sites is included in Appendix G.

Hatheway (2002) discusses that there is a relationship between various chemical substances generated by the former MGP and various processes of gas manufacturing both in terms of characteristics and quantity of the waste. For instance, light tar oils, which contain monocyclic and duo cyclic PAHs were the typical wastes generated in carbureted water gas process. Specifically, the benzene, toluene, ethylbenzene, and xylenes (BTEX) were the components of gas liquor waste, which was produced by carbureted water gas and oil gas processes.

NHDES (2006) states the chemical composition of former MGP waste depends on the type of coal and the gasification process used. The fact sheet also states that VOCs (benzene and toluene), PAHs (naphthalene), tar acids (phenol and cresol), and creosote are the main chemicals associated with former MGP waste.

WBEOH (2004) presents the chemicals in soil, sediment, and groundwater at former MGP sites located in Wisconsin. Table 1 of WBEOH (2004) presenting MGP chemicals is included in Appendix G.

The above references indicate that BTEX, styrene, and naphthalene are the primary MGP-related volatile chemicals.

Of the 63 chemicals detected in soil gas samples collected at the Champaign site, the following seven chemicals were identified as MGP-related chemicals:

- Benzene
- Toluene
- Ethylbenzene
- m,p-Xylenes
- o-Xylene
- Styrene
- Naphthalene

As per Section 742.200 of the draft TACO rule, all of the above chemicals meet the definition of volatile chemicals.

3.2.2 Comparison of Soil Gas Concentrations for MGP Chemicals with Tier 1 Soil Gas Remediation Objectives for Residential Properties

The Tier 1 soil gas remediation objectives (ROs) for residential properties were obtained from Table G of Appendix B in Section 742 of draft TACO rule. Table 3-1 presents both soil gas ROs and soil gas concentrations for MGP chemicals. The comparison of soil gas concentrations with Tier 1 soil gas ROs indicated none of the MGP chemicals exceeds the Tier 1 soil gas ROs.

3.3 EVALUATION OF NON-MGP RELATED CHEMICALS

Of the 63 chemicals detected, 56 are non-MGP related chemicals and are presented in Table 3-2. As per Section 742.200 of draft TACO rule, all of these chemicals meet the definition of volatile chemicals. Of these chemicals, 30 have TACO Tier 1 soil gas ROs; whereas, 26 chemicals do not have TACO Tier 1 soil gas ROs.

3.3.1 Evaluation of Non-MGP Chemicals with TACO Tier 1 Soil Gas ROs

The Tier 1 soil gas ROs for residential properties for these 30 chemicals were obtained from Table G of Appendix B in Section 742 of draft TACO rule. Table 3-3 presents both soil gas concentrations and Tier 1 soil gas ROs. Comparison of soil gas concentrations with Tier 1 soil gas ROs indicated that none of the soil gas concentrations exceeds the Tier 1 soil gas ROs.

3.3.2 Evaluation of Non-MGP Chemicals without TACO Tier 1 Soil Gas ROs

Consistent with the methodology presented in TACO Section 742.515(f), Tier 1 soil gas ROs were developed for these chemicals. Of the 26 chemicals relevant input parameters were readily available for 17 chemicals. For these chemicals Tier 1 ROs were developed as discussed in Appendix H.

Tier 1 soil gas ROs developed are presented in Table 3-6. The Tier 1 soil gas ROs were compared with soil gas concentrations. The comparison indicated that none of the soil gas concentrations exceeded the respective Tier 1 soil gas ROs.

3.3.3 Evaluation of 9 Other Non-MGP and Non-TACO Chemicals

There are nine non-MGP and non-TACO chemicals for which ROs have not been developed due to non-availability of toxicity and some physical/chemical information. These chemicals may be generated by various natural and anthropogenic sources; however, none is MGP related. Table 3-7 presents concentrations of these chemicals. Also, these chemicals and their possible sources are presented in Appendix I.

3.3 SUMMARY OF DATA EVALUATION

Based on the above evaluation none of the soil gas concentrations exceeds the Tier 1 soil gas ROs.

SECTION 4.0
SUMMARY AND RECOMMENDATIONS

This report presents the results of the soil gas sampling and basement survey event performed on October 15, 2008 at the following three residential properties near the former MGP site in Champaign, Illinois:

- 505 E. Washington Street
- 507 E. Washington Street
- 412 E. Hill Street

The soil gas sampling event consisted of the collection of nine soil gas samples (including one duplicate) and one ambient air sample from eight locations along the perimeter of the three residential properties. The samples were collected in SUMMA canisters using Geoprobe® post-run tubing (PRT) methods. Appropriate QA/QC samples were also collected.

The soil gas samples were compared to the draft Illinois Environmental Protection Agency (IEPA) Tiered Approach to Corrective Action Objectives (TACO) Tier 1 soil gas remediation objectives (ROs) for residential land use. The comparison indicated that the concentrations of none of the chemicals exceeded the Tier 1 ROs, and hence the residual soil and groundwater impacts from the former MGP are not of concern.

Based on the above results, no further action is recommended relative to potential indoor air inhalation risks to the residents.

SECTION 5.0
REFERENCES

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USEPA, June 2008. Regional Screening Levels for Chemical Contaminants at Superfund Sites, Chemical Specific Parameters.

USEPA, July 2008. Regional Screening Levels for Chemical Contaminants at Superfund Sites.

Wisconsin Bureau of Environmental and Occupational Health (WBEOH), 2004. Health-based Guidelines for Air Management, Public Participation, and Risk Communication during the Excavation of Former Manufactured Gas Plants.

Table 2-1
Soil Gas Sample Details
Former MGP Site, Champaign, Illinois

Sample	Depth	Canister Pressure/Vacuum			Concentration of Leak Detection Compound*	Analytical Method	Date Collected	Date Analyzed
		Initial[1]	Final[2]	Lab receipt[3]				
	[ft]	[Hg]			[ug/m^3]			
412 E. Hill Street								
VP412EHILL-1	6	-28.9	-5.0	-6	15	Modified TO-15 (Full Scan)	10/15/2008	10/31/2008
VP412EHILL-2	3.8	-27.7	-5.0	-6	<14			
VP412EHILL-3	4.5	-28.0	-5.0	-6	27			
505 E. Washington Street								
VP505EWASH-1	5.5	-27.4	-5.0	-6	<14	Modified TO-15 (Full Scan)	10/15/2008	10/31/2008
VP505EWASH-2	4.5	-27.1	-5.0	-6	<14			
507 E. Washington Street								
VP507EWASH-1	3.5	-27.5	-5.0	-6	19	Modified TO-15 (Full Scan)	10/15/2008	10/31/2008
VP507EWASH-1(lab duplicate)			-5.0	6	16			
VP507EWASH-2	5	-27.4	-5.0	-5.5	27			
VP507EWASH-3	5	-28.4	-5.0	-5	<13			
VP507EWASH-F	5	-28.9	-5.0	-5	20			
VP507EWASH(AMBIENT)	Ground Surface	-28	-5.0	-6	N/A			

Notes:
N/A: Not applicable
Hg: Inches of mercury
ug/m^3: micrograms per meter cube
*: Leak detection compound was 1,1-Difluoroethane
<: Reporting limit
1: Field measurement prior to filling canister
2: Field measurement after filling canister
3: Lab measurement upon receipt of canister

Table 2-2
Comprehensive Soil Gas Concentrations (ug/m³)
412 E Hill Street, Champaign, Illinois

Chemical	CAS	412 E Hill Street			505 E Washington Street		507 E Washington Street					
							VP507EWASH-1					
		VP412EHILL-1	VP412EHILL-2	VP412EHILL-3	VP505EWASH-1	VP505EWASH-2	Original	Lab Duplicate	VP507EWASH-2	VP507EWASH-F (field duplicate of -2)	VP507EWASH-3	Ambient Air
Freon 12	75-71-8	<6.2	<6.2	<6.2	<6.2	<6.2	<6.2	<6.2	**9**	**8.8**	<6.0	<6.2
Freon 114	76-14-2	<8.8	<8.8	<8.8	<8.8	<8.8	<8.8	<8.8	<8.6	<8.4	<8.4	<8.8
Chloromethane	74-87-3	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
Vinyl Chloride	75-01-4	<3.2	<3.2	<3.2	<3.2	<3.2	<3.2	<3.2	<3.2	<3.1	<3.1	<3.2
1,3-Butadiene	106-99-0	**9.2**	**2.9**	**25**	**4.4**	**9.4**	<2.8	<2.8	**9.7**	**5**	**4**	<2.8
Bromomethane	74-83-9	<4.9	<4.9	<4.9	<4.9	<4.9	<4.9	<4.9	<4.8	<4.7	<4.7	<4.9
Chloroethane	75-00-3	<3.3	<3.3	<3.3	<3.3	<3.3	<3.3	<3.3	<3.2	<3.2	<3.2	<3.3
Freon 11	75-69-4	<7.1	<7.1	<7.1	<7.1	<7.1	<7.1	<7.1	<6.9	<6.8	<6.8	<7.1
Ethanol	64-17-5	**50**	**17**	**280**	**14**	**20**	**13**	**12**	**18**	**19**	**29**	**11**
Freon 113	76-13-1	<9.7	<9.7	<9.7	<9.7	<9.7	<9.7	<9.7	<9.5	<9.3	<9.3	<9.7
1,1-Dichloroethene	75-35-4	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<4.9	<4.8	<4.8	<5.1
Acetone	67-64-1	**230**	**110**	**580**	**120**	**160**	**120**	**120**	**180**	**180**	**230**	**16**
2-Propanol	67-63-0	**14**	**50**	**100**	<12	**46**	**37**	**38**	**13**	<12	**16**	**23**
Carbon Disulfide	75-15-0	<3.9	<3.9	<3.9	**7.6**	<3.9	<3.9	<3.9	**4.3**	<3.8	<3.8	<3.9
3-Chloropropene	107-05-1	<16	<16	<16	<16	<16	<16	<16	<15	<15	<15	<16
Methylene Chloride	75-09-2	<4.4	<4.4	<4.4	<4.4	<4.4	<4.4	<4.4	<4.3	<4.2	<4.2	<4.4
Methyl tert-butyl ether	1634-04-4	<4.6	<4.6	<4.6	<4.6	<4.6	<4.6	<4.6	<4.4	<4.4	<4.4	<4.6
trans-1,2-Dichloroethene	156-60-5	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<4.9	<4.8	<4.8	<5.0
Hexane	110-54-3	**9.5**	**7.3**	**20**	**17**	**14**	**8**	**8.5**	**14**	**11**	**14**	<4.4
1,1-Dichloroethane	75-34-3	<5.1	<5.1	<5.1	<5.1	<5.1	<5.1	<5.1	<5.0	<4.9	<4.9	<5.1
2-Butanone (MEK)	78-93-3	**47**	**18**	**130**	**26**	**43**	**21**	**18**	**40**	**34**	**56**	<3.7
cis-1,2-Dichloroethene	156-59-2	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<4.9	<4.8	<4.8	<5.0
Tetrahydrofuran	109-99-9	>3.7	<3.7	<3.7	<3.7	<3.7	<3.7	<3.7	<3.6	<3.6	<3.6	<3.7
Chloroform	67-66-3	<6.2	<6.2	<6.2	<6.2	<6.2	<6.2	<6.2	<6.0	<5.9	<5.9	<6.2
1,1,1-Trichloroethane	71-55-6	<6.9	<6.9	<6.9	<6.9	<6.9	<6.9	<6.9	<6.7	<6.6	<6.6	<6.9
Cyclohexane	110-82-7	<4.4	<4.4	**5.9**	**8.9**	**4.8**	<4.4	<4.4	**5.3**	**4.2**	**6.1**	<4.4
Carbon Tetrachloride	56-23-5	<8.0	<8.0	<8.0	<8.0	<8.0	<8.0	<8.0	<7.8	<7.6	<7.6	<8.0
2,2,4-Trimethylpentane	540-84-1	**8.1**	**7.2**	**13**	**14**	**10**	**6.9**	**7.7**	**11**	**8.9**	**15**	<5.9
Benzene	71-43-2	**8.5**	**5.9**	**14**	**13**	**10**	**8**	**7.4**	**14**	**9.7**	**10**	<4.0
1,2-Dichloroethane	107-06-2	<5.1	<5.1	<5.1	<5.1	<5.1	<5.1	<5.1	<5.0	<4.9	<4.9	<5.1
Heptane	142-82-5	**10**	**7.6**	**21**	**19**	**17**	**12**	**13**	**20**	**13**	**19**	<5.2
Trichloroethene	79-01-6	<6.8	<6.8	<6.8	<6.8	<6.8	<6.8	<6.8	**7.3**	<6.5	<6.5	<6.8
1,2-Dichloropropane	78-87-5	<5.8	<5.8	<5.8	<5.8	<5.8	<5.8	<5.8	<5.7	<5.6	<5.6	<5.8
1,4-Dioxane	123-91-1	<18	<18	<18	<18	<18	<18	<18	<18	<17	<17	<18
Bromodichloromethane	75-27-4	<8.5	<8.5	<8.5	<8.5	<8.5	<8.5	<8.5	<8.3	<8.1	<8.1	<8.5

Table 2-2
Comprehensive Soil Gas Concentrations (ug/m^3)
412 E Hill Street, Champaign, Illinois

Chemical	CAS	412 E Hill Street			505 E Washington Street		507 E Washington Street					
		VP412EHILL-1	VP412EHILL-2	VP412EHILL-3	VP505EWASH-1	VP505EWASH-2	VP507EWASH-1 Original	VP507EWASH-1 Lab Duplicate	VP507EWASH-2	VP507EWASH-F (field duplicate of -2)	VP507EWASH-3	Ambient Air
cis-1,3-Dichloropropene	10061-01-5	<5.7	<5.7	<5.7	<5.7	<5.7	<5.7	<5.7	<5.6	<5.5	<5.5	<5.7
4-Methyl-2-pentanone	108-10-1	<5.2	<5.2	**6.5**	<5.2	<5.2	<5.2	<5.2	<5.0	<5.0	**5.4**	<5.2
Toluene	108-88-3	**120**	**86**	**190**	**210**	**200**	**150**	**140**	**220**	**150**	**170**	<4.8
trans-1,3-Dichloropropene	10061-02-6	<5.7	<5.7	<5.7	<5.7	<5.7	<5.7	<5.7	<5.6	<5.5	<5.5	<5.7
1,1,2-Trichloroethane	79-00-5	<6.9	<6.9	<6.9	<6.9	<6.9	<6.9	<6.9	<6.7	<6.6	<6.6	<6.9
Tetrachloroethene	127-18-4	<8.6	<8.6	<8.6	<8.6	<8.6	<8.6	<8.6	<8.4	<8.2	<8.2	<8.6
2-Hexanone	591-78-6	<21	<21	<21	<21	<21	<21	<21	<20	<20	<20	<21
Dibromochloromethane	124-48-1	<11	<11	<11	<11	<11	<11	<11	<10	<10	<10	<11
1,2-Dibromoethane (EDB)	106-93-4	<9.7	<9.7	<9.7	<9.7	<9.7	<9.7	<9.7	<9.5	<9.3	<9.3	<9.7
Chlorobenzene	108-90-7	<5.8	<5.8	<5.8	<5.8	<5.8	<5.8	<5.8	<5.7	<5.6	<5.6	<5.8
Ethyl Benzene	100-41-4	**40**	**28**	**52**	**50**	**50**	**44**	**42**	**61**	**51**	**57**	<5.5
m,p-Xylene	108-38-3/ 106-42-3	**160**	**120**	**210**	**190**	**200**	**180**	**180**	**240**	**210**	**230**	<5.5
o-Xylene	95-47-6	**77**	**54**	**94**	**84**	**89**	**83**	**81**	**110**	**98**	**110**	<5.5
Styrene	100-42-5	<5.4	<5.4	<5.4	<5.4	<5.4	<5.4	<5.4	<5.3	<5.2	<5.2	<5.4
Bromoform	75-25-2	<13	<13	<13	<13	<13	<13	<13	<13	<12	<12	<13
Cumene	98-82-8	<6.2	<6.2	**7.2**	**6.6**	<6.2	<6.2	<6.2	**8.3**	**7**	**7.9**	<6.2
1,1,2,2-Tetrachloroethane	79-34-5	<8.7	<8.7	<8.7	<8.7	<8.7	<8.7	<8.7	<8.5	<8.3	<8.3	<8.7
Propylbenzene	103-65-1	**25**	**20**	**30**	**24**	**26**	**27**	**26**	**34**	**34**	**34**	<6.2
4-Ethyltoluene	622-96-8	**100**	**83**	**130**	**97**	**100**	**120**	**110**	**150**	**150**	**140**	<6.2
1,3,5-Trimethylbenzene	108-67-8	**56**	**42**	**45**	**34**	**52**	**45**	**41**	**55**	**59**	**76**	<6.2
1,2,4-Trimethylbenzene	95-63-6	**160**	**120**	**160**	**120**	**140**	**160**	**150**	**190**	**210**	**210**	<6.2
1,3-Dichlorobenzene	541-73-1	<7.6	<7.6	<7.6	<7.6	<7.6	<7.6	<7.6	<7.4	<7.3	<7.3	<7.6
1,4-Dichlorobenzene	106-46-7	<7.6	<7.6	<7.6	<7.6	<7.6	<7.6	<7.6	<7.4	<7.3	<7.3	<7.6
alpha-Chlorotoluene	100-44-7	<6.5	<6.5	<6.5	<6.5	<6.5	<6.5	<6.5	<6.4	<6.3	<6.3	<6.5
1,2-Dichlorobenzene	95-50-1	<7.6	<7.6	<7.6	<7.6	<7.6	<7.6	<7.6	<7.4	<7.3	<7.3	<7.6
1,2,4-Trichlorobenzene	120-82-1	<38	<38	<38	<38	<38	<38	<38	<37	<36	<36	<38
Hexachlorobutadiene	87-68-3	<54	<54	<54	<54	<54	<54	<54	<53	<52	<52	<54
Naphthalene	91-20-3	<26	<26	<26	<26	<26	<26	<26	<26	<25	<25	<26

Notes:
<: Reporting limit shown
Values with bold font are detected values.
*: RO for 1,3-dichloropropylene (cis + trans)
**: RO for p-xylene

Table 2-3
Comparison of Original Sample Results to Field Duplicate (ug/m^3)
Former MGP Site, Champaign, Illinois

CAS Number	Chemical	VP507EWASH						RPD (%)
		Original (-2)	Original (RL)	5 X Original RL	Duplicate (-F)	Duplicate (RL)	5 X Duplicate RL	
71-55-6	1,1,1-Trichloroethane	<6.7			<6.6			
79-34-5	1,1,2,2-Tetrachloroethane	<8.5			<8.3			
79-00-5	1,1,2-Trichloroethane	<6.7			<6.6			
75-34-3	1,1-Dichloroethane	<5			<4.9			
75-35-4	1,1-Dichloroethene	<4.9			<4.8			
75-37-6	1,1-Difluoroethane	27	<13	65	20	<13	65	
120-82-1	1,2,4-Trichlorobenzene	<37			<36			
95-63-6	1,2,4-Trimethylbenzene	190	<6.1	30.5	210	<5.9	29.5	10.00
106-93-4	1,2-Dibromoethane (EDB)	<9.5			<9.3			
95-50-1	1,2-Dichlorobenzene	<7.4			<7.3			
107-06-2	1,2-Dichloroethane	<5			<4.9			
78-87-5	1,2-Dichloropropane	<5.7			<5.6			
108-67-8	1,3,5-Trimethylbenzene	55	<6.1	30.5	59	<5.9	29.5	7.02
106-99-0	1,3-Butadiene	9.7	<2.7	13.5	5	<2.7	13.5	
541-73-1	1,3-Dichlorobenzene	<7.4			<7.3			
106-46-7	1,4-Dichlorobenzene	<7.4			<7.3			
123-91-1	1,4-Dioxane	<18			<17			
540-84-1	2,2,4-Trimethylpentane	11	<5.8	29	8.9	<5.6	28	
78-93-3	2-Butanone (Methyl Ethyl Ketone)	40	<3.6	18	34	<3.6	18	16.22
591-78-6	2-Hexanone	<20			<20			
67-63-0	2-Propanol	13			<12			
107-05-1	3-Chloropropene	<15			<15			
622-96-8	4-Ethyltoluene	150	<6.1	30.5	150	<5.9	29.5	0.00
108-10-1	4-Methyl-2-pentanone	<5			<5			
67-64-1	Acetone	180	<12	60	180	<11	55	0.00
100-44-7	alpha-Chlorotoluene	<6.4			<6.3			1.57
71-43-2	Benzene	14	<3.9	19.5	9.7	<3.9	19.5	36.29
75-27-4	Bromodichloromethane	<8.3			<8.1			
75-25-2	Bromoform	<13			<12			
74-83-9	Bromomethane	<4.8			<4.7			
75-15-0	Carbon Disulfide	4.3			<3.8			
56-23-5	Carbon Tetrachloride	<7.8			<7.6			
108-90-7	Chlorobenzene	<5.7			<5.6			
75-00-3	Chloroethane	<3.2			<3.2			
67-66-3	Chloroform	<6			<5.9			
74-87-3	Chloromethane	<10			<10			
156-59-2	cis-1,2-Dichloroethene	<4.9			<4.8			
10061-01-5	cis-1,3-Dichloropropene	<5.6			<5.5			
98-82-8	Cumene	8.3	<6.1	30.5	7	<5.98	29.9	
110-82-7	Cyclohexane	5.3	<4.2	21	4.2	<4.2	21	
124-48-1	Dibromochloromethane	<10			<10			

Table 2-3
Comparison of Original Sample Results to Field Duplicate (ug/m^3)
Former MGP Site, Champaign, Illinois

CAS Number	Chemical	VP507EWASH						RPD (%)
		Original (-2)	Original (RL)	5 X Original RL	Duplicate (-F)	Duplicate (RL)	5 X Duplicate RL	
64-17-5	Ethanol	18	<9.3	46.5	19	<9.1	45.5	
100-41-4	Ethyl Benzene	61	<5.4	27	51	<5.2	26	17.86
75-69-4	Freon 11	<6.9			<6.8			
76-13-1	Freon 113	<9.5			<9.3			
76-14-2	Freon 114	<8.6			<8.4			
75-71-8	Freon 12	9	<6.1	30.5	8.8	<6	30	
142-82-5	Heptane	20	<5.1	25.5	13	<5	25	
87-68-3	Hexachlorobutadiene	<53			<52			
110-54-3	Hexane	14	<4.4	22	11	<4.3	21.5	
108-38-3/106-42-3	m,p-Xylene	240	<5.4	27	210	<5.2	26	13.33
1634-04-4	Methyl tert-butyl ether	<4.4			<4.4			
75-09-2	Methylene Chloride	<4.3			<4.2			
91-20-3	Naphthalene	<26			<25			
95-47-6	o-Xylene	110	<5.4	27	98	<5.2	26	11.54
103-65-1	Propylbenzene	34	<6.1	30.5	34	<5.9	29.5	0.00
100-42-5	Styrene	<5.3			<5.2			
127-18-4	Tetrachloroethene	<8.4			<8.2			
109-99-9	Tetrahydrofuran	<3.6			<3.6			
108-88-3	Toluene	220	<4.6	23	150	<4.6	23	37.84
156-60-5	trans-1,2-Dichloroethene	<4.9			<4.8			
10061-02-6	trans-1,3-Dichloropropene	<5.6			<5.5			
79-01-6	Trichloroethene	7.3			<6.5			
75-01-4	Vinyl Chloride	<3.2			<3.1			

Notes:

<: Reporting limit   SAD: Sample absolute difference   RPD: Relative percent difference   RL: Reporting limit

Table 3-1
Soil Gas Concentrations for MGP Chemicals (ug/m^3)
Former MGP Site, Champaign, Illinois

Chemical	CAS	Residential Tier 1 Soil Gas RO (ug/m^3)	412 E Hill Street			505 E Washington Street		507 E Washington Street					
			VP412EHILL-1	VP412EHILL-2	VP412EHILL-3	VP505EWASH-1	VP505EWASH-2	VP507EWASH-1		VP507EWASH-2	VP507EWASH-3	VP507EWASH-F	Ambient Air
								Original	Lab Duplicate				
Benzene	71-43-2	41000	**8.5**	**5.9**	**14**	**13**	**10**	**8**	**7.4**	**14**	**10**	**9.7**	<4.0
Toluene	108-88-3	140000000	**120**	**86**	**190**	**210**	**200**	**150**	**140**	**220**	**170**	**150**	<4.8
Ethyl Benzene	100-41-4	59000000	**40**	**28**	**52**	**50**	**50**	**44**	**42**	**61**	**57**	**51**	<5.5
m,p-Xylene	108-38-3/ 106-42-3	16000000*	**160**	**120**	**210**	**190**	**200**	**180**	**180**	**240**	**230**	**210**	<5.5
o-Xylene	95-47-6	17000000	**77**	**54**	**94**	**84**	**89**	**83**	**81**	**110**	**110**	**98**	<5.5
Styrene	100-42-5	34000000	<5.4	<5.4	<5.4	<5.4	<5.4	<5.4	<5.4	<5.3	<5.2	<5.2	<5.4
Naphthalene	91-20-3	610000	<26	<26	<26	<26	<26	<26	<26	<26	<25	<25	<26

Notes:
<: Reporting limit shown
Values with bold font are detected values.
*: RO for p-xylene

Table 3-2
Soil Gas Concentrations for Non-MGP Chemicals (ug/m^3)
Former MGP Site, Champaign, Illinois

Chemical	CAS	412 E Hill Street			505 E Washington Street		507 E Washington Street					
		VP412EHILL-1	VP412EHILL-2	VP412EHILL-3	VP505EWASH-1	VP505EWASH-2	VP507EWASH-1		VP507EWASH-2	VP507EWASH-3	VP507EWASH-F	Ambient Air
							Original	Lab Duplicate				
Freon 12	75-71-8	<6.2	<6.2	<6.2	<6.2	<6.2	<6.2	<6.2	**9**	<6.0	**8.8**	<6.2
Freon 114	76-14-2	<8.8	<8.8	<8.8	<8.8	<8.8	<8.8	<8.8	<8.6	<8.4	<8.4	<8.8
Chloromethane	74-87-3	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
Vinyl Chloride	75-01-4	<3.2	<3.2	<3.2	<3.2	<3.2	<3.2	<3.2	<3.2	<3.1	<3.1	<3.2
1,3-Butadiene	106-99-0	**9.2**	**2.9**	**25**	**4.4**	**9.4**	<2.8	<2.8	**9.7**	**4**	**5**	<2.8
Bromomethane	74-83-9	<4.9	<4.9	<4.9	<4.9	<4.9	<4.9	<4.9	<4.8	<4.7	<4.7	<4.9
Chloroethane	75-00-3	<3.3	<3.3	<3.3	<3.3	<3.3	<3.3	<3.3	<3.2	<3.2	<3.2	<3.3
Freon 11	75-69-4	<7.1	<7.1	<7.1	<7.1	<7.1	<7.1	<7.1	<6.9	<6.8	<6.8	<7.1
Ethanol	64-17-5	**50**	**17**	**280**	**14**	**20**	**13**	**12**	**18**	**29**	**19**	**11**
Freon 113	76-13-1	<9.7	<9.7	<9.7	<9.7	<9.7	<9.7	<9.7	<9.5	<9.3	<9.3	<9.7
1,1-Dichloroethene	75-35-4	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<4.9	<4.8	<4.8	<5.1
Acetone	67-64-1	**230**	**110**	**580**	**120**	**160**	**120**	**120**	**180**	**230**	**180**	**16**
2-Propanol	67-63-0	**14**	**50**	**100**	<12	**46**	**37**	**38**	**13**	**16**	<12	**23**
Carbon Disulfide	75-15-0	<3.9	<3.9	<3.9	**7.6**	<3.9	<3.9	<3.9	**4.3**	<3.8	<3.8	<3.9
3-Chloropropene	107-05-1	<16	<16	<16	<16	<16	<16	<16	<15	<15	<15	<16
Methylene Chloride	75-09-2	<4.4	<4.4	<4.4	<4.4	<4.4	<4.4	<4.4	<4.3	<4.2	<4.2	<4.4
Methyl tert-butyl ether	1634-04-4	<4.6	<4.6	<4.6	<4.6	<4.6	<4.6	<4.6	<4.4	<4.4	<4.4	<4.6
trans-1,2-Dichloroethene	156-60-5	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<4.9	<4.8	<4.8	<5.0
Hexane	110-54-3	**9.5**	**7.3**	**20**	**17**	**14**	**8**	**8.5**	**14**	**14**	**11**	<4.4
1,1-Dichloroethane	75-34-3	<5.1	<5.1	<5.1	<5.1	<5.1	<5.1	<5.1	<5.0	<4.9	<4.9	<5.1
2-Butanone (MEK)	78-93-3	**47**	**18**	**130**	**26**	**43**	**21**	**18**	**40**	**56**	**34**	<3.7
cis-1,2-Dichloroethene	156-59-2	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<4.9	<4.8	<4.8	<5.0
Tetrahydrofuran	109-99-9	>3.7	<3.7	<3.7	<3.7	<3.7	<3.7	<3.7	<3.6	<3.6	<3.6	<3.7
Chloroform	67-66-3	<6.2	<6.2	<6.2	<6.2	<6.2	<6.2	<6.2	<6.0	<5.9	<5.9	<6.2
1,1,1-Trichloroethane	71-55-6	<6.9	<6.9	<6.9	<6.9	<6.9	<6.9	<6.9	<6.7	<6.6	<6.6	<6.9
Cyclohexane	110-82-7	<4.4	<4.4	**5.9**	**8.9**	**4.8**	<4.4	<4.4	**5.3**	**6.1**	**4.2**	<4.4
Carbon Tetrachloride	56-23-5	<8.0	<8.0	<8.0	<8.0	<8.0	<8.0	<8.0	<7.8	<7.6	<7.6	<8.0
2,2,4-Trimethylpentane	540-84-1	**8.1**	**7.2**	**13**	**14**	**10**	**6.9**	**7.7**	**11**	**15**	**8.9**	<5.9
1,2-Dichloroethane	107-06-2	<5.1	<5.1	<5.1	<5.1	<5.1	<5.1	<5.1	<5.0	<4.9	<4.9	<5.1
Heptane	142-82-5	**10**	**7.6**	**21**	**19**	**17**	**12**	**13**	**20**	**19**	**13**	<5.2
Trichloroethene	79-01-6	<6.8	<6.8	<6.8	<6.8	<6.8	<6.8	<6.8	**7.3**	<6.5	<6.5	<6.8
1,2-Dichloropropane	78-87-5	<5.8	<5.8	<5.8	<5.8	<5.8	<5.8	<5.8	<5.7	<5.6	<5.6	<5.8
1,4-Dioxane	123-91-1	<18	<18	<18	<18	<18	<18	<18	<18	<17	<17	<18
Bromodichloromethane	75-27-4	<8.5	<8.5	<8.5	<8.5	<8.5	<8.5	<8.5	<8.3	<8.1	<8.1	<8.5
cis-1,3-Dichloropropene	10061-01-5	<5.7	<5.7	<5.7	<5.7	<5.7	<5.7	<5.7	<5.6	<5.5	<5.5	<5.7

Table 3-2
Soil Gas Concentrations for Non-MGP Chemicals (ug/m^3)
Former MGP Site, Champaign, Illinois

Chemical	CAS	412 E Hill Street			505 E Washington Street		507 E Washington Street					
							VP507EWASH-1					
		VP412EHILL-1	VP412EHILL-2	VP412EHILL-3	VP505EWASH-1	VP505EWASH-2	Original	Lab Duplicate	VP507EWASH-2	VP507EWASH-3	VP507EWASH-F	Ambient Air
4-Methyl-2-pentanone	108-10-1	<5.2	<5.2	**6.5**	<5.2	<5.2	<5.2	<5.2	<5.0	**5.4**	<5.0	<5.2
trans-1,3-Dichloropropene	10061-02-6	<5.7	<5.7	<5.7	<5.7	<5.7	<5.7	<5.7	<5.6	<5.5	<5.5	<5.7
1,1,2-Trichloroethane	79-00-5	<6.9	<6.9	<6.9	<6.9	<6.9	<6.9	<6.9	<6.7	<6.6	<6.6	<6.9
Tetrachloroethene	127-18-4	<8.6	<8.6	<8.6	<8.6	<8.6	<8.6	<8.6	<8.4	<8.2	<8.2	<8.6
2-Hexanone	591-78-6	<21	<21	<21	<21	<21	<21	<21	<20	<20	<20	<21
Dibromochloromethane	124-48-1	<11	<11	<11	<11	<11	<11	<11	<10	<10	<10	<11
1,2-Dibromoethane (EDB)	106-93-4	<9.7	<9.7	<9.7	<9.7	<9.7	<9.7	<9.7	<9.5	<9.3	<9.3	<9.7
Chlorobenzene	108-90-7	<5.8	<5.8	<5.8	<5.8	<5.8	<5.8	<5.8	<5.7	<5.6	<5.6	<5.8
Bromoform	75-25-2	<13	<13	<13	<13	<13	<13	<13	<13	<12	<12	<13
Cumene	98-82-8	<6.2	<6.2	**7.2**	**6.6**	<6.2	<6.2	<6.2	**8.3**	**7.9**	**7**	<6.2
1,1,2,2-Tetrachloroethane	79-34-5	<8.7	<8.7	<8.7	<8.7	<8.7	<8.7	<8.7	<8.5	<8.3	<8.3	<8.7
Propylbenzene	103-65-1	**25**	**20**	**30**	**24**	**26**	**27**	**26**	**34**	**34**	**34**	<6.2
4-Ethyltoluene	622-96-8	**100**	**83**	**130**	**97**	**100**	**120**	**110**	**150**	**140**	**150**	<6.2
1,3,5-Trimethylbenzene	108-67-8	**56**	**42**	**45**	**34**	**52**	**45**	**41**	**55**	**76**	**59**	<6.2
1,2,4-Trimethylbenzene	95-63-6	**160**	**120**	**160**	**120**	**140**	**160**	**150**	**190**	**210**	**210**	<6.2
1,3-Dichlorobenzene	541-73-1	<7.6	<7.6	<7.6	<7.6	<7.6	<7.6	<7.6	<7.4	<7.3	<7.3	<7.6
1,4-Dichlorobenzene	106-46-7	<7.6	<7.6	<7.6	<7.6	<7.6	<7.6	<7.6	<7.4	<7.3	<7.3	<7.6
alpha-Chlorotoluene	100-44-7	<6.5	<6.5	<6.5	<6.5	<6.5	<6.5	<6.5	<6.4	<6.3	<6.3	<6.5
1,2-Dichlorobenzene	95-50-1	<7.6	<7.6	<7.6	<7.6	<7.6	<7.6	<7.6	<7.4	<7.3	<7.3	<7.6
1,2,4-Trichlorobenzene	120-82-1	<38	<38	<38	<38	<38	<38	<38	<37	<36	<36	<38
Hexachlorobutadiene	87-68-3	<54	<54	<54	<54	<54	<54	<54	<53	<52	<52	<54

Notes:

<: Reporting limit shown

Values with bold font are detected values.

*: RO for 1,3-dichloropropylene (cis + trans)

**: RO for p-xylene

Table 3-3
Soil Gas Concentrations for Non-MGP Chemicals with TACO Tier 1 Remediation Objectives (ug/m^3)
Former MGP Site, Champaign, Illinois

Chemical	CAS	Residential Tier 1 Soil Gas RO (ug/m^3)	412 E Hill Street			505 E Washington Street		507 E Washington Street					
								VP507EWASH-1					
			VP412EHILL-1	VP412EHILL-2	VP412EHILL-3	VP505EWASH-1	VP505EWASH-2	Original	Lab Duplicate	VP507EWASH-2	VP507EWASH-3	VP507EWASH-F	Ambient Air
Freon 12	75-71-8	32000000	<6.2	<6.2	<6.2	<6.2	<6.2	<6.2	<6.2	**9**	<6.0	**8.8**	<6.2
Vinyl Chloride	75-01-4	30000	<3.2	<3.2	<3.2	<3.2	<3.2	<3.2	<3.2	<3.2	<3.1	<3.1	<3.2
Bromomethane	74-83-9	830000	<4.9	<4.9	<4.9	<4.9	<4.9	<4.9	<4.9	<4.8	<4.7	<4.7	<4.9
Freon 11	75-69-4	97000000	<7.1	<7.1	<7.1	<7.1	<7.1	<7.1	<7.1	<6.9	<6.8	<6.8	<7.1
1,1-Dichloroethene	75-35-4	240000	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<4.9	<4.8	<4.8	<5.1
Carbon Disulfide	75-15-0	81000000	<3.9	<3.9	<3.9	**7.6**	<3.9	<3.9	<3.9	**4.3**	<3.8	<3.8	<3.9
Methylene Chloride	75-09-2	590000	<4.4	<4.4	<4.4	<4.4	<4.4	<4.4	<4.4	<4.3	<4.2	<4.2	<4.4
Methyl tert-butyl ether	1634-04-4	350000000	<4.6	<4.6	<4.6	<4.6	<4.6	<4.6	<4.6	<4.4	<4.4	<4.4	<4.6
trans-1,2-Dichloroethene	156-60-5	10000000	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<4.9	<4.8	<4.8	<5.0
1,1-Dichloroethane	75-34-3	81000000	<5.1	<5.1	<5.1	<5.1	<5.1	<5.1	<5.1	<5.0	<4.9	<4.9	<5.1
2-Butanone (MEK)	78-93-3	440000000	**47**	**18**	**130**	**26**	**43**	**21**	**18**	**40**	**56**	**34**	<3.7
cis-1,2-Dichloroethene	156-59-2	27000000	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<4.9	<4.8	<4.8	<5.0
Chloroform	67-66-3	12000	<6.2	<6.2	<6.2	<6.2	<6.2	<6.2	<6.2	<6.0	<5.9	<5.9	<6.2
1,1,1-Trichloroethane	71-55-6	770000000	<6.9	<6.9	<6.9	<6.9	<6.9	<6.9	<6.9	<6.7	<6.6	<6.6	<6.9
Carbon Tetrachloride	56-23-5	24000	<8.0	<8.0	<8.0	<8.0	<8.0	<8.0	<8.0	<7.8	<7.6	<7.6	<8.0
1,2-Dichloroethane	107-06-2	10000	<5.1	<5.1	<5.1	<5.1	<5.1	<5.1	<5.1	<5.0	<4.9	<4.9	<5.1
Trichloroethene	79-01-6	180000	<6.8	<6.8	<6.8	<6.8	<6.8	<6.8	<6.8	**7.3**	<6.5	<6.5	<6.8
1,2-Dichloropropane	78-87-5	7200	<5.8	<5.8	<5.8	<5.8	<5.8	<5.8	<5.8	**<5.7**	<5.6	<5.6	<5.8
1,4-Dioxane	123-91-1	15000	<18	<18	<18	<18	<18	<18	<18	<18	<17	<17	<18
Bromodichloromethane	75-27-4	450000000	<8.5	<8.5	<8.5	<8.5	<8.5	<8.5	<8.5	<8.3	<8.1	<8.1	<8.5
cis-1,3-Dichloropropene	10061-01-5	110000*	<5.7	<5.7	<5.7	<5.7	<5.7	<5.7	<5.7	<5.6	<5.5	<5.5	<5.7
trans-1,3-Dichloropropene	10061-02-6	110000*	<5.7	<5.7	<5.7	<5.7	<5.7	<5.7	<5.7	<5.6	<5.5	<5.5	<5.7
Tetrachloroethene	127-18-4	66000	<8.6	<8.6	<8.6	<8.6	<8.6	<8.6	<8.6	<8.4	<8.2	<8.2	<8.6
1,2-Dibromoethane (EDB)	106-93-4	1600	<9.7	<9.7	<9.7	<9.7	<9.7	<9.7	<9.7	<9.5	<9.3	<9.3	<9.7
Chlorobenzene	108-90-7	8300000	<5.8	<5.8	<5.8	<5.8	<5.8	<5.8	<5.8	<5.7	<5.6	<5.6	<5.8
Bromoform	75-25-2	1800000	<13	<13	<13	<13	<13	<13	<13	<13	<12	<12	<13
Cumene	98-82-8	30000000	<6.2	<6.2	**7.2**	**6.6**	<6.2	<6.2	<6.2	**8.3**	**7.9**	**7**	<6.2
1,4-Dichlorobenzene	106-46-7	317000	<7.6	<7.6	<7.6	<7.6	<7.6	<7.6	<7.6	<7.4	<7.3	<7.3	<7.6
1,2-Dichlorobenzene	95-50-1	11000000	<7.6	<7.6	<7.6	<7.6	<7.6	<7.6	<7.6	<7.4	<7.3	<7.3	<7.6
1,2,4-Trichlorobenzene	120-82-1	1600000	<38	<38	<38	<38	<38	<38	<38	<37	<36	<36	<38

Notes:
<: Reporting limit shown
Values with bold font are detected values.
*: RO for 1,3-dichloropropylene (cis + trans)

Table 3-4
Toxicological Information Used to Calculate Tier 1 ROs for Non-MGP Soil Gas Chemicals without TACO ROs
Former MGP Site, Champaign, Illinois

Chemical	CAS No.	URF [(ug/m3) $^{-1}$]		RfC [mg/m^3]	
		Value	Source	Value	Source
Chloromethane	74-87-3	1.80E-06	R	9.00E-02	I
1,3-Butadiene	106-99-0	3.00E-05	I	2.00E-03	I
Chloroethane	75-00-3	NA		1.00E+01	I
Freon 113	76-13-1	NA		3.00E+01	R
Acetone	67-64-1	NA		1.30E+01	A
2-Propanol	67-63-0	NA		3.20E-03	C(1hr)
3-Chloropropene	107-05-1	NA		1.00E-03	I
Hexane	110-54-3	NA		7.00E-01	I
Cyclohexane	110-82-7	NA		6.00E+00	I
4-Methyl-2-pentanone	108-10-1	NA		3.00E+00	I
1,1,2-Trichloroethane	79-00-5	1.60E-05	I	NA	
Dibromochloromethane	124-48-1	2.70E-05	C	NA	
1,1,2,2-Tetrachloroethane	79-34-5	5.80E-05	I	NA	
1,3,5-Trimethylbenzene	108-67-8	NA		6.00E-03	R
1,2,4-Trimethylbenzene	95-63-6	NA		7.00E-03	R
alpha-Chlorotoluene	100-44-7	4.90E-05	C	1.00E-03	R
Hexachlorobutadiene	87-68-3	2.20E-05	I	NA	

Notes:
I = USEPA, Integrated Risk Information System (IRIS). Accessed via Internet.
C = California EPA, Office of Environmental Health Hazard Assessment, Toxicity Criteria Database, accessed via Internet.
A = Agency for Toxic Substances and Disease Registry (ATSDR), December 2006. Minimal Risk Levels (MRLs).
R = USEPA, July 2008. Regional Screening Levels for Chemical Contaminants at Superfund Sites.
NA: Not available

Table 3-5
Physical Chemical Properties Used to Calculate Tier 1 ROs for Non-MGP Soil Gas Chemicals without Tier 1 ROs
Former MGP Site, Champaign, Illinois

Chemical	CAS No.	Vapor Pressure (P)	Molecular Weight (MW)	Solubility in Water (S)	Dimensionless Henry's Law Constant (H') at	Organic Carbon Partition Coefficient (K_{oc})	Diffusivity in Air (D_i)	Diffusivity in Water (D_w)	Normal Boiling Temperature T_B	Critical Temperature T_c	Enthalpy of Vaporization at the Normal Boiling Point
		atm	[g/mole]	[mg/L]	25 °C [-]	[L/kg]	[cm^2/s]	[cm^2/s]	°K	°K	cal/mole
Chloromethane	74-87-3	5.66E+00	5.05E+01	5.33E+03	3.62E-01	6.30E+00	1.26E-01	6.50E-06	2.50E+02	4.17E+02	5.12E+03
1,3-Butadiene	106-99-0	2.77E+00	5.41E+01	7.35E+02	3.02E+00	4.47E+01	2.49E-01	1.08E-05	2.70E+02	4.25E+02	5.37E+03
Chloroethane	75-00-3	1.33E+00	6.45E+01	5.68E+03	3.62E-01	1.62E+01	2.71E-01	1.15E-05	2.86E+02	4.60E+02	5.88E+03
Freon 113	76-13-1	*4.36E-01*	*1.87E+02*	*1.70E+02*	*1.96E+01*	*3.72E+02*	***3.80E-02***	***8.60E-06***	*3.22E+02*	4.87E+02	6.46E+03
Acetone	67-64-1	3.03E-01	5.80E+01	1.00E+06	1.60E-03	7.80E-01	1.24E-01	1.14E-05	3.29E+02	5.08E+02	6.96E+03
2-Propanol	67-63-0	*5.98E-02*	*6.01E+01*	*1.97E+04*	*3.21E-04*	*2.50E+01*	*9.59E-02*	*1.03E-05*	*3.56E+02*	NA	NA
3-Chloropropene	107-05-1	*4.84E-01*	*7.65E+01*	*3.37E+03*	*4.50E-01*	*5.00E+01*	***9.40E-02***	***1.10E-05***	*3.19E+02*	NA	NA
Hexane	110-54-3	1.99E-01	8.62E+01	1.24E+01	7.38E+01	1.58E+03	2.00E-01	7.77E-06	3.43E+02	5.08E+02	6.90E+03
Cyclohexane	110-82-7	1.28E-01	8.42E+01	5.50E+01	6.15E+00	6.31E+02	8.39E-02	9.10E-06	3.55E+02	NA	NA
4-Methyl-2-pentanone	108-10-1	2.63E-02	1.00E+02	1.90E+04	5.70E-03	1.00E+01	7.50E-02	7.80E-06	3.94E+02	5.71E+02	8.24E+03
1,1,2-Trichloroethane	79-00-5	3.03E-02	1.30E+02	4.40E+03	3.73E-02	5.01E+01	7.80E-02	8.80E-06	**3.88E+02**	6.02E+02	8.32E+03
Dibromochloromethane	124-48-1	6.45E-03	2.08E+02	2.60E+03	3.20E-02	6.92E+01	3.66E-02	1.05E-05	4.07E+02	6.78E+02	5.90E+03
1,1,2,2-Tetrachloroethane	79-34-5	6.05E-03	1.70E+02	3.00E+03	1.39E-02	1.00E+02	7.10E-02	7.90E-06	4.24E+02	6.61E+02	9.00E+03
1,3,5-Trimethylbenzene	108-67-8	3.26E-03	1.20E+02	4.82E+01	3.60E-01	6.17E+02	6.02E-02	8.67E-06	4.39E+02	6.37E+02	9.32E+03
1,2,4-Trimethylbenzene	95-63-6	2.76E-03	1.20E+02	5.70E+01	2.53E-01	1.17E+03	6.06E-02	7.92E-06	4.44E+02	6.49E+02	9.37E+03
alpha-Chlorotoluene	100-44-7	*1.72E-03*	*1.27E+02*	*5.25E+02*	*1.69E-02*	*1.39E+02*	***6.30E-02***	***8.80E-06***	*4.54E+02*	6.85E+02	8.77E+03
Hexachlorobutadiene	87-68-3	2.89E-04	2.60E+02	3.20E+00	3.32E-01	5.00E+04	5.61E-02	6.16E-06	4.94E+02	7.38E+02	1.02E+04

Notes:

Normal: IEPA Bold: PhysProp Normal with Underline: USEPA, 2004 NA: Not available

Italic: Chemfate Italic Bold: Regional Screening Levels Italic with Underline: TCEQ, June 2007

Table 3-6
Tier 1 ROs Developed for Non-MGP Soil Gas Chemicals without TACO Tier 1 ROs (ug/m^3)
Former MGP Site, Champaign, Illinois

Chemical	CAS	Residential Tier 1 Soil Gas RO (ug/m^3)	412 E Hill Street			505 E Washington Street		507 E Washington Street					
			VP412EHILL-1	VP412EHILL-2	VP412EHILL-3	VP505EWASH-1	VP505EWASH-2	VP507EWASH-1 Original	VP507EWASH-1 Lab Duplicate	VP507EWASH-2	VP507EWASH-3	VP507EWASH-F	Ambient Air
Chloromethane	74-87-3	124000	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
1,3-Butadiene	106-99-0	3770	**9.2**	**2.9**	**25**	**4.4**	**9.4**	<2.8	<2.8	**9.7**	**4**	**5**	<2.8
Chloroethane	75-00-3	446000000	<3.3	<3.3	<3.3	<3.3	<3.3	<3.3	<3.3	<3.2	<3.2	<3.2	<3.3
Freon 113	76-13-1	9530000000	<9.7	<9.7	<9.7	<9.7	<9.7	<9.7	<9.7	<9.5	<9.3	<9.3	<9.7
Acetone	67-64-1	1250000000	**230**	**110**	**580**	**120**	**160**	**120**	**120**	**180**	**230**	**180**	**16**
2-Propanol	67-63-0	387000	**14**	**50**	**100**	<12	**46**	**37**	**38**	**13**	**16**	<12	**23**
3-Chloropropene	107-05-1	128000	<16	<16	<16	<16	<16	<16	<16	<15	<15	<15	<16
Hexane	110-54-3	42300000	**9.5**	**7.3**	**20**	**17**	**14**	**8**	**8.5**	**14**	**14**	**11**	<4.4
Cyclohexane	110-82-7	457000000	<4.4	<4.4	**5.9**	**8.9**	**4.8**	<4.4	<4.4	**5.3**	**6.1**	**4.2**	<4.4
4-Methyl-2-pentanone	108-10-1	481000000	<5.2	<5.2	**6.5**	<5.2	<5.2	<5.2	<5.2	<5.0	**5.4**	<5.0	<5.2
1,1,2-Trichloroethane	79-00-5	22600	<6.9	<6.9	<6.9	<6.9	<6.9	<6.9	<6.9	<6.7	<6.6	<6.6	<6.9
Dibromochloromethane	124-48-1	28500	<11	<11	<11	<11	<11	<11	<11	<10	<10	<10	<11
1,1,2,2-Tetrachloroethane	79-34-5	6830	<8.7	<8.7	<8.7	<8.7	<8.7	<8.7	<8.7	<8.5	<8.3	<8.3	<8.7
1,3,5-Trimethylbenzene	108-67-8	1200000	**56**	**42**	**45**	**34**	**52**	**45**	**41**	**55**	**76**	**59**	<6.2
1,2,4-Trimethylbenzene	95-63-6	1390000	**160**	**120**	**160**	**120**	**140**	**160**	**150**	**190**	**210**	**210**	<6.2
alpha-Chlorotoluene	100-44-7	9110	<6.5	<6.5	<6.5	<6.5	<6.5	<6.5	<6.5	<6.4	<6.3	<6.3	<6.5
Hexachlorobutadiene	87-68-3	22800	<54	<54	<54	<54	<54	<54	<54	<53	<52	<52	<54

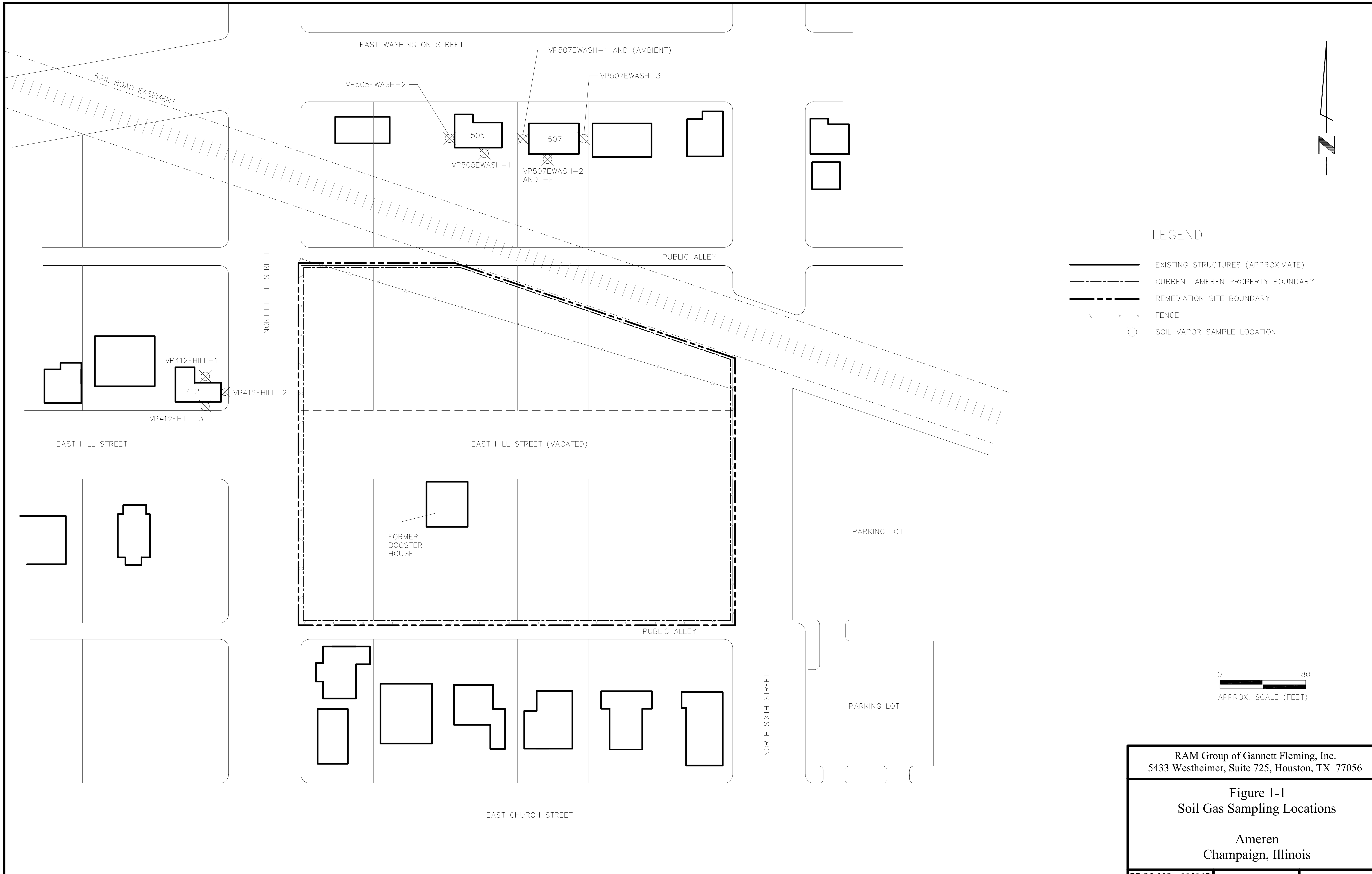
Notes:
<: Reporting limit shown
Values with bold font are detected values.

Table 3-7
Soil Vapor Concentrations for Non-MGP Chemicals without TACO Tier 1 Remediation Objectives (ug/m^3)
Former MGP Site, Champaign, Illinois

Chemical	CAS	Residential Tier 1 Soil Gas RO (ug/m^3)	412 E Hill Street			505 E Washington Street		507 E Washington Street					
			VP412EHILL-1	VP412EHILL-2	VP412EHILL-3	VP505EWASH-1	VP505EWASH-2	VP507EWASH-1		VP507EWASH-2	VP507EWASH-3	VP507EWASH-F	Ambient Air
								Original	Lab Duplicate				
Freon 114	76-14-2	NC	<8.8	<8.8	<8.8	<8.8	<8.8	<8.8	<8.8	<8.6	<8.4	<8.4	<8.8
Ethanol	64-17-5	NC	**50**	**17**	**280**	**14**	**20**	**13**	**12**	**18**	**29**	**19**	**11**
Tetrahydrofuran	109-99-9	NC	>3.7	<3.7	<3.7	<3.7	<3.7	<3.7	<3.7	<3.6	<3.6	<3.6	<3.7
2,2,4-Trimethylpentane	540-84-1	NC	**8.1**	**7.2**	**13**	**14**	**10**	**6.9**	**7.7**	**11**	**15**	**8.9**	<5.9
Heptane	142-82-5	NC	**10**	**7.6**	**21**	**19**	**17**	**12**	**13**	**20**	**19**	**13**	<5.2
2-Hexanone	591-78-6	NC	<21	<21	<21	<21	<21	<21	<21	<20	<20	<20	<21
Propylbenzene	103-65-1	NC	**25**	**20**	**30**	**24**	**26**	**27**	**26**	**34**	**34**	**34**	<6.2
4-Ethyltoluene	622-96-8	NC	**100**	**83**	**130**	**97**	**100**	**120**	**110**	**150**	**140**	**150**	<6.2
1,3-Dichlorobenzene	541-73-1	NC	<7.6	<7.6	<7.6	<7.6	<7.6	<7.6	<7.6	<7.4	<7.3	<7.3	<7.6

Notes:
<: Reporting limit shown
Values with bold font are detected values.
NC: Not calculated due to lack of toxicity or physical chemical information

FIGURES



RAM Group of Gannett Fleming, Inc.
5433 Westheimer, Suite 725, Houston, TX 77056

Figure 1-1
Soil Gas Sampling Locations

Ameren
Champaign, Illinois

PROJ. NO: 005067	D/B: TLD	DATE: 12/08

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Figure 2-1
Basement Layout for 505 East
Washington Street
Ameren Site
Champaign, Illinois

PROJ. NO: 005067	D/B: TLD	DATE: 12/08

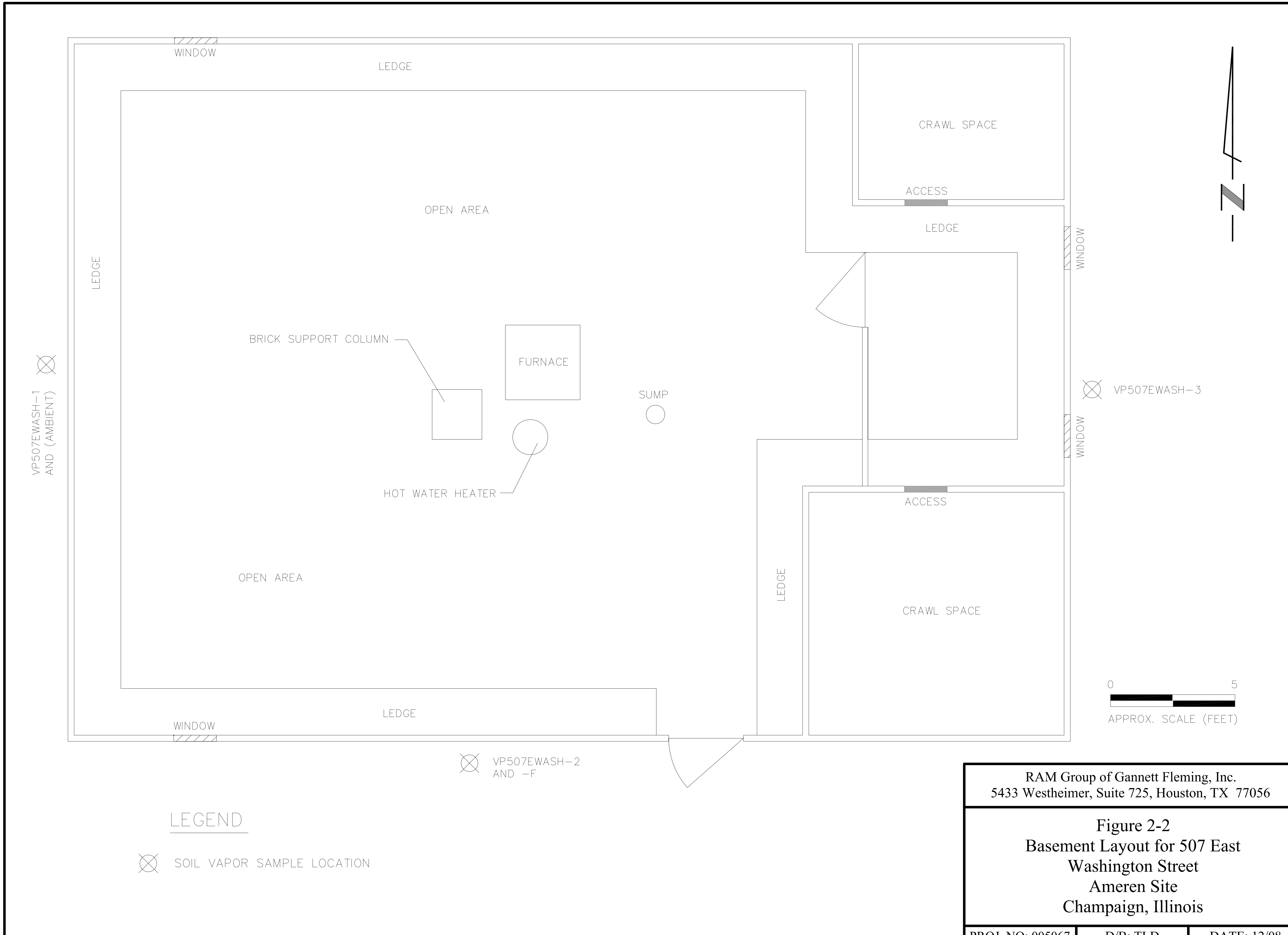

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Figure 2-2
Basement Layout for 507 East Washington Street
Ameren Site
Champaign, Illinois

PROJ. NO: 005067	D/B: TLD	DATE: 12/08

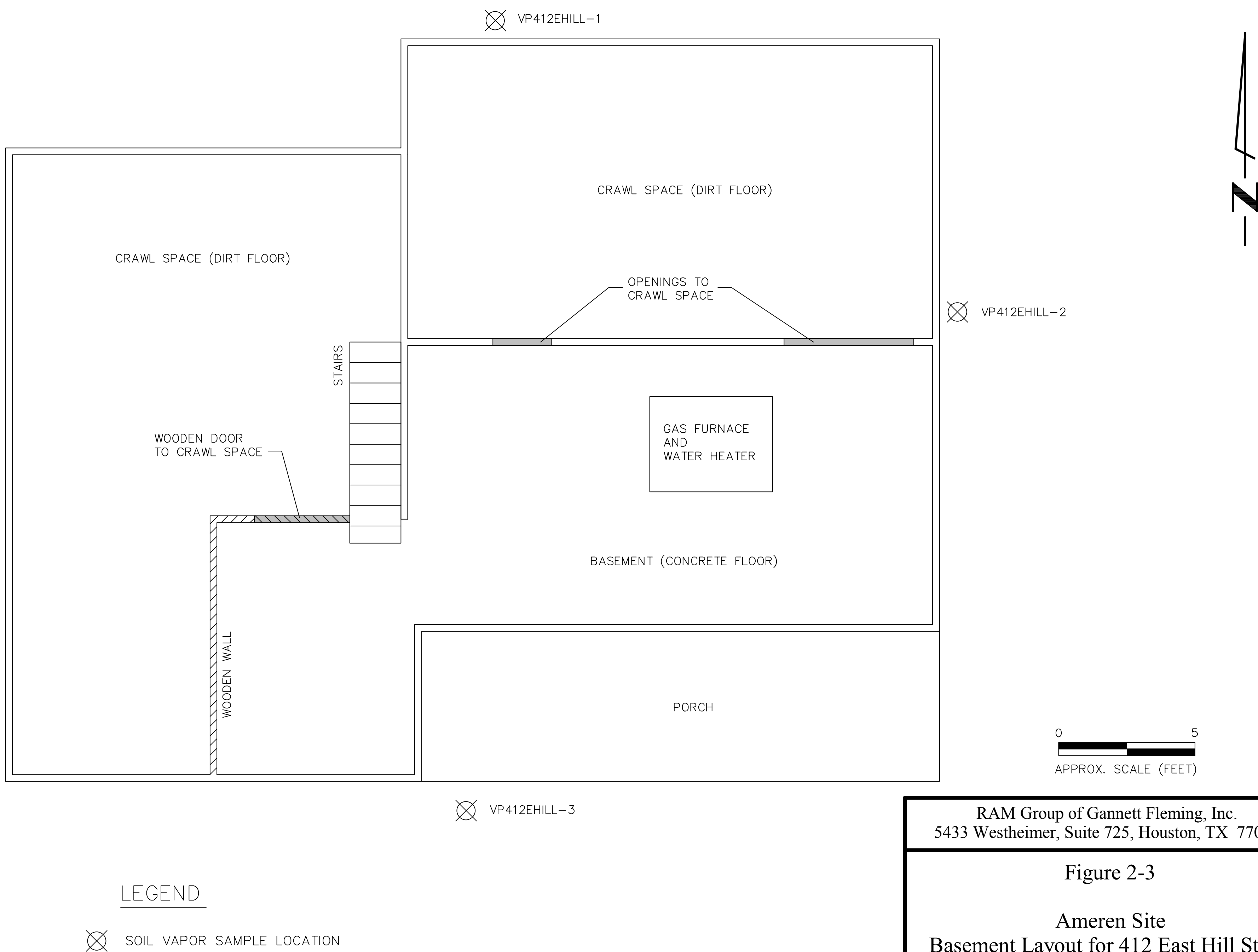

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Figure 2-3

Ameren Site
Basement Layout for 412 East Hill Street
Champaign, Illinois

PROJ. NO: 005067	D/B: TLD	DATE: 12/08

Appendix A
Scope of Work

August 21, 2008 ***Transmitted by E mail***

Mr. Brian Martin
Ameren Services
One Ameren Plaza
1901 Chouteau Avenue, MC 602
St. Louis, MO 63166-6149

Re: Soil Vapor Sampling
Former Manufactured Gas Plant Site, Champaign, Illinois

Dear Brian:

Thank you very much for the opportunity to collect the data necessary to evaluate potential soil vapor migration and vapor inhalation risk at this site. With our merger with Gannett Fleming (GF), we are excited at the opportunity to continue to provide an expanded set of high quality services to you.

The following tasks will be conducted:

An OSHA-compliant health and safety plan (HASP) will be prepared prior to mobilization. The state one-call service will be notified at least 48 hours before the fieldwork to mark the locations of sub-surface utilities along the public rights-of-way in the vicinity of the three residential properties to be sampled. These markings as well as visual observations at each residence will be used in an effort to avoid encountering sub-surface utilities during the fieldwork.

Coordination with residents and owners will be conducted to explain and coordinate the work prior to mobilization to the field. We understand the three residential homes are located at 412 East Hill (resident owner occupied) located west of the former MGP site, 505 East Washington (resident owner occupied and full time day care in basement) located north of the MGP site, and 507 East Washington (resident renter occupied) located north of the MGP site. Each of the homes have basements that are partially below grade extending to a depth of approximately five feet below ground surface (bgs).

We understand that the soils in the vicinity of the site consist of glacial till consisting of mostly tight silty clays in the upper 10 feet bgs and sandy sediments below 10 feet bgs. The water table has been measured at depths of 7 to 8 feet bgs.

Keith Klemm or Devin Yeatman will perform the fieldwork according to the following schedule:

Day 1: Travel to the site and perform site reconnaissance, mark utility and sampling locations, inspect all Summa canisters and other field equipment, and purchase any field supplies necessary.

Day 2: Install eight temporary vapor sampling borings to a target depth of approximately six feet below ground surface (approximately one foot below the bottom of the basement slab, estimated at 5 ft bgs and above the water table, estimated at 7-8 ft bgs) adjacent to three private residences. We will verify groundwater depths prior to beginning the field works at nearby accessible shallow monitoring wells. The vapor borings will be installed using a geoprobe track-mounted rig. Extreme care will be taken to prevent damage to private property. Soil vapor samples will be collected from the borings using post-run tubing (PRT) methods. One co-located duplicate soil vapor sample will be collected from a location between the two residences located on East Washington Street along with one ambient (outdoor) air sample.

Day 3: Continuation of work performed on Day 2. The samples will be shipped and the field technician will travel back to the office to complete any remaining paperwork.

Day 20: Receipt of all data from laboratory (standard turnaround) in electronic format.

Day 45: Submission of draft report for your review and comments. Single report including data collection, risk evaluation, and recommendations.

Day 60: Finalization of the report.

[cost portion of letter deleted for proprietary reasons]

We look forward to working with you on this project and will call you soon to discuss this.

Sincerely,

Kendall L. Pickett
Senior Geologist

Appendix B
Site Health & Safety Plan

FORMER AMEREN MANUFACTURED GAS PLANT SITE
HEALTH AND SAFETY PLAN
GANNETT FLEMING, INC.

SITE NAME	Ameren - Champaign	**PROJECT #**	50067
ADDRESS	308 N. 5th Street	**PROJECT CONTACT**	Kendall Pickett (Houston Office)
CITY, STATE	Champaign, Illinois	**PM PHONE**	(713) 784-5151
VERSION NO.	1	**CLIENT CONTACT**	Brian Martin
DATE	October 6, 2008	**CLIENT PHONE**	(314) 554-2233
PREPARED BY	Erin Beares	**SIGNATURE**	Erin Beares
APPROVED BY	Chris Ralston	**SIGNATURE**	[illegible]
REVIEWED BY	Rob Scrafford	**SIGNATURE**	[illegible]

1 SITE BACKGROUND AND DESCRIPTION

The former Champaign and Urbana Gas Light Company and subsequently AmerenIP, operated a manufactured gas plant on this site from approximately 1869 to the 1930's. The plant was then on standby status from the 1930's through the 1950's and was used to meet peak demands. The site was vacant and unused from 1960 until 1979 when the property was sold to American Legion Post 559 as a meeting house. The property was then repurchased by AmerenIP in 1991 and has since remained vacant.

The site consists of a vacant flat area secured by a chain-link fence. There are residential properties to the north, south and west and commercial properties to the east.

1.1 SITE TYPE

	Active		Agricultural		Recreational
X	Inactive	X	Commercial		Natural Area
X	Secure	X	Residential		Unknown
	Unsecured	X	Industrial		Other
	Landfill		Military		

1.2 SURROUNDING POPULATION

X	Industrial	X	Residential
	Urban		Rural

1.3 SITE TOPOGRAPHY

This site consists of flat topography.

1.4 ANTICIPATED WEATHER CONDITIONS

The predicted weather is fall temperatures and a possibility of rain showers.

2 DESCRIPTION OF ON-SITE ACTIVITIES

	Soil sampling		Well gauging
	Lagoon/pond sampling		Well sampling
	Drum sampling		Tank sampling

X	Oversight of drill crew		Asbestos sampling
	Site walk		On-site meeting
	Tank removal oversight		Air monitoring
	Groundwater sampling		Product removal from specified wells
X	Geoprobe® Soil Borings		Monitoring Well Installation
	Sump gauging	X	Soil Vapor Sampling

2.1 SPECIFIC WORK TASKS

1. Installation of eight soil borings using Geoprobe.
2. Sample soil vapor using Geoprobe post-run tubing.

2.2 SUBCONTRACTOR TASKS

Geoprobe drilling will be performed by a subcontractor, yet to be determined.

3 ON-SITE ORGANIZATION AND COORDINATION

The following personnel are designated to carry out the stated job functions on-site.

GF Project Manager/Contact:	Kendall Pickett
GF Safety Manager:	Sid Curran
Site Safety and Health Supervisor (SSHS):	Keith Klemm
Field Team Leader (FTL):	Keith Klemm
Field Team Members:	Keith Klemm, Kendall Pickett
Contractor Personnel:	TBD
Regulators/Client:	Ameren Services

All personnel arriving or departing from the site should log in and out with the SSHS. All activities on-site must be approved by the Gannett Fleming, Inc. Project Manager. The SSHS will maintain a site log.

3.1 TRAINING AND MEDICAL SURVEILLANCE

All onsite personnel must meet the requirements of OSHA 29CFR 1910.120 (f) prior to entry into the exclusion zone. Documentation of each employee's health monitoring records is the responsibility of their employer. Employees must be able to produce copies of their training records, if asked to do so.

4 ON-SITE CONTROL

N/A

5 HAZARD ASSESSMENT

5.1 Hazard evaluation

X	Slip/trip/fall	X	Chemical		Heat stress
	Open trenches (small for piping)		Radiation	X	Overhead utilities
	Confined spaces		Flammable atmospheres		Cold stress
	Work around vacuum tank and hoses		Asbestos	X	Machinery

CHANGES AND/OR DEVIATIONS FROM THIS PLAN REQUIRE A SAFETY PLAN AMENDMENT

	Floor openings		Ladders	X	Buried utilities
X	Vehicle traffic		Gas cylinders		Poisonous plants
	Entry into excavation		Insects		

**Note this list is not inclusive of all hazards, which may be encountered.

5.2 On-site hazards

The substance(s) in Table 1 (attached) are known or suspected to be on-site. The primary hazards of each are identified.

6 PERSONAL PROTECTIVE EQUIPMENT AND SAFETY PROCEDURES

6.1 Personal Protective Equipment

The following designated items will be the minimum protection required while in the exclusion zone. Specific activities may require modification to this list.

ANTICIPATED LEVEL OF PROTECTION: B___ C___ D_X

JUSTIFICATION:_Level D protection is anticipated based on the open atmosphere. Upgrades would be based on air monitoring results or field observations.

LEVEL B WILL INCLUDE:_ (Check all that apply)
COVERALL: Saranex___ Polytyvek___ Tyvek
GLOVES: Latex___ Nitrile___ Silver Shields___ Butyl___ Other
BOOTS: Steel Toe___ Latex Booties___ Robars___ Other
SUPPLIED AIR: SCBA___ Airlines
SPLASH APRON: Acid___ Other/Type:___/
OTHER EQUIPMENT: Hardhat___ Flash Light___ Radio___ Life Jacket___ Car Phone
Earplugs

ACTIVITIES TO BE PERFORMED IN LEVEL B: (Please List)
Not anticipated.

LEVEL C WILL INCLUDE: (Check all that apply)
COVERALL: Saranex___ Polytyvek___ Tyvek
GLOVES: Latex___ Nitrile___ Silver Shields___ Butyl___ Other
BOOTS: Steel Toe___ Latex Booties___ Robars___ Other
FULL FACE RESPIRATOR: Positive Pressure___ Negative Pressure
CARTRIDGES: GMC-P100___ Other/Type___/_________________ Escape Pack:
OTHER EQUIPMENT: Hardhat___ Flash Light___ Radio___ Life Jacket___ Car Phone
Earplugs

ACTIVITIES TO BE PERFORMED IN LEVEL C: (Please List)
Not anticipated.

LEVEL D WILL INCLUDE: (Check all that apply)
COVERALL: Tyvek___ Cotton___ Other
GLOVES: Latex___ Nitrile_X_ Cotton___ Other _(leather/work)
BOOTS: Steel Toe_X_ Latex Booties___ Robars___ Other_____
OTHER EQUIPMENT: Hardhat_X (if an overhead hazard is present) Safety Glasses_X
Flash Light___ Radio___ Cell Phone_X_ Earplugs _X_ Safety Vest _X

ACTIVITIES TO BE PERFORMED IN LEVEL D: (Please List)

1. Soil vapor sampling
2. Installation of soil borings

AIR MONITORING: (Check all that apply)
___ FID _X_ PID ___CGI___ DRAGER PUMP (LIST TUBES)__________RADIATION METER____
LOW-VOLUME PUMP___ HI-VOLUME PUMP___OTHERS (LIST)____________________________

6.2 Safety Procedures

- Eating, drinking, chewing gum or tobacco, smoking, or any practice which increases the potential of hand-to-mouth transfer of dangerous material is **PROHIBITED**.
- Any facial hair that interferes with a satisfactory fit of respiratory protective devices to the face is **PROHIBITED**.
- All joins between the protective suit and gloves, boots, respirator and zipper must be taped with duct tape when working near the machinery.
- An eye station will be located in the staging area.

7 COMMUNICATION PROCEDURES

Hand signals will be agreed upon during the tailgate safety meeting prior to commencement of activities each day. Cell phones will be available for emergency use. Personnel should remain within sight of the Field Team Leader.

Thee short blasts of the vehicle horn is the emergency signal to indicate that all personnel should leave the area and convene at the location designated by the Field Team Leader.

The following standard hand signals will be used in case of failure of radio communications.

Hand gripping throat	⇨	Out of air; can't breathe
Grip partner's wrist or both hands around waist	⇨	Leave area immediately
Hands on top of head	⇨	Need assistance
Thumbs up	⇨	OK; I am alright; I understand
Thumbs down	⇨	No; negative

Telephone communication to the Command Post should be established as soon as practicable.

8 DECONTAMINATION PROCEDURES

8.1 Personnel Decontamination

All boots and other potentially contaminated garments that have, or may have, contacted contaminated materials will be cleaned with detergent/water solution and rinsed with water in wash tubs. The wash water, rinse water, and residues will be collected and properly stored until sampling results are received and final disposition of the waste can be determined. Disposable PPE will be properly bagged and disposed of. All contaminated boots, clothing, and equipment that cannot be decontaminated will be disposed of with the disposable garments.

8.2 Sampling Equipment Decontamination

Sampling equipment will be decontaminated in the field using buckets, brushes, alconox, water and isopropyl alcohol.

8.3 Heavy Equipment Decontamination

Geoprobe rods will be decontaminated between sampling locations using buckets, brushes, alconox, and water.

8.4 Emergency Decontamination

Emergency decontamination will be conducted in the same manner as described above, when possible.

8.5 Decontamination Equipment

The following decontamination equipment is required:

X	Buckets	X	Decontamination pad
X	Brushes		Water hoses
X	Tubs		Disposal drums
	Steam cleaner	X	Cleaning solution
	Other	X	Water

9 SITE SAFETY AND HEALTH PROCEDURES

9.1 Environmental Monitoring

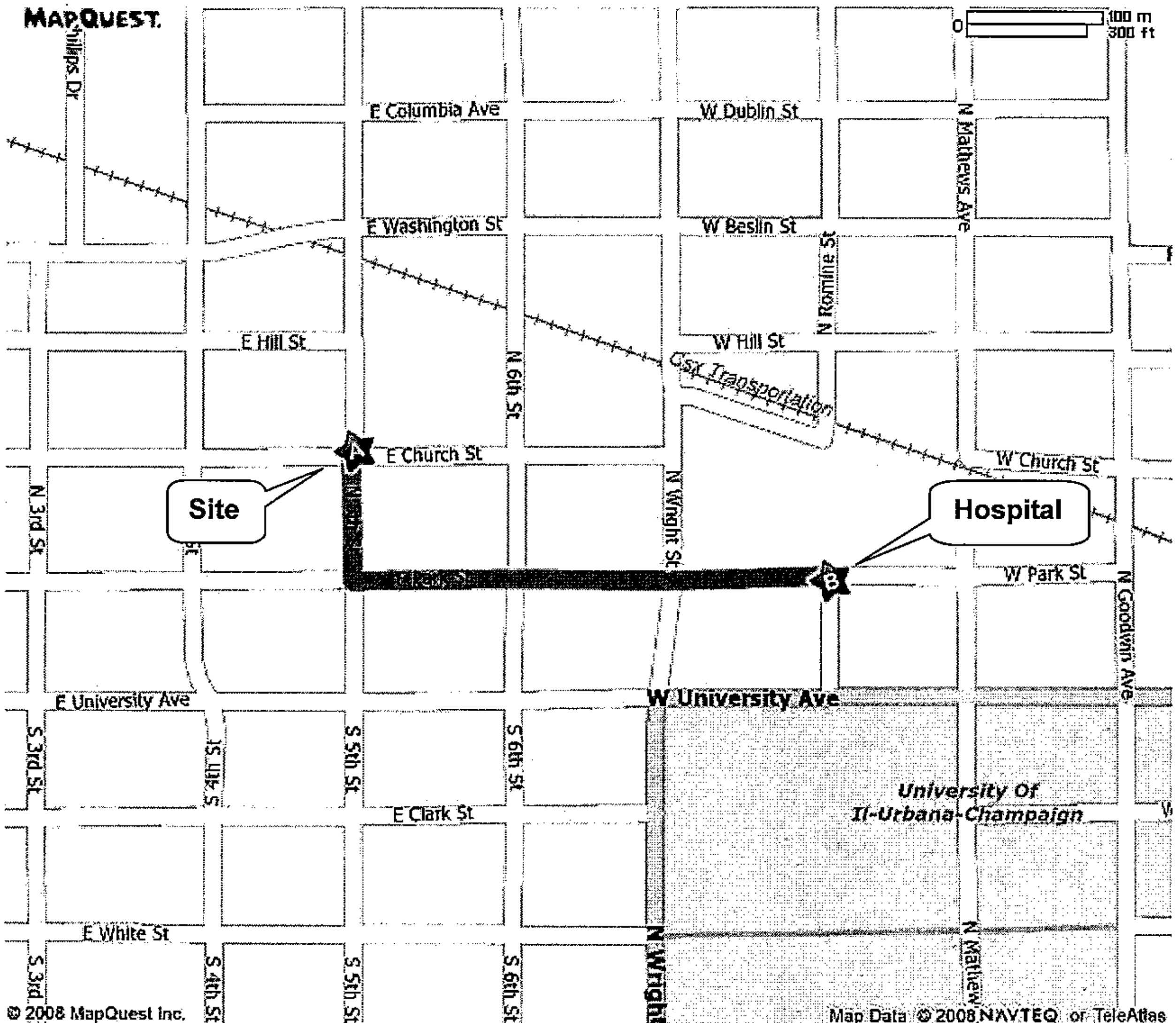
See Table 2 (attached) for the specified intervals and action levels for the PID to be used on-site.

The following activities will be performed:

- Recharge each instrument at the end of each day.
- Record all reading in the site logbook.
- If an instrument fails to work, it must be repaired or replaced before work requiring its use can continue.
- Instrument readings above the action level require evacuation, reevaluation, and consultation with the Gannett Fleming, Inc. Health and Safety Manager for PPE upgrade.
- Dusty conditions may warrant upgrade in PPE. Consult with the Gannett Fleming, Inc. Health and Safety Manager if dusty conditions exist.

9.2 Emergency Medical Care

HOSPITAL: Provena Covenant Medical Center
1400 W. Park Street
Urbana, IL 61801



Source: MapQuest

DIRECTIONS TO HOSPITAL:

1. Start at 308 N 5th St going toward E Church St
2. Turn left on E Park St – go 0.3 miles
3. Arrive at 1400 W Park St on left

APPROXIMATE DISTANCE: 0.34 Miles

APPROXIMATE TRAVEL TIME: 1 Minute

CHANGES AND/OR DEVIATIONS FROM THIS PLAN REQUIRE A SAFETY PLAN AMENDMENT

FIRE DEPARTMENT: 911

POLICE DEPARTMENT: 911

AMBULANCE 911

FIRST AID KIT AVAILABLE AT Field vehicle

EYE WASH STATION AVAILABLE AT Field vehicle

GANNETT FLEMING TELEPHONE NO. (410) 585-1460 Baltimore Office
Sid Curran, Health and Safety Manager
(717) 763-7211 Harrisburg Office (Headquarters)
Thomas Gingrich, Regional Health & Safety Officer

9.3 Fire and Rescue Equipment

Fire extinguishers are located inside the wash building located immediately adjacent to the site. In addition, the Field Team Lead should have a fire extinguisher in the car.

First aid equipment is available on-site as follows:
First aid kit: In field vehicle and in wash building
Emergency eye wash: In field vehicle
Emergency shower: N/A

I have read and I understand the safety guidelines presented in this plan. I further understand that each contractor performing work on this site is solely responsible for the health and safety of their workers.

NAME (signature) NAME (print)

Keith Klemm

Kendall Pickett

CHANGES AND/OR DEVIATIONS FROM THIS PLAN REQUIRE A SAFETY PLAN AMENDMENT

Table 1. Chemicals of Concern

Contaminant	Chemical / Physical Properties	Incompat -ibilities	Threshold Limit Value/ Permissible Exposure Limit	Immediately Dangerous to Life & Health	Route	Exposure Symptoms	First Aid
Benzene	MW: 78.1 BP: 176°F Fl.P: 12°F Sol: 0.07% VP: 75 mmHg	Strong Oxidizers, many fluorides & perchlorates nitric acid	0.1 ppm	500 ppm	Inhalation Ingestion Contact Skin absorption	Irritated eyes, skin, nose Dizziness, nausea Lassitude, Dermatitis, bone marrow depression	Eye: Immediately wash eyes with water Skin: Wash with soap and water immediately Inhalation: Move to fresh air, medical attention ASAP Swallow: Immediate medical attention
Ethyl benzene	MW: 106.2 BP: 62°F Fl.P: 55°F Sol: 0.01% VP: 7 mmHg	Strong Oxidizers	100 ppm	800 ppm	Inhalation, Ingestion, Contact	Irritated eyes, skin; Headache, dermatitis, narcosis	Eye: Immediately wash eyes with water Skin: Flush with water promptly Inhalation: Move to fresh air, medical attention ASAP Swallow: Immediate medical attention
Xylene	MW: 106.2 BP: 292°F Fl.P: 90°F Sol: 0.02% VP: 7 mmHG	Strong oxidizers, strong acids	100 ppm	900 ppm	Inhalation, Absorption, Ingestion, Contact	Irritated eyes, skin, nose throat; dizziness, excitement, drowsiness, nausea, vomiting, abdominal pain	Eye: Immediately wash eyes with water Skin: Wash skin with soap and water immediately Inhalation: Move to fresh air, medical attention immediately Swallow: Medical attention immediately
Toluene	MW: 92.1 BP: 232°F Fl.P: 40°F Sol: 0.07% VP: 21 mmHG	Strong Oxidizers	100 ppm	500 ppm	Inhalation, Absorption, Ingestion, Contact	Irritated eyes, skin, nose, coughing, dizziness, headache, Lassitude, dilated pupils, liver and kidney damage	Eye: Immediately wash eyes with water Skin: Flush with water immediately Inhalation: Move to fresh air, medical attention ASAP Swallow: Medical attention immediately

*Numerous PAH's have also been identified to exist at this site, including Benzo(a)pyrene in concentrations ranging from 10 mg/kg to 7700 mg/kg. Proper PPE, including gloves and safety glasses will be worn at all times during the short periods when exposure to these compounds is possible.

CHANGES AND/OR DEVIATIONS FROM THIS PLAN REQUIRE A SAFETY PLAN AMENDMENT

Table 2

AIR MONITORING ACTION LEVELS

Monitoring Equipment	Ambient Reading	Action
FID/PID*	Background	Level D
	1 - 5 units/ppm	Level C
	5-500 units/ppm	Level B
	>500 units/ppm	Exit area, consult health and safety coordinator. Note: Action levels based on sustained reading in breathing zone.

*Action levels provided as guidelines. Compound specific action levels may be lower or higher based on the TLV for the compound. Where unknown concentrations of organic vapors may be present caution is advised. Level B may be required until ambient concentrations are determined.

CHANGES AND/OR DEVIATIONS FROM THIS PLAN REQUIRE A SAFETY PLAN AMENDMENT

EFFECTS OF HEAT EXPOSURE

Adverse weather conditions are important considerations in planning and conducting site operations. Hot or cold weather can cause physical discomfort, loss of efficiency, and personal injury. Of particular importance is heat stress resulting from protective clothing decreasing natural ventilation of the body. Heat stress can occur even when temperatures are considered moderate. One or more of the following recommendations will help reduce heat stress:

- Provide plenty of liquids. Drink plenty of water or commercial drink mixes along with more heavily salted foods (unless on a low salt diet) to replace body fluids (water and electrolytes) lost due to sweating. To prevent dehydration, response personnel should be encouraged to drink generous amounts of water even if not thirsty. Heat-related problems can happen before the sensation of thirst occurs.
- Provide cooling devices to aid natural body ventilation. These devices, however, add weight, and their use should be balanced against worker fatigue. Long cotton underwear or similar type garments act as a wick to help absorb moisture and protect the skin from direct contact with heat-absorbing chemical protective clothing. It should be the minimum undergarment worn.
- Install mobile showers and/or hose-down facilities to reduce body temperature and cool protective clothing.
- Ensure that adequate shelter is available to protect personnel against heat, cold, rain, snow, and that a shaded resting area is provided on sunny days. On hot days, air conditioned rest areas should be provided.
- In hot weather, rotate teams of workers wearing protective clothing or performing extremely arduous tasks. In extremely hot weather, conduct non-emergency response operations in the early morning or evening.
- Response personnel should be encouraged to maintain their physical fitness. Physically fit personnel are less prone to stress-related problems.
- Liquids which act as diuretics (such as alcohol and coffee) should be avoided or their intake minimized before anticipated operation. These can contribute to dehydration and subsequent heat-related problems.

HEAT STRESS MONITORING

For monitoring the body's recuperative ability to handle excess heat, one or more of the following techniques should be used as a screening technique. Monitoring of personnel wearing protective clothing should commence when the ambient temperature is 70°F or above. Frequency of monitoring should increase as the ambient temperature increases or if slow recovery rates are indicated. When temperatures exceed 80°F, workers must be monitored for heat stress after every work period.

- Heart rate (HR) should be measured by counting the radial pulse for 30 seconds as early as possible in the resting period. The HR at the beginning of the rest period should not exceed 110 beats per minute. If the HR is higher, the next work period should be shortened by 10 minutes (or 33 percent), while the length of the rest period stays the same. If the pulse rate is 100 beats per minute at the beginning of the next rest period, the following work cycle should be shortened by 33 percent.
- Body temperature should be measured orally with a clinical thermometer as early as possible in the resting period. Oral temperature (OT) at the beginning of the rest period should not exceed 99°F. If it does, the next work period should be shortened by 10 minutes (or 33 percent), while the length of the rest period stays the same. However, if the OT

exceeds 99.7°F at the beginning of the next period, the following work cycle should be further shortened by 33 percent. OT should be measured again at the end of the rest period to make sure that it has dropped below 99°F.

- Body water loss (BWL) due to sweating should be measured by weighing the worker in the morning and in the evening. The clothing worn should be similar at both weighing; preferably the worker should be nude. The scale should be accurate to plus or minus □ pounds. BWL should not exceed 1.5 percent of the total body weight. If it does, workers should be instructed to increase their daily intake of fluids to replace the water lost through perspiration. Ideally, body fluids should be maintained at a constant level during the work day. This requires replacement of salt lost in sweat as well.

Good hygienic standards must be maintained by frequent change of clothing and daily showering. Clothing should be permitted to dry during rest periods. Persons who notice skin problems should immediately consult medical personnel.

EFFECT OF HEAT STRESS

If the body's physiological processes fail to maintain a normal body temperature because of excessive heat, a number of physical reactions can occur ranging from mild (such as fatigue, irritability, anxiety, and decreased concentration, dexterity, or movement) to fatal. Standard reference books should be consulted for specific first aid treatment. Medical help must be obtained for the more serious conditions.

Heat-related problems are:

- Heat Rash: caused by continuous exposure to heat and humid air and aggravated by chafing clothes. Decreases ability to tolerate heat as well as being a nuisance.
- Heat Cramps: caused by profuse perspiration with inadequate fluid intake and chemical replacement (especially salts). Signs: muscle spasm and pain in the extremities and abdomen.
- Heat Exhaustion: caused by increased stress on various organs to meet increased demands to cool the body. Signs: shallow breathing; pale, cool, moist skin; profuse sweating; dizziness and lassitude.
- Heat Stroke: the most severe form of heat stress. Can be fatal. Medical help must be obtained immediately. Body must be cooled immediately to prevent severe injury and/or death. Signs: red, hot, dry skin; no perspiration; nausea; dizziness and confusion; strong, rapid pulse; coma.

USEPA STANDARD OPERATING SAFETY GUIDES, Office of Emergency and Remedial Response, Emergency Response Division, July 1988.

USEPA STANDARD OPERATING SAFETY GUIDES, Office of Emergency and Remedial Response, Emergency Response Division, July 1988.

PHOTO 1: View of packing bentonite putty seal around probe.

PHOTO 2: View to North along west side of 505 E. Washington at location of VP505EWASH-2. Probe in ground, tubing inside probe.

PHOTO 3: Purging VP505EWASH-2.

PHOTO 4: Obtain soil vapor sample in 1-Liter Summa Canister at VP505EWASH-2.

PHOTO 5: View to NW from N. Fifth St. MGP entrance gate looking at 412 E. Hill and Soil Essentials truck & trailer and Geoprobe rig at VP412EHill-3 location.

PHOTO 6: View to north at VP412EHill-3 location. Note plywood under Geoprobe rig.

PHOTO 7: Attaching 1-Liter SUMMA canister at VP412EHill-3 location. Note white paper towels with leak detection compound wrapped around equipment.

PHOTO 8: Another view of leak detector paper towels around rod on top of bentonite putty seal at VP412EHill-3 location.

PHOTO 9: View of oven cleaner & tire shine chemical containers on window ceil of south basement wall at 505 E. Washington.

PHOTO 10: Inside basement of 507 E. Washington looking east along north wall. Note new central heating unit and water heater, both fueled by natural gas.

PHOTO 11: Inside basement of 507 E. Washington looking North from entrance on south side of house. Note gasoline container, paint cans, and floor sump.

PHOTO 12: Inside basement of 507 E. Washington looking at water in swamp. Note broken concrete floor slab and exposed soil.

PHOTO 13: View of small basement room looking SE at corner of room. Left wall is outside east wall and right wall is interior wall with crawl space beyond.

PHOTO 14: View from small basement room into crawl space below northeast corner of house.

PHOTO 15: View of window along south wall of basement. There are several gaps between window frame and bricks & cinder blocks in this area and throughout basement.

PHOTO 16: View of entrance to basement from south exterior of house.

Appendix D
Field Sample Forms

Wednesday, 10/15/08

Rainy, expecting thunderstorms

0630 - K. Klemm (GF) and K. Pickett (RAM) onsite to prep for soil vapor sampling.

0637 - C. Johnson (Soil Essentials) onsite. Will begin at 505 E. Washington St.

0910 - Spoke to Ameren. Given permission to begin work. Residents know that we will be present.

0715 MW in front of 507 E. Washington GW @ 28+'

0720 Setup on VP505 E.Wash-1 at 6' BGS #36555 Canister #
IV = 27.4 lift up 6-8"

0805 Setup on VP505 E.Wash-2 at 6' BGS lift up 6-8" - too tight did not sample lift up another 10-12" & reattach on point

0855 End of VP505 E.Wash-2 sampling

0900 Performed basement survey at 507 E. Washington

0915 Set up on VP507 E.Wash-1 between homes at 505 & 507 E.Wash.
0940 - too tight - no flow purge lift up 6" (cont on p13)

Changa.

Soil Vapor Sampling Details

Sample ID/ Location	Canister #	Init Vac.	Final Vac.	Purge Vol (mL)	Sample Start	Sample Stop
VP505 E.Wash-1 (6')	36555	27.4	5.0	125	0755	080202
VP505 E.Wash-2 (6') (5.5')	36553	27.1	—	125	1st attempt 2nd attempt	
(4.5') "	"	"	5.0	150	084745	085356
VP507 E.Wash-1 (6')	34167	27.4		170	1st attempt	
(5') "	"	"		170	2nd attempt	
(4') "	"	"		570	3rd attempt	
VP507 E.Wash-2 (6')	"	"		170	1st attempt	
(5') "	"	"	5.0	380	104430	105146
VP507 E.Wash-F	2085	28.9	5.0	—	105800	110345
VP507 E.Wash-3 (6')	36522	28.4	~~5.0~~	300	1st attempt	
(5.5) "	"	"		7	2nd attempt	
(5') "	"	"		700	3rd attempt	
"	"	28.4	5.0	115511	114800	
VP412 E.Hill-1 (7')	34081	28.9		310	1st attempt	
(6.5') "	"			610	2nd attempt	
"	"	18	5.0	1310	55	132920
"				900	3rd attempt	
VP412 E.Hill-2	2219	27.7	—	1280	—	—
"	"	"	—	1500	—	—
"	"	"	5.0	1800	1436:02	1441:...
VP412 E.Hill-3 (4.5')	36494	29.0	5.0	340	152700	1531:4...
VP507 E.Wash-1 (3.5')	(33727)	27.5	5.0	920	1636:10	1642:2...
VP507 E.Wash Ambient		28.0	5.0	—	1658:20	1715:3...

Vapor Probe Locations

VP505E.Wash-1 (backyard)
27" south from S. wall of basement
57" west of W. wall of basement entrance
20'2" east of SWC of outside basement corner
29" east of E. edge of A/C slab

Note - Photo of oven cleaner & tire shine cans on window seal of basement

VP505 E.Wash-2 (westside)
12' 4" ~~ft~~ N of SWC of outside basement corner
19" west of west wall of basement

VP507E. Wash-2 (backyard)

KK

10/15/08 (continued)

0945 tight during purge - lifted up another 6-8" (at ~~5~~'bgs)

1015 setup with Geoprobe rig on VP507E.Wash-2 in backyard at 6' bgs
tight on 1st attempt
pulled up to 5' bgs

1055 Setting up to take duplicate at VP507EWash-2 (-F), no add'l purge

1110 Moving to next location

1115 Driving probe to 6' bgs at VP507EWash-3 (east side of house)

1120 too tight pulled up to 5.5' bgs

1135 too tight pulled up to 5' bgs

1240 Setting up on VP412EHill-1 (backyard) at 7' BGS - too tight pulled up 6-8", too tight pulled up another 6-8"

1350 - Set up at VP412EHill-2, Drove point down to 5.5 ft bgs, but could not purge at sample depth of 5.0 (to bottom of rod). Pulled up 6", then 8", then 6" (bottom of rod at approx. 3'-10" bgs.

~~1350 ##.~~

KK

10/15/08 (continued)

1432 - Able to complete VP 412EHILL-2 with bottom of rod at ~~3~~ 3' 10"

1505 Set up to Sample VP 412EHILL-3 in front yard at 4.5' bgs
1535 completed sampling

1605 Set up to Sample VP507EWash-1 @ 6' bgs on west side of house (moved closer to house from previous location between 505 & 507 E. Washington) pulled up ≈ 8". Tight pulled up another 6". Tight pulled up to 4' bgs. Tight pulled up to 3.5' bgs.

1655 Set up for Ambient Sample in 6-L Summa. Placed sample cannister near VP507EWash-1.

1736 - Site cleanup complete Gate to former Ameren facility locked. Depart from site.

Thursday, 10/16/08

45°F, Sunny

0740 - Depart from Champaigne to Alton, IL

1052 - K. Klemm (GF) onsite at Alton site for soil vapor well sampling.

1100 - VW-1 is submerged in puddle. Will attempt to remove standing water, allow to dry, and return later to sample.

1223 - Water encountered while purging VW-1. Will attempt to purge out as much water as possible, but will not be able to sample today.

1227 - Removed approx 60mL water from VW-1 tubing, but droplets remain trapped inside.

1611 - Sampling completed. Difluoroethane was used as tracer during all sample collection

1650 - Site cleanup completed. Depart from site.

10/15/08
[initials]

Champaign Location
412 E. Hill

VP 412 E Hill-1 34" north of northernmost wall
10' 2" east of patio slab
10' west of NEC of house

VP412 E Hill-2
40" east of east wall of house
7'10" south of NEC of house

VP 412 E Hill-3
40" South of cinder block supporting porch
between SEC of porch & entrance ramp
onto porch
8' 3" ~~east~~ west of SEC of porch

VP 507 E. Wash-2
38" south of south wall
16'9" ~~west~~ east of SWC of house

VP 507 E Wash-3
42" east of eastermost wall
14' South of NEC of house
14' North of SEC of house

VP 507 E WASH-1
29" west of west wall
12'6" South of NWC of house
15' 10" North of SWC of house

Field Forms and Check lists
for
Manufactured Gas Plant Sites

Developed for:

Ameren Services
One Ameren Plaza
1901 Chouteau Avenue
P.O. Box 66149, MC 602
St. Louis, MO 63166-6149

Developed by:

Risk Assessment & Management (RAM) Group, Inc.
5433 Westheimer, Suite 725, Houston, TX 77056
Ph: (713) 784-5151
Fax: (713) 784-6105
www.ramgp.com

MGP Site Name:	Ameren- Champaigne, IL
Ameren:	
Date:	10/15/08
Prepared By:	
Completed On:	

MGP Site:		
Table of Contents		
Form	**Description**	**Check box if**
Field Forms and Checklists		
Form 1	Building Characteristics to be Determined Before Finalization of Work Plan	☐
Form 2	Location of Soil, Soil Vapor, and Geotechnical Data to be Collected	☐
Form 3	Summary of Data Collected	☐
Form 4.1	Preparation of Subsurface Soil/Sub-slab Vapor Sampling	☐
Form 4.2	Vapor Sampling Analysis and Equipment Checklist	☐
Form 5	Vapor Sampling Field Documentation Checklist	☐
Form 6	Soil Vapor Sampling Documentation During Sampling	☐
Form 7	Geotechnical Parameters	☐

Building Characteristics to be Determined Before Finalization of Work Plan | **Form 1**

Building Identification					
Ownership					
Age of Building					
Number of Floors (Yes/No)					
Number of Elevators (Yes/No)					
First Floor Footprint Dimensions (L x W in ft)					
Crawl Space Dimensions (L x W x H in ft)					
Basement Footprint Dimensions (L x W in ft)					
Basement Height (ft)					
Basement Height Above Ground Surface (ft)					
First Floor Height (ft)					
Basement Floor Type					
Thickness of Basement Walls (ft)					
Thickness of Slab (ft)					
Condition of Slab					
Vapor Barrier (Yes/No)					
Post-Tension Slab (Yes/No)					
Sump Characteristics					
HVAC Characteristics					
Information on Doors/Windows					
Locations of floor drains, sinks, toilets on lowest floor of building					
As-Built Drawings or Plans Reviewed (Yes/No)					
Exposure Characteristics:					
Building Activities-General					
First Floor Activities					
Basement Activities					
Number of Workers					
Work-week number of days					
Work-day number of hours					

Note: Add additional sheets for relevant comments/information; Locate all buildings on a site map.

MGP Site:

Location of Soil, Soil Vapor, and Geotechnical Data to be Collected

Form 2

Boring Name	P/T	GW Table Range__to__(ft bgs) Depths (ft bgs)			TO-15: Full-suite ~~BTEX~~ with Naphthalene and Difluoroethane	Styrene	Acenaphthene	Anthracene	Fluorene	Naphthalene	Other Chemicals**	Soil Samples	Bio-Indicators***	Geotechnical Samples
					Yes/No									
SB-1*	P	3-5	7-9	10-12	Yes	Yes	No	No	No	No	Yes	Yes	Yes	Yes
VP507EWASH -1	T	≈3.5ft			X									
VP505EWASH -1	T	≈5.5ft			X									
VP507EWASH -2	T	5ft			X									
VP507EWASH -F	T	5ft			X									
VP412EHILL -2	T	3ft-10in			X									
VP505EWASH -2	T	≈4.5ft			X									
VP507EWASH -3	T	5ft			X									
VP412EHILL -3	T	4.5ft			X									
VP412EHILL -1	T	≈6ft			X									
*														
Total Number of Samples					0	0	0	0	0	0	0	0	0	0

Notes: P-Permanent sampling probes; *Completed for illustration only; **Provide details in comments section;
T-Temporary sampling probes; ***Bio-indicators (O_2, CO_2, N_2, CH_4 etc.) for evaluation of biodegradation. Provide details in comments; For Geotechnical methods see Form 7.
For PAHs-Use methods in Section 3.4.6.2 in SOP; For VOCs and Naphthalene-Use methods in Section 3.4.6.1 in SOP. □

Comments:

One ambient sample also collected (VP507EWASHCAMBIENT) in area immediately adjacent to VP507EWASH1.

VP507EWASH-F was collected in same location as VP507EWASH-2.

MGP Site:

Summary of Data Collected

Form 3

Number	Activity	Planned	Lab (F, M, B)	Actual	Lab (F, M, B)
1	Method of Drilling	Geoprobe PRT	NA	Geoprobe PRT	NA
2	Number of Permanent Probes		NA		NA
3	Number of Temporary Probes		NA		NA
4	Number of Soil Vapor Samples	8 + 1 Duplicate	F	8 + 1 Duplicate	F
5	Number of Soil Samples				
6	Number of Geo-technical Samples				
7	Number of Bio-indicator Samples				
8	Number of Sub-slab vapor Samples				

Notes: F - Fixed Laboratory; M - Mobile Laboratory; B - Both Fixed and Mobile Laboratories; NA - Not Applicable.

MGP Site:

Preparation of Subsurface Soil/Sub-slab Vapor Sampling

Form 4.1

Pre-Sampling Activities:	Yes	No	N/A
Access from Property Owners/Tenants	☑	☐	☐
State One-call Contacted	☑	☐	☐
Subsurface Utilities Marked	☑	☐	☐
Site Drawings/Plans/As-builts Reviewed	☐	☐	☑
Proposed Sample Locations Accessible	☑	☐	☐
Proposed Sample Locations Approved by	☑	☐	☐
• Site Owner	☑	☐	☐
• Tenant	☑	☐	☐
• Client	☑	☐	☐
• Regulatory Agency	☑	☐	☐
• Other			

Site visitors included Ameren, Illinois EPA, PSC, activist groups,

Other Ameren or Site-Specific Requirements:

MGP Site:

Vapor Sampling Analysis and Equipment Checklist

Form 4.2

Vapor Laboratory Analysis:	Yes	No	N/A
Mobile Lab	☐	☐	☑
Permanent Lab	☑	☐	☐
RLs ≤ Regulatory Target Levels	☒	☐	☐
Vapor Sampling Equipment:			
Tedlar Bags	☐	☑	☑
Syringes	☑	☐	☐
Tubes and Cartridges	☐	☐	☑
Summa Canisters	☑	☐	☐
Flow Controller	☐	☐	☑
Tubing Type			
• Nylon	☐	☐	☑
• Teflon	☑	☐	☐
• Other			

Leak Test Methods:

	Yes	No	N/A
Containment	☐	☐	☑
Helium (Recommended)	☐	☐	☑
2-propanol	☐	☐	☑
Lab Grade of Tracer Gas	☑	☐	☐

Other

Difluoroethane used as leak detector compound

Air Pumps

N/A

Connectors

All fittings were 1/4" Swagelok (stainless steel)

Note: RL - Laboratory Reporting Limits.

MGP Site:

Vapor Sampling Field Documentation Checklist

Form 5

Field Personnel:	Keith Klemm (Gannett Fleming), Kendall Pickett (RAM Group) Cory Johnson (Soil Essentials)
Weather Conditions: Raining, Humidity Cloudiness, etc.	Cloudy in morning, changing to rain showers by noon. Showers throughout entire afternoon.
Temperature	Ranged 60°F - 70°F
Barometric Pressure	Not measured
Wind Speed and Direction	Not measured
Surface Soil Conditions: Wet Dry Moist Standing Water Frozen/Snow covered	Moist to wet
Chain of Custody Forms Completed:	1 COC for Air Toxics, LTD
Shipment Method and Tracking Numbers:	FedEx overnight

Do not collect soil vapor samples during or within 3 days of a significant rain event.

p. 1 of 3

MCL Site:

Form 6

Soil Vapor Sampling Documentation During Sampling

Sample ID & Interval	VP507EWASH-1	VP507EWASH-2	VP507EWASH-3	VP507EWASH-F
Sample Dates/Times	10/15/08 1642	10/15/08 1051	10/15/08 1155	10/15/08 1103
Equilibration Time				
Purging:				
Volume Purged	570 mL	380 mL	700 mL	N/A - Duplicate for 507 EWASH-2
Flow Rate	~~<200 mL/min~~ <60mL/min	<60 mL/min	<60 mL/min	<60 mL/min for 507 EWASH-2
Time Interval	≈ 70 sec	≈ 45 sec	≈ 80 sec	N/A
Canister	N/A			
Pump	N/A			
Other				
Leak Testing:				
Surface Seal	Hydrated bentonite			
Bucket Containment	N/A			
Tracer Chemical	Difluoroethane			
Tracer gas labgrade (Yes/No)	No			
Onsite Measurement	No			
Lab Measurement	Yes (Air Toxics, LTD)			
Pre-sample test	N/A			
Post-sample test	N/A			
Field Adjustment Performed ?*	N/A			
Sample Collection:**				
Sample Volume	1-Liter			
Beginning Vacuum	27.5	27.4	28.4	28.9
Ending Vacuum	5.0 in. Hg			
Flow Rate	<200mL/min			
Sample Container	Summa Canister batch certified			

Notes:
* Includes inspection of probe and other system components.
** Refer to Sections 3.4.6.1 and 3.4.6.2 of SOP for details. ** For sub-slab sampling refer to Section 4 of SOP.

MGP Site:

Soil Vapor Sampling Documentation During Sampling				Form 6
Sample ID & Interval	VP412 EHILL-1	VP412 EHILL-2	VP412EHILL-3	VP 505E NASH-1
Sample Dates/Times	10/15/08 1329	10/15/08 1441	10/15/08 1531	10/15/08 0802
Equilibration Time				
Purging:				
Volume Purged	900 ML	1800 ML	340 ML	125 ML
Flow Rate	<60 ML/MIN	<60 ML/MIN	<60 ML/MIN	<60 ML/MIN
Time Interval	≈ 100 sec	≈ 200 sec	≈ 50 sec	≈ 20 sec
Canister	~~34081~~ NA	~~2219~~ NA	~~36494~~ NA	~~36555~~ NA
Pump	NA	NA	NA	NA
Other				
Leak Testing:				
Surface Seal	Hydrated bentonite	→	→	→
Bucket Containment	NA	NA	NA	NA
Tracer Chemical	Difluoroethane	→	→	→
Tracer gas labgrade (Yes/No)	No	No	No	No
Onsite Measurement	No	No	No	No
Lab Measurement	Yes (AirToxics Ltd)	→	→	→
Pre-sample test	NA	NA	NA	NA
Post-sample test	NA	NA	NA	NA
Field Adjustment Performed ?*	NA	NA	NA	NA
Sample Collection:**				
Sample Volume	1 Liter	1 Liter	1 Liter	1 Liter
Beginning Vacuum	28.9	27.7	28.0	27.4
Ending Vacuum	5.0	5.0	5.0	5.0
Flow Rate	< 200 ML/MIN	→	→	→
Sample Container	SUMMA Canister (batch certified)	→	→	→

Notes:
* Includes inspection of probe and other system components.
** Refer to Sections 3.4.6.1 and 3.4.6.2 of SOP for details. ** For sub-slab sampling refer to Section 4 of SOP.

MGP Site:

Soil Vapor Sampling Documentation During Sampling				Form 6
Sample ID & Interval	VP505 EWASH-2	VP505 EWASH (AMBIENT)		
Sample Dates/Times	10/15/08 0853	10/15/08 1715		
Equilibration Time				
Purging:				
Volume Purged	170 ML	NA		
Flow Rate	< 60 ML/MIN	NA		
Time Interval	≈ 25 sec	NA		
Canister	~~36553~~ NA	NA		
Pump	NA	NA		
Other				
Leak Testing:				
Surface Seal	Hydrated bentonite	NA		
Bucket Containment	NA	NA		
Tracer Chemical	Difluoroethane	→		
Tracer gas labgrade (Yes/No)	No	No		
Onsite Measurement	No	No		
Lab Measurement	Yes (AirToxics Ltd)	→		
Pre-sample test	NA	NA		
Post-sample test	NA	NA		
Field Adjustment Performed ?*	NA	NA		
Sample Collection:**				
Sample Volume	1 Liter	6 Liter		
Beginning Vacuum	27.1	28.0		
Ending Vacuum	5.0	5.0		
Flow Rate	< 200 ML/MIN	≈ 350 mL/min		
Sample Container	SUMMA Canister (batch	certified) →		

Notes:
* Includes inspection of probe and other system components.
** Refer to Sections 3.4.6.1 and 3.4.6.2 of SOP for details. ** For sub-slab sampling refer to Section 4 of SOP.

Appendix E
Basement Survey Forms

INDOOR AIR BUILDING SURVEY FORM PAGE 1 OF 4

Building Address: 505 E. Washington

Property Contact: Pearl Buchanan Samuels Owner / Renter / other: ______

Contact's Phone: home ( ) ______ work (217) 351-9847 cell ( ) ______

Building occupants: Children under age 13 ~~8~~ 16 day / 10 night Children age 13-18 0 Adults 2

How long in this residence? 17-18 yrs – till midnight naps in basement

History of wet basement or flooding? 1250 SF

No

General Description of Building Construction and Materials:

How many occupied stories does the building have? 1+ Basement 4BR 2 Baths

Does someone sleep in the basement? 1

Has the building been weatherized with any of the following? (Circle all that apply)

Insulation (attic) Storm Windows Energy-Efficient Windows Other (specify) ______

Approximately how much of the basement is below grade level? ≈ 4' below grade

Total wall area: 30×7×2 + 22×7×2 = 728 SF.

Total wall area in contact with soil: 7' Ceiling in basement

30×4×2 + 22×4×2 = 416 SF

Basement Floor Description:

1 Bedroom Bath Laundry Day-Care

1 ofc Pantry Kitchen

Basement Walls Description:

Paneled wall & wafer board on concrete

Moisture, water, or wet floors or walls observed or sensed:

No

Is a basement sump present? (Y/N) Laundry Room Sufficient water for sampling? (Y/N) ? Covered, could not access

Sump Construction: ______

Does the basement have any observable characteristics that might permit soil vapor entry? (i.e. cracks in concrete, crack at wall/floor, pipe penetrations):

Floor in good condition

Plumbing pipes in laundry room, bath room & kitchen in basement

5 Rooms in basement

12 paces E-W (≈38')

9 paces N-S (≈28')

Building address: 505 E. Washington
Date: 10/15/08

INDOOR AIR BUILDING SURVEY FORM PAGE 2 OF 4

Heating and Ventilation System(s) Present

Central Air - Energy Efficient

What type of heating system(s) are used in this building? (Circle all that apply)

Hot Air Circulation | Heat Pump | Stream Radiation | Wood Stove
Hot Air Radiation | Unvented Kerosene heater | Electric Baseboard | Other (specify) ______

What type(s) of fuel(s) are used in this building? (Circle all that apply)

Natural Gas | Electric | Coal | Other (specify) ______
Fuel Oil | Wood | Solar

What type of mechanical ventilation systems are present in the building? (Circle all that apply)

Central Air Conditioning | Mechanical Fans | Bathroom Ventilation Fan
Individual Air Conditioning Units | Kitchen Range Hood | Air-to-Air Heat Exchanger
Open windows | Other (specify) ______

Do any occupants of the building smoke? *Yes / No* How often? Daily

Has anyone smoked within the building within the last 48 hours? *Yes / No*

Do the occupants of the building have their clothes dry-cleaned? *Yes / No*

When were dry-cleaned clothes last brought into the building? Last week

Have the occupants ever noticed any unusual odors in the building? *Yes / No*

Describe (with location): End of June/July - outside foul smells

Any known spills of a chemical immediately outside or inside the building? *Yes / No*

Describe (with location): ______

Has the building been treated with any insecticides/pesticides? If so, what chemicals are used and how often are they applied? Once per month

Do any of the occupants apply pesticides/herbicides in the yard or garden? If so, what chemicals are used and how often are they applied? No

Any use of chemicals not listed above? *Yes* / No

Building address: 505 E. Washington
Date: 10/15/08

INDOOR AIR BUILDING SURVEY FORM PAGE 3 OF 4

Indoor Contaminant Sources

Identify all potential indoor sources found on the first floor and basement levels, the location of the sources, and whether the item was removed from the building at least 48 hours prior to indoor air sampling event.

Potential Sources	Location(s)	Removed Prior to Sampling? (Yes / No / NA)
Gasoline storage cans	outside shed	Y
Gas-powered equipment	" Lawn mower	Y
Kerosene storage cans	" Torches	Y
Paints / thinners / strippers		N
Cleaning solvents	Laundry room & upstairs	Y
Oven cleaners	" "	Y
Carpet / upholstery cleaners		N
Moth balls		N
Polishes / waxes	Wax Laundry Rm	Y
Insecticides		N
Furniture / floor polish	Laundry Rm	Y
Nail polish / polish remover	Upstairs Bedrm	Y
Hairspray	" Bath	Y
Cologne / perfume	" Bedrm	Y
Air fresheners	Laundry & upstairs	Y
Hobbies - glues, paints, etc.	Basement ofc	Y
Fireplace		N NA
Wood stove or kerosene burner		N NA
New furniture / upholstery	New table - upstairs	Y NA
New carpeting / flooring	Linoleum tile in basement	Y NA
Recent painting in building?		N NA
Medical Equipment		N NA

INDOOR AIR BUILDING SURVEY FORM PAGE 4 OF 4

Indoor Contaminant Sources – Did not perform survey with meter

Identify all potential indoor sources as detected by the ppbRAE located on the first floor and basement levels, the location of the sources. Provide a brief description of source and the two PID responses obtained from the initial and follow-up screenings.

Location Number	Location	Brief Description	ppbRAE Response (initial screening)	ppbRAE Response (follow-up screening)
1				
2				
3				
4				
5				
6				
7				
8				
9				
10				
11				
12				
13				
14				
15				
16				
17				
18				
19				
20				
21				
22				
23				
24				
25				
26				
27				
28				
29				
30				
31				
32				
33				

MGP Site:

Building Characteristics to be Determined Before Finalization of Work Plan — **Form 1**

Building Identification					
Ownership	Nina Sibley				
Age of Building					
Number of Floors (Yes/No)	1 + basement				
Number of Elevators (Yes/No)	No				
First Floor Footprint Dimensions (L x W in ft)					
Crawl Space Dimensions (L x W x H in ft)	No				
Basement Footprint Dimensions (L x W in ft)					
Basement Height (ft)	7'				
Basement Height Above Ground Surface (ft)	4-5'				
First Floor Height (ft)	8'				
Basement Floor Type	Linoleum Tile				
Thickness of Basement Walls (ft)					
Thickness of Slab (ft)					
Condition of Slab					
Vapor Barrier (Yes/No)	No				
Post-Tension Slab (Yes/No)	No				
Sump Characteristics					
HVAC Characteristics					
Information on Doors/Windows	Storm windows & doors				
Locations of floor drains, sinks, toilets on lowest floor of building					
As-Built Drawings or Plans Reviewed (Yes/No)					
Exposure Characteristics:					
Building Activities-General	Residence & Day Care				
First Floor Activities	Residence				
Basement Activities	Day Care & Residence				
Number of Workers	2				
Work-week number of days	M-F				
Work-day number of hours	4 & 9				

Note: Add additional sheets for relevant comments/information; Locate all buildings on a site map.

INDOOR AIR BUILDING SURVEY FORM PAGE 1 OF 4

Building Address: 507 E. Washington

Property Contact: NA Owner / Renter / other: Vacant

Contact's Phone: home ( ) ______ work ( ) ______ cell ( ) ______

Building occupants: Children under age 13 0 Children age 13-18 0 Adults 0

How long in this residence? NA

History of wet basement or flooding?

?

General Description of Building Construction and Materials:
basement: Brick walls, concrete slab, wood frame 1st floor with vinyl siding and composition roof. 1 Story + basement (Brick below grade, cinder block above grade) 8"-thick cinder block

How many occupied stories does the building have? 0
Does someone sleep in the basement? 0

Has the building been weatherized with any of the following? (Circle all that apply)
Insulation Storm Windows Energy-Efficient Windows Other (specify) ______

Approximately how much of the basement is below grade level? 4' 8' ceiling Footprint of house: 40'x28'
Total wall area: 13 paces x 9 paces
EW NS
Total wall area in contact with soil: Less 6'x16' offset in NEC of basement

Basement Floor Description:
Concrete slab, cracked, broken, exposed soil areas, poor condition
One sump with debris & standing water about 6-8" below floor of

Basement Walls Description:
Brick, Deteriorated, holes, gaps around window frames & outside Doorframe, No door, storm door with open frame, poor condition

Moisture, water, or wet floors or walls observed or sensed:

No

Is a basement sump present? (Y/N) Y Sufficient water for sampling? (Y/N) Y
Sump Construction: ______

Does the basement have any observable characteristics that might permit soil vapor entry? (i.e. cracks in concrete, crack at wall/floor, pipe penetrations):

Cracked floors, cracked walls, holes in walls, gaps between bricks & mortar, exposed soil through floor

Central heat - gas in basement
Hot water heater - gas in basement
Basement (footprint of house less 6'x16' offset (NEC of basement)

Building address: 507 E. Washington
Date: 10/15/08

INDOOR AIR BUILDING SURVEY FORM PAGE 2 OF 4

Heating and Ventilation System(s) Present

What type of heating system(s) are used in this building? (Circle all that apply)

Hot Air Circulation | Heat Pump | Stream Radiation | Wood Stove
Hot Air Radiation | Unvented Kerosene heater | Electric Baseboard | Other (specify) ____

New

What type(s) of fuel(s) are used in this building? (Circle all that apply)

Natural Gas | Electric | Coal | Other (specify) ____
Fuel Oil | Wood | Solar

What type of mechanical ventilation systems are present in the building? (Circle all that apply)

Central Air Conditioning | Mechanical Fans | Bathroom Ventilation Fan
Individual Air Conditioning Units | Kitchen Range Hood | Air-to-Air Heat Exchanger
Open windows | Other (specify) ____

Do any occupants of the building smoke? *Yes / No* How often? NA

Has anyone smoked within the building within the last 48 hours? *Yes / No* NA

Do the occupants of the building have their clothes dry-cleaned? *Yes / No* NA

When were dry-cleaned clothes last brought into the building? NA

Have the occupants ever noticed any unusual odors in the building? *Yes / No* NA

Describe (with location): ____

Any known spills of a chemical immediately outside or inside the building? *Yes / No*

Describe (with location): Foul odors in backyard due to moldy belongings on lawn exposed to weather, Musty odors in basement

Has the building been treated with any insecticides/pesticides? If so, what chemicals are used and how often are they applied? ?

Do any of the occupants apply pesticides/herbicides in the yard or garden? If so, what chemicals are used and how often are they applied? ?

Any use of chemicals not listed above? *Yes / No*

Noted gasoline plastic containers and paint cans in basement

Building address: 507 E. Washington
Date: 10/15/08

INDOOR AIR BUILDING SURVEY FORM PAGE 3 OF 4

Indoor Contaminant Sources

Identify all potential indoor sources found on the first floor and basement levels, the location of the sources, and whether the item was removed from the building at least 48 hours prior to indoor air sampling event.

Potential Sources	Location(s)	Removed Prior to Sampling? (Yes / No / NA)
Gasoline storage cans	basement	Y
Gas-powered equipment		
Kerosene storage cans		
Paints / thinners / strippers	basement	Y
Cleaning solvents		
Oven cleaners		
Carpet / upholstery cleaners		
Moth balls		
Polishes / waxes		
Insecticides		
Furniture / floor polish		
Nail polish / polish remover		
Hairspray		
Cologne / perfume		
Air fresheners		
Hobbies - glues, paints, etc.		
Fireplace		NA
Wood stove or kerosene burner		NA
New furniture / upholstery		NA
New carpeting / flooring		NA
Recent painting in building?		NA
Medical Equipment		NA

INDOOR AIR BUILDING SURVEY FORM PAGE 4 OF 4

Indoor Contaminant Sources – Did not perform survey with meter

Identify all potential indoor sources as detected by the ppbRAE located on the first floor and basement levels, the location of the sources. Provide a brief description of source and the two PID responses obtained from the initial and follow-up screenings.

Location Number	Location	Brief Description	ppbRAE Response (initial screening)	ppbRAE Response (follow-up screening)
1	Basement	Gasoline & Paint Cans		
2				
3				
4				
5				
6				
7				
8				
9				
10				
11				
12				
13				
14				
15				
16				
17				
18				
19				
20				
21				
22				
23				
24				
25				
26				
27				
28				
29				
30				
31				
32				
33				

MGP Site:

Building Characteristics to be Determined Before Finalization of Work Plan					Form 1
Building Identification					
Ownership	?				
Age of Building	?				
Number of Floors (Yes/No)	1 + basement				
Number of Elevators (Yes/No)	No				
First Floor Footprint Dimensions (L x W in ft)					
Crawl Space Dimensions (L x W x H in ft)					
Basement Footprint Dimensions (L x W in ft)					
Basement Height (ft)	8'				
Basement Height Above Ground Surface (ft)	4.5'				
First Floor Height (ft)	8'				
Basement Floor Type	concrete slab				
Thickness of Basement Walls (ft)					
Thickness of Slab (ft)					
Condition of Slab	Poor, cracked, exposed soil				
Vapor Barrier (Yes/No)	No				
Post-Tension Slab (Yes/No)	No				
Sump Characteristics					
HVAC Characteristics	gas unit in basement, duct work to 1st Floor				
Information on Doors/Windows	Standard				
Locations of floor drains, sinks, toilets on lowest floor of building	Sump in basement, No drains, sinks, toilets in basement				
As-Built Drawings or Plans Reviewed (Yes/No)	No				
Exposure Characteristics:					
Building Activities-General	Vacant				
First Floor Activities	None				
Basement Activities	None				
Number of Workers	None				
Work-week number of days	None				
Work-day number of hours	None				

Note: Add additional sheets for relevant comments/information; Locate all buildings on a site map.

10/15/08
[initials]

Basement at 507 E. Washington Survey
- Sump with auto
- Brick walls
- Concrete slab floor with cracks & exposed soil,
- two separate rooms
- not used for living quarters or human activity
- musty odors
- gas hot water heater
- gas furnace
- floor about 4.5' below grade
- cracks around windows along brick
- one window boarded
- holes in walls to outside
- Storm door entrance from back yard
- No entrance from surface
- 14 paces - side to side entire basement
- 1.5-2.0 foot ledge about 3' above floor all around
- utility entrances in basement walls
- new furnace
- paint cans
- gasoline can

large room [
- 7 paces on floor front to back
- 9 paces on floor side to side

Small room - 3 x 3 paces on floor

Building Address	412 East Hill Street Champaign, IL 61820	**Ownership**	Willie Claiborne 410 East Hill Street Champaign, IL 61820

Rental Tenant (Y N) Alvia Dyson **Number/Type Residents** 2 Adults / 1 child 3.

Construction Wood frame 1 story house with 1/2 basement and 1/2 crawlspace
Age of Building ________ years

Number of Floors/Description 1 story, 1/2 basement, 1/2 crawlspace
First Floor Footprint Length 36' Width 28' Height ____
Second Floor (if applicable) Length ____ Width ____ Height ____

BASEMENT
Location Length 20 / 7 Width 11' = 220 ft2 / 4.5' = 66 ft2 / 286 ft2
Finished Yes No
Basement Height Total Floor to Ceiling 6' Below ground 5' Above ground 1'
Floor Type Concrete Thickness 3.5"
Wall Type Brick w/ outer facing Thickness ~3.5"

Condition of Floor Cracks Wet Damp Dry
Additonal Description ____

Vapor Barrier Yes No **Description** ____
Sump Yes No
Dimensions 14 x 14", 12" deep from top of slab
Additional Description ~4" water. Sump pump. Sampled 9/15/08 - non-detect

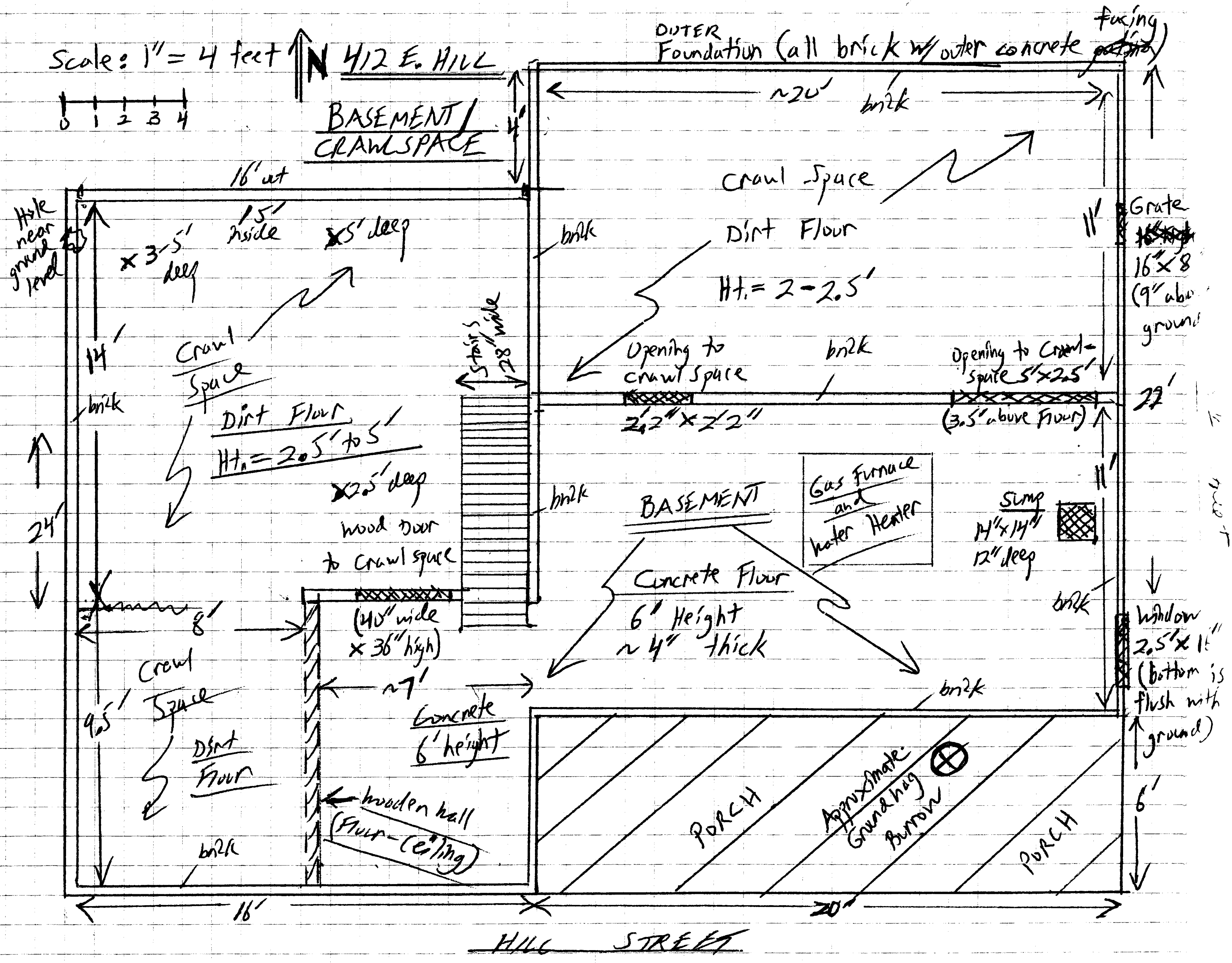
Floor Drains Yes No **Location** ____
Sinks/Toilets Yes No **Location** ____
Additional Description ____
Basement Door Location Stairs (28" wide) at west-central (center of house)
Basement Windows Yes No **Number** 1

	Location	Dimension	Aboveground	Belowground
Location Window 1	S. end of E. wall	16 x 30"	Flush	NO
Location Window 2				
Location Window 3				

CRAWL SPACE
Location Length 20' / 15' / 8 Width 11' NE = 220 ft2 / 14' NW = 210 ft2 / 9.5' SW = 76 ft2
Access Point multiple
Floor Type DIRT **Floor Thickness** ____
Additional Description Crawl space ht. ranges from 2 to 5 foot; Avg ≈ 2.5 - 3'
Vapor Barrier Yes No **Description** ____
Heating System in Basement Yes No
Type of System Forced Air / Gas Furnace
Location of System center of basement

Observable Entry Points for Soil Vapor Entry
Cracks in Floor Yes No
Cracks in Wall Yes No Brick w/ old mortar
Floor/Wall Intersection Cracks Yes No
Pipe Penetrations Yes No

Surveyed by: Stu Cravens / Kelron Env. Date: 10/22/08
Signature: [signature] Time In/Out 5:05 / 5:55 pm



Scale: 1" = 4 feet
0 1 2 3 4
N
412 E. HILL
BASEMENT / CRAWLSPACE
OUTER Foundation (all brick w/ outer concrete facing)
~20'
brick
Crawl Space
Dirt Floor
Ht. = 2-2.5'
Grate 16" x 8 (9" above ground)
11'
Opening to crawl space
2'2" x 2'2"
Opening to Crawl-space 5' x 2.5' (3.5" above Floor)
22'
4'
16' out
15' inside
Hole near ground level
x 3-5' deep
x 5' deep
14'
Crawl Space
Dirt Floor
Ht. = 2.5' to 5'
x 2.5' deep
wood Door to Crawl space
Stairs 28" wide
(40" wide x 36" high)
24'
8'
Crawl Space
Dirt Floor
9.5'
~7'
Concrete 6' height
wooden wall (Floor-ceiling)
BASEMENT
Gas Furnace and water Heater
Concrete Floor
6' Height
~4" thick
Sump 14" x 14" 12" deep
Window 2.5' x 1.5' (bottom is flush with ground)
6'
PORCH
Approximate Groundhog Burrow
PORCH
16'
20'
HILL STREET

Appendix F
Laboratory Analytical Report and Chain of Custody Form

AN ENVIRONMENTAL ANALYTICAL LABRATORY

10/31/2008
Mr. Kendall Pickett
Gannett Fleming
5433 Westheimer Road
Suite 725
Houston TX 77056-5312

Project Name: Ameren - Champaign
Project #: 050067

Dear Mr. Kendall Pickett

The following report includes the data for the above referenced project for sample(s) received on 10/18/2008 at Air Toxics Ltd.

The data and associated QC analyzed by Modified TO-15 are compliant with the project requirements or laboratory criteria with the exception of the deviations noted in the attached case narrative.

Thank you for choosing Air Toxics Ltd. for you air analysis needs. Air Toxics Ltd. is committed to providing accurate data of the highest quality. Please feel free to contact the Project Manager: Bryanna Langley at 916-985-1000 if you have any questions regarding the data in this report.

Regards,

Bryanna Langley

Bryanna Langley
Project Manager

180 BLUE RAVINE ROAD, SUITE B FOLSOM, CA - 95630
(916) 985-1000 .FAX (916) 985-1020
Hours 8:00 A.M to 6:00 P.M. Pacific

AN ENVIRONMENTAL ANALYTICAL LABORATORY

WORK ORDER #: 0810427

Work Order Summary

CLIENT:	Mr. Kendall Pickett Gannett Fleming 5433 Westheimer Road Suite 725 Houston, TX 77056-5312	**BILL TO:**	Accounts Payable Gannett Fleming 4701 Mt. Hope Dr. Suite A Baltimore, MD 21215-1883
PHONE:	(713) 784-5151	**P.O. #**	050067.C
FAX:	(713) 784-6105	**PROJECT #**	050067 Ameren - Champaign
DATE RECEIVED:	10/18/2008	**CONTACT:**	Bryanna Langley
DATE COMPLETED:	10/31/2008		

FRACTION #	NAME	TEST	RECEIPT VAC./PRES.	FINAL PRESSURE
01A	VP507EWASH-1	Modified TO-15	6.0 "Hg	15 psi
01AA	VP507EWASH-1 Lab Duplicate	Modified TO-15	6.0 "Hg	15 psi
02A	VP505EWASH-1	Modified TO-15	6.0 "Hg	15 psi
03A	VP507EWASH-2	Modified TO-15	5.5 "Hg	15 psi
04A	VP507EWASH-F	Modified TO-15	5.0 "Hg	15 psi
05A	VP412EHILL-2	Modified TO-15	6.0 "Hg	15 psi
06A	VP505EWASH-2	Modified TO-15	6.0 "Hg	15 psi
07A	VP507EWASH-3	Modified TO-15	5.0 "Hg	15 psi
08A	VP412EHILL-3	Modified TO-15	6.0 "Hg	15 psi
09A	VP412EHILL-1	Modified TO-15	6.0 "Hg	15 psi
10A	VP507EWASH(AMBIENT)	Modified TO-15	6.0 "Hg	15 psi
11A	Lab Blank	Modified TO-15	NA	NA
12A	CCV	Modified TO-15	NA	NA
13A	LCS	Modified TO-15	NA	NA

CERTIFIED BY: Linda L. Freeman DATE: 10/31/08

Laboratory Director

Certfication numbers: CA NELAP - 02110CA, LA NELAP/LELAP- AI 30763, NJ NELAP - CA004
NY NELAP - 11291, UT NELAP - 9166389892, AZ Licensure AZ0719
Name of Accrediting Agency: NELAP/Florida Department of Health, Scope of Application: Clean Air Act,
Accreditation number: E87680, Effective date: 07/01/08, Expiration date: 06/30/09
Air Toxics Ltd. certifies that the test results contained in this report meet all requirements of the NELAC standards

180 BLUE RAVINE ROAD, SUITE B FOLSOM, CA - 95630
(916) 985-1000 . (800) 985-5955 . FAX (916) 985-1020

LABORATORY NARRATIVE
Modified TO-15
Gannett Fleming
Workorder# 0810427

Seven 1 Liter Summa Canister, Two 1 Liter Summa Canister (100% Certified), and one 6 Liter Summa Canister samples were received on October 18, 2008. The laboratory performed analysis via modified EPA Method TO-15 using GC/MS in the full scan mode. The method involves concentrating up to 0.2 liters of air. The concentrated aliquot is then flash vaporized and swept through a water management system to remove water vapor. Following dehumidification, the sample passes directly into the GC/MS for analysis.

This workorder was independently validated prior to submittal using 'USEPA National Functional Guidelines' as generally applied to the analysis of volatile organic compounds in air. A rules-based, logic driven, independent validation engine was employed to assess completeness, evaluate pass/fail of relevant project quality control requirements and verification of all quantified amounts.

Method modifications taken to run these samples are summarized in the table below. Specific project requirements may over-ride the ATL modifications.

Requirement	*TO-15*	*ATL Modifications*
Daily CCV	</= 30% Difference	</= 30% Difference; Compounds exceeding this criterion and associated data are flagged and narrated.
Sample collection media	Summa canister	ATL recommends use of summa canisters to insure data defensibility, but will report results from Tedlar bags at client request
Method Detection Limit	Follow 40CFR Pt.136 App. B	The MDL met all relevant requirements in Method TO-15 (statistical MDL less than the LOQ). The concentration of the spiked replicate may have exceeded 10X the calculated MDL in some cases

Receiving Notes

There were no receiving discrepancies.

Analytical Notes

The reported CCV for each daily batch may be derived from more than one analytical file due to the client's request for non-standard compounds.

Non-standard compounds may have different acceptance criteria than the standard TO-14A/TO-15 compound list as per contract or verbal agreement.

Definition of Data Qualifying Flags

Eight qualifiers may have been used on the data analysis sheets and indicates as follows:

B - Compound present in laboratory blank greater than reporting limit (background subtraction no performed).

J - Estimated value.

E - Exceeds instrument calibration range.

S - Saturated peak.

Q - Exceeds quality control limits.

U - Compound analyzed for but not detected above the reporting limit.

UJ- Non-detected compound associated with low bias in the CCV

N - The identification is based on presumptive evidence.

File extensions may have been used on the data analysis sheets and indicates as follows:

a-File was requantified

b-File was quantified by a second column and detector

r1-File was requantified for the purpose of reissue

AN ENVIRONMENTAL ANALYTICAL LABORATORY

Summary of Detected Compounds
MODIFIED EPA METHOD TO-15 GC/MS FULL SCAN

Client Sample ID: VP507EWASH-1

Lab ID#: 0810427-01A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (uG/m3)	Amount (uG/m3)
Ethanol	5.1	6.7	9.5	13
Acetone	5.1	50	12	120
2-Propanol	5.1	15	12	37
Hexane	1.3	2.3	4.4	8.0
2-Butanone (Methyl Ethyl Ketone)	1.3	7.0	3.7	21
2,2,4-Trimethylpentane	1.3	1.5	5.9	6.9
Benzene	1.3	2.5	4.0	8.0
Heptane	1.3	3.0	5.2	12
Toluene	1.3	40	4.8	150
Ethyl Benzene	1.3	10	5.5	44
m,p-Xylene	1.3	41	5.5	180
o-Xylene	1.3	19	5.5	83
Propylbenzene	1.3	5.6	6.2	27
4-Ethyltoluene	1.3	25	6.2	120
1,3,5-Trimethylbenzene	1.3	9.2	6.2	45
1,2,4-Trimethylbenzene	1.3	33	6.2	160
1,1-Difluoroethane	5.1	7.0	14	19

Client Sample ID: VP507EWASH-1 Lab Duplicate

Lab ID#: 0810427-01AA

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (uG/m3)	Amount (uG/m3)
Ethanol	5.1	6.4	9.5	12
Acetone	5.1	51	12	120
2-Propanol	5.1	16	12	38
Hexane	1.3	2.4	4.4	8.5
2-Butanone (Methyl Ethyl Ketone)	1.3	6.2	3.7	18
2,2,4-Trimethylpentane	1.3	1.6	5.9	7.7
Benzene	1.3	2.3	4.0	7.4
Heptane	1.3	3.1	5.2	13
Toluene	1.3	38	4.8	140
Ethyl Benzene	1.3	9.8	5.5	42
m,p-Xylene	1.3	41	5.5	180
o-Xylene	1.3	19	5.5	81
Propylbenzene	1.3	5.3	6.2	26
4-Ethyltoluene	1.3	23	6.2	110
1,3,5-Trimethylbenzene	1.3	8.4	6.2	41

AN ENVIRONMENTAL ANALYTICAL LABORATORY

Summary of Detected Compounds
MODIFIED EPA METHOD TO-15 GC/MS FULL SCAN

Client Sample ID: VP507EWASH-1 Lab Duplicate

Lab ID#: 0810427-01AA

1,2,4-Trimethylbenzene	1.3	30	6.2	150
1,1-Difluoroethane	5.1	6.0	14	16

Client Sample ID: VP505EWASH-1

Lab ID#: 0810427-02A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (uG/m3)	Amount (uG/m3)
1,3-Butadiene	1.3	2.0	2.8	4.4
Ethanol	5.1	7.7	9.5	14
Acetone	5.1	51	12	120
Carbon Disulfide	1.3	2.4	3.9	7.6
Hexane	1.3	4.7	4.4	17
2-Butanone (Methyl Ethyl Ketone)	1.3	9.0	3.7	26
Cyclohexane	1.3	2.6	4.4	8.9
2,2,4-Trimethylpentane	1.3	3.1	5.9	14
Benzene	1.3	4.2	4.0	13
Heptane	1.3	4.6	5.2	19
Toluene	1.3	55	4.8	210
Ethyl Benzene	1.3	11	5.5	50
m,p-Xylene	1.3	43	5.5	190
o-Xylene	1.3	19	5.5	84
Cumene	1.3	1.3	6.2	6.6
Propylbenzene	1.3	4.8	6.2	24
4-Ethyltoluene	1.3	20	6.2	97
1,3,5-Trimethylbenzene	1.3	7.0	6.2	34
1,2,4-Trimethylbenzene	1.3	25	6.2	120

Client Sample ID: VP507EWASH-2

Lab ID#: 0810427-03A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (uG/m3)	Amount (uG/m3)
Freon 12	1.2	1.8	6.1	9.0
1,3-Butadiene	1.2	4.4	2.7	9.7
Ethanol	4.9	9.5	9.3	18
Acetone	4.9	78	12	180
2-Propanol	4.9	5.4	12	13
Carbon Disulfide	1.2	1.4	3.8	4.3
Hexane	1.2	4.0	4.4	14

AN ENVIRONMENTAL ANALYTICAL LABORATORY

Summary of Detected Compounds
MODIFIED EPA METHOD TO-15 GC/MS FULL SCAN

Client Sample ID: VP507EWASH-2

Lab ID#: 0810427-03A

2-Butanone (Methyl Ethyl Ketone)	1.2	14	3.6	40
Cyclohexane	1.2	1.5	4.2	5.3
2,2,4-Trimethylpentane	1.2	2.4	5.8	11
Benzene	1.2	4.5	3.9	14
Heptane	1.2	4.8	5.1	20
Trichloroethene	1.2	1.4	6.6	7.3
Toluene	1.2	57	4.6	220
Ethyl Benzene	1.2	14	5.4	61
m,p-Xylene	1.2	56	5.4	240
o-Xylene	1.2	26	5.4	110
Cumene	1.2	1.7	6.1	8.3
Propylbenzene	1.2	6.9	6.1	34
4-Ethyltoluene	1.2	30	6.1	150
1,3,5-Trimethylbenzene	1.2	11	6.1	55
1,2,4-Trimethylbenzene	1.2	38	6.1	190
1,1-Difluoroethane	4.9	9.9	13	27

Client Sample ID: VP507EWASH-F

Lab ID#: 0810427-04A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (uG/m3)	Amount (uG/m3)
Freon 12	1.2	1.8	6.0	8.8
1,3-Butadiene	1.2	2.3	2.7	5.0
Ethanol	4.8	10	9.1	19
Acetone	4.8	76	11	180
Hexane	1.2	3.0	4.3	11
2-Butanone (Methyl Ethyl Ketone)	1.2	11	3.6	34
Cyclohexane	1.2	1.2	4.2	4.2
2,2,4-Trimethylpentane	1.2	1.9	5.6	8.9
Benzene	1.2	3.0	3.9	9.7
Heptane	1.2	3.2	5.0	13
Toluene	1.2	40	4.6	150
Ethyl Benzene	1.2	12	5.2	51
m,p-Xylene	1.2	49	5.2	210
o-Xylene	1.2	22	5.2	98
Cumene	1.2	1.4	5.9	7.0
Propylbenzene	1.2	7.0	5.9	34
4-Ethyltoluene	1.2	31	5.9	150
1,3,5-Trimethylbenzene	1.2	12	5.9	59

AN ENVIRONMENTAL ANALYTICAL LABORATORY

Summary of Detected Compounds
MODIFIED EPA METHOD TO-15 GC/MS FULL SCAN

Client Sample ID: VP507EWASH-F

Lab ID#: 0810427-04A

1,2,4-Trimethylbenzene	1.2	43	5.9	210
1,1-Difluoroethane	4.8	7.3	13	20

Client Sample ID: VP412EHILL-2

Lab ID#: 0810427-05A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (uG/m3)	Amount (uG/m3)
1,3-Butadiene	1.3	1.3	2.8	2.9
Ethanol	5.1	9.2	9.5	17
Acetone	5.1	45	12	110
2-Propanol	5.1	20	12	50
Hexane	1.3	2.1	4.4	7.3
2-Butanone (Methyl Ethyl Ketone)	1.3	6.2	3.7	18
2,2,4-Trimethylpentane	1.3	1.5	5.9	7.2
Benzene	1.3	1.8	4.0	5.9
Heptane	1.3	1.8	5.2	7.6
Toluene	1.3	23	4.8	86
Ethyl Benzene	1.3	6.6	5.5	28
m,p-Xylene	1.3	28	5.5	120
o-Xylene	1.3	12	5.5	54
Propylbenzene	1.3	4.0	6.2	20
4-Ethyltoluene	1.3	17	6.2	83
1,3,5-Trimethylbenzene	1.3	8.5	6.2	42
1,2,4-Trimethylbenzene	1.3	25	6.2	120

Client Sample ID: VP505EWASH-2

Lab ID#: 0810427-06A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (uG/m3)	Amount (uG/m3)
1,3-Butadiene	1.3	4.2	2.8	9.4
Ethanol	5.1	10	9.5	20
Acetone	5.1	69	12	160
2-Propanol	5.1	19	12	46
Hexane	1.3	3.8	4.4	14
2-Butanone (Methyl Ethyl Ketone)	1.3	14	3.7	43
Cyclohexane	1.3	1.4	4.4	4.8
2,2,4-Trimethylpentane	1.3	2.1	5.9	10
Benzene	1.3	3.3	4.0	10

AN ENVIRONMENTAL ANALYTICAL LABORATORY

Summary of Detected Compounds
MODIFIED EPA METHOD TO-15 GC/MS FULL SCAN

Client Sample ID: VP505EWASH-2

Lab ID#: 0810427-06A

Heptane	1.3	4.2	5.2	17
Toluene	1.3	53	4.8	200
Ethyl Benzene	1.3	11	5.5	50
m,p-Xylene	1.3	46	5.5	200
o-Xylene	1.3	20	5.5	89
Propylbenzene	1.3	5.2	6.2	26
4-Ethyltoluene	1.3	21	6.2	100
1,3,5-Trimethylbenzene	1.3	10	6.2	52
1,2,4-Trimethylbenzene	1.3	28	6.2	140

Client Sample ID: VP507EWASH-3

Lab ID#: 0810427-07A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (uG/m3)	Amount (uG/m3)
1,3-Butadiene	1.2	1.8	2.7	4.0
Ethanol	4.8	16	9.1	29
Acetone	4.8	96	11	230
2-Propanol	4.8	6.6	12	16
Hexane	1.2	4.0	4.3	14
2-Butanone (Methyl Ethyl Ketone)	1.2	19	3.6	56
Cyclohexane	1.2	1.8	4.2	6.1
2,2,4-Trimethylpentane	1.2	3.2	5.6	15
Benzene	1.2	3.2	3.9	10
Heptane	1.2	4.7	5.0	19
4-Methyl-2-pentanone	1.2	1.3	5.0	5.4
Toluene	1.2	46	4.6	170
Ethyl Benzene	1.2	13	5.2	57
m,p-Xylene	1.2	52	5.2	230
o-Xylene	1.2	25	5.2	110
Cumene	1.2	1.6	5.9	7.9
Propylbenzene	1.2	7.0	5.9	34
4-Ethyltoluene	1.2	28	5.9	140
1,3,5-Trimethylbenzene	1.2	16	5.9	76
1,2,4-Trimethylbenzene	1.2	42	5.9	210

Client Sample ID: VP412EHILL-3

Lab ID#: 0810427-08A

AN ENVIRONMENTAL ANALYTICAL LABORATORY

Summary of Detected Compounds
MODIFIED EPA METHOD TO-15 GC/MS FULL SCAN

Client Sample ID: VP412EHILL-3

Lab ID#: 0810427-08A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (uG/m3)	Amount (uG/m3)
1,3-Butadiene	1.3	11	2.8	25
Ethanol	5.1	150	9.5	280
Acetone	5.1	240	12	580
2-Propanol	5.1	41	12	100
Hexane	1.3	5.8	4.4	20
2-Butanone (Methyl Ethyl Ketone)	1.3	45	3.7	130
Cyclohexane	1.3	1.7	4.4	5.9
2,2,4-Trimethylpentane	1.3	2.8	5.9	13
Benzene	1.3	4.2	4.0	14
Heptane	1.3	5.2	5.2	21
4-Methyl-2-pentanone	1.3	1.6	5.2	6.5
Toluene	1.3	52	4.8	190
Ethyl Benzene	1.3	12	5.5	52
m,p-Xylene	1.3	48	5.5	210
o-Xylene	1.3	22	5.5	94
Cumene	1.3	1.5	6.2	7.2
Propylbenzene	1.3	6.1	6.2	30
4-Ethyltoluene	1.3	26	6.2	130
1,3,5-Trimethylbenzene	1.3	9.1	6.2	45
1,2,4-Trimethylbenzene	1.3	33	6.2	160
1,1-Difluoroethane	5.1	10	14	27

Client Sample ID: VP412EHILL-1

Lab ID#: 0810427-09A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (uG/m3)	Amount (uG/m3)
1,3-Butadiene	1.3	4.1	2.8	9.2
Ethanol	5.1	26	9.5	50
Acetone	5.1	96	12	230
2-Propanol	5.1	5.8	12	14
Hexane	1.3	2.7	4.4	9.5
2-Butanone (Methyl Ethyl Ketone)	1.3	16	3.7	47
2,2,4-Trimethylpentane	1.3	1.7	5.9	8.1
Benzene	1.3	2.6	4.0	8.5
Heptane	1.3	2.5	5.2	10
Toluene	1.3	32	4.8	120
Ethyl Benzene	1.3	9.1	5.5	40

AN ENVIRONMENTAL ANALYTICAL LABORATORY

Summary of Detected Compounds
MODIFIED EPA METHOD TO-15 GC/MS FULL SCAN

Client Sample ID: VP412EHILL-1

Lab ID#: 0810427-09A

m,p-Xylene	1.3	38	5.5	160
o-Xylene	1.3	18	5.5	77
Propylbenzene	1.3	5.1	6.2	25
4-Ethyltoluene	1.3	22	6.2	100
1,3,5-Trimethylbenzene	1.3	11	6.2	56
1,2,4-Trimethylbenzene	1.3	32	6.2	160
1,1-Difluoroethane	5.1	5.4	14	15

Client Sample ID: VP507EWASH(AMBIENT)

Lab ID#: 0810427-10A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (uG/m3)	Amount (uG/m3)
Acetone	5.1	6.6	12	16
2-Propanol	5.1	9.3	12	23
Ethanol	5.1	6.0	9.5	11

AN ENVIRONMENTAL ANALYTICAL LABORATORY

Client Sample ID: VP507EWASH-1

Lab ID#: 0810427-01A

MODIFIED EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**5102908**	**Date of Collection: 10/15/08**
Dil. Factor:	**2.53**	**Date of Analysis: 10/29/08 02:20 PM**

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (uG/m3)	Amount (uG/m3)
Freon 12	1.3	Not Detected	6.2	Not Detected
Freon 114	1.3	Not Detected	8.8	Not Detected
Chloromethane	5.1	Not Detected	10	Not Detected
Vinyl Chloride	1.3	Not Detected	3.2	Not Detected
1,3-Butadiene	1.3	Not Detected	2.8	Not Detected
Bromomethane	1.3	Not Detected	4.9	Not Detected
Chloroethane	1.3	Not Detected	3.3	Not Detected
Freon 11	1.3	Not Detected	7.1	Not Detected
Ethanol	5.1	6.7	9.5	13
Freon 113	1.3	Not Detected	9.7	Not Detected
1,1-Dichloroethene	1.3	Not Detected	5.0	Not Detected
Acetone	5.1	50	12	120
2-Propanol	5.1	15	12	37
Carbon Disulfide	1.3	Not Detected	3.9	Not Detected
3-Chloropropene	5.1	Not Detected	16	Not Detected
Methylene Chloride	1.3	Not Detected	4.4	Not Detected
Methyl tert-butyl ether	1.3	Not Detected	4.6	Not Detected
trans-1,2-Dichloroethene	1.3	Not Detected	5.0	Not Detected
Hexane	1.3	2.3	4.4	8.0
1,1-Dichloroethane	1.3	Not Detected	5.1	Not Detected
2-Butanone (Methyl Ethyl Ketone)	1.3	7.0	3.7	21
cis-1,2-Dichloroethene	1.3	Not Detected	5.0	Not Detected
Tetrahydrofuran	1.3	Not Detected	3.7	Not Detected
Chloroform	1.3	Not Detected	6.2	Not Detected
1,1,1-Trichloroethane	1.3	Not Detected	6.9	Not Detected
Cyclohexane	1.3	Not Detected	4.4	Not Detected
Carbon Tetrachloride	1.3	Not Detected	8.0	Not Detected
2,2,4-Trimethylpentane	1.3	1.5	5.9	6.9
Benzene	1.3	2.5	4.0	8.0
1,2-Dichloroethane	1.3	Not Detected	5.1	Not Detected
Heptane	1.3	3.0	5.2	12
Trichloroethene	1.3	Not Detected	6.8	Not Detected
1,2-Dichloropropane	1.3	Not Detected	5.8	Not Detected
1,4-Dioxane	5.1	Not Detected	18	Not Detected
Bromodichloromethane	1.3	Not Detected	8.5	Not Detected
cis-1,3-Dichloropropene	1.3	Not Detected	5.7	Not Detected
4-Methyl-2-pentanone	1.3	Not Detected	5.2	Not Detected
Toluene	1.3	40	4.8	150
trans-1,3-Dichloropropene	1.3	Not Detected	5.7	Not Detected

AN ENVIRONMENTAL ANALYTICAL LABORATORY

Client Sample ID: VP507EWASH-1

Lab ID#: 0810427-01A

MODIFIED EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**5102908**	**Date of Collection: 10/15/08**
Dil. Factor:	**2.53**	**Date of Analysis: 10/29/08 02:20 PM**

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (uG/m3)	Amount (uG/m3)
1,1,2-Trichloroethane	1.3	Not Detected	6.9	Not Detected
Tetrachloroethene	1.3	Not Detected	8.6	Not Detected
2-Hexanone	5.1	Not Detected	21	Not Detected
Dibromochloromethane	1.3	Not Detected	11	Not Detected
1,2-Dibromoethane (EDB)	1.3	Not Detected	9.7	Not Detected
Chlorobenzene	1.3	Not Detected	5.8	Not Detected
Ethyl Benzene	1.3	10	5.5	44
m,p-Xylene	1.3	41	5.5	180
o-Xylene	1.3	19	5.5	83
Styrene	1.3	Not Detected	5.4	Not Detected
Bromoform	1.3	Not Detected	13	Not Detected
Cumene	1.3	Not Detected	6.2	Not Detected
1,1,2,2-Tetrachloroethane	1.3	Not Detected	8.7	Not Detected
Propylbenzene	1.3	5.6	6.2	27
4-Ethyltoluene	1.3	25	6.2	120
1,3,5-Trimethylbenzene	1.3	9.2	6.2	45
1,2,4-Trimethylbenzene	1.3	33	6.2	160
1,3-Dichlorobenzene	1.3	Not Detected	7.6	Not Detected
1,4-Dichlorobenzene	1.3	Not Detected	7.6	Not Detected
alpha-Chlorotoluene	1.3	Not Detected	6.5	Not Detected
1,2-Dichlorobenzene	1.3	Not Detected	7.6	Not Detected
1,2,4-Trichlorobenzene	5.1	Not Detected	38	Not Detected
Hexachlorobutadiene	5.1	Not Detected	54	Not Detected
Naphthalene	5.1	Not Detected	26	Not Detected
1,1-Difluoroethane	5.1	7.0	14	19

Container Type: 1 Liter Summa Canister

Surrogates	%Recovery	Method Limits
Toluene-d8	100	70-130
1,2-Dichloroethane-d4	121	70-130
4-Bromofluorobenzene	117	70-130

AN ENVIRONMENTAL ANALYTICAL LABORATORY

Client Sample ID: VP507EWASH-1 Lab Duplicate

Lab ID#: 0810427-01AA

MODIFIED EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**5102909**	**Date of Collection: 10/15/08**
Dil. Factor:	**2.53**	**Date of Analysis: 10/29/08 03:01 PM**

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (uG/m3)	Amount (uG/m3)
Freon 12	1.3	Not Detected	6.2	Not Detected
Freon 114	1.3	Not Detected	8.8	Not Detected
Chloromethane	5.1	Not Detected	10	Not Detected
Vinyl Chloride	1.3	Not Detected	3.2	Not Detected
1,3-Butadiene	1.3	Not Detected	2.8	Not Detected
Bromomethane	1.3	Not Detected	4.9	Not Detected
Chloroethane	1.3	Not Detected	3.3	Not Detected
Freon 11	1.3	Not Detected	7.1	Not Detected
Ethanol	5.1	6.4	9.5	12
Freon 113	1.3	Not Detected	9.7	Not Detected
1,1-Dichloroethene	1.3	Not Detected	5.0	Not Detected
Acetone	5.1	51	12	120
2-Propanol	5.1	16	12	38
Carbon Disulfide	1.3	Not Detected	3.9	Not Detected
3-Chloropropene	5.1	Not Detected	16	Not Detected
Methylene Chloride	1.3	Not Detected	4.4	Not Detected
Methyl tert-butyl ether	1.3	Not Detected	4.6	Not Detected
trans-1,2-Dichloroethene	1.3	Not Detected	5.0	Not Detected
Hexane	1.3	2.4	4.4	8.5
1,1-Dichloroethane	1.3	Not Detected	5.1	Not Detected
2-Butanone (Methyl Ethyl Ketone)	1.3	6.2	3.7	18
cis-1,2-Dichloroethene	1.3	Not Detected	5.0	Not Detected
Tetrahydrofuran	1.3	Not Detected	3.7	Not Detected
Chloroform	1.3	Not Detected	6.2	Not Detected
1,1,1-Trichloroethane	1.3	Not Detected	6.9	Not Detected
Cyclohexane	1.3	Not Detected	4.4	Not Detected
Carbon Tetrachloride	1.3	Not Detected	8.0	Not Detected
2,2,4-Trimethylpentane	1.3	1.6	5.9	7.7
Benzene	1.3	2.3	4.0	7.4
1,2-Dichloroethane	1.3	Not Detected	5.1	Not Detected
Heptane	1.3	3.1	5.2	13
Trichloroethene	1.3	Not Detected	6.8	Not Detected
1,2-Dichloropropane	1.3	Not Detected	5.8	Not Detected
1,4-Dioxane	5.1	Not Detected	18	Not Detected
Bromodichloromethane	1.3	Not Detected	8.5	Not Detected
cis-1,3-Dichloropropene	1.3	Not Detected	5.7	Not Detected
4-Methyl-2-pentanone	1.3	Not Detected	5.2	Not Detected
Toluene	1.3	38	4.8	140
trans-1,3-Dichloropropene	1.3	Not Detected	5.7	Not Detected

AN ENVIRONMENTAL ANALYTICAL LABORATORY

Client Sample ID: VP507EWASH-1 Lab Duplicate

Lab ID#: 0810427-01AA

MODIFIED EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**5102909**	**Date of Collection: 10/15/08**
Dil. Factor:	**2.53**	**Date of Analysis: 10/29/08 03:01 PM**

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (uG/m3)	Amount (uG/m3)
1,1,2-Trichloroethane	1.3	Not Detected	6.9	Not Detected
Tetrachloroethene	1.3	Not Detected	8.6	Not Detected
2-Hexanone	5.1	Not Detected	21	Not Detected
Dibromochloromethane	1.3	Not Detected	11	Not Detected
1,2-Dibromoethane (EDB)	1.3	Not Detected	9.7	Not Detected
Chlorobenzene	1.3	Not Detected	5.8	Not Detected
Ethyl Benzene	1.3	9.8	5.5	42
m,p-Xylene	1.3	41	5.5	180
o-Xylene	1.3	19	5.5	81
Styrene	1.3	Not Detected	5.4	Not Detected
Bromoform	1.3	Not Detected	13	Not Detected
Cumene	1.3	Not Detected	6.2	Not Detected
1,1,2,2-Tetrachloroethane	1.3	Not Detected	8.7	Not Detected
Propylbenzene	1.3	5.3	6.2	26
4-Ethyltoluene	1.3	23	6.2	110
1,3,5-Trimethylbenzene	1.3	8.4	6.2	41
1,2,4-Trimethylbenzene	1.3	30	6.2	150
1,3-Dichlorobenzene	1.3	Not Detected	7.6	Not Detected
1,4-Dichlorobenzene	1.3	Not Detected	7.6	Not Detected
alpha-Chlorotoluene	1.3	Not Detected	6.5	Not Detected
1,2-Dichlorobenzene	1.3	Not Detected	7.6	Not Detected
1,2,4-Trichlorobenzene	5.1	Not Detected	38	Not Detected
Hexachlorobutadiene	5.1	Not Detected	54	Not Detected
Naphthalene	5.1	Not Detected	26	Not Detected
1,1-Difluoroethane	5.1	6.0	14	16

Container Type: 1 Liter Summa Canister

Surrogates	%Recovery	Method Limits
Toluene-d8	100	70-130
1,2-Dichloroethane-d4	120	70-130
4-Bromofluorobenzene	109	70-130

AN ENVIRONMENTAL ANALYTICAL LABORATORY

Client Sample ID: VP505EWASH-1

Lab ID#: 0810427-02A

MODIFIED EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**5102910**	**Date of Collection: 10/15/08**
Dil. Factor:	**2.53**	**Date of Analysis: 10/29/08 03:42 PM**

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (uG/m3)	Amount (uG/m3)
Freon 12	1.3	Not Detected	6.2	Not Detected
Freon 114	1.3	Not Detected	8.8	Not Detected
Chloromethane	5.1	Not Detected	10	Not Detected
Vinyl Chloride	1.3	Not Detected	3.2	Not Detected
1,3-Butadiene	1.3	2.0	2.8	4.4
Bromomethane	1.3	Not Detected	4.9	Not Detected
Chloroethane	1.3	Not Detected	3.3	Not Detected
Freon 11	1.3	Not Detected	7.1	Not Detected
Ethanol	5.1	7.7	9.5	14
Freon 113	1.3	Not Detected	9.7	Not Detected
1,1-Dichloroethene	1.3	Not Detected	5.0	Not Detected
Acetone	5.1	51	12	120
2-Propanol	5.1	Not Detected	12	Not Detected
Carbon Disulfide	1.3	2.4	3.9	7.6
3-Chloropropene	5.1	Not Detected	16	Not Detected
Methylene Chloride	1.3	Not Detected	4.4	Not Detected
Methyl tert-butyl ether	1.3	Not Detected	4.6	Not Detected
trans-1,2-Dichloroethene	1.3	Not Detected	5.0	Not Detected
Hexane	1.3	4.7	4.4	17
1,1-Dichloroethane	1.3	Not Detected	5.1	Not Detected
2-Butanone (Methyl Ethyl Ketone)	1.3	9.0	3.7	26
cis-1,2-Dichloroethene	1.3	Not Detected	5.0	Not Detected
Tetrahydrofuran	1.3	Not Detected	3.7	Not Detected
Chloroform	1.3	Not Detected	6.2	Not Detected
1,1,1-Trichloroethane	1.3	Not Detected	6.9	Not Detected
Cyclohexane	1.3	2.6	4.4	8.9
Carbon Tetrachloride	1.3	Not Detected	8.0	Not Detected
2,2,4-Trimethylpentane	1.3	3.1	5.9	14
Benzene	1.3	4.2	4.0	13
1,2-Dichloroethane	1.3	Not Detected	5.1	Not Detected
Heptane	1.3	4.6	5.2	19
Trichloroethene	1.3	Not Detected	6.8	Not Detected
1,2-Dichloropropane	1.3	Not Detected	5.8	Not Detected
1,4-Dioxane	5.1	Not Detected	18	Not Detected
Bromodichloromethane	1.3	Not Detected	8.5	Not Detected
cis-1,3-Dichloropropene	1.3	Not Detected	5.7	Not Detected
4-Methyl-2-pentanone	1.3	Not Detected	5.2	Not Detected
Toluene	1.3	55	4.8	210
trans-1,3-Dichloropropene	1.3	Not Detected	5.7	Not Detected

AN ENVIRONMENTAL ANALYTICAL LABORATORY

Client Sample ID: VP505EWASH-1

Lab ID#: 0810427-02A

MODIFIED EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**5102910**	**Date of Collection: 10/15/08**
Dil. Factor:	**2.53**	**Date of Analysis: 10/29/08 03:42 PM**

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (uG/m3)	Amount (uG/m3)
1,1,2-Trichloroethane	1.3	Not Detected	6.9	Not Detected
Tetrachloroethene	1.3	Not Detected	8.6	Not Detected
2-Hexanone	5.1	Not Detected	21	Not Detected
Dibromochloromethane	1.3	Not Detected	11	Not Detected
1,2-Dibromoethane (EDB)	1.3	Not Detected	9.7	Not Detected
Chlorobenzene	1.3	Not Detected	5.8	Not Detected
Ethyl Benzene	1.3	11	5.5	50
m,p-Xylene	1.3	43	5.5	190
o-Xylene	1.3	19	5.5	84
Styrene	1.3	Not Detected	5.4	Not Detected
Bromoform	1.3	Not Detected	13	Not Detected
Cumene	1.3	1.3	6.2	6.6
1,1,2,2-Tetrachloroethane	1.3	Not Detected	8.7	Not Detected
Propylbenzene	1.3	4.8	6.2	24
4-Ethyltoluene	1.3	20	6.2	97
1,3,5-Trimethylbenzene	1.3	7.0	6.2	34
1,2,4-Trimethylbenzene	1.3	25	6.2	120
1,3-Dichlorobenzene	1.3	Not Detected	7.6	Not Detected
1,4-Dichlorobenzene	1.3	Not Detected	7.6	Not Detected
alpha-Chlorotoluene	1.3	Not Detected	6.5	Not Detected
1,2-Dichlorobenzene	1.3	Not Detected	7.6	Not Detected
1,2,4-Trichlorobenzene	5.1	Not Detected	38	Not Detected
Hexachlorobutadiene	5.1	Not Detected	54	Not Detected
Naphthalene	5.1	Not Detected	26	Not Detected
1,1-Difluoroethane	5.1	Not Detected	14	Not Detected

Container Type: 1 Liter Summa Canister

Surrogates	%Recovery	Method Limits
Toluene-d8	99	70-130
1,2-Dichloroethane-d4	124	70-130
4-Bromofluorobenzene	110	70-130

AN ENVIRONMENTAL ANALYTICAL LABORATORY

Client Sample ID: VP507EWASH-2

Lab ID#: 0810427-03A

MODIFIED EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**5102911**	**Date of Collection: 10/15/08**
Dil. Factor:	**2.47**	**Date of Analysis: 10/29/08 04:24 PM**

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (uG/m3)	Amount (uG/m3)
Freon 12	1.2	1.8	6.1	9.0
Freon 114	1.2	Not Detected	8.6	Not Detected
Chloromethane	4.9	Not Detected	10	Not Detected
Vinyl Chloride	1.2	Not Detected	3.2	Not Detected
1,3-Butadiene	1.2	4.4	2.7	9.7
Bromomethane	1.2	Not Detected	4.8	Not Detected
Chloroethane	1.2	Not Detected	3.2	Not Detected
Freon 11	1.2	Not Detected	6.9	Not Detected
Ethanol	4.9	9.5	9.3	18
Freon 113	1.2	Not Detected	9.5	Not Detected
1,1-Dichloroethene	1.2	Not Detected	4.9	Not Detected
Acetone	4.9	78	12	180
2-Propanol	4.9	5.4	12	13
Carbon Disulfide	1.2	1.4	3.8	4.3
3-Chloropropene	4.9	Not Detected	15	Not Detected
Methylene Chloride	1.2	Not Detected	4.3	Not Detected
Methyl tert-butyl ether	1.2	Not Detected	4.4	Not Detected
trans-1,2-Dichloroethene	1.2	Not Detected	4.9	Not Detected
Hexane	1.2	4.0	4.4	14
1,1-Dichloroethane	1.2	Not Detected	5.0	Not Detected
2-Butanone (Methyl Ethyl Ketone)	1.2	14	3.6	40
cis-1,2-Dichloroethene	1.2	Not Detected	4.9	Not Detected
Tetrahydrofuran	1.2	Not Detected	3.6	Not Detected
Chloroform	1.2	Not Detected	6.0	Not Detected
1,1,1-Trichloroethane	1.2	Not Detected	6.7	Not Detected
Cyclohexane	1.2	1.5	4.2	5.3
Carbon Tetrachloride	1.2	Not Detected	7.8	Not Detected
2,2,4-Trimethylpentane	1.2	2.4	5.8	11
Benzene	1.2	4.5	3.9	14
1,2-Dichloroethane	1.2	Not Detected	5.0	Not Detected
Heptane	1.2	4.8	5.1	20
Trichloroethene	1.2	1.4	6.6	7.3
1,2-Dichloropropane	1.2	Not Detected	5.7	Not Detected
1,4-Dioxane	4.9	Not Detected	18	Not Detected
Bromodichloromethane	1.2	Not Detected	8.3	Not Detected
cis-1,3-Dichloropropene	1.2	Not Detected	5.6	Not Detected
4-Methyl-2-pentanone	1.2	Not Detected	5.0	Not Detected
Toluene	1.2	57	4.6	220
trans-1,3-Dichloropropene	1.2	Not Detected	5.6	Not Detected

AN ENVIRONMENTAL ANALYTICAL LABORATORY

Client Sample ID: VP507EWASH-2

Lab ID#: 0810427-03A

MODIFIED EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**5102911**	**Date of Collection: 10/15/08**
Dil. Factor:	**2.47**	**Date of Analysis: 10/29/08 04:24 PM**

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (uG/m3)	Amount (uG/m3)
1,1,2-Trichloroethane	1.2	Not Detected	6.7	Not Detected
Tetrachloroethene	1.2	Not Detected	8.4	Not Detected
2-Hexanone	4.9	Not Detected	20	Not Detected
Dibromochloromethane	1.2	Not Detected	10	Not Detected
1,2-Dibromoethane (EDB)	1.2	Not Detected	9.5	Not Detected
Chlorobenzene	1.2	Not Detected	5.7	Not Detected
Ethyl Benzene	1.2	14	5.4	61
m,p-Xylene	1.2	56	5.4	240
o-Xylene	1.2	26	5.4	110
Styrene	1.2	Not Detected	5.3	Not Detected
Bromoform	1.2	Not Detected	13	Not Detected
Cumene	1.2	1.7	6.1	8.3
1,1,2,2-Tetrachloroethane	1.2	Not Detected	8.5	Not Detected
Propylbenzene	1.2	6.9	6.1	34
4-Ethyltoluene	1.2	30	6.1	150
1,3,5-Trimethylbenzene	1.2	11	6.1	55
1,2,4-Trimethylbenzene	1.2	38	6.1	190
1,3-Dichlorobenzene	1.2	Not Detected	7.4	Not Detected
1,4-Dichlorobenzene	1.2	Not Detected	7.4	Not Detected
alpha-Chlorotoluene	1.2	Not Detected	6.4	Not Detected
1,2-Dichlorobenzene	1.2	Not Detected	7.4	Not Detected
1,2,4-Trichlorobenzene	4.9	Not Detected	37	Not Detected
Hexachlorobutadiene	4.9	Not Detected	53	Not Detected
Naphthalene	4.9	Not Detected	26	Not Detected
1,1-Difluoroethane	4.9	9.9	13	27

Container Type: 1 Liter Summa Canister (100% Certified)

Surrogates	%Recovery	Method Limits
Toluene-d8	101	70-130
1,2-Dichloroethane-d4	116	70-130
4-Bromofluorobenzene	106	70-130

AN ENVIRONMENTAL ANALYTICAL LABORATORY

Client Sample ID: VP507EWASH-F

Lab ID#: 0810427-04A

MODIFIED EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**5102912**	**Date of Collection: 10/15/08**
Dil. Factor:	**2.42**	**Date of Analysis: 10/29/08 05:05 PM**

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (uG/m3)	Amount (uG/m3)
Freon 12	1.2	1.8	6.0	8.8
Freon 114	1.2	Not Detected	8.4	Not Detected
Chloromethane	4.8	Not Detected	10	Not Detected
Vinyl Chloride	1.2	Not Detected	3.1	Not Detected
1,3-Butadiene	1.2	2.3	2.7	5.0
Bromomethane	1.2	Not Detected	4.7	Not Detected
Chloroethane	1.2	Not Detected	3.2	Not Detected
Freon 11	1.2	Not Detected	6.8	Not Detected
Ethanol	4.8	10	9.1	19
Freon 113	1.2	Not Detected	9.3	Not Detected
1,1-Dichloroethene	1.2	Not Detected	4.8	Not Detected
Acetone	4.8	76	11	180
2-Propanol	4.8	Not Detected	12	Not Detected
Carbon Disulfide	1.2	Not Detected	3.8	Not Detected
3-Chloropropene	4.8	Not Detected	15	Not Detected
Methylene Chloride	1.2	Not Detected	4.2	Not Detected
Methyl tert-butyl ether	1.2	Not Detected	4.4	Not Detected
trans-1,2-Dichloroethene	1.2	Not Detected	4.8	Not Detected
Hexane	1.2	3.0	4.3	11
1,1-Dichloroethane	1.2	Not Detected	4.9	Not Detected
2-Butanone (Methyl Ethyl Ketone)	1.2	11	3.6	34
cis-1,2-Dichloroethene	1.2	Not Detected	4.8	Not Detected
Tetrahydrofuran	1.2	Not Detected	3.6	Not Detected
Chloroform	1.2	Not Detected	5.9	Not Detected
1,1,1-Trichloroethane	1.2	Not Detected	6.6	Not Detected
Cyclohexane	1.2	1.2	4.2	4.2
Carbon Tetrachloride	1.2	Not Detected	7.6	Not Detected
2,2,4-Trimethylpentane	1.2	1.9	5.6	8.9
Benzene	1.2	3.0	3.9	9.7
1,2-Dichloroethane	1.2	Not Detected	4.9	Not Detected
Heptane	1.2	3.2	5.0	13
Trichloroethene	1.2	Not Detected	6.5	Not Detected
1,2-Dichloropropane	1.2	Not Detected	5.6	Not Detected
1,4-Dioxane	4.8	Not Detected	17	Not Detected
Bromodichloromethane	1.2	Not Detected	8.1	Not Detected
cis-1,3-Dichloropropene	1.2	Not Detected	5.5	Not Detected
4-Methyl-2-pentanone	1.2	Not Detected	5.0	Not Detected
Toluene	1.2	40	4.6	150
trans-1,3-Dichloropropene	1.2	Not Detected	5.5	Not Detected

AN ENVIRONMENTAL ANALYTICAL LABORATORY

Client Sample ID: VP507EWASH-F

Lab ID#: 0810427-04A

MODIFIED EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**5102912**	**Date of Collection: 10/15/08**
Dil. Factor:	**2.42**	**Date of Analysis: 10/29/08 05:05 PM**

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (uG/m3)	Amount (uG/m3)
1,1,2-Trichloroethane	1.2	Not Detected	6.6	Not Detected
Tetrachloroethene	1.2	Not Detected	8.2	Not Detected
2-Hexanone	4.8	Not Detected	20	Not Detected
Dibromochloromethane	1.2	Not Detected	10	Not Detected
1,2-Dibromoethane (EDB)	1.2	Not Detected	9.3	Not Detected
Chlorobenzene	1.2	Not Detected	5.6	Not Detected
Ethyl Benzene	1.2	12	5.2	51
m,p-Xylene	1.2	49	5.2	210
o-Xylene	1.2	22	5.2	98
Styrene	1.2	Not Detected	5.2	Not Detected
Bromoform	1.2	Not Detected	12	Not Detected
Cumene	1.2	1.4	5.9	7.0
1,1,2,2-Tetrachloroethane	1.2	Not Detected	8.3	Not Detected
Propylbenzene	1.2	7.0	5.9	34
4-Ethyltoluene	1.2	31	5.9	150
1,3,5-Trimethylbenzene	1.2	12	5.9	59
1,2,4-Trimethylbenzene	1.2	43	5.9	210
1,3-Dichlorobenzene	1.2	Not Detected	7.3	Not Detected
1,4-Dichlorobenzene	1.2	Not Detected	7.3	Not Detected
alpha-Chlorotoluene	1.2	Not Detected	6.3	Not Detected
1,2-Dichlorobenzene	1.2	Not Detected	7.3	Not Detected
1,2,4-Trichlorobenzene	4.8	Not Detected	36	Not Detected
Hexachlorobutadiene	4.8	Not Detected	52	Not Detected
Naphthalene	4.8	Not Detected	25	Not Detected
1,1-Difluoroethane	4.8	7.3	13	20

Container Type: 1 Liter Summa Canister

Surrogates	%Recovery	Method Limits
Toluene-d8	98	70-130
1,2-Dichloroethane-d4	118	70-130
4-Bromofluorobenzene	111	70-130

AN ENVIRONMENTAL ANALYTICAL LABORATORY

Client Sample ID: VP412EHILL-2

Lab ID#: 0810427-05A

MODIFIED EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**5102913**	**Date of Collection: 10/15/08**
Dil. Factor:	**2.53**	**Date of Analysis: 10/29/08 05:46 PM**

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (uG/m3)	Amount (uG/m3)
Freon 12	1.3	Not Detected	6.2	Not Detected
Freon 114	1.3	Not Detected	8.8	Not Detected
Chloromethane	5.1	Not Detected	10	Not Detected
Vinyl Chloride	1.3	Not Detected	3.2	Not Detected
1,3-Butadiene	1.3	1.3	2.8	2.9
Bromomethane	1.3	Not Detected	4.9	Not Detected
Chloroethane	1.3	Not Detected	3.3	Not Detected
Freon 11	1.3	Not Detected	7.1	Not Detected
Ethanol	5.1	9.2	9.5	17
Freon 113	1.3	Not Detected	9.7	Not Detected
1,1-Dichloroethene	1.3	Not Detected	5.0	Not Detected
Acetone	5.1	45	12	110
2-Propanol	5.1	20	12	50
Carbon Disulfide	1.3	Not Detected	3.9	Not Detected
3-Chloropropene	5.1	Not Detected	16	Not Detected
Methylene Chloride	1.3	Not Detected	4.4	Not Detected
Methyl tert-butyl ether	1.3	Not Detected	4.6	Not Detected
trans-1,2-Dichloroethene	1.3	Not Detected	5.0	Not Detected
Hexane	1.3	2.1	4.4	7.3
1,1-Dichloroethane	1.3	Not Detected	5.1	Not Detected
2-Butanone (Methyl Ethyl Ketone)	1.3	6.2	3.7	18
cis-1,2-Dichloroethene	1.3	Not Detected	5.0	Not Detected
Tetrahydrofuran	1.3	Not Detected	3.7	Not Detected
Chloroform	1.3	Not Detected	6.2	Not Detected
1,1,1-Trichloroethane	1.3	Not Detected	6.9	Not Detected
Cyclohexane	1.3	Not Detected	4.4	Not Detected
Carbon Tetrachloride	1.3	Not Detected	8.0	Not Detected
2,2,4-Trimethylpentane	1.3	1.5	5.9	7.2
Benzene	1.3	1.8	4.0	5.9
1,2-Dichloroethane	1.3	Not Detected	5.1	Not Detected
Heptane	1.3	1.8	5.2	7.6
Trichloroethene	1.3	Not Detected	6.8	Not Detected
1,2-Dichloropropane	1.3	Not Detected	5.8	Not Detected
1,4-Dioxane	5.1	Not Detected	18	Not Detected
Bromodichloromethane	1.3	Not Detected	8.5	Not Detected
cis-1,3-Dichloropropene	1.3	Not Detected	5.7	Not Detected
4-Methyl-2-pentanone	1.3	Not Detected	5.2	Not Detected
Toluene	1.3	23	4.8	86
trans-1,3-Dichloropropene	1.3	Not Detected	5.7	Not Detected

AN ENVIRONMENTAL ANALYTICAL LABORATORY

Client Sample ID: VP412EHILL-2

Lab ID#: 0810427-05A

MODIFIED EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**5102913**	**Date of Collection: 10/15/08**
Dil. Factor:	**2.53**	**Date of Analysis: 10/29/08 05:46 PM**

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (uG/m3)	Amount (uG/m3)
1,1,2-Trichloroethane	1.3	Not Detected	6.9	Not Detected
Tetrachloroethene	1.3	Not Detected	8.6	Not Detected
2-Hexanone	5.1	Not Detected	21	Not Detected
Dibromochloromethane	1.3	Not Detected	11	Not Detected
1,2-Dibromoethane (EDB)	1.3	Not Detected	9.7	Not Detected
Chlorobenzene	1.3	Not Detected	5.8	Not Detected
Ethyl Benzene	1.3	6.6	5.5	28
m,p-Xylene	1.3	28	5.5	120
o-Xylene	1.3	12	5.5	54
Styrene	1.3	Not Detected	5.4	Not Detected
Bromoform	1.3	Not Detected	13	Not Detected
Cumene	1.3	Not Detected	6.2	Not Detected
1,1,2,2-Tetrachloroethane	1.3	Not Detected	8.7	Not Detected
Propylbenzene	1.3	4.0	6.2	20
4-Ethyltoluene	1.3	17	6.2	83
1,3,5-Trimethylbenzene	1.3	8.5	6.2	42
1,2,4-Trimethylbenzene	1.3	25	6.2	120
1,3-Dichlorobenzene	1.3	Not Detected	7.6	Not Detected
1,4-Dichlorobenzene	1.3	Not Detected	7.6	Not Detected
alpha-Chlorotoluene	1.3	Not Detected	6.5	Not Detected
1,2-Dichlorobenzene	1.3	Not Detected	7.6	Not Detected
1,2,4-Trichlorobenzene	5.1	Not Detected	38	Not Detected
Hexachlorobutadiene	5.1	Not Detected	54	Not Detected
Naphthalene	5.1	Not Detected	26	Not Detected
1,1-Difluoroethane	5.1	Not Detected	14	Not Detected

Container Type: 1 Liter Summa Canister

Surrogates	%Recovery	Method Limits
Toluene-d8	99	70-130
1,2-Dichloroethane-d4	120	70-130
4-Bromofluorobenzene	107	70-130

Air Toxics LTD.
AN ENVIRONMENTAL ANALYTICAL LABORATORY

Client Sample ID: VP505EWASH-2

Lab ID#: 0810427-06A

MODIFIED EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**5102914**	**Date of Collection: 10/15/08**
Dil. Factor:	**2.53**	**Date of Analysis: 10/29/08 06:27 PM**

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (uG/m3)	Amount (uG/m3)
Freon 12	1.3	Not Detected	6.2	Not Detected
Freon 114	1.3	Not Detected	8.8	Not Detected
Chloromethane	5.1	Not Detected	10	Not Detected
Vinyl Chloride	1.3	Not Detected	3.2	Not Detected
1,3-Butadiene	1.3	4.2	2.8	9.4
Bromomethane	1.3	Not Detected	4.9	Not Detected
Chloroethane	1.3	Not Detected	3.3	Not Detected
Freon 11	1.3	Not Detected	7.1	Not Detected
Ethanol	5.1	10	9.5	20
Freon 113	1.3	Not Detected	9.7	Not Detected
1,1-Dichloroethene	1.3	Not Detected	5.0	Not Detected
Acetone	5.1	69	12	160
2-Propanol	5.1	19	12	46
Carbon Disulfide	1.3	Not Detected	3.9	Not Detected
3-Chloropropene	5.1	Not Detected	16	Not Detected
Methylene Chloride	1.3	Not Detected	4.4	Not Detected
Methyl tert-butyl ether	1.3	Not Detected	4.6	Not Detected
trans-1,2-Dichloroethene	1.3	Not Detected	5.0	Not Detected
Hexane	1.3	3.8	4.4	14
1,1-Dichloroethane	1.3	Not Detected	5.1	Not Detected
2-Butanone (Methyl Ethyl Ketone)	1.3	14	3.7	43
cis-1,2-Dichloroethene	1.3	Not Detected	5.0	Not Detected
Tetrahydrofuran	1.3	Not Detected	3.7	Not Detected
Chloroform	1.3	Not Detected	6.2	Not Detected
1,1,1-Trichloroethane	1.3	Not Detected	6.9	Not Detected
Cyclohexane	1.3	1.4	4.4	4.8
Carbon Tetrachloride	1.3	Not Detected	8.0	Not Detected
2,2,4-Trimethylpentane	1.3	2.1	5.9	10
Benzene	1.3	3.3	4.0	10
1,2-Dichloroethane	1.3	Not Detected	5.1	Not Detected
Heptane	1.3	4.2	5.2	17
Trichloroethene	1.3	Not Detected	6.8	Not Detected
1,2-Dichloropropane	1.3	Not Detected	5.8	Not Detected
1,4-Dioxane	5.1	Not Detected	18	Not Detected
Bromodichloromethane	1.3	Not Detected	8.5	Not Detected
cis-1,3-Dichloropropene	1.3	Not Detected	5.7	Not Detected
4-Methyl-2-pentanone	1.3	Not Detected	5.2	Not Detected
Toluene	1.3	53	4.8	200
trans-1,3-Dichloropropene	1.3	Not Detected	5.7	Not Detected

AN ENVIRONMENTAL ANALYTICAL LABORATORY

Client Sample ID: VP505EWASH-2

Lab ID#: 0810427-06A

MODIFIED EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**5102914**	**Date of Collection: 10/15/08**
Dil. Factor:	**2.53**	**Date of Analysis: 10/29/08 06:27 PM**

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (uG/m3)	Amount (uG/m3)
1,1,2-Trichloroethane	1.3	Not Detected	6.9	Not Detected
Tetrachloroethene	1.3	Not Detected	8.6	Not Detected
2-Hexanone	5.1	Not Detected	21	Not Detected
Dibromochloromethane	1.3	Not Detected	11	Not Detected
1,2-Dibromoethane (EDB)	1.3	Not Detected	9.7	Not Detected
Chlorobenzene	1.3	Not Detected	5.8	Not Detected
Ethyl Benzene	1.3	11	5.5	50
m,p-Xylene	1.3	46	5.5	200
o-Xylene	1.3	20	5.5	89
Styrene	1.3	Not Detected	5.4	Not Detected
Bromoform	1.3	Not Detected	13	Not Detected
Cumene	1.3	Not Detected	6.2	Not Detected
1,1,2,2-Tetrachloroethane	1.3	Not Detected	8.7	Not Detected
Propylbenzene	1.3	5.2	6.2	26
4-Ethyltoluene	1.3	21	6.2	100
1,3,5-Trimethylbenzene	1.3	10	6.2	52
1,2,4-Trimethylbenzene	1.3	28	6.2	140
1,3-Dichlorobenzene	1.3	Not Detected	7.6	Not Detected
1,4-Dichlorobenzene	1.3	Not Detected	7.6	Not Detected
alpha-Chlorotoluene	1.3	Not Detected	6.5	Not Detected
1,2-Dichlorobenzene	1.3	Not Detected	7.6	Not Detected
1,2,4-Trichlorobenzene	5.1	Not Detected	38	Not Detected
Hexachlorobutadiene	5.1	Not Detected	54	Not Detected
Naphthalene	5.1	Not Detected	26	Not Detected
1,1-Difluoroethane	5.1	Not Detected	14	Not Detected

Container Type: 1 Liter Summa Canister (100% Certified)

Surrogates	%Recovery	Method Limits
Toluene-d8	98	70-130
1,2-Dichloroethane-d4	115	70-130
4-Bromofluorobenzene	107	70-130

AN ENVIRONMENTAL ANALYTICAL LABORATORY

Client Sample ID: VP507EWASH-3

Lab ID#: 0810427-07A

MODIFIED EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**5102915**	**Date of Collection: 10/15/08**
Dil. Factor:	**2.42**	**Date of Analysis: 10/29/08 07:08 PM**

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (uG/m3)	Amount (uG/m3)
Freon 12	1.2	Not Detected	6.0	Not Detected
Freon 114	1.2	Not Detected	8.4	Not Detected
Chloromethane	4.8	Not Detected	10	Not Detected
Vinyl Chloride	1.2	Not Detected	3.1	Not Detected
1,3-Butadiene	1.2	1.8	2.7	4.0
Bromomethane	1.2	Not Detected	4.7	Not Detected
Chloroethane	1.2	Not Detected	3.2	Not Detected
Freon 11	1.2	Not Detected	6.8	Not Detected
Ethanol	4.8	16	9.1	29
Freon 113	1.2	Not Detected	9.3	Not Detected
1,1-Dichloroethene	1.2	Not Detected	4.8	Not Detected
Acetone	4.8	96	11	230
2-Propanol	4.8	6.6	12	16
Carbon Disulfide	1.2	Not Detected	3.8	Not Detected
3-Chloropropene	4.8	Not Detected	15	Not Detected
Methylene Chloride	1.2	Not Detected	4.2	Not Detected
Methyl tert-butyl ether	1.2	Not Detected	4.4	Not Detected
trans-1,2-Dichloroethene	1.2	Not Detected	4.8	Not Detected
Hexane	1.2	4.0	4.3	14
1,1-Dichloroethane	1.2	Not Detected	4.9	Not Detected
2-Butanone (Methyl Ethyl Ketone)	1.2	19	3.6	56
cis-1,2-Dichloroethene	1.2	Not Detected	4.8	Not Detected
Tetrahydrofuran	1.2	Not Detected	3.6	Not Detected
Chloroform	1.2	Not Detected	5.9	Not Detected
1,1,1-Trichloroethane	1.2	Not Detected	6.6	Not Detected
Cyclohexane	1.2	1.8	4.2	6.1
Carbon Tetrachloride	1.2	Not Detected	7.6	Not Detected
2,2,4-Trimethylpentane	1.2	3.2	5.6	15
Benzene	1.2	3.2	3.9	10
1,2-Dichloroethane	1.2	Not Detected	4.9	Not Detected
Heptane	1.2	4.7	5.0	19
Trichloroethene	1.2	Not Detected	6.5	Not Detected
1,2-Dichloropropane	1.2	Not Detected	5.6	Not Detected
1,4-Dioxane	4.8	Not Detected	17	Not Detected
Bromodichloromethane	1.2	Not Detected	8.1	Not Detected
cis-1,3-Dichloropropene	1.2	Not Detected	5.5	Not Detected
4-Methyl-2-pentanone	1.2	1.3	5.0	5.4
Toluene	1.2	46	4.6	170
trans-1,3-Dichloropropene	1.2	Not Detected	5.5	Not Detected

AN ENVIRONMENTAL ANALYTICAL LABORATORY

Client Sample ID: VP507EWASH-3

Lab ID#: 0810427-07A

MODIFIED EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**5102915**	**Date of Collection: 10/15/08**
Dil. Factor:	**2.42**	**Date of Analysis: 10/29/08 07:08 PM**

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (uG/m3)	Amount (uG/m3)
1,1,2-Trichloroethane	1.2	Not Detected	6.6	Not Detected
Tetrachloroethene	1.2	Not Detected	8.2	Not Detected
2-Hexanone	4.8	Not Detected	20	Not Detected
Dibromochloromethane	1.2	Not Detected	10	Not Detected
1,2-Dibromoethane (EDB)	1.2	Not Detected	9.3	Not Detected
Chlorobenzene	1.2	Not Detected	5.6	Not Detected
Ethyl Benzene	1.2	13	5.2	57
m,p-Xylene	1.2	52	5.2	230
o-Xylene	1.2	25	5.2	110
Styrene	1.2	Not Detected	5.2	Not Detected
Bromoform	1.2	Not Detected	12	Not Detected
Cumene	1.2	1.6	5.9	7.9
1,1,2,2-Tetrachloroethane	1.2	Not Detected	8.3	Not Detected
Propylbenzene	1.2	7.0	5.9	34
4-Ethyltoluene	1.2	28	5.9	140
1,3,5-Trimethylbenzene	1.2	16	5.9	76
1,2,4-Trimethylbenzene	1.2	42	5.9	210
1,3-Dichlorobenzene	1.2	Not Detected	7.3	Not Detected
1,4-Dichlorobenzene	1.2	Not Detected	7.3	Not Detected
alpha-Chlorotoluene	1.2	Not Detected	6.3	Not Detected
1,2-Dichlorobenzene	1.2	Not Detected	7.3	Not Detected
1,2,4-Trichlorobenzene	4.8	Not Detected	36	Not Detected
Hexachlorobutadiene	4.8	Not Detected	52	Not Detected
Naphthalene	4.8	Not Detected	25	Not Detected
1,1-Difluoroethane	4.8	Not Detected	13	Not Detected

Container Type: 1 Liter Summa Canister

Surrogates	%Recovery	Method Limits
Toluene-d8	99	70-130
1,2-Dichloroethane-d4	112	70-130
4-Bromofluorobenzene	105	70-130

AN ENVIRONMENTAL ANALYTICAL LABORATORY

Client Sample ID: VP412EHILL-3

Lab ID#: 0810427-08A

MODIFIED EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**5102917**	**Date of Collection: 10/15/08**
Dil. Factor:	**2.53**	**Date of Analysis: 10/29/08 10:23 PM**

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (uG/m3)	Amount (uG/m3)
Freon 12	1.3	Not Detected	6.2	Not Detected
Freon 114	1.3	Not Detected	8.8	Not Detected
Chloromethane	5.1	Not Detected	10	Not Detected
Vinyl Chloride	1.3	Not Detected	3.2	Not Detected
1,3-Butadiene	1.3	11	2.8	25
Bromomethane	1.3	Not Detected	4.9	Not Detected
Chloroethane	1.3	Not Detected	3.3	Not Detected
Freon 11	1.3	Not Detected	7.1	Not Detected
Ethanol	5.1	150	9.5	280
Freon 113	1.3	Not Detected	9.7	Not Detected
1,1-Dichloroethene	1.3	Not Detected	5.0	Not Detected
Acetone	5.1	240	12	580
2-Propanol	5.1	41	12	100
Carbon Disulfide	1.3	Not Detected	3.9	Not Detected
3-Chloropropene	5.1	Not Detected	16	Not Detected
Methylene Chloride	1.3	Not Detected	4.4	Not Detected
Methyl tert-butyl ether	1.3	Not Detected	4.6	Not Detected
trans-1,2-Dichloroethene	1.3	Not Detected	5.0	Not Detected
Hexane	1.3	5.8	4.4	20
1,1-Dichloroethane	1.3	Not Detected	5.1	Not Detected
2-Butanone (Methyl Ethyl Ketone)	1.3	45	3.7	130
cis-1,2-Dichloroethene	1.3	Not Detected	5.0	Not Detected
Tetrahydrofuran	1.3	Not Detected	3.7	Not Detected
Chloroform	1.3	Not Detected	6.2	Not Detected
1,1,1-Trichloroethane	1.3	Not Detected	6.9	Not Detected
Cyclohexane	1.3	1.7	4.4	5.9
Carbon Tetrachloride	1.3	Not Detected	8.0	Not Detected
2,2,4-Trimethylpentane	1.3	2.8	5.9	13
Benzene	1.3	4.2	4.0	14
1,2-Dichloroethane	1.3	Not Detected	5.1	Not Detected
Heptane	1.3	5.2	5.2	21
Trichloroethene	1.3	Not Detected	6.8	Not Detected
1,2-Dichloropropane	1.3	Not Detected	5.8	Not Detected
1,4-Dioxane	5.1	Not Detected	18	Not Detected
Bromodichloromethane	1.3	Not Detected	8.5	Not Detected
cis-1,3-Dichloropropene	1.3	Not Detected	5.7	Not Detected
4-Methyl-2-pentanone	1.3	1.6	5.2	6.5
Toluene	1.3	52	4.8	190
trans-1,3-Dichloropropene	1.3	Not Detected	5.7	Not Detected

AN ENVIRONMENTAL ANALYTICAL LABORATORY

Client Sample ID: VP412EHILL-3

Lab ID#: 0810427-08A

MODIFIED EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**5102917**	**Date of Collection: 10/15/08**
Dil. Factor:	**2.53**	**Date of Analysis: 10/29/08 10:23 PM**

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (uG/m3)	Amount (uG/m3)
1,1,2-Trichloroethane	1.3	Not Detected	6.9	Not Detected
Tetrachloroethene	1.3	Not Detected	8.6	Not Detected
2-Hexanone	5.1	Not Detected	21	Not Detected
Dibromochloromethane	1.3	Not Detected	11	Not Detected
1,2-Dibromoethane (EDB)	1.3	Not Detected	9.7	Not Detected
Chlorobenzene	1.3	Not Detected	5.8	Not Detected
Ethyl Benzene	1.3	12	5.5	52
m,p-Xylene	1.3	48	5.5	210
o-Xylene	1.3	22	5.5	94
Styrene	1.3	Not Detected	5.4	Not Detected
Bromoform	1.3	Not Detected	13	Not Detected
Cumene	1.3	1.5	6.2	7.2
1,1,2,2-Tetrachloroethane	1.3	Not Detected	8.7	Not Detected
Propylbenzene	1.3	6.1	6.2	30
4-Ethyltoluene	1.3	26	6.2	130
1,3,5-Trimethylbenzene	1.3	9.1	6.2	45
1,2,4-Trimethylbenzene	1.3	33	6.2	160
1,3-Dichlorobenzene	1.3	Not Detected	7.6	Not Detected
1,4-Dichlorobenzene	1.3	Not Detected	7.6	Not Detected
alpha-Chlorotoluene	1.3	Not Detected	6.5	Not Detected
1,2-Dichlorobenzene	1.3	Not Detected	7.6	Not Detected
1,2,4-Trichlorobenzene	5.1	Not Detected	38	Not Detected
Hexachlorobutadiene	5.1	Not Detected	54	Not Detected
Naphthalene	5.1	Not Detected	26	Not Detected
1,1-Difluoroethane	5.1	10	14	27

Container Type: 1 Liter Summa Canister

Surrogates	%Recovery	Method Limits
Toluene-d8	100	70-130
1,2-Dichloroethane-d4	115	70-130
4-Bromofluorobenzene	109	70-130

AN ENVIRONMENTAL ANALYTICAL LABORATORY

Client Sample ID: VP412EHILL-1

Lab ID#: 0810427-09A

MODIFIED EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**5102918**	**Date of Collection: 10/15/08**
Dil. Factor:	**2.53**	**Date of Analysis: 10/29/08 11:05 PM**

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (uG/m3)	Amount (uG/m3)
Freon 12	1.3	Not Detected	6.2	Not Detected
Freon 114	1.3	Not Detected	8.8	Not Detected
Chloromethane	5.1	Not Detected	10	Not Detected
Vinyl Chloride	1.3	Not Detected	3.2	Not Detected
1,3-Butadiene	1.3	4.1	2.8	9.2
Bromomethane	1.3	Not Detected	4.9	Not Detected
Chloroethane	1.3	Not Detected	3.3	Not Detected
Freon 11	1.3	Not Detected	7.1	Not Detected
Ethanol	5.1	26	9.5	50
Freon 113	1.3	Not Detected	9.7	Not Detected
1,1-Dichloroethene	1.3	Not Detected	5.0	Not Detected
Acetone	5.1	96	12	230
2-Propanol	5.1	5.8	12	14
Carbon Disulfide	1.3	Not Detected	3.9	Not Detected
3-Chloropropene	5.1	Not Detected	16	Not Detected
Methylene Chloride	1.3	Not Detected	4.4	Not Detected
Methyl tert-butyl ether	1.3	Not Detected	4.6	Not Detected
trans-1,2-Dichloroethene	1.3	Not Detected	5.0	Not Detected
Hexane	1.3	2.7	4.4	9.5
1,1-Dichloroethane	1.3	Not Detected	5.1	Not Detected
2-Butanone (Methyl Ethyl Ketone)	1.3	16	3.7	47
cis-1,2-Dichloroethene	1.3	Not Detected	5.0	Not Detected
Tetrahydrofuran	1.3	Not Detected	3.7	Not Detected
Chloroform	1.3	Not Detected	6.2	Not Detected
1,1,1-Trichloroethane	1.3	Not Detected	6.9	Not Detected
Cyclohexane	1.3	Not Detected	4.4	Not Detected
Carbon Tetrachloride	1.3	Not Detected	8.0	Not Detected
2,2,4-Trimethylpentane	1.3	1.7	5.9	8.1
Benzene	1.3	2.6	4.0	8.5
1,2-Dichloroethane	1.3	Not Detected	5.1	Not Detected
Heptane	1.3	2.5	5.2	10
Trichloroethene	1.3	Not Detected	6.8	Not Detected
1,2-Dichloropropane	1.3	Not Detected	5.8	Not Detected
1,4-Dioxane	5.1	Not Detected	18	Not Detected
Bromodichloromethane	1.3	Not Detected	8.5	Not Detected
cis-1,3-Dichloropropene	1.3	Not Detected	5.7	Not Detected
4-Methyl-2-pentanone	1.3	Not Detected	5.2	Not Detected
Toluene	1.3	32	4.8	120
trans-1,3-Dichloropropene	1.3	Not Detected	5.7	Not Detected

AN ENVIRONMENTAL ANALYTICAL LABORATORY

Client Sample ID: VP412EHILL-1

Lab ID#: 0810427-09A

MODIFIED EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**5102918**	**Date of Collection:**	**10/15/08**
Dil. Factor:	**2.53**	**Date of Analysis:**	**10/29/08 11:05 PM**

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (uG/m3)	Amount (uG/m3)
1,1,2-Trichloroethane	1.3	Not Detected	6.9	Not Detected
Tetrachloroethene	1.3	Not Detected	8.6	Not Detected
2-Hexanone	5.1	Not Detected	21	Not Detected
Dibromochloromethane	1.3	Not Detected	11	Not Detected
1,2-Dibromoethane (EDB)	1.3	Not Detected	9.7	Not Detected
Chlorobenzene	1.3	Not Detected	5.8	Not Detected
Ethyl Benzene	1.3	9.1	5.5	40
m,p-Xylene	1.3	38	5.5	160
o-Xylene	1.3	18	5.5	77
Styrene	1.3	Not Detected	5.4	Not Detected
Bromoform	1.3	Not Detected	13	Not Detected
Cumene	1.3	Not Detected	6.2	Not Detected
1,1,2,2-Tetrachloroethane	1.3	Not Detected	8.7	Not Detected
Propylbenzene	1.3	5.1	6.2	25
4-Ethyltoluene	1.3	22	6.2	100
1,3,5-Trimethylbenzene	1.3	11	6.2	56
1,2,4-Trimethylbenzene	1.3	32	6.2	160
1,3-Dichlorobenzene	1.3	Not Detected	7.6	Not Detected
1,4-Dichlorobenzene	1.3	Not Detected	7.6	Not Detected
alpha-Chlorotoluene	1.3	Not Detected	6.5	Not Detected
1,2-Dichlorobenzene	1.3	Not Detected	7.6	Not Detected
1,2,4-Trichlorobenzene	5.1	Not Detected	38	Not Detected
Hexachlorobutadiene	5.1	Not Detected	54	Not Detected
Naphthalene	5.1	Not Detected	26	Not Detected
1,1-Difluoroethane	5.1	5.4	14	15

Container Type: 1 Liter Summa Canister

Surrogates	%Recovery	Method Limits
Toluene-d8	100	70-130
1,2-Dichloroethane-d4	117	70-130
4-Bromofluorobenzene	108	70-130

AN ENVIRONMENTAL ANALYTICAL LABORATORY

Client Sample ID: VP507EWASH(AMBIENT)

Lab ID#: 0810427-10A

MODIFIED EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**5102919**	**Date of Collection: 10/15/08**
Dil. Factor:	**2.53**	**Date of Analysis: 10/29/08 11:58 PM**

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (uG/m3)	Amount (uG/m3)
Freon 12	1.3	Not Detected	6.2	Not Detected
Freon 114	1.3	Not Detected	8.8	Not Detected
Vinyl Chloride	1.3	Not Detected	3.2	Not Detected
Bromomethane	1.3	Not Detected	4.9	Not Detected
Chloroethane	1.3	Not Detected	3.3	Not Detected
Freon 11	1.3	Not Detected	7.1	Not Detected
1,1-Dichloroethene	1.3	Not Detected	5.0	Not Detected
Freon 113	1.3	Not Detected	9.7	Not Detected
Methylene Chloride	1.3	Not Detected	4.4	Not Detected
1,1-Dichloroethane	1.3	Not Detected	5.1	Not Detected
cis-1,2-Dichloroethene	1.3	Not Detected	5.0	Not Detected
Chloroform	1.3	Not Detected	6.2	Not Detected
1,1,1-Trichloroethane	1.3	Not Detected	6.9	Not Detected
Carbon Tetrachloride	1.3	Not Detected	8.0	Not Detected
Benzene	1.3	Not Detected	4.0	Not Detected
1,2-Dichloroethane	1.3	Not Detected	5.1	Not Detected
Trichloroethene	1.3	Not Detected	6.8	Not Detected
1,2-Dichloropropane	1.3	Not Detected	5.8	Not Detected
cis-1,3-Dichloropropene	1.3	Not Detected	5.7	Not Detected
Toluene	1.3	Not Detected	4.8	Not Detected
trans-1,3-Dichloropropene	1.3	Not Detected	5.7	Not Detected
1,1,2-Trichloroethane	1.3	Not Detected	6.9	Not Detected
Tetrachloroethene	1.3	Not Detected	8.6	Not Detected
1,2-Dibromoethane (EDB)	1.3	Not Detected	9.7	Not Detected
Chlorobenzene	1.3	Not Detected	5.8	Not Detected
Ethyl Benzene	1.3	Not Detected	5.5	Not Detected
m,p-Xylene	1.3	Not Detected	5.5	Not Detected
o-Xylene	1.3	Not Detected	5.5	Not Detected
Styrene	1.3	Not Detected	5.4	Not Detected
1,1,2,2-Tetrachloroethane	1.3	Not Detected	8.7	Not Detected
1,3,5-Trimethylbenzene	1.3	Not Detected	6.2	Not Detected
1,2,4-Trimethylbenzene	1.3	Not Detected	6.2	Not Detected
1,3-Dichlorobenzene	1.3	Not Detected	7.6	Not Detected
1,4-Dichlorobenzene	1.3	Not Detected	7.6	Not Detected
alpha-Chlorotoluene	1.3	Not Detected	6.5	Not Detected
1,2-Dichlorobenzene	1.3	Not Detected	7.6	Not Detected
1,3-Butadiene	1.3	Not Detected	2.8	Not Detected
Hexane	1.3	Not Detected	4.4	Not Detected
Cyclohexane	1.3	Not Detected	4.4	Not Detected

AN ENVIRONMENTAL ANALYTICAL LABORATORY

Client Sample ID: VP507EWASH(AMBIENT)

Lab ID#: 0810427-10A

MODIFIED EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**5102919**	**Date of Collection: 10/15/08**
Dil. Factor:	**2.53**	**Date of Analysis: 10/29/08 11:58 PM**

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (uG/m3)	Amount (uG/m3)
Heptane	1.3	Not Detected	5.2	Not Detected
Bromodichloromethane	1.3	Not Detected	8.5	Not Detected
Dibromochloromethane	1.3	Not Detected	11	Not Detected
Cumene	1.3	Not Detected	6.2	Not Detected
Propylbenzene	1.3	Not Detected	6.2	Not Detected
Chloromethane	5.1	Not Detected	10	Not Detected
1,2,4-Trichlorobenzene	5.1	Not Detected	38	Not Detected
Hexachlorobutadiene	5.1	Not Detected	54	Not Detected
Acetone	5.1	6.6	12	16
Carbon Disulfide	1.3	Not Detected	3.9	Not Detected
2-Propanol	5.1	9.3	12	23
trans-1,2-Dichloroethene	1.3	Not Detected	5.0	Not Detected
2-Butanone (Methyl Ethyl Ketone)	1.3	Not Detected	3.7	Not Detected
Tetrahydrofuran	1.3	Not Detected	3.7	Not Detected
1,4-Dioxane	5.1	Not Detected	18	Not Detected
4-Methyl-2-pentanone	1.3	Not Detected	5.2	Not Detected
2-Hexanone	5.1	Not Detected	21	Not Detected
Bromoform	1.3	Not Detected	13	Not Detected
4-Ethyltoluene	1.3	Not Detected	6.2	Not Detected
Ethanol	5.1	6.0	9.5	11
Methyl tert-butyl ether	1.3	Not Detected	4.6	Not Detected
3-Chloropropene	5.1	Not Detected	16	Not Detected
2,2,4-Trimethylpentane	1.3	Not Detected	5.9	Not Detected
Naphthalene	5.1	Not Detected	26	Not Detected

Container Type: 6 Liter Summa Canister

Surrogates	%Recovery	Method Limits
Toluene-d8	95	70-130
1,2-Dichloroethane-d4	117	70-130
4-Bromofluorobenzene	112	70-130

AN ENVIRONMENTAL ANALYTICAL LABORATORY

Client Sample ID: Lab Blank

Lab ID#: 0810427-11A

MODIFIED EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**5102905**	**Date of Collection: NA**
Dil. Factor:	**1.00**	**Date of Analysis: 10/29/08 11:26 AM**

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (uG/m3)	Amount (uG/m3)
Freon 12	0.50	Not Detected	2.5	Not Detected
Freon 114	0.50	Not Detected	3.5	Not Detected
Chloromethane	2.0	Not Detected	4.1	Not Detected
Vinyl Chloride	0.50	Not Detected	1.3	Not Detected
1,3-Butadiene	0.50	Not Detected	1.1	Not Detected
Bromomethane	0.50	Not Detected	1.9	Not Detected
Chloroethane	0.50	Not Detected	1.3	Not Detected
Freon 11	0.50	Not Detected	2.8	Not Detected
Ethanol	2.0	Not Detected	3.8	Not Detected
Freon 113	0.50	Not Detected	3.8	Not Detected
1,1-Dichloroethene	0.50	Not Detected	2.0	Not Detected
Acetone	2.0	Not Detected	4.8	Not Detected
2-Propanol	2.0	Not Detected	4.9	Not Detected
Carbon Disulfide	0.50	Not Detected	1.6	Not Detected
3-Chloropropene	2.0	Not Detected	6.3	Not Detected
Methylene Chloride	0.50	Not Detected	1.7	Not Detected
Methyl tert-butyl ether	0.50	Not Detected	1.8	Not Detected
trans-1,2-Dichloroethene	0.50	Not Detected	2.0	Not Detected
Hexane	0.50	Not Detected	1.8	Not Detected
1,1-Dichloroethane	0.50	Not Detected	2.0	Not Detected
2-Butanone (Methyl Ethyl Ketone)	0.50	Not Detected	1.5	Not Detected
cis-1,2-Dichloroethene	0.50	Not Detected	2.0	Not Detected
Tetrahydrofuran	0.50	Not Detected	1.5	Not Detected
Chloroform	0.50	Not Detected	2.4	Not Detected
1,1,1-Trichloroethane	0.50	Not Detected	2.7	Not Detected
Cyclohexane	0.50	Not Detected	1.7	Not Detected
Carbon Tetrachloride	0.50	Not Detected	3.1	Not Detected
2,2,4-Trimethylpentane	0.50	Not Detected	2.3	Not Detected
Benzene	0.50	Not Detected	1.6	Not Detected
1,2-Dichloroethane	0.50	Not Detected	2.0	Not Detected
Heptane	0.50	Not Detected	2.0	Not Detected
Trichloroethene	0.50	Not Detected	2.7	Not Detected
1,2-Dichloropropane	0.50	Not Detected	2.3	Not Detected
1,4-Dioxane	2.0	Not Detected	7.2	Not Detected
Bromodichloromethane	0.50	Not Detected	3.4	Not Detected
cis-1,3-Dichloropropene	0.50	Not Detected	2.3	Not Detected
4-Methyl-2-pentanone	0.50	Not Detected	2.0	Not Detected
Toluene	0.50	Not Detected	1.9	Not Detected
trans-1,3-Dichloropropene	0.50	Not Detected	2.3	Not Detected

AN ENVIRONMENTAL ANALYTICAL LABORATORY

Client Sample ID: Lab Blank

Lab ID#: 0810427-11A

MODIFIED EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**5102905**	**Date of Collection: NA**
Dil. Factor:	**1.00**	**Date of Analysis: 10/29/08 11:26 AM**

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (uG/m3)	Amount (uG/m3)
1,1,2-Trichloroethane	0.50	Not Detected	2.7	Not Detected
Tetrachloroethene	0.50	Not Detected	3.4	Not Detected
2-Hexanone	2.0	Not Detected	8.2	Not Detected
Dibromochloromethane	0.50	Not Detected	4.2	Not Detected
1,2-Dibromoethane (EDB)	0.50	Not Detected	3.8	Not Detected
Chlorobenzene	0.50	Not Detected	2.3	Not Detected
Ethyl Benzene	0.50	Not Detected	2.2	Not Detected
m,p-Xylene	0.50	Not Detected	2.2	Not Detected
o-Xylene	0.50	Not Detected	2.2	Not Detected
Styrene	0.50	Not Detected	2.1	Not Detected
Bromoform	0.50	Not Detected	5.2	Not Detected
Cumene	0.50	Not Detected	2.4	Not Detected
1,1,2,2-Tetrachloroethane	0.50	Not Detected	3.4	Not Detected
Propylbenzene	0.50	Not Detected	2.4	Not Detected
4-Ethyltoluene	0.50	Not Detected	2.4	Not Detected
1,3,5-Trimethylbenzene	0.50	Not Detected	2.4	Not Detected
1,2,4-Trimethylbenzene	0.50	Not Detected	2.4	Not Detected
1,3-Dichlorobenzene	0.50	Not Detected	3.0	Not Detected
1,4-Dichlorobenzene	0.50	Not Detected	3.0	Not Detected
alpha-Chlorotoluene	0.50	Not Detected	2.6	Not Detected
1,2-Dichlorobenzene	0.50	Not Detected	3.0	Not Detected
1,2,4-Trichlorobenzene	2.0	Not Detected	15	Not Detected
Hexachlorobutadiene	2.0	Not Detected	21	Not Detected
Naphthalene	2.0	Not Detected	10	Not Detected
1,1-Difluoroethane	2.0	Not Detected	5.4	Not Detected

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
Toluene-d8	95	70-130
1,2-Dichloroethane-d4	113	70-130
4-Bromofluorobenzene	113	70-130

AN ENVIRONMENTAL ANALYTICAL LABORATORY

Client Sample ID: CCV

Lab ID#: 0810427-12A

MODIFIED EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**5102902**	**Date of Collection: NA**
Dil. Factor:	**1.00**	**Date of Analysis: 10/29/08 09:04 AM**

Compound	%Recovery
Freon 12	114
Freon 114	107
Chloromethane	97
Vinyl Chloride	94
1,3-Butadiene	97
Bromomethane	114
Chloroethane	79
Freon 11	111
Ethanol	89
Freon 113	99
1,1-Dichloroethene	102
Acetone	86
2-Propanol	91
Carbon Disulfide	91
3-Chloropropene	86
Methylene Chloride	96
Methyl tert-butyl ether	127
trans-1,2-Dichloroethene	89
Hexane	84
1,1-Dichloroethane	91
2-Butanone (Methyl Ethyl Ketone)	88
cis-1,2-Dichloroethene	92
Tetrahydrofuran	87
Chloroform	90
1,1,1-Trichloroethane	103
Cyclohexane	86
Carbon Tetrachloride	107
2,2,4-Trimethylpentane	82
Benzene	84
1,2-Dichloroethane	113
Heptane	89
Trichloroethene	100
1,2-Dichloropropane	89
1,4-Dioxane	91
Bromodichloromethane	109
cis-1,3-Dichloropropene	96
4-Methyl-2-pentanone	92
Toluene	89
trans-1,3-Dichloropropene	98

AN ENVIRONMENTAL ANALYTICAL LABORATORY

Client Sample ID: CCV

Lab ID#: 0810427-12A

MODIFIED EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**5102902**	**Date of Collection: NA**
Dil. Factor:	**1.00**	**Date of Analysis: 10/29/08 09:04 AM**

Compound	%Recovery
1,1,2-Trichloroethane	90
Tetrachloroethene	94
2-Hexanone	81
Dibromochloromethane	104
1,2-Dibromoethane (EDB)	91
Chlorobenzene	91
Ethyl Benzene	91
m,p-Xylene	92
o-Xylene	93
Styrene	90
Bromoform	111
Cumene	93
1,1,2,2-Tetrachloroethane	91
Propylbenzene	100
4-Ethyltoluene	85
1,3,5-Trimethylbenzene	125
1,2,4-Trimethylbenzene	95
1,3-Dichlorobenzene	101
1,4-Dichlorobenzene	100
alpha-Chlorotoluene	103
1,2-Dichlorobenzene	99
1,2,4-Trichlorobenzene	105
Hexachlorobutadiene	108
Naphthalene	98
1,1-Difluoroethane	114

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
Toluene-d8	101	70-130
1,2-Dichloroethane-d4	114	70-130
4-Bromofluorobenzene	111	70-130

AN ENVIRONMENTAL ANALYTICAL LABORATORY

Client Sample ID: LCS

Lab ID#: 0810427-13A

MODIFIED EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**5102903**	**Date of Collection: NA**
Dil. Factor:	**1.00**	**Date of Analysis: 10/29/08 09:39 AM**

Compound	%Recovery
Freon 12	119
Freon 114	111
Chloromethane	104
Vinyl Chloride	102
1,3-Butadiene	100
Bromomethane	131 Q
Chloroethane	93
Freon 11	116
Ethanol	106
Freon 113	122
1,1-Dichloroethene	122
Acetone	95
2-Propanol	103
Carbon Disulfide	102
3-Chloropropene	95
Methylene Chloride	113
Methyl tert-butyl ether	147 Q
trans-1,2-Dichloroethene	97
Hexane	98
1,1-Dichloroethane	104
2-Butanone (Methyl Ethyl Ketone)	96
cis-1,2-Dichloroethene	102
Tetrahydrofuran	95
Chloroform	100
1,1,1-Trichloroethane	114
Cyclohexane	96
Carbon Tetrachloride	117
2,2,4-Trimethylpentane	93
Benzene	93
1,2-Dichloroethane	122
Heptane	99
Trichloroethene	106
1,2-Dichloropropane	98
1,4-Dioxane	97
Bromodichloromethane	119
cis-1,3-Dichloropropene	106
4-Methyl-2-pentanone	104
Toluene	103
trans-1,3-Dichloropropene	107

AN ENVIRONMENTAL ANALYTICAL LABORATORY

Client Sample ID: LCS

Lab ID#: 0810427-13A

MODIFIED EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**5102903**	**Date of Collection: NA**
Dil. Factor:	**1.00**	**Date of Analysis: 10/29/08 09:39 AM**

Compound	%Recovery
1,1,2-Trichloroethane	98
Tetrachloroethene	102
2-Hexanone	88
Dibromochloromethane	114
1,2-Dibromoethane (EDB)	96
Chlorobenzene	98
Ethyl Benzene	98
m,p-Xylene	98
o-Xylene	99
Styrene	98
Bromoform	117
Cumene	102
1,1,2,2-Tetrachloroethane	97
Propylbenzene	108
4-Ethyltoluene	115
1,3,5-Trimethylbenzene	99
1,2,4-Trimethylbenzene	99
1,3-Dichlorobenzene	105
1,4-Dichlorobenzene	104
alpha-Chlorotoluene	111
1,2-Dichlorobenzene	102
1,2,4-Trichlorobenzene	106
Hexachlorobutadiene	108
Naphthalene	104
1,1-Difluoroethane	Not Spiked

Q = Exceeds Quality Control limits.

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
Toluene-d8	102	70-130
1,2-Dichloroethane-d4	111	70-130
4-Bromofluorobenzene	110	70-130

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Collected by: (Print and Sign) Keith Klemm
Company Gannett Fleming Email rscafford@gfnet.com
Address 4201 Mount Hope Dr. Suite A City Baltimore State MD Zip 21215
Phone 410-585-1460 Fax 410-585-1470

Project Info:
P.O. # 050067.C
Project # 050067
Project Name Ameren-Champaigne

Turn Around Time:
☒ Normal
☐ Rush
specify

Lab Use Only
Pressurized by:
Date:
Pressurization Gas: N_2 He

Lab I.D.	Field Sample I.D. (Location)	Can #	Date of Collection	Time of Collection	Analyses Requested	Canister Pressure/Vacuum Initial	Final	Receipt	Final (psi)
01A	VP507EWASH-1	33727	10/15/08	1642	TO-15: Full scan with	27.5	5.0		
02A	VP505EWASH-1	36555		0902	Naphthalene and	27.4	5.0		
03A	VP507EWASH-2	34167		1051	Difluoroethane	27.4	5.0		
04A	VP507EWASH-F	2085		1103		28.9	5.0		
05A	VP412EHILL-2	2219		1441		27.7	5.0		
06A	VP505EWASH-2	36553		0853		27.1	5.0		
07A	VP507EWASH-3	36522		1155		28.4	5.0		
08A	VP412EHILL-3	36494		1531		28.0	5.0		
09A	VP412EHILL-1	34081		1329		28.9	5.0		
10A	VP507EWASH (AMBIENT)	33669		1715	TO-15: Full Scan with Naphthalene	28.0	5.0		

Relinquished by: (signature)	Date/Time	Received by: (signature)	Date/Time
[signature]	10/15/08/2300	[signature] AAL	10/18/08 915

Notes:

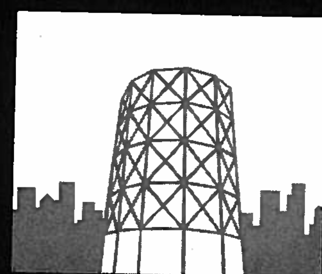
Lab Use Only	Shipper Name	Air Bill #	Temp (°C)	Condition	Custody Seals Intact?	Work Order #
	FedEx		NA	Good	Yes No None	0810427

Form 1293 rev.11

Appendix G
References for Selection of MGP Related Chemicals

VOLUME 1

Management of Manufactured Gas Plant Sites



Two-Volume Practical Reference Guide from Gas Research Institute

EDITED BY

Thomas D. Hayes, Ph.D.
David G. Linz
David V. Nakles, Ph.D.
Alfred P. Leuschner

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ISBN 1-884940-06-4

Table 5-1 Wastes and Chemicals of Interest at MGP Sites

WASTES		
	Free tars, oils, and lampblack	Organic-contaminated vessel, surface, and groundwaters
	Organic-contaminated soils - Heavily contaminated - Lightly contaminated	Purifier wastes Mixed wastes and fill

CHEMICALS	INORGANICS	METALS	VOLATILE AROMATICS	PHENOLICS	POLYNUCLEAR AROMATIC HYDROCARBONS
	Ammonia	Aluminum	Benzene	Phenol	Acenaphthene
	Cyanide	Antimony	Ethyl Benzene	2-Methylphenol	Acenaphthylene
	Nitrate	Arsenic	Toluene	4-Methylphenol	Anthracene
	Sulfate	Barium	Total Xylenes	2,4-Dimethylphenol	Benzo(a)anthracene
	Sulfide	Cadmium			Benzo(a)pyrene
	Thiocyanates	Chromium			Benzo(b)fluoranthene
		Copper			Benzo(g,h,i)perylene
		Iron			Benzo(k)fluoranthene
		Lead			Chrysene
		Manganese			Dibenzo(a,h)anthracene
		Mercury			Dibenzofuran
		Nickel			Fluoranthene
		Selenium			Fluorene
		Silver			Indeno(1,2,3. cd)pyrene
		Vanadium			Naphthalene
		Zinc			Phenanthrene
					Pyrene
					2-Methyl Naphthalene

5.1 WASTES

The five wastes listec
based upon the survey o
of the process residuals
as man and nature have
The wastes reveal th
oils and lampblack and
based upon the relativel
and the regulatory signi
hydrocarbons. Potential
which tend to be widel
should be noted again t
site wastes with miscella
demolition. Mixed was
combination of hazardo

5.2 CHEMICALS

The methodology f
The chemicals of regula
in the EPA CLP or i
compared to the chem
residuals (Chapter 2). T
of regulatory concern t
to be there based upon
smaller set of chemicals
of interest for MGP si
The chemical scree
limitations of both the
identified in the site v
scope of the study fro
available at the time t
understand the impac
investigations should c
scans of both aqueous
classes and chemicals
The results of the
the six primary chemic
extent that exceptions
rationale for and impa

5.2.1 Inorganic Chem

Six inorganic com
nitrogen (cyanide, am
sulfates) compounds.

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Engineering Geology 64 (2002) 317–338

ENGINEERING GEOLOGY

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Geoenvironmental protocol for site and waste characterization of former manufactured gas plants; worldwide remediation challenge in semi-volatile organic wastes☆

Allen W. Hatheway*

Consultant in Mitigation and Forensics Rolla, Missouri and Big Arm, Montana, USA

Abstract

The most common and difficult of all hazardous waste sites are those that historically produced artificial (manufactured) gas; for gas-making was international in scope and at the very core of the industrial revolution. With former manufactured gas plants (FMGPs), virtually no geologic region in the industrialized or urbanized world or its trade centers and ports escaped the gas industry. These plants applied pyrolysis of organic matter (roasting to drive off volatiles in the form of useful gases) to illuminate the world and to fuel all manner of progress. Gas was and is the universal fuel. Its prominence stemmed from the omnipresence of organic matter and the universal process for the extraction of its volatile contents to manufacture useful gas. Furthermore, for most of the century and a half-long history of manufactured gas, natural gas was unavailable to slow or daunt the production of man-made gas and the universal creation of its toxic tar residues and other harmful waste residuals. Today we face the presence of toxic organic gas manufacturing residuals as a unique threat to both the health and welfare of contemporary society, as well as being a long-term threat to the environment that is dominantly geologic in character. Most of these tar residuals are highly resistant to natural degradation or attenuation in the environment and their lives, therefore, they are measured in geologic time. Given its environmental persistence, potential problems associated with tar may exist centuries to thousands of years. Engineering geologists and geological engineers are, by training and experience, particularly well equipped to plan, manage and conduct site and waste characterization efforts for FMGPs and related coal-tar sites.

Keywords: Site and waste characterization; Former manufactured gas plants; Semi-volatile organic wastes

1. Introduction

Derelict industrial waste sites are among the greatest environmental problems worldwide. "Uncontrolled hazardous waste sites" (UHWS) have been noticed as a major societal threat for about the last quarter century.

With these sites we face a vast spectrum of compounds comprising the waste and an infinite variety of complex geological materials/waste settings. The variable relationships between geologic conditions and the fate of hazardous waste is the most difficult of all site characterization challenges for those working in the applied earth sciences.

The very presence, design layout, management and operation of each gas works was wholly influenced by geologic site features and accessibility to natural and man-made resources. Likewise, historically, the

☆ An Inaugural Paper in Principles of Engineering Geology; The George A. Kiersch Series, Engineering Geology, Amsterdam.

* Fax: +1-573-341-6935.

E-mail address: allen@hatheway.net (A.W. Hatheway).

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management options for toxic waste by-products (i.e. sell, use, discard) were often governed by the location of the gas works or their geologic setting, including proximity to surface water bodies, wetlands, and unoccupied land. Economics also played a large role in the operations of the gas plant, from the selection of feedstock to the management of by-products and wastes.

Most of the broad advances made in dealing with toxic and persistent groundwater contaminants have been concentrated on and successful in dealing with halogenated (chlorinated), specialty chemical compounds created since 1928 to serve as solvents, pesticides and heat-dissipation oils. These solvents are volatile organic compounds (VOCs) and their nature and geologic affinities and associations are very different from the predominant semi-volatile organic compounds (SVOCs) associated with the processes of manufacturing gas, as well as the halogenated pesticides and heat-dissipation compounds.

This paper deals with the associations between geologic conditions and the nature and ultimate face of the tar residuals and oils generated by the manufacture of gas and coke, and by the processing of the tar and oil by-products of the industry. Tar residuals and gas oil are composed of complex mixtures of hundreds of aliphatic and aromatic organic hydrocarbons. The constituents of tar and oil that are of specific interest for investigation and remediation at former manufactured gas plant (FMGP) sites are the polycyclic aromatic hydrocarbons (PAHs). Many of these compounds are of particular concern because they are suspected human carcinogens. Sixteen of the PAHs found in tar are on the U.S. Environmental Protection Agency (USEPA) list of priority pollutants. Also of grave concern are the known and emerging carcinogenicity of the PAHs and the toxic threats of associated cyanides, heavy metals, and sulfur compounds.

2. Historic background of manufactured gas

Prior to 1792, inhabited portions of the earth were lit at night by various types of tallow candles and oil lamps. The streets of most cities were unlit and on moonless nights thieves abounded so that no citizen was safe. Likewise, commerce was restricted to daylight hours and nighttime deliberations of government were carried on under the feeble light of whale oil and candle. Factories worked on single 12-h shifts when possible.

The complacency of this world was shattered by a discovery by Scotsman William Murdoch (now known as Murdock) in 1792. Murdock was a brilliant self-educated mechanical engineer who was employed as an erection engineer by Boulton & Watt of Birmingham, England. While on assignment in Cornwall, to install a steam (pumping) engine at a local mine, Murdock fashioned the world's first gas manufacturing and house lighting system, in his spare time, at his home at Redruth. The rest truly is history.

Murdock returned soon to Birmingham and, by 1798, had built institutional gas plants for double-shift lighting factories in England's industrial "Black Country" northwest of Birmingham and raised the specter of gas lighting. By the turn of the 19th century, awareness of artificial gas and gas lighting had awakened in Moravia (now Czech Republic), Belgium and France. This knowledge came to be focused by the German Moravian Friedrich Albrecht Winzler, at London, around the year 1804.

Murdock went on to pursue other important works in practical engineering and Winzler, anglicized as Winsor, created the world-pioneering Chartered Gas Light and Coke of London (1812), sometimes known as the London and Westminster Gas Light and Coke Company. The world took note and the British Empire, upon whose flag the "sun never set," cheerfully began to light its nighttime world. The first experimentation with gas lighting in the United States was in 1796 at Philadelphia (the Italian fireworks manufacturers, the Brothers Ambroise) and around 1810 at Newport, RI, by David Melville. America's first commercial gas lighting occurred in Baltimore in 1816.

A complete treatment of the historic technical aspects of the subject is contained in *Remediation of Former Manufactured Gas Plants and Other Coal-Tar Sites* (Hatheway, in press (a)).

3. The chemical–geologic connection of manufactured gas

Gas manufacturing and gas lighting were of the highest order of technologies at the turn of the 19th

Table 1
De facto geologic siting conditions for manufactured gas plants

Geologic/related anthropogenic factors	Application	Rationale
Proximity to central business district	Optimal gas distribution at minimal cost	Saves in cost and effort toward placing gas mains for distribution of plant gas to the city.
Size of site	Half hectare minimum; generally much larger	Based on premise that city would grow and that more and more gas could be sold, hence the need to expand the plant; a few to tens of ha. of space most desirable.
Sited on transportation route	Rail, river or canal ideally accessible to the plant site by spur or slip. Vehicle transport rarely available during the era of manufactured gas.	Incoming feedstock such as coal, coke, and oils, as well as replacement supplies and parts for the making machines. Export of such salable residuals as must go off-site, such as coke, tar, light oils, ammonia, sulfur and cyanides.
Plant elevation lower than distribution zone	Illuminating and fuel gas is lighter than air	Designed to rise from the plant throughout the gas distribution area.
Entrance "Fluids" at the highest elevated portion of the works	Fluids able to move through plant from process start to finish	Facilitates movement of process water and fluids by gravity, without requiring pump energy.
Source of process water	On-site well or adjacent water body (lake, river, stream)	High demand for water; to generate steam and to clarify gas; water used to gather and manage tar residuals and to produce tar for possible use or sale.
Stable foundation for works structure	Retort benches and other gas-manufacturing machines, as well as clarification, purification, and storage structures have heavy foundation loads	Entire function of gas manufacturing, treatment and storage is sensitive to stress fracturing as well as gas and fluid leakage from foundation settlement on poor or over-stressed foundation earth materials.
Located on inferior site of rail tracks	Gas works were considered nuisances by the public	Resulted in devaluation of surrounding properties.
Site drainage	From gate to lower end of the site.	Most operators took effort to see that the working surface of the gas yard was trafficable in all weather.
Off-site drainage	Effluents could not be stored on the plant site	Required consideration of some form of off-site removal of liquids from the plant site.
Above frequent flood levels	Gas machines highly susceptible to thermal and silting damage from floodwaters	Gas was considered essential once the supply was initiated and coal-gas retorts could not be shut down without thermal damage.
Plant "Upsets"; explosions and other emergency situations	Floods, explosions, hurricanes, unseated gas holders, frozen valves	May have resulted in direct discharges of process residuals and wastes to the ground, to include surface waters. Also flood erosion and transport of residuals and wastes. Search for contemporary newspaper accounts of impact on FMGP.
Waste disposal area(s)	Plant generated significant amounts of solid and liquid waste that could not be accommodated on the plant site	Typically solids assigned to plant dump, mostly as broken bricks and ceramic retort fragments, along with purification wastes. Dumps typically had high voids ratios and were a tempting disposal for toxic liquids and sludges.
	Large and sometimes deep tar ponds have been encountered at Duquoin, IL, Larium and Pontiac, MI, and Carondelet Coke Works, St. Louis, MO; the latter measured in hectare of area and meters of depth	Contemporary swamps, sloughs and lowlands were favorite dumpsite candidates. Adjacent low land was often selected for use as typically unlined tar ponds and tar lagoons, as a waste disposal option when tar quality fell below sales or during bad-market conditions.

century. Science and trade journals eagerly carried news of its developments and applications. Likewise, technical books began to appear, in English as early as 1815 (Accum, 1815). All that was needed to create gas and to have gas lighting was feedstock (coal), an iron monger (i.e. blacksmith) and some ready financing.

At its beginning and for several decades thereafter, manufactured gas could be generated anywhere, given the two essential ingredients, but it required a local means of storage. This was solved immediately by invention of the *gasometer*—or *gas holder*. The technical impracticalities of its transmission prevented its distribution beyond a few miles of each gas works. Reliable, high-pressure metal pipelines were to be a thing of the future, a problem not wholly solved until 1928.

Initially, the gas engineer was faced with physical decisions related to the actual siting and layout of the gas works. Once the financing was raised (about £6,000 or US$30,000), the rest of the equation was based on geologic and anthropogenic factors (Table 1), the latter not directly recognized at the time.

4. Generic process of gas-making

It is imperative that the remedial site manager tasked with investigation and remediation of an FMGP have knowledge of the general gas manufacturing processes and the specific processes, equipment, and operational practices of the plant being investigated.

Basically, an organic feedstock (e.g. coal or oil) was pyrolytically roasted (in the absence of oxygen) to release volatile constituents in the form of raw gas. For manufacture of coal gas roasting was a batch process of a few hours' duration. For production of gas from oil (i.e. water gas, carburetted water gas, oil-enriched water gas, and the various types of oil gas), roasting was a continuous process conducted in sequential cycles of a few minutes each.

Once created, the gas always contained tar and other microscopic impurities inimical to the purpose of the gas, which was for illumination, heating, or used as an industrial fuel. Removal of these impurities was performed in two sequential efforts. The first effort, which occurred immediately after the gas was

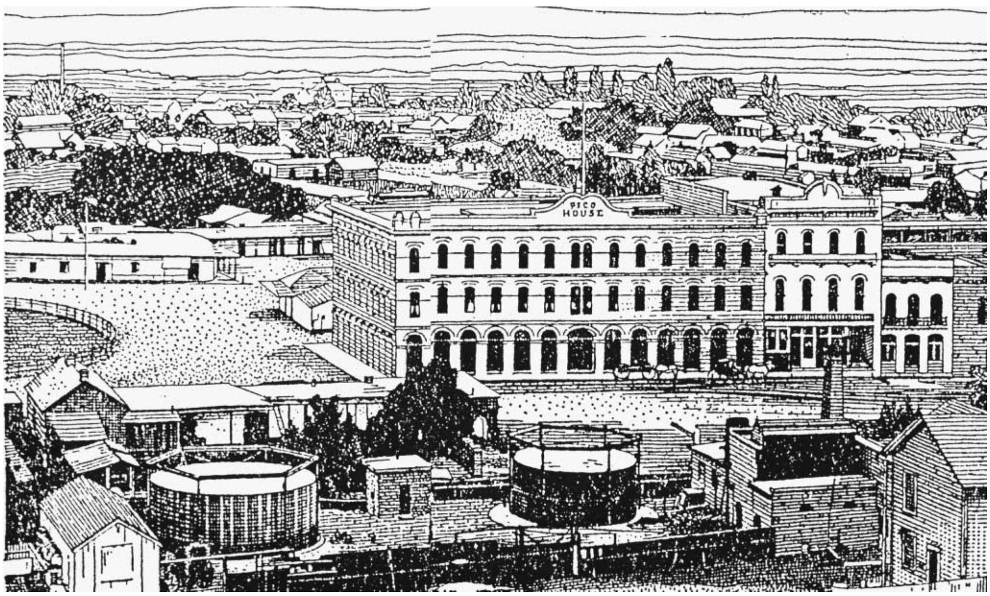

Fig. 1. Los Angeles Gas Company works off Aliso Street at today's historic Olvera Street Plaza. This was a coal-gas plant employing feedstock sent from Australia and from Britain as return cargoes for California grains. The works fronted Governor Pio Pico's hotel and it sported gas lights. Note the two gas holders already present at the 3-year-old plant. In the center is the lime house, storing purification media (from Newcomen Society of America, 1966).

generated and released from the retort (coal gas) or the generator (water gas, carburetted water gas [CWG], oil-enriched water gas and oil gas), never had a simplistic name and was conducted in devices named condensers, washers and scrubbers and in combinations of those devices. For this overall process, I use the generic term of *clarification*. The subsequent and finishing process of treatment always was termed *purification*.

Most of the gas treatment was involved in clarification. Purification, however, was essentially the same process for all forms of manufactured gas. Purifiers came in a wide variety of shapes, mainly right-circular cylinders and square-sided paralellapipeds. Known generically as "boxes," these devices produced "box wastes" that demanded strict attention toward their management as solid wastes. In the past 2 years, a rash of discoveries of derelict box wastes has brought their fate and today's threats, mainly from forms of cyanide, to the forefront of our national remediation attention.

4.1. Generic layout for a manufactured gas plant

After examining the layout evidence for hundreds of former plants, I have concluded that there never was a consensus physical arrangement employed by the manufactured gas industry. Gas works were designed

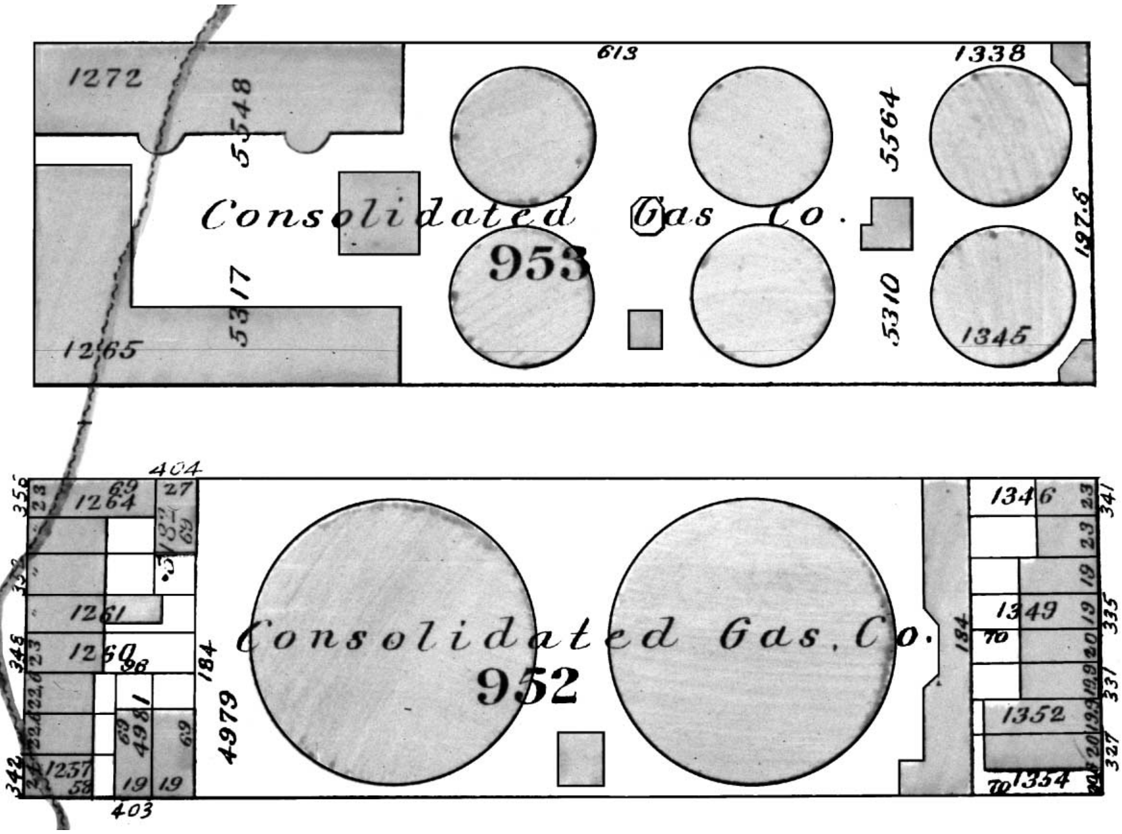

Fig. 2. Large urban gas works, that of the Consolidated Gas of New York City, 1884, when it was formed to consolidate six of the many competing manufactured gas companies. This portion of the plant covers most of two city blocks, with a rail spur in the alleyway. The remainder of the gas works occupied nearly three more city blocks. Each of the blocks is nearly 200 ft wide at the sidewalk. The drawing is a portion of G.M. Hopkins' Ward Maps of the City, published in many water-colored plates. Of course, no external trace of the gasworks exists today but the subsurface predictably will be saturated with tars, to include probable invasion of the utility systems, including drinking water. The bold, irregular line represents a topographic break in slope (from the author's collection of manufactured gas memorabilia).

Table 2
Typical components of FMGPs as potential waste sources

Component	MGP use	Waste source location and potential
Transportation spur	Delivery point of feedstocks; exit point of salable residuals	Human labor was a significant cost to gas making. Feedstocks were brought as close as possible to the retorts and generator houses.
Coal yard	Storage area which kept coal dry for optimal use in firing boilers or as retort feedstock	Kept as close as feasible to the retorts and generators. Many plants chose to place coal in sheds so as to optimize gasification in the presence of minimal water content.
Coke yard	By-product coke from coal-gas plants	Used symbiotically as feedstock for various water gas plants, especially as co-located.
Retort house	Coal-gas retorts housed internally in *benches*; groups of benches as *stacks*	The central building of the gas-making process; generally located at the corner of the plant with highest elevation and near the gate, from which the processed gas left the plant through the station meter.
Generator house	Location of *generator sets* for carburetted water gas process	Generation capacity such that vastly smaller space required for commensurate production over coal-gas process.
Condenser house	Building or addition immediately adjacent to retort house or generator house	After 1920, tended to be out-of-doors. Same configuration used for all gas generating processes; usually a wet process.
Scrubber	Tall (5–10 m) right-circular cylinders with slanted trays holding wood fiber/chips	Usually employed a water shower to remove tar and other process residuals from the gas.
Washer	Gas immersed in agitated water bath to cool gas and drop tar particles	With carburetted water gas and enhanced oil-gas, placed first in the clarification sequence as a seal against back-flow of gas.
Combined washer–scrubber	When employed, generally post-1895	Enhanced the recovery of tar from gas.
Sumps of clarification devices	Condensers, scrubbers and washers, and their combinations had bottom sumps to trap and yield tar and tar sludges	Tar generally removed manually for recovery, reuse or dumping. Spills and leaks assumed in a generic sense. Tar sludges contained refractory geologic impurities such as quartz and feldspar.
Exhauster	Steam-driven gas evacuator to reduce gas pressure and promote flow through system	Position of exhauster chosen by the plant gas engineer to achieve optimal flow of gas through the tar-removal clarification process; most plants had a backup exhauster.
Purifiers (Purifier Boxes)	Gas was passed through "boxes" containing layers of lime, wood chips and/or strips of iron as various forms of sorbants, often in conjunction with each other Generally employed minimally as a pair of "boxes" in series, with at least a spare pair in series	Trapped some tar, but designed to trap sulfur, cyanide, arsenic and other heavy metals all of which originated in or from the organic gas feedstock materials.
Relief holder	(1) With coal gas, the oldest of the gas holders, serving as a raw-gas exposure to tar-dropping seal water before clarification/purification (2) With carburetted or oil-enhanced water gas a necessary presence to buffer gas-pressure variations on blow-run cycles	Relief holders of the first variety can be expected to be of the subsurface variety and left virtually full of unrecovered tar as commonly abandoned. Second variety holder tanks tend to be less commonly abandoned with large volumes of water-gas tar, unless dumped at time of plant decommissioning.
Gas holders (Gasometers)	As many as needed Generally predicated on the largest being equivalent to 1 day's *make* Of prime concern are the subsurface tanks most common to pre-1900 varieties	Of several basic design variations. Those pre-1900 have a subsurface water-seal tank likely to have leaked considerable amounts of PAHs to the subsurface through various fractures related to brick, masonry and/or

Table 2 (*continued*)

Component	MGP use	Waste source location and potential
		concrete or composite construction materials. Valve pits commonly exhibit hot-spot concentrations of PAH contamination.
Tar wells and tar cisterns	Subsurface tanks, right-circular cylinders and rectangular or square-sided; brick, masonry or concrete or composite Less commonly known as "ammonia wells"	Commonly designed with a self-functioning gas-liquor (process water) discharge system to carry off lightest-fraction of gas liquor while retaining the gravity-separated tar fraction; all subject to through-fracture flow leakage to the surrounding earth during the operational period.
Tar separator	Both as above-ground devices housed in structures and as subsurface rectangular-form concrete or wood "tanks," the latter often made of wood planks subject to between-plank leakage	Above-ground devices were machines built to physically separate tar particles from liquor; below-ground devices contained flow baffles functioning to slow in–out flow of gas liquor carrying suspended tar, the latter dropped to the sump of the tar separator.
Boiler house	Necessary to power the exhauster and a variety of small steam engines and fluid pumps	Generally consumed coal or by-product coke; could be rigged for burning tar, under close supervision of temperatures. Ash not expected to be toxic unless exposed.
Oil storage tanks (above ground and underground)	Illuminating or enriching oil for non-coal-gas production	Generally petroleum oils susceptible to biodegradation if leaked or spilled; generally no incentive or reason to dump.
Plant plumbing	Below-ground piping, often in trenches or pipe chases	Virtually all process piping was subject to corrosion and release of PAHs, or release through joints and seams.
Yard drips (Drip Pots)	Light-oil (drip oil) collection sumps placed along gas-flow pipes in the gas yard	Used to collect naphthalene and other light oils; these were of value and were recycled, usually as carburettion oils for water gas, or as industrial solvents.
Furnaces	The fire box located below gas benches and all boilers	Source of operational heat; residue was only ash, cinder, clinker or slag; not expected to be hazardous by nature of its formation.
Station meter	Plant production measuring device housed in a structure at the gas-outlet from the plant	Generally co-located with the plant office and in the up-gradient end of the site, near the plant gate. Not a source of contamination.
Governor	Gas flow control device adjusting distributed gas to main distribution pressure	Should not be a source of contamination.
Rail-spur spills	Operational-era spills of tars and other fluid residuals (light oils and ammonia) being transferred off-site as by-products	Naturally most prominent at larger plants and those plants engaged in by-product recovery operations.
Purification box media spreading ground	Wood-chip and some forms of iron oxide media could be *revivified* on this pad and returned for re-use short of ultimate "spent" condition	Action implies shaking and mass-expansion via pitch forks. Sulfur and Prussian blue (cyanide) could be raked up and sold as by-products in many instances.
Spent wood-chip box waste burning ground	A corner or side area of the gas yard where dry chips could be torched and destroyed by fire	Required dry climate or dry season; ashes carried to a plant dump.
Plant dump	Primary disposal site on the gas yard; broken, fractured, slagged retort bricks; generator lining bricks, all manner of scurf or other carbon-slag wastes, ash, clinker, slag, off-specification tar, tar sludge, lampblack, box wastes, bottles, purifier shelf slats, broken windows, corroded pipe, scrap iron, wagon and vehicle parts, and broken gas-plant equipment	Expect a toxic character in general. Plant dump likely will be found in or at the furthest down-slope corner or extension of the gas yard, along the adjacent creek, stream, or river, or filling any original topographic declivity of the ground at the site. In almost all cases, the plant dump was filled early and supplemented with multiple dumps around the periphery of the gas plant, to within a several-block wagon haul distance.

initially by veteran gas men, who later included master plumbers, and after about 1870 in North America and Europe, by graduate gas engineers, mostly of the mechanical discipline, but including a significant percentage of civil engineers (about 40%). The overall governing condition was the topography of the site, mainly site surface gradient and the presence of an adjacent stream or body of surface water. The designer made the components fit the site and the flow of activity was from higher to lower elevation. Fig. 1 is the small original gas works at Los Angeles, CA. A

Fig. 4. Solid waste typical of the gas works dump. This riverside location displays a variety of maker-marked fire and refractory brick into which typically liquid-waste PAHs were channeled or dumped, either out of convenience to the operators or during times and conditions under which the economics of by-product recovery were considered infeasible (photograph by the author, Lansing, MI, 2001).

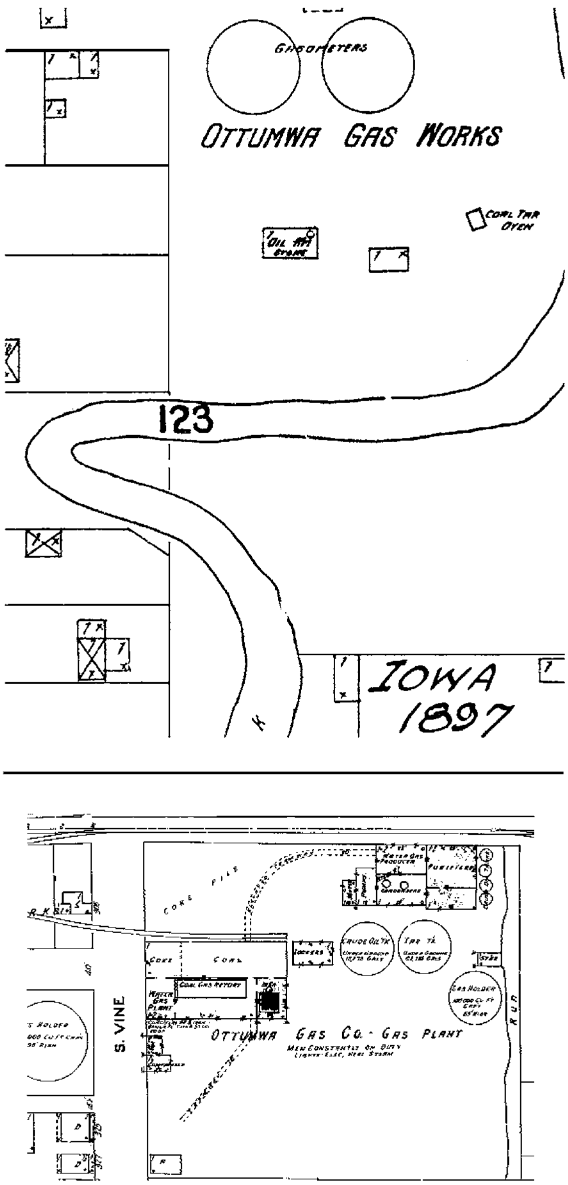

Fig. 3. Medium-sized works displayed by two editions of the Sanborn Fire Insurance Maps of Ottumwa, IA. The plant was independent as shown in the first view and as shown in the second view, was controlled by the United Light and Power, of Chicago (after the Library of Congress Collection). Upper view shows a portion of the plant in 1897, with a prominent "run" (creek) plies the gas yard flowing from the right toward the bottom of the view on its way to join the nearby river. At this time, the plant appears to have been burning at least some of its tar residuals, while other wastes likely made use of the large unoccupied gas yard rear (bottom) for disposal of ammoniacal liquors to the run and disposal of box wastes and other solid debris to the ground. Lower view, drawn in 1930, shows no trace of the now-infilled run, surely the plant dump. Owner Ottumwa Gas Company is modern in its array of symbiotic gas manufacturing processes. Coal gas yet is prominent, for Iowa coal was everywhere abundant and the agricultural rail grid was the finest in America. Coke from the coal-gas retorts likely was fed to the carburetted water gas generators and carburetting oil tanks are prominent. Water gas (blue gas) producers, the third gas manufacturing process, were present to make fuel gas for lively sales for heating and cooking and such gas likely was stored in the 100,000 cf. gas holder by the run. Illuminating gas was stored as a mix of CWG and coal gas in the newer gas holder across South Vine Street. The two older gas holders (gasometers) had been converted to carburetting oil storage and for accumulation of tar for minimum loads to be shipped via tank cars arriving on the nearby railroad siding (both maps are after coverage held in the Library of Congress).

truly large urban FMGP, the 1884 Consolidated Gas Company of New York City is shown as Fig. 2 and portrays the heroic dimensions of the gas yard and its individual buildings such as were common to large cities. Today, greater New York City is the site of at least 130 FMGPs.

To develop an accurate and effective site characterization plan for an FMGP site, an investigator must first understand how the individual *components* of the gas works (Table 2) contributed to the gas-making, treatment, storage and distribution process. The physical layout of the various plant components on a site and the likely subsurface piping connections between them will dictate where wastes were generated, leaked, or spilled. Conversely, bodies of wastes not having these associations were likely dumped around the fringes of the gas yard, in adjacent gullies or topographically low areas (Figs. 3, 4 and 5 and Hatheway, 2000). Without an appreciation of the functions of the various process components, and a knowledge of their locations, field investigators with the best of intentions can develop site and waste characterizations that are flawed. Worse-yet, such flaws may prompt injudicious choices and decisions related to public health and environmental protection. To be blunt, a flawed, inaccurate, or possibly incom-

Fig. 5. Some outstanding gas works residuals. (5L) Motor spirit (a.k.a. Benzol) was the forerunner of our gasoline and benzine was a distilled derivitive of the benzol. Today, these two light nonaqueous-phase liquids (LAPLs) are commonly found as groundwater contaminants, though more often not as free phase (from the Author's collection). (5L) The motor spirit can is British and holds one imperial gallon (both are from the author's collection). (5LL) Freshly excavated box-waste wood chips from the gas works dump at Sacramento FMGP no. 2, California (photographed by the author, 1999). (5RR) Typical appearance of the gas works dump at creek or riverside. This is at Manistee, MI (photographed by the author, 2001).

petent site and waste characterization of an FMGP destroys the accuracy and purpose of risk assessment of any sort. This is especially the case when carcinogenicity is considered.

4.2. Identifying the process flow path

Through the use of standard references sources, such as *Brown's Directory of North American Gas Plants* (Brown's Directory of North American Gas Companies; From 1889), *Sanborn* (Sanborn Fire Insurance Maps) or other fire insurance maps, and the many technical and association journals, it is possible to identify a chronological history of operations of the subject FMGP. I generally employ a working enlargement of the plant layout as found in the literature. To this drawing is applied a series of dashed arrows to denote the likely locations of leaks, spills, or discharges of toxic gas-making residuals to the ground (including discharge to surface drainage and bodies of surface water). Fig. 5 shows two prominent Light, Non-aqueous-Phase Liquid (LNAPL) "light oils" that frequently are encountered as solubilized into ground water passing below the surface of FMGPs.

This is a desktop assessment made before visiting the field. For this exercise, it is always prudent to attempt to secure both historic and recent aerial photographs of the site, particularly stereoscopic coverage. The use of image interpretation, of course, is a standard technique in engineering geology. A search for archival topographic and planar map coverage may well yield additional information concerning original topography. Of special consideration are high and low elevations and topographic lows that will have influenced, if not governed, the layout and the fate of site wastes, whether solid, liquid, toxic or non-toxic.

4.3. A word about sampling gas-house wastes

Characterization of FMGP sites in the United States is rather hindered by the fact that the Resource Conservation and Recover Act (RCRA, 1976, as amended) regulations (Code of Federal Regulations [CFR], Part 260–299) lists only 16 PAHs. In reality, there are some 500 to 3000 separate PAH compounds that can be expected to have been produced and wasted on and around a given FMGP. It is important also to recognize that "tar" and PAHs originate from non-petroleum organic material and it is "asphalt" that is the SVOC product relating to petroleum refining. A distinction is made, however, with the residuals formed from the various processes of oil–gas generation, all of which also are termed "tars" and which contain PAHs. Incomplete combustion of wood, whether used in manufacturing resin-gas or from wood fires, wood furnaces, or forest fires, also produce PAHs.

Since 1995, the popular Voluntary Cleanup Program (VCP), developed by the State of California as the *Expedited Remedial Action Program Act of 1994* have been selected by Responsible Parties (RPs) as a more favorable basis for conduct of their FMGP site cleanups. USEPA embraced this concept nationally and has allowed the States considerable freedom in the conduct of these actions. As with all hazardous waste cleanups, the VCP program generally offers the greatest degree of freedom to the Responsible Party (RP) in proposing key chemical parameters and other sampling and analysis details for site and waste characterization work plans. VCP also is the seat of the ensuing *Brownfields* program of USEPA.

With this in mind, an early site sampling effort designed to test the interpretations generated under the recommended provisions presented later in the paper is recommended. It may be in the best interests of those requesting the investigation or those funding the characterization, to generate an accurate assessment of which detectable PAHs are present in the largest concentrations, thereby possibly indicating those species that may also represent the greatest environmental threats. If strict adherence to the RCRA Appendix VIII list (40CFR261, Appx. VIII) is mandatory, a few supplemental compounds may be proposed for purposes more directly associated with the remediation philosophy of the funding organization.

The hazardous waste list that applies to Comprehensive Environmental Response, Liability and Compensation Act (CERCLA) or SUPERFUND LAW activities (40CFR302.4) does not specify individual compounds, rather, "characteristic" wastes as well as "listed" wastes.

Furthermore, in selecting plant waste bodies for sampling, high priority should be given to selecting samples representative of detected waste sources ("hot spots") as well as of the host stratigraphic unit (the latter for waste that has invaded the interstices or discontinuities of earth material units). Hambley (personal communication, Jul, 2001) notes that species-detection by means of a chromatograph, from tar samples, generally requires verification by mass spectrography, and that strict proof is a function of the resolution of the test column, and the length given over to the analysis. PAHs are not well separated by the gas chromatographic/mass spectrophotometric (GC/MS) method (SW 846 Method 8270) and High Performance Liquid Chromatography (HPLC; USEPA analytic protocol SW 846, method 8310) separates only a limited number of compounds—the 16 PAHs usually specified plus 2 isomers of methyl naphthalene. Also, several compounds can elute at a given time in a GC and identification by MS signatures is not always straightforward. Finally, long-chain hydrocarbons and multi-ring aromatics tend to travel through the chromatograph in a mass without separation. Caution is the word here and additional sampling and analysis generally will be required.

The benzene, toluene, ethylbenzene and xylene (BTEX) VOC compounds all were generated at FMGPs and are often given attention because of their capacity to dissolve away from their source volumes and to form separate, definable groundwater contamination plumes.

As a means of considering relative threats from various source areas or source volumes, it is sometimes appropriate to consider these three artificial groupings of PAH:

1. Total PAH detected and analyzed (TPAH);
2. Total carcinogenic PAH (TCPAH), and;
3. Total non-carcinogenic PAH (TNPAH).

Heavy metals, especially the carcinogen arsenic, were captured and detained at the purifier boxes and generally pose a major concern when present as dumped box wastes.

Parties to the FMGP and related remediation should feel free to suggest or require (as the case may be) screening or detection of elements or compounds in addition to those that may be required State or Federal regulatory consent orders. Such a selection may be helpful in support of the interpretation of operational or environmental conditions to support the remediation concept preferred either by the responsible party or the regulatory agency.

5. Identifying and predicting generic gas plant wastes

The relationships between various toxic wastes produced by FMGPs, and the various processes of gas manufacture are well known, both in characteristics and in relative quantities per thousand cubic feet of gas produced.

5.1. Predicting FMGP waste types

Knowledge of the character of the expected wastes is essential for planning, performance and interpretation of FMGP site and waste characterization efforts. Much of the character of the wastes to be expected at individual gas works sites can be predicted with the assistance of some of the history of that works (Table 3). In particular, Figs. 6 and 7 show drawings typical of the information traditionally held in utility company archives. Application of the following five-step sequence of logic is useful for guiding initial investigation planning efforts:

1. What residuals are to be expected on the basis of the gas manufacturing and treatment processes employed at the plant, by time period?
2. What was the overall flow path of gas and liquors, including precipitation points and likely locations of leaks, spills and other discharge, along with locations of typically leaky gas holder pit tanks, tar wells and tar cisterns, and dedicated plant sewerage?
3. Where were the wastes, as separated from useful residuals likely discharged?
4. How did the geologic setting likely affect the fate and transport of each of the potential gas works wastes and their likely points of discharge?
5. How were the wasted residuals likely removed from the site and to where?

The waste-type analysis forms the basis for the site and waste characterization effort. Some workers representing Potential Responsible Parties (PRPs) indulge in the speculation of "risk assessment" as regards the most likely scenario of exposure of gas-house wastes to human, animal and food-chain receptors, though the

Table 3
Predicting FMGP waste types as the basis for site and waste characterization

Residual	Conditions as a waste	Guidelines to quantities per 10,000 cf. gas produced
Coke	Always a candidate for fuel, for sale in the community or for use at the plant	About 60%, by weight of the original quantity of feedstock coal; approximately 2000 lb of coal per 10,000 cf. of coal gas produced yields of about 1200 lb coke.
Tar	Salable under local and regional market conditions when produced or treated to have less than 4.0% water content	When marketable and containing less than 4.0% water, sold at the plant and via rail tank cars to the many tar distillers, in the range of US$0.05 to US$0.02 per gallon. Required an effort to capture and separate from liquors and its own unsalable sludge. Calculate at 10 to 14 gal per 10,000 cf. gas, depending on the feed stock and operating conditions.
Tar-water emulsion	Commonly formed in CWG process, especially after 1910 and whenever soft coal was substituted for coke and when heavy or crude oil was used in carburettion in lieu of light petroleum oils or light tar oils	Generally unsalable whenever untreated to reduce the water content of tar water emulsions, which ran from in excess of 4% market limit to as much as 92%, as noted in the literature. Calculate at 4 to 6 gal per 10,000 cf. gas.
Liquor	Always a contaminant; was the process water used to extract tar from the tar fog of produced gas. *Ammoniacal Liquor* with coal gas and *Gas Liquor* with CWG	Highly dependent on plant design and mode of operation; generally in the range of high hundreds to tens of thousands of gallons per day. Difficult to relate to quantities of liquor per 10,000 cf. gas produced.
Tar sludge	Made up of the refractory geologic debris minerals and lithologic fragments from the parent coal or residues from parent oil feedstock	Tens to hundreds of gallons per day, depending on local design and operating conditions. Difficult to relate to quantities of liquor per 10,000 cf. gas produced. Sludge was unsalable, unusable, and nearly always dumped.
Lampblack	Uncommon to coal-gas Sometimes found in CWG Common to oil gas	Major amounts produced by Pacific Coast Oil Gas process; as produced, nearly pure, powered carbon; easily sorbs toxic PAHs in post-operational deposits or in gas works dump environments.
Ammonia	Released mainly from coal-gas production, stemming from feedstock coals	Typically wasted in both (post-1875) and smaller coal-gas plants; required special equipment to capture; after 1870 some large-city collection as cleaning agent; after 1920 sometimes a market as ammonium sulfate fertilizer.
Naphthalene	Captured at plant and distribution-system sumps, as pumped from yard and street trips on a weekly basis	Had to be captured and pumped or would cause blockages of transmission and distribution pipes and clogging of gas lights and stove jet ports.
Naphtha	Chemical term for crystallized naphthalene	AKA "moth balls" in commerce.
Light tar oils	Monocyclic and duocyclic PAHs	Historically, these were sold as commercial solvents and fuels or used as carburetting oils at CWG plants.
Medium tar oils	Another term for medium tars of the general 3 to 4-benzene-ring tars	Miscible and co-soluble with the tar mass; separable through distillation; seldom done on plant site.
Heavy tar oils	5,6,7-benzene-ring tars, includes anthracene and the "green oils" (tars)	Miscible and co-soluble with the tar mass; separable through distillation; seldom done on plant site.
Tar pitch	Heavy ends of any residual tar of manufactured gas Common to all processes	Not encountered on site in absence of a still; the end reside from distillation; favored for use as waterproofing and roofing material
Cyanide/Prussian blue	Cyanides formed from C and N released from coal Captured mainly at purification boxes and found as several compounds depending on plant conditions	Most formed in coal gas production; minor amounts to be expected with CWG and lesser amounts with oil gas. Can be released to environment in modern times under locally acidic conditions, mainly in the presence of box-waste sulfur; comes out as water-soluble or as poisonous gas.

Table 3 (*continued*)

Residual	Conditions as a waste	Guidelines to quantities per 10,000 cf. gas produced
Sulphur	Captured in purification boxes	Could be gathered and sold under favorable market conditions, mainly to generate vitriol (sulfuric acid) in urban centers; generally not the case elsewhere.
Ash	Inert refractory mineral residue of coal as a gas-making feedstock or as a plant furnace or boiler fuel	Not expected to contain contaminants above remedial action levels. Should be sampled and tested, however.
Clinker	Partially fused ash	Not expected to contain contaminants above remedial action levels.
Slag	Mineral-fused ash	Forms from retort and boiler furnaces. Not expected to contain contaminants above remedial action levels.
Scurf	Hard carbon deposits formed on interior surfaces of retorts and generators	Removed by manual chipping via iron rods. Not expected to contain contaminants above remedial action levels.
Spent lime ("Blue Billy")	Spent lime cleared from one-time use in purifying boxes; most common before 1875; crushed limestone as well as pulverized sea shells	Generally a toxic waste containing cyanide and heavy metals, possibly sulfides. May be associated, as dumped, with other spent purification media.
Spent wood chips, excelsior[a] or coarse sawdust	Sorbant wood waste brought to the plant for purification medium; Generally from 1870 to end of manufactured gas era	Consider potentially toxic unless shown otherwise. May be associated with other spend purification media. May not display Prussian blue color until exposed to air.
Spent iron Spirals, Spent iron strips, Spent iron oxide, Spent bog iron (ore)	Sulfur-capturing media brought to the plant for purification; generally post-1875 to the end of manufactured gas	Considered toxic unless shown otherwise. Be concerned with sulfur-related pH conditions that can lead to release cyanide to the environment.[b] May be associated with other spent purification media.
Retort and bench fragments	Retorts replaced at 24-month or lesser frequency	Approximately 1 ton per bench per year. Forms a void matrix for dump-sequestering of PAH toxic waste.
Replaced CWG generator shell lining brick	Average brick liner replacement each 6 months	Approximately 3 tons of brick removed and replaced per generator set per year. Forms a void matrix for dump sequestering of PAH toxic waste.

[a] Spiral-form wood shavings.
[b] "Sulfuric" spelling is consistent with historic usage.

latter two computations generally are neglected. It is recognized, of course, that there are differences in the degrees of potential exposure involving the food chain, between urban and rural areas, with the exception of urban residents who rely on fish and other aquatic life to supplement their diet. Likewise, USEPA has largely abandoned its own regional prosecution of FMGP cleanups in favor of limited special funding to those of the State regulatory agencies that have elected to pursue this highly worthwhile area of environmental remediation.

This paper therefore is presented especially as suggested guidance for the States and Provinces in their deliberations related to defining full disclosure FMGP characterization. Without deliberation as to the likely presence and location of gas-house toxic waste "sources" (a.k.a. "hot spots"), the entire exercise of risk assessment takes on the nature of a ridiculous "drill," conducted with the reality of a charade that bears little or no bearing to actual site conditions.

5.2. Generic forms of manufactured gas plant wastes

Gas-house wastes are herein classified as a series of groups (Table 4) that are useful for site and waste characterization. In this classification presented physiochemically, it is theoretically possible for PAHs to contain more than six rings; however, no such

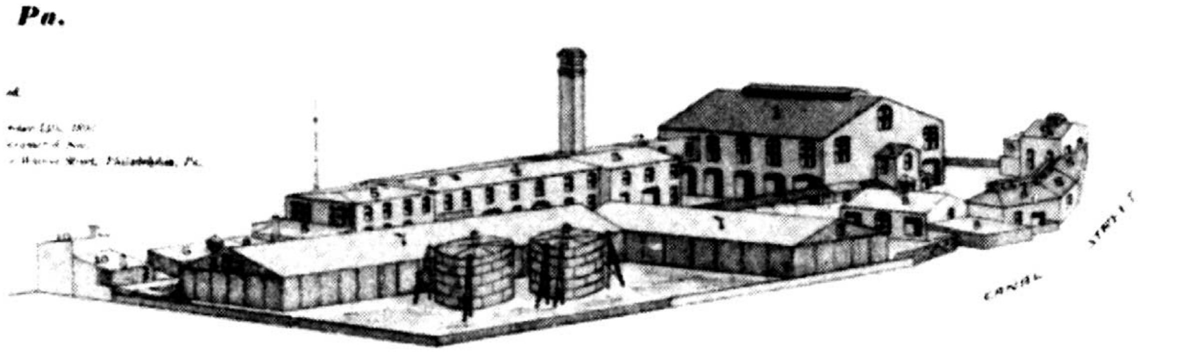

Fig. 6. Ernest Hexamer's Fire Insurance perspective sketch of the Northern Liberties Gas Works off Canal Street, in Philadelphia, 1875. Hexamer was an innovator with this well-appreciated visual feature in his atlases. The 2.5-story generator house proclaims that this works had already adopted T.S.C. Lowe's carburetted water gas sets, as produced at the Lowe factory at nearby Norristown, PA. The plant boiler supplies steam for pumps, gas holder external heating, and drives exhausters and feedstock elevators. The long farside building was the site of clarification and purification of the gas, and such was stored on the gas yard in two gas holders with subsurface pits ("tanks"). Coal and coke was stored in the sheds on the near side of the plant and the works was surrounded by a low fence. Pipe-fitting and maintenance shops and a stable occupy the uphill Canal Street corner of the works, while pipe-fitting shops fill the far downhill corner (from the author's collection).

compounds have been reliably reported as of this writing.

Though many readers will have significant experience with volatile organic compounds (VOCs) such as halogenated (chlorinated) solvents, gas-house tars are non-chlorinated and are classed as semi-volatile organic compounds (SVOCs). This distinction is important, for much of the knowledge of modern remedial-mitigation technology does not apply to site and waste characterization of FMGPs. USEPA recog-

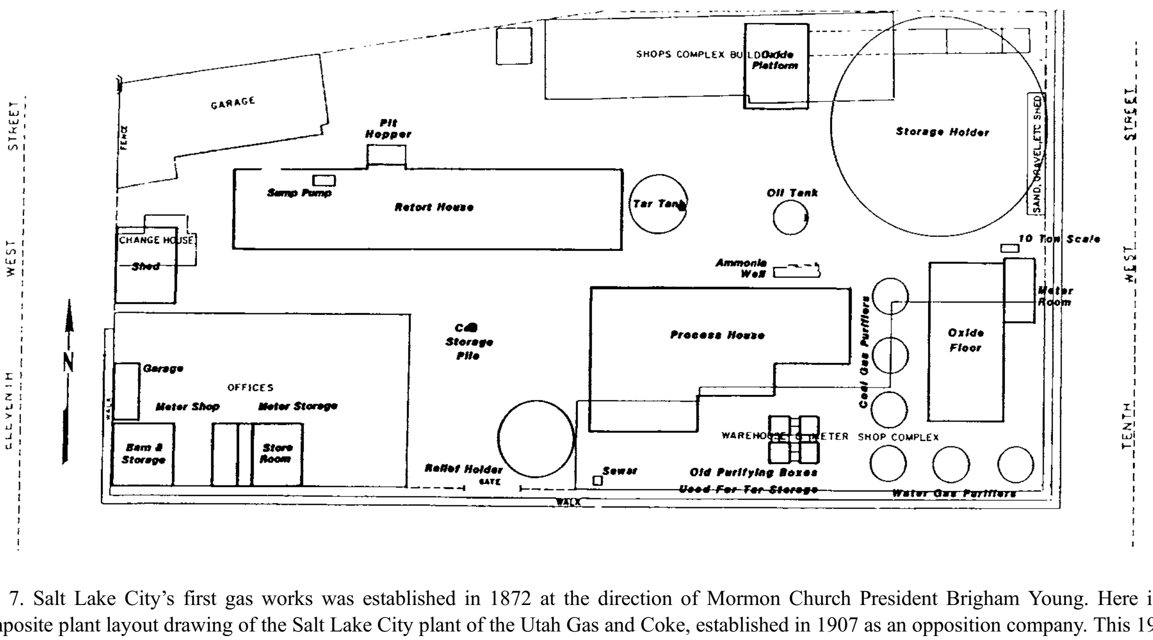

Fig. 7. Salt Lake City's first gas works was established in 1872 at the direction of Mormon Church President Brigham Young. Here is a composite plant layout drawing of the Salt Lake City plant of the Utah Gas and Coke, established in 1907 as an opposition company. This 1924 configuration is as taken from design plans by its holding company owner, American Public Utilities, a subsidiary of the engineers, Kelsey Brewer & Company, of Grand Rapids, MI, also operators of gas and electric properties. Utility company archives were famous for the breadth and detail of their holdings. The FMGP is bordered on the right by 10th West Street and on the left by 11th West Street (after drawing in files of Utah Department of Environmental Quality).

Table 4
Generic forms of manufactured gas plant wastes

Waste form	Nature	Character as a waste source
Solid waste	Plant operation, maintenance, expansion, and demolition debris Found both on-site and in near off-site environs Every site had at least one gas-yard dump Most plants were ringed with multiple off-site dumps	Typically inert and dominated by service-damaged ceramic retort fragments, fractured fire brick, scrap iron and pipe, along with scurf, ash, clinker and slag, some from gas machines, some from plant boilers. Ash and clinker is subject to sorption of PAH if such later comes into contact. Often this inert mass contains dumped toxic tarry wastes in its void interstices.
"Box waste"	Potentially toxic solid waste such as cyanide and heavy metals Found both on-site and in near off-site environs	Media were introduced at about the times shown; Lime (1805), wood chips, excelsior and sawdust (1870), and iron oxide (1875), as borings, scraps, strips, bog iron ore and various forms of particulate oxide. Often used contemporaneously, as layers.
"Gas liquor" (Generic Term) A.k.a. "Ammoniacal Liquor" (Coal-Gas Process) A.k.a. "Gas Liquor" CWG and Oil-Gas Processes)	Combined aqueous condensate of gas manufacture plus process waters applied for gas cooling and precipitation of tar Includes coke quench waters at the retort house and at by-product coke ovens Subject to final, long-term precipitation of PAHs to sediment of the receiving area Tend to be found throughout the site and its subsurface, as ubiquitous waste fluids and as groundwater contaminants	Known as "ammoniacal" if from coal gas, other wise and generally known as "gas liquor." This was the plant process water effluent and may have been treated to recover tar, especially where such documentary evidence exists. The treated residue always was discharged in some fashion, either through leaking subsurface vessels or from design-overflow discharge, or directly into plant surface drainage channels or dedicated sewers. It is important to recognize that some gas liquor is BTEX, as "light oils", are LNAPLs, and the remainder are "medium" to "heavy tar oils" and therefore are DNAPLs.
Tar	Created as a result of all gas-manufacturing from organic feedstock Had to be removed from the raw gas, at the plant, to serve the consumer Was totally lost to the environment at charcoal plants and "beehive" coke ovens	Recover and reuse or sale based entirely on philosophy of plant management as well as on current market conditions for sale. Generally unsalable when water content exceeded 4%; CWG tars typically had a high-water-content emulsion form after 1910. Usually present at FMGPs as bodies of contaminated soil, in abandoned subsurface vessels such as gas holder tanks and tar wells, and as subsurface pockets or "hot spots."
Lampblack	Relatively largest quantities to be found at oil-gas plants	Typically non-toxic but capable of sorbing PAHs later, to significant degrees.
PAH in site ground water	Released continually, from each source area, solubilized into passing groundwater Released from the source in relation to their solubility in the passing ground water	Typically most active during active operation of the gas works. Will persist indefinitely afterward, unless physically removed, as the source areas are essentially non-degradable in nature and have lives measured in geologic time. "Light oils" do not reflect the totality of groundwater contamination.

nizes 16 PAHs as defined toxic compounds (Appendix VIII, 40CFR261), though it is well known that gas feedstocks can produce from 500 to 3000 separate PAH compounds at a single instance of pyrolysis.

We used to have considerable reservation toward penetration of sources for the purpose of sampling for laboratory analysis. Site exploration equipment and skills are now established well enough that all FMGP

Table 5
Predictable general geologic influences on gas plant wastes

Geologic condition	General effect	Implication
Vadose zone	Transmits SVOCs to depth	Depth controlled by magnitude and duration of the discharge or leakage.
Groundwater surface	Terminates free downward component of fluid gas waste flow during active addition by source-creating mechanism, unless the waste is DNAPL	Major force in lateral movement, mainly along flow gradient, with some side-spreading.
Hydraulically conductive vadose-zone bottom stratum	Base of toxic source volume sits on or in the waste mass	Common occurrence in disused sand pits in which original borrow pit was terminated at depth of entry of ground water, and that case repeats itself to flush or leach the waste volume to local ground water.
Alternating sequences of vadose-zone soil stratigraphy	Direct relationship on how much lateral flow transport distance will occur for the less-viscous tar fractions	Vertical trace of horizontal migration will have the irregular appearance of a geophysical borehole density signature (i.e. furthest outward in the most conductive strata).
Geomorphic channel-and-fill	Become selective pathways for lighter tar fractions and, especially gas liquors (as PAH-contaminated wastewaters)	Acts as an overwhelming conduit for contaminant migration as long as supply and relative viscosity overcome gravitational effects, along with channel-bottom permeability to the gas liquor or its suspended tar or dissolved PAHs.
Lateral distance to topographic declivity	Will significantly alter flow path of contaminated ground water	Always be on the lookout for gully-side breakouts.
Solubility in ground water	Most soluble tar fractions will strip off the outer rind of each tarry source volumes and contaminate passing ground water	The situation has the potential to yield and transport contamination for thousands of years or more. Often detected by iridescence of floating water-surface sheens or from fish and other aquatic-life kills, particularly fresh-water clams.
pH of vadose-zone host soil	Under acidic conditions can lead to release of box-waste cyanides and heavy metals	Arsenic, a known carcinogen, is the most common of the box-waste heavy metals.
Active cone of depression	Cone of depression touches host earth material holding the contaminant source volume	Active withdrawal from adjacent ground water supply may induce activated flow movement of FMGP toxics.
Pockets, lenses or channels of higher porosity and/or conductivity	Stratigraphic bodies present as anomalies in an otherwise more dense and less porous/less conductive host medium	Become operational-era sumps as natural "hot spots" of accumulated PAHs as leaked spilled or otherwise discharged to the ground.
Top-of-rock	Very important to anticipate and/or recognize this situation as a potential DNAPL trap, especially if at the base of a soil sequence	Traps most of the tar oils, yet lighter or free-phase DNAPLs will likely have penetrated the more open rock discontinuities. May, in some cases, cause PAH migration counter to the recognized saturated-zone groundwater flow gradient.
Psuedo-geologic pathways for PAH transport	Formal (municipal) and informal (plant) sewers	Most gas plant operators chose to keep the gas yard dry for optimization of plant operation.
	Gas yard drainage features such as tiles	Most gas yards were laid out to drain from the entrance to the adjacent stream or lowland.
	Often leakage occurred along the exterior of the sewer/pipe	Some of these drains leaked wastes before ultimate discharge.
Fluvial sediments	Generally present in thalwegs and channel inverts of natural drainage and as accumulated in lowland areas formerly known as "swamps," adjacent to the FMGP	Usually has an appreciable content of clay-particle and clay mineral content that was instrumental in local capture of the PAH and other impurities discharged with the plant liquors.

Table 5 (*continued*)

Geologic condition	General effect	Implication
Glacial geologic features	Lodgment (basal) till restricts contaminant transport	Light oils could and did penetrate glacial lodgment till joints however.
	Periglacial and proglacial drainage features	May constitute high-velocity operational-era contaminant-transport pathways.
	Buried channels	May constitute high-velocity operational-era contaminant-transport pathways.
	Geomorphic "holidays" ("windows") in glacial-lacustrine clay horizons	Known to destroy natural restraints to PAH migration downward in the soil sequence.

subsurface structures deserve careful, incremental sampling to their ultimate depths. In most cases, hot spots will require some sort of direct treatment and the imperative of maintaining their integrity during field exploration should not be cited as a deterrent to sampling. Nevertheless, invasive sampling should be planned and conducted so as to only minimally disturb contaminated ground.

5.3. Special nature of "tar"

"Tar," as a technical form, refers strictly to the viscous residue from pyrolytic (in the absence of oxygen) combustion of organic matter. Strictly speaking, use of the term "tar" thus implies an origin from coal. Its counterpart term "asphalt" strictly connotes a petroleum origin. During the manufactured gas era, the tars were also referred to as "oils," and they came in combined degrees of specific gravity, from light through medium to heavy oils. The final high-gravity, high-viscosity residue was known as "pitch," which readers older than age 50 will recall having seen tar as a waterproofing roofing material melted on-site in roaster trailers and applied with hot mops.

Tar oils consist of chains of benzene rings. Those that contain three to six benzene rings are known as polycyclic aromatic hydrocarbons (PAHs) or less commonly as polyaromatic hydrocarbons or, equivalently, polynuclear aromatic hydrocarbons (PNAs). The tar "light oils" properly are one-ring (monocyclic) and two-ring (duo-cyclic) PAHs, but these are light, non-aqueous-phase liquids (LNAPLs). PAHs of three or more benzene rings are dense, non-aqueous-phase liquids (DNAPLs). Theoretically, it is possible for PAHs to form in chains of more than six benzene rings, but such has not yet been reliably reported in the literature.

5.4. Typical hot-spot waste locations

In the absence of gas company historic design and layout drawings, the historic Sanborn Maps (Goad Maps in Canada) are the most reliable, generally available indicators of potential FMGP site waste locations. Design and layout drawings, along with equipment inventories and interior and exterior photographs were routinely produced for and by the gas utilities during the era of manufactured gas. Regrettably little of this well-known trove of company archives has been declared as surviving in the traditionally meticulous and comprehensive utility archives. State archives sometimes yield such contributions from the public service commissions. Almost impossible to locate is other such evidence in the hands of collectors, as historic "paper."

As revised aperiodically, it is important to ensure that the Sanborn Map coverage of subsequent editions spans the entire operational period of the plant. In many instances there were process and equipment modifications and replacements, along with other additions that can greatly impact the locations of present-day hot spots.

The author prefers to identify, in prediction, likely locations of hot spots of plant toxic by a series of circled "x" marks with numbers to identify the suspected nature of the wastes and their waste-source form.

Information regarding plant decommissioning and demolition also must be considered. Those FMGPs that were formally decommissioned, most likely in the 1946–1965 time frame, were subject to dumping of on-hand tars left in place at termination of plant activities. Those sites at which derelict tar wastes were brought to the ground surface and spread across the site can greatly alter the resultant contamination. Decommissioning by utilities was typically carried out under formal bid and work-order documents specifying final site conditions.

I strive to overcome not only subtleties but some outstanding misconceptions that have been applied to FMGP remediation since Federal emphasis was placed on remediating such sites in 1985 by USEPA.

6. Geologic controls

The nature of the location of wastes at an FMGP relate mainly to historic gas works technology. For most FMGP sites, the historic record is cloudy due to the fact that archival records relating to most plants are claimed by RPs to have been destroyed. A diligent search of the relevant gas literature (e.g. American Gas-Light Journal) will provide most of the missing events affecting plant operational history.

It becomes paramount, therefore, that the actual search, discovery and verification of gas works wastes be a geologically intensive field activity, following a competent attempt to predict such wastes. Most gas plant remediation professionals have witnessed clean-up overruns of "unexpected" caches of contaminated soil or hot spots of tar pockets that easily reach the magnitude of several thousand cubic meters. The "surprise" was, of course, generally rooted in an unwillingness of the RP to categorically predict the potential for such wastes and to place explorations in the potential area for such waste. Regulatory officials must also be prepared to make such predictions and argue for, or stipulate, that such ground be investigated to their satisfaction.

Once in the ground, and certainly after termination of plant activity, most gas-house wastes become relatively immobile, either because they are SVOC liquids with typically low solubility in ground water and high viscosity, or that they were solid wastes in the first instance. SVOCs basically come to rest in the vadose zone due to a positional equilibrium between their fluid density and viscosity and the pore or fracture medium of the host earth material, upon which gravitational force has acted as the driving mechanism. The viscous SVOC compounds lack the pressure to overcome interstitial forces and to invade pore or fracture space at that point.

I have discovered some geologic truisms as a result of my own FMGP and other site characterization experience. These are offered in Table 5 as the most likely conditions to be expected in planning for characterizing FMGP sites and can be used to develop the first phase of field explorations and to test the resulting observations. Geologic features of the FMGP site may themselves present the greatest physicochemical control over the fate and transport of plant contaminants that have been leaked, spilled or discharged, and were not the subject of plant dumping during the plant operational period.

6.1. Site and waste characterization planning

Once the historic site layout information has been evaluated and interpreted and the predicted sources and location of wastes have been delimited on the site map, explorations can be allocated to the verification of the expected (pre-exploration) stratigraphy and the discovery of waste sources or other hot spots.

Site exploration costs can be managed in an economically effective way if the general findings of Expedited Site Characterization are followed (Beam et al., 1997); to wit, to produce and evaluate findings on a daily basis while the team is mobilized for field activity, and to apply corrections to the plan on that basis. Corrections are made from evaluation of visual observations and from incoming laboratory determinations. Of course, the exploration team must be on a highly credible level of communication with regulatory officials in order to conduct the work plan within a rapid-response framework. Generally, it is most efficient when the RP arranges with the State or Provincial regulatory agency to pay for the presence of an on-site regulatory oversight official.

6.2. Geological and geophysical exploration techniques

Sensitive FMGP site characterization efforts generally begin with the use of a backhoe. Good photo-interpretation skills, followed by field-mapping observation, are primary and essential, as leads to backhoe exploration. Then, on evaluation of site evidence, it is proper to consider some form of push-probe, capable of sensing the geologic character of the subsurface with minimal disturbance of the ground itself, should waste sources be directly encountered. Direct-push devices are ineffective, however, where gas-house solid wastes have been disposed with retort and generator brick fragments.

Backhoes are particularly useful in locating the outer surface of gas holder tank walls, as well as those of the various forms of tar wells and cisterns (same meaning). For most other applications of site characterization technique (Hatheway, in press (b)), exploration of FMGPs do not differ significantly from the prudent choices available for site exploration and sampling for UHWSs in general.

Where soil-vapor gas analysis collectors are appropriate, the gas-collection port must be pushed to such a depth as to avoid the usual background. By their very nature, however, PAHs are only weakly volatile at

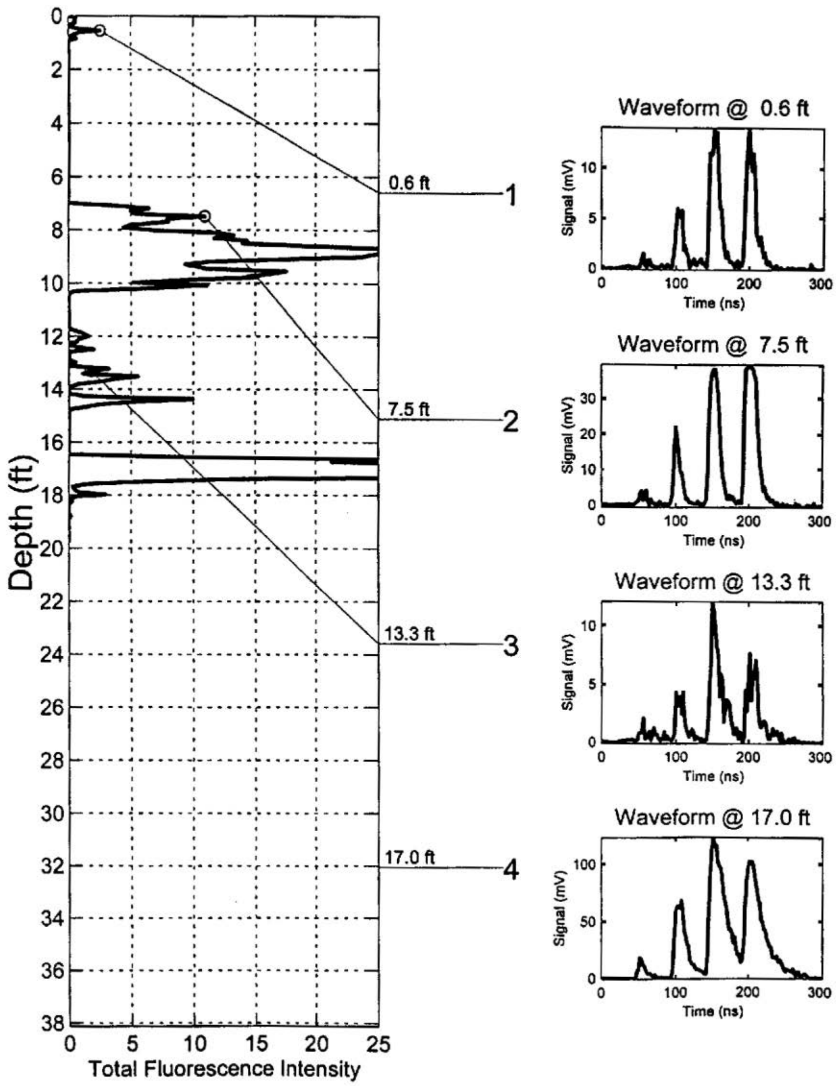

Fig. 8. Composite SCAPS signature from a FMGP site in New York State. The wave form is diagnostic of PAHs with four peaks. The laser-induced fluorescence is tied directly to highly reproducible soil typing by the Unified Soil Classification System (USCS) of the U.S. Army Corps of Engineers (courtesy of Fugro Geosciences, Houston, TX).

ambient temperature. Many probe operators are ultra cautious about incurring damage to their equipment, so that it is prudent to allow extra time for slow advance rates in this ground suspected of having subsurface obstacles.

Of particular use are push devices equipped with fluorescence scanning capability. The original tool in this field is the Site Characterization and Penetration System (SCAPS) developed by the U.S. Army Engineer Waterways Experiment Station, and field-tested in 1990. SCAPS became commercially available in 1994 and is equipped with a fiber-optic laser-induced fluorescence (LIF) device that excites spectral response in soils penetrated outside its sapphire–crystal lens. The collected soil/contamination response is computer-recorded and plotted as a LIF signature opposite the geotechnical push-resistance plot of the stratigraphy being penetrated.

Together, the two vertical plots define the soil types penetrated (in accordance with the Unified Soil Classification System [USCS]) and such contaminant groups as are present, including those groups with compounds and elements typical of gas-house wastes.

Fig. 8 is a segment of an FMGP exploratory boring response signature captured by FUGRO-McClelland consultants, of Houston, TX, who are one of several

Table 6
Criteria for producing a complete and accurate FMGP characterization

Criteria	Scope	Questions to be raised and resolved
Chronological history of the site	Minimally to include screening and abstraction of dates and time periods, gas-manufacturing process, site ownership and configuration (1) *Brown's Directory* (2) Fire Insurance Maps (3) Historic Photographs (4) Local Newspaper Coverage (5) Proceedings of Gas Associations (6) Gas Industry Journals	(1) Fundamental layout of the site, from establishment to termination. (2) Relate gas manufacturing and necessary treatment activity to types of gas-house residuals and wastes. (3) Estimate, quantitatively, the gross amount of site wastes that would likely have been produced for each period (say, decade) of plant history.
Definition of gas-production and treatment paths	Provide layout interpretation of the locations of component steps and transport of gas and residuals on the property	(1) Location and function of all definable components of the gas plant. (2) Pathway of movement of gas and residuals at the site.
Predicted locations of wastes remaining on site today	Examine historic evidence; evaluate such in terms of site as it exists today.	(1) Most likely present location of wastes associated with each component device and structure and each gas production and treatment activity. (2) Portions of the gas yard shown as vacant on Sanborn Maps likely are on-site dumps.
Complete coverage of the plant site area	Apply geologic assessment to all field data to gain an appropriately high-level of confidence that undetected toxic wastes are not left undetected	(1) Ensure that each predicted lead is subject to individual field investigation. (2) Leave no portion of the former gas yard unexplored; To commit such an error is to flaw the entire Remedial Investigation or characterization.
Possible off-site dumps	Commensurate with access to property and the risk assumption policy of the responsible party and the oversight public agency	Presentation of a real question of environmental ethics, especially considering that the adjacent property will likely be owned by interests other than those of the project at hand. May require being addressed by public officials and the regulatory agency.

geoenvironmental firms that market the technique nationally, as their Rapid Optical Screening Tool (ROST)-LIF services.

6.3. Development of the characterization assessment

Characterization should be terminated only when its scope and findings meet established criteria for completeness. Table 6 is offered as a checklist for conduct of FMGP site and waste characterization.

A guiding philosophy for site and waste characterization of FMGPs should always reflect the fact that these toxic compounds are non-degradable with time and are relatively immobile. Whenever they are in contact with ground water, they transfer their toxicity to the environment. Whenever and wherever there are flaws in the characterization of a FMGP (or other coal-tar site) there will come a day when resultant human or environmental damage will be detected after the fact. Our larger cities are rife with derelict MGP sites (130 in Greater New York City and at least 87 in Greater Chicago). Nearly priceless building sites will be heavily cost-impacted by premium foundation treatments when they occur at an FMGP.

7. Conclusions and recommendations

All parties to the characterization of FMGPs and other related sites should bear in mind that incompleteness or flaws in the characterization may leave the public and/or environment at peril.

Some agents working with these sites prefer to apply the concept of Risk-Based Corrective Action (RBCA), in accordance with the provisions of applicable ASTM standards. Based on his own background and experience, the author is strongly opposed to the application of RBCA to any FMGP, because none of the site wastes are environmentally degradable (as opposed to petroleum-based compounds) and seldom are FMGP sites explored with enough thoroughness to preclude that gasworks waste are not left undiscovered. It is unrealistic to expect or factor in any form of future "natural attenuation" for the medium-to-heavy "oil" associations (three-plus benzene-ring molecular structure) of the tars. This objection is based not only on possible reliance on "natural attenuation" but on fate-and-transport assumptions that are not borne out by comprehensive and competent site and waste characterization exploration, logging, evaluation and interpretation.

This paper constitutes a very brief overview of what the author has attempted to encapsulate in his forthcoming technical book *Remediation of Former Manufactured Gas Plants and Other Coal-Tar Sites*. Unlike nearly all other uncontrolled hazardous waste sites, FMGPs represent the most difficult of characterization sites, mainly because of the largely SVOC nature of much of the toxic wastes and the fact that all waste bodies are intimately united with the subsurface geologic conditions at the individual site. The author invites the reader to visit his web site (www.hatheway.net) and to contact him with suggestions, comments and/or questions.

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ENVIRONMENTAL
Fact Sheet

NEW HAMPSHIRE DEPARTMENT OF Environmental Services

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ARD-EHP-17 2006

Manufactured Gas Plant Waste

What is a manufactured gas plant?

Until natural gas was introduced, coal was the primary natural resource used for making the gas used to illuminate street lights and mills, as well as for cooking and heating. By the later half of the 19th century, most of the big cities in America had manufactured gas plants (MGPs) that were operated by utility companies. To manufacture the fuel, coal and other ingredients were heated in large brick ovens. As the coal was heated, it produced a gas. The gas was filtered from the ovens and stored in tanks. The gas was then used as fuel throughout a community.

MGP production declined as a network of natural gas pipelines was built across the country in the 1950s. As natural gas became widely available, MGPs closed. It was cheaper to use natural gas. Many MGPs were abandoned and eventually demolished. However, waste and contamination from MGPs still pose an environmental and public health concern.

Why be concerned about wastes from a MGP?

Manufacturing gas from coal generated a lot of waste. Typically, MGP waste in the form of tars, oils, cinders, coke and ash, was buried or used as fill for construction projects. The wastes contain many chemical constituents that are hazardous to human health. The composition of the waste depends on the type of coal and the gasification process used. Chemicals associated with MGP waste include volatile organic compounds (VOCs) like benzene and toluene, polynuclear aromatic hydrocarbons (PAHs) like naphthalene, tar acids like phenol and cresol, creosote, and coal tar pitch.

Can MGP waste be a health hazard?

Waste from the gas manufacturing processes can be found in soil, surface water, and ground water. Depending on the site, the contamination can be minimal or extensive. Most of the contamination is buried under soil and does not pose a direct health risk. However, if coal tar residues come in contact with skin, it can cause redness or a rash. In some people, the coal tar can cause a sunburn effect on skin. Eye irritation is another hazard if coal tar residues get in the eyes.

Can it affect my drinking water?

In cases where the contamination has spread into groundwater, exposure to drinking water contaminants can be a concern. Tests can be performed to determine if water quality is affected by MGP waste.

What are the health hazards from MGP waste?

The Agency for Toxic Substances and Disease Registry (ATSDR), a branch of the US Department of Health and Human Services, provides information on the health hazards from chemical exposures. Toxicology fact sheets for the specific chemical constituents of MGP waste are available at the ATSDR website: http://www.atsdr.cdc.gov/toxfaq.html.

What are the health concerns of cleaning up former MGP sites?

Cleaning up a MGP waste site may temporarily cause discomfort to a neighborhood. The cleanup problems include odors, noise and the presence of heavy machinery. Odors are the most commonly reported nuisance. The odors that may occur can have either a gasoline or mothball-like smell. People with breathing difficulties, such as asthma, may be affected if the odors reach hazardous levels.

The contractors cleaning up MGP waste are trained to manage the site for safety. They monitor and control vapors from reaching levels of health concern to nearby residents. DES actively works with the site clean up team to ensure that odors and other discomforts minimally affect a community.

For more information

For more information regarding the environment and how it relates to your health or any other topics presented here, please call the NH Department of Environmental Services Environmental Health Program at (603) 271-4664, or toll-free in New Hampshire at (800) 498-6868, Ext. 4664. Information is also available at www.des.nh.gov/ard/ehp/.

NH Department of Environmental Services
Environmental Health Program
29 Hazen Drive, PO Box 95
Concord, NH 03302-0095

Health-based Guidelines for
Air Management, Public Participation, and Risk Communication
During the Excavation of Former Manufactured Gas Plants

Wisconsin Bureau of Environmental and Occupational Health
Department of Health and Family Services
PO Box 2659
Madison, WI 53701-2659
(608) 266-1120
or Internet: dhfs.wisconsin.gov/eh

August 24, 2004

Wisconsin DHFS: Manufactured Gas Plant Air Guidance

damage from sulfur-containing materials, particularly sulfur dioxide (ATSDR MRL=10ppb), are well known (Kleinman 2003) but have not been well addressed as an air issue during MGP remediations. Sulfides (S^{2-} ; metal-sulfur compounds), sulfates (SO_4^{2-} ; compounds of oxygen and sulphur combined with one or more metals), and sulfites, where present, are predictably dispersed with soil and dust particles during MGP excavations. At this time, DHFS recommends that non-volatile sulfur compounds be managed in the context of NAAQS for particles discussed above.

Table 2. Toxicity, odor, volatility, and relative prevalence of major volatile compounds in air at MGP sites.

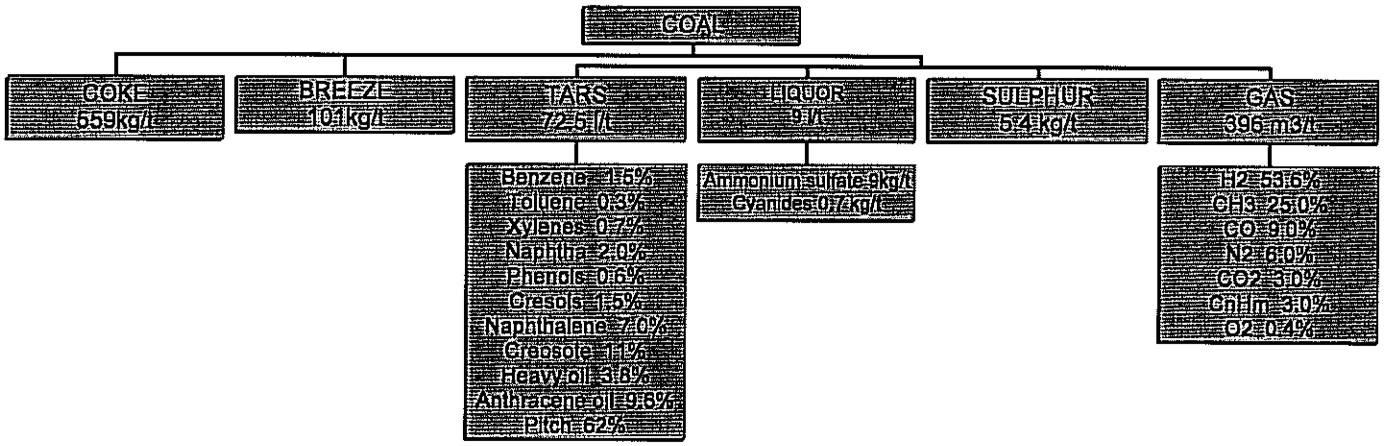
				Prevalence in air at one example MGP site[c]	
	Toxicity RBC ppb[a]	Odor threshold ppb[b]	Vapor pressure mmHg, 68F	Excavation (total volatiles= 4103 μg/m³)	Perimeter (total volatiles = 1117 μg/m³)
Benzene	**10**	**61,000**	**75**	**21.7%**	**7.7%**
Naphthalene	**0.6**	**40**	**0.08**	**46.3%**	**6.3%**
Xylenes	**23**	**20,000**	**7**	**11.5%**	**56.4%**
Toluene	**106**	**1,600**	**21**	**8.3%**	**17%**
Styrene	**235**	**140**	**5**	**Not reported**	**Not reported**
Ethylbenzene	**230**	**100-600**	**7**	**11.9%**	**12.5%**

[a]EPA, *Integrated Risk Information System, 2004.* Reference concentration chronic inhalation.
[b]AIHA 1989
[c]Collins *et al.* 1999

Developing Air Quality Goals and Action Levels

Recommended sentinel compounds. Many different volatile chemicals are present in MGP wastes, but on-site air management decisions are usually based on the monitoring of just a few of these (Collins *et al.* 1999). The choice of representative sentinel compounds in an air management plan should be based both on the risk imparted by a compound's prevalence and toxicity, as well as the analytical ability to detect these compounds. The odor threshold of particular VOCs also factors into their inclusion as a sentinel compound, since tar odors around MGP excavations speaks directly to public risk perception surrounding the remediation work. MGP projects often extrapolate from the fuel spill model, choosing the BTEX group (benzene, toluene, ethylbenzene, xylenes) as representative VOCs. Other candidate sentinel compounds should be considered, based on environmental assessment. For example, groundwater from an MGP test well techniques. Perhaps most important is anticipating dry, windy conditions that disperse stockpiles. In Wisconsin, occasional problems have occurred around MGP sites where winds have dispersed particles and odors from pretreated stockpiles awaiting thermal desorption. In these cases, irritating odors in nearby buildings were resolved using surfactant controls on stockpiles and closing building openings where necessary. With experience, site managers can anticipate and prevent such problems. For example, at a summer MGP excavation in an urban residential location in Wisconsin, site managers found it prudent to cease excavation work during hot or windy afternoons to avoid potential air releases that would generate complaints from the public.

Figure 2. Product yield from coal gasification. (Adapted from Buckley 1983)



PAHs. Polycyclic aromatic hydrocarbons are a diverse group of hydrocarbons that comprise a large proportion of MGP wastes (Figure 2). PAHs are also a focal component of the particles targeted in the NAAQS. The PAHs commonly studied in the environmental literature and included in environmental reports from MGP sites are 2-6 ringed, with molecular weights in the range of 128-300 (Boström *et al.* 2002). The actual breadth of PAH structures present in MGP wastes is probably much greater (Hathaway 2002) if included are little-studied larger molecular weight structures, PAHs with side-chain substituents, and PAHs with sulfur- or nitrogen-containing rings. The tendency of PAHs to disperse ranges from semi-volatile (e.g. naphthalene, vapor pressure 0.08 mm Hg;), to non-volatile structures that are dispersed via surface adsorption to particulate matter. A number of PAHs are toxic following their oxidation to a corresponding reactive structure (ATSDR 1995, Boström *et al.* 2002). Activation to a reactive structure can occur through photooxidation in the case of skin contact, or metabolically in the case of ingestion or inhalation. Benzo(a)pyrene (B(a)P) is one of several PAHs that form

Cyanides. Cyanide wastes at MGP sites exist mostly as stable iron cyanide complexes, such as ferric ferrocyanide, which are associated with oxide box wastes common to coal gas sites. A small percentage (< 5%; Luthy *et al.* 1994) of the total cyanide-containing waste is in the form of less stable metallo-cyanides and cyanide salts. The potential for free cyanides to be released from these materials into groundwater is a topic that has received both scientific and regulatory attention (Ghosh, *et al.* 1999a, 1999b; EPA 2003d). The release of cyanide to air at MGP sites is theoretically possible, but because such releases would occur from very slow dissociation of iron cyanides followed by rapid volatilization and dissipation, this is unlikely to be an exposure issue. DHFS has identified no public health concern from cyanide exposure to the general public at the site perimeter. Still, prudent management of worker safety at MGP sites suggests that cyanide should be monitored in air within the work zone when Prussian Blue soils are encountered.

Table 1. Composition of MGP wastes (From Gas Research Institute 1996). Chemicals in bold have been found to be an environmental or public health concern in soil, sediment, and groundwater at MGP sites in WI.

Inorganics	Metals	VOCs	Phenolics	PAHs
Ammonia	Aluminum	**Benzene**	Phenol	Acenaphthene
Cyanide	Antimony	**Ethyl**	Methyl	Acenaphthylene
Nitrate	Arsenic	**Benzene**	phenol	Anthracene
Sulfate	Barium	**Toluene**	Dimethyl	**Benzo(a)anthracene**
Sulfide	Cadmium	**Xylenes**	Phenol	**Benzo(a)pyrene**
Thiocyanates	Chromium	**Styrene**		**Benzo(b)fluoranthene**
	Copper			Benzo(g,h,i)perylene
	Iron			Benzo(k)fluoranthene
	Lead			**Chrysene**
	Manganese			**Dibenzo(a,h)anthracene**
	Mercury			Dibenzofuran
	Nickel			**Fluoranthene**
	Selenium			Fluorene
	Silver			**Indeno(1,2,3-cd)pyrene**
	Vanadium			**Naphthalene**
	Zinc			Phenanthrene
				Pyrene
				2-Methylnaphthalene

Sulfur compounds. Sulfur-containing compounds, produced by pyrolysis or combustion of coal, are common in soil and groundwater at MGP sites. This is especially true in oxide box wastes, which may contain 40% sulfur oxides (Luthy *et al.* 1994). Pulmonary

Appendix H
Input Parameters Required to Develop the Tier 1 ROs for Non-MGP Chemicals without TACO Tier 1 ROs

Input Parameters Required to Develop Residential Soil Gas Tier 1 ROs for non-MGP Chemicals without TACO Tier 1 ROs

The soil gas ROs were developed using a combination of default and chemical specific properties.

The development of Tier 1 ROs requires the following parameters:

i. Target risk
ii. Exposure factors
iii. Soil properties
iv. Building parameters
v. Physical/chemical properties
vi. Toxicological information
vii. Models and equations

Default input parameters (i) through (iv) were obtained from Table M, Appendix C of Section 742 in draft TACO rule. Models and equations (vii) were obtained from Table L, Appendix C in Section 742 of draft TACO rule.

Both physical/chemical and toxicological parameters were obtained from various sources and are discussed below:

Toxicological Information

TACO recommends the use of unit risk factor (URF) and reference concentration (RfC) to calculate carcinogenic and non-carcinogenic ROs protective of indoor inhalation. As per Section 742.505(d) (2), the toxicological information was obtained from various sources and hierarchy presented in Office of Solid Waste and Emergency Response (OSWER) Directive 9285.7-53 (USEPA, 2003). The sources and hierarchy are listed below:

i. USEPA, Integrated Risk Information System (IRIS)
ii. California EPA. Office of Environmental Health Hazard Assessment (OEHHA), Toxicity Criteria Database
iii. Agency for Toxic Substances and Disease Registry (ATSDR), December 2006. Minimal Rik Levels (MRLs).
iv. USEPA, July 2008. Regional Screening Levels for Chemical Contaminants at Superfund Sites.

Of the 26 chemicals, toxicity information was available for 17 chemicals from the above four sources mentioned in USEPA (2003) and this information is presented in Table 3-4.

Physical/Chemical Properties

As per Section 742.610(a) in the draft TACO rule after contacting the IEPA, the physical/chemical properties were obtained from the agency recommended sources. The sources and their hierarchy are listed below:

i. Syracuse Research Institute (SRC), June 2008. CHEMFATE Chemical Search
ii. SRC, PHYPROP Database
iii. IEPA recommended values for non-TACO chemicals
iv. USEPA, June 2008. Regional Screening Levels for Chemical Contaminants at Superfund Sites, Chemical Specific Parameters
v. USEPA, 2004. User's Guide for Evaluating Subsurface Vapor Intrusion into Buildings
vi. Texas Commission on Environmental Quality (TCEQ), June 2007. Table for Risk Reduction Program Rule.

For three chemicals namely 2-propanol, 3-chloropropene, and cyclohexane, two physical/chemical properties (critical temperature and enthalpy of vaporization) that require to calculating dimensionless Henry's law constant at system temperature were not available. Therefore, the Tier 1 ROs for these chemical were calculated using a dimensionless Henry's law constant at 25^{o}C.

The physical/chemical properties are presented in Table 3-5. The sources for these properties have also been mentioned in Table 3-5 designating the values with different fonts.

Appendix I
Potential Sources of 9 other non-MGP Chemicals without TACO Tier 1 ROs

Potential Sources of 9 Other Non-MGP Chemicals without Non-TACO Tier 1 ROs

Freon 114:

Freon 114 is the constituent of domestic products like foaming agents and refrigerants. These products may be released to the environment through various waste streams.

Source: Hazardous Substances Data Bank (HSDB)
http://toxnet.nlm.nih.gov/cgi-bin/sis/search/f?./temp/~OVAmKX:1

Ethanol:

Ethanol has been detected in emissions from animal wastes, plants, insects, forest fires, microbes. Therefore, ethanol may be generated by terrestrial activities.

Source: HSDB
http://toxnet.nlm.nih.gov/cgi-bin/sis/search/f?./temp/~7zFfu6:1

Tetrahydrofuran:

This chemical is the constituent of solvents like synthetic resins (e.g., vinyls) and in top-coating solutions. Therefore, this chemical may be released to the environment through various waste streams.

Source: HSDB
http://toxnet.nlm.nih.gov/cgi-bin/sis/search/f?./temp/~vKQhXe:1

2,2,4- Trimethylpentane:

This chemical is the constituent of polyethylene pipes used for distribution of drinking water. Hence it may be released from these from these pipes passing through subsurface near residential areas.

Source: HSDB
http://toxnet.nlm.nih.gov/cgi-bin/sis/search/f?./temp/~HHh0U6:1

n-Heptane:

This chemical is used as a solvent in petroleum based products. Hence may be released to the environment through various waste streams with the use of these products.

Source: HSDB
http://toxnet.nlm.nih.gov/cgi-bin/sis/search/f?./temp/~UhxTsM:1

2-Hexanone:

This chemical is used as a solvent for a wide variety of materials including lacquers, resins, oils, nitrocellulose, acrylates, vinyl, and alkyd coatings. Also, 2-Hexanone has been identified as disinfection by product of ozone treatment in drinking water. Therefore, it may be released to the soil environment through various waste streams.

Source: HSDB
http://toxnet.nlm.nih.gov/cgi-bin/sis/search

n-propylbenzene:

This is the constituent of asphalt and naphtha and it can be used as a solvent. Hence the use of these products may release this chemical into the soil environment. It also can be released to the environment in leachates and vapor emissions from landfills.

Source: HSDB
http://toxnet.nlm.nih.gov/cgi-bin/sis/search/f?./temp/~s4c6tw:1

4-Ethyltoluene:

This chemical is used as an additive in petroleum products and a solvent in a variety of agricultural and domestic products. Hence, it may be released to the soil environment due to the use of these products.

Source: Environment Agency
http://www.environment-agency.gov.uk/business/444255/446867/255244/substances/1024/?lang=_e&theme=&region=&subject=&searchfor=toluene&any_all=&choose_order=&exactphrase=&withoutwords=

1,3-Dichlorobenzene:

This chemical is used as an intermediate in the production of chlorophenols. It can also be used as fumigant and insecticide. Hence it may be released into the soil environment due to the domestic use of these products.

Source: HSDB
http://toxnet.nlm.nih.gov/cgi-bin/sis/search/f?./temp/~NJmNjJ:1

Appendix J
Illinois Licensed Professional Engineer Review Letter

SHIFRIN & ASSOCIATES, inc.
Environmental Engineers

December 10, 2008

Mr. Kendall L. Pickett, P.G., Senior Environmental Geologist
Risk Assessment & Management (RAM) Group, Inc.
5433 Westheimer Suite 725
Houston, Texas 77056

Re: Evaluation of Soil Gas Data Collected at Residential Properties near Former MGP Site Champaign, Illinois

Dear Mr. Pickett:

We have reviewed the draft of the referenced report. The soil gas data collected have been compared with applicable draft Illinois Environmental Protection Agency ("IEPA") Tiered Approach to Corrective Action ("TACO") Tier 1 soil gas remediation objectives for residential land use. It has been concluded that the concentrations of all chemicals in the samples collected were less than the comparable remediation objectives. Based upon these findings, the report concludes that the residual soil and groundwater impacts from the former MGP are not of concern.

Based upon our review, we agree with the above findings.

If you have any questions or require further information, please contact us at your convenience.

Sincerely yours,
SHIFRIN & ASSOCIATES, INC.

Walter G. Shifrin, P.E., President
Illinois Licensed Professional Engineer 062.021317

WALTER G. SHIFRIN 21317 REGISTERED PROFESSIONAL ENGINEER OF ILLINOIS

WGS:mkh

Z:\WS-FILES\A08128.ltr1.wpd

Appendix D

Soil Analytical Data and Chain of Custody Forms

TEKLAB, INC.

5445 HORSESHOE LAKE ROAD
COLLINSVILLE, ILLINOIS 62234

ENVIRONMENTAL TESTING LABORATORY

TEL: 618-344-1004
FAX: 618-344-1005

May 16, 2008

Derek Ingram
Philip Environmental
210 West Sand Bank Road
Columbia, IL 62236-0230
TEL: (618) 281-7173
FAX: (618) 281-5120

NELAP Accredited #100226

RE: A831-735002-012901-225/IP Champaign 62403053 **WorkOrder:** 08050415

Dear Derek Ingram:

TEKLAB, INC received 40 samples on 5/9/2008 5:20:00 PM for the analysis presented in the following report.

Samples are analyzed on an as received basis unless otherwise requested and documented. The sample results contained in this report relate only to the requested analytes of interest as directed on the chain of custody. IL ELAP and NELAP accredited fields of testing are indicated by the letters NELAP under the Certification column.

All quality control criteria applicable to the test methods employed for this project have been satisfactorily met and are in accordance with NELAP except where noted. The following report shall not be reproduced, except in full, without the written approval of Teklab, Inc.

If you have any questions regarding these tests results, please feel free to call.

Sincerely,

Heather A. White

Heather A. White
Project Manager
(618)344-1004 ex.20

TEKLAB, INC.

5445 HORSESHOE LAKE ROAD
COLLINSVILLE, ILLINOIS 62234

ENVIRONMENTAL TESTING LABORATORY

TEL: 618-344-1004
FAX: 618-344-1005

Client: Philip Environmental

SAMPLE SUMMARY

Project: A831-735002-012901-225/IP Champaign 62403053
Lab Order: 08050415
Report Date: 16-May-08

Lab Sample ID	Client Sample ID	Fractions	Collection Date
08050415-001	B-812 1.0-2.0 ft	4	5/5/2008 4:10:00 PM
08050415-002	B-812 9.0-10.0 ft	4	5/5/2008 4:25:00 PM
08050415-003	B-812 11.0-12.0 ft	4	5/5/2008 4:42:00 PM
08050415-004	B-811 2.0-3.0 ft	4	5/5/2008 5:15:00 PM
08050415-005	B-811 9.0-10.0 ft	4	5/5/2008 5:23:00 PM
08050415-006	B-811 11.0-12.0 ft	4	5/5/2008 5:43:00 PM
08050415-007	B-843 2.0-3.0 ft	4	5/6/2008 9:24:00 AM
08050415-008	B-843 7.0-8.0 ft	4	5/6/2008 9:35:00 AM
08050415-009	B-843 10.0-11.0 ft	4	5/6/2008 9:47:00 AM
08050415-010	B-844 1.0-2.0 ft	4	5/6/2008 12:47:00 PM
08050415-011	B-844 8.0-9.0 ft	4	5/6/2008 1:05:00 PM
08050415-012	B-844 15.0-16.0 ft	4	5/6/2008 1:40:00 PM
08050415-013	B-851 19.0-20.0 ft	4	5/9/2008 10:20:00 AM
08050415-014	B-852 2.0-3.0 ft	4	5/9/2008 11:11:00 AM
08050415-015	B-852 9.0-10.0 ft	4	5/9/2008 11:25:00 AM
08050415-016	B-852 23.0-24.0 ft	4	5/9/2008 11:42:00 AM
08050415-017	B-845 6.0-7.0 ft	4	5/6/2008 2:45:00 PM
08050415-018	B-845 13.0-14.0 ft	4	5/6/2008 3:00:00 PM
08050415-019	B-846 8.5-9.5 ft	4	5/7/2008 8:55:00 AM
08050415-020	B-846 10.0-11.0 ft	4	5/7/2008 9:30:00 AM
08050415-021	B-846 20.0-21.0 ft	4	5/7/2008 9:54:00 AM
08050415-022	B-803 2.0-3.0 ft	4	5/7/2008 10:07:00 AM
08050415-023	B-803 9.0-10.0 ft	4	5/7/2008 10:20:00 AM
08050415-024	B-803 21.0-22.0 ft	4	5/7/2008 10:41:00 AM
08050415-025	B-803 29.0-30.0 ft	4	5/7/2008 10:55:00 AM
08050415-026	B-849 0.0-1.0 ft	4	5/7/2008 11:25:00 AM
08050415-027	B-849 9.0-10.0 ft	4	5/7/2008 11:35:00 AM
08050415-028	B-849 16.0-17.0 ft	4	5/7/2008 11:55:00 AM
08050415-029	B-848 2.0-3.0 ft	4	5/7/2008 3:45:00 PM
08050415-030	B-848 9.0-10.0 ft	4	5/7/2008 3:55:00 PM
08050415-031	B-848 13.0-14.0 ft	4	5/7/2008 4:10:00 PM
08050415-032	B-847 6.0-7.0 ft	4	5/7/2008 4:47:00 PM
08050415-033	B-847 22.0-23.0 ft	4	5/7/2008 5:18:00 PM

TEKLAB, INC.

5445 HORSESHOE LAKE ROAD
COLLINSVILLE, ILLINOIS 62234

ENVIRONMENTAL TESTING LABORATORY

TEL: 618-344-1004
FAX: 618-344-1005

SAMPLE SUMMARY

Client: Philip Environmental
Project: A831-735002-012901-225/IP Champaign 62403053
Lab Order: 08050415
Report Date: 16-May-08

Lab Sample ID	Client Sample ID	Fractions	Collection Date
08050415-034	B-809 2.0-3.0 ft	4	5/8/2008 9:45:00 AM
08050415-035	B-809 9.0-10.0 ft	4	5/8/2008 9:58:00 AM
08050415-036	B-809 15.0-16.0 ft	4	5/8/2008 10:15:00 AM
08050415-037	B-847 29.0-30.0 ft	4	5/7/2008 5:30:00 PM
08050415-038	B-850 8.0-9.0 ft	4	5/8/2008 11:30:00 AM
08050415-039	B-850 16.0-17.0 ft	4	5/8/2008 12:05:00 PM
08050415-040	B-850 25.0-26.0 ft	4	5/8/2008 12:55:00 PM

TEKLAB, INC.

5445 HORSESHOE LAKE ROAD
COLLINSVILLE, ILLINOIS 62234

ENVIRONMENTAL TESTING LABORATORY

TEL: 618-344-1004
FAX: 618-344-1005

CASE NARRATIVE

Client: Philip Environmental
Project: A831-735002-012901-225/IP Champaign 62403053
LabOrder: 08050415
Report Date: 16-May-08

Cooler Receipt Temp: 4.6 °C

State accreditations:

KS: NELAP #E-10347 | KY: UST #0073 | MO: DNR #00930 | AR: ADEQ #70-028-0

Qualifiers

DF - Dilution Factor	**B** - Analyte detected in the associated Method Blank	**C** - Client requested RL below
RL - Reporting Limit	**J** - Analyte detected below reporting limits	**D** - Diluted out of sample
ND - Not Detected at the Reporting Limit	**R** - RPD outside accepted recovery limits	**E** - Value above quantitation range
Surr - Surrogate Standard added by lab	**S** - Spike Recovery outside accepted recovery limits	**H** - Holding time exceeded
TNTC - Too numerous to count (> 200 CFU)	X - Value exceeds Maximum Contaminant Level	**MI** - Matrix interference
Q - QC criteria failed or noncompliant CCV	# - Unknown hydrocarbon	**DNI** - Did not ignite
NELAP - IL ELAP and NELAP Accredited Field of Testing	**IDPH** - IL Dept. of Public Health	

TEKLAB, INC.

5445 HORSESHOE LAKE ROAD
COLLINSVILLE, ILLINOIS 62234

ENVIRONMENTAL TESTING LABORATORY

TEL: 618-344-1004
FAX: 618-344-1005

LABORATORY RESULTS

Client: Philip Environmental
WorkOrder: 08050415
Lab ID: 08050415-001
Report Date: 16-May-08

Client Project: A831-735002-012901-225/IP Champ
Client Sample ID: B-812 1.0-2.0 ft
Collection Date: 5/5/2008 4:10:00 PM
Matrix: SOLID

Analyses	Certification	RL	Qual	Result	Units	DF	Date Analyzed	Analyst
ASTM D2974								
Percent Moisture		0.1		**24.5**	%	1	5/12/2008	TWM
STANDARD METHODS 18TH ED. 2540 G								
Total Solids		0.1		**75.5**	%	1	5/12/2008	TWM
SW-846 3550B, 8270C SIMS, SEMI-VOLATILE ORGANIC COMPOUNDS BY GC/MS								
Acenaphthene	NELAP	0.005		**ND**	mg/Kg-dry	1	5/14/2008 10:34:00 AM	TDN
Acenaphthylene	NELAP	0.005		**ND**	mg/Kg-dry	1	5/14/2008 10:34:00 AM	TDN
Anthracene	NELAP	0.005		**ND**	mg/Kg-dry	1	5/14/2008 10:34:00 AM	TDN
Benzo(a)anthracene	NELAP	0.005		**0.008**	mg/Kg-dry	1	5/14/2008 10:34:00 AM	TDN
Benzo(a)pyrene	NELAP	0.005		**0.008**	mg/Kg-dry	1	5/14/2008 10:34:00 AM	TDN
Benzo(b)fluoranthene	NELAP	0.005		**0.011**	mg/Kg-dry	1	5/14/2008 10:34:00 AM	TDN
Benzo(g,h,i)perylene	NELAP	0.005		**0.007**	mg/Kg-dry	1	5/14/2008 10:34:00 AM	TDN
Benzo(k)fluoranthene	NELAP	0.005		**ND**	mg/Kg-dry	1	5/14/2008 10:34:00 AM	TDN
Chrysene	NELAP	0.005		**0.006**	mg/Kg-dry	1	5/14/2008 10:34:00 AM	TDN
Dibenzo(a,h)anthracene	NELAP	0.005		**ND**	mg/Kg-dry	1	5/14/2008 10:34:00 AM	TDN
Fluoranthene	NELAP	0.005		**0.007**	mg/Kg-dry	1	5/14/2008 10:34:00 AM	TDN
Fluorene	NELAP	0.005		**ND**	mg/Kg-dry	1	5/14/2008 10:34:00 AM	TDN
Indeno(1,2,3-cd)pyrene	NELAP	0.005		**0.005**	mg/Kg-dry	1	5/14/2008 10:34:00 AM	TDN
Naphthalene	NELAP	0.005		**ND**	mg/Kg-dry	1	5/14/2008 10:34:00 AM	TDN
Phenanthrene	NELAP	0.005		**ND**	mg/Kg-dry	1	5/14/2008 10:34:00 AM	TDN
Pyrene	NELAP	0.005		**0.008**	mg/Kg-dry	1	5/14/2008 10:34:00 AM	TDN
Surr: 2-Fluorobiphenyl		10-131		**57.7**	%REC	1	5/14/2008 10:34:00 AM	TDN
Surr: Nitrobenzene-d5		10-132		**61.9**	%REC	1	5/14/2008 10:34:00 AM	TDN
Surr: p-Terphenyl-d14		30.6-131		**66.7**	%REC	1	5/14/2008 10:34:00 AM	TDN
SW-846 5035, 8260B, VOLATILE ORGANIC COMPOUNDS BY GC/MS								
Benzene	NELAP	1.1		**ND**	µg/Kg-dry	1	5/13/2008 5:30:00 AM	JSA
Ethylbenzene	NELAP	5.7		**ND**	µg/Kg-dry	1	5/13/2008 5:30:00 AM	JSA
Toluene	NELAP	5.7	J	**1.4**	µg/Kg-dry	1	5/13/2008 5:30:00 AM	JSA
Xylenes, Total	NELAP	5.7		**ND**	µg/Kg-dry	1	5/13/2008 5:30:00 AM	JSA
Surr: 1,2-Dichloroethane-d4		61-128		**87.3**	%REC	1	5/13/2008 5:30:00 AM	JSA
Surr: 4-Bromofluorobenzene		78.2-117		**98.3**	%REC	1	5/13/2008 5:30:00 AM	JSA
Surr: Dibromofluoromethane		66.6-130		**98.0**	%REC	1	5/13/2008 5:30:00 AM	JSA
Surr: Toluene-d8		80.1-122		**98.3**	%REC	1	5/13/2008 5:30:00 AM	JSA

Sample Narrative

TEKLAB, INC.

5445 HORSESHOE LAKE ROAD
COLLINSVILLE, ILLINOIS 62234

ENVIRONMENTAL TESTING LABORATORY

TEL: 618-344-1004
FAX: 618-344-1005

LABORATORY RESULTS

Client: Philip Environmental
WorkOrder: 08050415
Lab ID: 08050415-002
Report Date: 16-May-08

Client Project: A831-735002-012901-225/IP Champ
Client Sample ID: B-812 9.0-10.0 ft
Collection Date: 5/5/2008 4:25:00 PM
Matrix: SOLID

Analyses	Certification	RL	Qual	Result	Units	DF	Date Analyzed	Analyst
ASTM D2974								
Percent Moisture		0.1		**12.7**	%	1	5/12/2008	TWM
STANDARD METHODS 18TH ED. 2540 G								
Total Solids		0.1		**87.3**	%	1	5/12/2008	TWM
SW-846 3550B, 8270C SIMS, SEMI-VOLATILE ORGANIC COMPOUNDS BY GC/MS								
Acenaphthene	NELAP	0.004		**ND**	mg/Kg-dry	1	5/14/2008 11:10:00 AM	TDN
Acenaphthylene	NELAP	0.004		**ND**	mg/Kg-dry	1	5/14/2008 11:10:00 AM	TDN
Anthracene	NELAP	0.004		**ND**	mg/Kg-dry	1	5/14/2008 11:10:00 AM	TDN
Benzo(a)anthracene	NELAP	0.004		**ND**	mg/Kg-dry	1	5/14/2008 11:10:00 AM	TDN
Benzo(a)pyrene	NELAP	0.004		**ND**	mg/Kg-dry	1	5/14/2008 11:10:00 AM	TDN
Benzo(b)fluoranthene	NELAP	0.004		**ND**	mg/Kg-dry	1	5/14/2008 11:10:00 AM	TDN
Benzo(g,h,i)perylene	NELAP	0.004		**ND**	mg/Kg-dry	1	5/14/2008 11:10:00 AM	TDN
Benzo(k)fluoranthene	NELAP	0.004		**ND**	mg/Kg-dry	1	5/14/2008 11:10:00 AM	TDN
Chrysene	NELAP	0.004		**ND**	mg/Kg-dry	1	5/14/2008 11:10:00 AM	TDN
Dibenzo(a,h)anthracene	NELAP	0.004		**ND**	mg/Kg-dry	1	5/14/2008 11:10:00 AM	TDN
Fluoranthene	NELAP	0.004		**ND**	mg/Kg-dry	1	5/14/2008 11:10:00 AM	TDN
Fluorene	NELAP	0.004		**ND**	mg/Kg-dry	1	5/14/2008 11:10:00 AM	TDN
Indeno(1,2,3-cd)pyrene	NELAP	0.004		**ND**	mg/Kg-dry	1	5/14/2008 11:10:00 AM	TDN
Naphthalene	NELAP	0.004		**ND**	mg/Kg-dry	1	5/14/2008 11:10:00 AM	TDN
Phenanthrene	NELAP	0.004		**ND**	mg/Kg-dry	1	5/14/2008 11:10:00 AM	TDN
Pyrene	NELAP	0.004		**ND**	mg/Kg-dry	1	5/14/2008 11:10:00 AM	TDN
Surr: 2-Fluorobiphenyl		10-131		**60.7**	%REC	1	5/14/2008 11:10:00 AM	TDN
Surr: Nitrobenzene-d5		10-132		**61.3**	%REC	1	5/14/2008 11:10:00 AM	TDN
Surr: p-Terphenyl-d14		30.6-131		**66.7**	%REC	1	5/14/2008 11:10:00 AM	TDN
SW-846 5035, 8260B, VOLATILE ORGANIC COMPOUNDS BY GC/MS								
Benzene	NELAP	1.0		**3.0**	µg/Kg-dry	1	5/13/2008 5:59:00 AM	JSA
Ethylbenzene	NELAP	4.8	J	**2.1**	µg/Kg-dry	1	5/13/2008 5:59:00 AM	JSA
Toluene	NELAP	4.8		**7.1**	µg/Kg-dry	1	5/13/2008 5:59:00 AM	JSA
Xylenes, Total	NELAP	4.8		**5.0**	µg/Kg-dry	1	5/13/2008 5:59:00 AM	JSA
Surr: 1,2-Dichloroethane-d4		61-128		**72.0**	%REC	1	5/13/2008 5:59:00 AM	JSA
Surr: 4-Bromofluorobenzene		78.2-117		**97.6**	%REC	1	5/13/2008 5:59:00 AM	JSA
Surr: Dibromofluoromethane		66.6-130		**85.6**	%REC	1	5/13/2008 5:59:00 AM	JSA
Surr: Toluene-d8		80.1-122		**104.7**	%REC	1	5/13/2008 5:59:00 AM	JSA

Sample Narrative

TEKLAB, INC.

5445 HORSESHOE LAKE ROAD
COLLINSVILLE, ILLINOIS 62234

ENVIRONMENTAL TESTING LABORATORY

TEL: 618-344-1004
FAX: 618-344-1005

LABORATORY RESULTS

Client: Philip Environmental
WorkOrder: 08050415
Lab ID: 08050415-003
Report Date: 16-May-08
Client Project: A831-735002-012901-225/IP Champ
Client Sample ID: B-812 11.0-12.0 ft
Collection Date: 5/5/2008 4:42:00 PM
Matrix: SOLID

Analyses	Certification	RL	Qual	Result	Units	DF	Date Analyzed	Analyst
ASTM D2974								
Percent Moisture		0.1		**15.3**	%	1	5/12/2008	TWM
STANDARD METHODS 18TH ED. 2540 G								
Total Solids		0.1		**84.7**	%	1	5/12/2008	TWM
SW-846 3550B, 8270C SIMS, SEMI-VOLATILE ORGANIC COMPOUNDS BY GC/MS								
Acenaphthene	NELAP	0.004		**ND**	mg/Kg-dry	1	5/15/2008 2:02:00 PM	TDN
Acenaphthylene	NELAP	0.004		**ND**	mg/Kg-dry	1	5/15/2008 2:02:00 PM	TDN
Anthracene	NELAP	0.004		**ND**	mg/Kg-dry	1	5/15/2008 2:02:00 PM	TDN
Benzo(a)anthracene	NELAP	0.004		**ND**	mg/Kg-dry	1	5/15/2008 2:02:00 PM	TDN
Benzo(a)pyrene	NELAP	0.004		**ND**	mg/Kg-dry	1	5/15/2008 2:02:00 PM	TDN
Benzo(b)fluoranthene	NELAP	0.004		**ND**	mg/Kg-dry	1	5/15/2008 2:02:00 PM	TDN
Benzo(g,h,i)perylene	NELAP	0.004		**ND**	mg/Kg-dry	1	5/15/2008 2:02:00 PM	TDN
Benzo(k)fluoranthene	NELAP	0.004		**ND**	mg/Kg-dry	1	5/15/2008 2:02:00 PM	TDN
Chrysene	NELAP	0.004		**ND**	mg/Kg-dry	1	5/15/2008 2:02:00 PM	TDN
Dibenzo(a,h)anthracene	NELAP	0.004		**ND**	mg/Kg-dry	1	5/15/2008 2:02:00 PM	TDN
Fluoranthene	NELAP	0.004		**ND**	mg/Kg-dry	1	5/15/2008 2:02:00 PM	TDN
Fluorene	NELAP	0.004		**ND**	mg/Kg-dry	1	5/15/2008 2:02:00 PM	TDN
Indeno(1,2,3-cd)pyrene	NELAP	0.004		**ND**	mg/Kg-dry	1	5/15/2008 2:02:00 PM	TDN
Naphthalene	NELAP	0.004		**ND**	mg/Kg-dry	1	5/15/2008 2:02:00 PM	TDN
Phenanthrene	NELAP	0.004		**ND**	mg/Kg-dry	1	5/15/2008 2:02:00 PM	TDN
Pyrene	NELAP	0.004		**ND**	mg/Kg-dry	1	5/15/2008 2:02:00 PM	TDN
Surr: 2-Fluorobiphenyl		10-131		**48.5**	%REC	1	5/15/2008 2:02:00 PM	TDN
Surr: Nitrobenzene-d5		10-132		**51.9**	%REC	1	5/15/2008 2:02:00 PM	TDN
Surr: p-Terphenyl-d14		30.6-131		**59.5**	%REC	1	5/15/2008 2:02:00 PM	TDN
SW-846 5035, 8260B, VOLATILE ORGANIC COMPOUNDS BY GC/MS								
Benzene	NELAP	0.9		**2.3**	µg/Kg-dry	1	5/13/2008 6:28:00 AM	JSA
Ethylbenzene	NELAP	4.6	J	**1.6**	µg/Kg-dry	1	5/13/2008 6:28:00 AM	JSA
Toluene	NELAP	4.6		**4.6**	µg/Kg-dry	1	5/13/2008 6:28:00 AM	JSA
Xylenes, Total	NELAP	4.6	J	**3.6**	µg/Kg-dry	1	5/13/2008 6:28:00 AM	JSA
Surr: 1,2-Dichloroethane-d4		61-128		**85.1**	%REC	1	5/13/2008 6:28:00 AM	JSA
Surr: 4-Bromofluorobenzene		78.2-117		**99.2**	%REC	1	5/13/2008 6:28:00 AM	JSA
Surr: Dibromofluoromethane		66.6-130		**96.8**	%REC	1	5/13/2008 6:28:00 AM	JSA
Surr: Toluene-d8		80.1-122		**97.7**	%REC	1	5/13/2008 6:28:00 AM	JSA

Sample Narrative

TEKLAB, INC.

5445 HORSESHOE LAKE ROAD
COLLINSVILLE, ILLINOIS 62234

ENVIRONMENTAL TESTING LABORATORY

TEL: 618-344-1004
FAX: 618-344-1005

LABORATORY RESULTS

Client: Philip Environmental
WorkOrder: 08050415
Lab ID: 08050415-004
Report Date: 16-May-08

Client Project: A831-735002-012901-225/IP Champ
Client Sample ID: B-811 2.0-3.0 ft
Collection Date: 5/5/2008 5:15:00 PM
Matrix: SOLID

Analyses	Certification	RL	Qual	Result	Units	DF	Date Analyzed	Analyst
ASTM D2974								
Percent Moisture		0.1		**21.1**	%	1	5/12/2008	TWM
STANDARD METHODS 18TH ED. 2540 G								
Total Solids		0.1		**78.9**	%	1	5/12/2008	TWM
SW-846 3050B, 6010B, METALS BY ICP								
Arsenic	NELAP	2.27		**2.81**	mg/Kg-dry	1	5/14/2008 7:32:30 PM	LAL
Chromium	NELAP	0.91		**20.0**	mg/Kg-dry	1	5/14/2008 7:32:30 PM	LAL
Lead	NELAP	3.64		**16.8**	mg/Kg-dry	1	5/15/2008 5:35:14 PM	CRK
SW-846 3550B, 8270C SIMS, SEMI-VOLATILE ORGANIC COMPOUNDS BY GC/MS								
Acenaphthene	NELAP	0.004		**ND**	mg/Kg-dry	1	5/15/2008 3:56:00 AM	TDN
Acenaphthylene	NELAP	0.004		**0.012**	mg/Kg-dry	1	5/15/2008 3:56:00 AM	TDN
Anthracene	NELAP	0.004		**0.020**	mg/Kg-dry	1	5/15/2008 3:56:00 AM	TDN
Benzo(a)anthracene	NELAP	0.004		**0.073**	mg/Kg-dry	1	5/15/2008 3:56:00 AM	TDN
Benzo(a)pyrene	NELAP	0.004		**0.083**	mg/Kg-dry	1	5/15/2008 3:56:00 AM	TDN
Benzo(b)fluoranthene	NELAP	0.004		**0.102**	mg/Kg-dry	1	5/15/2008 3:56:00 AM	TDN
Benzo(g,h,i)perylene	NELAP	0.004		**0.047**	mg/Kg-dry	1	5/15/2008 3:56:00 AM	TDN
Benzo(k)fluoranthene	NELAP	0.004		**0.035**	mg/Kg-dry	1	5/15/2008 3:56:00 AM	TDN
Chrysene	NELAP	0.004		**0.080**	mg/Kg-dry	1	5/15/2008 3:56:00 AM	TDN
Dibenzo(a,h)anthracene	NELAP	0.004		**0.014**	mg/Kg-dry	1	5/15/2008 3:56:00 AM	TDN
Fluoranthene	NELAP	0.004		**0.127**	mg/Kg-dry	1	5/15/2008 3:56:00 AM	TDN
Fluorene	NELAP	0.004		**0.005**	mg/Kg-dry	1	5/15/2008 3:56:00 AM	TDN
Indeno(1,2,3-cd)pyrene	NELAP	0.004		**0.046**	mg/Kg-dry	1	5/15/2008 3:56:00 AM	TDN
Naphthalene	NELAP	0.004		**0.004**	mg/Kg-dry	1	5/15/2008 3:56:00 AM	TDN
Phenanthrene	NELAP	0.004		**0.055**	mg/Kg-dry	1	5/15/2008 3:56:00 AM	TDN
Pyrene	NELAP	0.004		**0.105**	mg/Kg-dry	1	5/15/2008 3:56:00 AM	TDN
Surr: 2-Fluorobiphenyl		10-131		**53.5**	%REC	1	5/15/2008 3:56:00 AM	TDN
Surr: Nitrobenzene-d5		10-132		**57.1**	%REC	1	5/15/2008 3:56:00 AM	TDN
Surr: p-Terphenyl-d14		30.6-131		**67.1**	%REC	1	5/15/2008 3:56:00 AM	TDN
SW-846 5035, 8260B, VOLATILE ORGANIC COMPOUNDS BY GC/MS								
Benzene	NELAP	1.1		**3.6**	µg/Kg-dry	1	5/13/2008 8:23:00 PM	GEK
Ethylbenzene	NELAP	5.5	J	**2.2**	µg/Kg-dry	1	5/13/2008 8:23:00 PM	GEK
Toluene	NELAP	5.5		**7.3**	µg/Kg-dry	1	5/13/2008 8:23:00 PM	GEK
Xylenes, Total	NELAP	5.5		**7.6**	µg/Kg-dry	1	5/13/2008 8:23:00 PM	GEK
Surr: 1,2-Dichloroethane-d4		61-128		**115.7**	%REC	1	5/13/2008 8:23:00 PM	GEK
Surr: 4-Bromofluorobenzene		78.2-117	S	**73.2**	%REC	1	5/13/2008 8:23:00 PM	GEK
Surr: Dibromofluoromethane		66.6-130		**109.3**	%REC	1	5/13/2008 8:23:00 PM	GEK
Surr: Toluene-d8		80.1-122		**117.4**	%REC	1	5/13/2008 8:23:00 PM	GEK
SW-846 9010B, 9014								
Cyanide	NELAP	0.63	J	**0.32**	mg/Kg-dry	1	5/13/2008	AET

TEKLAB, INC.

5445 HORSESHOE LAKE ROAD
COLLINSVILLE, ILLINOIS 62234

ENVIRONMENTAL TESTING LABORATORY

TEL: 618-344-1004
FAX: 618-344-1005

LABORATORY RESULTS

Client:	Philip Environmental	**Client Project:**	A831-735002-012901-225/IP Champ
WorkOrder:	08050415	**Client Sample ID:**	B-811 2.0-3.0 ft
Lab ID:	08050415-004	**Collection Date:**	5/5/2008 5:15:00 PM
Report Date:	16-May-08	**Matrix:**	SOLID

Analyses	Certification	RL	Qual	Result	Units	DF	Date Analyzed	Analyst
SW-846 9014A								
Cyanide, Amenable to Chlorination		0.63		**< 0.63**	mg/Kg-dry	1	5/14/2008	AET

Sample Narrative

SW-846 5035, 8260B, Volatile Organic Compounds by GC/MS

Surrogate recovery was outside QC limits due to matrix interference.

TEKLAB, INC.

5445 HORSESHOE LAKE ROAD
COLLINSVILLE, ILLINOIS 62234

ENVIRONMENTAL TESTING LABORATORY

TEL: 618-344-1004
FAX: 618-344-1005

LABORATORY RESULTS

Client: Philip Environmental
WorkOrder: 08050415
Lab ID: 08050415-005
Report Date: 16-May-08

Client Project: A831-735002-012901-225/IP Champ
Client Sample ID: B-811 9.0-10.0 ft
Collection Date: 5/5/2008 5:23:00 PM
Matrix: SOLID

Analyses	Certification	RL	Qual	Result	Units	DF	Date Analyzed	Analyst
ASTM D2974								
Percent Moisture		0.1		**20.3**	%	1	5/12/2008	TWM
STANDARD METHODS 18TH ED. 2540 G								
Total Solids		0.1		**79.7**	%	1	5/12/2008	TWM
SW-846 3050B, 6010B, METALS BY ICP								
Arsenic	NELAP	2.50		**6.47**	mg/Kg-dry	1	5/14/2008 7:39:17 PM	LAL
Chromium	NELAP	1.00		**15.1**	mg/Kg-dry	1	5/14/2008 7:39:17 PM	LAL
Lead	NELAP	4.00		**10.0**	mg/Kg-dry	1	5/15/2008 5:39:25 PM	CRK
SW-846 3550B, 8270C SIMS, SEMI-VOLATILE ORGANIC COMPOUNDS BY GC/MS								
Acenaphthene	NELAP	0.004		**0.008**	mg/Kg-dry	1	5/15/2008 2:39:00 PM	TDN
Acenaphthylene	NELAP	0.004		**0.017**	mg/Kg-dry	1	5/15/2008 2:39:00 PM	TDN
Anthracene	NELAP	0.004		**ND**	mg/Kg-dry	1	5/15/2008 2:39:00 PM	TDN
Benzo(a)anthracene	NELAP	0.004		**ND**	mg/Kg-dry	1	5/15/2008 2:39:00 PM	TDN
Benzo(a)pyrene	NELAP	0.004		**ND**	mg/Kg-dry	1	5/15/2008 2:39:00 PM	TDN
Benzo(b)fluoranthene	NELAP	0.004		**ND**	mg/Kg-dry	1	5/15/2008 2:39:00 PM	TDN
Benzo(g,h,i)perylene	NELAP	0.004		**ND**	mg/Kg-dry	1	5/15/2008 2:39:00 PM	TDN
Benzo(k)fluoranthene	NELAP	0.004		**ND**	mg/Kg-dry	1	5/15/2008 2:39:00 PM	TDN
Chrysene	NELAP	0.004		**ND**	mg/Kg-dry	1	5/15/2008 2:39:00 PM	TDN
Dibenzo(a,h)anthracene	NELAP	0.004		**ND**	mg/Kg-dry	1	5/15/2008 2:39:00 PM	TDN
Fluoranthene	NELAP	0.004		**ND**	mg/Kg-dry	1	5/15/2008 2:39:00 PM	TDN
Fluorene	NELAP	0.004		**ND**	mg/Kg-dry	1	5/15/2008 2:39:00 PM	TDN
Indeno(1,2,3-cd)pyrene	NELAP	0.004		**ND**	mg/Kg-dry	1	5/15/2008 2:39:00 PM	TDN
Naphthalene	NELAP	0.004		**ND**	mg/Kg-dry	1	5/15/2008 2:39:00 PM	TDN
Phenanthrene	NELAP	0.004		**ND**	mg/Kg-dry	1	5/15/2008 2:39:00 PM	TDN
Pyrene	NELAP	0.004		**ND**	mg/Kg-dry	1	5/15/2008 2:39:00 PM	TDN
Surr: 2-Fluorobiphenyl		10-131		**35.3**	%REC	1	5/15/2008 2:39:00 PM	TDN
Surr: Nitrobenzene-d5		10-132		**40.1**	%REC	1	5/15/2008 2:39:00 PM	TDN
Surr: p-Terphenyl-d14		30.6-131		**54.9**	%REC	1	5/15/2008 2:39:00 PM	TDN
SW-846 5035, 8260B, VOLATILE ORGANIC COMPOUNDS BY GC/MS								
Benzene	NELAP	0.8		**ND**	µg/Kg-dry	1	5/13/2008 6:58:00 AM	JSA
Ethylbenzene	NELAP	4.2		**ND**	µg/Kg-dry	1	5/13/2008 6:58:00 AM	JSA
Toluene	NELAP	4.2		**ND**	µg/Kg-dry	1	5/13/2008 6:58:00 AM	JSA
Xylenes, Total	NELAP	4.2		**ND**	µg/Kg-dry	1	5/13/2008 6:58:00 AM	JSA
Surr: 1,2-Dichloroethane-d4		61-128		**89.2**	%REC	1	5/13/2008 6:58:00 AM	JSA
Surr: 4-Bromofluorobenzene		78.2-117		**101.7**	%REC	1	5/13/2008 6:58:00 AM	JSA
Surr: Dibromofluoromethane		66.6-130		**98.6**	%REC	1	5/13/2008 6:58:00 AM	JSA
Surr: Toluene-d8		80.1-122		**97.7**	%REC	1	5/13/2008 6:58:00 AM	JSA
SW-846 9010B, 9014								
Cyanide	NELAP	0.60	J	**0.25**	mg/Kg-dry	1	5/13/2008	AET

TEKLAB, INC.

5445 HORSESHOE LAKE ROAD
COLLINSVILLE, ILLINOIS 62234

ENVIRONMENTAL TESTING LABORATORY

TEL: 618-344-1004
FAX: 618-344-1005

LABORATORY RESULTS

Client: Philip Environmental
WorkOrder: 08050415
Lab ID: 08050415-005
Report Date: 16-May-08

Client Project: A831-735002-012901-225/IP Champ
Client Sample ID: B-811 9.0-10.0 ft
Collection Date: 5/5/2008 5:23:00 PM
Matrix: SOLID

Analyses	Certification	RL	Qual	Result	Units	DF	Date Analyzed	Analyst
SW-846 9014A								
Cyanide, Amenable to Chlorination		0.60		**Interference**	mg/Kg-dry	1	5/14/2008	AET

Sample Narrative

TEKLAB, INC.

5445 HORSESHOE LAKE ROAD
COLLINSVILLE, ILLINOIS 62234

ENVIRONMENTAL TESTING LABORATORY

TEL: 618-344-1004
FAX: 618-344-1005

LABORATORY RESULTS

Client: Philip Environmental
WorkOrder: 08050415
Lab ID: 08050415-006
Report Date: 16-May-08

Client Project: A831-735002-012901-225/IP Champ
Client Sample ID: B-811 11.0-12.0 ft
Collection Date: 5/5/2008 5:43:00 PM
Matrix: SOLID

Analyses	Certification	RL	Qual	Result	Units	DF	Date Analyzed	Analyst
ASTM D2974								
Percent Moisture		0.1		**12.6**	%	1	5/12/2008	TWM
STANDARD METHODS 18TH ED. 2540 G								
Total Solids		0.1		**87.4**	%	1	5/12/2008	TWM
SW-846 3050B, 6010B, METALS BY ICP								
Arsenic	NELAP	2.40		**6.43**	mg/Kg-dry	1	5/14/2008 7:46:04 PM	LAL
Chromium	NELAP	0.96		**14.4**	mg/Kg-dry	1	5/14/2008 7:46:04 PM	LAL
Lead	NELAP	3.85		**10.1**	mg/Kg-dry	1	5/15/2008 5:43:38 PM	CRK
SW-846 3550B, 8270C SIMS, SEMI-VOLATILE ORGANIC COMPOUNDS BY GC/MS								
Acenaphthene	NELAP	0.004		**ND**	mg/Kg-dry	1	5/14/2008 4:11:00 PM	TDN
Acenaphthylene	NELAP	0.004		**ND**	mg/Kg-dry	1	5/14/2008 4:11:00 PM	TDN
Anthracene	NELAP	0.004		**ND**	mg/Kg-dry	1	5/14/2008 4:11:00 PM	TDN
Benzo(a)anthracene	NELAP	0.004		**ND**	mg/Kg-dry	1	5/14/2008 4:11:00 PM	TDN
Benzo(a)pyrene	NELAP	0.004		**ND**	mg/Kg-dry	1	5/14/2008 4:11:00 PM	TDN
Benzo(b)fluoranthene	NELAP	0.004		**ND**	mg/Kg-dry	1	5/14/2008 4:11:00 PM	TDN
Benzo(g,h,i)perylene	NELAP	0.004		**ND**	mg/Kg-dry	1	5/14/2008 4:11:00 PM	TDN
Benzo(k)fluoranthene	NELAP	0.004		**ND**	mg/Kg-dry	1	5/14/2008 4:11:00 PM	TDN
Chrysene	NELAP	0.004		**ND**	mg/Kg-dry	1	5/14/2008 4:11:00 PM	TDN
Dibenzo(a,h)anthracene	NELAP	0.004		**ND**	mg/Kg-dry	1	5/14/2008 4:11:00 PM	TDN
Fluoranthene	NELAP	0.004		**ND**	mg/Kg-dry	1	5/14/2008 4:11:00 PM	TDN
Fluorene	NELAP	0.004		**ND**	mg/Kg-dry	1	5/14/2008 4:11:00 PM	TDN
Indeno(1,2,3-cd)pyrene	NELAP	0.004		**ND**	mg/Kg-dry	1	5/14/2008 4:11:00 PM	TDN
Naphthalene	NELAP	0.004		**ND**	mg/Kg-dry	1	5/14/2008 4:11:00 PM	TDN
Phenanthrene	NELAP	0.004		**ND**	mg/Kg-dry	1	5/14/2008 4:11:00 PM	TDN
Pyrene	NELAP	0.004		**ND**	mg/Kg-dry	1	5/14/2008 4:11:00 PM	TDN
Surr: 2-Fluorobiphenyl		10-131		**31.9**	%REC	1	5/14/2008 4:11:00 PM	TDN
Surr: Nitrobenzene-d5		10-132		**48.3**	%REC	1	5/14/2008 4:11:00 PM	TDN
Surr: p-Terphenyl-d14		30.6-131		**62.7**	%REC	1	5/14/2008 4:11:00 PM	TDN
SW-846 5035, 8260B, VOLATILE ORGANIC COMPOUNDS BY GC/MS								
Benzene	NELAP	0.8		**2.5**	µg/Kg-dry	1	5/13/2008 7:27:00 AM	JSA
Ethylbenzene	NELAP	4.2	J	**1.4**	µg/Kg-dry	1	5/13/2008 7:27:00 AM	JSA
Toluene	NELAP	4.2		**4.5**	µg/Kg-dry	1	5/13/2008 7:27:00 AM	JSA
Xylenes, Total	NELAP	4.2	J	**3.2**	µg/Kg-dry	1	5/13/2008 7:27:00 AM	JSA
Surr: 1,2-Dichloroethane-d4		61-128		**88.3**	%REC	1	5/13/2008 7:27:00 AM	JSA
Surr: 4-Bromofluorobenzene		78.2-117	S	**77.3**	%REC	1	5/13/2008 7:27:00 AM	JSA
Surr: Dibromofluoromethane		66.6-130		**107.2**	%REC	1	5/13/2008 7:27:00 AM	JSA
Surr: Toluene-d8		80.1-122		**89.1**	%REC	1	5/13/2008 7:27:00 AM	JSA
SW-846 9010B, 9014								
Cyanide	NELAP	0.57		**< 0.57**	mg/Kg-dry	1	5/13/2008	AET

TEKLAB, INC.

5445 HORSESHOE LAKE ROAD
COLLINSVILLE, ILLINOIS 62234

ENVIRONMENTAL TESTING LABORATORY

TEL: 618-344-1004
FAX: 618-344-1005

LABORATORY RESULTS

Client: Philip Environmental
WorkOrder: 08050415
Lab ID: 08050415-006
Report Date: 16-May-08

Client Project: A831-735002-012901-225/IP Champ
Client Sample ID: B-811 11.0-12.0 ft
Collection Date: 5/5/2008 5:43:00 PM
Matrix: SOLID

Analyses	Certification	RL	Qual	Result	Units	DF	Date Analyzed	Analyst
SW-846 9014A								
Cyanide, Amenable to Chlorination		0.57		**Interference**	mg/Kg-dry	1	5/14/2008	AET

Sample Narrative

SW-846 5035, 8260B, Volatile Organic Compounds by GC/MS

Surrogate recovery was outside QC limits due to matrix interference.

TEKLAB, INC.

5445 HORSESHOE LAKE ROAD
COLLINSVILLE, ILLINOIS 62234

ENVIRONMENTAL TESTING LABORATORY

TEL: 618-344-1004
FAX: 618-344-1005

LABORATORY RESULTS

Client: Philip Environmental
WorkOrder: 08050415
Lab ID: 08050415-007
Report Date: 16-May-08

Client Project: A831-735002-012901-225/IP Champ
Client Sample ID: B-843 2.0-3.0 ft
Collection Date: 5/6/2008 9:24:00 AM
Matrix: SOLID

Analyses	Certification	RL	Qual	Result	Units	DF	Date Analyzed	Analyst
ASTM D2974								
Percent Moisture		0.1		**19.5**	%	1	5/12/2008	TWM
STANDARD METHODS 18TH ED. 2540 G								
Total Solids		0.1		**80.5**	%	1	5/12/2008	TWM
SW-846 3050B, 6010B, METALS BY ICP								
Arsenic	NELAP	2.50		**3.16**	mg/Kg-dry	1	5/14/2008 8:06:21 PM	LAL
Chromium	NELAP	1.00		**27.0**	mg/Kg-dry	1	5/14/2008 8:06:21 PM	LAL
Lead	NELAP	4.00		**27.3**	mg/Kg-dry	1	5/16/2008 9:05:23 AM	CRK
SW-846 3550B, 8270C SIMS, SEMI-VOLATILE ORGANIC COMPOUNDS BY GC/MS								
Acenaphthene	NELAP	0.004		**ND**	mg/Kg-dry	1	5/14/2008 4:47:00 PM	TDN
Acenaphthylene	NELAP	0.004		**ND**	mg/Kg-dry	1	5/14/2008 4:47:00 PM	TDN
Anthracene	NELAP	0.004		**ND**	mg/Kg-dry	1	5/14/2008 4:47:00 PM	TDN
Benzo(a)anthracene	NELAP	0.004		**ND**	mg/Kg-dry	1	5/14/2008 4:47:00 PM	TDN
Benzo(a)pyrene	NELAP	0.004		**ND**	mg/Kg-dry	1	5/14/2008 4:47:00 PM	TDN
Benzo(b)fluoranthene	NELAP	0.004		**ND**	mg/Kg-dry	1	5/14/2008 4:47:00 PM	TDN
Benzo(g,h,i)perylene	NELAP	0.004		**ND**	mg/Kg-dry	1	5/14/2008 4:47:00 PM	TDN
Benzo(k)fluoranthene	NELAP	0.004		**ND**	mg/Kg-dry	1	5/14/2008 4:47:00 PM	TDN
Chrysene	NELAP	0.004		**ND**	mg/Kg-dry	1	5/14/2008 4:47:00 PM	TDN
Dibenzo(a,h)anthracene	NELAP	0.004		**ND**	mg/Kg-dry	1	5/14/2008 4:47:00 PM	TDN
Fluoranthene	NELAP	0.004		**ND**	mg/Kg-dry	1	5/14/2008 4:47:00 PM	TDN
Fluorene	NELAP	0.004		**ND**	mg/Kg-dry	1	5/14/2008 4:47:00 PM	TDN
Indeno(1,2,3-cd)pyrene	NELAP	0.004		**ND**	mg/Kg-dry	1	5/14/2008 4:47:00 PM	TDN
Naphthalene	NELAP	0.004		**ND**	mg/Kg-dry	1	5/14/2008 4:47:00 PM	TDN
Phenanthrene	NELAP	0.004		**ND**	mg/Kg-dry	1	5/14/2008 4:47:00 PM	TDN
Pyrene	NELAP	0.004		**ND**	mg/Kg-dry	1	5/14/2008 4:47:00 PM	TDN
Surr: 2-Fluorobiphenyl		10-131		**43.5**	%REC	1	5/14/2008 4:47:00 PM	TDN
Surr: Nitrobenzene-d5		10-132		**54.9**	%REC	1	5/14/2008 4:47:00 PM	TDN
Surr: p-Terphenyl-d14		30.6-131		**65.9**	%REC	1	5/14/2008 4:47:00 PM	TDN
SW-846 5035, 8260B, VOLATILE ORGANIC COMPOUNDS BY GC/MS								
Benzene	NELAP	1.1		**ND**	µg/Kg-dry	1	5/13/2008 7:57:00 AM	JSA
Ethylbenzene	NELAP	5.5		**ND**	µg/Kg-dry	1	5/13/2008 7:57:00 AM	JSA
Toluene	NELAP	5.5		**ND**	µg/Kg-dry	1	5/13/2008 7:57:00 AM	JSA
Xylenes, Total	NELAP	5.5		**ND**	µg/Kg-dry	1	5/13/2008 7:57:00 AM	JSA
Surr: 1,2-Dichloroethane-d4		61-128		**89.0**	%REC	1	5/13/2008 7:57:00 AM	JSA
Surr: 4-Bromofluorobenzene		78.2-117		**103.9**	%REC	1	5/13/2008 7:57:00 AM	JSA
Surr: Dibromofluoromethane		66.6-130		**101.9**	%REC	1	5/13/2008 7:57:00 AM	JSA
Surr: Toluene-d8		80.1-122		**97.8**	%REC	1	5/13/2008 7:57:00 AM	JSA
SW-846 9010B, 9014								
Cyanide	NELAP	0.60		**< 0.60**	mg/Kg-dry	1	5/13/2008	AET

LABORATORY RESULTS

Client: Philip Environmental
WorkOrder: 08050415
Lab ID: 08050415-007
Report Date: 16-May-08
Client Project: A831-735002-012901-225/IP Champ
Client Sample ID: B-843 2.0-3.0 ft
Collection Date: 5/6/2008 9:24:00 AM
Matrix: SOLID

Analyses	Certification	RL	Qual	Result	Units	DF	Date Analyzed	Analyst
SW-846 9014A								
Cyanide, Amenable to Chlorination		0.60		**Interference**	mg/Kg-dry	1	5/14/2008	AET

Sample Narrative

TEKLAB, INC.

5445 HORSESHOE LAKE ROAD
COLLINSVILLE, ILLINOIS 62234

ENVIRONMENTAL TESTING LABORATORY

TEL: 618-344-1004
FAX: 618-344-1005

LABORATORY RESULTS

Client: Philip Environmental
WorkOrder: 08050415
Lab ID: 08050415-008
Report Date: 16-May-08

Client Project: A831-735002-012901-225/IP Champ
Client Sample ID: B-843 7.0-8.0 ft
Collection Date: 5/6/2008 9:35:00 AM
Matrix: SOLID

Analyses	Certification	RL	Qual	Result	Units	DF	Date Analyzed	Analyst
ASTM D2974								
Percent Moisture		0.1		**13.2**	%	1	5/12/2008	TWM
STANDARD METHODS 18TH ED. 2540 G								
Total Solids		0.1		**86.8**	%	1	5/12/2008	TWM
SW-846 3050B, 6010B, METALS BY ICP								
Arsenic	NELAP	2.50		**6.42**	mg/Kg-dry	1	5/14/2008 8:13:28 PM	LAL
Chromium	NELAP	1.00		**14.0**	mg/Kg-dry	1	5/14/2008 8:13:28 PM	LAL
Lead	NELAP	4.00		**9.48**	mg/Kg-dry	1	5/16/2008 9:07:39 AM	CRK
SW-846 3550B, 8270C SIMS, SEMI-VOLATILE ORGANIC COMPOUNDS BY GC/MS								
Acenaphthene	NELAP	0.004		**ND**	mg/Kg-dry	1	5/14/2008 5:22:00 PM	TDN
Acenaphthylene	NELAP	0.004		**ND**	mg/Kg-dry	1	5/14/2008 5:22:00 PM	TDN
Anthracene	NELAP	0.004		**ND**	mg/Kg-dry	1	5/14/2008 5:22:00 PM	TDN
Benzo(a)anthracene	NELAP	0.004		**ND**	mg/Kg-dry	1	5/14/2008 5:22:00 PM	TDN
Benzo(a)pyrene	NELAP	0.004		**ND**	mg/Kg-dry	1	5/14/2008 5:22:00 PM	TDN
Benzo(b)fluoranthene	NELAP	0.004		**ND**	mg/Kg-dry	1	5/14/2008 5:22:00 PM	TDN
Benzo(g,h,i)perylene	NELAP	0.004		**ND**	mg/Kg-dry	1	5/14/2008 5:22:00 PM	TDN
Benzo(k)fluoranthene	NELAP	0.004		**ND**	mg/Kg-dry	1	5/14/2008 5:22:00 PM	TDN
Chrysene	NELAP	0.004		**ND**	mg/Kg-dry	1	5/14/2008 5:22:00 PM	TDN
Dibenzo(a,h)anthracene	NELAP	0.004		**ND**	mg/Kg-dry	1	5/14/2008 5:22:00 PM	TDN
Fluoranthene	NELAP	0.004		**ND**	mg/Kg-dry	1	5/14/2008 5:22:00 PM	TDN
Fluorene	NELAP	0.004		**ND**	mg/Kg-dry	1	5/14/2008 5:22:00 PM	TDN
Indeno(1,2,3-cd)pyrene	NELAP	0.004		**ND**	mg/Kg-dry	1	5/14/2008 5:22:00 PM	TDN
Naphthalene	NELAP	0.004		**ND**	mg/Kg-dry	1	5/14/2008 5:22:00 PM	TDN
Phenanthrene	NELAP	0.004		**ND**	mg/Kg-dry	1	5/14/2008 5:22:00 PM	TDN
Pyrene	NELAP	0.004		**ND**	mg/Kg-dry	1	5/14/2008 5:22:00 PM	TDN
Surr: 2-Fluorobiphenyl		10-131		**28.5**	%REC	1	5/14/2008 5:22:00 PM	TDN
Surr: Nitrobenzene-d5		10-132		**41.3**	%REC	1	5/14/2008 5:22:00 PM	TDN
Surr: p-Terphenyl-d14		30.6-131		**67.9**	%REC	1	5/14/2008 5:22:00 PM	TDN
SW-846 5035, 8260B, VOLATILE ORGANIC COMPOUNDS BY GC/MS								
Benzene	NELAP	0.8		**3.1**	µg/Kg-dry	1	5/13/2008 8:25:00 AM	JSA
Ethylbenzene	NELAP	3.8	J	**2.8**	µg/Kg-dry	1	5/13/2008 8:25:00 AM	JSA
Toluene	NELAP	3.8		**6.1**	µg/Kg-dry	1	5/13/2008 8:25:00 AM	JSA
Xylenes, Total	NELAP	3.8		**4.4**	µg/Kg-dry	1	5/13/2008 8:25:00 AM	JSA
Surr: 1,2-Dichloroethane-d4		61-128		**82.2**	%REC	1	5/13/2008 8:25:00 AM	JSA
Surr: 4-Bromofluorobenzene		78.2-117		**98.4**	%REC	1	5/13/2008 8:25:00 AM	JSA
Surr: Dibromofluoromethane		66.6-130		**96.0**	%REC	1	5/13/2008 8:25:00 AM	JSA
Surr: Toluene-d8		80.1-122		**100.3**	%REC	1	5/13/2008 8:25:00 AM	JSA
SW-846 9010B, 9014								
Cyanide	NELAP	0.55		**< 0.55**	mg/Kg-dry	1	5/13/2008	AET

TEKLAB, INC.

5445 HORSESHOE LAKE ROAD
COLLINSVILLE, ILLINOIS 62234

ENVIRONMENTAL TESTING LABORATORY

TEL: 618-344-1004
FAX: 618-344-1005

LABORATORY RESULTS

Client: Philip Environmental
WorkOrder: 08050415
Lab ID: 08050415-008
Report Date: 16-May-08

Client Project: A831-735002-012901-225/IP Champ
Client Sample ID: B-843 7.0-8.0 ft
Collection Date: 5/6/2008 9:35:00 AM
Matrix: SOLID

Analyses	Certification	RL	Qual	Result	Units	DF	Date Analyzed	Analyst
SW-846 9014A								
Cyanide, Amenable to Chlorination		0.55		**Interference**	mg/Kg-dry	1	5/14/2008	AET

Sample Narrative

TEKLAB, INC.

5445 HORSESHOE LAKE ROAD
COLLINSVILLE, ILLINOIS 62234

ENVIRONMENTAL TESTING LABORATORY

TEL: 618-344-1004
FAX: 618-344-1005

LABORATORY RESULTS

Client: Philip Environmental
WorkOrder: 08050415
Lab ID: 08050415-009
Report Date: 16-May-08

Client Project: A831-735002-012901-225/IP Champ
Client Sample ID: B-843 10.0-11.0 ft
Collection Date: 5/6/2008 9:47:00 AM
Matrix: SOLID

Analyses	Certification	RL	Qual	Result	Units	DF	Date Analyzed	Analyst
ASTM D2974								
Percent Moisture		0.1		**12.5**	%	1	5/12/2008	TWM
STANDARD METHODS 18TH ED. 2540 G								
Total Solids		0.1		**87.5**	%	1	5/12/2008	TWM
SW-846 3550B, 8270C SIMS, SEMI-VOLATILE ORGANIC COMPOUNDS BY GC/MS								
Acenaphthene	NELAP	0.004		**0.004**	mg/Kg-dry	1	5/14/2008 5:58:00 PM	TDN
Acenaphthylene	NELAP	0.004		**ND**	mg/Kg-dry	1	5/14/2008 5:58:00 PM	TDN
Anthracene	NELAP	0.004		**0.004**	mg/Kg-dry	1	5/14/2008 5:58:00 PM	TDN
Benzo(a)anthracene	NELAP	0.004		**0.011**	mg/Kg-dry	1	5/14/2008 5:58:00 PM	TDN
Benzo(a)pyrene	NELAP	0.004		**0.008**	mg/Kg-dry	1	5/14/2008 5:58:00 PM	TDN
Benzo(b)fluoranthene	NELAP	0.004		**0.011**	mg/Kg-dry	1	5/14/2008 5:58:00 PM	TDN
Benzo(g,h,i)perylene	NELAP	0.004		**0.005**	mg/Kg-dry	1	5/14/2008 5:58:00 PM	TDN
Benzo(k)fluoranthene	NELAP	0.004	J	**0.004**	mg/Kg-dry	1	5/14/2008 5:58:00 PM	TDN
Chrysene	NELAP	0.004		**0.008**	mg/Kg-dry	1	5/14/2008 5:58:00 PM	TDN
Dibenzo(a,h)anthracene	NELAP	0.004		**ND**	mg/Kg-dry	1	5/14/2008 5:58:00 PM	TDN
Fluoranthene	NELAP	0.004		**0.021**	mg/Kg-dry	1	5/14/2008 5:58:00 PM	TDN
Fluorene	NELAP	0.004		**ND**	mg/Kg-dry	1	5/14/2008 5:58:00 PM	TDN
Indeno(1,2,3-cd)pyrene	NELAP	0.004		**0.004**	mg/Kg-dry	1	5/14/2008 5:58:00 PM	TDN
Naphthalene	NELAP	0.004	J	**0.004**	mg/Kg-dry	1	5/14/2008 5:58:00 PM	TDN
Phenanthrene	NELAP	0.004		**0.020**	mg/Kg-dry	1	5/14/2008 5:58:00 PM	TDN
Pyrene	NELAP	0.004		**0.016**	mg/Kg-dry	1	5/14/2008 5:58:00 PM	TDN
Surr: 2-Fluorobiphenyl		10-131		**34.9**	%REC	1	5/14/2008 5:58:00 PM	TDN
Surr: Nitrobenzene-d5		10-132		**49.3**	%REC	1	5/14/2008 5:58:00 PM	TDN
Surr: p-Terphenyl-d14		30.6-131		**64.5**	%REC	1	5/14/2008 5:58:00 PM	TDN
SW-846 5035, 8260B, VOLATILE ORGANIC COMPOUNDS BY GC/MS								
Benzene	NELAP	0.9		**2.6**	µg/Kg-dry	1	5/13/2008 8:54:00 AM	JSA
Ethylbenzene	NELAP	4.4	J	**1.8**	µg/Kg-dry	1	5/13/2008 8:54:00 AM	JSA
Toluene	NELAP	4.4		**5.9**	µg/Kg-dry	1	5/13/2008 8:54:00 AM	JSA
Xylenes, Total	NELAP	4.4		**4.4**	µg/Kg-dry	1	5/13/2008 8:54:00 AM	JSA
Surr: 1,2-Dichloroethane-d4		61-128		**81.8**	%REC	1	5/13/2008 8:54:00 AM	JSA
Surr: 4-Bromofluorobenzene		78.2-117		**91.1**	%REC	1	5/13/2008 8:54:00 AM	JSA
Surr: Dibromofluoromethane		66.6-130		**98.7**	%REC	1	5/13/2008 8:54:00 AM	JSA
Surr: Toluene-d8		80.1-122		**97.8**	%REC	1	5/13/2008 8:54:00 AM	JSA

Sample Narrative

TEKLAB, INC.

5445 HORSESHOE LAKE ROAD
COLLINSVILLE, ILLINOIS 62234

ENVIRONMENTAL TESTING LABORATORY

TEL: 618-344-1004
FAX: 618-344-1005

LABORATORY RESULTS

Client: Philip Environmental
WorkOrder: 08050415
Lab ID: 08050415-010
Report Date: 16-May-08

Client Project: A831-735002-012901-225/IP Champ
Client Sample ID: B-844 1.0-2.0 ft
Collection Date: 5/6/2008 12:47:00 PM
Matrix: SOLID

Analyses	Certification	RL	Qual	Result	Units	DF	Date Analyzed	Analyst
ASTM D2974								
Percent Moisture		0.1		**20.8**	%	1	5/12/2008	TWM
STANDARD METHODS 18TH ED. 2540 G								
Total Solids		0.1		**79.2**	%	1	5/12/2008	TWM
SW-846 3050B, 6010B, METALS BY ICP								
Arsenic	NELAP	2.31		**9.60**	mg/Kg-dry	1	5/14/2008 8:20:17 PM	LAL
Chromium	NELAP	0.93		**20.2**	mg/Kg-dry	1	5/14/2008 8:20:17 PM	LAL
Lead	NELAP	3.70		**150**	mg/Kg-dry	1	5/16/2008 9:09:55 AM	CRK
SW-846 3550B, 8270C SIMS, SEMI-VOLATILE ORGANIC COMPOUNDS BY GC/MS								
Acenaphthene	NELAP	0.009		**ND**	mg/Kg-dry	2	5/15/2008 8:06:00 PM	TDN
Acenaphthylene	NELAP	0.009		**0.035**	mg/Kg-dry	2	5/15/2008 8:06:00 PM	TDN
Anthracene	NELAP	0.009		**0.026**	mg/Kg-dry	2	5/15/2008 8:06:00 PM	TDN
Benzo(a)anthracene	NELAP	0.009		**0.119**	mg/Kg-dry	2	5/15/2008 8:06:00 PM	TDN
Benzo(a)pyrene	NELAP	0.009		**0.135**	mg/Kg-dry	2	5/15/2008 8:06:00 PM	TDN
Benzo(b)fluoranthene	NELAP	0.009		**0.169**	mg/Kg-dry	2	5/15/2008 8:06:00 PM	TDN
Benzo(g,h,i)perylene	NELAP	0.009		**0.084**	mg/Kg-dry	2	5/15/2008 8:06:00 PM	TDN
Benzo(k)fluoranthene	NELAP	0.009		**0.060**	mg/Kg-dry	2	5/15/2008 8:06:00 PM	TDN
Chrysene	NELAP	0.009		**0.144**	mg/Kg-dry	2	5/15/2008 8:06:00 PM	TDN
Dibenzo(a,h)anthracene	NELAP	0.009		**0.023**	mg/Kg-dry	2	5/15/2008 8:06:00 PM	TDN
Fluoranthene	NELAP	0.009		**0.230**	mg/Kg-dry	2	5/15/2008 8:06:00 PM	TDN
Fluorene	NELAP	0.009		**0.012**	mg/Kg-dry	2	5/15/2008 8:06:00 PM	TDN
Indeno(1,2,3-cd)pyrene	NELAP	0.009		**0.077**	mg/Kg-dry	2	5/15/2008 8:06:00 PM	TDN
Naphthalene	NELAP	0.009		**0.011**	mg/Kg-dry	2	5/15/2008 8:06:00 PM	TDN
Phenanthrene	NELAP	0.009		**0.162**	mg/Kg-dry	2	5/15/2008 8:06:00 PM	TDN
Pyrene	NELAP	0.009		**0.232**	mg/Kg-dry	2	5/15/2008 8:06:00 PM	TDN
Surr: 2-Fluorobiphenyl		10-131		**47.1**	%REC	2	5/15/2008 8:06:00 PM	TDN
Surr: Nitrobenzene-d5		10-132		**50.3**	%REC	2	5/15/2008 8:06:00 PM	TDN
Surr: p-Terphenyl-d14		30.6-131		**56.7**	%REC	2	5/15/2008 8:06:00 PM	TDN
SW-846 5035, 8260B, VOLATILE ORGANIC COMPOUNDS BY GC/MS								
Benzene	NELAP	1.2		**ND**	µg/Kg-dry	1	5/13/2008 9:23:00 AM	JSA
Ethylbenzene	NELAP	6.0		**ND**	µg/Kg-dry	1	5/13/2008 9:23:00 AM	JSA
Toluene	NELAP	6.0		**ND**	µg/Kg-dry	1	5/13/2008 9:23:00 AM	JSA
Xylenes, Total	NELAP	6.0		**ND**	µg/Kg-dry	1	5/13/2008 9:23:00 AM	JSA
Surr: 1,2-Dichloroethane-d4		61-128		**92.9**	%REC	1	5/13/2008 9:23:00 AM	JSA
Surr: 4-Bromofluorobenzene		78.2-117		**96.5**	%REC	1	5/13/2008 9:23:00 AM	JSA
Surr: Dibromofluoromethane		66.6-130		**104.9**	%REC	1	5/13/2008 9:23:00 AM	JSA
Surr: Toluene-d8		80.1-122		**96.8**	%REC	1	5/13/2008 9:23:00 AM	JSA
SW-846 9010B, 9014								
Cyanide	NELAP	0.60	J	**0.51**	mg/Kg-dry	1	5/13/2008	AET

TEKLAB, INC.

5445 HORSESHOE LAKE ROAD
COLLINSVILLE, ILLINOIS 62234

ENVIRONMENTAL TESTING LABORATORY

TEL: 618-344-1004
FAX: 618-344-1005

LABORATORY RESULTS

Client: Philip Environmental
WorkOrder: 08050415
Lab ID: 08050415-010
Report Date: 16-May-08

Client Project: A831-735002-012901-225/IP Champ
Client Sample ID: B-844 1.0-2.0 ft
Collection Date: 5/6/2008 12:47:00 PM
Matrix: SOLID

Analyses	Certification	RL	Qual	Result	Units	DF	Date Analyzed	Analyst
SW-846 9014A								
Cyanide, Amenable to Chlorination		0.60		**Interference**	mg/Kg-dry	1	5/14/2008	AET

Sample Narrative

SW-846 3550B, 8270C SIMS, Semi-Volatile Organic Compounds by GC/MS

Elevated reporting limit due to high levels of target and/or non-target analytes.

TEKLAB, INC.

5445 HORSESHOE LAKE ROAD
COLLINSVILLE, ILLINOIS 62234

ENVIRONMENTAL TESTING LABORATORY

TEL: 618-344-1004
FAX: 618-344-1005

LABORATORY RESULTS

Client: Philip Environmental
WorkOrder: 08050415
Lab ID: 08050415-011
Report Date: 16-May-08

Client Project: A831-735002-012901-225/IP Champ
Client Sample ID: B-844 8.0-9.0 ft
Collection Date: 5/6/2008 1:05:00 PM
Matrix: SOLID

Analyses	Certification	RL	Qual	Result	Units	DF	Date Analyzed	Analyst
ASTM D2974								
Percent Moisture		0.1		**13.3**	%	1	5/12/2008	TWM
STANDARD METHODS 18TH ED. 2540 G								
Total Solids		0.1		**86.7**	%	1	5/12/2008	TWM
SW-846 3050B, 6010B, METALS BY ICP								
Arsenic	NELAP	2.50		**6.35**	mg/Kg-dry	1	5/14/2008 8:39:50 PM	LAL
Chromium	NELAP	1.00		**14.0**	mg/Kg-dry	1	5/14/2008 8:39:50 PM	LAL
Lead	NELAP	4.00		**9.77**	mg/Kg-dry	1	5/16/2008 9:12:12 AM	CRK
SW-846 3550B, 8270C SIMS, SEMI-VOLATILE ORGANIC COMPOUNDS BY GC/MS								
Acenaphthene	NELAP	0.004		**ND**	mg/Kg-dry	1	5/14/2008 6:33:00 PM	TDN
Acenaphthylene	NELAP	0.004		**0.014**	mg/Kg-dry	1	5/14/2008 6:33:00 PM	TDN
Anthracene	NELAP	0.004		**ND**	mg/Kg-dry	1	5/14/2008 6:33:00 PM	TDN
Benzo(a)anthracene	NELAP	0.004		**0.020**	mg/Kg-dry	1	5/14/2008 6:33:00 PM	TDN
Benzo(a)pyrene	NELAP	0.004		**0.028**	mg/Kg-dry	1	5/14/2008 6:33:00 PM	TDN
Benzo(b)fluoranthene	NELAP	0.004		**0.024**	mg/Kg-dry	1	5/14/2008 6:33:00 PM	TDN
Benzo(g,h,i)perylene	NELAP	0.004		**0.014**	mg/Kg-dry	1	5/14/2008 6:33:00 PM	TDN
Benzo(k)fluoranthene	NELAP	0.004		**0.007**	mg/Kg-dry	1	5/14/2008 6:33:00 PM	TDN
Chrysene	NELAP	0.004		**0.018**	mg/Kg-dry	1	5/14/2008 6:33:00 PM	TDN
Dibenzo(a,h)anthracene	NELAP	0.004	J	**0.004**	mg/Kg-dry	1	5/14/2008 6:33:00 PM	TDN
Fluoranthene	NELAP	0.004		**0.016**	mg/Kg-dry	1	5/14/2008 6:33:00 PM	TDN
Fluorene	NELAP	0.004		**ND**	mg/Kg-dry	1	5/14/2008 6:33:00 PM	TDN
Indeno(1,2,3-cd)pyrene	NELAP	0.004		**0.011**	mg/Kg-dry	1	5/14/2008 6:33:00 PM	TDN
Naphthalene	NELAP	0.004		**ND**	mg/Kg-dry	1	5/14/2008 6:33:00 PM	TDN
Phenanthrene	NELAP	0.004		**ND**	mg/Kg-dry	1	5/14/2008 6:33:00 PM	TDN
Pyrene	NELAP	0.004		**0.039**	mg/Kg-dry	1	5/14/2008 6:33:00 PM	TDN
Surr: 2-Fluorobiphenyl		10-131		**22.0**	%REC	1	5/14/2008 6:33:00 PM	TDN
Surr: Nitrobenzene-d5		10-132		**37.3**	%REC	1	5/14/2008 6:33:00 PM	TDN
Surr: p-Terphenyl-d14		30.6-131		**66.7**	%REC	1	5/14/2008 6:33:00 PM	TDN
SW-846 5035, 8260B, VOLATILE ORGANIC COMPOUNDS BY GC/MS								
Benzene	NELAP	0.9		**3.1**	µg/Kg-dry	1	5/13/2008 9:52:00 AM	JSA
Ethylbenzene	NELAP	4.5		**7.9**	µg/Kg-dry	1	5/13/2008 9:52:00 AM	JSA
Toluene	NELAP	4.5		**5.5**	µg/Kg-dry	1	5/13/2008 9:52:00 AM	JSA
Xylenes, Total	NELAP	4.5		**11.1**	µg/Kg-dry	1	5/13/2008 9:52:00 AM	JSA
Surr: 1,2-Dichloroethane-d4		61-128		**91.0**	%REC	1	5/13/2008 9:52:00 AM	JSA
Surr: 4-Bromofluorobenzene		78.2-117		**100.1**	%REC	1	5/13/2008 9:52:00 AM	JSA
Surr: Dibromofluoromethane		66.6-130		**100.8**	%REC	1	5/13/2008 9:52:00 AM	JSA
Surr: Toluene-d8		80.1-122		**98.6**	%REC	1	5/13/2008 9:52:00 AM	JSA
SW-846 9010B, 9014								
Cyanide	NELAP	0.56		**< 0.56**	mg/Kg-dry	1	5/13/2008	AET

LABORATORY RESULTS

Client: Philip Environmental
WorkOrder: 08050415
Lab ID: 08050415-011
Report Date: 16-May-08

Client Project: A831-735002-012901-225/IP Champ
Client Sample ID: B-844 8.0-9.0 ft
Collection Date: 5/6/2008 1:05:00 PM
Matrix: SOLID

Analyses	Certification	RL	Qual	Result	Units	DF	Date Analyzed	Analyst
SW-846 9014A								
Cyanide, Amenable to Chlorination		0.56		**Interference**	mg/Kg-dry	1	5/14/2008	AET

Sample Narrative

TEKLAB, INC.

5445 HORSESHOE LAKE ROAD
COLLINSVILLE, ILLINOIS 62234

ENVIRONMENTAL TESTING LABORATORY

TEL: 618-344-1004
FAX: 618-344-1005

LABORATORY RESULTS

Client: Philip Environmental
WorkOrder: 08050415
Lab ID: 08050415-012
Report Date: 16-May-08

Client Project: A831-735002-012901-225/IP Champ
Client Sample ID: B-844 15.0-16.0 ft
Collection Date: 5/6/2008 1:40:00 PM
Matrix: SOLID

Analyses	Certification	RL	Qual	Result	Units	DF	Date Analyzed	Analyst
ASTM D2974								
Percent Moisture		0.1		**11.9**	%	1	5/12/2008	TWM
STANDARD METHODS 18TH ED. 2540 G								
Total Solids		0.1		**88.1**	%	1	5/12/2008	TWM
SW-846 3550B, 8270C SIMS, SEMI-VOLATILE ORGANIC COMPOUNDS BY GC/MS								
Acenaphthene	NELAP	0.039		**2.49**	mg/Kg-dry	10	5/15/2008 5:10:00 AM	TDN
Acenaphthylene	NELAP	0.039		**0.684**	mg/Kg-dry	10	5/15/2008 5:10:00 AM	TDN
Anthracene	NELAP	0.039		**1.81**	mg/Kg-dry	10	5/15/2008 5:10:00 AM	TDN
Benzo(a)anthracene	NELAP	0.039		**0.893**	mg/Kg-dry	10	5/15/2008 5:10:00 AM	TDN
Benzo(a)pyrene	NELAP	0.039		**0.847**	mg/Kg-dry	10	5/15/2008 5:10:00 AM	TDN
Benzo(b)fluoranthene	NELAP	0.039		**0.662**	mg/Kg-dry	10	5/15/2008 5:10:00 AM	TDN
Benzo(g,h,i)perylene	NELAP	0.039		**0.325**	mg/Kg-dry	10	5/15/2008 5:10:00 AM	TDN
Benzo(k)fluoranthene	NELAP	0.039		**0.195**	mg/Kg-dry	10	5/15/2008 5:10:00 AM	TDN
Chrysene	NELAP	0.039		**0.913**	mg/Kg-dry	10	5/15/2008 5:10:00 AM	TDN
Dibenzo(a,h)anthracene	NELAP	0.039		**0.089**	mg/Kg-dry	10	5/15/2008 5:10:00 AM	TDN
Fluoranthene	NELAP	0.039		**1.88**	mg/Kg-dry	10	5/15/2008 5:10:00 AM	TDN
Fluorene	NELAP	0.039		**1.70**	mg/Kg-dry	10	5/15/2008 5:10:00 AM	TDN
Indeno(1,2,3-cd)pyrene	NELAP	0.039		**0.266**	mg/Kg-dry	10	5/15/2008 5:10:00 AM	TDN
Naphthalene	NELAP	0.039		**12.7**	mg/Kg-dry	10	5/15/2008 5:10:00 AM	TDN
Phenanthrene	NELAP	0.039		**6.07**	mg/Kg-dry	10	5/15/2008 5:10:00 AM	TDN
Pyrene	NELAP	0.039		**2.71**	mg/Kg-dry	10	5/15/2008 5:10:00 AM	TDN
Surr: 2-Fluorobiphenyl		10-131		**49.9**	%REC	10	5/15/2008 5:10:00 AM	TDN
Surr: Nitrobenzene-d5		10-132		**49.9**	%REC	10	5/15/2008 5:10:00 AM	TDN
Surr: p-Terphenyl-d14		30.6-131		**61.9**	%REC	10	5/15/2008 5:10:00 AM	TDN
SW-846 5035, 8260B, VOLATILE ORGANIC COMPOUNDS BY GC/MS								
Benzene	NELAP	87.3		**640**	µg/Kg-dry	50	5/14/2008 8:41:00 PM	GEK
Ethylbenzene	NELAP	436		**3070**	µg/Kg-dry	50	5/14/2008 8:41:00 PM	GEK
Toluene	NELAP	436	J	**250**	µg/Kg-dry	50	5/14/2008 8:41:00 PM	GEK
Xylenes, Total	NELAP	436		**4200**	µg/Kg-dry	50	5/14/2008 8:41:00 PM	GEK
Surr: 1,2-Dichloroethane-d4		61-128		**95.8**	%REC	50	5/14/2008 8:41:00 PM	GEK
Surr: 4-Bromofluorobenzene		78.2-117		**96.8**	%REC	50	5/14/2008 8:41:00 PM	GEK
Surr: Dibromofluoromethane		66.6-130		**103.0**	%REC	50	5/14/2008 8:41:00 PM	GEK
Surr: Toluene-d8		80.1-122		**96.5**	%REC	50	5/14/2008 8:41:00 PM	GEK

Sample Narrative

SW-846 5035, 8260B, Volatile Organic Compounds by GC/MS

Elevated reporting limit due to high levels of target and/or non-target analytes.

TEKLAB, INC.

5445 HORSESHOE LAKE ROAD
COLLINSVILLE, ILLINOIS 62234

ENVIRONMENTAL TESTING LABORATORY

TEL: 618-344-1004
FAX: 618-344-1005

LABORATORY RESULTS

Client: Philip Environmental
Client Project: A831-735002-012901-225/IP Champ
WorkOrder: 08050415
Client Sample ID: B-851 19.0-20.0 ft
Lab ID: 08050415-013
Collection Date: 5/9/2008 10:20:00 AM
Report Date: 16-May-08
Matrix: SOLID

Analyses	Certification	RL	Qual	Result	Units	DF	Date Analyzed	Analyst
ASTM D2974								
Percent Moisture		0.1		**10.7**	%	1	5/12/2008	TWM
STANDARD METHODS 18TH ED. 2540 G								
Total Solids		0.1		**89.3**	%	1	5/12/2008	TWM
SW-846 3550B, 8270C SIMS, SEMI-VOLATILE ORGANIC COMPOUNDS BY GC/MS								
Acenaphthene	NELAP	0.004		**ND**	mg/Kg-dry	1	5/15/2008 3:15:00 PM	TDN
Acenaphthylene	NELAP	0.004		**ND**	mg/Kg-dry	1	5/15/2008 3:15:00 PM	TDN
Anthracene	NELAP	0.004		**ND**	mg/Kg-dry	1	5/15/2008 3:15:00 PM	TDN
Benzo(a)anthracene	NELAP	0.004		**ND**	mg/Kg-dry	1	5/15/2008 3:15:00 PM	TDN
Benzo(a)pyrene	NELAP	0.004		**ND**	mg/Kg-dry	1	5/15/2008 3:15:00 PM	TDN
Benzo(b)fluoranthene	NELAP	0.004		**ND**	mg/Kg-dry	1	5/15/2008 3:15:00 PM	TDN
Benzo(g,h,i)perylene	NELAP	0.004		**ND**	mg/Kg-dry	1	5/15/2008 3:15:00 PM	TDN
Benzo(k)fluoranthene	NELAP	0.004		**ND**	mg/Kg-dry	1	5/15/2008 3:15:00 PM	TDN
Chrysene	NELAP	0.004		**ND**	mg/Kg-dry	1	5/15/2008 3:15:00 PM	TDN
Dibenzo(a,h)anthracene	NELAP	0.004		**ND**	mg/Kg-dry	1	5/15/2008 3:15:00 PM	TDN
Fluoranthene	NELAP	0.004		**ND**	mg/Kg-dry	1	5/15/2008 3:15:00 PM	TDN
Fluorene	NELAP	0.004		**ND**	mg/Kg-dry	1	5/15/2008 3:15:00 PM	TDN
Indeno(1,2,3-cd)pyrene	NELAP	0.004		**ND**	mg/Kg-dry	1	5/15/2008 3:15:00 PM	TDN
Naphthalene	NELAP	0.004		**ND**	mg/Kg-dry	1	5/15/2008 3:15:00 PM	TDN
Phenanthrene	NELAP	0.004		**ND**	mg/Kg-dry	1	5/15/2008 3:15:00 PM	TDN
Pyrene	NELAP	0.004		**ND**	mg/Kg-dry	1	5/15/2008 3:15:00 PM	TDN
Surr: 2-Fluorobiphenyl		10-131		**25.7**	%REC	1	5/15/2008 3:15:00 PM	TDN
Surr: Nitrobenzene-d5		10-132		**41.9**	%REC	1	5/15/2008 3:15:00 PM	TDN
Surr: p-Terphenyl-d14		30.6-131		**57.1**	%REC	1	5/15/2008 3:15:00 PM	TDN
SW-846 5035, 8260B, VOLATILE ORGANIC COMPOUNDS BY GC/MS								
Benzene	NELAP	0.8		**1.4**	µg/Kg-dry	1	5/12/2008 11:56:00 PM	GEK
Ethylbenzene	NELAP	3.8		**ND**	µg/Kg-dry	1	5/12/2008 11:56:00 PM	GEK
Toluene	NELAP	3.8	J	**2.1**	µg/Kg-dry	1	5/12/2008 11:56:00 PM	GEK
Xylenes, Total	NELAP	3.8	J	**2.6**	µg/Kg-dry	1	5/12/2008 11:56:00 PM	GEK
Surr: 1,2-Dichloroethane-d4		61-128		**106.9**	%REC	1	5/12/2008 11:56:00 PM	GEK
Surr: 4-Bromofluorobenzene		78.2-117		**86.2**	%REC	1	5/12/2008 11:56:00 PM	GEK
Surr: Dibromofluoromethane		66.6-130		**107.4**	%REC	1	5/12/2008 11:56:00 PM	GEK
Surr: Toluene-d8		80.1-122		**111.8**	%REC	1	5/12/2008 11:56:00 PM	GEK

Sample Narrative

TEKLAB, INC.
5445 HORSESHOE LAKE ROAD
COLLINSVILLE, ILLINOIS 62234
ENVIRONMENTAL TESTING LABORATORY
TEL: 618-344-1004
FAX: 618-344-1005

LABORATORY RESULTS

Client: Philip Environmental
WorkOrder: 08050415
Lab ID: 08050415-014
Report Date: 16-May-08
Client Project: A831-735002-012901-225/IP Champ
Client Sample ID: B-852 2.0-3.0 ft
Collection Date: 5/9/2008 11:11:00 AM
Matrix: SOLID

Analyses	Certification	RL	Qual	Result	Units	DF	Date Analyzed	Analyst
ASTM D2974								
Percent Moisture		0.1		**21.2**	%	1	5/12/2008	TWM
STANDARD METHODS 18TH ED. 2540 G								
Total Solids		0.1		**78.8**	%	1	5/12/2008	TWM
SW-846 3050B, 6010B, METALS BY ICP								
Arsenic	NELAP	2.40		**4.62**	mg/Kg-dry	1	5/14/2008 8:46:38 PM	LAL
Chromium	NELAP	0.96		**23.5**	mg/Kg-dry	1	5/14/2008 8:46:38 PM	LAL
Lead	NELAP	3.85		**51.9**	mg/Kg-dry	1	5/16/2008 9:14:29 AM	CRK
SW-846 3550B, 8270C SIMS, SEMI-VOLATILE ORGANIC COMPOUNDS BY GC/MS								
Acenaphthene	NELAP	0.004		**ND**	mg/Kg-dry	1	5/15/2008 5:47:00 AM	TDN
Acenaphthylene	NELAP	0.004		**0.005**	mg/Kg-dry	1	5/15/2008 5:47:00 AM	TDN
Anthracene	NELAP	0.004		**ND**	mg/Kg-dry	1	5/15/2008 5:47:00 AM	TDN
Benzo(a)anthracene	NELAP	0.004		**0.020**	mg/Kg-dry	1	5/15/2008 5:47:00 AM	TDN
Benzo(a)pyrene	NELAP	0.004		**0.023**	mg/Kg-dry	1	5/15/2008 5:47:00 AM	TDN
Benzo(b)fluoranthene	NELAP	0.004		**0.032**	mg/Kg-dry	1	5/15/2008 5:47:00 AM	TDN
Benzo(g,h,i)perylene	NELAP	0.004		**0.015**	mg/Kg-dry	1	5/15/2008 5:47:00 AM	TDN
Benzo(k)fluoranthene	NELAP	0.004		**0.011**	mg/Kg-dry	1	5/15/2008 5:47:00 AM	TDN
Chrysene	NELAP	0.004		**0.023**	mg/Kg-dry	1	5/15/2008 5:47:00 AM	TDN
Dibenzo(a,h)anthracene	NELAP	0.004		**0.004**	mg/Kg-dry	1	5/15/2008 5:47:00 AM	TDN
Fluoranthene	NELAP	0.004		**0.036**	mg/Kg-dry	1	5/15/2008 5:47:00 AM	TDN
Fluorene	NELAP	0.004		**ND**	mg/Kg-dry	1	5/15/2008 5:47:00 AM	TDN
Indeno(1,2,3-cd)pyrene	NELAP	0.004		**0.014**	mg/Kg-dry	1	5/15/2008 5:47:00 AM	TDN
Naphthalene	NELAP	0.004		**ND**	mg/Kg-dry	1	5/15/2008 5:47:00 AM	TDN
Phenanthrene	NELAP	0.004		**0.016**	mg/Kg-dry	1	5/15/2008 5:47:00 AM	TDN
Pyrene	NELAP	0.004		**0.032**	mg/Kg-dry	1	5/15/2008 5:47:00 AM	TDN
Surr: 2-Fluorobiphenyl		10-131		**37.9**	%REC	1	5/15/2008 5:47:00 AM	TDN
Surr: Nitrobenzene-d5		10-132		**49.7**	%REC	1	5/15/2008 5:47:00 AM	TDN
Surr: p-Terphenyl-d14		30.6-131		**62.1**	%REC	1	5/15/2008 5:47:00 AM	TDN
SW-846 5035, 8260B, VOLATILE ORGANIC COMPOUNDS BY GC/MS								
Benzene	NELAP	1.1		**1.2**	µg/Kg-dry	1	5/13/2008 12:25:00 AM	GEK
Ethylbenzene	NELAP	5.6		**ND**	µg/Kg-dry	1	5/13/2008 12:25:00 AM	GEK
Toluene	NELAP	5.6		**ND**	µg/Kg-dry	1	5/13/2008 12:25:00 AM	GEK
Xylenes, Total	NELAP	5.6	J	**1.7**	µg/Kg-dry	1	5/13/2008 12:25:00 AM	GEK
Surr: 1,2-Dichloroethane-d4		61-128		**115.8**	%REC	1	5/13/2008 12:25:00 AM	GEK
Surr: 4-Bromofluorobenzene		78.2-117		**96.7**	%REC	1	5/13/2008 12:25:00 AM	GEK
Surr: Dibromofluoromethane		66.6-130		**104.6**	%REC	1	5/13/2008 12:25:00 AM	GEK
Surr: Toluene-d8		80.1-122		**98.2**	%REC	1	5/13/2008 12:25:00 AM	GEK
SW-846 9010B, 9014								
Cyanide	NELAP	0.63		**< 0.63**	mg/Kg-dry	1	5/13/2008	AET

TEKLAB, INC.

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COLLINSVILLE, ILLINOIS 62234

ENVIRONMENTAL TESTING LABORATORY

TEL: 618-344-1004
FAX: 618-344-1005

LABORATORY RESULTS

Client: Philip Environmental
WorkOrder: 08050415
Lab ID: 08050415-014
Report Date: 16-May-08

Client Project: A831-735002-012901-225/IP Champ
Client Sample ID: B-852 2.0-3.0 ft
Collection Date: 5/9/2008 11:11:00 AM
Matrix: SOLID

Analyses	Certification	RL	Qual	Result	Units	DF	Date Analyzed	Analyst
SW-846 9014A								
Cyanide, Amenable to Chlorination		0.63		**Interference**	mg/Kg-dry	1	5/14/2008	AET

Sample Narrative

TEKLAB, INC.

5445 HORSESHOE LAKE ROAD
COLLINSVILLE, ILLINOIS 62234

ENVIRONMENTAL TESTING LABORATORY

TEL: 618-344-1004
FAX: 618-344-1005

LABORATORY RESULTS

Client: Philip Environmental
WorkOrder: 08050415
Lab ID: 08050415-015
Report Date: 16-May-08

Client Project: A831-735002-012901-225/IP Champ
Client Sample ID: B-852 9.0-10.0 ft
Collection Date: 5/9/2008 11:25:00 AM
Matrix: SOLID

Analyses	Certification	RL	Qual	Result	Units	DF	Date Analyzed	Analyst
ASTM D2974								
Percent Moisture		0.1		**13.2**	%	1	5/12/2008	TWM
STANDARD METHODS 18TH ED. 2540 G								
Total Solids		0.1		**86.8**	%	1	5/12/2008	TWM
SW-846 3550B, 8270C SIMS, SEMI-VOLATILE ORGANIC COMPOUNDS BY GC/MS								
Acenaphthene	NELAP	0.004		**ND**	mg/Kg-dry	1	5/15/2008 3:52:00 PM	TDN
Acenaphthylene	NELAP	0.004		**ND**	mg/Kg-dry	1	5/15/2008 3:52:00 PM	TDN
Anthracene	NELAP	0.004		**ND**	mg/Kg-dry	1	5/15/2008 3:52:00 PM	TDN
Benzo(a)anthracene	NELAP	0.004		**ND**	mg/Kg-dry	1	5/15/2008 3:52:00 PM	TDN
Benzo(a)pyrene	NELAP	0.004		**ND**	mg/Kg-dry	1	5/15/2008 3:52:00 PM	TDN
Benzo(b)fluoranthene	NELAP	0.004		**ND**	mg/Kg-dry	1	5/15/2008 3:52:00 PM	TDN
Benzo(g,h,i)perylene	NELAP	0.004		**ND**	mg/Kg-dry	1	5/15/2008 3:52:00 PM	TDN
Benzo(k)fluoranthene	NELAP	0.004		**ND**	mg/Kg-dry	1	5/15/2008 3:52:00 PM	TDN
Chrysene	NELAP	0.004		**ND**	mg/Kg-dry	1	5/15/2008 3:52:00 PM	TDN
Dibenzo(a,h)anthracene	NELAP	0.004		**ND**	mg/Kg-dry	1	5/15/2008 3:52:00 PM	TDN
Fluoranthene	NELAP	0.004		**ND**	mg/Kg-dry	1	5/15/2008 3:52:00 PM	TDN
Fluorene	NELAP	0.004		**ND**	mg/Kg-dry	1	5/15/2008 3:52:00 PM	TDN
Indeno(1,2,3-cd)pyrene	NELAP	0.004		**ND**	mg/Kg-dry	1	5/15/2008 3:52:00 PM	TDN
Naphthalene	NELAP	0.004		**ND**	mg/Kg-dry	1	5/15/2008 3:52:00 PM	TDN
Phenanthrene	NELAP	0.004		**ND**	mg/Kg-dry	1	5/15/2008 3:52:00 PM	TDN
Pyrene	NELAP	0.004		**ND**	mg/Kg-dry	1	5/15/2008 3:52:00 PM	TDN
Surr: 2-Fluorobiphenyl		10-131		**23.0**	%REC	1	5/15/2008 3:52:00 PM	TDN
Surr: Nitrobenzene-d5		10-132		**34.7**	%REC	1	5/15/2008 3:52:00 PM	TDN
Surr: p-Terphenyl-d14		30.6-131		**65.1**	%REC	1	5/15/2008 3:52:00 PM	TDN
SW-846 5035, 8260B, VOLATILE ORGANIC COMPOUNDS BY GC/MS								
Benzene	NELAP	0.8		**2.5**	µg/Kg-dry	1	5/13/2008 12:53:00 AM	GEK
Ethylbenzene	NELAP	4.2	J	**1.6**	µg/Kg-dry	1	5/13/2008 12:53:00 AM	GEK
Toluene	NELAP	4.2		**5.0**	µg/Kg-dry	1	5/13/2008 12:53:00 AM	GEK
Xylenes, Total	NELAP	4.2	J	**4.0**	µg/Kg-dry	1	5/13/2008 12:53:00 AM	GEK
Surr: 1,2-Dichloroethane-d4		61-128		**110.6**	%REC	1	5/13/2008 12:53:00 AM	GEK
Surr: 4-Bromofluorobenzene		78.2-117		**101.1**	%REC	1	5/13/2008 12:53:00 AM	GEK
Surr: Dibromofluoromethane		66.6-130		**108.5**	%REC	1	5/13/2008 12:53:00 AM	GEK
Surr: Toluene-d8		80.1-122		**98.3**	%REC	1	5/13/2008 12:53:00 AM	GEK
SW-846 9045C								
pH (1:1)	NELAP	1.00		**8.15**		1	5/13/2008 1:27:00 PM	KNL

Sample Narrative

TEKLAB, INC.

5445 HORSESHOE LAKE ROAD
COLLINSVILLE, ILLINOIS 62234

ENVIRONMENTAL TESTING LABORATORY

TEL: 618-344-1004
FAX: 618-344-1005

LABORATORY RESULTS

Client: Philip Environmental
WorkOrder: 08050415
Lab ID: 08050415-016
Report Date: 16-May-08

Client Project: A831-735002-012901-225/IP Champ
Client Sample ID: B-852 23.0-24.0 ft
Collection Date: 5/9/2008 11:42:00 AM
Matrix: SOLID

Analyses	Certification	RL	Qual	Result	Units	DF	Date Analyzed	Analyst
ASTM D2974								
Percent Moisture		0.1		**11.1**	%	1	5/12/2008	TWM
STANDARD METHODS 18TH ED. 2540 G								
Total Solids		0.1		**88.9**	%	1	5/12/2008	TWM
SW-846 3550B, 8270C SIMS, SEMI-VOLATILE ORGANIC COMPOUNDS BY GC/MS								
Acenaphthene	NELAP	0.004		**ND**	mg/Kg-dry	1	5/15/2008 4:28:00 PM	TDN
Acenaphthylene	NELAP	0.004		**ND**	mg/Kg-dry	1	5/15/2008 4:28:00 PM	TDN
Anthracene	NELAP	0.004		**ND**	mg/Kg-dry	1	5/15/2008 4:28:00 PM	TDN
Benzo(a)anthracene	NELAP	0.004		**ND**	mg/Kg-dry	1	5/15/2008 4:28:00 PM	TDN
Benzo(a)pyrene	NELAP	0.004		**ND**	mg/Kg-dry	1	5/15/2008 4:28:00 PM	TDN
Benzo(b)fluoranthene	NELAP	0.004		**ND**	mg/Kg-dry	1	5/15/2008 4:28:00 PM	TDN
Benzo(g,h,i)perylene	NELAP	0.004		**ND**	mg/Kg-dry	1	5/15/2008 4:28:00 PM	TDN
Benzo(k)fluoranthene	NELAP	0.004		**ND**	mg/Kg-dry	1	5/15/2008 4:28:00 PM	TDN
Chrysene	NELAP	0.004		**ND**	mg/Kg-dry	1	5/15/2008 4:28:00 PM	TDN
Dibenzo(a,h)anthracene	NELAP	0.004		**ND**	mg/Kg-dry	1	5/15/2008 4:28:00 PM	TDN
Fluoranthene	NELAP	0.004		**ND**	mg/Kg-dry	1	5/15/2008 4:28:00 PM	TDN
Fluorene	NELAP	0.004		**ND**	mg/Kg-dry	1	5/15/2008 4:28:00 PM	TDN
Indeno(1,2,3-cd)pyrene	NELAP	0.004		**ND**	mg/Kg-dry	1	5/15/2008 4:28:00 PM	TDN
Naphthalene	NELAP	0.004		**ND**	mg/Kg-dry	1	5/15/2008 4:28:00 PM	TDN
Phenanthrene	NELAP	0.004		**ND**	mg/Kg-dry	1	5/15/2008 4:28:00 PM	TDN
Pyrene	NELAP	0.004		**ND**	mg/Kg-dry	1	5/15/2008 4:28:00 PM	TDN
Surr: 2-Fluorobiphenyl		10-131		**24.4**	%REC	1	5/15/2008 4:28:00 PM	TDN
Surr: Nitrobenzene-d5		10-132		**38.9**	%REC	1	5/15/2008 4:28:00 PM	TDN
Surr: p-Terphenyl-d14		30.6-131		**56.9**	%REC	1	5/15/2008 4:28:00 PM	TDN
SW-846 5035, 8260B, VOLATILE ORGANIC COMPOUNDS BY GC/MS								
Benzene	NELAP	0.9		**1.6**	µg/Kg-dry	1	5/13/2008 1:22:00 AM	GEK
Ethylbenzene	NELAP	4.4		**ND**	µg/Kg-dry	1	5/13/2008 1:22:00 AM	GEK
Toluene	NELAP	4.4	J	**2.5**	µg/Kg-dry	1	5/13/2008 1:22:00 AM	GEK
Xylenes, Total	NELAP	4.4	J	**1.8**	µg/Kg-dry	1	5/13/2008 1:22:00 AM	GEK
Surr: 1,2-Dichloroethane-d4		61-128		**113.7**	%REC	1	5/13/2008 1:22:00 AM	GEK
Surr: 4-Bromofluorobenzene		78.2-117		**83.9**	%REC	1	5/13/2008 1:22:00 AM	GEK
Surr: Dibromofluoromethane		66.6-130		**111.2**	%REC	1	5/13/2008 1:22:00 AM	GEK
Surr: Toluene-d8		80.1-122		**110.2**	%REC	1	5/13/2008 1:22:00 AM	GEK

Sample Narrative

TEKLAB, INC.

5445 HORSESHOE LAKE ROAD
COLLINSVILLE, ILLINOIS 62234

ENVIRONMENTAL TESTING LABORATORY

TEL: 618-344-1004
FAX: 618-344-1005

LABORATORY RESULTS

Client: Philip Environmental
WorkOrder: 08050415
Lab ID: 08050415-017
Report Date: 16-May-08

Client Project: A831-735002-012901-225/IP Champ
Client Sample ID: B-845 6.0-7.0 ft
Collection Date: 5/6/2008 2:45:00 PM
Matrix: SOLID

Analyses	Certification	RL	Qual	Result	Units	DF	Date Analyzed	Analyst
ASTM D2974								
Percent Moisture		0.1		**19.3**	%	1	5/12/2008	TWM
STANDARD METHODS 18TH ED. 2540 G								
Total Solids		0.1		**80.7**	%	1	5/12/2008	TWM
SW-846 3050B, 6010B, METALS BY ICP								
Arsenic	NELAP	2.40		**6.44**	mg/Kg-dry	1	5/14/2008 9:06:55 PM	LAL
Chromium	NELAP	0.96		**13.6**	mg/Kg-dry	1	5/14/2008 9:06:55 PM	LAL
Lead	NELAP	3.85		**9.36**	mg/Kg-dry	1	5/16/2008 9:21:21 AM	CRK
SW-846 3550B, 8270C SIMS, SEMI-VOLATILE ORGANIC COMPOUNDS BY GC/MS								
Acenaphthene	NELAP	0.004		**ND**	mg/Kg-dry	1	5/15/2008 5:04:00 PM	TDN
Acenaphthylene	NELAP	0.004		**ND**	mg/Kg-dry	1	5/15/2008 5:04:00 PM	TDN
Anthracene	NELAP	0.004		**ND**	mg/Kg-dry	1	5/15/2008 5:04:00 PM	TDN
Benzo(a)anthracene	NELAP	0.004		**ND**	mg/Kg-dry	1	5/15/2008 5:04:00 PM	TDN
Benzo(a)pyrene	NELAP	0.004		**ND**	mg/Kg-dry	1	5/15/2008 5:04:00 PM	TDN
Benzo(b)fluoranthene	NELAP	0.004		**ND**	mg/Kg-dry	1	5/15/2008 5:04:00 PM	TDN
Benzo(g,h,i)perylene	NELAP	0.004		**ND**	mg/Kg-dry	1	5/15/2008 5:04:00 PM	TDN
Benzo(k)fluoranthene	NELAP	0.004		**ND**	mg/Kg-dry	1	5/15/2008 5:04:00 PM	TDN
Chrysene	NELAP	0.004		**ND**	mg/Kg-dry	1	5/15/2008 5:04:00 PM	TDN
Dibenzo(a,h)anthracene	NELAP	0.004		**ND**	mg/Kg-dry	1	5/15/2008 5:04:00 PM	TDN
Fluoranthene	NELAP	0.004		**ND**	mg/Kg-dry	1	5/15/2008 5:04:00 PM	TDN
Fluorene	NELAP	0.004		**ND**	mg/Kg-dry	1	5/15/2008 5:04:00 PM	TDN
Indeno(1,2,3-cd)pyrene	NELAP	0.004		**ND**	mg/Kg-dry	1	5/15/2008 5:04:00 PM	TDN
Naphthalene	NELAP	0.004		**ND**	mg/Kg-dry	1	5/15/2008 5:04:00 PM	TDN
Phenanthrene	NELAP	0.004		**0.004**	mg/Kg-dry	1	5/15/2008 5:04:00 PM	TDN
Pyrene	NELAP	0.004		**ND**	mg/Kg-dry	1	5/15/2008 5:04:00 PM	TDN
Surr: 2-Fluorobiphenyl		10-131		**25.9**	%REC	1	5/15/2008 5:04:00 PM	TDN
Surr: Nitrobenzene-d5		10-132		**34.5**	%REC	1	5/15/2008 5:04:00 PM	TDN
Surr: p-Terphenyl-d14		30.6-131		**60.3**	%REC	1	5/15/2008 5:04:00 PM	TDN
SW-846 5035, 8260B, VOLATILE ORGANIC COMPOUNDS BY GC/MS								
Benzene	NELAP	0.9		**2.5**	µg/Kg-dry	1	5/13/2008 1:51:00 AM	GEK
Ethylbenzene	NELAP	4.7	J	**2.2**	µg/Kg-dry	1	5/13/2008 1:51:00 AM	GEK
Toluene	NELAP	4.7		**7.2**	µg/Kg-dry	1	5/13/2008 1:51:00 AM	GEK
Xylenes, Total	NELAP	4.7		**4.8**	µg/Kg-dry	1	5/13/2008 1:51:00 AM	GEK
Surr: 1,2-Dichloroethane-d4		61-128		**113.5**	%REC	1	5/13/2008 1:51:00 AM	GEK
Surr: 4-Bromofluorobenzene		78.2-117		**99.0**	%REC	1	5/13/2008 1:51:00 AM	GEK
Surr: Dibromofluoromethane		66.6-130		**108.5**	%REC	1	5/13/2008 1:51:00 AM	GEK
Surr: Toluene-d8		80.1-122		**97.7**	%REC	1	5/13/2008 1:51:00 AM	GEK
SW-846 9010B, 9014								
Cyanide	NELAP	0.60	J	**0.20**	mg/Kg-dry	1	5/13/2008	AET

TEKLAB, INC.
5445 HORSESHOE LAKE ROAD
COLLINSVILLE, ILLINOIS 62234
ENVIRONMENTAL TESTING LABORATORY
TEL: 618-344-1004
FAX: 618-344-1005

LABORATORY RESULTS

Client: Philip Environmental
WorkOrder: 08050415
Lab ID: 08050415-017
Report Date: 16-May-08

Client Project: A831-735002-012901-225/IP Champ
Client Sample ID: B-845 6.0-7.0 ft
Collection Date: 5/6/2008 2:45:00 PM
Matrix: SOLID

Analyses	Certification	RL	Qual	Result	Units	DF	Date Analyzed	Analyst
SW-846 9014A								
Cyanide, Amenable to Chlorination		0.60		**Interference**	mg/Kg-dry	1	5/14/2008	AET

Sample Narrative

TEKLAB, INC.

5445 HORSESHOE LAKE ROAD
COLLINSVILLE, ILLINOIS 62234

ENVIRONMENTAL TESTING LABORATORY

TEL: 618-344-1004
FAX: 618-344-1005

LABORATORY RESULTS

Client: Philip Environmental
WorkOrder: 08050415
Lab ID: 08050415-018
Report Date: 16-May-08

Client Project: A831-735002-012901-225/IP Champ
Client Sample ID: B-845 13.0-14.0 ft
Collection Date: 5/6/2008 3:00:00 PM
Matrix: SOLID

Analyses	Certification	RL	Qual	Result	Units	DF	Date Analyzed	Analyst
ASTM D2974								
Percent Moisture		0.1		**13.8**	%	1	5/12/2008	TWM
STANDARD METHODS 18TH ED. 2540 G								
Total Solids		0.1		**86.2**	%	1	5/12/2008	TWM
SW-846 3550B, 8270C SIMS, SEMI-VOLATILE ORGANIC COMPOUNDS BY GC/MS								
Acenaphthene	NELAP	0.004		**ND**	mg/Kg-dry	1	5/15/2008 5:40:00 PM	TDN
Acenaphthylene	NELAP	0.004		**ND**	mg/Kg-dry	1	5/15/2008 5:40:00 PM	TDN
Anthracene	NELAP	0.004		**ND**	mg/Kg-dry	1	5/15/2008 5:40:00 PM	TDN
Benzo(a)anthracene	NELAP	0.004		**ND**	mg/Kg-dry	1	5/15/2008 5:40:00 PM	TDN
Benzo(a)pyrene	NELAP	0.004		**ND**	mg/Kg-dry	1	5/15/2008 5:40:00 PM	TDN
Benzo(b)fluoranthene	NELAP	0.004		**ND**	mg/Kg-dry	1	5/15/2008 5:40:00 PM	TDN
Benzo(g,h,i)perylene	NELAP	0.004		**ND**	mg/Kg-dry	1	5/15/2008 5:40:00 PM	TDN
Benzo(k)fluoranthene	NELAP	0.004		**ND**	mg/Kg-dry	1	5/15/2008 5:40:00 PM	TDN
Chrysene	NELAP	0.004		**ND**	mg/Kg-dry	1	5/15/2008 5:40:00 PM	TDN
Dibenzo(a,h)anthracene	NELAP	0.004		**ND**	mg/Kg-dry	1	5/15/2008 5:40:00 PM	TDN
Fluoranthene	NELAP	0.004		**ND**	mg/Kg-dry	1	5/15/2008 5:40:00 PM	TDN
Fluorene	NELAP	0.004		**ND**	mg/Kg-dry	1	5/15/2008 5:40:00 PM	TDN
Indeno(1,2,3-cd)pyrene	NELAP	0.004		**ND**	mg/Kg-dry	1	5/15/2008 5:40:00 PM	TDN
Naphthalene	NELAP	0.004		**ND**	mg/Kg-dry	1	5/15/2008 5:40:00 PM	TDN
Phenanthrene	NELAP	0.004		**ND**	mg/Kg-dry	1	5/15/2008 5:40:00 PM	TDN
Pyrene	NELAP	0.004		**0.004**	mg/Kg-dry	1	5/15/2008 5:40:00 PM	TDN
Surr: 2-Fluorobiphenyl		10-131		**23.8**	%REC	1	5/15/2008 5:40:00 PM	TDN
Surr: Nitrobenzene-d5		10-132		**34.5**	%REC	1	5/15/2008 5:40:00 PM	TDN
Surr: p-Terphenyl-d14		30.6-131		**58.5**	%REC	1	5/15/2008 5:40:00 PM	TDN
SW-846 5035, 8260B, VOLATILE ORGANIC COMPOUNDS BY GC/MS								
Benzene	NELAP	0.8		**2.3**	µg/Kg-dry	1	5/13/2008 2:20:00 AM	GEK
Ethylbenzene	NELAP	4.0	J	**1.4**	µg/Kg-dry	1	5/13/2008 2:20:00 AM	GEK
Toluene	NELAP	4.0		**4.7**	µg/Kg-dry	1	5/13/2008 2:20:00 AM	GEK
Xylenes, Total	NELAP	4.0	J	**3.5**	µg/Kg-dry	1	5/13/2008 2:20:00 AM	GEK
Surr: 1,2-Dichloroethane-d4		61-128		**117.4**	%REC	1	5/13/2008 2:20:00 AM	GEK
Surr: 4-Bromofluorobenzene		78.2-117		**93.3**	%REC	1	5/13/2008 2:20:00 AM	GEK
Surr: Dibromofluoromethane		66.6-130		**107.2**	%REC	1	5/13/2008 2:20:00 AM	GEK
Surr: Toluene-d8		80.1-122		**102.2**	%REC	1	5/13/2008 2:20:00 AM	GEK

Sample Narrative

TEKLAB, INC.

5445 HORSESHOE LAKE ROAD
COLLINSVILLE, ILLINOIS 62234

ENVIRONMENTAL TESTING LABORATORY

TEL: 618-344-1004
FAX: 618-344-1005

LABORATORY RESULTS

Client: Philip Environmental
WorkOrder: 08050415
Lab ID: 08050415-019
Report Date: 16-May-08

Client Project: A831-735002-012901-225/IP Champ
Client Sample ID: B-846 8.5-9.5 ft
Collection Date: 5/7/2008 8:55:00 AM
Matrix: SOLID

Analyses	Certification	RL	Qual	Result	Units	DF	Date Analyzed	Analyst
ASTM D2974								
Percent Moisture		0.1		**24.2**	%	1	5/12/2008	TWM
STANDARD METHODS 18TH ED. 2540 G								
Total Solids		0.1		**75.8**	%	1	5/12/2008	TWM
SW-846 3550B, 8270C SIMS, SEMI-VOLATILE ORGANIC COMPOUNDS BY GC/MS								
Acenaphthene	NELAP	0.023		**1.87**	mg/Kg-dry	5	5/15/2008 6:24:00 AM	TDN
Acenaphthylene	NELAP	0.023		**0.312**	mg/Kg-dry	5	5/15/2008 6:24:00 AM	TDN
Anthracene	NELAP	0.023		**0.928**	mg/Kg-dry	5	5/15/2008 6:24:00 AM	TDN
Benzo(a)anthracene	NELAP	0.023		**0.523**	mg/Kg-dry	5	5/15/2008 6:24:00 AM	TDN
Benzo(a)pyrene	NELAP	0.023		**0.469**	mg/Kg-dry	5	5/15/2008 6:24:00 AM	TDN
Benzo(b)fluoranthene	NELAP	0.023		**0.356**	mg/Kg-dry	5	5/15/2008 6:24:00 AM	TDN
Benzo(g,h,i)perylene	NELAP	0.023		**0.173**	mg/Kg-dry	5	5/15/2008 6:24:00 AM	TDN
Benzo(k)fluoranthene	NELAP	0.023		**0.109**	mg/Kg-dry	5	5/15/2008 6:24:00 AM	TDN
Chrysene	NELAP	0.023		**0.518**	mg/Kg-dry	5	5/15/2008 6:24:00 AM	TDN
Dibenzo(a,h)anthracene	NELAP	0.023		**0.049**	mg/Kg-dry	5	5/15/2008 6:24:00 AM	TDN
Fluoranthene	NELAP	0.023		**1.08**	mg/Kg-dry	5	5/15/2008 6:24:00 AM	TDN
Fluorene	NELAP	0.023		**0.941**	mg/Kg-dry	5	5/15/2008 6:24:00 AM	TDN
Indeno(1,2,3-cd)pyrene	NELAP	0.023		**0.142**	mg/Kg-dry	5	5/15/2008 6:24:00 AM	TDN
Naphthalene	NELAP	0.023		**5.44**	mg/Kg-dry	5	5/15/2008 6:24:00 AM	TDN
Phenanthrene	NELAP	0.023		**2.78**	mg/Kg-dry	5	5/15/2008 6:24:00 AM	TDN
Pyrene	NELAP	0.023		**1.61**	mg/Kg-dry	5	5/15/2008 6:24:00 AM	TDN
Surr: 2-Fluorobiphenyl		10-131		**27.9**	%REC	5	5/15/2008 6:24:00 AM	TDN
Surr: Nitrobenzene-d5		10-132		**31.9**	%REC	5	5/15/2008 6:24:00 AM	TDN
Surr: p-Terphenyl-d14		30.6-131		**63.9**	%REC	5	5/15/2008 6:24:00 AM	TDN
SW-846 5035, 8260B, VOLATILE ORGANIC COMPOUNDS BY GC/MS								
Benzene	NELAP	130		**438**	µg/Kg-dry	50	5/14/2008 7:44:00 PM	GEK
Ethylbenzene	NELAP	648		**10100**	µg/Kg-dry	50	5/14/2008 7:44:00 PM	GEK
Toluene	NELAP	648		**ND**	µg/Kg-dry	50	5/14/2008 7:44:00 PM	GEK
Xylenes, Total	NELAP	648		**8820**	µg/Kg-dry	50	5/14/2008 7:44:00 PM	GEK
Surr: 1,2-Dichloroethane-d4		61-128		**94.8**	%REC	50	5/14/2008 7:44:00 PM	GEK
Surr: 4-Bromofluorobenzene		78.2-117		**98.3**	%REC	50	5/14/2008 7:44:00 PM	GEK
Surr: Dibromofluoromethane		66.6-130		**104.4**	%REC	50	5/14/2008 7:44:00 PM	GEK
Surr: Toluene-d8		80.1-122		**96.1**	%REC	50	5/14/2008 7:44:00 PM	GEK

Sample Narrative

SW-846 5035, 8260B, Volatile Organic Compounds by GC/MS

Elevated reporting limit due to high levels of target and/or non-target analytes.

TEKLAB, INC.

5445 HORSESHOE LAKE ROAD
COLLINSVILLE, ILLINOIS 62234

ENVIRONMENTAL TESTING LABORATORY

TEL: 618-344-1004
FAX: 618-344-1005

LABORATORY RESULTS

Client: Philip Environmental
WorkOrder: 08050415
Lab ID: 08050415-020
Report Date: 16-May-08

Client Project: A831-735002-012901-225/IP Champ
Client Sample ID: B-846 10.0-11.0 ft
Collection Date: 5/7/2008 9:30:00 AM
Matrix: SOLID

Analyses	Certification	RL	Qual	Result	Units	DF	Date Analyzed	Analyst
ASTM D2974								
Percent Moisture		0.1		**20.0**	%	1	5/12/2008	TWM
STANDARD METHODS 18TH ED. 2540 G								
Total Solids		0.1		**80.0**	%	1	5/12/2008	TWM
SW-846 3550B, 8270C SIMS, SEMI-VOLATILE ORGANIC COMPOUNDS BY GC/MS								
Acenaphthene	NELAP	0.041		**4.19**	mg/Kg-dry	10	5/15/2008 7:01:00 AM	TDN
Acenaphthylene	NELAP	0.041		**0.808**	mg/Kg-dry	10	5/15/2008 7:01:00 AM	TDN
Anthracene	NELAP	0.041		**2.10**	mg/Kg-dry	10	5/15/2008 7:01:00 AM	TDN
Benzo(a)anthracene	NELAP	0.041		**1.30**	mg/Kg-dry	10	5/15/2008 7:01:00 AM	TDN
Benzo(a)pyrene	NELAP	0.041		**1.28**	mg/Kg-dry	10	5/15/2008 7:01:00 AM	TDN
Benzo(b)fluoranthene	NELAP	0.041		**0.979**	mg/Kg-dry	10	5/15/2008 7:01:00 AM	TDN
Benzo(g,h,i)perylene	NELAP	0.041		**0.471**	mg/Kg-dry	10	5/15/2008 7:01:00 AM	TDN
Benzo(k)fluoranthene	NELAP	0.041		**0.290**	mg/Kg-dry	10	5/15/2008 7:01:00 AM	TDN
Chrysene	NELAP	0.041		**1.32**	mg/Kg-dry	10	5/15/2008 7:01:00 AM	TDN
Dibenzo(a,h)anthracene	NELAP	0.041		**0.133**	mg/Kg-dry	10	5/15/2008 7:01:00 AM	TDN
Fluoranthene	NELAP	0.041		**2.47**	mg/Kg-dry	10	5/15/2008 7:01:00 AM	TDN
Fluorene	NELAP	0.041		**1.91**	mg/Kg-dry	10	5/15/2008 7:01:00 AM	TDN
Indeno(1,2,3-cd)pyrene	NELAP	0.041		**0.381**	mg/Kg-dry	10	5/15/2008 7:01:00 AM	TDN
Naphthalene	NELAP	0.041		**12.4**	mg/Kg-dry	10	5/15/2008 7:01:00 AM	TDN
Phenanthrene	NELAP	0.041		**6.29**	mg/Kg-dry	10	5/15/2008 7:01:00 AM	TDN
Pyrene	NELAP	0.041		**3.94**	mg/Kg-dry	10	5/15/2008 7:01:00 AM	TDN
Surr: 2-Fluorobiphenyl		10-131		**18.0**	%REC	10	5/15/2008 7:01:00 AM	TDN
Surr: Nitrobenzene-d5		10-132		**22.0**	%REC	10	5/15/2008 7:01:00 AM	TDN
Surr: p-Terphenyl-d14		30.6-131		**57.9**	%REC	10	5/15/2008 7:01:00 AM	TDN
SW-846 5035, 8260B, VOLATILE ORGANIC COMPOUNDS BY GC/MS								
Benzene	NELAP	65.2		**205**	µg/Kg-dry	25	5/14/2008 6:46:00 PM	GEK
Ethylbenzene	NELAP	326		**3420**	µg/Kg-dry	25	5/14/2008 6:46:00 PM	GEK
Toluene	NELAP	326	J	**84**	µg/Kg-dry	25	5/14/2008 6:46:00 PM	GEK
Xylenes, Total	NELAP	326		**2900**	µg/Kg-dry	25	5/14/2008 6:46:00 PM	GEK
Surr: 1,2-Dichloroethane-d4		61-128		**102.2**	%REC	25	5/14/2008 6:46:00 PM	GEK
Surr: 4-Bromofluorobenzene		78.2-117		**101.3**	%REC	25	5/14/2008 6:46:00 PM	GEK
Surr: Dibromofluoromethane		66.6-130		**113.7**	%REC	25	5/14/2008 6:46:00 PM	GEK
Surr: Toluene-d8		80.1-122		**98.2**	%REC	25	5/14/2008 6:46:00 PM	GEK

Sample Narrative

SW-846 5035, 8260B, Volatile Organic Compounds by GC/MS

Elevated reporting limit due to high levels of target and/or non-target analytes.

TEKLAB, INC.

5445 HORSESHOE LAKE ROAD
COLLINSVILLE, ILLINOIS 62234

ENVIRONMENTAL TESTING LABORATORY

TEL: 618-344-1004
FAX: 618-344-1005

LABORATORY RESULTS

Client: Philip Environmental
WorkOrder: 08050415
Lab ID: 08050415-021
Report Date: 16-May-08

Client Project: A831-735002-012901-225/IP Champ
Client Sample ID: B-846 20.0-21.0 ft
Collection Date: 5/7/2008 9:54:00 AM
Matrix: SOLID

Analyses	Certification	RL	Qual	Result	Units	DF	Date Analyzed	Analyst
ASTM D2974								
Percent Moisture		0.1		**9.7**	%	1	5/12/2008	TWM
STANDARD METHODS 18TH ED. 2540 G								
Total Solids		0.1		**90.3**	%	1	5/12/2008	TWM
SW-846 3550B, 8270C SIMS, SEMI-VOLATILE ORGANIC COMPOUNDS BY GC/MS								
Acenaphthene	NELAP	0.004		**0.004**	mg/Kg-dry	1	5/14/2008 7:09:00 PM	TDN
Acenaphthylene	NELAP	0.004		**ND**	mg/Kg-dry	1	5/14/2008 7:09:00 PM	TDN
Anthracene	NELAP	0.004		**ND**	mg/Kg-dry	1	5/14/2008 7:09:00 PM	TDN
Benzo(a)anthracene	NELAP	0.004		**ND**	mg/Kg-dry	1	5/14/2008 7:09:00 PM	TDN
Benzo(a)pyrene	NELAP	0.004		**ND**	mg/Kg-dry	1	5/14/2008 7:09:00 PM	TDN
Benzo(b)fluoranthene	NELAP	0.004		**ND**	mg/Kg-dry	1	5/14/2008 7:09:00 PM	TDN
Benzo(g,h,i)perylene	NELAP	0.004		**ND**	mg/Kg-dry	1	5/14/2008 7:09:00 PM	TDN
Benzo(k)fluoranthene	NELAP	0.004		**ND**	mg/Kg-dry	1	5/14/2008 7:09:00 PM	TDN
Chrysene	NELAP	0.004		**ND**	mg/Kg-dry	1	5/14/2008 7:09:00 PM	TDN
Dibenzo(a,h)anthracene	NELAP	0.004		**ND**	mg/Kg-dry	1	5/14/2008 7:09:00 PM	TDN
Fluoranthene	NELAP	0.004		**ND**	mg/Kg-dry	1	5/14/2008 7:09:00 PM	TDN
Fluorene	NELAP	0.004		**ND**	mg/Kg-dry	1	5/14/2008 7:09:00 PM	TDN
Indeno(1,2,3-cd)pyrene	NELAP	0.004		**ND**	mg/Kg-dry	1	5/14/2008 7:09:00 PM	TDN
Naphthalene	NELAP	0.004		**0.013**	mg/Kg-dry	1	5/14/2008 7:09:00 PM	TDN
Phenanthrene	NELAP	0.004		**0.009**	mg/Kg-dry	1	5/14/2008 7:09:00 PM	TDN
Pyrene	NELAP	0.004		**0.005**	mg/Kg-dry	1	5/14/2008 7:09:00 PM	TDN
Surr: 2-Fluorobiphenyl		10-131		**50.3**	%REC	1	5/14/2008 7:09:00 PM	TDN
Surr: Nitrobenzene-d5		10-132		**54.7**	%REC	1	5/14/2008 7:09:00 PM	TDN
Surr: p-Terphenyl-d14		30.6-131		**63.7**	%REC	1	5/14/2008 7:09:00 PM	TDN
SW-846 5035, 8260B, VOLATILE ORGANIC COMPOUNDS BY GC/MS								
Benzene	NELAP	19.7		**3160**	µg/Kg-dry	12.5	5/13/2008 6:28:00 PM	GEK
Ethylbenzene	NELAP	98.3		**ND**	µg/Kg-dry	12.5	5/13/2008 6:28:00 PM	GEK
Toluene	NELAP	98.3		**ND**	µg/Kg-dry	12.5	5/13/2008 6:28:00 PM	GEK
Xylenes, Total	NELAP	98.3		**ND**	µg/Kg-dry	12.5	5/13/2008 6:28:00 PM	GEK
Surr: 1,2-Dichloroethane-d4		61-128		**99.8**	%REC	12.5	5/13/2008 6:28:00 PM	GEK
Surr: 4-Bromofluorobenzene		78.2-117		**96.1**	%REC	12.5	5/13/2008 6:28:00 PM	GEK
Surr: Dibromofluoromethane		66.6-130		**104.2**	%REC	12.5	5/13/2008 6:28:00 PM	GEK
Surr: Toluene-d8		80.1-122		**100.6**	%REC	12.5	5/13/2008 6:28:00 PM	GEK

Sample Narrative

SW-846 3550B, 8270C SIMS, Semi-Volatile Organic Compounds by GC/MS

Marginal Exceedance for Naphthalene, LCS is verified per NELAC Appendix D 1.1.2

SW-846 5035, 8260B, Volatile Organic Compounds by GC/MS

Elevated reporting limit due to high levels of target and/or non-target analytes.

TEKLAB, INC.

5445 HORSESHOE LAKE ROAD
COLLINSVILLE, ILLINOIS 62234

ENVIRONMENTAL TESTING LABORATORY

TEL: 618-344-1004
FAX: 618-344-1005

LABORATORY RESULTS

Client: Philip Environmental
WorkOrder: 08050415
Lab ID: 08050415-022
Report Date: 16-May-08

Client Project: A831-735002-012901-225/IP Champ
Client Sample ID: B-803 2.0-3.0 ft
Collection Date: 5/7/2008 10:07:00 AM
Matrix: SOLID

Analyses	Certification	RL	Qual	Result	Units	DF	Date Analyzed	Analyst
ASTM D2974								
Percent Moisture		0.1		**19.9**	%	1	5/12/2008	TWM
STANDARD METHODS 18TH ED. 2540 G								
Total Solids		0.1		**80.1**	%	1	5/12/2008	TWM
SW-846 3050B, 6010B, METALS BY ICP								
Arsenic	NELAP	2.27		**5.49**	mg/Kg-dry	1	5/14/2008 9:13:44 PM	LAL
Chromium	NELAP	0.91		**21.2**	mg/Kg-dry	1	5/14/2008 9:13:44 PM	LAL
Lead	NELAP	3.64		**145**	mg/Kg-dry	1	5/16/2008 9:23:38 AM	CRK
SW-846 3550B, 8270C SIMS, SEMI-VOLATILE ORGANIC COMPOUNDS BY GC/MS								
Acenaphthene	NELAP	0.004		**0.008**	mg/Kg-dry	1	5/15/2008 7:39:00 AM	TDN
Acenaphthylene	NELAP	0.004		**0.023**	mg/Kg-dry	1	5/15/2008 7:39:00 AM	TDN
Anthracene	NELAP	0.004		**0.023**	mg/Kg-dry	1	5/15/2008 7:39:00 AM	TDN
Benzo(a)anthracene	NELAP	0.004		**0.086**	mg/Kg-dry	1	5/15/2008 7:39:00 AM	TDN
Benzo(a)pyrene	NELAP	0.004		**0.105**	mg/Kg-dry	1	5/15/2008 7:39:00 AM	TDN
Benzo(b)fluoranthene	NELAP	0.004		**0.131**	mg/Kg-dry	1	5/15/2008 7:39:00 AM	TDN
Benzo(g,h,i)perylene	NELAP	0.004		**0.066**	mg/Kg-dry	1	5/15/2008 7:39:00 AM	TDN
Benzo(k)fluoranthene	NELAP	0.004		**0.045**	mg/Kg-dry	1	5/15/2008 7:39:00 AM	TDN
Chrysene	NELAP	0.004		**0.096**	mg/Kg-dry	1	5/15/2008 7:39:00 AM	TDN
Dibenzo(a,h)anthracene	NELAP	0.004		**0.017**	mg/Kg-dry	1	5/15/2008 7:39:00 AM	TDN
Fluoranthene	NELAP	0.004		**0.173**	mg/Kg-dry	1	5/15/2008 7:39:00 AM	TDN
Fluorene	NELAP	0.004		**0.007**	mg/Kg-dry	1	5/15/2008 7:39:00 AM	TDN
Indeno(1,2,3-cd)pyrene	NELAP	0.004		**0.059**	mg/Kg-dry	1	5/15/2008 7:39:00 AM	TDN
Naphthalene	NELAP	0.004		**0.034**	mg/Kg-dry	1	5/15/2008 7:39:00 AM	TDN
Phenanthrene	NELAP	0.004		**0.105**	mg/Kg-dry	1	5/15/2008 7:39:00 AM	TDN
Pyrene	NELAP	0.004		**0.171**	mg/Kg-dry	1	5/15/2008 7:39:00 AM	TDN
Surr: 2-Fluorobiphenyl		10-131		**61.7**	%REC	1	5/15/2008 7:39:00 AM	TDN
Surr: Nitrobenzene-d5		10-132		**59.9**	%REC	1	5/15/2008 7:39:00 AM	TDN
Surr: p-Terphenyl-d14		30.6-131		**64.3**	%REC	1	5/15/2008 7:39:00 AM	TDN
SW-846 5035, 8260B, VOLATILE ORGANIC COMPOUNDS BY GC/MS								
Benzene	NELAP	1.2		**1.9**	µg/Kg-dry	1	5/13/2008 7:54:00 PM	GEK
Ethylbenzene	NELAP	5.8		**6.9**	µg/Kg-dry	1	5/13/2008 7:54:00 PM	GEK
Toluene	NELAP	5.8	J	**3.9**	µg/Kg-dry	1	5/13/2008 7:54:00 PM	GEK
Xylenes, Total	NELAP	5.8		**10.7**	µg/Kg-dry	1	5/13/2008 7:54:00 PM	GEK
Surr: 1,2-Dichloroethane-d4		61-128		**119.2**	%REC	1	5/13/2008 7:54:00 PM	GEK
Surr: 4-Bromofluorobenzene		78.2-117	S	**75.0**	%REC	1	5/13/2008 7:54:00 PM	GEK
Surr: Dibromofluoromethane		66.6-130		**113.6**	%REC	1	5/13/2008 7:54:00 PM	GEK
Surr: Toluene-d8		80.1-122		**121.7**	%REC	1	5/13/2008 7:54:00 PM	GEK
SW-846 9010B, 9014								
Cyanide	NELAP	0.57	J	**0.37**	mg/Kg-dry	1	5/13/2008	AET

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5445 HORSESHOE LAKE ROAD
COLLINSVILLE, ILLINOIS 62234

ENVIRONMENTAL TESTING LABORATORY

TEL: 618-344-1004
FAX: 618-344-1005

LABORATORY RESULTS

Client: Philip Environmental
WorkOrder: 08050415
Lab ID: 08050415-022
Report Date: 16-May-08

Client Project: A831-735002-012901-225/IP Champ
Client Sample ID: B-803 2.0-3.0 ft
Collection Date: 5/7/2008 10:07:00 AM
Matrix: SOLID

Analyses	Certification	RL	Qual	Result	Units	DF	Date Analyzed	Analyst
SW-846 9014A								
Cyanide, Amenable to Chlorination		0.57		**Interference**	mg/Kg-dry	1	5/14/2008	AET

Sample Narrative

SW-846 3550B, 8270C SIMS, Semi-Volatile Organic Compounds by GC/MS

Marginal Exceedance for Naphthalene, LCS is verified per NELAC Appendix D 1.1.2

SW-846 5035, 8260B, Volatile Organic Compounds by GC/MS

Surrogate recovery was outside QC limits due to matrix interference.

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COLLINSVILLE, ILLINOIS 62234

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TEL: 618-344-1004
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LABORATORY RESULTS

Client: Philip Environmental
WorkOrder: 08050415
Lab ID: 08050415-023
Report Date: 16-May-08

Client Project: A831-735002-012901-225/IP Champ
Client Sample ID: B-803 9.0-10.0 ft
Collection Date: 5/7/2008 10:20:00 AM
Matrix: SOLID

Analyses	Certification	RL	Qual	Result	Units	DF	Date Analyzed	Analyst
ASTM D2974								
Percent Moisture		0.1		**22.0**	%	1	5/12/2008	TWM
STANDARD METHODS 18TH ED. 2540 G								
Total Solids		0.1		**78.0**	%	1	5/12/2008	TWM
SW-846 3050B, 6010B, METALS BY ICP								
Arsenic	NELAP	2.50	J	**2.0**	mg/Kg-dry	1	5/14/2008 9:20:31 PM	LAL
Chromium	NELAP	1.00		**27.0**	mg/Kg-dry	1	5/14/2008 9:20:31 PM	LAL
Lead	NELAP	4.00		**14.2**	mg/Kg-dry	1	5/16/2008 9:25:56 AM	CRK
SW-846 3550B, 8270C SIMS, SEMI-VOLATILE ORGANIC COMPOUNDS BY GC/MS								
Acenaphthene	NELAP	0.004		**0.026**	mg/Kg-dry	1	5/14/2008 8:56:00 PM	TDN
Acenaphthylene	NELAP	0.004		**0.008**	mg/Kg-dry	1	5/14/2008 8:56:00 PM	TDN
Anthracene	NELAP	0.004		**0.018**	mg/Kg-dry	1	5/14/2008 8:56:00 PM	TDN
Benzo(a)anthracene	NELAP	0.004		**0.015**	mg/Kg-dry	1	5/14/2008 8:56:00 PM	TDN
Benzo(a)pyrene	NELAP	0.004		**0.012**	mg/Kg-dry	1	5/14/2008 8:56:00 PM	TDN
Benzo(b)fluoranthene	NELAP	0.004		**0.010**	mg/Kg-dry	1	5/14/2008 8:56:00 PM	TDN
Benzo(g,h,i)perylene	NELAP	0.004		**0.005**	mg/Kg-dry	1	5/14/2008 8:56:00 PM	TDN
Benzo(k)fluoranthene	NELAP	0.004		**ND**	mg/Kg-dry	1	5/14/2008 8:56:00 PM	TDN
Chrysene	NELAP	0.004		**0.014**	mg/Kg-dry	1	5/14/2008 8:56:00 PM	TDN
Dibenzo(a,h)anthracene	NELAP	0.004		**ND**	mg/Kg-dry	1	5/14/2008 8:56:00 PM	TDN
Fluoranthene	NELAP	0.004		**0.025**	mg/Kg-dry	1	5/14/2008 8:56:00 PM	TDN
Fluorene	NELAP	0.004		**0.015**	mg/Kg-dry	1	5/14/2008 8:56:00 PM	TDN
Indeno(1,2,3-cd)pyrene	NELAP	0.004	J	**0.004**	mg/Kg-dry	1	5/14/2008 8:56:00 PM	TDN
Naphthalene	NELAP	0.004		**0.062**	mg/Kg-dry	1	5/14/2008 8:56:00 PM	TDN
Phenanthrene	NELAP	0.004		**0.063**	mg/Kg-dry	1	5/14/2008 8:56:00 PM	TDN
Pyrene	NELAP	0.004		**0.037**	mg/Kg-dry	1	5/14/2008 8:56:00 PM	TDN
Surr: 2-Fluorobiphenyl		10-131		**52.1**	%REC	1	5/14/2008 8:56:00 PM	TDN
Surr: Nitrobenzene-d5		10-132		**57.7**	%REC	1	5/14/2008 8:56:00 PM	TDN
Surr: p-Terphenyl-d14		30.6-131		**64.1**	%REC	1	5/14/2008 8:56:00 PM	TDN
SW-846 5035, 8260B, VOLATILE ORGANIC COMPOUNDS BY GC/MS								
Benzene	NELAP	1.0	J	**0.8**	µg/Kg-dry	1	5/13/2008 7:26:00 PM	GEK
Ethylbenzene	NELAP	5.2		**ND**	µg/Kg-dry	1	5/13/2008 7:26:00 PM	GEK
Toluene	NELAP	5.2		**ND**	µg/Kg-dry	1	5/13/2008 7:26:00 PM	GEK
Xylenes, Total	NELAP	5.2		**ND**	µg/Kg-dry	1	5/13/2008 7:26:00 PM	GEK
Surr: 1,2-Dichloroethane-d4		61-128		**111.9**	%REC	1	5/13/2008 7:26:00 PM	GEK
Surr: 4-Bromofluorobenzene		78.2-117		**94.5**	%REC	1	5/13/2008 7:26:00 PM	GEK
Surr: Dibromofluoromethane		66.6-130		**103.3**	%REC	1	5/13/2008 7:26:00 PM	GEK
Surr: Toluene-d8		80.1-122		**98.1**	%REC	1	5/13/2008 7:26:00 PM	GEK
SW-846 9010B, 9014								
Cyanide	NELAP	0.61		**< 0.61**	mg/Kg-dry	1	5/13/2008	AET

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5445 HORSESHOE LAKE ROAD
COLLINSVILLE, ILLINOIS 62234

ENVIRONMENTAL TESTING LABORATORY

TEL: 618-344-1004
FAX: 618-344-1005

LABORATORY RESULTS

Client: Philip Environmental
WorkOrder: 08050415
Lab ID: 08050415-023
Report Date: 16-May-08

Client Project: A831-735002-012901-225/IP Champ
Client Sample ID: B-803 9.0-10.0 ft
Collection Date: 5/7/2008 10:20:00 AM
Matrix: SOLID

Analyses	Certification	RL	Qual	Result	Units	DF	Date Analyzed	Analyst
SW-846 9014A								
Cyanide, Amenable to Chlorination		0.61		**Interference**	mg/Kg-dry	1	5/14/2008	AET

Sample Narrative

SW-846 3550B, 8270C SIMS, Semi-Volatile Organic Compounds by GC/MS

Marginal Exceedance for Naphthalene, LCS is verified per NELAC Appendix D 1.1.2

TEKLAB, INC.

5445 HORSESHOE LAKE ROAD
COLLINSVILLE, ILLINOIS 62234

ENVIRONMENTAL TESTING LABORATORY

TEL: 618-344-1004
FAX: 618-344-1005

LABORATORY RESULTS

Client: Philip Environmental
WorkOrder: 08050415
Lab ID: 08050415-024
Report Date: 16-May-08

Client Project: A831-735002-012901-225/IP Champ
Client Sample ID: B-803 21.0-22.0 ft
Collection Date: 5/7/2008 10:41:00 AM
Matrix: SOLID

Analyses	Certification	RL	Qual	Result	Units	DF	Date Analyzed	Analyst
ASTM D2974								
Percent Moisture		0.1		**12.8**	%	1	5/12/2008	TWM
STANDARD METHODS 18TH ED. 2540 G								
Total Solids		0.1		**87.2**	%	1	5/12/2008	TWM
SW-846 3050B, 6010B, METALS BY ICP								
Arsenic	NELAP	2.31		**5.41**	mg/Kg-dry	1	5/14/2008 9:27:19 PM	LAL
Chromium	NELAP	0.93		**14.2**	mg/Kg-dry	1	5/14/2008 9:27:19 PM	LAL
Lead	NELAP	7.41		**8.65**	mg/Kg-dry	2	5/16/2008 11:09:13 AM	CRK
SW-846 3550B, 8270C SIMS, SEMI-VOLATILE ORGANIC COMPOUNDS BY GC/MS								
Acenaphthene	NELAP	0.039		**2.96**	mg/Kg-dry	10	5/15/2008 8:14:00 AM	TDN
Acenaphthylene	NELAP	0.039		**3.19**	mg/Kg-dry	10	5/15/2008 8:14:00 AM	TDN
Anthracene	NELAP	0.039		**2.54**	mg/Kg-dry	10	5/15/2008 8:14:00 AM	TDN
Benzo(a)anthracene	NELAP	0.039		**1.33**	mg/Kg-dry	10	5/15/2008 8:14:00 AM	TDN
Benzo(a)pyrene	NELAP	0.039		**1.24**	mg/Kg-dry	10	5/15/2008 8:14:00 AM	TDN
Benzo(b)fluoranthene	NELAP	0.039		**0.915**	mg/Kg-dry	10	5/15/2008 8:14:00 AM	TDN
Benzo(g,h,i)perylene	NELAP	0.039		**0.425**	mg/Kg-dry	10	5/15/2008 8:14:00 AM	TDN
Benzo(k)fluoranthene	NELAP	0.039		**0.275**	mg/Kg-dry	10	5/15/2008 8:14:00 AM	TDN
Chrysene	NELAP	0.039		**1.30**	mg/Kg-dry	10	5/15/2008 8:14:00 AM	TDN
Dibenzo(a,h)anthracene	NELAP	0.039		**0.119**	mg/Kg-dry	10	5/15/2008 8:14:00 AM	TDN
Fluoranthene	NELAP	0.039		**2.74**	mg/Kg-dry	10	5/15/2008 8:14:00 AM	TDN
Fluorene	NELAP	0.039		**2.61**	mg/Kg-dry	10	5/15/2008 8:14:00 AM	TDN
Indeno(1,2,3-cd)pyrene	NELAP	0.039		**0.345**	mg/Kg-dry	10	5/15/2008 8:14:00 AM	TDN
Naphthalene	NELAP	0.039		**13.0**	mg/Kg-dry	10	5/15/2008 8:14:00 AM	TDN
Phenanthrene	NELAP	0.039		**8.16**	mg/Kg-dry	10	5/15/2008 8:14:00 AM	TDN
Pyrene	NELAP	0.039		**4.13**	mg/Kg-dry	10	5/15/2008 8:14:00 AM	TDN
Surr: 2-Fluorobiphenyl		10-131		**61.9**	%REC	10	5/15/2008 8:14:00 AM	TDN
Surr: Nitrobenzene-d5		10-132		**51.9**	%REC	10	5/15/2008 8:14:00 AM	TDN
Surr: p-Terphenyl-d14		30.6-131		**63.9**	%REC	10	5/15/2008 8:14:00 AM	TDN
SW-846 5035, 8260B, VOLATILE ORGANIC COMPOUNDS BY GC/MS								
Benzene	NELAP	75.8		**158**	µg/Kg-dry	50	5/14/2008 6:18:00 PM	GEK
Ethylbenzene	NELAP	379		**4560**	µg/Kg-dry	50	5/14/2008 6:18:00 PM	GEK
Toluene	NELAP	379	J	**320**	µg/Kg-dry	50	5/14/2008 6:18:00 PM	GEK
Xylenes, Total	NELAP	379		**3500**	µg/Kg-dry	50	5/14/2008 6:18:00 PM	GEK
Surr: 1,2-Dichloroethane-d4		61-128		**96.1**	%REC	50	5/14/2008 6:18:00 PM	GEK
Surr: 4-Bromofluorobenzene		78.2-117		**101.5**	%REC	50	5/14/2008 6:18:00 PM	GEK
Surr: Dibromofluoromethane		66.6-130		**105.3**	%REC	50	5/14/2008 6:18:00 PM	GEK
Surr: Toluene-d8		80.1-122		**97.2**	%REC	50	5/14/2008 6:18:00 PM	GEK
SW-846 9010B, 9014								
Cyanide	NELAP	0.57		**< 0.57**	mg/Kg-dry	1	5/13/2008	AET

TEKLAB, INC.

5445 HORSESHOE LAKE ROAD
COLLINSVILLE, ILLINOIS 62234

ENVIRONMENTAL TESTING LABORATORY

TEL: 618-344-1004
FAX: 618-344-1005

LABORATORY RESULTS

Client: Philip Environmental
WorkOrder: 08050415
Lab ID: 08050415-024
Report Date: 16-May-08

Client Project: A831-735002-012901-225/IP Champ
Client Sample ID: B-803 21.0-22.0 ft
Collection Date: 5/7/2008 10:41:00 AM
Matrix: SOLID

Analyses	Certification	RL	Qual	Result	Units	DF	Date Analyzed	Analyst
SW-846 9014A								
Cyanide, Amenable to Chlorination		0.57		**Interference**	mg/Kg-dry	1	5/14/2008	AET

Sample Narrative

SW-846 3550B, 8270C SIMS, Semi-Volatile Organic Compounds by GC/MS

Marginal Exceedance for Naphthalene, LCS is verified per NELAC Appendix D 1.1.2

SW-846 5035, 8260B, Volatile Organic Compounds by GC/MS

Elevated reporting limit due to high levels of target and/or non-target analytes.

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COLLINSVILLE, ILLINOIS 62234

ENVIRONMENTAL TESTING LABORATORY

TEL: 618-344-1004
FAX: 618-344-1005

LABORATORY RESULTS

Client: Philip Environmental
WorkOrder: 08050415
Lab ID: 08050415-025
Report Date: 16-May-08

Client Project: A831-735002-012901-225/IP Champ
Client Sample ID: B-803 29.0-30.0 ft
Collection Date: 5/7/2008 10:55:00 AM
Matrix: SOLID

Analyses	Certification	RL	Qual	Result	Units	DF	Date Analyzed	Analyst
ASTM D2974								
Percent Moisture		0.1		**10.3**	%	1	5/12/2008	TWM
STANDARD METHODS 18TH ED. 2540 G								
Total Solids		0.1		**89.7**	%	1	5/12/2008	TWM
SW-846 3550B, 8270C SIMS, SEMI-VOLATILE ORGANIC COMPOUNDS BY GC/MS								
Acenaphthene	NELAP	0.004		**ND**	mg/Kg-dry	1	5/14/2008 9:32:00 PM	TDN
Acenaphthylene	NELAP	0.004		**ND**	mg/Kg-dry	1	5/14/2008 9:32:00 PM	TDN
Anthracene	NELAP	0.004		**ND**	mg/Kg-dry	1	5/14/2008 9:32:00 PM	TDN
Benzo(a)anthracene	NELAP	0.004		**0.004**	mg/Kg-dry	1	5/14/2008 9:32:00 PM	TDN
Benzo(a)pyrene	NELAP	0.004		**ND**	mg/Kg-dry	1	5/14/2008 9:32:00 PM	TDN
Benzo(b)fluoranthene	NELAP	0.004		**ND**	mg/Kg-dry	1	5/14/2008 9:32:00 PM	TDN
Benzo(g,h,i)perylene	NELAP	0.004		**ND**	mg/Kg-dry	1	5/14/2008 9:32:00 PM	TDN
Benzo(k)fluoranthene	NELAP	0.004		**ND**	mg/Kg-dry	1	5/14/2008 9:32:00 PM	TDN
Chrysene	NELAP	0.004		**ND**	mg/Kg-dry	1	5/14/2008 9:32:00 PM	TDN
Dibenzo(a,h)anthracene	NELAP	0.004		**ND**	mg/Kg-dry	1	5/14/2008 9:32:00 PM	TDN
Fluoranthene	NELAP	0.004	J	**0.004**	mg/Kg-dry	1	5/14/2008 9:32:00 PM	TDN
Fluorene	NELAP	0.004		**ND**	mg/Kg-dry	1	5/14/2008 9:32:00 PM	TDN
Indeno(1,2,3-cd)pyrene	NELAP	0.004		**ND**	mg/Kg-dry	1	5/14/2008 9:32:00 PM	TDN
Naphthalene	NELAP	0.004		**0.010**	mg/Kg-dry	1	5/14/2008 9:32:00 PM	TDN
Phenanthrene	NELAP	0.004		**0.008**	mg/Kg-dry	1	5/14/2008 9:32:00 PM	TDN
Pyrene	NELAP	0.004		**0.005**	mg/Kg-dry	1	5/14/2008 9:32:00 PM	TDN
Surr: 2-Fluorobiphenyl		10-131		**39.9**	%REC	1	5/14/2008 9:32:00 PM	TDN
Surr: Nitrobenzene-d5		10-132		**47.3**	%REC	1	5/14/2008 9:32:00 PM	TDN
Surr: p-Terphenyl-d14		30.6-131		**61.7**	%REC	1	5/14/2008 9:32:00 PM	TDN
SW-846 5035, 8260B, VOLATILE ORGANIC COMPOUNDS BY GC/MS								
Benzene	NELAP	0.8		**1.4**	µg/Kg-dry	1	5/13/2008 2:49:00 AM	GEK
Ethylbenzene	NELAP	3.8		**ND**	µg/Kg-dry	1	5/13/2008 2:49:00 AM	GEK
Toluene	NELAP	3.8	J	**2.0**	µg/Kg-dry	1	5/13/2008 2:49:00 AM	GEK
Xylenes, Total	NELAP	3.8	J	**1.3**	µg/Kg-dry	1	5/13/2008 2:49:00 AM	GEK
Surr: 1,2-Dichloroethane-d4		61-128		**116.3**	%REC	1	5/13/2008 2:49:00 AM	GEK
Surr: 4-Bromofluorobenzene		78.2-117		**88.7**	%REC	1	5/13/2008 2:49:00 AM	GEK
Surr: Dibromofluoromethane		66.6-130		**111.7**	%REC	1	5/13/2008 2:49:00 AM	GEK
Surr: Toluene-d8		80.1-122		**108.4**	%REC	1	5/13/2008 2:49:00 AM	GEK

Sample Narrative

SW-846 3550B, 8270C SIMS, Semi-Volatile Organic Compounds by GC/MS

Marginal Exceedance for Naphthalene, LCS is verified per NELAC Appendix D 1.1.2

TEKLAB, INC.

5445 HORSESHOE LAKE ROAD
COLLINSVILLE, ILLINOIS 62234

ENVIRONMENTAL TESTING LABORATORY

TEL: 618-344-1004
FAX: 618-344-1005

LABORATORY RESULTS

Client: Philip Environmental
WorkOrder: 08050415
Lab ID: 08050415-026
Report Date: 16-May-08

Client Project: A831-735002-012901-225/IP Champ
Client Sample ID: B-849 0.0-1.0 ft
Collection Date: 5/7/2008 11:25:00 AM
Matrix: SOLID

Analyses	Certification	RL	Qual	Result	Units	DF	Date Analyzed	Analyst
ASTM D2974								
Percent Moisture		0.1		**20.0**	%	1	5/12/2008	TWN
STANDARD METHODS 18TH ED. 2540 G								
Total Solids		0.1		**80.0**	%	1	5/12/2008	TWN
SW-846 3050B, 6010B, METALS BY ICP								
Arsenic	NELAP	2.40	J	**2.0**	mg/Kg-dry	1	5/14/2008 9:34:08 PM	LAL
Chromium	NELAP	0.96		**27.5**	mg/Kg-dry	1	5/14/2008 9:34:08 PM	LAL
Lead	NELAP	38.5		**107**	mg/Kg-dry	10	5/16/2008 11:11:31 AM	CRK
SW-846 3550B, 8270C SIMS, SEMI-VOLATILE ORGANIC COMPOUNDS BY GC/MS								
Acenaphthene	NELAP	0.004		**ND**	mg/Kg-dry	1	5/15/2008 8:50:00 AM	TDN
Acenaphthylene	NELAP	0.004		**0.010**	mg/Kg-dry	1	5/15/2008 8:50:00 AM	TDN
Anthracene	NELAP	0.004		**0.006**	mg/Kg-dry	1	5/15/2008 8:50:00 AM	TDN
Benzo(a)anthracene	NELAP	0.004		**0.033**	mg/Kg-dry	1	5/15/2008 8:50:00 AM	TDN
Benzo(a)pyrene	NELAP	0.004		**0.039**	mg/Kg-dry	1	5/15/2008 8:50:00 AM	TDN
Benzo(b)fluoranthene	NELAP	0.004		**0.058**	mg/Kg-dry	1	5/15/2008 8:50:00 AM	TDN
Benzo(g,h,i)perylene	NELAP	0.004		**0.025**	mg/Kg-dry	1	5/15/2008 8:50:00 AM	TDN
Benzo(k)fluoranthene	NELAP	0.004		**0.020**	mg/Kg-dry	1	5/15/2008 8:50:00 AM	TDN
Chrysene	NELAP	0.004		**0.043**	mg/Kg-dry	1	5/15/2008 8:50:00 AM	TDN
Dibenzo(a,h)anthracene	NELAP	0.004		**0.007**	mg/Kg-dry	1	5/15/2008 8:50:00 AM	TDN
Fluoranthene	NELAP	0.004		**0.062**	mg/Kg-dry	1	5/15/2008 8:50:00 AM	TDN
Fluorene	NELAP	0.004		**ND**	mg/Kg-dry	1	5/15/2008 8:50:00 AM	TDN
Indeno(1,2,3-cd)pyrene	NELAP	0.004		**0.024**	mg/Kg-dry	1	5/15/2008 8:50:00 AM	TDN
Naphthalene	NELAP	0.004		**0.006**	mg/Kg-dry	1	5/15/2008 8:50:00 AM	TDN
Phenanthrene	NELAP	0.004		**0.035**	mg/Kg-dry	1	5/15/2008 8:50:00 AM	TDN
Pyrene	NELAP	0.004		**0.064**	mg/Kg-dry	1	5/15/2008 8:50:00 AM	TDN
Surr: 2-Fluorobiphenyl		10-131		**51.9**	%REC	1	5/15/2008 8:50:00 AM	TDN
Surr: Nitrobenzene-d5		10-132		**56.9**	%REC	1	5/15/2008 8:50:00 AM	TDN
Surr: p-Terphenyl-d14		30.6-131		**62.9**	%REC	1	5/15/2008 8:50:00 AM	TDN
SW-846 5035, 8260B, VOLATILE ORGANIC COMPOUNDS BY GC/MS								
Benzene	NELAP	1.1		**1.2**	µg/Kg-dry	1	5/13/2008 3:18:00 AM	GEK
Ethylbenzene	NELAP	5.3		**ND**	µg/Kg-dry	1	5/13/2008 3:18:00 AM	GEK
Toluene	NELAP	5.3	J	**1.1**	µg/Kg-dry	1	5/13/2008 3:18:00 AM	GEK
Xylenes, Total	NELAP	5.3		**ND**	µg/Kg-dry	1	5/13/2008 3:18:00 AM	GEK
Surr: 1,2-Dichloroethane-d4		61-128		**117.3**	%REC	1	5/13/2008 3:18:00 AM	GEK
Surr: 4-Bromofluorobenzene		78.2-117		**83.5**	%REC	1	5/13/2008 3:18:00 AM	GEK
Surr: Dibromofluoromethane		66.6-130		**113.3**	%REC	1	5/13/2008 3:18:00 AM	GEK
Surr: Toluene-d8		80.1-122		**109.7**	%REC	1	5/13/2008 3:18:00 AM	GEK
SW-846 9010B, 9014								
Cyanide	NELAP	0.60	J	**0.52**	mg/Kg-dry	1	5/13/2008	AET

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COLLINSVILLE, ILLINOIS 62234

ENVIRONMENTAL TESTING LABORATORY

TEL: 618-344-1004
FAX: 618-344-1005

LABORATORY RESULTS

Client: Philip Environmental
WorkOrder: 08050415
Lab ID: 08050415-026
Report Date: 16-May-08

Client Project: A831-735002-012901-225/IP Champ
Client Sample ID: B-849 0.0-1.0 ft
Collection Date: 5/7/2008 11:25:00 AM
Matrix: SOLID

Analyses	Certification	RL	Qual	Result	Units	DF	Date Analyzed	Analyst
SW-846 9014A								
Cyanide, Amenable to Chlorination		0.60		**Interference**	mg/Kg-dry	1	5/14/2008	AET

Sample Narrative

SW-846 3550B, 8270C SIMS, Semi-Volatile Organic Compounds by GC/MS

Marginal Exceedance for Naphthalene, LCS is verified per NELAC Appendix D 1.1.2

TEKLAB, INC.

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COLLINSVILLE, ILLINOIS 62234

ENVIRONMENTAL TESTING LABORATORY

TEL: 618-344-1004
FAX: 618-344-1005

LABORATORY RESULTS

Client: Philip Environmental
WorkOrder: 08050415
Lab ID: 08050415-027
Report Date: 16-May-08

Client Project: A831-735002-012901-225/IP Champ
Client Sample ID: B-849 9.0-10.0 ft
Collection Date: 5/7/2008 11:35:00 AM
Matrix: SOLID

Analyses	Certification	RL	Qual	Result	Units	DF	Date Analyzed	Analyst
ASTM D2974								
Percent Moisture		0.1		**14.5**	%	1	5/12/2008	TWM
STANDARD METHODS 18TH ED. 2540 G								
Total Solids		0.1		**85.5**	%	1	5/12/2008	TWM
SW-846 3050B, 6010B, METALS BY ICP								
Arsenic	NELAP	2.50		**5.59**	mg/Kg-dry	1	5/14/2008 9:41:15 PM	LAL
Chromium	NELAP	1.00		**13.3**	mg/Kg-dry	1	5/14/2008 9:41:15 PM	LAL
Lead	NELAP	8.00		**12.4**	mg/Kg-dry	2	5/16/2008 11:13:47 AM	CRK
SW-846 3550B, 8270C SIMS, SEMI-VOLATILE ORGANIC COMPOUNDS BY GC/MS								
Acenaphthene	NELAP	0.004		**ND**	mg/Kg-dry	1	5/14/2008 10:08:00 PM	TDN
Acenaphthylene	NELAP	0.004		**ND**	mg/Kg-dry	1	5/14/2008 10:08:00 PM	TDN
Anthracene	NELAP	0.004		**ND**	mg/Kg-dry	1	5/14/2008 10:08:00 PM	TDN
Benzo(a)anthracene	NELAP	0.004		**ND**	mg/Kg-dry	1	5/14/2008 10:08:00 PM	TDN
Benzo(a)pyrene	NELAP	0.004		**ND**	mg/Kg-dry	1	5/14/2008 10:08:00 PM	TDN
Benzo(b)fluoranthene	NELAP	0.004		**ND**	mg/Kg-dry	1	5/14/2008 10:08:00 PM	TDN
Benzo(g,h,i)perylene	NELAP	0.004		**ND**	mg/Kg-dry	1	5/14/2008 10:08:00 PM	TDN
Benzo(k)fluoranthene	NELAP	0.004		**ND**	mg/Kg-dry	1	5/14/2008 10:08:00 PM	TDN
Chrysene	NELAP	0.004		**ND**	mg/Kg-dry	1	5/14/2008 10:08:00 PM	TDN
Dibenzo(a,h)anthracene	NELAP	0.004		**ND**	mg/Kg-dry	1	5/14/2008 10:08:00 PM	TDN
Fluoranthene	NELAP	0.004		**ND**	mg/Kg-dry	1	5/14/2008 10:08:00 PM	TDN
Fluorene	NELAP	0.004		**ND**	mg/Kg-dry	1	5/14/2008 10:08:00 PM	TDN
Indeno(1,2,3-cd)pyrene	NELAP	0.004		**ND**	mg/Kg-dry	1	5/14/2008 10:08:00 PM	TDN
Naphthalene	NELAP	0.004		**ND**	mg/Kg-dry	1	5/14/2008 10:08:00 PM	TDN
Phenanthrene	NELAP	0.004		**ND**	mg/Kg-dry	1	5/14/2008 10:08:00 PM	TDN
Pyrene	NELAP	0.004		**ND**	mg/Kg-dry	1	5/14/2008 10:08:00 PM	TDN
Surr: 2-Fluorobiphenyl		10-131		**23.4**	%REC	1	5/14/2008 10:08:00 PM	TDN
Surr: Nitrobenzene-d5		10-132		**30.7**	%REC	1	5/14/2008 10:08:00 PM	TDN
Surr: p-Terphenyl-d14		30.6-131		**63.1**	%REC	1	5/14/2008 10:08:00 PM	TDN
SW-846 5035, 8260B, VOLATILE ORGANIC COMPOUNDS BY GC/MS								
Benzene	NELAP	0.9		**2.6**	µg/Kg-dry	1	5/13/2008 3:46:00 AM	GEK
Ethylbenzene	NELAP	4.4	J	**2.1**	µg/Kg-dry	1	5/13/2008 3:46:00 AM	GEK
Toluene	NELAP	4.4		**5.7**	µg/Kg-dry	1	5/13/2008 3:46:00 AM	GEK
Xylenes, Total	NELAP	4.4		**4.6**	µg/Kg-dry	1	5/13/2008 3:46:00 AM	GEK
Surr: 1,2-Dichloroethane-d4		61-128		**118.7**	%REC	1	5/13/2008 3:46:00 AM	GEK
Surr: 4-Bromofluorobenzene		78.2-117		**98.0**	%REC	1	5/13/2008 3:46:00 AM	GEK
Surr: Dibromofluoromethane		66.6-130		**109.8**	%REC	1	5/13/2008 3:46:00 AM	GEK
Surr: Toluene-d8		80.1-122		**97.5**	%REC	1	5/13/2008 3:46:00 AM	GEK
SW-846 9010B, 9014								
Cyanide	NELAP	0.56		**< 0.56**	mg/Kg-dry	1	5/13/2008	AET

TEKLAB, INC.

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COLLINSVILLE, ILLINOIS 62234

ENVIRONMENTAL TESTING LABORATORY

TEL: 618-344-1004
FAX: 618-344-1005

LABORATORY RESULTS

Client: Philip Environmental
WorkOrder: 08050415
Lab ID: 08050415-027
Report Date: 16-May-08

Client Project: A831-735002-012901-225/IP Champ
Client Sample ID: B-849 9.0-10.0 ft
Collection Date: 5/7/2008 11:35:00 AM
Matrix: SOLID

Analyses	Certification	RL	Qual	Result	Units	DF	Date Analyzed	Analyst
SW-846 9014A								
Cyanide, Amenable to Chlorination		0.56		**Interference**	mg/Kg-dry	1	5/14/2008	AET

Sample Narrative

SW-846 3550B, 8270C SIMS, Semi-Volatile Organic Compounds by GC/MS

Marginal Exceedance for Naphthalene, LCS is verified per NELAC Appendix D 1.1.2

TEKLAB, INC.

5445 HORSESHOE LAKE ROAD
COLLINSVILLE, ILLINOIS 62234

ENVIRONMENTAL TESTING LABORATORY

TEL: 618-344-1004
FAX: 618-344-1005

LABORATORY RESULTS

Client: Philip Environmental
WorkOrder: 08050415
Lab ID: 08050415-028
Report Date: 16-May-08

Client Project: A831-735002-012901-225/IP Champ
Client Sample ID: B-849 16.0-17.0 ft
Collection Date: 5/7/2008 11:55:00 AM
Matrix: SOLID

Analyses	Certification	RL	Qual	Result	Units	DF	Date Analyzed	Analyst
ASTM D2974								
Percent Moisture		0.1		**9.7**	%	1	5/12/2008	TWM
STANDARD METHODS 18TH ED. 2540 G								
Total Solids		0.1		**90.3**	%	1	5/12/2008	TWM
SW-846 3050B, 6010B, METALS BY ICP								
Arsenic	NELAP	2.31		**5.88**	mg/Kg-dry	1	5/14/2008 10:00:49 PM	LAL
Chromium	NELAP	0.93		**12.0**	mg/Kg-dry	1	5/14/2008 10:00:49 PM	LAL
Lead	NELAP	3.70		**6.88**	mg/Kg-dry	1	5/16/2008 11:16:03 AM	CRK
SW-846 3550B, 8270C SIMS, SEMI-VOLATILE ORGANIC COMPOUNDS BY GC/MS								
Acenaphthene	NELAP	0.037		**0.665**	mg/Kg-dry	10	5/15/2008 9:27:00 AM	TDN
Acenaphthylene	NELAP	0.037		**1.55**	mg/Kg-dry	10	5/15/2008 9:27:00 AM	TDN
Anthracene	NELAP	0.037		**1.12**	mg/Kg-dry	10	5/15/2008 9:27:00 AM	TDN
Benzo(a)anthracene	NELAP	0.037		**0.670**	mg/Kg-dry	10	5/15/2008 9:27:00 AM	TDN
Benzo(a)pyrene	NELAP	0.037		**0.661**	mg/Kg-dry	10	5/15/2008 9:27:00 AM	TDN
Benzo(b)fluoranthene	NELAP	0.037		**0.520**	mg/Kg-dry	10	5/15/2008 9:27:00 AM	TDN
Benzo(g,h,i)perylene	NELAP	0.037		**0.227**	mg/Kg-dry	10	5/15/2008 9:27:00 AM	TDN
Benzo(k)fluoranthene	NELAP	0.037		**0.161**	mg/Kg-dry	10	5/15/2008 9:27:00 AM	TDN
Chrysene	NELAP	0.037		**0.661**	mg/Kg-dry	10	5/15/2008 9:27:00 AM	TDN
Dibenzo(a,h)anthracene	NELAP	0.037		**0.065**	mg/Kg-dry	10	5/15/2008 9:27:00 AM	TDN
Fluoranthene	NELAP	0.037		**1.21**	mg/Kg-dry	10	5/15/2008 9:27:00 AM	TDN
Fluorene	NELAP	0.037		**1.07**	mg/Kg-dry	10	5/15/2008 9:27:00 AM	TDN
Indeno(1,2,3-cd)pyrene	NELAP	0.037		**0.187**	mg/Kg-dry	10	5/15/2008 9:27:00 AM	TDN
Naphthalene	NELAP	0.037		**5.37**	mg/Kg-dry	10	5/15/2008 9:27:00 AM	TDN
Phenanthrene	NELAP	0.037		**3.54**	mg/Kg-dry	10	5/15/2008 9:27:00 AM	TDN
Pyrene	NELAP	0.037		**1.84**	mg/Kg-dry	10	5/15/2008 9:27:00 AM	TDN
Surr: 2-Fluorobiphenyl		10-131		**53.9**	%REC	10	5/15/2008 9:27:00 AM	TDN
Surr: Nitrobenzene-d5		10-132		**53.9**	%REC	10	5/15/2008 9:27:00 AM	TDN
Surr: p-Terphenyl-d14		30.6-131		**65.9**	%REC	10	5/15/2008 9:27:00 AM	TDN
SW-846 5035, 8260B, VOLATILE ORGANIC COMPOUNDS BY GC/MS								
Benzene	NELAP	179		**1210**	µg/Kg-dry	100	5/14/2008 5:49:00 PM	GEK
Ethylbenzene	NELAP	896		**6240**	µg/Kg-dry	100	5/14/2008 5:49:00 PM	GEK
Toluene	NELAP	896	J	**890**	µg/Kg-dry	100	5/14/2008 5:49:00 PM	GEK
Xylenes, Total	NELAP	896		**5640**	µg/Kg-dry	100	5/14/2008 5:49:00 PM	GEK
Surr: 1,2-Dichloroethane-d4		61-128		**101.0**	%REC	100	5/14/2008 5:49:00 PM	GEK
Surr: 4-Bromofluorobenzene		78.2-117		**100.4**	%REC	100	5/14/2008 5:49:00 PM	GEK
Surr: Dibromofluoromethane		66.6-130		**103.7**	%REC	100	5/14/2008 5:49:00 PM	GEK
Surr: Toluene-d8		80.1-122		**95.9**	%REC	100	5/14/2008 5:49:00 PM	GEK
SW-846 9010B, 9014								
Cyanide	NELAP	0.54		**< 0.54**	mg/Kg-dry	1	5/13/2008	AET

TEKLAB, INC.

5445 HORSESHOE LAKE ROAD
COLLINSVILLE, ILLINOIS 62234

ENVIRONMENTAL TESTING LABORATORY

TEL: 618-344-1004
FAX: 618-344-1005

LABORATORY RESULTS

Client: Philip Environmental
WorkOrder: 08050415
Lab ID: 08050415-028
Report Date: 16-May-08

Client Project: A831-735002-012901-225/IP Champ
Client Sample ID: B-849 16.0-17.0 ft
Collection Date: 5/7/2008 11:55:00 AM
Matrix: SOLID

Analyses	Certification	RL	Qual	Result	Units	DF	Date Analyzed	Analyst
SW-846 9014A								
Cyanide, Amenable to Chlorination		0.54		**Interference**	mg/Kg-dry	1	5/14/2008	AET

Sample Narrative

SW-846 3550B, 8270C SIMS, Semi-Volatile Organic Compounds by GC/MS

Marginal Exceedance for Naphthalene, LCS is verified per NELAC Appendix D 1.1.2

SW-846 5035, 8260B, Volatile Organic Compounds by GC/MS

Elevated reporting limit due to high levels of target and/or non-target analytes.

TEKLAB, INC.

5445 HORSESHOE LAKE ROAD
COLLINSVILLE, ILLINOIS 62234

ENVIRONMENTAL TESTING LABORATORY

TEL: 618-344-1004
FAX: 618-344-1005

LABORATORY RESULTS

Client: Philip Environmental
WorkOrder: 08050415
Lab ID: 08050415-029
Report Date: 16-May-08

Client Project: A831-735002-012901-225/IP Champ
Client Sample ID: B-848 2.0-3.0 ft
Collection Date: 5/7/2008 3:45:00 PM
Matrix: SOLID

Analyses	Certification	RL	Qual	Result	Units	DF	Date Analyzed	Analyst
ASTM D2974								
Percent Moisture		0.1		**20.1**	%	1	5/12/2008	TWM
STANDARD METHODS 18TH ED. 2540 G								
Total Solids		0.1		**79.9**	%	1	5/12/2008	TWM
SW-846 3550B, 8270C SIMS, SEMI-VOLATILE ORGANIC COMPOUNDS BY GC/MS								
Acenaphthene	NELAP	0.008		**ND**	mg/Kg-dry	2	5/15/2008 10:04:00 AM	TDN
Acenaphthylene	NELAP	0.008		**0.024**	mg/Kg-dry	2	5/15/2008 10:04:00 AM	TDN
Anthracene	NELAP	0.008		**0.011**	mg/Kg-dry	2	5/15/2008 10:04:00 AM	TDN
Benzo(a)anthracene	NELAP	0.008		**0.067**	mg/Kg-dry	2	5/15/2008 10:04:00 AM	TDN
Benzo(a)pyrene	NELAP	0.008		**0.089**	mg/Kg-dry	2	5/15/2008 10:04:00 AM	TDN
Benzo(b)fluoranthene	NELAP	0.008		**0.103**	mg/Kg-dry	2	5/15/2008 10:04:00 AM	TDN
Benzo(g,h,i)perylene	NELAP	0.008		**0.050**	mg/Kg-dry	2	5/15/2008 10:04:00 AM	TDN
Benzo(k)fluoranthene	NELAP	0.008		**0.032**	mg/Kg-dry	2	5/15/2008 10:04:00 AM	TDN
Chrysene	NELAP	0.008		**0.075**	mg/Kg-dry	2	5/15/2008 10:04:00 AM	TDN
Dibenzo(a,h)anthracene	NELAP	0.008		**0.013**	mg/Kg-dry	2	5/15/2008 10:04:00 AM	TDN
Fluoranthene	NELAP	0.008		**0.091**	mg/Kg-dry	2	5/15/2008 10:04:00 AM	TDN
Fluorene	NELAP	0.008		**ND**	mg/Kg-dry	2	5/15/2008 10:04:00 AM	TDN
Indeno(1,2,3-cd)pyrene	NELAP	0.008		**0.042**	mg/Kg-dry	2	5/15/2008 10:04:00 AM	TDN
Naphthalene	NELAP	0.008		**0.014**	mg/Kg-dry	2	5/15/2008 10:04:00 AM	TDN
Phenanthrene	NELAP	0.008		**0.053**	mg/Kg-dry	2	5/15/2008 10:04:00 AM	TDN
Pyrene	NELAP	0.008		**0.111**	mg/Kg-dry	2	5/15/2008 10:04:00 AM	TDN
Surr: 2-Fluorobiphenyl		10-131		**39.5**	%REC	2	5/15/2008 10:04:00 AM	TDN
Surr: Nitrobenzene-d5		10-132		**47.5**	%REC	2	5/15/2008 10:04:00 AM	TDN
Surr: p-Terphenyl-d14		30.6-131		**57.1**	%REC	2	5/15/2008 10:04:00 AM	TDN
SW-846 5035, 8260B, VOLATILE ORGANIC COMPOUNDS BY GC/MS								
Benzene	NELAP	1.1		**1.3**	µg/Kg-dry	1	5/13/2008 4:15:00 AM	GEK
Ethylbenzene	NELAP	5.7		**ND**	µg/Kg-dry	1	5/13/2008 4:15:00 AM	GEK
Toluene	NELAP	5.7		**ND**	µg/Kg-dry	1	5/13/2008 4:15:00 AM	GEK
Xylenes, Total	NELAP	5.7		**ND**	µg/Kg-dry	1	5/13/2008 4:15:00 AM	GEK
Surr: 1,2-Dichloroethane-d4		61-128		**118.6**	%REC	1	5/13/2008 4:15:00 AM	GEK
Surr: 4-Bromofluorobenzene		78.2-117		**88.6**	%REC	1	5/13/2008 4:15:00 AM	GEK
Surr: Dibromofluoromethane		66.6-130		**110.9**	%REC	1	5/13/2008 4:15:00 AM	GEK
Surr: Toluene-d8		80.1-122		**106.0**	%REC	1	5/13/2008 4:15:00 AM	GEK

Sample Narrative

SW-846 3550B, 8270C SIMS, Semi-Volatile Organic Compounds by GC/MS

Marginal Exceedance for Naphthalene, LCS is verified per NELAC Appendix D 1.1.2

Elevated reporting limit due to high levels of target and/or non-target analytes.

TEKLAB, INC.

5445 HORSESHOE LAKE ROAD
COLLINSVILLE, ILLINOIS 62234

ENVIRONMENTAL TESTING LABORATORY

TEL: 618-344-1004
FAX: 618-344-1005

LABORATORY RESULTS

Client: Philip Environmental
WorkOrder: 08050415
Lab ID: 08050415-030
Report Date: 16-May-08

Client Project: A831-735002-012901-225/IP Champ
Client Sample ID: B-848 9.0-10.0 ft
Collection Date: 5/7/2008 3:55:00 PM
Matrix: SOLID

Analyses	Certification	RL	Qual	Result	Units	DF	Date Analyzed	Analyst
ASTM D2974								
Percent Moisture		0.1		**24.2**	%	1	5/12/2008	TWM
STANDARD METHODS 18TH ED. 2540 G								
Total Solids		0.1		**75.8**	%	1	5/12/2008	TWM
SW-846 3550B, 8270C SIMS, SEMI-VOLATILE ORGANIC COMPOUNDS BY GC/MS								
Acenaphthene	NELAP	0.004		**ND**	mg/Kg-dry	1	5/14/2008 10:46:00 PM	TDN
Acenaphthylene	NELAP	0.004		**ND**	mg/Kg-dry	1	5/14/2008 10:46:00 PM	TDN
Anthracene	NELAP	0.004		**ND**	mg/Kg-dry	1	5/14/2008 10:46:00 PM	TDN
Benzo(a)anthracene	NELAP	0.004		**ND**	mg/Kg-dry	1	5/14/2008 10:46:00 PM	TDN
Benzo(a)pyrene	NELAP	0.004		**ND**	mg/Kg-dry	1	5/14/2008 10:46:00 PM	TDN
Benzo(b)fluoranthene	NELAP	0.004		**ND**	mg/Kg-dry	1	5/14/2008 10:46:00 PM	TDN
Benzo(g,h,i)perylene	NELAP	0.004		**ND**	mg/Kg-dry	1	5/14/2008 10:46:00 PM	TDN
Benzo(k)fluoranthene	NELAP	0.004		**ND**	mg/Kg-dry	1	5/14/2008 10:46:00 PM	TDN
Chrysene	NELAP	0.004		**ND**	mg/Kg-dry	1	5/14/2008 10:46:00 PM	TDN
Dibenzo(a,h)anthracene	NELAP	0.004		**ND**	mg/Kg-dry	1	5/14/2008 10:46:00 PM	TDN
Fluoranthene	NELAP	0.004		**ND**	mg/Kg-dry	1	5/14/2008 10:46:00 PM	TDN
Fluorene	NELAP	0.004		**ND**	mg/Kg-dry	1	5/14/2008 10:46:00 PM	TDN
Indeno(1,2,3-cd)pyrene	NELAP	0.004		**ND**	mg/Kg-dry	1	5/14/2008 10:46:00 PM	TDN
Naphthalene	NELAP	0.004		**ND**	mg/Kg-dry	1	5/14/2008 10:46:00 PM	TDN
Phenanthrene	NELAP	0.004		**ND**	mg/Kg-dry	1	5/14/2008 10:46:00 PM	TDN
Pyrene	NELAP	0.004		**ND**	mg/Kg-dry	1	5/14/2008 10:46:00 PM	TDN
Surr: 2-Fluorobiphenyl		10-131		**42.3**	%REC	1	5/14/2008 10:46:00 PM	TDN
Surr: Nitrobenzene-d5		10-132		**45.3**	%REC	1	5/14/2008 10:46:00 PM	TDN
Surr: p-Terphenyl-d14		30.6-131		**67.9**	%REC	1	5/14/2008 10:46:00 PM	TDN
SW-846 5035, 8260B, VOLATILE ORGANIC COMPOUNDS BY GC/MS								
Benzene	NELAP	1.0		**5.8**	µg/Kg-dry	1	5/13/2008 4:44:00 AM	GEK
Ethylbenzene	NELAP	5.1	J	**3.9**	µg/Kg-dry	1	5/13/2008 4:44:00 AM	GEK
Toluene	NELAP	5.1		**11.7**	µg/Kg-dry	1	5/13/2008 4:44:00 AM	GEK
Xylenes, Total	NELAP	5.1		**7.2**	µg/Kg-dry	1	5/13/2008 4:44:00 AM	GEK
Surr: 1,2-Dichloroethane-d4		61-128		**116.7**	%REC	1	5/13/2008 4:44:00 AM	GEK
Surr: 4-Bromofluorobenzene		78.2-117		**99.5**	%REC	1	5/13/2008 4:44:00 AM	GEK
Surr: Dibromofluoromethane		66.6-130		**110.0**	%REC	1	5/13/2008 4:44:00 AM	GEK
Surr: Toluene-d8		80.1-122		**97.9**	%REC	1	5/13/2008 4:44:00 AM	GEK

Sample Narrative

SW-846 3550B, 8270C SIMS, Semi-Volatile Organic Compounds by GC/MS

Marginal Exceedance for Naphthalene, LCS is verified per NELAC Appendix D 1.1.2

TEKLAB, INC.

5445 HORSESHOE LAKE ROAD
COLLINSVILLE, ILLINOIS 62234

ENVIRONMENTAL TESTING LABORATORY

TEL: 618-344-1004
FAX: 618-344-1005

LABORATORY RESULTS

Client: Philip Environmental
WorkOrder: 08050415
Lab ID: 08050415-031
Report Date: 16-May-08

Client Project: A831-735002-012901-225/IP Champ
Client Sample ID: B-848 13.0-14.0 ft
Collection Date: 5/7/2008 4:10:00 PM
Matrix: SOLID

Analyses	Certification	RL	Qual	Result	Units	DF	Date Analyzed	Analyst
ASTM D2974								
Percent Moisture		0.1		**21.5**	%	1	5/12/2008	TWM
STANDARD METHODS 18TH ED. 2540 G								
Total Solids		0.1		**78.5**	%	1	5/12/2008	TWM
SW-846 3550B, 8270C SIMS, SEMI-VOLATILE ORGANIC COMPOUNDS BY GC/MS								
Acenaphthene	NELAP	0.004		**ND**	mg/Kg-dry	1	5/14/2008 11:23:00 PM	TDN
Acenaphthylene	NELAP	0.004		**ND**	mg/Kg-dry	1	5/14/2008 11:23:00 PM	TDN
Anthracene	NELAP	0.004		**ND**	mg/Kg-dry	1	5/14/2008 11:23:00 PM	TDN
Benzo(a)anthracene	NELAP	0.004		**ND**	mg/Kg-dry	1	5/14/2008 11:23:00 PM	TDN
Benzo(a)pyrene	NELAP	0.004		**ND**	mg/Kg-dry	1	5/14/2008 11:23:00 PM	TDN
Benzo(b)fluoranthene	NELAP	0.004		**ND**	mg/Kg-dry	1	5/14/2008 11:23:00 PM	TDN
Benzo(g,h,i)perylene	NELAP	0.004		**ND**	mg/Kg-dry	1	5/14/2008 11:23:00 PM	TDN
Benzo(k)fluoranthene	NELAP	0.004		**ND**	mg/Kg-dry	1	5/14/2008 11:23:00 PM	TDN
Chrysene	NELAP	0.004		**ND**	mg/Kg-dry	1	5/14/2008 11:23:00 PM	TDN
Dibenzo(a,h)anthracene	NELAP	0.004		**ND**	mg/Kg-dry	1	5/14/2008 11:23:00 PM	TDN
Fluoranthene	NELAP	0.004		**ND**	mg/Kg-dry	1	5/14/2008 11:23:00 PM	TDN
Fluorene	NELAP	0.004		**ND**	mg/Kg-dry	1	5/14/2008 11:23:00 PM	TDN
Indeno(1,2,3-cd)pyrene	NELAP	0.004		**ND**	mg/Kg-dry	1	5/14/2008 11:23:00 PM	TDN
Naphthalene	NELAP	0.004		**ND**	mg/Kg-dry	1	5/14/2008 11:23:00 PM	TDN
Phenanthrene	NELAP	0.004		**ND**	mg/Kg-dry	1	5/14/2008 11:23:00 PM	TDN
Pyrene	NELAP	0.004		**ND**	mg/Kg-dry	1	5/14/2008 11:23:00 PM	TDN
Surr: 2-Fluorobiphenyl		10-131		**25.7**	%REC	1	5/14/2008 11:23:00 PM	TDN
Surr: Nitrobenzene-d5		10-132		**35.7**	%REC	1	5/14/2008 11:23:00 PM	TDN
Surr: p-Terphenyl-d14		30.6-131		**67.3**	%REC	1	5/14/2008 11:23:00 PM	TDN
SW-846 5035, 8260B, VOLATILE ORGANIC COMPOUNDS BY GC/MS								
Benzene	NELAP	0.9		**3.0**	µg/Kg-dry	1	5/13/2008 5:13:00 AM	GEK
Ethylbenzene	NELAP	4.6	J	**1.9**	µg/Kg-dry	1	5/13/2008 5:13:00 AM	GEK
Toluene	NELAP	4.6		**6.0**	µg/Kg-dry	1	5/13/2008 5:13:00 AM	GEK
Xylenes, Total	NELAP	4.6	J	**3.8**	µg/Kg-dry	1	5/13/2008 5:13:00 AM	GEK
Surr: 1,2-Dichloroethane-d4		61-128		**114.6**	%REC	1	5/13/2008 5:13:00 AM	GEK
Surr: 4-Bromofluorobenzene		78.2-117		**96.6**	%REC	1	5/13/2008 5:13:00 AM	GEK
Surr: Dibromofluoromethane		66.6-130		**111.8**	%REC	1	5/13/2008 5:13:00 AM	GEK
Surr: Toluene-d8		80.1-122		**96.1**	%REC	1	5/13/2008 5:13:00 AM	GEK

Sample Narrative

SW-846 3550B, 8270C SIMS, Semi-Volatile Organic Compounds by GC/MS

Marginal Exceedance for Naphthalene, LCS is verified per NELAC Appendix D 1.1.2

TEKLAB, INC.

5445 HORSESHOE LAKE ROAD
COLLINSVILLE, ILLINOIS 62234

ENVIRONMENTAL TESTING LABORATORY

TEL: 618-344-1004
FAX: 618-344-1005

LABORATORY RESULTS

Client: Philip Environmental
WorkOrder: 08050415
Lab ID: 08050415-032
Report Date: 16-May-08

Client Project: A831-735002-012901-225/IP Champ
Client Sample ID: B-847 6.0-7.0 ft
Collection Date: 5/7/2008 4:47:00 PM
Matrix: SOLID

Analyses	Certification	RL	Qual	Result	Units	DF	Date Analyzed	Analyst
ASTM D2974								
Percent Moisture		0.1		**21.1**	%	1	5/12/2008	TWM
STANDARD METHODS 18TH ED. 2540 G								
Total Solids		0.1		**78.9**	%	1	5/12/2008	TWM
SW-846 3550B, 8270C SIMS, SEMI-VOLATILE ORGANIC COMPOUNDS BY GC/MS								
Acenaphthene	NELAP	0.004		**ND**	mg/Kg-dry	1	5/15/2008 6:17:00 PM	TDN
Acenaphthylene	NELAP	0.004		**ND**	mg/Kg-dry	1	5/15/2008 6:17:00 PM	TDN
Anthracene	NELAP	0.004		**ND**	mg/Kg-dry	1	5/15/2008 6:17:00 PM	TDN
Benzo(a)anthracene	NELAP	0.004	J	**0.004**	mg/Kg-dry	1	5/15/2008 6:17:00 PM	TDN
Benzo(a)pyrene	NELAP	0.004		**ND**	mg/Kg-dry	1	5/15/2008 6:17:00 PM	TDN
Benzo(b)fluoranthene	NELAP	0.004		**ND**	mg/Kg-dry	1	5/15/2008 6:17:00 PM	TDN
Benzo(g,h,i)perylene	NELAP	0.004		**ND**	mg/Kg-dry	1	5/15/2008 6:17:00 PM	TDN
Benzo(k)fluoranthene	NELAP	0.004		**ND**	mg/Kg-dry	1	5/15/2008 6:17:00 PM	TDN
Chrysene	NELAP	0.004		**ND**	mg/Kg-dry	1	5/15/2008 6:17:00 PM	TDN
Dibenzo(a,h)anthracene	NELAP	0.004		**ND**	mg/Kg-dry	1	5/15/2008 6:17:00 PM	TDN
Fluoranthene	NELAP	0.004		**0.005**	mg/Kg-dry	1	5/15/2008 6:17:00 PM	TDN
Fluorene	NELAP	0.004		**ND**	mg/Kg-dry	1	5/15/2008 6:17:00 PM	TDN
Indeno(1,2,3-cd)pyrene	NELAP	0.004		**ND**	mg/Kg-dry	1	5/15/2008 6:17:00 PM	TDN
Naphthalene	NELAP	0.004		**ND**	mg/Kg-dry	1	5/15/2008 6:17:00 PM	TDN
Phenanthrene	NELAP	0.004		**0.011**	mg/Kg-dry	1	5/15/2008 6:17:00 PM	TDN
Pyrene	NELAP	0.004		**0.006**	mg/Kg-dry	1	5/15/2008 6:17:00 PM	TDN
Surr: 2-Fluorobiphenyl		10-131		**25.1**	%REC	1	5/15/2008 6:17:00 PM	TDN
Surr: Nitrobenzene-d5		10-132		**41.1**	%REC	1	5/15/2008 6:17:00 PM	TDN
Surr: p-Terphenyl-d14		30.6-131		**64.1**	%REC	1	5/15/2008 6:17:00 PM	TDN
SW-846 5035, 8260B, VOLATILE ORGANIC COMPOUNDS BY GC/MS								
Benzene	NELAP	1.0		**2.7**	µg/Kg-dry	1	5/13/2008 5:42:00 AM	GEK
Ethylbenzene	NELAP	5.2	J	**3.0**	µg/Kg-dry	1	5/13/2008 5:42:00 AM	GEK
Toluene	NELAP	5.2		**6.8**	µg/Kg-dry	1	5/13/2008 5:42:00 AM	GEK
Xylenes, Total	NELAP	5.2		**5.7**	µg/Kg-dry	1	5/13/2008 5:42:00 AM	GEK
Surr: 1,2-Dichloroethane-d4		61-128		**119.9**	%REC	1	5/13/2008 5:42:00 AM	GEK
Surr: 4-Bromofluorobenzene		78.2-117		**101.9**	%REC	1	5/13/2008 5:42:00 AM	GEK
Surr: Dibromofluoromethane		66.6-130		**109.3**	%REC	1	5/13/2008 5:42:00 AM	GEK
Surr: Toluene-d8		80.1-122		**97.3**	%REC	1	5/13/2008 5:42:00 AM	GEK

Sample Narrative

SW-846 3550B, 8270C SIMS, Semi-Volatile Organic Compounds by GC/MS

Marginal Exceedance for Naphthalene, LCS is verified per NELAC Appendix D 1.1.2

TEKLAB, INC.

5445 HORSESHOE LAKE ROAD
COLLINSVILLE, ILLINOIS 62234

ENVIRONMENTAL TESTING LABORATORY

TEL: 618-344-1004
FAX: 618-344-1005

LABORATORY RESULTS

Client: Philip Environmental
WorkOrder: 08050415
Lab ID: 08050415-033
Report Date: 16-May-08

Client Project: A831-735002-012901-225/IP Champ
Client Sample ID: B-847 22.0-23.0 ft
Collection Date: 5/7/2008 5:18:00 PM
Matrix: SOLID

Analyses	Certification	RL	Qual	Result	Units	DF	Date Analyzed	Analyst
ASTM D2974								
Percent Moisture		0.1		**12.4**	%	1	5/12/2008	TWM
STANDARD METHODS 18TH ED. 2540 G								
Total Solids		0.1		**87.6**	%	1	5/12/2008	TWM
SW-846 3550B, 8015B, TOTAL PETROLEUM HYDROCARBONS (OA-2) BY GC/FID								
Diesel	NELAP	139	SR#	**562**	mg/Kg-dry	25	5/15/2008 4:01:00 PM	DMH
Kerosene	NELAP	139		**ND**	mg/Kg-dry	25	5/15/2008 4:01:00 PM	DMH
Mineral Spirits	NELAP	139		**ND**	mg/Kg-dry	25	5/15/2008 4:01:00 PM	DMH
Motor Oil	NELAP	139		**ND**	mg/Kg-dry	25	5/15/2008 4:01:00 PM	DMH
Surr: n-Tetracontane	NELAP	50.6-140	S	**44.7**	%REC	25	5/15/2008 4:01:00 PM	DMH
SW-846 3550B, 8270C SIMS, SEMI-VOLATILE ORGANIC COMPOUNDS BY GC/MS								
Acenaphthene	NELAP	0.190		**0.950**	mg/Kg-dry	50	5/15/2008 10:39:00 AM	TDN
Acenaphthylene	NELAP	0.190		**4.73**	mg/Kg-dry	50	5/15/2008 10:39:00 AM	TDN
Anthracene	NELAP	0.190		**2.36**	mg/Kg-dry	50	5/15/2008 10:39:00 AM	TDN
Benzo(a)anthracene	NELAP	0.190		**1.29**	mg/Kg-dry	50	5/15/2008 10:39:00 AM	TDN
Benzo(a)pyrene	NELAP	0.190		**1.15**	mg/Kg-dry	50	5/15/2008 10:39:00 AM	TDN
Benzo(b)fluoranthene	NELAP	0.190		**0.905**	mg/Kg-dry	50	5/15/2008 10:39:00 AM	TDN
Benzo(g,h,i)perylene	NELAP	0.190		**0.356**	mg/Kg-dry	50	5/15/2008 10:39:00 AM	TDN
Benzo(k)fluoranthene	NELAP	0.190		**0.258**	mg/Kg-dry	50	5/15/2008 10:39:00 AM	TDN
Chrysene	NELAP	0.190		**1.27**	mg/Kg-dry	50	5/15/2008 10:39:00 AM	TDN
Dibenzo(a,h)anthracene	NELAP	0.190		**ND**	mg/Kg-dry	50	5/15/2008 10:39:00 AM	TDN
Fluoranthene	NELAP	0.190		**2.53**	mg/Kg-dry	50	5/15/2008 10:39:00 AM	TDN
Fluorene	NELAP	0.190		**2.50**	mg/Kg-dry	50	5/15/2008 10:39:00 AM	TDN
Indeno(1,2,3-cd)pyrene	NELAP	0.190		**0.300**	mg/Kg-dry	50	5/15/2008 10:39:00 AM	TDN
Naphthalene	NELAP	0.190		**13.8**	mg/Kg-dry	50	5/15/2008 10:39:00 AM	TDN
Phenanthrene	NELAP	0.190		**8.04**	mg/Kg-dry	50	5/15/2008 10:39:00 AM	TDN
Pyrene	NELAP	0.190		**3.79**	mg/Kg-dry	50	5/15/2008 10:39:00 AM	TDN
Surr: 2-Fluorobiphenyl		10-131		**49.9**	%REC	50	5/15/2008 10:39:00 AM	TDN
Surr: Nitrobenzene-d5		10-132		**49.9**	%REC	50	5/15/2008 10:39:00 AM	TDN
Surr: p-Terphenyl-d14		30.6-131		**59.9**	%REC	50	5/15/2008 10:39:00 AM	TDN
SW-846 5035, 8260B, VOLATILE ORGANIC COMPOUNDS BY GC/MS								
Benzene	NELAP	548		**1440**	µg/Kg-dry	500	5/14/2008 11:32:00 AM	GEK
Ethylbenzene	NELAP	2740		**62800**	µg/Kg-dry	500	5/14/2008 11:32:00 AM	GEK
Toluene	NELAP	2740		**12400**	µg/Kg-dry	500	5/14/2008 11:32:00 AM	GEK
Xylenes, Total	NELAP	2740		**75600**	µg/Kg-dry	500	5/14/2008 11:32:00 AM	GEK
Surr: 1,2-Dichloroethane-d4		61-128		**109.7**	%REC	500	5/14/2008 11:32:00 AM	GEK
Surr: 4-Bromofluorobenzene		78.2-117		**104.6**	%REC	500	5/14/2008 11:32:00 AM	GEK
Surr: Dibromofluoromethane		66.6-130		**105.8**	%REC	500	5/14/2008 11:32:00 AM	GEK
Surr: Toluene-d8		80.1-122		**93.6**	%REC	500	5/14/2008 11:32:00 AM	GEK

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COLLINSVILLE, ILLINOIS 62234

ENVIRONMENTAL TESTING LABORATORY

TEL: 618-344-1004
FAX: 618-344-1005

LABORATORY RESULTS

Client:	Philip Environmental	**Client Project:**	A831-735002-012901-225/IP Champ
WorkOrder:	08050415	**Client Sample ID:**	B-847 22.0-23.0 ft
Lab ID:	08050415-033	**Collection Date:**	5/7/2008 5:18:00 PM
Report Date:	16-May-08	**Matrix:**	SOLID

Analyses	Certification	RL	Qual	Result	Units	DF	Date Analyzed	Analyst

Sample Narrative

SW-846 3550B, 8270C SIMS, Semi-Volatile Organic Compounds by GC/MS

Marginal Exceedance for Naphthalene, LCS is verified per NELAC Appendix D 1.1.2

Elevated reporting limit due to high levels of target and/or non-target analytes.

SW-846 3550B, 8015B, Total Petroleum Hydrocarbons (OA-2) by GC/FID

Surrogate recovery was outside QC limits due to matrix interference.

Matrix spike and RPD did not recover within control limits because of sample composition.

Elevated reporting limit due to high levels of target and/or non-target analytes.

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ENVIRONMENTAL TESTING LABORATORY

TEL: 618-344-1004
FAX: 618-344-1005

LABORATORY RESULTS

Client: Philip Environmental
WorkOrder: 08050415
Lab ID: 08050415-034
Report Date: 16-May-08

Client Project: A831-735002-012901-225/IP Champ
Client Sample ID: B-809 2.0-3.0 ft
Collection Date: 5/8/2008 9:45:00 AM
Matrix: SOLID

Analyses	Certification	RL	Qual	Result	Units	DF	Date Analyzed	Analyst
ASTM D2974								
Percent Moisture		0.1		**19.7**	%	1	5/12/2008	TWM
STANDARD METHODS 18TH ED. 2540 G								
Total Solids		0.1		**80.3**	%	1	5/12/2008	TWM
SW-846 3050B, 6010B, METALS BY ICP								
Arsenic	NELAP	2.36		**4.34**	mg/Kg-dry	1	5/14/2008 10:07:39 PM	LAL
Chromium	NELAP	0.94		**7.08**	mg/Kg-dry	1	5/14/2008 10:07:39 PM	LAL
Lead	NELAP	37.7		**48.5**	mg/Kg-dry	10	5/16/2008 11:18:19 AM	CRK
SW-846 3550B, 8270C SIMS, SEMI-VOLATILE ORGANIC COMPOUNDS BY GC/MS								
Acenaphthene	NELAP	0.042		**0.153**	mg/Kg-dry	10	5/15/2008 8:41:00 PM	TDN
Acenaphthylene	NELAP	0.042		**0.061**	mg/Kg-dry	10	5/15/2008 8:41:00 PM	TDN
Anthracene	NELAP	0.042		**0.157**	mg/Kg-dry	10	5/15/2008 8:41:00 PM	TDN
Benzo(a)anthracene	NELAP	0.042		**1.11**	mg/Kg-dry	10	5/15/2008 8:41:00 PM	TDN
Benzo(a)pyrene	NELAP	0.042		**2.84**	mg/Kg-dry	10	5/15/2008 8:41:00 PM	TDN
Benzo(b)fluoranthene	NELAP	0.042		**2.78**	mg/Kg-dry	10	5/15/2008 8:41:00 PM	TDN
Benzo(g,h,i)perylene	NELAP	0.042		**2.26**	mg/Kg-dry	10	5/15/2008 8:41:00 PM	TDN
Benzo(k)fluoranthene	NELAP	0.042		**0.907**	mg/Kg-dry	10	5/15/2008 8:41:00 PM	TDN
Chrysene	NELAP	0.042		**1.24**	mg/Kg-dry	10	5/15/2008 8:41:00 PM	TDN
Dibenzo(a,h)anthracene	NELAP	0.042		**0.551**	mg/Kg-dry	10	5/15/2008 8:41:00 PM	TDN
Fluoranthene	NELAP	0.042		**1.40**	mg/Kg-dry	10	5/15/2008 8:41:00 PM	TDN
Fluorene	NELAP	0.042		**0.049**	mg/Kg-dry	10	5/15/2008 8:41:00 PM	TDN
Indeno(1,2,3-cd)pyrene	NELAP	0.042		**2.03**	mg/Kg-dry	10	5/15/2008 8:41:00 PM	TDN
Naphthalene	NELAP	0.042		**0.136**	mg/Kg-dry	10	5/15/2008 8:41:00 PM	TDN
Phenanthrene	NELAP	0.042		**0.716**	mg/Kg-dry	10	5/15/2008 8:41:00 PM	TDN
Pyrene	NELAP	0.042		**1.34**	mg/Kg-dry	10	5/15/2008 8:41:00 PM	TDN
Surr: 2-Fluorobiphenyl		10-131		**45.9**	%REC	10	5/15/2008 8:41:00 PM	TDN
Surr: Nitrobenzene-d5		10-132		**47.9**	%REC	10	5/15/2008 8:41:00 PM	TDN
Surr: p-Terphenyl-d14		30.6-131		**53.9**	%REC	10	5/15/2008 8:41:00 PM	TDN
SW-846 5035, 8260B, VOLATILE ORGANIC COMPOUNDS BY GC/MS								
Benzene	NELAP	1.5		**1.6**	µg/Kg-dry	1	5/13/2008 9:50:00 PM	GEK
Ethylbenzene	NELAP	7.5		**ND**	µg/Kg-dry	1	5/13/2008 9:50:00 PM	GEK
Toluene	NELAP	7.5	J	**2.8**	µg/Kg-dry	1	5/13/2008 9:50:00 PM	GEK
Xylenes, Total	NELAP	7.5	J	**6.2**	µg/Kg-dry	1	5/13/2008 9:50:00 PM	GEK
Surr: 1,2-Dichloroethane-d4		61-128	S	**140.0**	%REC	1	5/13/2008 9:50:00 PM	GEK
Surr: 4-Bromofluorobenzene		78.2-117	S	**63.5**	%REC	1	5/13/2008 9:50:00 PM	GEK
Surr: Dibromofluoromethane		66.6-130	S	**142.3**	%REC	1	5/13/2008 9:50:00 PM	GEK
Surr: Toluene-d8		80.1-122	S	**158.5**	%REC	1	5/13/2008 9:50:00 PM	GEK
SW-846 9010B, 9014								
Cyanide	NELAP	0.61		**1.23**	mg/Kg-dry	1	5/13/2008	AET

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5445 HORSESHOE LAKE ROAD
COLLINSVILLE, ILLINOIS 62234

ENVIRONMENTAL TESTING LABORATORY

TEL: 618-344-1004
FAX: 618-344-1005

LABORATORY RESULTS

Client: Philip Environmental
WorkOrder: 08050415
Lab ID: 08050415-034
Report Date: 16-May-08

Client Project: A831-735002-012901-225/IP Champ
Client Sample ID: B-809 2.0-3.0 ft
Collection Date: 5/8/2008 9:45:00 AM
Matrix: SOLID

Analyses	Certification	RL	Qual	Result	Units	DF	Date Analyzed	Analyst
SW-846 9014A								
Cyanide, Amenable to Chlorination		0.61		**Interference**	mg/Kg-dry	1	5/14/2008	AET
SW-846 9045C								
pH (1:1)	NELAP	1.00		**7.25**		1	5/13/2008 1:32:00 PM	KNL

Sample Narrative

SW-846 3550B, 8270C SIMS, Semi-Volatile Organic Compounds by GC/MS

Marginal Exceedance for Naphthalene, LCS is verified per NELAC Appendix D 1.1.2

SW-846 5035, 8260B, Volatile Organic Compounds by GC/MS

Surrogate recovery was outside QC limits due to matrix interference.
Results verified by re-analysis.

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TEL: 618-344-1004
FAX: 618-344-1005

LABORATORY RESULTS

Client: Philip Environmental
Client Project: A831-735002-012901-225/IP Champ
WorkOrder: 08050415
Client Sample ID: B-809 9.0-10.0 ft
Lab ID: 08050415-035
Collection Date: 5/8/2008 9:58:00 AM
Report Date: 16-May-08
Matrix: SOLID

Analyses	Certification	RL	Qual	Result	Units	DF	Date Analyzed	Analyst
ASTM D2974								
Percent Moisture		0.1		**17.7**	%	1	5/12/2008	TWM
STANDARD METHODS 18TH ED. 2540 G								
Total Solids		0.1		**82.3**	%	1	5/12/2008	TWM
SW-846 3050B, 6010B, METALS BY ICP								
Arsenic	NELAP	2.36		**3.08**	mg/Kg-dry	1	5/14/2008 10:14:13 PM	LAL
Chromium	NELAP	0.94		**16.1**	mg/Kg-dry	1	5/14/2008 10:14:13 PM	LAL
Lead	NELAP	7.55		**12.4**	mg/Kg-dry	2	5/16/2008 11:20:35 AM	CRK
SW-846 3550B, 8270C SIMS, SEMI-VOLATILE ORGANIC COMPOUNDS BY GC/MS								
Acenaphthene	NELAP	0.004		**ND**	mg/Kg-dry	1	5/15/2008 12:37:00 AM	TDN
Acenaphthylene	NELAP	0.004		**ND**	mg/Kg-dry	1	5/15/2008 12:37:00 AM	TDN
Anthracene	NELAP	0.004		**ND**	mg/Kg-dry	1	5/15/2008 12:37:00 AM	TDN
Benzo(a)anthracene	NELAP	0.004	J	**0.004**	mg/Kg-dry	1	5/15/2008 12:37:00 AM	TDN
Benzo(a)pyrene	NELAP	0.004		**ND**	mg/Kg-dry	1	5/15/2008 12:37:00 AM	TDN
Benzo(b)fluoranthene	NELAP	0.004		**ND**	mg/Kg-dry	1	5/15/2008 12:37:00 AM	TDN
Benzo(g,h,i)perylene	NELAP	0.004		**ND**	mg/Kg-dry	1	5/15/2008 12:37:00 AM	TDN
Benzo(k)fluoranthene	NELAP	0.004		**ND**	mg/Kg-dry	1	5/15/2008 12:37:00 AM	TDN
Chrysene	NELAP	0.004		**ND**	mg/Kg-dry	1	5/15/2008 12:37:00 AM	TDN
Dibenzo(a,h)anthracene	NELAP	0.004		**ND**	mg/Kg-dry	1	5/15/2008 12:37:00 AM	TDN
Fluoranthene	NELAP	0.004		**ND**	mg/Kg-dry	1	5/15/2008 12:37:00 AM	TDN
Fluorene	NELAP	0.004		**ND**	mg/Kg-dry	1	5/15/2008 12:37:00 AM	TDN
Indeno(1,2,3-cd)pyrene	NELAP	0.004		**ND**	mg/Kg-dry	1	5/15/2008 12:37:00 AM	TDN
Naphthalene	NELAP	0.004		**ND**	mg/Kg-dry	1	5/15/2008 12:37:00 AM	TDN
Phenanthrene	NELAP	0.004		**ND**	mg/Kg-dry	1	5/15/2008 12:37:00 AM	TDN
Pyrene	NELAP	0.004		**ND**	mg/Kg-dry	1	5/15/2008 12:37:00 AM	TDN
Surr: 2-Fluorobiphenyl		10-131		**26.3**	%REC	1	5/15/2008 12:37:00 AM	TDN
Surr: Nitrobenzene-d5		10-132		**38.7**	%REC	1	5/15/2008 12:37:00 AM	TDN
Surr: p-Terphenyl-d14		30.6-131		**65.3**	%REC	1	5/15/2008 12:37:00 AM	TDN
SW-846 5035, 8260B, VOLATILE ORGANIC COMPOUNDS BY GC/MS								
Benzene	NELAP	0.9		**1.6**	µg/Kg-dry	1	5/13/2008 6:39:00 AM	GEK
Ethylbenzene	NELAP	4.3		**ND**	µg/Kg-dry	1	5/13/2008 6:39:00 AM	GEK
Toluene	NELAP	4.3	J	**1.4**	µg/Kg-dry	1	5/13/2008 6:39:00 AM	GEK
Xylenes, Total	NELAP	4.3		**ND**	µg/Kg-dry	1	5/13/2008 6:39:00 AM	GEK
Surr: 1,2-Dichloroethane-d4		61-128		**117.9**	%REC	1	5/13/2008 6:39:00 AM	GEK
Surr: 4-Bromofluorobenzene		78.2-117		**97.9**	%REC	1	5/13/2008 6:39:00 AM	GEK
Surr: Dibromofluoromethane		66.6-130		**109.2**	%REC	1	5/13/2008 6:39:00 AM	GEK
Surr: Toluene-d8		80.1-122		**96.1**	%REC	1	5/13/2008 6:39:00 AM	GEK
SW-846 9010B, 9014								
Cyanide	NELAP	0.59		**< 0.59**	mg/Kg-dry	1	5/13/2008	AET

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5445 HORSESHOE LAKE ROAD
COLLINSVILLE, ILLINOIS 62234

ENVIRONMENTAL TESTING LABORATORY

TEL: 618-344-1004
FAX: 618-344-1005

LABORATORY RESULTS

Client:	Philip Environmental	**Client Project:**	A831-735002-012901-225/IP Champ
WorkOrder:	08050415	**Client Sample ID:**	B-809 9.0-10.0 ft
Lab ID:	08050415-035	**Collection Date:**	5/8/2008 9:58:00 AM
Report Date:	16-May-08	**Matrix:**	SOLID

Analyses	Certification	RL	Qual	Result	Units	DF	Date Analyzed	Analyst
SW-846 9014A								
Cyanide, Amenable to Chlorination		0.59		**Interference**	mg/Kg-dry	1	5/14/2008	AET
SW-846 9045C								
pH (1:1)	NELAP	1.00		**7.22**		1	5/13/2008 1:39:00 PM	KNL

Sample Narrative

SW-846 3550B, 8270C SIMS, Semi-Volatile Organic Compounds by GC/MS

Marginal Exceedance for Naphthalene, LCS is verified per NELAC Appendix D 1.1.2

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COLLINSVILLE, ILLINOIS 62234

ENVIRONMENTAL TESTING LABORATORY

TEL: 618-344-1004
FAX: 618-344-1005

LABORATORY RESULTS

Client: Philip Environmental
WorkOrder: 08050415
Lab ID: 08050415-036
Report Date: 16-May-08

Client Project: A831-735002-012901-225/IP Champ
Client Sample ID: B-809 15.0-16.0 ft
Collection Date: 5/8/2008 10:15:00 AM
Matrix: SOLID

Analyses	Certification	RL	Qual	Result	Units	DF	Date Analyzed	Analyst
ASTM D2974								
Percent Moisture		0.1		**13.3**	%	1	5/12/2008	TWM
STANDARD METHODS 18TH ED. 2540 G								
Total Solids		0.1		**86.7**	%	1	5/12/2008	TWM
SW-846 3050B, 6010B, METALS BY ICP								
Arsenic	NELAP	2.50		**4.69**	mg/Kg-dry	1	5/14/2008 10:21:02 PM	LAL
Chromium	NELAP	1.00		**15.3**	mg/Kg-dry	1	5/14/2008 10:21:02 PM	LAL
Lead	NELAP	4.00		**8.68**	mg/Kg-dry	1	5/16/2008 11:22:52 AM	CRK
SW-846 3550B, 8270C SIMS, SEMI-VOLATILE ORGANIC COMPOUNDS BY GC/MS								
Acenaphthene	NELAP	0.004		**ND**	mg/Kg-dry	1	5/15/2008 1:15:00 AM	TDN
Acenaphthylene	NELAP	0.004		**ND**	mg/Kg-dry	1	5/15/2008 1:15:00 AM	TDN
Anthracene	NELAP	0.004		**ND**	mg/Kg-dry	1	5/15/2008 1:15:00 AM	TDN
Benzo(a)anthracene	NELAP	0.004		**ND**	mg/Kg-dry	1	5/15/2008 1:15:00 AM	TDN
Benzo(a)pyrene	NELAP	0.004		**ND**	mg/Kg-dry	1	5/15/2008 1:15:00 AM	TDN
Benzo(b)fluoranthene	NELAP	0.004		**ND**	mg/Kg-dry	1	5/15/2008 1:15:00 AM	TDN
Benzo(g,h,i)perylene	NELAP	0.004		**ND**	mg/Kg-dry	1	5/15/2008 1:15:00 AM	TDN
Benzo(k)fluoranthene	NELAP	0.004		**ND**	mg/Kg-dry	1	5/15/2008 1:15:00 AM	TDN
Chrysene	NELAP	0.004		**ND**	mg/Kg-dry	1	5/15/2008 1:15:00 AM	TDN
Dibenzo(a,h)anthracene	NELAP	0.004		**ND**	mg/Kg-dry	1	5/15/2008 1:15:00 AM	TDN
Fluoranthene	NELAP	0.004		**ND**	mg/Kg-dry	1	5/15/2008 1:15:00 AM	TDN
Fluorene	NELAP	0.004		**ND**	mg/Kg-dry	1	5/15/2008 1:15:00 AM	TDN
Indeno(1,2,3-cd)pyrene	NELAP	0.004		**ND**	mg/Kg-dry	1	5/15/2008 1:15:00 AM	TDN
Naphthalene	NELAP	0.004	J	**0.004**	mg/Kg-dry	1	5/15/2008 1:15:00 AM	TDN
Phenanthrene	NELAP	0.004		**ND**	mg/Kg-dry	1	5/15/2008 1:15:00 AM	TDN
Pyrene	NELAP	0.004		**ND**	mg/Kg-dry	1	5/15/2008 1:15:00 AM	TDN
Surr: 2-Fluorobiphenyl		10-131		**46.5**	%REC	1	5/15/2008 1:15:00 AM	TDN
Surr: Nitrobenzene-d5		10-132		**47.9**	%REC	1	5/15/2008 1:15:00 AM	TDN
Surr: p-Terphenyl-d14		30.6-131		**62.9**	%REC	1	5/15/2008 1:15:00 AM	TDN
SW-846 5035, 8260B, VOLATILE ORGANIC COMPOUNDS BY GC/MS								
Benzene	NELAP	0.9		**1.8**	µg/Kg-dry	1	5/13/2008 7:08:00 AM	GEK
Ethylbenzene	NELAP	4.5		**ND**	µg/Kg-dry	1	5/13/2008 7:08:00 AM	GEK
Toluene	NELAP	4.5	J	**2.9**	µg/Kg-dry	1	5/13/2008 7:08:00 AM	GEK
Xylenes, Total	NELAP	4.5		**ND**	µg/Kg-dry	1	5/13/2008 7:08:00 AM	GEK
Surr: 1,2-Dichloroethane-d4		61-128		**122.8**	%REC	1	5/13/2008 7:08:00 AM	GEK
Surr: 4-Bromofluorobenzene		78.2-117		**88.5**	%REC	1	5/13/2008 7:08:00 AM	GEK
Surr: Dibromofluoromethane		66.6-130		**115.0**	%REC	1	5/13/2008 7:08:00 AM	GEK
Surr: Toluene-d8		80.1-122		**107.5**	%REC	1	5/13/2008 7:08:00 AM	GEK
SW-846 9010B, 9014								
Cyanide	NELAP	0.55		**< 0.55**	mg/Kg-dry	1	5/13/2008	AET

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5445 HORSESHOE LAKE ROAD
COLLINSVILLE, ILLINOIS 62234

ENVIRONMENTAL TESTING LABORATORY

TEL: 618-344-1004
FAX: 618-344-1005

LABORATORY RESULTS

Client: Philip Environmental
WorkOrder: 08050415
Lab ID: 08050415-036
Report Date: 16-May-08

Client Project: A831-735002-012901-225/IP Champ
Client Sample ID: B-809 15.0-16.0 ft
Collection Date: 5/8/2008 10:15:00 AM
Matrix: SOLID

Analyses	Certification	RL	Qual	Result	Units	DF	Date Analyzed	Analyst
SW-846 9014A								
Cyanide, Amenable to Chlorination		0.55		**Interference**	mg/Kg-dry	1	5/14/2008	AET

Sample Narrative

SW-846 3550B, 8270C SIMS, Semi-Volatile Organic Compounds by GC/MS

Marginal Exceedance for Naphthalene, LCS is verified per NELAC Appendix D 1.1.2

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COLLINSVILLE, ILLINOIS 62234

ENVIRONMENTAL TESTING LABORATORY

TEL: 618-344-1004
FAX: 618-344-1005

LABORATORY RESULTS

Client: Philip Environmental
WorkOrder: 08050415
Lab ID: 08050415-037
Report Date: 16-May-08

Client Project: A831-735002-012901-225/IP Champ
Client Sample ID: B-847 29.0-30.0 ft
Collection Date: 5/7/2008 5:30:00 PM
Matrix: SOLID

Analyses	Certification	RL	Qual	Result	Units	DF	Date Analyzed	Analyst
ASTM D2974								
Percent Moisture		0.1		**11.5**	%	1	5/12/2008	TWM
STANDARD METHODS 18TH ED. 2540 G								
Total Solids		0.1		**88.5**	%	1	5/12/2008	TWM
SW-846 3550B, 8270C SIMS, SEMI-VOLATILE ORGANIC COMPOUNDS BY GC/MS								
Acenaphthene	NELAP	0.004		**ND**	mg/Kg-dry	1	5/15/2008 1:52:00 AM	TDN
Acenaphthylene	NELAP	0.004		**ND**	mg/Kg-dry	1	5/15/2008 1:52:00 AM	TDN
Anthracene	NELAP	0.004		**ND**	mg/Kg-dry	1	5/15/2008 1:52:00 AM	TDN
Benzo(a)anthracene	NELAP	0.004		**ND**	mg/Kg-dry	1	5/15/2008 1:52:00 AM	TDN
Benzo(a)pyrene	NELAP	0.004		**ND**	mg/Kg-dry	1	5/15/2008 1:52:00 AM	TDN
Benzo(b)fluoranthene	NELAP	0.004		**ND**	mg/Kg-dry	1	5/15/2008 1:52:00 AM	TDN
Benzo(g,h,i)perylene	NELAP	0.004		**ND**	mg/Kg-dry	1	5/15/2008 1:52:00 AM	TDN
Benzo(k)fluoranthene	NELAP	0.004		**ND**	mg/Kg-dry	1	5/15/2008 1:52:00 AM	TDN
Chrysene	NELAP	0.004		**ND**	mg/Kg-dry	1	5/15/2008 1:52:00 AM	TDN
Dibenzo(a,h)anthracene	NELAP	0.004		**ND**	mg/Kg-dry	1	5/15/2008 1:52:00 AM	TDN
Fluoranthene	NELAP	0.004		**ND**	mg/Kg-dry	1	5/15/2008 1:52:00 AM	TDN
Fluorene	NELAP	0.004		**ND**	mg/Kg-dry	1	5/15/2008 1:52:00 AM	TDN
Indeno(1,2,3-cd)pyrene	NELAP	0.004		**ND**	mg/Kg-dry	1	5/15/2008 1:52:00 AM	TDN
Naphthalene	NELAP	0.004		**0.012**	mg/Kg-dry	1	5/15/2008 1:52:00 AM	TDN
Phenanthrene	NELAP	0.004		**0.006**	mg/Kg-dry	1	5/15/2008 1:52:00 AM	TDN
Pyrene	NELAP	0.004		**ND**	mg/Kg-dry	1	5/15/2008 1:52:00 AM	TDN
Surr: 2-Fluorobiphenyl		10-131		**26.1**	%REC	1	5/15/2008 1:52:00 AM	TDN
Surr: Nitrobenzene-d5		10-132		**32.3**	%REC	1	5/15/2008 1:52:00 AM	TDN
Surr: p-Terphenyl-d14		30.6-131		**61.5**	%REC	1	5/15/2008 1:52:00 AM	TDN
SW-846 5035, 8260B, VOLATILE ORGANIC COMPOUNDS BY GC/MS								
Benzene	NELAP	0.8		**1.2**	µg/Kg-dry	1	5/13/2008 7:37:00 AM	GEK
Ethylbenzene	NELAP	3.8		**ND**	µg/Kg-dry	1	5/13/2008 7:37:00 AM	GEK
Toluene	NELAP	3.8	J	**1.8**	µg/Kg-dry	1	5/13/2008 7:37:00 AM	GEK
Xylenes, Total	NELAP	3.8		**ND**	µg/Kg-dry	1	5/13/2008 7:37:00 AM	GEK
Surr: 1,2-Dichloroethane-d4		61-128		**121.1**	%REC	1	5/13/2008 7:37:00 AM	GEK
Surr: 4-Bromofluorobenzene		78.2-117		**82.3**	%REC	1	5/13/2008 7:37:00 AM	GEK
Surr: Dibromofluoromethane		66.6-130		**115.5**	%REC	1	5/13/2008 7:37:00 AM	GEK
Surr: Toluene-d8		80.1-122		**113.1**	%REC	1	5/13/2008 7:37:00 AM	GEK

Sample Narrative

SW-846 3550B, 8270C SIMS, Semi-Volatile Organic Compounds by GC/MS

Marginal Exceedance for Naphthalene, LCS is verified per NELAC Appendix D 1.1.2

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COLLINSVILLE, ILLINOIS 62234

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Report Date: 16-May-08

DATES REPORT

Sample ID	Client Sample ID	Collection Date	Matrix	Test Name	Prep Date	Analysis Date
08050415-001A	B-812 1.0-2.0 ft	5/5/2008	Solid	ASTM D2974		5/12/2008
				Standard Methods 18th Ed. 2540 G		5/12/2008
				SW-846 3550B, 8270C SIMS, Semi-Volatile Organic Compounds by GC/MS	5/12/2008	5/14/2008
08050415-001D				SW-846 5035, 8260B, Volatile Organic Compounds by GC/MS	5/12/2008	5/13/2008
08050415-002A	B-812 9.0-10.0 ft			ASTM D2974		5/12/2008
				Standard Methods 18th Ed. 2540 G		5/12/2008
				SW-846 3550B, 8270C SIMS, Semi-Volatile Organic Compounds by GC/MS	5/12/2008	5/14/2008
08050415-002D				SW-846 5035, 8260B, Volatile Organic Compounds by GC/MS	5/12/2008	5/13/2008
08050415-003A	B-812 11.0-12.0 ft			ASTM D2974		5/12/2008
				Standard Methods 18th Ed. 2540 G		5/12/2008
				SW-846 3550B, 8270C SIMS, Semi-Volatile Organic Compounds by GC/MS	5/12/2008	5/15/2008
08050415-003D				SW-846 5035, 8260B, Volatile Organic Compounds by GC/MS	5/12/2008	5/13/2008
08050415-004A	B-811 2.0-3.0 ft			ASTM D2974		5/12/2008
				Standard Methods 18th Ed. 2540 G		5/12/2008
				SW-846 3050B, 6010B, Metals by ICP	5/13/2008	5/14/2008
				SW-846 3050B, 6010B, Metals by ICP	5/13/2008	5/15/2008
				SW-846 3550B, 8270C SIMS, Semi-Volatile Organic Compounds by GC/MS	5/12/2008	5/15/2008
				SW-846 9010B, 9014	5/12/2008	5/13/2008
				SW-846 9014A	5/13/2008	5/14/2008
08050415-004D				SW-846 5035, 8260B, Volatile Organic Compounds by GC/MS	5/13/2008	5/13/2008
				SW-846 5035, 8260B, Volatile Organic Compounds by GC/MS	5/13/2008	5/13/2008
08050415-005A	B-811 9.0-10.0 ft			ASTM D2974		5/12/2008

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DATES REPORT

Sample ID	Client Sample ID	Collection Date	Matrix	Test Name	Prep Date	Analysis Date
08050415-005A	B-811 9.0-10.0 ft	5/5/2008	Solid	Standard Methods 18th Ed. 2540 G		5/12/2008
				SW-846 3050B, 6010B, Metals by ICP	5/13/2008	5/14/2008
				SW-846 3050B, 6010B, Metals by ICP	5/13/2008	5/15/2008
				SW-846 3550B, 8270C SIMS, Semi-Volatile Organic Compounds by GC/MS	5/12/2008	5/15/2008
				SW-846 9010B, 9014	5/12/2008	5/13/2008
				SW-846 9014A	5/13/2008	5/14/2008
08050415-005D				SW-846 5035, 8260B, Volatile Organic Compounds by GC/MS	5/12/2008	5/13/2008
08050415-006A	B-811 11.0-12.0 ft			ASTM D2974		5/12/2008
				Standard Methods 18th Ed. 2540 G		5/12/2008
				SW-846 3050B, 6010B, Metals by ICP	5/13/2008	5/14/2008
				SW-846 3050B, 6010B, Metals by ICP	5/13/2008	5/15/2008
				SW-846 3550B, 8270C SIMS, Semi-Volatile Organic Compounds by GC/MS	5/12/2008	5/14/2008
				SW-846 9010B, 9014	5/12/2008	5/13/2008
				SW-846 9014A	5/13/2008	5/14/2008
08050415-006D				SW-846 5035, 8260B, Volatile Organic Compounds by GC/MS	5/12/2008	5/13/2008
08050415-007A	B-843 2.0-3.0 ft	5/6/2008		ASTM D2974		5/12/2008
				Standard Methods 18th Ed. 2540 G		5/12/2008
				SW-846 3050B, 6010B, Metals by ICP	5/13/2008	5/14/2008
				SW-846 3050B, 6010B, Metals by ICP	5/13/2008	5/15/2008
				SW-846 3050B, 6010B, Metals by ICP	5/13/2008	5/16/2008
				SW-846 3550B, 8270C SIMS, Semi-Volatile Organic Compounds by GC/MS	5/12/2008	5/14/2008
				SW-846 9010B, 9014	5/12/2008	5/13/2008

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DATES REPORT

Sample ID	Client Sample ID	Collection Date	Matrix	Test Name	Prep Date	Analysis Date
08050415-007A	B-843 2.0-3.0 ft	5/6/2008	Solid	SW-846 9014A	5/13/2008	5/14/2008
08050415-007D				SW-846 5035, 8260B, Volatile Organic Compounds by GC/MS	5/12/2008	5/13/2008
08050415-008A	B-843 7.0-8.0 ft			ASTM D2974		5/12/2008
				Standard Methods 18th Ed. 2540 G		5/12/2008
				SW-846 3050B, 6010B, Metals by ICP	5/13/2008	5/14/2008
				SW-846 3050B, 6010B, Metals by ICP	5/13/2008	5/15/2008
				SW-846 3050B, 6010B, Metals by ICP	5/13/2008	5/16/2008
				SW-846 3550B, 8270C SIMS, Semi-Volatile Organic Compounds by GC/MS	5/12/2008	5/14/2008
				SW-846 9010B, 9014	5/12/2008	5/13/2008
				SW-846 9014A	5/13/2008	5/14/2008
08050415-008D				SW-846 5035, 8260B, Volatile Organic Compounds by GC/MS	5/12/2008	5/13/2008
08050415-009A	B-843 10.0-11.0 ft			ASTM D2974		5/12/2008
				Standard Methods 18th Ed. 2540 G		5/12/2008
				SW-846 3550B, 8270C SIMS, Semi-Volatile Organic Compounds by GC/MS	5/12/2008	5/14/2008
08050415-009D				SW-846 5035, 8260B, Volatile Organic Compounds by GC/MS	5/12/2008	5/13/2008
08050415-010A	B-844 1.0-2.0 ft			ASTM D2974		5/12/2008
				Standard Methods 18th Ed. 2540 G		5/12/2008
				SW-846 3050B, 6010B, Metals by ICP	5/13/2008	5/14/2008
				SW-846 3050B, 6010B, Metals by ICP	5/13/2008	5/15/2008
				SW-846 3050B, 6010B, Metals by ICP	5/13/2008	5/16/2008
				SW-846 3550B, 8270C SIMS, Semi-Volatile Organic Compounds by GC/MS	5/12/2008	5/15/2008
				SW-846 3550B, 8270C SIMS, Semi-Volatile Organic Compounds by GC/MS	5/12/2008	5/15/2008

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DATES REPORT

Sample ID	Client Sample ID	Collection Date	Matrix	Test Name	Prep Date	Analysis Date
08050415-010A	B-844 1.0-2.0 ft	5/6/2008	Solid	SW-846 9010B, 9014	5/12/2008	5/13/2008
				SW-846 9014A	5/13/2008	5/14/2008
08050415-010D				SW-846 5035, 8260B, Volatile Organic Compounds by GC/MS	5/12/2008	5/13/2008
08050415-011A	B-844 8.0-9.0 ft			ASTM D2974		5/12/2008
				Standard Methods 18th Ed. 2540 G		5/12/2008
				SW-846 3050B, 6010B, Metals by ICP	5/13/2008	5/14/2008
				SW-846 3050B, 6010B, Metals by ICP	5/13/2008	5/15/2008
				SW-846 3050B, 6010B, Metals by ICP	5/13/2008	5/16/2008
				SW-846 3550B, 8270C SIMS, Semi-Volatile Organic Compounds by GC/MS	5/12/2008	5/14/2008
				SW-846 9010B, 9014	5/12/2008	5/13/2008
				SW-846 9014A	5/13/2008	5/14/2008
08050415-011D				SW-846 5035, 8260B, Volatile Organic Compounds by GC/MS	5/12/2008	5/13/2008
08050415-012A	B-844 15.0-16.0 ft			ASTM D2974		5/12/2008
				Standard Methods 18th Ed. 2540 G		5/12/2008
				SW-846 3550B, 8270C SIMS, Semi-Volatile Organic Compounds by GC/MS	5/12/2008	5/15/2008
08050415-012D				SW-846 5035, 8260B, Volatile Organic Compounds by GC/MS	5/14/2008	5/14/2008
08050415-013A	B-851 19.0-20.0 ft	5/9/2008		ASTM D2974		5/12/2008
				Standard Methods 18th Ed. 2540 G		5/12/2008
				SW-846 3550B, 8270C SIMS, Semi-Volatile Organic Compounds by GC/MS	5/12/2008	5/15/2008
08050415-013D				SW-846 5035, 8260B, Volatile Organic Compounds by GC/MS	5/12/2008	5/12/2008
08050415-014A	B-852 2.0-3.0 ft			ASTM D2974		5/12/2008
				Standard Methods 18th Ed. 2540 G		5/12/2008

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DATES REPORT

Sample ID	Client Sample ID	Collection Date	Matrix	Test Name	Prep Date	Analysis Date
08050415-014A	B-852 2.0-3.0 ft	5/9/2008	Solid	SW-846 3050B, 6010B, Metals by ICP	5/13/2008	5/14/2008
				SW-846 3050B, 6010B, Metals by ICP	5/13/2008	5/15/2008
				SW-846 3050B, 6010B, Metals by ICP	5/13/2008	5/16/2008
				SW-846 3550B, 8270C SIMS, Semi-Volatile Organic Compounds by GC/MS	5/12/2008	5/15/2008
				SW-846 9010B, 9014	5/12/2008	5/13/2008
				SW-846 9014A	5/13/2008	5/14/2008
08050415-014D				SW-846 5035, 8260B, Volatile Organic Compounds by GC/MS	5/12/2008	5/13/2008
08050415-015A	B-852 9.0-10.0 ft			ASTM D2974		5/12/2008
				Standard Methods 18th Ed. 2540 G		5/12/2008
				SW-846 3550B, 8270C SIMS, Semi-Volatile Organic Compounds by GC/MS	5/12/2008	5/15/2008
				SW-846 9045C		5/13/2008
08050415-015D				SW-846 5035, 8260B, Volatile Organic Compounds by GC/MS	5/12/2008	5/13/2008
08050415-016A	B-852 23.0-24.0 ft			ASTM D2974		5/12/2008
				Standard Methods 18th Ed. 2540 G		5/12/2008
				SW-846 3550B, 8270C SIMS, Semi-Volatile Organic Compounds by GC/MS	5/12/2008	5/15/2008
08050415-016D				SW-846 5035, 8260B, Volatile Organic Compounds by GC/MS	5/12/2008	5/13/2008
08050415-017A	B-845 6.0-7.0 ft	5/6/2008		ASTM D2974		5/12/2008
				Standard Methods 18th Ed. 2540 G		5/12/2008
				SW-846 3050B, 6010B, Metals by ICP	5/13/2008	5/14/2008
				SW-846 3050B, 6010B, Metals by ICP	5/13/2008	5/15/2008
				SW-846 3050B, 6010B, Metals by ICP	5/13/2008	5/16/2008
				SW-846 3550B, 8270C SIMS, Semi-Volatile Organic Compounds by GC/MS	5/12/2008	5/15/2008

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Lab Order: 08050415
Report Date: 16-May-08

DATES REPORT

Sample ID	Client Sample ID	Collection Date	Matrix	Test Name	Prep Date	Analysis Date
08050415-017A	B-845 6.0-7.0 ft	5/6/2008	Solid	SW-846 9010B, 9014	5/12/2008	5/13/2008
				SW-846 9014A	5/13/2008	5/14/2008
08050415-017D				SW-846 5035, 8260B, Volatile Organic Compounds by GC/MS	5/12/2008	5/13/2008
08050415-018A	B-845 13.0-14.0 ft			ASTM D2974		5/12/2008
				Standard Methods 18th Ed. 2540 G		5/12/2008
				SW-846 3550B, 8270C SIMS, Semi-Volatile Organic Compounds by GC/MS	5/12/2008	5/15/2008
08050415-018D				SW-846 5035, 8260B, Volatile Organic Compounds by GC/MS	5/12/2008	5/13/2008
08050415-019A	B-846 8.5-9.5 ft	5/7/2008		ASTM D2974		5/12/2008
				Standard Methods 18th Ed. 2540 G		5/12/2008
				SW-846 3550B, 8270C SIMS, Semi-Volatile Organic Compounds by GC/MS	5/12/2008	5/15/2008
08050415-019D				SW-846 5035, 8260B, Volatile Organic Compounds by GC/MS	5/14/2008	5/14/2008
08050415-020A	B-846 10.0-11.0 ft			ASTM D2974		5/12/2008
				Standard Methods 18th Ed. 2540 G		5/12/2008
				SW-846 3550B, 8270C SIMS, Semi-Volatile Organic Compounds by GC/MS	5/12/2008	5/15/2008
08050415-020D				SW-846 5035, 8260B, Volatile Organic Compounds by GC/MS	5/14/2008	5/14/2008
08050415-021A	B-846 20.0-21.0 ft			ASTM D2974		5/12/2008
				Standard Methods 18th Ed. 2540 G		5/12/2008
				SW-846 3550B, 8270C SIMS, Semi-Volatile Organic Compounds by GC/MS	5/12/2008	5/14/2008
08050415-021D				SW-846 5035, 8260B, Volatile Organic Compounds by GC/MS	5/13/2008	5/13/2008
08050415-022A	B-803 2.0-3.0 ft			ASTM D2974		5/12/2008
				Standard Methods 18th Ed. 2540 G		5/12/2008
				SW-846 3050B, 6010B, Metals by ICP	5/13/2008	5/14/2008

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DATES REPORT

Sample ID	Client Sample ID	Collection Date	Matrix	Test Name	Prep Date	Analysis Date
08050415-022A	B-803 2.0-3.0 ft	5/7/2008	Solid	SW-846 3050B, 6010B, Metals by ICP	5/13/2008	5/15/2008
				SW-846 3050B, 6010B, Metals by ICP	5/13/2008	5/16/2008
				SW-846 3550B, 8270C SIMS, Semi-Volatile Organic Compounds by GC/MS	5/12/2008	5/15/2008
				SW-846 9010B, 9014	5/12/2008	5/13/2008
				SW-846 9014A	5/13/2008	5/14/2008
08050415-022D				SW-846 5035, 8260B, Volatile Organic Compounds by GC/MS	5/13/2008	5/13/2008
08050415-023A	B-803 9.0-10.0 ft			ASTM D2974		5/12/2008
				Standard Methods 18th Ed. 2540 G		5/12/2008
				SW-846 3050B, 6010B, Metals by ICP	5/13/2008	5/14/2008
				SW-846 3050B, 6010B, Metals by ICP	5/13/2008	5/15/2008
				SW-846 3050B, 6010B, Metals by ICP	5/13/2008	5/16/2008
				SW-846 3550B, 8270C SIMS, Semi-Volatile Organic Compounds by GC/MS	5/12/2008	5/14/2008
				SW-846 9010B, 9014	5/12/2008	5/13/2008
				SW-846 9014A	5/13/2008	5/14/2008
08050415-023D				SW-846 5035, 8260B, Volatile Organic Compounds by GC/MS	5/13/2008	5/13/2008
08050415-024A	B-803 21.0-22.0 ft			ASTM D2974		5/12/2008
				Standard Methods 18th Ed. 2540 G		5/12/2008
				SW-846 3050B, 6010B, Metals by ICP	5/13/2008	5/14/2008
				SW-846 3050B, 6010B, Metals by ICP	5/13/2008	5/15/2008
				SW-846 3050B, 6010B, Metals by ICP	5/13/2008	5/16/2008
				SW-846 3050B, 6010B, Metals by ICP	5/13/2008	5/16/2008
				SW-846 3050B, 6010B, Metals by ICP	5/13/2008	5/16/2008

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DATES REPORT

Sample ID	Client Sample ID	Collection Date	Matrix	Test Name	Prep Date	Analysis Date
08050415-024A	B-803 21.0-22.0 ft	5/7/2008	Solid	SW-846 3550B, 8270C SIMS, Semi-Volatile Organic Compounds by GC/MS	5/12/2008	5/15/2008
				SW-846 9010B, 9014	5/12/2008	5/13/2008
				SW-846 9014A	5/13/2008	5/14/2008
08050415-024D				SW-846 5035, 8260B, Volatile Organic Compounds by GC/MS	5/14/2008	5/14/2008
08050415-025A	B-803 29.0-30.0 ft			ASTM D2974		5/12/2008
				Standard Methods 18th Ed. 2540 G		5/12/2008
				SW-846 3550B, 8270C SIMS, Semi-Volatile Organic Compounds by GC/MS	5/12/2008	5/14/2008
08050415-025D				SW-846 5035, 8260B, Volatile Organic Compounds by GC/MS	5/12/2008	5/13/2008
08050415-026A	B-849 0.0-1.0 ft			ASTM D2974		5/12/2008
				Standard Methods 18th Ed. 2540 G		5/12/2008
				SW-846 3050B, 6010B, Metals by ICP	5/13/2008	5/14/2008
				SW-846 3050B, 6010B, Metals by ICP	5/13/2008	5/15/2008
				SW-846 3050B, 6010B, Metals by ICP	5/13/2008	5/16/2008
				SW-846 3050B, 6010B, Metals by ICP	5/13/2008	5/16/2008
				SW-846 3050B, 6010B, Metals by ICP	5/13/2008	5/16/2008
				SW-846 3550B, 8270C SIMS, Semi-Volatile Organic Compounds by GC/MS	5/12/2008	5/15/2008
				SW-846 9010B, 9014	5/12/2008	5/13/2008
				SW-846 9014A	5/13/2008	5/14/2008
08050415-026D				SW-846 5035, 8260B, Volatile Organic Compounds by GC/MS	5/12/2008	5/13/2008
08050415-027A	B-849 9.0-10.0 ft			ASTM D2974		5/12/2008
				Standard Methods 18th Ed. 2540 G		5/12/2008
				SW-846 3050B, 6010B, Metals by ICP	5/13/2008	5/14/2008

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5445 HORSESHOE LAKE ROAD
COLLINSVILLE, ILLINOIS 62234

ENVIRONMENTAL TESTING LABORATORY

TEL: 618-344-1004
FAX: 618-344-1005

Client: Philip Environmental
Project: A831-735002-012901-225/IP Champaign 62403053
Lab Order: 08050415
Report Date: 16-May-08

DATES REPORT

Sample ID	Client Sample ID	Collection Date	Matrix	Test Name	Prep Date	Analysis Date
08050415-027A	B-849 9.0-10.0 ft	5/7/2008	Solid	SW-846 3050B, 6010B, Metals by ICP	5/13/2008	5/15/2008
				SW-846 3050B, 6010B, Metals by ICP	5/13/2008	5/16/2008
				SW-846 3050B, 6010B, Metals by ICP	5/13/2008	5/16/2008
				SW-846 3050B, 6010B, Metals by ICP	5/13/2008	5/16/2008
				SW-846 3550B, 8270C SIMS, Semi-Volatile Organic Compounds by GC/MS	5/12/2008	5/14/2008
				SW-846 9010B, 9014	5/12/2008	5/13/2008
				SW-846 9014A	5/13/2008	5/14/2008
08050415-027D				SW-846 5035, 8260B, Volatile Organic Compounds by GC/MS	5/12/2008	5/13/2008
08050415-028A	B-849 16.0-17.0 ft			ASTM D2974		5/12/2008
				Standard Methods 18th Ed. 2540 G		5/12/2008
				SW-846 3050B, 6010B, Metals by ICP	5/13/2008	5/14/2008
				SW-846 3050B, 6010B, Metals by ICP	5/13/2008	5/15/2008
				SW-846 3050B, 6010B, Metals by ICP	5/13/2008	5/16/2008
				SW-846 3050B, 6010B, Metals by ICP	5/13/2008	5/16/2008
				SW-846 3050B, 6010B, Metals by ICP	5/13/2008	5/16/2008
				SW-846 3550B, 8270C SIMS, Semi-Volatile Organic Compounds by GC/MS	5/12/2008	5/15/2008
				SW-846 9010B, 9014	5/12/2008	5/13/2008
				SW-846 9014A	5/13/2008	5/14/2008
08050415-028D				SW-846 5035, 8260B, Volatile Organic Compounds by GC/MS	5/14/2008	5/14/2008
08050415-029A	B-848 2.0-3.0 ft			ASTM D2974		5/12/2008
				Standard Methods 18th Ed. 2540 G		5/12/2008
				SW-846 3550B, 8270C SIMS, Semi-Volatile Organic Compounds by GC/MS	5/12/2008	5/15/2008

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COLLINSVILLE, ILLINOIS 62234

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DATES REPORT

Sample ID	Client Sample ID	Collection Date	Matrix	Test Name	Prep Date	Analysis Date
08050415-029D	B-848 2.0-3.0 ft	5/7/2008	Solid	SW-846 5035, 8260B, Volatile Organic Compounds by GC/MS	5/12/2008	5/13/2008
08050415-030A	B-848 9.0-10.0 ft			ASTM D2974		5/12/2008
				Standard Methods 18th Ed. 2540 G		5/12/2008
				SW-846 3550B, 8270C SIMS, Semi-Volatile Organic Compounds by GC/MS	5/12/2008	5/14/2008
08050415-030D				SW-846 5035, 8260B, Volatile Organic Compounds by GC/MS	5/12/2008	5/13/2008
08050415-031A	B-848 13.0-14.0 ft			ASTM D2974		5/12/2008
				Standard Methods 18th Ed. 2540 G		5/12/2008
				SW-846 3550B, 8270C SIMS, Semi-Volatile Organic Compounds by GC/MS	5/12/2008	5/14/2008
08050415-031D				SW-846 5035, 8260B, Volatile Organic Compounds by GC/MS	5/12/2008	5/13/2008
08050415-032A	B-847 6.0-7.0 ft			ASTM D2974		5/12/2008
				Standard Methods 18th Ed. 2540 G		5/12/2008
				SW-846 3550B, 8270C SIMS, Semi-Volatile Organic Compounds by GC/MS	5/12/2008	5/14/2008
				SW-846 3550B, 8270C SIMS, Semi-Volatile Organic Compounds by GC/MS	5/12/2008	5/15/2008
08050415-032D				SW-846 5035, 8260B, Volatile Organic Compounds by GC/MS	5/12/2008	5/13/2008
08050415-033A	B-847 22.0-23.0 ft			ASTM D2974		5/12/2008
				Standard Methods 18th Ed. 2540 G		5/12/2008
				SW-846 3550B, 8015B, Total Petroleum Hydrocarbons (OA-2) by GC/FID	5/12/2008	5/14/2008
				SW-846 3550B, 8015B, Total Petroleum Hydrocarbons (OA-2) by GC/FID	5/14/2008	5/15/2008
				SW-846 3550B, 8270C SIMS, Semi-Volatile Organic Compounds by GC/MS	5/12/2008	5/15/2008
08050415-033D				SW-846 5035, 8260B, Volatile Organic Compounds by GC/MS	5/14/2008	5/14/2008
08050415-034A	B-809 2.0-3.0 ft	5/8/2008		ASTM D2974		5/12/2008
				Standard Methods 18th Ed. 2540 G		5/12/2008

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Project: A831-735002-012901-225/IP Champaign 62403053
Lab Order: 08050415
Report Date: 16-May-08

DATES REPORT

Sample ID	Client Sample ID	Collection Date	Matrix	Test Name	Prep Date	Analysis Date
08050415-034A	B-809 2.0-3.0 ft	5/8/2008	Solid	SW-846 3050B, 6010B, Metals by ICP	5/13/2008	5/14/2008
				SW-846 3050B, 6010B, Metals by ICP	5/13/2008	5/15/2008
				SW-846 3050B, 6010B, Metals by ICP	5/13/2008	5/16/2008
				SW-846 3050B, 6010B, Metals by ICP	5/13/2008	5/16/2008
				SW-846 3050B, 6010B, Metals by ICP	5/13/2008	5/16/2008
				SW-846 3550B, 8270C SIMS, Semi-Volatile Organic Compounds by GC/MS	5/12/2008	5/15/2008
				SW-846 3550B, 8270C SIMS, Semi-Volatile Organic Compounds by GC/MS	5/12/2008	5/15/2008
				SW-846 9010B, 9014	5/12/2008	5/13/2008
				SW-846 9014A	5/13/2008	5/14/2008
				SW-846 9045C		5/13/2008
08050415-034D				SW-846 5035, 8260B, Volatile Organic Compounds by GC/MS	5/12/2008	5/13/2008
				SW-846 5035, 8260B, Volatile Organic Compounds by GC/MS	5/13/2008	5/13/2008
08050415-035A	B-809 9.0-10.0 ft			ASTM D2974		5/12/2008
				Standard Methods 18th Ed. 2540 G		5/12/2008
				SW-846 3050B, 6010B, Metals by ICP	5/13/2008	5/14/2008
				SW-846 3050B, 6010B, Metals by ICP	5/13/2008	5/15/2008
				SW-846 3050B, 6010B, Metals by ICP	5/13/2008	5/16/2008
				SW-846 3050B, 6010B, Metals by ICP	5/13/2008	5/16/2008
				SW-846 3050B, 6010B, Metals by ICP	5/13/2008	5/16/2008
				SW-846 3550B, 8270C SIMS, Semi-Volatile Organic Compounds by GC/MS	5/12/2008	5/15/2008
				SW-846 9010B, 9014	5/12/2008	5/13/2008
				SW-846 9014A	5/13/2008	5/14/2008

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DATES REPORT

Sample ID	Client Sample ID	Collection Date	Matrix	Test Name	Prep Date	Analysis Date
08050415-035A	B-809 9.0-10.0 ft	5/8/2008	Solid	SW-846 9045C		5/13/2008
08050415-035D				SW-846 5035, 8260B, Volatile Organic Compounds by GC/MS	5/12/2008	5/13/2008
08050415-036A	B-809 15.0-16.0 ft			ASTM D2974		5/12/2008
				Standard Methods 18th Ed. 2540 G		5/12/2008
				SW-846 3050B, 6010B, Metals by ICP	5/13/2008	5/14/2008
				SW-846 3050B, 6010B, Metals by ICP	5/13/2008	5/15/2008
				SW-846 3050B, 6010B, Metals by ICP	5/13/2008	5/16/2008
				SW-846 3050B, 6010B, Metals by ICP	5/13/2008	5/16/2008
				SW-846 3050B, 6010B, Metals by ICP	5/13/2008	5/16/2008
				SW-846 3550B, 8270C SIMS, Semi-Volatile Organic Compounds by GC/MS	5/12/2008	5/15/2008
				SW-846 9010B, 9014	5/12/2008	5/13/2008
				SW-846 9014A	5/13/2008	5/14/2008
08050415-036D				SW-846 5035, 8260B, Volatile Organic Compounds by GC/MS	5/12/2008	5/13/2008
08050415-037A	B-847 29.0-30.0 ft	5/7/2008		ASTM D2974		5/12/2008
				Standard Methods 18th Ed. 2540 G		5/12/2008
				SW-846 3550B, 8270C SIMS, Semi-Volatile Organic Compounds by GC/MS	5/12/2008	5/15/2008
08050415-037D				SW-846 5035, 8260B, Volatile Organic Compounds by GC/MS	5/12/2008	5/13/2008
08050415-038A	B-850 8.0-9.0 ft	5/8/2008		ASTM D2974		5/12/2008
				Standard Methods 18th Ed. 2540 G		5/12/2008
				SW-846 3050B, 6010B, Metals by ICP	5/13/2008	5/14/2008
				SW-846 3050B, 6010B, Metals by ICP	5/13/2008	5/15/2008
				SW-846 3050B, 6010B, Metals by ICP	5/13/2008	5/16/2008

TEKLAB, INC.

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COLLINSVILLE, ILLINOIS 62234

ENVIRONMENTAL TESTING LABORATORY

TEL: 618-344-1004
FAX: 618-344-1005

Client: Philip Environmental
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Lab Order: 08050415
Report Date: 16-May-08

DATES REPORT

Sample ID	Client Sample ID	Collection Date	Matrix	Test Name	Prep Date	Analysis Date
08050415-038A	B-850 8.0-9.0 ft	5/8/2008	Solid	SW-846 3050B, 6010B, Metals by ICP	5/13/2008	5/16/2008
				SW-846 3050B, 6010B, Metals by ICP	5/13/2008	5/16/2008
				SW-846 3550B, 8270C SIMS, Semi-Volatile Organic Compounds by GC/MS	5/12/2008	5/15/2008
				SW-846 9010B, 9014	5/12/2008	5/13/2008
				SW-846 9014A	5/13/2008	5/14/2008
08050415-038D				SW-846 5035, 8260B, Volatile Organic Compounds by GC/MS	5/13/2008	5/13/2008
08050415-039A	B-850 16.0-17.0 ft			ASTM D2974		5/12/2008
				Standard Methods 18th Ed. 2540 G		5/12/2008
				SW-846 3050B, 6010B, Metals by ICP	5/13/2008	5/14/2008
				SW-846 3050B, 6010B, Metals by ICP	5/13/2008	5/15/2008
				SW-846 3050B, 6010B, Metals by ICP	5/13/2008	5/16/2008
				SW-846 3050B, 6010B, Metals by ICP	5/13/2008	5/16/2008
				SW-846 3050B, 6010B, Metals by ICP	5/13/2008	5/16/2008
				SW-846 3550B, 8015B, Total Petroleum Hydrocarbons (OA-2) by GC/FID	5/12/2008	5/14/2008
				SW-846 3550B, 8015B, Total Petroleum Hydrocarbons (OA-2) by GC/FID	5/14/2008	5/15/2008
				SW-846 3550B, 8270C SIMS, Semi-Volatile Organic Compounds by GC/MS	5/12/2008	5/15/2008
				SW-846 3550B, 8270C SIMS, Semi-Volatile Organic Compounds by GC/MS	5/12/2008	5/15/2008
				SW-846 9010B, 9014	5/12/2008	5/13/2008
				SW-846 9014A	5/13/2008	5/14/2008
08050415-039D				SW-846 5035, 8260B, Volatile Organic Compounds by GC/MS	5/14/2008	5/14/2008
08050415-040A	B-850 25.0-26.0 ft			ASTM D2974		5/12/2008
				Standard Methods 18th Ed. 2540 G		5/12/2008

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Project: A831-735002-012901-225/IP Champaign 62403053
Lab Order: 08050415
Report Date: 16-May-08

DATES REPORT

Sample ID	Client Sample ID	Collection Date	Matrix	Test Name	Prep Date	Analysis Date
08050415-040A	B-850 25.0-26.0 ft	5/8/2008	Solid	SW-846 3550B, 8270C SIMS, Semi-Volatile Organic Compounds by GC/MS	5/12/2008	5/15/2008
08050415-040D				SW-846 5035, 8260B, Volatile Organic Compounds by GC/MS	5/13/2008	5/13/2008

ANALYTICAL QC SUMMARY REPORT

Key QC concepts:

CCV Continuing calibration verification is a check of a standard to determine the state of calibration of an instrument between recalibration.

DF Dilution factor is the dilution performed during analysis only and does not take into account any dilutions made during sample preparation. The reported result is final and includes all dilutions factors.

DUP Laboratory duplicate is an aliquot of a sample taken from the same container under laboratory conditions for independent processing and analysis independently of the original aliquot. (NELAC)

ICV Initial calibration verification is a check of a standard to determine the state of calibration of an instrument before sample analysis is initiated.

LCS Laboratory control sample, spiked with verified known amounts of analytes, is analyzed exactly like a sample to establish intra-laboratory or analyst specific precision and bias or to assess the performance of all or a portion of the measurement system. (NELAC) The acceptable recovery range is listed in this report.

MS Matrix spike is an aliquot of matrix fortified (spiked) with known quantities of specific analytes that is subjected to the entire analytical procedures in order to determine the effect of the matrix on an approved test method’s recovery system. The acceptable recovery range is listed in this report.

MSD Matrix spike duplicate means a replicate matrix spike that is prepared and analyzed in order to determine the precision of the approved test method. The acceptable recovery range is listed in this report.

MDL Method detection limit or limit of detection (LOD) means the minimum concentration of a substance that can be measured and reported with 99% confidence that the analyte concentration is greater than zero and is determined from analysis of a sample in a given matrix type containing the analyte.

MB/LCB Method blank or lab control blank is a sample of a matrix similar to the batch of associated sample (when available) that is free from the analytes of interest and is processed simultaneously with and under the same conditions as samples through all steps of the analytical procedures, and in which no target analytes or interferences are present at concentrations that impact the analytical results for sample analyses. (NELAC)

PQL Practical quantitation limit or limit of quantitation (LOQ) means the lowest level that can be reliably achieved within specified limits of precision and accuracy during routine laboratory operation conditions. The acceptable recovery range is listed in this report.

RL The reporting limit the lowest level that the data is displayed in the final report. The reporting limit may vary according to customer request or sample dilution. The reporting limit may not be less than the MDL.

RPD Relative percent difference is a calculated difference between two recoveries (ie. MS/MSD). The acceptable recovery limit is listed in this report.

SPK The spike is a known mass of target analyte added to a blank sample or sub-sample; used to determine recovery deficiency or for other quality control purposes. (NELAC)

Surr Surrogates are an organic compound which is similar to the analytes of interest in chemical composition and behavior in the analytical process, but which is not normally found in environmental samples.

Qualifiers

DF - Dilution Factor	**B** - Analyte detected in the associated Method Blank	**C** - Client requested RL below PQL	**MI** - Matrix interference
RL - Reporting Limit	**J** - Analyte detected below reporting limits	**D** - Diluted out of sample	**DNI** - Did not ignite
ND - Not Detected at the Reporting Limit	**R** - RPD outside accepted recovery limits	**IDPH** - IL Dept. of Public Health	**E** - Value above quantitation range
Surr - Surrogate Standard added by lab	**S** - Spike Recovery outside accepted recovery limits	**Q** - QC criteria failed	**H** - Holding time exceeded
TNTC - Too numerous to count (> 200 CFU)	X - Value exceeds Maximum Contaminant Level	# - Unknown hydrocarbon	**NELAP** - IL ELAP and NELAP Accredited

Client: Philip Environmental
Project: A831-735002-012901-225/IP Champaign 62403053
Lab Order: 08050415 **Report Date:** *16-May-08*

ANALYTICAL QC SUMMARY REPORT

TestCode: **I_ACN_S_MT**

Sample ID: **MB-R108131** SampType: **MBLK** Units: **mg/Kg** Prep Date: **5/13/2008** RunNo: **108131**
Client ID: **ZZZZZZ** Batch ID: **44827** **SOP2092** Analysis Date: **5/14/2008** SeqNo: **1947206**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Cyanide, Amenable to Chlorination	< 0.01	0.01									

Sample ID: **LCS-R108131** SampType: **LCS** Units: **mg/Kg** Prep Date: **5/13/2008** RunNo: **108131**
Client ID: **ZZZZZZ** Batch ID: **44827** **SOP2092** Analysis Date: **5/14/2008** SeqNo: **1947207**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Cyanide, Amenable to Chlorination	0.20	0.01	0.2000	0	100.8	85	115				

Client: Philip Environmental
Project: A831-735002-012901-225/IP Champaign 62403053
Lab Order: 08050415 **Report Date:** *16-May-08*

ANALYTICAL QC SUMMARY REPORT

TestCode: **I_TCN_S_MT**

Sample ID: **MB-R108067** SampType: **MBLK** Units: **mg/Kg** Prep Date: **5/12/2008** RunNo: **108067**
Client ID: **ZZZZZZ** Batch ID: **44810** **SW9010** Analysis Date: **5/13/2008** SeqNo: **1945237**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Cyanide	< 0.01	0.01									

Sample ID: **LCS-R108067** SampType: **LCS** Units: **mg/Kg** Prep Date: **5/12/2008** RunNo: **108067**
Client ID: **ZZZZZZ** Batch ID: **44810** **SW9010** Analysis Date: **5/13/2008** SeqNo: **1945238**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Cyanide	0.20	0.01	0.2000	0	100.8	85	115				

Sample ID: **LCSD-R108067** SampType: **LCSD** Units: **mg/Kg** Prep Date: **5/12/2008** RunNo: **108067**
Client ID: **ZZZZZZ** Batch ID: **44810** **SW9010** Analysis Date: **5/13/2008** SeqNo: **1945239**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Cyanide	0.19	0.01	0.2000	0	93.2	85	115	0.2016	7.85	15	

Sample ID: **08050415-005AMS** SampType: **MS** Units: **mg/Kg-dry** Prep Date: **5/12/2008** RunNo: **108067**
Client ID: **B-811 9.0-10.0 ftMS** Batch ID: **44810** **SW9010** Analysis Date: **5/13/2008** SeqNo: **1945242**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Cyanide	5.97	0.62	6.205	0.2479	92.2	80	120				

Sample ID: **08050415-005AMSD** SampType: **MSD** Units: **mg/Kg-dry** Prep Date: **5/12/2008** RunNo: **108067**
Client ID: **B-811 9.0-10.0 ftMS** Batch ID: **44810** **SW9010** Analysis Date: **5/13/2008** SeqNo: **1945243**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Cyanide	6.23	0.62	6.198	0.2479	96.5	80	120	5.971	4.27	20	

Sample ID: **MB-R108067** SampType: **MBLK** Units: **mg/Kg** Prep Date: **5/12/2008** RunNo: **108067**
Client ID: **ZZZZZZ** Batch ID: **44826** **SW9010** Analysis Date: **5/13/2008** SeqNo: **1945262**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Client: Philip Environmental
Project: A831-735002-012901-225/IP Champaign 62403053
Lab Order: 08050415 **Report Date:** *16-May-08*

ANALYTICAL QC SUMMARY REPORT

TestCode: **I_TCN_S_MT**

Sample ID: **MB-R108067** SampType: **MBLK** Units: **mg/Kg** Prep Date: **5/12/2008** RunNo: **108067**
Client ID: **ZZZZZZ** Batch ID: **44826** **SW9010** Analysis Date: **5/13/2008** SeqNo: **1945262**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Cyanide	< 0.01	0.01									

Sample ID: **LCS-R108067** SampType: **LCS** Units: **mg/Kg** Prep Date: **5/12/2008** RunNo: **108067**
Client ID: **ZZZZZZ** Batch ID: **44826** **SW9010** Analysis Date: **5/13/2008** SeqNo: **1945263**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Cyanide	0.19	0.01	0.2000	0	94.1	85	115				

Sample ID: **LCSD-R108067** SampType: **LCSD** Units: **mg/Kg** Prep Date: **5/12/2008** RunNo: **108067**
Client ID: **ZZZZZZ** Batch ID: **44826** **SW9010** Analysis Date: **5/13/2008** SeqNo: **1945264**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Cyanide	0.20	0.01	0.2000	0	99.7	85	115	0.1881	5.84	15	

Client: Philip Environmental
Project: A831-735002-012901-225/IP Champaign 62403053
Lab Order: 08050415 **Report Date:** *16-May-08*

ANALYTICAL QC SUMMARY REPORT

TestCode: **I_TS_M_MT**

Sample ID: **LCS-R108052** SampType: **LCS** Units: **%** Prep Date: RunNo: **108052**
Client ID: **ZZZZZZ** Batch ID: **R108052** Analysis Date: **5/12/2008** SeqNo: **1944672**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Total Solids	1.0	0.1	1.000	0	99.0	90	110				

Sample ID: **LCSQC** SampType: **LCSQC** Units: **%** Prep Date: RunNo: **108052**
Client ID: **ZZZZZZ** Batch ID: **R108052** Analysis Date: **5/12/2008** SeqNo: **1944673**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Total Solids	1.0	0.1	1.000	0	100	90	110				

Sample ID: **08050415-004ADUP** SampType: **DUP** Units: **%** Prep Date: RunNo: **108052**
Client ID: **B-811 2.0-3.0 ftDUP** Batch ID: **R108052** Analysis Date: **5/12/2008** SeqNo: **1944689**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Total Solids	79.2	0.1						78.94	0.341	15	

Sample ID: **08050415-022ADUP** SampType: **DUP** Units: **%** Prep Date: RunNo: **108052**
Client ID: **B-803 2.0-3.0 ftDUP** Batch ID: **R108052** Analysis Date: **5/12/2008** SeqNo: **1944708**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Total Solids	80.2	0.1						80.07	0.150	15	

Client: Philip Environmental
Project: A831-735002-012901-225/IP Champaign 62403053
Lab Order: 08050415 **Report Date:** *16-May-08*

ANALYTICAL QC SUMMARY REPORT

TestCode: **L_PH_S_M**

Sample ID: **08050415-015ADUP** SampType: **DUP** Units: Prep Date: RunNo: **108062**
Client ID: **B-852 9.0-10.0 ftDUP** Batch ID: **R108062** Analysis Date: **5/13/2008** SeqNo: **1945105**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
pH (1:1)	8.18	1.00						8.150	0.367	10	

Sample ID: **LCS-R108062** SampType: **LCS** Units: Prep Date: RunNo: **108062**
Client ID: **ZZZZZZ** Batch ID: **R108062** Analysis Date: **5/13/2008** SeqNo: **1945128**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
pH (1:1)	7.00	1.00	7.000	0	100	99.1	100.9				

Client: Philip Environmental
Project: A831-735002-012901-225/IP Champaign 62403053
Lab Order: 08050415 **Report Date:** *16-May-08*

ANALYTICAL QC SUMMARY REPORT

TestCode: M_SOLIDS_ICP

Sample ID: **MB-44809** SampType: **MBLK** Units: **mg/Kg-dry** Prep Date: **5/13/2008** RunNo: **108118**
Client ID: **ZZZZZZ** Batch ID: **44809** **SOP 3032** Analysis Date: **5/14/2008** SeqNo: **1947268**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	< 2.50	2.50	2.500	0	0	-100	100				
Chromium	< 1.00	1.00	1.000	0	0	-100	100				
Lead	< 4.00	4.00	4.000	0	0	-100	100				

Sample ID: **LCS-44809** SampType: **LCS** Units: **mg/Kg-dry** Prep Date: **5/13/2008** RunNo: **108118**
Client ID: **ZZZZZZ** Batch ID: **44809** **SOP 3032** Analysis Date: **5/14/2008** SeqNo: **1947271**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	196	2.50	200.0	0	97.8	85	115				
Chromium	19.5	1.00	20.00	0	97.6	85	115				

Sample ID: **08050415-006AMS** SampType: **MS** Units: **mg/Kg-dry** Prep Date: **5/13/2008** RunNo: **108118**
Client ID: **B-811 11.0-12.0 ftMS** Batch ID: **44809** **SOP 3032** Analysis Date: **5/14/2008** SeqNo: **1947276**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	176	2.40	192.3	6.433	88.1	75	125				
Chromium	31.2	0.96	19.23	14.38	87.7	75	125				

Sample ID: **08050415-006AMSD** SampType: **MSD** Units: **mg/Kg-dry** Prep Date: **5/13/2008** RunNo: **108118**
Client ID: **B-811 11.0-12.0 ftMS** Batch ID: **44809** **SOP 3032** Analysis Date: **5/14/2008** SeqNo: **1947277**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	177	2.40	192.3	6.433	88.9	75	125	175.8	0.871	20	
Chromium	30.4	0.96	19.23	14.38	83.4	75	125	31.25	2.71	20	

Sample ID: **08050415-014AMS** SampType: **MS** Units: **mg/Kg-dry** Prep Date: **5/13/2008** RunNo: **108118**
Client ID: **B-852 2.0-3.0 ftMS** Batch ID: **44809** **SOP 3032** Analysis Date: **5/14/2008** SeqNo: **1947285**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	177	2.40	192.3	4.615	89.8	75	125				

Client: Philip Environmental
Project: A831-735002-012901-225/IP Champaign 62403053
Lab Order: 08050415 **Report Date:** *16-May-08*

ANALYTICAL QC SUMMARY REPORT

TestCode: **M_SOLIDS_ICP**

Sample ID: **08050415-014AMS** SampType: **MS** Units: **mg/Kg-dry** Prep Date: **5/13/2008** RunNo: **108118**
Client ID: **B-852 2.0-3.0 ftMS** Batch ID: **44809** **SOP 3032** Analysis Date: **5/14/2008** SeqNo: **1947285**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chromium	40.6	0.96	19.23	23.50	89.2	75	125				

Sample ID: **08050415-014AMSD** SampType: **MSD** Units: **mg/Kg-dry** Prep Date: **5/13/2008** RunNo: **108118**
Client ID: **B-852 2.0-3.0 ftMSD** Batch ID: **44809** **SOP 3032** Analysis Date: **5/14/2008** SeqNo: **1947286**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	179	2.40	192.3	4.615	90.7	75	125	177.3	0.971	20	
Chromium	41.6	0.96	19.23	23.50	94.2	75	125	40.64	2.36	20	

Sample ID: **MB-44809** SampType: **MBLK** Units: **mg/Kg-dry** Prep Date: **5/13/2008** RunNo: **108133**
Client ID: **ZZZZZZ** Batch ID: **44809** **SOP 3032** Analysis Date: **5/15/2008** SeqNo: **1949076**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	< 4.00	4.00	4.000	0	0	-100	100				

Sample ID: **LCS-44809** SampType: **LCS** Units: **mg/Kg-dry** Prep Date: **5/13/2008** RunNo: **108133**
Client ID: **ZZZZZZ** Batch ID: **44809** **SOP 3032** Analysis Date: **5/15/2008** SeqNo: **1949077**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	52.7	4.00	50.00	0	105.3	85	115				

Sample ID: **08050415-006AMS** SampType: **MS** Units: **mg/Kg-dry** Prep Date: **5/13/2008** RunNo: **108133**
Client ID: **B-811 11.0-12.0 ftMS** Batch ID: **44809** **SOP 3032** Analysis Date: **5/15/2008** SeqNo: **1949084**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	50.6	3.85	48.08	10.14	84.1	75	125				

Client: Philip Environmental
Project: A831-735002-012901-225/IP Champaign 62403053
Lab Order: 08050415 **Report Date:** *16-May-08*

ANALYTICAL QC SUMMARY REPORT

TestCode: **M_SOLIDS_ICP**

Sample ID: **08050415-006AMSD** SampType: **MSD** Units: **mg/Kg-dry** Prep Date: **5/13/2008** RunNo: **108133**
Client ID: **B-811 11.0-12.0 ftMS** Batch ID: **44809** **SOP 3032** Analysis Date: **5/15/2008** SeqNo: **1949085**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	49.7	3.85	48.08	10.14	82.3	75	125	50.56	1.71	20	

Sample ID: **08050415-014AMS** SampType: **MS** Units: **mg/Kg-dry** Prep Date: **5/13/2008** RunNo: **108207**
Client ID: **B-852 2.0-3.0 ftMS** Batch ID: **44809** **SOP 3032** Analysis Date: **5/16/2008** SeqNo: **1949511**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	99.8	3.85	48.08	51.90	99.6	75	125				

Sample ID: **08050415-014AMSD** SampType: **MSD** Units: **mg/Kg-dry** Prep Date: **5/13/2008** RunNo: **108207**
Client ID: **B-852 2.0-3.0 ftMSD** Batch ID: **44809** **SOP 3032** Analysis Date: **5/16/2008** SeqNo: **1949512**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	94.3	3.85	48.08	51.90	88.1	75	125	99.81	5.71	20	

Client: Philip Environmental
Project: A831-735002-012901-225/IP Champaign 62403053
Lab Order: 08050415 **Report Date:** *16-May-08*

ANALYTICAL QC SUMMARY REPORT

TestCode: **SV_8270S_S_SIMS**

Sample ID: **MB-44799** SampType: **MBLK** Units: **mg/Kg** Prep Date: **5/12/2008** RunNo: **108117**
Client ID: **ZZZZZZ** Batch ID: **44799** **SW3550B** Analysis Date: **5/14/2008** SeqNo: **1946847**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Acenaphthene	ND	0.003									
Acenaphthylene	ND	0.003									
Anthracene	ND	0.003									
Benzo(a)anthracene	ND	0.003									
Benzo(a)pyrene	ND	0.003									
Benzo(b)fluoranthene	ND	0.003									
Benzo(g,h,i)perylene	ND	0.003									
Benzo(k)fluoranthene	ND	0.003									
Chrysene	ND	0.003									
Dibenzo(a,h)anthracene	ND	0.003									
Fluoranthene	ND	0.003									
Fluorene	ND	0.003									
Indeno(1,2,3-cd)pyrene	ND	0.003									
Naphthalene	ND	0.003									
Phenanthrene	ND	0.003									
Pyrene	ND	0.003									
Surr: 2-Fluorobiphenyl	0.120		0.1670		72.1	17.5	123				
Surr: Nitrobenzene-d5	0.112		0.1670		67.3	35	105				
Surr: p-Terphenyl-d14	0.137		0.1670		81.8	53.6	122				

Sample ID: **LCS-44799** SampType: **LCS** Units: **mg/Kg** Prep Date: **5/12/2008** RunNo: **108117**
Client ID: **ZZZZZZ** Batch ID: **44799** **SW3550B** Analysis Date: **5/14/2008** SeqNo: **1946848**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Acenaphthene	0.103	0.003	0.1670	0	61.6	56.3	115				
Acenaphthylene	0.137	0.003	0.1670	0	81.8	60.3	143				
Anthracene	0.099	0.003	0.1670	0	59.0	52.1	109				
Benzo(a)anthracene	0.100	0.003	0.1670	0	59.8	52.8	112				
Benzo(a)pyrene	0.105	0.003	0.1670	0	63.0	40.8	127				
Benzo(b)fluoranthene	0.118	0.003	0.1670	0	70.8	50.1	150				
Benzo(g,h,i)perylene	0.118	0.003	0.1670	0	70.5	52.8	145				

Client: Philip Environmental
Project: A831-735002-012901-225/IP Champaign 62403053
Lab Order: 08050415 **Report Date:** *16-May-08*

ANALYTICAL QC SUMMARY REPORT

TestCode: **SV_8270S_S_SIMS**

Sample ID: **LCS-44799** SampType: **LCS** Units: **mg/Kg** Prep Date: **5/12/2008** RunNo: **108117**
Client ID: **ZZZZZZ** Batch ID: **44799** **SW3550B** Analysis Date: **5/14/2008** SeqNo: **1946848**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzo(k)fluoranthene	0.115	0.003	0.1670	0	68.7	52	153				
Chrysene	0.110	0.003	0.1670	0	65.8	60.8	128				
Dibenzo(a,h)anthracene	0.118	0.003	0.1670	0	70.6	54.9	150				
Fluoranthene	0.105	0.003	0.1670	0	62.7	58.7	125				
Fluorene	0.109	0.003	0.1670	0	65.4	57.8	125				
Indeno(1,2,3-cd)pyrene	0.116	0.003	0.1670	0	69.2	52	147				
Naphthalene	0.093	0.003	0.1670	0	55.6	54.8	113				
Phenanthrene	0.109	0.003	0.1670	0	65.2	60.4	121				
Pyrene	0.109	0.003	0.1670	0	65.1	57.9	129				
Surr: 2-Fluorobiphenyl	0.109		0.1670		65.5	35.3	113				
Surr: Nitrobenzene-d5	0.100		0.1670		59.7	33.9	108				
Surr: p-Terphenyl-d14	0.111		0.1670		66.5	58.4	122				

Sample ID: **08050415-002AMS** SampType: **MS** Units: **mg/Kg-dry** Prep Date: **5/12/2008** RunNo: **108117**
Client ID: **B-812 9.0-10.0 ftMS** Batch ID: **44799** **SW3550B** Analysis Date: **5/14/2008** SeqNo: **1946862**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Acenaphthene	0.116	0.004	0.1863	0	62.3	36	135				
Acenaphthylene	0.150	0.004	0.1863	0	80.5	17.2	167				
Anthracene	0.111	0.004	0.1863	0	59.6	39.3	124				
Benzo(a)anthracene	0.116	0.004	0.1863	0	62.5	10	183				
Benzo(a)pyrene	0.129	0.004	0.1863	0	69.3	10	204				
Benzo(b)fluoranthene	0.132	0.004	0.1863	0	71.0	10.6	178				
Benzo(g,h,i)perylene	0.130	0.004	0.1863	0	69.5	10	168				
Benzo(k)fluoranthene	0.130	0.004	0.1863	0	69.7	27.6	181				
Chrysene	0.126	0.004	0.1863	0	67.6	10	176				
Dibenzo(a,h)anthracene	0.136	0.004	0.1863	0	72.9	12.2	156				
Fluoranthene	0.121	0.004	0.1863	0	64.7	10	227				
Fluorene	0.119	0.004	0.1863	0	64.1	35.2	148				
Indeno(1,2,3-cd)pyrene	0.133	0.004	0.1863	0	71.2	10	164				
Naphthalene	0.099	0.004	0.1863	0	53.4	14.7	128				

Client: Philip Environmental
Project: A831-735002-012901-225/IP Champaign 62403053
Lab Order: 08050415 **Report Date:** *16-May-08*

ANALYTICAL QC SUMMARY REPORT

TestCode: **SV_8270S_S_SIMS**

Sample ID: **08050415-002AMS** SampType: **MS** Units: **mg/Kg-dry** Prep Date: **5/12/2008** RunNo: **108117**
Client ID: **B-812 9.0-10.0 ftMS** Batch ID: **44799** **SW3550B** Analysis Date: **5/14/2008** SeqNo: **1946862**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Phenanthrene	0.121	0.004	0.1863	0	64.7	32.8	143				
Pyrene	0.122	0.004	0.1863	0	65.7	10	180				
Surr: 2-Fluorobiphenyl	0.124		0.1863		66.5	10	131				
Surr: Nitrobenzene-d5	0.116		0.1863		62.5	10	132				
Surr: p-Terphenyl-d14	0.131		0.1863		70.3	30.6	131				

Sample ID: **08050415-002AMSD** SampType: **MSD** Units: **mg/Kg-dry** Prep Date: **5/12/2008** RunNo: **108117**
Client ID: **B-812 9.0-10.0 ftMS** Batch ID: **44799** **SW3550B** Analysis Date: **5/14/2008** SeqNo: **1946863**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Acenaphthene	0.118	0.004	0.1879	0	62.8	36	135	0.1161	1.71	49.7	
Acenaphthylene	0.146	0.004	0.1879	0	77.5	17.2	167	0.1499	2.91	33.3	
Anthracene	0.110	0.004	0.1879	0	58.3	39.3	124	0.1110	1.25	51.1	
Benzo(a)anthracene	0.117	0.004	0.1879	0	62.2	10	183	0.1163	0.464	40.6	
Benzo(a)pyrene	0.122	0.004	0.1879	0	65.1	10	204	0.1291	5.36	56.4	
Benzo(b)fluoranthene	0.130	0.004	0.1879	0	69.2	10.6	178	0.1323	1.68	49.7	
Benzo(g,h,i)perylene	0.131	0.004	0.1879	0	69.8	10	168	0.1295	1.25	36.5	
Benzo(k)fluoranthene	0.130	0.004	0.1879	0	69.3	27.6	181	0.1298	0.305	42.6	
Chrysene	0.129	0.004	0.1879	0	68.9	10	176	0.1260	2.72	45.1	
Dibenzo(a,h)anthracene	0.134	0.004	0.1879	0	71.5	12.2	156	0.1358	1.03	39.9	
Fluoranthene	0.122	0.004	0.1879	0	64.8	10	227	0.1205	1.03	66.2	
Fluorene	0.121	0.004	0.1879	0	64.4	35.2	148	0.1195	1.22	65.6	
Indeno(1,2,3-cd)pyrene	0.131	0.004	0.1879	0	69.6	10	164	0.1326	1.45	36.5	
Naphthalene	0.100	0.004	0.1879	0	53.0	14.7	128	0.09943	0.129	39.6	
Phenanthrene	0.119	0.004	0.1879	0	63.5	32.8	143	0.1205	0.957	35.4	
Pyrene	0.122	0.004	0.1879	0	65.1	10	180	0.1224	0.0969	60.1	
Surr: 2-Fluorobiphenyl	0.114		0.1879		60.9	10	131		0	40	
Surr: Nitrobenzene-d5	0.108		0.1879		57.7	10	132		0	40	
Surr: p-Terphenyl-d14	0.121		0.1879		64.5	30.6	131		0	40	

Client: Philip Environmental
Project: A831-735002-012901-225/IP Champaign 62403053
Lab Order: 08050415 **Report Date:** *16-May-08*

ANALYTICAL QC SUMMARY REPORT

TestCode: **SV_8270S_S_SIMS**

Sample ID: **MB-44801** SampType: **MBLK** Units: **mg/Kg** Prep Date: **5/12/2008** RunNo: **108147**
Client ID: **ZZZZZZ** Batch ID: **44801** **SW3550B** Analysis Date: **5/14/2008** SeqNo: **1947688**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Acenaphthene	ND	0.003									
Acenaphthylene	ND	0.003									
Anthracene	ND	0.003									
Benzo(a)anthracene	ND	0.003									
Benzo(a)pyrene	ND	0.003									
Benzo(b)fluoranthene	ND	0.003									
Benzo(g,h,i)perylene	ND	0.003									
Benzo(k)fluoranthene	ND	0.003									
Chrysene	ND	0.003									
Dibenzo(a,h)anthracene	ND	0.003									
Fluoranthene	ND	0.003									
Fluorene	ND	0.003									
Indeno(1,2,3-cd)pyrene	ND	0.003									
Naphthalene	ND	0.003									
Phenanthrene	ND	0.003									
Pyrene	ND	0.003									
Surr: 2-Fluorobiphenyl	0.104		0.1670		62.3	17.5	123				
Surr: Nitrobenzene-d5	0.097		0.1670		57.9	35	105				
Surr: p-Terphenyl-d14	0.121		0.1670		72.7	53.6	122				

Sample ID: **LCS-44801** SampType: **LCS** Units: **mg/Kg** Prep Date: **5/12/2008** RunNo: **108147**
Client ID: **ZZZZZZ** Batch ID: **44801** **SW3550B** Analysis Date: **5/14/2008** SeqNo: **1947689**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Acenaphthene	0.100	0.003	0.1670	0	59.8	56.3	115				
Acenaphthylene	0.128	0.003	0.1670	0	76.4	60.3	143				
Anthracene	0.103	0.003	0.1670	0	61.6	52.1	109				
Benzo(a)anthracene	0.097	0.003	0.1670	0	58.2	52.8	112				
Benzo(a)pyrene	0.106	0.003	0.1670	0	63.7	40.8	127				
Benzo(b)fluoranthene	0.112	0.003	0.1670	0	67.0	50.1	150				
Benzo(g,h,i)perylene	0.109	0.003	0.1670	0	65.2	52.8	145				

Client: Philip Environmental
Project: A831-735002-012901-225/IP Champaign 62403053
Lab Order: 08050415 **Report Date:** *16-May-08*

ANALYTICAL QC SUMMARY REPORT

TestCode: **SV_8270S_S_SIMS**

Sample ID: **LCS-44801** SampType: **LCS** Units: **mg/Kg** Prep Date: **5/12/2008** RunNo: **108147**
Client ID: **ZZZZZZ** Batch ID: **44801** **SW3550B** Analysis Date: **5/14/2008** SeqNo: **1947689**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzo(k)fluoranthene	0.110	0.003	0.1670	0	65.8	52	153				
Chrysene	0.109	0.003	0.1670	0	65.2	60.8	128				
Dibenzo(a,h)anthracene	0.111	0.003	0.1670	0	66.2	54.9	150				
Fluoranthene	0.103	0.003	0.1670	0	61.5	58.7	125				
Fluorene	0.106	0.003	0.1670	0	63.5	57.8	125				
Indeno(1,2,3-cd)pyrene	0.107	0.003	0.1670	0	64.3	52	147				
Naphthalene	0.090	0.003	0.1670	0	54.1	54.8	113				S
Phenanthrene	0.103	0.003	0.1670	0	61.4	60.4	121				
Pyrene	0.106	0.003	0.1670	0	63.4	57.9	129				
Surr: 2-Fluorobiphenyl	0.096		0.1670		57.7	35.3	113				
Surr: Nitrobenzene-d5	0.087		0.1670		51.9	33.9	108				
Surr: p-Terphenyl-d14	0.109		0.1670		65.5	58.4	122				

Sample ID: **08050415-021AMS** SampType: **MS** Units: **mg/Kg-dry** Prep Date: **5/12/2008** RunNo: **108147**
Client ID: **B-846 20.0-21.0 ftMS** Batch ID: **44801** **SW3550B** Analysis Date: **5/14/2008** SeqNo: **1947696**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Acenaphthene	0.107	0.004	0.1841	0.003893	56.1	36	135				
Acenaphthylene	0.134	0.004	0.1841	0	73.0	17.2	167				
Anthracene	0.117	0.004	0.1841	0	63.6	39.3	124				
Benzo(a)anthracene	0.113	0.004	0.1841	0	61.5	10	183				
Benzo(a)pyrene	0.122	0.004	0.1841	0	66.3	10	204				
Benzo(b)fluoranthene	0.128	0.004	0.1841	0	69.5	10.6	178				
Benzo(g,h,i)perylene	0.124	0.004	0.1841	0	67.3	10	168				
Benzo(k)fluoranthene	0.120	0.004	0.1841	0	65.3	27.6	181				
Chrysene	0.122	0.004	0.1841	0	66.4	10	176				
Dibenzo(a,h)anthracene	0.123	0.004	0.1841	0	66.9	12.2	156				
Fluoranthene	0.122	0.004	0.1841	0	66.3	10	227				
Fluorene	0.110	0.004	0.1841	0	59.9	35.2	148				
Indeno(1,2,3-cd)pyrene	0.122	0.004	0.1841	0	66.2	10	164				
Naphthalene	0.097	0.004	0.1841	0.01291	45.4	14.7	128				

Client: Philip Environmental
Project: A831-735002-012901-225/IP Champaign 62403053
Lab Order: 08050415 **Report Date:** *16-May-08*

ANALYTICAL QC SUMMARY REPORT

TestCode: **SV_8270S_S_SIMS**

Sample ID: **08050415-021AMS** SampType: **MS** Units: **mg/Kg-dry** Prep Date: **5/12/2008** RunNo: **108147**
Client ID: **B-846 20.0-21.0 ftMS** Batch ID: **44801** **SW3550B** Analysis Date: **5/14/2008** SeqNo: **1947696**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Phenanthrene	0.124	0.004	0.1841	0.008913	62.5	32.8	143				
Pyrene	0.124	0.004	0.1841	0.004766	64.9	10	180				
Surr: 2-Fluorobiphenyl	0.104		0.1841		56.3	10	131				
Surr: Nitrobenzene-d5	0.108		0.1841		58.7	10	132				
Surr: p-Terphenyl-d14	0.118		0.1841		63.9	30.6	131				

Sample ID: **08050415-021AMSD** SampType: **MSD** Units: **mg/Kg-dry** Prep Date: **5/12/2008** RunNo: **108147**
Client ID: **B-846 20.0-21.0 ftMS** Batch ID: **44801** **SW3550B** Analysis Date: **5/14/2008** SeqNo: **1947697**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Acenaphthene	0.107	0.004	0.1794	0.003893	57.6	36	135	0.1072	0.0509	49.7	
Acenaphthylene	0.137	0.004	0.1794	0	76.5	17.2	167	0.1343	2.19	33.3	
Anthracene	0.106	0.004	0.1794	0	59.2	39.3	124	0.1171	9.80	51.1	
Benzo(a)anthracene	0.105	0.004	0.1794	0	58.3	10	183	0.1132	7.88	40.6	
Benzo(a)pyrene	0.112	0.004	0.1794	0	62.3	10	204	0.1221	8.82	56.4	
Benzo(b)fluoranthene	0.117	0.004	0.1794	0	65.3	10.6	178	0.1280	8.81	49.7	
Benzo(g,h,i)perylene	0.113	0.004	0.1794	0	63.0	10	168	0.1240	9.20	36.5	
Benzo(k)fluoranthene	0.116	0.004	0.1794	0	64.4	27.6	181	0.1202	3.94	42.6	
Chrysene	0.117	0.004	0.1794	0	65.0	10	176	0.1222	4.69	45.1	
Dibenzo(a,h)anthracene	0.117	0.004	0.1794	0	65.5	12.2	156	0.1232	4.76	39.9	
Fluoranthene	0.111	0.004	0.1794	0	62.1	10	227	0.1220	9.09	66.2	
Fluorene	0.112	0.004	0.1794	0	62.3	35.2	148	0.1102	1.40	65.6	
Indeno(1,2,3-cd)pyrene	0.114	0.004	0.1794	0	63.4	10	164	0.1220	7.06	36.5	
Naphthalene	0.096	0.004	0.1794	0.01291	46.4	14.7	128	0.09652	0.325	39.6	
Phenanthrene	0.117	0.004	0.1794	0.008913	60.3	32.8	143	0.1240	5.78	35.4	
Pyrene	0.116	0.004	0.1794	0.004766	62.0	10	180	0.1242	6.85	60.1	
Surr: 2-Fluorobiphenyl	0.112		0.1794		62.7	10	131		0	40	
Surr: Nitrobenzene-d5	0.110		0.1794		61.5	10	132		0	40	
Surr: p-Terphenyl-d14	0.122		0.1794		68.3	30.6	131		0	40	

Client: Philip Environmental
Project: A831-735002-012901-225/IP Champaign 62403053
Lab Order: 08050415 **Report Date:** *16-May-08*

ANALYTICAL QC SUMMARY REPORT

TestCode: **SV_OA2_S**

Sample ID: **LCS-44861**	SampType: **LCS**		Units: **mg/Kg**		Prep Date: **5/14/2008**		RunNo: **108200**				
Client ID: **ZZZZZZ**	Batch ID: **44861**		**SW3550B**		Analysis Date: **5/15/2008**		SeqNo: **1948905**				
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Diesel	19.3	5.00	16.70	0	115.4	45.8	131				
Surr: n-Tetracontane	0.60		0.6700		89.0	58	130				

Sample ID: **MB-44861**	SampType: **MBLK**		Units: **mg/Kg**		Prep Date: **5/14/2008**		RunNo: **108200**				
Client ID: **ZZZZZZ**	Batch ID: **44861**		**SW3550B**		Analysis Date: **5/15/2008**		SeqNo: **1948906**				
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Diesel	ND	5.00									
Kerosene	ND	5.00									
Mineral Spirits	ND	5.00									
Motor Oil	ND	5.00									
Surr: n-Tetracontane	0.63		0.6700		94.3	59.5	122				

Sample ID: **08050415-033AMS**	SampType: **MS**		Units: **mg/Kg-dry**		Prep Date: **5/14/2008**		RunNo: **108200**				
Client ID: **B-847 22.0-23.0 ftMS**	Batch ID: **44861**		**SW3550B**		Analysis Date: **5/15/2008**		SeqNo: **1948908**				
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Diesel	656	144	19.25	562.1	487.0	20.3	167				S#
Surr: n-Tetracontane	0.40		0.7724		52.0	53.9	153				S

Sample ID: **08050415-033AMSD**	SampType: **MSD**		Units: **mg/Kg-dry**		Prep Date: **5/14/2008**		RunNo: **108200**				
Client ID: **B-847 22.0-23.0 ftMS**	Batch ID: **44861**		**SW3550B**		Analysis Date: **5/15/2008**		SeqNo: **1948909**				
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Diesel	976	142	18.98	562.1	2181	20.3	167	655.9	39.2	34	SR#
Surr: n-Tetracontane	0.79		0.7614		104.0	53.9	153		0	0	

Client: Philip Environmental
Project: A831-735002-012901-225/IP Champaign 62403053
Lab Order: 08050415 **Report Date:** *16-May-08*

ANALYTICAL QC SUMMARY REPORT

TestCode: V_BTEX_S

Sample ID: **LCS-G080512-2** SampType: **LCS** Units: **µg/Kg** Prep Date: **5/12/2008** RunNo: **108042**
Client ID: **ZZZZZZ** Batch ID: **44816** **SW5035** Analysis Date: **5/12/2008** SeqNo: **1944539**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzene	51.4	1.0	50.00	0	102.8	75	123				
Toluene	50.2	5.0	50.00	0	100.3	77.3	117				
Ethylbenzene	46.8	5.0	50.00	0	93.5	80.8	118				
Xylenes, Total	92.8	5.0	100.0	0	92.8	78.5	121				
Surr: 1,2-Dichloroethane-d4	40.9		50.00		81.8	61	128				
Surr: 4-Bromofluorobenzene	50.6		50.00		101.3	78.2	117				
Surr: Dibromofluoromethane	49.5		50.00		99.0	66.6	130				
Surr: Toluene-d8	49.4		50.00		98.9	80.1	122				

Sample ID: **LCSD-G080512-2** SampType: **LCSD** Units: **µg/Kg** Prep Date: **5/12/2008** RunNo: **108042**
Client ID: **ZZZZZZ** Batch ID: **44816** **SW5035** Analysis Date: **5/13/2008** SeqNo: **1944540**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzene	50.6	1.0	50.00	0	101.3	75	123	51.42	1.53	20	
Toluene	49.3	5.0	50.00	0	98.6	77.3	117	50.16	1.69	20	
Ethylbenzene	46.4	5.0	50.00	0	92.8	80.8	118	46.75	0.708	20	
Xylenes, Total	91.2	5.0	100.0	0	91.2	78.5	121	92.81	1.76	20	
Surr: 1,2-Dichloroethane-d4	39.7		50.00		79.3	61	128		0	0	
Surr: 4-Bromofluorobenzene	50.4		50.00		100.9	78.2	117		0	0	
Surr: Dibromofluoromethane	49.1		50.00		98.2	66.6	130		0	0	
Surr: Toluene-d8	48.8		50.00		97.6	80.1	122		0	0	

Sample ID: **MBLK-G080512-2** SampType: **MBLK** Units: **µg/Kg** Prep Date: **5/12/2008** RunNo: **108042**
Client ID: **ZZZZZZ** Batch ID: **44816** **SW5035** Analysis Date: **5/13/2008** SeqNo: **1944542**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzene	ND	1.0									
Toluene	ND	5.0									
Ethylbenzene	ND	5.0									
Xylenes, Total	ND	5.0									

Client: Philip Environmental
Project: A831-735002-012901-225/IP Champaign 62403053
Lab Order: 08050415 **Report Date:** *16-May-08*

ANALYTICAL QC SUMMARY REPORT

TestCode: **V_BTEX_S**

Sample ID: **MBLK-G080512-2** SampType: **MBLK** Units: **µg/Kg** Prep Date: **5/12/2008** RunNo: **108042**
Client ID: **ZZZZZZ** Batch ID: **44816** **SW5035** Analysis Date: **5/13/2008** SeqNo: **1944542**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Surr: 1,2-Dichloroethane-d4	40.0		50.00		80.0	61	128				
Surr: 4-Bromofluorobenzene	51.1		50.00		102.1	78.2	117				
Surr: Dibromofluoromethane	48.5		50.00		97.0	66.6	130				
Surr: Toluene-d8	49.1		50.00		98.2	80.1	122				

Sample ID: **LCS-F080512-2** SampType: **LCS** Units: **µg/Kg** Prep Date: **5/12/2008** RunNo: **108043**
Client ID: **ZZZZZZ** Batch ID: **44818** **SW5035** Analysis Date: **5/12/2008** SeqNo: **1944551**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzene	49.4	1.0	50.00	0	98.9	75	123				
Toluene	48.5	5.0	50.00	0	97.0	77.3	117				
Ethylbenzene	51.5	5.0	50.00	0	103.0	80.8	118				
Xylenes, Total	106	5.0	100.0	0	106.0	78.5	121				
Surr: 1,2-Dichloroethane-d4	48.3		50.00		96.6	61	128				
Surr: 4-Bromofluorobenzene	49.3		50.00		98.5	78.2	117				
Surr: Dibromofluoromethane	49.5		50.00		99.0	66.6	130				
Surr: Toluene-d8	48.9		50.00		97.8	80.1	122				

Sample ID: **LCSD-F080512-2** SampType: **LCSD** Units: **µg/Kg** Prep Date: **5/12/2008** RunNo: **108043**
Client ID: **ZZZZZZ** Batch ID: **44818** **SW5035** Analysis Date: **5/12/2008** SeqNo: **1944552**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzene	50.6	1.0	50.00	0	101.2	75	123	49.44	2.36	20	
Toluene	49.3	5.0	50.00	0	98.7	77.3	117	48.52	1.68	20	
Ethylbenzene	52.4	5.0	50.00	0	104.8	80.8	118	51.51	1.71	20	
Xylenes, Total	109	5.0	100.0	0	108.7	78.5	121	106.0	2.45	20	
Surr: 1,2-Dichloroethane-d4	49.2		50.00		98.4	61	128		0	0	
Surr: 4-Bromofluorobenzene	49.4		50.00		98.8	78.2	117		0	0	
Surr: Dibromofluoromethane	49.8		50.00		99.5	66.6	130		0	0	
Surr: Toluene-d8	48.6		50.00		97.3	80.1	122		0	0	

Client: Philip Environmental
Project: A831-735002-012901-225/IP Champaign 62403053
Lab Order: 08050415 **Report Date:** *16-May-08*

ANALYTICAL QC SUMMARY REPORT

TestCode: **V_BTEX_S**

Sample ID: **MBLK-F080512-2** SampType: **MBLK** Units: **µg/Kg** Prep Date: **5/12/2008** RunNo: **108043**
Client ID: **ZZZZZZ** Batch ID: **44818** **SW5035** Analysis Date: **5/12/2008** SeqNo: **1944554**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzene	ND	1.0									
Toluene	ND	5.0									
Ethylbenzene	ND	5.0									
Xylenes, Total	ND	5.0									
Surr: 1,2-Dichloroethane-d4	51.4		50.00		102.7	61	128				
Surr: 4-Bromofluorobenzene	48.6		50.00		97.2	78.2	117				
Surr: Dibromofluoromethane	51.3		50.00		102.6	66.6	130				
Surr: Toluene-d8	48.4		50.00		96.8	80.1	122				

Sample ID: **LCS-F080513-1** SampType: **LCS** Units: **µg/Kg** Prep Date: **5/13/2008** RunNo: **108092**
Client ID: **ZZZZZZ** Batch ID: **44849** **SW5035** Analysis Date: **5/13/2008** SeqNo: **1946113**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzene	48.8	1.0	50.00	0	97.7	75	123				
Toluene	48.1	5.0	50.00	0	96.3	77.3	117				
Ethylbenzene	51.9	5.0	50.00	0	103.8	80.8	118				
Xylenes, Total	107	5.0	100.0	0	106.6	78.5	121				
Surr: 1,2-Dichloroethane-d4	49.2		50.00		98.4	61	128				
Surr: 4-Bromofluorobenzene	48.9		50.00		97.8	78.2	117				
Surr: Dibromofluoromethane	50.4		50.00		100.8	66.6	130				
Surr: Toluene-d8	48.9		50.00		97.9	80.1	122				

Sample ID: **LCSD-F080513-1** SampType: **LCSD** Units: **µg/Kg** Prep Date: **5/13/2008** RunNo: **108092**
Client ID: **ZZZZZZ** Batch ID: **44849** **SW5035** Analysis Date: **5/13/2008** SeqNo: **1946114**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzene	46.0	1.0	50.00	0	92.0	75	123	48.83	5.95	20	
Toluene	44.8	5.0	50.00	0	89.7	77.3	117	48.13	7.10	20	
Ethylbenzene	48.4	5.0	50.00	0	96.9	80.8	118	51.89	6.90	20	
Xylenes, Total	98.7	5.0	100.0	0	98.7	78.5	121	106.6	7.73	20	

Client: Philip Environmental
Project: A831-735002-012901-225/IP Champaign 62403053
Lab Order: 08050415 **Report Date:** *16-May-08*

ANALYTICAL QC SUMMARY REPORT

TestCode: V_BTEX_S

Sample ID: **LCSD-F080513-1** SampType: **LCSD** Units: **µg/Kg** Prep Date: **5/13/2008** RunNo: **108092**
Client ID: **ZZZZZZ** Batch ID: **44849** **SW5035** Analysis Date: **5/13/2008** SeqNo: **1946114**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Surr: 1,2-Dichloroethane-d4	51.2		50.00		102.5	61	128		0	0	
Surr: 4-Bromofluorobenzene	49.1		50.00		98.2	78.2	117		0	0	
Surr: Dibromofluoromethane	50.5		50.00		100.9	66.6	130		0	0	
Surr: Toluene-d8	48.4		50.00		96.9	80.1	122		0	0	

Sample ID: **MBLK-F080513-1** SampType: **MBLK** Units: **µg/Kg** Prep Date: **5/13/2008** RunNo: **108092**
Client ID: **ZZZZZZ** Batch ID: **44849** **SW5035** Analysis Date: **5/13/2008** SeqNo: **1946115**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzene	ND	1.0									
Toluene	ND	5.0									
Ethylbenzene	ND	5.0									
Xylenes, Total	ND	5.0									
Surr: 1,2-Dichloroethane-d4	50.1		50.00		100.2	61	128				
Surr: 4-Bromofluorobenzene	49.2		50.00		98.3	78.2	117				
Surr: Dibromofluoromethane	50.6		50.00		101.2	66.6	130				
Surr: Toluene-d8	48.9		50.00		97.8	80.1	122				

Sample ID: **LCS-F080514-1** SampType: **LCS** Units: **µg/Kg** Prep Date: **5/14/2008** RunNo: **108135**
Client ID: **ZZZZZZ** Batch ID: **44866** **SW5035** Analysis Date: **5/14/2008** SeqNo: **1947428**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzene	45.9	1.0	50.00	0	91.8	75	123				
Toluene	45.4	5.0	50.00	0	90.7	77.3	117				
Ethylbenzene	49.4	5.0	50.00	0	98.9	80.8	118				
Xylenes, Total	101	5.0	100.0	0	101.0	78.5	121				
Surr: 1,2-Dichloroethane-d4	54.1		50.00		108.1	61	128				
Surr: 4-Bromofluorobenzene	50.2		50.00		100.3	78.2	117				
Surr: Dibromofluoromethane	52.6		50.00		105.1	66.6	130				
Surr: Toluene-d8	48.2		50.00		96.4	80.1	122				

Client: Philip Environmental
Project: A831-735002-012901-225/IP Champaign 62403053
Lab Order: 08050415 **Report Date:** *16-May-08*

ANALYTICAL QC SUMMARY REPORT

TestCode: **V_BTEX_S**

Sample ID: **LCSD-F080514-1** SampType: **LCSD** Units: **µg/Kg** Prep Date: **5/14/2008** RunNo: **108135**
Client ID: **ZZZZZZ** Batch ID: **44866** **SW5035** Analysis Date: **5/14/2008** SeqNo: **1947429**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzene	47.2	1.0	50.00	0	94.4	75	123	45.90	2.77	20	
Toluene	46.4	5.0	50.00	0	92.7	77.3	117	45.36	2.16	20	
Ethylbenzene	49.9	5.0	50.00	0	99.7	80.8	118	49.44	0.866	20	
Xylenes, Total	104	5.0	100.0	0	103.6	78.5	121	101.0	2.49	20	
Surr: 1,2-Dichloroethane-d4	54.6		50.00		109.2	61	128		0	0	
Surr: 4-Bromofluorobenzene	50.6		50.00		101.2	78.2	117		0	0	
Surr: Dibromofluoromethane	53.7		50.00		107.4	66.6	130		0	0	
Surr: Toluene-d8	47.7		50.00		95.3	80.1	122		0	0	

Sample ID: **MBLK-F080514-1** SampType: **MBLK** Units: **µg/Kg** Prep Date: **5/14/2008** RunNo: **108135**
Client ID: **ZZZZZZ** Batch ID: **44866** **SW5035** Analysis Date: **5/14/2008** SeqNo: **1947431**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzene	ND	1.0									
Toluene	ND	5.0									
Ethylbenzene	ND	5.0									
Xylenes, Total	ND	5.0									
Surr: 1,2-Dichloroethane-d4	56.5		50.00		113.0	61	128				
Surr: 4-Bromofluorobenzene	49.7		50.00		99.4	78.2	117				
Surr: Dibromofluoromethane	53.4		50.00		106.8	66.6	130				
Surr: Toluene-d8	48.0		50.00		96.0	80.1	122				

TEKLAB, INC.

5445 HORSESHOE LAKE ROAD
COLLINSVILLE, ILLINOIS 62234

ENVIRONMENTAL TESTING LABORATORY

TEL: 618-344-1004
FAX: 618-344-1005

RECEIVING CHECK LIST

Client: Philip Environmental
Project: A831-735002-012901-225/IP Champaign 62403053
Lab Order: 08050415
Report Date: 16-May-08

Carrier: Leslie Hoosier

Received By: EAH

Completed by: Elizabeth A. Hurley
On: 09-May-08
Elizabeth A. Hurley

Reviewed by: Marvin L. Darling II
On: 12-May-08
Marvin L. Darling

Pages to follow: Chain of custody 6 Extra pages included 0

Shipping container/cooler in good condition?	Yes	☑	No	☐	Not Present	☐	Temp °C	4.6		
Custody seals intact on shippping container/cooler?	Yes	☐	No	☐	Not Present	☑				
Custody seals intact on sample bottles?	Yes	☐	No	☐	Not Present	☑				
Type of thermal preservation?	None	☐	Ice	☑	Blue Ice	☐	Dry Ice	☐		
Chain of custody present?	Yes	☑	No	☐						
Chain of custody signed when relinquished and received?	Yes	☑	No	☐						
Chain of custody agrees with sample labels?	Yes	☑	No	☐						
Samples in proper container/bottle?	Yes	☑	No	☐						
Sample containers intact?	Yes	☑	No	☐						
Sufficient sample volume for indicated test?	Yes	☑	No	☐						
All samples received within holding time?	Yes	☑	No	☐						
Reported field parameters measured:	Field	☐	Lab	☐	NA	☑				
Container/Temp Blank temperature in compliance?	Yes	☑	No	☐						

When thermal preservation is required, samples are compliant with a temperature between 0.1°C - 6.0°C, or when samples are received on ice the same day as collected.

Water - VOA vials have zero headspace?	Yes	☐	No	☐	No VOA vials submitted	☑
Water - pH acceptable upon receipt?	Yes	☑	No	☐		

Any No responses must be detailed below or on the COC.

One B-847 6.0-7.0 ft jar was labeled "B-847 6.0-8.0 ft." All other containers were labeled correctly. EAH 5/9/08

PSC

Chain of Custody Record

210 West Sand Bank Road
P.O. Box 230
Columbia, IL 62236-0230

(618) 281-7173 Phone
(800) 733-7173
(618) 281-5120 Fax

0805045

COC Serial No. B 08649

Project Name: AmerenIP Champaign **Project Mgr.:** Derek Ingram
Project Number: 6240 3053 **Cost Code:** 024501
Sampler(s): L. Hoosier / R. Huson
Laboratory Name: Teklab Location: Collinsville

Laboratory Temperature upon Receipt: 4.6°C ICED

Analyses by Method Name and Number

Sample Number and (depth)	Date	Time	Soil	Water	Air	Wipes	Other *	Total Number of Containers	BTEX	PAH	Metals *	Cyanide	Comments (Field PID)	Lab ID #'s
B-812 1.0-2.0'	5/5	1610	X					5	X	X			*Arsenic, Chromium, ~~tot~~ & lead	0805045-001
B-812 9.0-10.0	5/5	1625	X					5	X	X				002
B-812 11.0-12.0	5/5	1642	X					5	X	X				003
B-811 ~~2'-3'~~ 2.0-3.0	5/5	1715	X					5	X	X	X	X		004
B-811 9.0-10.0	5/5	~~17~~ 1723	X					5	X	X	X	X		005
B-811 11.0-12.0	5/5	1743	X					5	X	X	X	X		006

Per Leslie Hoosier, add metals and cyanide to B809 (all depths), B811 (all depths), B843 (2-3 ft and 7-8 ft), B845 (6-7 ft), B803 (2-3 ft, 9-10 ft, and 21-22 ft), B849 (0-1 ft, 9-10 ft, 16-17 ft), B844 (1-2 ft and 8-9 ft), B852 (2-3 ft), and B850 (8-9 ft and 16-17 ft). Add pH to B809 (2-3 ft and 9-10 ft) and B852 (9-10 ft). EAH 5/12/08

Samples Iced: ☒ Yes ☐ No

Preservatives (ONLY for Water Samples)

- ☐ Volatile Organics .... Hydrochloric acid (HCl)
- ☐ VOC Soil (5035) .... Sodium Bisulfate/Methanol
- ☐ TPH .... Hydrochloric acid and/or Sulfuric acid
- ☐ Metals .... Nitric acid (HNO_3)
- ☐ Cyanide .... Sodium hydroxide (NaOH)
- ☐ Other (Specify) .... ________

Lab Directives:

Requested TAT: ☐ Rush ☐ 5 Days ☒ STD ☐ Other ______
Fax and/or Mail Results to: Derek Ingram
Send Invoice to: ______
QC Deliverable Requested: ☐ Full QC & Limits ☐ CLP-LIKE ☐ EDD ☐ Other ______
Special Guidelines: ______
Reporting Limits: ______
* Special: ______

Shipping:

Carrier / Airbill No.

Relinquished by:

Signature	Date	Time
Leslie Hoosier	5/9	1720

Received by:

Signature	Date	Time
Elizabeth A. Hurley	5/9/08	1720

Distribution: WHITE to Lab CANARY to PM PINK to QA/QC GREEN to Sampler

Shaded Areas to be Completed by Lab

PE-179 (6/03)

08050415

Chain of Custody Record

PSC
210 West Sand Bank Road
P.O. Box 230
Columbia, IL 62236-0230
(618) 281-7173 Phone
(800) 733-7173
(618) 281-5120 Fax

COC Serial No. B 08650

Project Name: AmerenIP Champaign Project Mgr.: Derek Ingram
Project Number: 62403053 Cost Code: 024501
Sampler(s): L. Hoosier / R. Huson
Laboratory Name: Teklab
Location: Collinsville

Laboratory Temperature upon Receipt: 4.6°C (ICED)

Analyses by Method Name and Number

Sample Number and (depth)	Date	Time	Soil	Water	Air	Wipes	Other *	Total Number of Containers	BTEX	PAH	Metals	Cyanide	pH	Comments (Field PID)	Lab ID #'s
B843 2.0-3.0'	5/6	0924	X					5	X	X	X	X			08050415-007
B843 7.0-8.0'	5/6	0935	X					5	X	X	X	X			008
B843 10.0-11.0'	5/6	0947	X					5	X	X					009
B844 1.0'-2.0'	5/6	1247	X					5	X	X	X	X			010
B844 ~~9.0~~ LH ~~10.0'~~ 8.0-9.0	5/6	1305	X					5	X	X	X	X			011
B844 15.0-16.0	5/6	1340	X					5	X	X					012
B851 19.0-20.0	5/9	1020	X					5	X	X					013
B852 2.0-3.0'	5/9	1111	X					5	X	X	X	X			014
B852 9.0-10.0'	5/9	1125	X					5	X	X	~~X~~ EAH 5/12/08	~~X~~	X		015
B852 23.0-24.0'	5/9	1142	X					5	X	X					016

Samples Iced: ☒ Yes ☐ No

Preservatives (ONLY for Water Samples)
- ☐ Volatile Organics .... Hydrochloric acid (HCl)
- ☐ VOC Soil (5035) .... Sodium Bisulfate/Methanol
- ☐ TPH .... Hydrochloric acid and/or Sulfuric acid
- ☐ Metals .... Nitric acid (HNO_3)
- ☐ Cyanide .... Sodium hydroxide (NaOH)
- ☐ Other (Specify) ....

Lab Directives:
Requested TAT: ☐ Rush ☐ 5 Days ☒ STD ☐ Other
Fax and/or Mail Results to: Derek Ingram
Send Invoice to:
QC Deliverable Requested: ☐ Full QC & Limits ☐ CLP-LIKE ☐ EDD ☐ Other
Special Guidelines:
Reporting Limits:
* Special:

Shipping:

Carrier / Airbill No.

Relinquished by:

Signature	Date	Time
Leslie Hoosier	5/9	1720

Received by:

Signature	Date	Time
Elizabeth A Hurley	5/9/08	1720

Distribution: WHITE to Lab CANARY to PM PINK to QA/QC GREEN to Sampler
PE-179 (6/03)

Shaded Areas to be Completed by Lab

PSC

Chain of Custody Record

210 West Sand Bank Road
P.O. Box 230
Columbia, IL 62236-0230
(618) 281-7173 Phone
(800) 733-7173
(618) 281-5120 Fax

08050415

COC Serial No. B 08651

Project Name: AmerenIP Champaign
Project Mgr.: Derek Ingram
Project Number: 62403053
Cost Code: 024501
Sampler(s): L. Hoosier / R. Huson
Laboratory Name: Teklab
Location: Collinsville

Laboratory Temperature upon Receipt: 4.6°C

Sample Number and (depth)	Date	Time	Soil	Water	Air	Wipes	Other *	Total Number of Containers	BTEX	PAH	Metals	Cyanide							Comments (Field PID)	Lab ID #'s
B845 6.0'-7.0'	5/6	1445	X					5	X	X	X	X								08050415-017
B845 13.0-14.0'	5/6	1500	X					5	X	X										018
B846 8.5-9.5'	5/7	0855	X					5	X	X										019
B846 10.0-11.0'	5/7	0930	X					5	X	X										020
B846 20.0-21.0'	5/7	0954	X					5	X	X										021
B803 2.0-3.0	5/7	1007	X					5	X	X	X	X								022
B803 9.0-10.0	5/7	1020	X					5	X	X	X	X								023
B803 21.0-22.0	5/7	~~1021~~ 1044	X					5	X	X	X	X								024
B803 29.0-30.0	5/7	1065	X					5	X	X										025

Samples Iced: ☒ Yes ☐ No

Preservatives (ONLY for Water Samples)
- ☐ Volatile Organics .... Hydrochloric acid (HCl)
- ☐ VOC Soil (5035) .... Sodium Bisulfate/Methanol
- ☐ TPH .... Hydrochloric acid and/or Sulfuric acid
- ☐ Metals .... Nitric acid (HNO_3)
- ☐ Cyanide .... Sodium hydroxide (NaOH)
- ☐ Other (Specify) ....

Lab Directives:
Requested TAT: ☐ Rush ☐ 5 Days ☒ STD ☐ Other
Fax and/or Mail Results to: Derek Ingram
Send Invoice to:
QC Deliverable Requested: ☐ Full QC & Limits ☐ CLP-LIKE ☐ EDD ☐ Other
Special Guidelines:
Reporting Limits:
* Special:

Shipping:

Carrier / Airbill No.

Relinquished by:

Signature	Date	Time
Leslie Hoosier	5/9	1720

Received by:

Signature	Date	Time
Elizabeth A Hurley	5/9/08	1720

Distribution: WHITE to Lab CANARY to PM PINK to QA/QC GREEN to Sampler

Shaded Areas to be Completed by Lab

PE-179 (6/03)

Chain of Custody Record

210 West Sand Bank Road
P.O. Box 230
Columbia, IL 62236-0230

(618) 281-7173 Phone
(800) 733-7173
(618) 281-5120 Fax

08050415

COC Serial No. B 08653

Project Name: AmerenIP Champaign **Project Mgr.:** Derek Ingram
Project Number: 62403053 **Cost Code:** 024501
Sampler(s): L. Hoosier / R. Huson
Laboratory Name: Teklab
Laboratory Location: Collinsville

Laboratory Temperature upon Receipt: 4.6°C ICED

Analyses by Method Name and Number

Sample Number and (depth)	Date	Time	Soil	Water	Air	Wipes	Other *	Total Number of Containers	BTEX	PAH	Metals	Cyanide	Comments (Field PID)	Lab ID #'s
B849 0.0-1.0'	5/7	1125	X					5	X	X	X	X		08050415-026
B849 9.0-10.0'	5/7	1135	X					5	X	X	X	X		027
B849 16.0-17.0'	5/7	1155	X					5	X	X	X	X		028

Samples Iced: ☒ Yes ☐ No

Preservatives (ONLY for Water Samples)
- ☐ Volatile Organics .... Hydrochloric acid (HCl)
- ☐ VOC Soil (5035) .... Sodium Bisulfate/Methanol
- ☐ TPH .... Hydrochloric acid and/or Sulfuric acid
- ☐ Metals .... Nitric acid (HNO_3)
- ☐ Cyanide .... Sodium hydroxide (NaOH)
- ☐ Other (Specify) .... ______

Lab Directives:

Requested TAT: ☐ Rush ☐ 5 Days ☒ STD ☐ Other ______
Fax and/or Mail Results to: Derek Ingram
Send Invoice to: ______
QC Deliverable Requested: ☐ Full QC & Limits ☐ CLP-LIKE ☐ EDD ☐ Other ______
Special Guidelines: ______
Reporting Limits: ______
* Special: ______

Shipping:

Carrier / Airbill No.

Relinquished by:

Signature	Date	Time
Leslie Hoosier	5/9	1720

Received by:

Signature	Date	Time
Elizabeth A. Hurley	5/9/08	1720

Distribution: WHITE to Lab CANARY to PM PINK to QA/QC GREEN to Sampler

Shaded Areas to be Completed by Lab

PE-179 (6/03)

Chain of Custody Record

PSC
210 West Sand Bank Road
P.O. Box 230
Columbia, IL 62236-0230
(618) 281-7173 Phone
(800) 733-7173
(618) 281-5120 Fax

08050415

COC Serial No. B 08654

Project Name: Ameren IP Champaign **Project Mgr.:** Derek Ingram
Project Number: 62403053 **Cost Code:** 024501
Sampler(s): L. Hoosier / R. Huson
Laboratory **Name:** Teklab **Location:** Collinsville

Laboratory Temperature upon Receipt: 4.6°C ICED

Sample Number and (depth)	Date	Time	Soil	Water	Air	Wipes	Other *	Total Number of Containers	BTEX	PAH	OA2	Metals	Cyanide	pH	Comments (Field PID)	Lab ID #'s
B848 2.0-3.0'	5/7	1545	X					5	X	X						08050415-029
B848 9.0'-10.0'	5/7	1555	X					5	X	X						030
B848 13.0-14.0'	5/7	1610	X					5	X	X						031
* B847 6.0-7.0'	5/7	1647	X					5	X	X						032
B847 22.0-23.0	5/7	1718	X					5	X	X	X					033
B809 2.0-3.0'	5/8	0945	X					5	X	X		X	X	X		034
B809 9.0-10.0'	5/8	0958	X					5	X	X		X	X	X		035
B809 15.0-16.0'	5/8	1015	X					5	X	X		X	X			036
~~B-847 18.5-19.5'~~	~~5/7~~	~~1710~~	~~X~~					~~5~~	~~X~~	~~X~~	~~X~~	No Sample provided — DDI 5/9/08				
B-847 29.0'-30.0'	5/7	1730	X					5	X	X						037

Samples Iced: ☒ Yes ☐ No

Preservatives (ONLY for Water Samples)
- ☐ Volatile Organics .... Hydrochloric acid (HCl)
- ☐ VOC Soil (5035) .... Sodium Bisulfate/Methanol
- ☐ TPH .... Hydrochloric acid and/or Sulfuric acid
- ☐ Metals .... Nitric acid (HNO_3)
- ☐ Cyanide .... Sodium hydroxide (NaOH)
- ☐ Other (Specify) .... ________

Lab Directives:
Requested TAT: ☐ Rush ☐ 5 Days ☒ STD ☐ Other ________
Fax and/or Mail Results to: Derek Ingram
Send Invoice to: ________
QC Deliverable Requested: ☐ Full QC & Limits ☐ CLP-LIKE ☐ EDD ☐ Other ________
Special Guidelines: ________
Reporting Limits: ________
* Special: ________

Shipping:

Carrier / Airbill No.

Relinquished by:

Signature	Date	Time
Leslie Hoosier	5/9	1720

Received by:

Signature	Date	Time
Elizabeth A Hurley	5/9/08	1720

PSC

Chain of Custody Record

210 West Sand Bank Road
P.O. Box 230
Columbia, IL 62236-0230

(618) 281-7173 Phone
(800) 733-7173
(618) 281-5120 Fax

08050415

COC Serial No. B 08655

Project Name: Ameren IP Champaign
Project Mgr.: Derek Ingram
Project Number: 62403053
Cost Code: 024501
Sampler(s): L. Hoosier / R. Huson
Laboratory Name: Teklab
Location: Collinsville

Laboratory Temperature upon Receipt: 4.6°C ICED

Sample Number and (depth)	Date	Time	Soil	Water	Air	Wipes	Other *	Total Number of Containers	BTEX	PAH	OA2	Metals	Cyanide						Comments (Field PID)	Lab ID #'s
B850 8.0-9.0	5-8	1130	X					5	X	X	X	X	X							08050415-038
B850 16.0-17.0'	5/8	1205	X					5	X	X	X	X	X							039
B-850 25.0'-26.0'	5/8	1255	X					5	X	X										040

Samples Iced: ☒ Yes ☐ No

Preservatives (ONLY for Water Samples)
- ☐ Volatile Organics .... Hydrochloric acid (HCl)
- ☐ VOC Soil (5035) .... Sodium Bisulfate/Methanol
- ☐ TPH .... Hydrochloric acid and/or Sulfuric acid
- ☐ Metals .... Nitric acid (HNO_3)
- ☐ Cyanide .... Sodium hydroxide (NaOH)
- ☐ Other (Specify) .... ______

Lab Directives:

Requested TAT: ☐ Rush ☐ 5 Days ☒ STD ☐ Other ______
Fax and/or Mail Results to: Derek Ingram
Send Invoice to: ______
QC Deliverable Requested: ☐ Full QC & Limits ☐ CLP-LIKE ☐ EDD ☐ Other ______
Special Guidelines: ______
Reporting Limits: ______
* Special: ______

Shipping:

Carrier / Airbill No.

Relinquished by:

Signature	Date	Time
Leslie Hoosier	5/9	1720

Received by:

Signature	Date	Time
Elizabeth A Hurley	5/9/08	1720

Distribution: WHITE to Lab CANARY to PM PINK to QA/QC GREEN to Sampler

Shaded Areas to be Completed by Lab

PE-179 (6/03)

Appendix E

Groundwater Analytical Data and Chain of Custody Forms

TEKLAB, INC.

5445 HORSESHOE LAKE ROAD
COLLINSVILLE, ILLINOIS 62234

ENVIRONMENTAL TESTING LABORATORY

TEL: 618-344-1004
FAX: 618-344-1005

LABORATORY RESULTS

Client: PSC Industrial Outsourcing, LP
Client Project: A831-735002-012901-225/IP Champ
WorkOrder: 09030701
Client Sample ID: UMW-119
Lab ID: 09030701-009
Collection Date: 3/17/2009 2:50:00 PM
Report Date: 31-Mar-09
Matrix: GROUNDWATER

Analyses	Certification	RL	Qual	Result	Units	DF	Date Analyzed	Analyst
SW-846 9012A (TOTAL) MODIFIED								
Cyanide		0.007		**0.035**	mg/L	1	3/24/2009	RCE
SW-846 3005A, 6010B, METALS BY ICP (TOTAL)								
Iron	NELAP	0.0200		**3.30**	mg/L	1	3/24/2009 5:38:17 PM	LAL
Manganese	NELAP	0.0050		**0.320**	mg/L	1	3/24/2009 5:38:17 PM	LAL
Nickel	NELAP	0.0100	J	**0.0043**	mg/L	1	3/24/2009 5:38:17 PM	LAL
SW-846 3020A, METALS BY GFAA (TOTAL)								
Lead 7421	NELAP	0.0020	J	**0.0016**	mg/L	1	3/25/2009 1:01:58 PM	MEK
SW-846 3510C, 8270C SIMS, SEMI-VOLATILE ORGANIC COMPOUNDS BY GC/MS								
2-Methylnaphthalene	NELAP	0.00010		**0.00034**	mg/L	1	3/24/2009 6:32:00 AM	MAM
Acenaphthene	NELAP	0.00010		**0.00026**	mg/L	1	3/24/2009 6:32:00 AM	MAM
Acenaphthylene	NELAP	0.00010		**0.00042**	mg/L	1	3/24/2009 6:32:00 AM	MAM
Anthracene	NELAP	0.00010		**ND**	mg/L	1	3/24/2009 6:32:00 AM	MAM
Benzo(a)anthracene	NELAP	0.00010		**ND**	mg/L	1	3/24/2009 6:32:00 AM	MAM
Benzo(a)pyrene	NELAP	0.00010		**ND**	mg/L	1	3/24/2009 6:32:00 AM	MAM
Benzo(b)fluoranthene	NELAP	0.00010		**ND**	mg/L	1	3/24/2009 6:32:00 AM	MAM
Benzo(g,h,i)perylene	NELAP	0.00010		**ND**	mg/L	1	3/24/2009 6:32:00 AM	MAM
Benzo(k)fluoranthene	NELAP	0.00010		**ND**	mg/L	1	3/24/2009 6:32:00 AM	MAM
Bis(2-ethylhexyl)phthalate	NELAP	0.00200		**ND**	mg/L	1	3/24/2009 6:32:00 AM	MAM
Chrysene	NELAP	0.00010		**ND**	mg/L	1	3/24/2009 6:32:00 AM	MAM
Dibenzo(a,h)anthracene	NELAP	0.00010		**ND**	mg/L	1	3/24/2009 6:32:00 AM	MAM
Dibenzofuran	NELAP	0.00010		**ND**	mg/L	1	3/24/2009 6:32:00 AM	MAM
Diethyl phthalate	NELAP	0.00100		**ND**	mg/L	1	3/24/2009 6:32:00 AM	MAM
Dimethyl phthalate	NELAP	0.00100		**ND**	mg/L	1	3/24/2009 6:32:00 AM	MAM
Di-n-butyl phthalate	NELAP	0.00100		**ND**	mg/L	1	3/24/2009 6:32:00 AM	MAM
Fluoranthene	NELAP	0.00010		**ND**	mg/L	1	3/24/2009 6:32:00 AM	MAM
Fluorene	NELAP	0.00010		**0.00010**	mg/L	1	3/24/2009 6:32:00 AM	MAM
Indeno(1,2,3-cd)pyrene	NELAP	0.00010		**ND**	mg/L	1	3/24/2009 6:32:00 AM	MAM
m,p-Cresol	NELAP	0.00010		**ND**	mg/L	1	3/24/2009 6:32:00 AM	MAM
Naphthalene	NELAP	0.00010		**0.00021**	mg/L	1	3/24/2009 6:32:00 AM	MAM
o-Cresol	NELAP	0.00010		**ND**	mg/L	1	3/24/2009 6:32:00 AM	MAM
Phenanthrene	NELAP	0.00010		**ND**	mg/L	1	3/24/2009 6:32:00 AM	MAM
Pyrene	NELAP	0.00010		**ND**	mg/L	1	3/24/2009 6:32:00 AM	MAM
Total PNAs except Naphthalene		0.00013		**0.00078**	mg/L	1	3/24/2009 6:32:00 AM	MAM
Surr: 2-Fluorobiphenyl		41.1-108		**62.0**	%REC	1	3/24/2009 6:32:00 AM	MAM
Surr: 2-Fluorophenol		16.8-65.9		**36.3**	%REC	1	3/24/2009 6:32:00 AM	MAM
Surr: Nitrobenzene-d5		37.6-105		**64.2**	%REC	1	3/24/2009 6:32:00 AM	MAM
Surr: Phenol-d5		11-42.8		**23.5**	%REC	1	3/24/2009 6:32:00 AM	MAM
Surr: p-Terphenyl-d14		49-113		**64.2**	%REC	1	3/24/2009 6:32:00 AM	MAM

TEKLAB, INC.

5445 HORSESHOE LAKE ROAD
COLLINSVILLE, ILLINOIS 62234

ENVIRONMENTAL TESTING LABORATORY

TEL: 618-344-1004
FAX: 618-344-1005

LABORATORY RESULTS

Client: PSC Industrial Outsourcing, LP
Client Project: A831-735002-012901-225/IP Champ
WorkOrder: 09030701
Client Sample ID: UMW-119
Lab ID: 09030701-009
Collection Date: 3/17/2009 2:50:00 PM
Report Date: 31-Mar-09
Matrix: GROUNDWATER

Analyses	Certification	RL	Qual	Result	Units	DF	Date Analyzed	Analyst
SW-846 5030, 8260B, VOLATILE ORGANIC COMPOUNDS BY GC/MS								
Benzene	NELAP	2.0		**ND**	µg/L	1	3/20/2009 10:04:00 PM	CCF
Ethylbenzene	NELAP	5.0		**ND**	µg/L	1	3/20/2009 10:04:00 PM	CCF
Toluene	NELAP	5.0		**ND**	µg/L	1	3/20/2009 10:04:00 PM	CCF
Xylenes, Total	NELAP	5.0		**ND**	µg/L	1	3/20/2009 10:04:00 PM	CCF
Surr: 1,2-Dichloroethane-d4		74.7-129		**106.7**	%REC	1	3/20/2009 10:04:00 PM	CCF
Surr: 4-Bromofluorobenzene		86-119		**107.4**	%REC	1	3/20/2009 10:04:00 PM	CCF
Surr: Dibromofluoromethane		81.7-123		**104.5**	%REC	1	3/20/2009 10:04:00 PM	CCF
Surr: Toluene-d8		84.3-114		**102.0**	%REC	1	3/20/2009 10:04:00 PM	CCF
SW-846 7470A (TOTAL)								
Mercury	NELAP	0.00020		**< 0.00020**	mg/L	1	3/23/2009	MEK

Sample Narrative

SW-846 3510C, 8270C SIMS, Semi-Volatile Organic Compounds by GC/MS

Laboratory control sample duplicate did not recover within QC limits. Batch verified by MS/MSD recoveries.

TEKLAB, INC.

5445 HORSESHOE LAKE ROAD
COLLINSVILLE, ILLINOIS 62234

ENVIRONMENTAL TESTING LABORATORY

TEL: 618-344-1004
FAX: 618-344-1005

LABORATORY RESULTS

Client: PSC Industrial Outsourcing, LP
WorkOrder: 09060507
Lab ID: 09060507-017
Report Date: 18-Jun-09

Client Project: A831-735002-012901-225/IP Champ
Client Sample ID: UMW-119
Collection Date: 6/10/2009 3:47:00 PM
Matrix: GROUNDWATER

Analyses	Certification	RL	Qual	Result	Units	DF	Date Analyzed	Analyst
SW-846 9012A (TOTAL) MODIFIED								
Cyanide		0.007		**0.030**	mg/L	1	6/16/2009 4:10:15 PM	RCE
SW-846 3510C, 8270C SIMS, SEMI-VOLATILE ORGANIC COMPOUNDS BY GC/MS								
2-Methylnaphthalene	NELAP	0.00010		**ND**	mg/L	1	6/16/2009 6:43:00 AM	DMH
Acenaphthene	NELAP	0.00010		**0.00020**	mg/L	1	6/16/2009 6:43:00 AM	DMH
Acenaphthylene	NELAP	0.00010		**0.00041**	mg/L	1	6/16/2009 6:43:00 AM	DMH
Anthracene	NELAP	0.00010		**ND**	mg/L	1	6/16/2009 6:43:00 AM	DMH
Benzo(a)anthracene	NELAP	0.00010		**ND**	mg/L	1	6/16/2009 6:43:00 AM	DMH
Benzo(a)pyrene	NELAP	0.00010		**ND**	mg/L	1	6/16/2009 6:43:00 AM	DMH
Benzo(b)fluoranthene	NELAP	0.00010		**ND**	mg/L	1	6/16/2009 6:43:00 AM	DMH
Benzo(g,h,i)perylene	NELAP	0.00010		**ND**	mg/L	1	6/16/2009 6:43:00 AM	DMH
Benzo(k)fluoranthene	NELAP	0.00010		**ND**	mg/L	1	6/16/2009 6:43:00 AM	DMH
Bis(2-ethylhexyl)phthalate	NELAP	0.00200		**ND**	mg/L	1	6/16/2009 6:43:00 AM	DMH
Chrysene	NELAP	0.00010		**ND**	mg/L	1	6/16/2009 6:43:00 AM	DMH
Dibenzo(a,h)anthracene	NELAP	0.00010		**ND**	mg/L	1	6/16/2009 6:43:00 AM	DMH
Dibenzofuran	NELAP	0.00010		**ND**	mg/L	1	6/16/2009 6:43:00 AM	DMH
Diethyl phthalate	NELAP	0.00100		**ND**	mg/L	1	6/16/2009 6:43:00 AM	DMH
Dimethyl phthalate	NELAP	0.00100		**ND**	mg/L	1	6/16/2009 6:43:00 AM	DMH
Di-n-butyl phthalate	NELAP	0.00100		**ND**	mg/L	1	6/16/2009 6:43:00 AM	DMH
Fluoranthene	NELAP	0.00010		**ND**	mg/L	1	6/16/2009 6:43:00 AM	DMH
Fluorene	NELAP	0.00010		**ND**	mg/L	1	6/16/2009 6:43:00 AM	DMH
Indeno(1,2,3-cd)pyrene	NELAP	0.00010		**ND**	mg/L	1	6/16/2009 6:43:00 AM	DMH
m,p-Cresol	NELAP	0.00010		**ND**	mg/L	1	6/16/2009 6:43:00 AM	DMH
Naphthalene	NELAP	0.00010		**0.00013**	mg/L	1	6/16/2009 6:43:00 AM	DMH
o-Cresol	NELAP	0.00010		**ND**	mg/L	1	6/16/2009 6:43:00 AM	DMH
Phenanthrene	NELAP	0.00010		**ND**	mg/L	1	6/16/2009 6:43:00 AM	DMH
Pyrene	NELAP	0.00010		**ND**	mg/L	1	6/16/2009 6:43:00 AM	DMH
Total PNAs except Naphthalene		0.00013		**0.00060**	mg/L	1	6/16/2009 6:43:00 AM	DMH
Surr: 2-Fluorobiphenyl		41.1-108		**67.2**	%REC	1	6/16/2009 6:43:00 AM	DMH
Surr: 2-Fluorophenol		16.8-65.9		**36.5**	%REC	1	6/16/2009 6:43:00 AM	DMH
Surr: Nitrobenzene-d5		37.6-105		**67.4**	%REC	1	6/16/2009 6:43:00 AM	DMH
Surr: Phenol-d5		11-42.8		**24.7**	%REC	1	6/16/2009 6:43:00 AM	DMH
Surr: p-Terphenyl-d14		49-113		**74.0**	%REC	1	6/16/2009 6:43:00 AM	DMH
SW-846 5030, 8260B, VOLATILE ORGANIC COMPOUNDS BY GC/MS								
Benzene	NELAP	2.0		**ND**	µg/L	1	6/13/2009 2:33:00 AM	TAL
Ethylbenzene	NELAP	5.0		**ND**	µg/L	1	6/13/2009 2:33:00 AM	TAL
Toluene	NELAP	5.0		**ND**	µg/L	1	6/13/2009 2:33:00 AM	TAL
Xylenes, Total	NELAP	5.0		**ND**	µg/L	1	6/13/2009 2:33:00 AM	TAL
Surr: 1,2-Dichloroethane-d4		74.7-129		**99.6**	%REC	1	6/13/2009 2:33:00 AM	TAL

TEKLAB, INC.

5445 HORSESHOE LAKE ROAD
COLLINSVILLE, ILLINOIS 62234

ENVIRONMENTAL TESTING LABORATORY

TEL: 618-344-1004
FAX: 618-344-1005

LABORATORY RESULTS

Client:	PSC Industrial Outsourcing, LP	**Client Project:**	A831-735002-012901-225/IP Champ
WorkOrder:	09060507	**Client Sample ID:**	UMW-119
Lab ID:	09060507-017	**Collection Date:**	6/10/2009 3:47:00 PM
Report Date:	18-Jun-09	**Matrix:**	GROUNDWATER

Analyses	Certification	RL	Qual	Result	Units	DF	Date Analyzed	Analyst
SW-846 5030, 8260B, VOLATILE ORGANIC COMPOUNDS BY GC/MS								
Surr: 4-Bromofluorobenzene		86-119		**99.4**	%REC	1	6/13/2009 2:33:00 AM	TAL
Surr: Dibromofluoromethane		81.7-123		**101.5**	%REC	1	6/13/2009 2:33:00 AM	TAL
Surr: Toluene-d8		84.3-114		**101.0**	%REC	1	6/13/2009 2:33:00 AM	TAL

Sample Narrative

TEKLAB, INC.

5445 HORSESHOE LAKE ROAD
COLLINSVILLE, ILLINOIS 62234

ENVIRONMENTAL TESTING LABORATORY

TEL: 618-344-1004
FAX: 618-344-1005

LABORATORY RESULTS

Client: PSC Industrial Outsourcing, LP
Client Project: A831-735002-012901-225/IP Champ
WorkOrder: 09090407
Client Sample ID: UMW119
Lab ID: 09090407-017
Collection Date: 9/9/2009 3:25:00 PM
Report Date: 21-Sep-09
Matrix: GROUNDWATER

Analyses	Certification	RL	Qual	Result	Units	DF	Date Analyzed	Analyst
SW-846 9012A (TOTAL) MODIFIED								
Cyanide		0.007		**0.031**	mg/L	1	9/16/2009 9:45:45 AM	RCE
SW-846 3510C, 8270C SIMS, SEMI-VOLATILE ORGANIC COMPOUNDS BY GC/MS								
2-Methylnaphthalene	NELAP	0.00010		**ND**	mg/L	1	9/15/2009 4:24:00 AM	MAM
Acenaphthene	NELAP	0.00010		**ND**	mg/L	1	9/15/2009 4:24:00 AM	MAM
Acenaphthylene	NELAP	0.00010		**0.00025**	mg/L	1	9/15/2009 4:24:00 AM	MAM
Anthracene	NELAP	0.00010		**ND**	mg/L	1	9/15/2009 4:24:00 AM	MAM
Benzo(a)anthracene	NELAP	0.00010		**ND**	mg/L	1	9/15/2009 4:24:00 AM	MAM
Benzo(a)pyrene	NELAP	0.00010		**ND**	mg/L	1	9/15/2009 4:24:00 AM	MAM
Benzo(b)fluoranthene	NELAP	0.00010		**ND**	mg/L	1	9/15/2009 4:24:00 AM	MAM
Benzo(g,h,i)perylene	NELAP	0.00010		**ND**	mg/L	1	9/15/2009 4:24:00 AM	MAM
Benzo(k)fluoranthene	NELAP	0.00010		**ND**	mg/L	1	9/15/2009 4:24:00 AM	MAM
Bis(2-ethylhexyl)phthalate	NELAP	0.00200		**ND**	mg/L	1	9/15/2009 4:24:00 AM	MAM
Chrysene	NELAP	0.00010		**ND**	mg/L	1	9/15/2009 4:24:00 AM	MAM
Dibenzo(a,h)anthracene	NELAP	0.00010		**ND**	mg/L	1	9/15/2009 4:24:00 AM	MAM
Dibenzofuran	NELAP	0.00010		**ND**	mg/L	1	9/15/2009 4:24:00 AM	MAM
Diethyl phthalate	NELAP	0.00100		**ND**	mg/L	1	9/15/2009 4:24:00 AM	MAM
Dimethyl phthalate	NELAP	0.00100		**ND**	mg/L	1	9/15/2009 4:24:00 AM	MAM
Di-n-butyl phthalate	NELAP	0.00100		**ND**	mg/L	1	9/15/2009 4:24:00 AM	MAM
Fluoranthene	NELAP	0.00010		**ND**	mg/L	1	9/15/2009 4:24:00 AM	MAM
Fluorene	NELAP	0.00010		**ND**	mg/L	1	9/15/2009 4:24:00 AM	MAM
Indeno(1,2,3-cd)pyrene	NELAP	0.00010		**ND**	mg/L	1	9/15/2009 4:24:00 AM	MAM
m,p-Cresol	NELAP	0.00010		**ND**	mg/L	1	9/15/2009 4:24:00 AM	MAM
Naphthalene	NELAP	0.00010		**ND**	mg/L	1	9/15/2009 4:24:00 AM	MAM
o-Cresol	NELAP	0.00010		**ND**	mg/L	1	9/15/2009 4:24:00 AM	MAM
Phenanthrene	NELAP	0.00010		**ND**	mg/L	1	9/15/2009 4:24:00 AM	MAM
Pyrene	NELAP	0.00010		**ND**	mg/L	1	9/15/2009 4:24:00 AM	MAM
Total PNAs except Naphthalene		0.00013		**0.00025**	mg/L	1	9/15/2009 4:24:00 AM	MAM
Surr: 2-Fluorobiphenyl		41.1-108		**74.4**	%REC	1	9/15/2009 4:24:00 AM	MAM
Surr: 2-Fluorophenol		16.8-65.9		**41.4**	%REC	1	9/15/2009 4:24:00 AM	MAM
Surr: Nitrobenzene-d5		37.6-105		**73.2**	%REC	1	9/15/2009 4:24:00 AM	MAM
Surr: Phenol-d5		11-42.8		**25.4**	%REC	1	9/15/2009 4:24:00 AM	MAM
Surr: p-Terphenyl-d14		49-113		**79.0**	%REC	1	9/15/2009 4:24:00 AM	MAM
SW-846 5030, 8260B, VOLATILE ORGANIC COMPOUNDS BY GC/MS								
Benzene	NELAP	2.0		**ND**	µg/L	1	9/11/2009 8:33:00 PM	CCF
Ethylbenzene	NELAP	5.0		**ND**	µg/L	1	9/11/2009 8:33:00 PM	CCF
Toluene	NELAP	5.0		**ND**	µg/L	1	9/11/2009 8:33:00 PM	CCF
Xylenes, Total	NELAP	5.0		**ND**	µg/L	1	9/11/2009 8:33:00 PM	CCF
Surr: 1,2-Dichloroethane-d4		74.7-129		**100.7**	%REC	1	9/11/2009 8:33:00 PM	CCF

TEKLAB, INC.

5445 HORSESHOE LAKE ROAD
COLLINSVILLE, ILLINOIS 62234

ENVIRONMENTAL TESTING LABORATORY

TEL: 618-344-1004
FAX: 618-344-1005

LABORATORY RESULTS

Client: PSC Industrial Outsourcing, LP
Client Project: A831-735002-012901-225/IP Champ
WorkOrder: 09090407
Client Sample ID: UMW119
Lab ID: 09090407-017
Collection Date: 9/9/2009 3:25:00 PM
Report Date: 21-Sep-09
Matrix: GROUNDWATER

Analyses	Certification	RL	Qual	Result	Units	DF	Date Analyzed	Analyst
SW-846 5030, 8260B, VOLATILE ORGANIC COMPOUNDS BY GC/MS								
Surr: 4-Bromofluorobenzene		86-119		**100.8**	%REC	1	9/11/2009 8:33:00 PM	CCF
Surr: Dibromofluoromethane		81.7-123		**100.8**	%REC	1	9/11/2009 8:33:00 PM	CCF
Surr: Toluene-d8		84.3-114		**96.5**	%REC	1	9/11/2009 8:33:00 PM	CCF

Sample Narrative

TEKLAB, INC.

5445 HORSESHOE LAKE ROAD
COLLINSVILLE, ILLINOIS 62234

ENVIRONMENTAL TESTING LABORATORY

TEL: 618-344-1004
FAX: 618-344-1005

LABORATORY RESULTS

Client: PSC Industrial Outsourcing, LP
Client Project: A831-735002-012901-225/IP Champ
WorkOrder: 09120458
Client Sample ID: UMW-119
Lab ID: 09120458-008
Collection Date: 12/7/2009 3:15:00 PM
Report Date: 21-Dec-09
Matrix: GROUNDWATER

Analyses	Certification	RL	Qual	Result	Units	DF	Date Analyzed	Analyst
SW-846 9012A (TOTAL) MODIFIED								
Cyanide		0.007		**0.027**	mg/L	1	12/15/2009 4:56:16 PM	RCE
SW-846 3510C, 8270C SIMS, SEMI-VOLATILE ORGANIC COMPOUNDS BY GC/MS								
2-Methylnaphthalene	NELAP	0.00010		**ND**	mg/L	1	12/11/2009 6:35:00 PM	MAM
Acenaphthene	NELAP	0.00010		**0.00016**	mg/L	1	12/11/2009 6:35:00 PM	MAM
Acenaphthylene	NELAP	0.00010		**0.00042**	mg/L	1	12/11/2009 6:35:00 PM	MAM
Anthracene	NELAP	0.00010		**ND**	mg/L	1	12/11/2009 6:35:00 PM	MAM
Benzo(a)anthracene	NELAP	0.00010		**ND**	mg/L	1	12/11/2009 6:35:00 PM	MAM
Benzo(a)pyrene	NELAP	0.00010		**ND**	mg/L	1	12/11/2009 6:35:00 PM	MAM
Benzo(b)fluoranthene	NELAP	0.00010		**ND**	mg/L	1	12/11/2009 6:35:00 PM	MAM
Benzo(g,h,i)perylene	NELAP	0.00010		**ND**	mg/L	1	12/11/2009 6:35:00 PM	MAM
Benzo(k)fluoranthene	NELAP	0.00010		**ND**	mg/L	1	12/11/2009 6:35:00 PM	MAM
Bis(2-ethylhexyl)phthalate	NELAP	0.00200		**ND**	mg/L	1	12/11/2009 6:35:00 PM	MAM
Chrysene	NELAP	0.00010		**ND**	mg/L	1	12/11/2009 6:35:00 PM	MAM
Dibenzo(a,h)anthracene	NELAP	0.00010		**ND**	mg/L	1	12/11/2009 6:35:00 PM	MAM
Dibenzofuran	NELAP	0.00010		**ND**	mg/L	1	12/11/2009 6:35:00 PM	MAM
Diethyl phthalate	NELAP	0.00100		**ND**	mg/L	1	12/11/2009 6:35:00 PM	MAM
Dimethyl phthalate	NELAP	0.00100		**ND**	mg/L	1	12/11/2009 6:35:00 PM	MAM
Di-n-butyl phthalate	NELAP	0.00100		**ND**	mg/L	1	12/11/2009 6:35:00 PM	MAM
Fluoranthene	NELAP	0.00010		**ND**	mg/L	1	12/11/2009 6:35:00 PM	MAM
Fluorene	NELAP	0.00010		**ND**	mg/L	1	12/11/2009 6:35:00 PM	MAM
Indeno(1,2,3-cd)pyrene	NELAP	0.00010		**ND**	mg/L	1	12/11/2009 6:35:00 PM	MAM
m,p-Cresol	NELAP	0.00010		**ND**	mg/L	1	12/11/2009 6:35:00 PM	MAM
Naphthalene	NELAP	0.00010		**0.00013**	mg/L	1	12/11/2009 6:35:00 PM	MAM
o-Cresol	NELAP	0.00010		**ND**	mg/L	1	12/11/2009 6:35:00 PM	MAM
Phenanthrene	NELAP	0.00010		**ND**	mg/L	1	12/11/2009 6:35:00 PM	MAM
Pyrene	NELAP	0.00010		**ND**	mg/L	1	12/11/2009 6:35:00 PM	MAM
Total PNAs except Naphthalene		0.00013		**0.00058**	mg/L	1	12/11/2009 6:35:00 PM	MAM
Surr: 2-Fluorobiphenyl		41.1-108		**63.2**	%REC	1	12/11/2009 6:35:00 PM	MAM
Surr: 2-Fluorophenol		16.8-65.9		**36.7**	%REC	1	12/11/2009 6:35:00 PM	MAM
Surr: Nitrobenzene-d5		37.6-105		**61.4**	%REC	1	12/11/2009 6:35:00 PM	MAM
Surr: Phenol-d5		11-42.8		**23.0**	%REC	1	12/11/2009 6:35:00 PM	MAM
Surr: p-Terphenyl-d14		49-113		**68.6**	%REC	1	12/11/2009 6:35:00 PM	MAM
SW-846 5030, 8260B, VOLATILE ORGANIC COMPOUNDS BY GC/MS								
Benzene	NELAP	2.0		**ND**	µg/L	1	12/11/2009 2:51:00 AM	CCF
Ethylbenzene	NELAP	5.0		**ND**	µg/L	1	12/11/2009 2:51:00 AM	CCF
Toluene	NELAP	5.0		**ND**	µg/L	1	12/11/2009 2:51:00 AM	CCF
Xylenes, Total	NELAP	5.0		**ND**	µg/L	1	12/11/2009 2:51:00 AM	CCF
Surr: 1,2-Dichloroethane-d4		74.7-129		**103.0**	%REC	1	12/11/2009 2:51:00 AM	CCF

TEKLAB, INC.

5445 HORSESHOE LAKE ROAD
COLLINSVILLE, ILLINOIS 62234

ENVIRONMENTAL TESTING LABORATORY

TEL: 618-344-1004
FAX: 618-344-1005

LABORATORY RESULTS

Client:	PSC Industrial Outsourcing, LP	**Client Project:**	A831-735002-012901-225/IP Champ
WorkOrder:	09120458	**Client Sample ID:**	UMW-119
Lab ID:	09120458-008	**Collection Date:**	12/7/2009 3:15:00 PM
Report Date:	21-Dec-09	**Matrix:**	GROUNDWATER

Analyses	Certification	RL	Qual	Result	Units	DF	Date Analyzed	Analyst
SW-846 5030, 8260B, VOLATILE ORGANIC COMPOUNDS BY GC/MS								
Surr: 4-Bromofluorobenzene		86-119		**100.9**	%REC	1	12/11/2009 2:51:00 AM	CCF
Surr: Dibromofluoromethane		81.7-123		**101.1**	%REC	1	12/11/2009 2:51:00 AM	CCF
Surr: Toluene-d8		84.3-114		**99.2**	%REC	1	12/11/2009 2:51:00 AM	CCF

Sample Narrative

TEKLAB, INC.

5445 HORSESHOE LAKE ROAD
COLLINSVILLE, ILLINOIS 62234

ENVIRONMENTAL TESTING LABORATORY

TEL: 618-344-1004
FAX: 618-344-1005

LABORATORY RESULTS

Client: PSC Industrial Outsourcing, LP
Client Project: A831-735002-012901-225/IP Champ
WorkOrder: 10030463
Client Sample ID: UMW-119
Lab ID: 10030463-001
Collection Date: 3/8/2010 2:30:00 PM
Report Date: 01-Apr-10
Matrix: AQUEOUS

Analyses	Certification	RL	Qual	Result	Units	DF	Date Analyzed	Analyst
SW-846 3510C, 8270C SIMS, SEMI-VOLATILE ORGANIC COMPOUNDS BY GC/MS								
2-Methylnaphthalene	NELAP	0.00010		**ND**	mg/L	1	3/12/2010 12:13:00 PM	MAM
Acenaphthene	NELAP	0.00010		**0.00012**	mg/L	1	3/12/2010 12:13:00 PM	MAM
Acenaphthylene	NELAP	0.00010		**0.00024**	mg/L	1	3/12/2010 12:13:00 PM	MAM
Anthracene	NELAP	0.00010		**ND**	mg/L	1	3/12/2010 12:13:00 PM	MAM
Benzo(a)anthracene	NELAP	0.00010		**ND**	mg/L	1	3/12/2010 12:13:00 PM	MAM
Benzo(a)pyrene	NELAP	0.00010		**ND**	mg/L	1	3/12/2010 12:13:00 PM	MAM
Benzo(b)fluoranthene	NELAP	0.00010		**ND**	mg/L	1	3/12/2010 12:13:00 PM	MAM
Benzo(g,h,i)perylene	NELAP	0.00010		**ND**	mg/L	1	3/12/2010 12:13:00 PM	MAM
Benzo(k)fluoranthene	NELAP	0.00010		**ND**	mg/L	1	3/12/2010 12:13:00 PM	MAM
Bis(2-ethylhexyl)phthalate	NELAP	0.00200		**ND**	mg/L	1	3/12/2010 12:13:00 PM	MAM
Chrysene	NELAP	0.00010		**ND**	mg/L	1	3/12/2010 12:13:00 PM	MAM
Dibenzo(a,h)anthracene	NELAP	0.00010		**ND**	mg/L	1	3/12/2010 12:13:00 PM	MAM
Dibenzofuran	NELAP	0.00010		**ND**	mg/L	1	3/12/2010 12:13:00 PM	MAM
Diethyl phthalate	NELAP	0.00100		**ND**	mg/L	1	3/12/2010 12:13:00 PM	MAM
Dimethyl phthalate	NELAP	0.00100		**ND**	mg/L	1	3/12/2010 12:13:00 PM	MAM
Di-n-butyl phthalate	NELAP	0.00100		**ND**	mg/L	1	3/12/2010 12:13:00 PM	MAM
Fluoranthene	NELAP	0.00010		**ND**	mg/L	1	3/12/2010 12:13:00 PM	MAM
Fluorene	NELAP	0.00010		**ND**	mg/L	1	3/12/2010 12:13:00 PM	MAM
Indeno(1,2,3-cd)pyrene	NELAP	0.00010		**ND**	mg/L	1	3/12/2010 12:13:00 PM	MAM
m,p-Cresol	NELAP	0.00010		**ND**	mg/L	1	3/12/2010 12:13:00 PM	MAM
Naphthalene	NELAP	0.00010		**ND**	mg/L	1	3/12/2010 12:13:00 PM	MAM
o-Cresol	NELAP	0.00010		**ND**	mg/L	1	3/12/2010 12:13:00 PM	MAM
Phenanthrene	NELAP	0.00010		**ND**	mg/L	1	3/12/2010 12:13:00 PM	MAM
Pyrene	NELAP	0.00010		**ND**	mg/L	1	3/12/2010 12:13:00 PM	MAM
Total PNAs except Naphthalene		0.00013		**0.00036**	mg/L	1	3/12/2010 12:13:00 PM	MAM
Surr: 2-Fluorobiphenyl		41.1-108		**68.2**	%REC	1	3/12/2010 12:13:00 PM	MAM
Surr: 2-Fluorophenol		16.8-65.9		**34.6**	%REC	1	3/12/2010 12:13:00 PM	MAM
Surr: Nitrobenzene-d5		37.6-105		**73.8**	%REC	1	3/12/2010 12:13:00 PM	MAM
Surr: Phenol-d5		11-42.8		**23.2**	%REC	1	3/12/2010 12:13:00 PM	MAM
Surr: p-Terphenyl-d14		49-113		**85.6**	%REC	1	3/12/2010 12:13:00 PM	MAM
SW-846 5030, 8260B, VOLATILE ORGANIC COMPOUNDS BY GC/MS								
Benzene	NELAP	2.0		**ND**	µg/L	1	3/13/2010 1:00:00 AM	CCF
Ethylbenzene	NELAP	5.0		**ND**	µg/L	1	3/13/2010 1:00:00 AM	CCF
Toluene	NELAP	5.0		**ND**	µg/L	1	3/13/2010 1:00:00 AM	CCF
Xylenes, Total	NELAP	5.0		**ND**	µg/L	1	3/13/2010 1:00:00 AM	CCF
Surr: 1,2-Dichloroethane-d4		74.7-129		**109.9**	%REC	1	3/13/2010 1:00:00 AM	CCF
Surr: 4-Bromofluorobenzene		86-119		**104.6**	%REC	1	3/13/2010 1:00:00 AM	CCF
Surr: Dibromofluoromethane		81.7-123		**101.3**	%REC	1	3/13/2010 1:00:00 AM	CCF

TEKLAB, INC.

5445 HORSESHOE LAKE ROAD
COLLINSVILLE, ILLINOIS 62234

ENVIRONMENTAL TESTING LABORATORY

TEL: 618-344-1004
FAX: 618-344-1005

LABORATORY RESULTS

Client: PSC Industrial Outsourcing, LP
Client Project: A831-735002-012901-225/IP Champ
WorkOrder: 10030463
Client Sample ID: UMW-119
Lab ID: 10030463-001
Collection Date: 3/8/2010 2:30:00 PM
Report Date: 01-Apr-10
Matrix: AQUEOUS

Analyses	Certification	RL	Qual	Result	Units	DF	Date Analyzed	Analyst
SW-846 5030, 8260B, VOLATILE ORGANIC COMPOUNDS BY GC/MS								
Surr: Toluene-d8		84.3-114		**103.1**	%REC	1	3/13/2010 1:00:00 AM	CCF
SW-846 9012A (TOTAL)								
Cyanide	NELAP	0.007		**0.031**	mg/L	1	3/18/2010 11:09:43 AM	RCE

Sample Narrative

TEKLAB, INC.

5445 HORSESHOE LAKE ROAD
COLLINSVILLE, ILLINOIS 62234

ENVIRONMENTAL TESTING LABORATORY

TEL: 618-344-1004
FAX: 618-344-1005

LABORATORY RESULTS

Client: PSC Industrial Outsourcing, LP
Client Project: A831-735002-012901-225/IP Champ
WorkOrder: 10060735
Client Sample ID: UMW-119
Lab ID: 10060735-023
Collection Date: 6/16/2010 11:05:00 AM
Report Date: 01-Jul-10
Matrix: GROUNDWATER

Analyses	Certification	RL	Qual	Result	Units	DF	Date Analyzed	Analyst
SW-846 3510C, 8270C SIMS, SEMI-VOLATILE ORGANIC COMPOUNDS BY GC/MS								
2-Methylnaphthalene	NELAP	0.00010		**ND**	mg/L	1	6/18/2010 2:15:00 PM	MAM
Acenaphthene	NELAP	0.00010		**ND**	mg/L	1	6/18/2010 2:15:00 PM	MAM
Acenaphthylene	NELAP	0.00010		**0.00017**	mg/L	1	6/18/2010 2:15:00 PM	MAM
Anthracene	NELAP	0.00010		**ND**	mg/L	1	6/18/2010 2:15:00 PM	MAM
Benzo(a)anthracene	NELAP	0.00010		**ND**	mg/L	1	6/18/2010 2:15:00 PM	MAM
Benzo(a)pyrene	NELAP	0.00010		**ND**	mg/L	1	6/18/2010 2:15:00 PM	MAM
Benzo(b)fluoranthene	NELAP	0.00010		**ND**	mg/L	1	6/18/2010 2:15:00 PM	MAM
Benzo(g,h,i)perylene	NELAP	0.00010		**ND**	mg/L	1	6/18/2010 2:15:00 PM	MAM
Benzo(k)fluoranthene	NELAP	0.00010		**ND**	mg/L	1	6/18/2010 2:15:00 PM	MAM
Chrysene	NELAP	0.00010		**ND**	mg/L	1	6/18/2010 2:15:00 PM	MAM
Dibenzo(a,h)anthracene	NELAP	0.00010		**ND**	mg/L	1	6/18/2010 2:15:00 PM	MAM
Fluoranthene	NELAP	0.00010		**ND**	mg/L	1	6/18/2010 2:15:00 PM	MAM
Fluorene	NELAP	0.00010		**ND**	mg/L	1	6/18/2010 2:15:00 PM	MAM
Indeno(1,2,3-cd)pyrene	NELAP	0.00010		**ND**	mg/L	1	6/18/2010 2:15:00 PM	MAM
Naphthalene	NELAP	0.00010		**ND**	mg/L	1	6/18/2010 2:15:00 PM	MAM
Phenanthrene	NELAP	0.00010		**ND**	mg/L	1	6/18/2010 2:15:00 PM	MAM
Pyrene	NELAP	0.00010		**ND**	mg/L	1	6/18/2010 2:15:00 PM	MAM
Total PNAs except Naphthalene		0.00013		**0.00017**	mg/L	1	6/18/2010 2:15:00 PM	MAM
Surr: 2-Fluorobiphenyl		41.1-108		**73.9**	%REC	1	6/18/2010 2:15:00 PM	MAM
Surr: 2-Fluorophenol		16.8-65.9		**44.8**	%REC	1	6/18/2010 2:15:00 PM	MAM
Surr: Nitrobenzene-d5		37.6-105		**71.0**	%REC	1	6/18/2010 2:15:00 PM	MAM
Surr: Phenol-d5		11-42.8		**29.4**	%REC	1	6/18/2010 2:15:00 PM	MAM
Surr: p-Terphenyl-d14		49-113		**72.0**	%REC	1	6/18/2010 2:15:00 PM	MAM
SW-846 5030, 8260B, VOLATILE ORGANIC COMPOUNDS BY GC/MS								
Benzene	NELAP	2.0		**ND**	µg/L	1	6/21/2010 4:47:00 PM	CCF
Ethylbenzene	NELAP	5.0		**ND**	µg/L	1	6/21/2010 4:47:00 PM	CCF
Toluene	NELAP	5.0		**ND**	µg/L	1	6/21/2010 4:47:00 PM	CCF
Xylenes, Total	NELAP	5.0		**ND**	µg/L	1	6/21/2010 4:47:00 PM	CCF
Surr: 1,2-Dichloroethane-d4		74.7-129		**107.3**	%REC	1	6/21/2010 4:47:00 PM	CCF
Surr: 4-Bromofluorobenzene		86-119		**105.0**	%REC	1	6/21/2010 4:47:00 PM	CCF
Surr: Dibromofluoromethane		81.7-123		**104.9**	%REC	1	6/21/2010 4:47:00 PM	CCF
Surr: Toluene-d8		84.3-114		**95.7**	%REC	1	6/21/2010 4:47:00 PM	CCF
SW-846 9012A (TOTAL)								
Cyanide	NELAP	0.007		**0.020**	mg/L	1	6/29/2010 1:27:51 PM	MVS

Sample Narrative

TEKLAB, INC.

5445 HORSESHOE LAKE ROAD
COLLINSVILLE, ILLINOIS 62234

ENVIRONMENTAL TESTING LABORATORY

TEL: 618-344-1004
FAX: 618-344-1005

LABORATORY RESULTS

Client: PSC Industrial Outsourcing, LP
Client Project: A831-735002-012901-225/Ameren C
WorkOrder: 10091212
Client Sample ID: UMW119
Lab ID: 10091212-016
Collection Date: 9/29/2010 8:05:00 AM
Report Date: 09-Oct-10
Matrix: GROUNDWATER

Analyses	Certification	RL	Qual	Result	Units	DF	Date Analyzed	Analyst
SW-846 3005A, 6010B, METALS BY ICP (TOTAL)								
Copper	NELAP	0.0100	J	**0.0094**	mg/L	1	10/1/2010 1:47:41 PM	JMW
SW-846 3020A, METALS BY GFAA (TOTAL)								
Lead 7421	NELAP	0.0020	J	**0.0011**	mg/L	1	10/1/2010 3:09:36 PM	MEK
SW-846 3510C, 8270C SIMS, SEMI-VOLATILE ORGANIC COMPOUNDS BY GC/MS								
2-Methylnaphthalene	NELAP	0.00010		**ND**	mg/L	1	10/5/2010 1:05:00 PM	MAM
Acenaphthene	NELAP	0.00010		**ND**	mg/L	1	10/5/2010 1:05:00 PM	MAM
Acenaphthylene	NELAP	0.00010		**0.00019**	mg/L	1	10/5/2010 1:05:00 PM	MAM
Anthracene	NELAP	0.00010		**ND**	mg/L	1	10/5/2010 1:05:00 PM	MAM
Benzo(a)anthracene	NELAP	0.00010		**ND**	mg/L	1	10/5/2010 1:05:00 PM	MAM
Benzo(a)pyrene	NELAP	0.00010		**ND**	mg/L	1	10/5/2010 1:05:00 PM	MAM
Benzo(b)fluoranthene	NELAP	0.00010		**ND**	mg/L	1	10/5/2010 1:05:00 PM	MAM
Benzo(g,h,i)perylene	NELAP	0.00010		**ND**	mg/L	1	10/5/2010 1:05:00 PM	MAM
Benzo(k)fluoranthene	NELAP	0.00010		**ND**	mg/L	1	10/5/2010 1:05:00 PM	MAM
Chrysene	NELAP	0.00010		**ND**	mg/L	1	10/5/2010 1:05:00 PM	MAM
Dibenzo(a,h)anthracene	NELAP	0.00010		**ND**	mg/L	1	10/5/2010 1:05:00 PM	MAM
Fluoranthene	NELAP	0.00010		**ND**	mg/L	1	10/5/2010 1:05:00 PM	MAM
Fluorene	NELAP	0.00010		**ND**	mg/L	1	10/5/2010 1:05:00 PM	MAM
Indeno(1,2,3-cd)pyrene	NELAP	0.00010		**ND**	mg/L	1	10/5/2010 1:05:00 PM	MAM
Naphthalene	NELAP	0.00010		**ND**	mg/L	1	10/5/2010 1:05:00 PM	MAM
Phenanthrene	NELAP	0.00010		**ND**	mg/L	1	10/5/2010 1:05:00 PM	MAM
Pyrene	NELAP	0.00010		**ND**	mg/L	1	10/5/2010 1:05:00 PM	MAM
Total PNAs except Naphthalene		0.00013		**0.00019**	mg/L	1	10/5/2010 1:05:00 PM	MAM
Surr: 2-Fluorobiphenyl		41.1-108		**76.7**	%REC	1	10/5/2010 1:05:00 PM	MAM
Surr: 2-Fluorophenol		16.8-65.9		**44.2**	%REC	1	10/5/2010 1:05:00 PM	MAM
Surr: Nitrobenzene-d5		37.6-105		**72.3**	%REC	1	10/5/2010 1:05:00 PM	MAM
Surr: Phenol-d5		11-42.8		**23.9**	%REC	1	10/5/2010 1:05:00 PM	MAM
Surr: p-Terphenyl-d14		49-113		**75.2**	%REC	1	10/5/2010 1:05:00 PM	MAM
SW-846 5030, 8260B, VOLATILE ORGANIC COMPOUNDS BY GC/MS								
Benzene	NELAP	2.0		**ND**	µg/L	1	10/1/2010 5:04:00 PM	CCF
Ethylbenzene	NELAP	5.0		**ND**	µg/L	1	10/1/2010 5:04:00 PM	CCF
Toluene	NELAP	5.0		**ND**	µg/L	1	10/1/2010 5:04:00 PM	CCF
Xylenes, Total	NELAP	5.0		**ND**	µg/L	1	10/1/2010 5:04:00 PM	CCF
Surr: 1,2-Dichloroethane-d4		74.7-129		**101.9**	%REC	1	10/1/2010 5:04:00 PM	CCF
Surr: 4-Bromofluorobenzene		86-119		**102.7**	%REC	1	10/1/2010 5:04:00 PM	CCF
Surr: Dibromofluoromethane		81.7-123		**102.8**	%REC	1	10/1/2010 5:04:00 PM	CCF
Surr: Toluene-d8		84.3-114		**95.2**	%REC	1	10/1/2010 5:04:00 PM	CCF
SW-846 9012A (TOTAL)								
Cyanide	NELAP	0.007		**0.028**	mg/L	1	10/1/2010 10:20:00 AM	KNS

TEKLAB, INC.

5445 HORSESHOE LAKE ROAD
COLLINSVILLE, ILLINOIS 62234

ENVIRONMENTAL TESTING LABORATORY

TEL: 618-344-1004
FAX: 618-344-1005

LABORATORY RESULTS

Client: PSC Industrial Outsourcing, LP
Client Project: A831-735002-012901-225Ameren Ch
WorkOrder: 10121047
Client Sample ID: UMW-119
Lab ID: 10121047-006
Collection Date: 12/28/2010 2:55:00 PM
Report Date: 12-Jan-11
Matrix: GROUNDWATER

Analyses	Certification	RL	Qual	Result	Units	DF	Date Analyzed	Analyst
SW-846 3510C, 8270C SIMS, SEMI-VOLATILE ORGANIC COMPOUNDS BY GC/MS								
2-Methylnaphthalene	NELAP	0.00010		**ND**	mg/L	1	1/4/2011 3:25:00 PM	MAM
Acenaphthene	NELAP	0.00010		**ND**	mg/L	1	1/4/2011 3:25:00 PM	MAM
Acenaphthylene	NELAP	0.00010		**ND**	mg/L	1	1/4/2011 3:25:00 PM	MAM
Anthracene	NELAP	0.00010		**ND**	mg/L	1	1/4/2011 3:25:00 PM	MAM
Benzo(a)anthracene	NELAP	0.00010		**ND**	mg/L	1	1/4/2011 3:25:00 PM	MAM
Benzo(a)pyrene	NELAP	0.00010		**ND**	mg/L	1	1/4/2011 3:25:00 PM	MAM
Benzo(b)fluoranthene	NELAP	0.00010		**ND**	mg/L	1	1/4/2011 3:25:00 PM	MAM
Benzo(g,h,i)perylene	NELAP	0.00010		**ND**	mg/L	1	1/4/2011 3:25:00 PM	MAM
Benzo(k)fluoranthene	NELAP	0.00010		**ND**	mg/L	1	1/4/2011 3:25:00 PM	MAM
Chrysene	NELAP	0.00010		**ND**	mg/L	1	1/4/2011 3:25:00 PM	MAM
Dibenzo(a,h)anthracene	NELAP	0.00010		**ND**	mg/L	1	1/4/2011 3:25:00 PM	MAM
Fluoranthene	NELAP	0.00010		**ND**	mg/L	1	1/4/2011 3:25:00 PM	MAM
Fluorene	NELAP	0.00010		**ND**	mg/L	1	1/4/2011 3:25:00 PM	MAM
Indeno(1,2,3-cd)pyrene	NELAP	0.00010		**ND**	mg/L	1	1/4/2011 3:25:00 PM	MAM
Naphthalene	NELAP	0.00010		**ND**	mg/L	1	1/4/2011 3:25:00 PM	MAM
Phenanthrene	NELAP	0.00010		**ND**	mg/L	1	1/4/2011 3:25:00 PM	MAM
Pyrene	NELAP	0.00010		**ND**	mg/L	1	1/4/2011 3:25:00 PM	MAM
Total PNAs except Naphthalene		0.00013		**ND**	mg/L	1	1/4/2011 3:25:00 PM	MAM
Surr: 2-Fluorobiphenyl		41.1-108		**69.7**	%REC	1	1/4/2011 3:25:00 PM	MAM
Surr: 2-Fluorophenol		16.8-65.9		**44.4**	%REC	1	1/4/2011 3:25:00 PM	MAM
Surr: Nitrobenzene-d5		37.6-105		**76.9**	%REC	1	1/4/2011 3:25:00 PM	MAM
Surr: Phenol-d5		11-42.8		**28.9**	%REC	1	1/4/2011 3:25:00 PM	MAM
Surr: p-Terphenyl-d14		49-113		**71.4**	%REC	1	1/4/2011 3:25:00 PM	MAM
SW-846 5030, 8260B, VOLATILE ORGANIC COMPOUNDS BY GC/MS								
Benzene	NELAP	2.0		**ND**	µg/L	1	12/31/2010 4:19:00 AM	CCF
Ethylbenzene	NELAP	5.0		**ND**	µg/L	1	12/31/2010 4:19:00 AM	CCF
Toluene	NELAP	5.0		**ND**	µg/L	1	12/31/2010 4:19:00 AM	CCF
Xylenes, Total	NELAP	5.0		**ND**	µg/L	1	12/31/2010 4:19:00 AM	CCF
Surr: 1,2-Dichloroethane-d4		74.7-129		**114.5**	%REC	1	12/31/2010 4:19:00 AM	CCF
Surr: 4-Bromofluorobenzene		86-119		**101.3**	%REC	1	12/31/2010 4:19:00 AM	CCF
Surr: Dibromofluoromethane		81.7-123		**109.6**	%REC	1	12/31/2010 4:19:00 AM	CCF
Surr: Toluene-d8		84.3-114		**94.5**	%REC	1	12/31/2010 4:19:00 AM	CCF
SW-846 9012A (TOTAL)								
Cyanide	NELAP	0.007		**0.028**	mg/L	1	1/3/2011 10:21:00 AM	KNS

Sample Narrative

SW-846 3510C, 8270C SIMS, Semi-Volatile Organic Compounds by GC/MS

Laboratory control sample duplicate did not recover within QC limits. Batch verified on MS recovery.

Client: PSC Industrial Outsourcing, LP **Work Order:** 11030761
Client Project: A831-735002-012901-225/IP Champaign **Report Date:** 24-Mar-11
Lab ID: 11030761-004 **Client Sample ID:** UMW-119
Matrix: GROUNDWATER **Collection Date:** 03/16/2011 9:15

Analyses	Certification	RL	Qual	Result	Units	DF	Date Analyzed	Batch
SW-846 9012A (TOTAL)								
Cyanide	NELAP	0.008		**< 0.008**	mg/L	1	03/21/2011 10:03	R147057
SW-846 3510C, 8270C SIMS, SEMI-VOLATILE ORGANIC COMPOUNDS BY GC/MS								
2-Methylnaphthalene	NELAP	0.00010		**ND**	mg/L	1	03/22/2011 22:45	66757
Acenaphthene	NELAP	0.00010		**ND**	mg/L	1	03/22/2011 22:45	66757
Acenaphthylene	NELAP	0.00010		**ND**	mg/L	1	03/22/2011 22:45	66757
Anthracene	NELAP	0.00010		**ND**	mg/L	1	03/22/2011 22:45	66757
Benzo(a)anthracene	NELAP	0.00010		**ND**	mg/L	1	03/22/2011 22:45	66757
Benzo(a)pyrene	NELAP	0.00010		**ND**	mg/L	1	03/22/2011 22:45	66757
Benzo(b)fluoranthene	NELAP	0.00010		**ND**	mg/L	1	03/22/2011 22:45	66757
Benzo(g,h,i)perylene	NELAP	0.00010		**ND**	mg/L	1	03/22/2011 22:45	66757
Benzo(k)fluoranthene	NELAP	0.00010		**ND**	mg/L	1	03/22/2011 22:45	66757
Chrysene	NELAP	0.00010		**ND**	mg/L	1	03/22/2011 22:45	66757
Dibenzo(a,h)anthracene	NELAP	0.00010		**ND**	mg/L	1	03/22/2011 22:45	66757
Fluoranthene	NELAP	0.00010		**ND**	mg/L	1	03/22/2011 22:45	66757
Fluorene	NELAP	0.00010		**ND**	mg/L	1	03/22/2011 22:45	66757
Indeno(1,2,3-cd)pyrene	NELAP	0.00010		**ND**	mg/L	1	03/22/2011 22:45	66757
Naphthalene	NELAP	0.00010		**ND**	mg/L	1	03/22/2011 22:45	66757
Phenanthrene	NELAP	0.00010		**ND**	mg/L	1	03/22/2011 22:45	66757
Pyrene	NELAP	0.00010		**ND**	mg/L	1	03/22/2011 22:45	66757
Total PNAs except Naphthalene		0.00013		**ND**	mg/L	1	03/22/2011 22:45	66757
Surr: 2-Fluorobiphenyl		41.1-108		**74.8**	%REC	1	03/22/2011 22:45	66757
Surr: 2-Fluorophenol		16.8-65.9		**40.1**	%REC	1	03/22/2011 22:45	66757
Surr: Nitrobenzene-d5		37.6-105		**86.6**	%REC	1	03/22/2011 22:45	66757
Surr: Phenol-d5		11-42.8		**26.7**	%REC	1	03/22/2011 22:45	66757
Surr: p-Terphenyl-d14		49-113		**58.6**	%REC	1	03/22/2011 22:45	66757
SW-846 5030, 8260B, VOLATILE ORGANIC COMPOUNDS BY GC/MS								
Benzene	NELAP	2.0		**ND**	µg/L	1	03/18/2011 19:41	66717
Ethylbenzene	NELAP	5.0		**ND**	µg/L	1	03/18/2011 19:41	66717
Toluene	NELAP	5.0		**ND**	µg/L	1	03/18/2011 19:41	66717
Xylenes, Total	NELAP	5.0		**ND**	µg/L	1	03/18/2011 19:41	66717
Surr: 1,2-Dichloroethane-d4		74.7-129		**94.4**	%REC	1	03/18/2011 19:41	66717
Surr: 4-Bromofluorobenzene		86-119		**101.2**	%REC	1	03/18/2011 19:41	66717
Surr: Dibromofluoromethane		81.7-123		**98.0**	%REC	1	03/18/2011 19:41	66717
Surr: Toluene-d8		84.3-114		**98.8**	%REC	1	03/18/2011 19:41	66717

Client: PSC Industrial Outsourcing, LP
Work Order: 11060800
Client Project: A831-735002-012901-225/IP Champaign
Report Date: 22-Jun-11
Lab ID: 11060800-016
Client Sample ID: VMW-119
Matrix: GROUNDWATER
Collection Date: 06/14/2011 14:25

Analyses	Certification	RL	Qual	Result	Units	DF	Date Analyzed	Batch
SW-846 9012A (TOTAL)								
Cyanide	NELAP	0.007		**0.026**	mg/L	1	06/20/2011 9:18	R150994
SW-846 3510C, 8270C SIMS, SEMI-VOLATILE ORGANIC COMPOUNDS BY GC/MS								
2-Methylnaphthalene	NELAP	0.00010		**ND**	mg/L	1	06/20/2011 20:26	69023
Acenaphthene	NELAP	0.00010		**ND**	mg/L	1	06/20/2011 20:26	69023
Acenaphthylene	NELAP	0.00010		**ND**	mg/L	1	06/20/2011 20:26	69023
Anthracene	NELAP	0.00010		**ND**	mg/L	1	06/20/2011 20:26	69023
Benzo(a)anthracene	NELAP	0.00010		**ND**	mg/L	1	06/20/2011 20:26	69023
Benzo(a)pyrene	NELAP	0.00010		**ND**	mg/L	1	06/20/2011 20:26	69023
Benzo(b)fluoranthene	NELAP	0.00010		**ND**	mg/L	1	06/20/2011 20:26	69023
Benzo(g,h,i)perylene	NELAP	0.00010		**ND**	mg/L	1	06/20/2011 20:26	69023
Benzo(k)fluoranthene	NELAP	0.00010		**ND**	mg/L	1	06/20/2011 20:26	69023
Chrysene	NELAP	0.00010		**ND**	mg/L	1	06/20/2011 20:26	69023
Dibenzo(a,h)anthracene	NELAP	0.00010		**ND**	mg/L	1	06/20/2011 20:26	69023
Fluoranthene	NELAP	0.00010		**ND**	mg/L	1	06/20/2011 20:26	69023
Fluorene	NELAP	0.00010		**ND**	mg/L	1	06/20/2011 20:26	69023
Indeno(1,2,3-cd)pyrene	NELAP	0.00010		**ND**	mg/L	1	06/20/2011 20:26	69023
Naphthalene	NELAP	0.00010		**0.00039**	mg/L	1	06/20/2011 20:26	69023
Phenanthrene	NELAP	0.00010		**ND**	mg/L	1	06/20/2011 20:26	69023
Pyrene	NELAP	0.00010		**ND**	mg/L	1	06/20/2011 20:26	69023
Total PNAs except Naphthalene		0.00013		**ND**	mg/L	1	06/20/2011 20:26	69023
Surr: 2-Fluorobiphenyl		34.3-105		**85.0**	%REC	1	06/20/2011 20:26	69023
Surr: 2-Fluorophenol		19.9-55.7		**35.8**	%REC	1	06/20/2011 20:26	69023
Surr: Nitrobenzene-d5		36.4-127		**73.2**	%REC	1	06/20/2011 20:26	69023
Surr: Phenol-d5		8.95-38.5		**21.1**	%REC	1	06/20/2011 20:26	69023
Surr: p-Terphenyl-d14		6.05-133		**81.8**	%REC	1	06/20/2011 20:26	69023
SW-846 5030, 8260B, VOLATILE ORGANIC COMPOUNDS BY GC/MS								
Benzene	NELAP	2.0		**ND**	µg/L	1	06/17/2011 18:05	69068
Ethylbenzene	NELAP	5.0		**ND**	µg/L	1	06/17/2011 18:05	69068
Toluene	NELAP	5.0		**ND**	µg/L	1	06/17/2011 18:05	69068
Xylenes, Total	NELAP	5.0		**ND**	µg/L	1	06/17/2011 18:05	69068
Surr: 1,2-Dichloroethane-d4		74.7-129		**106.1**	%REC	1	06/17/2011 18:05	69068
Surr: 4-Bromofluorobenzene		86-119		**102.2**	%REC	1	06/17/2011 18:05	69068
Surr: Dibromofluoromethane		81.7-123		**101.7**	%REC	1	06/17/2011 18:05	69068
Surr: Toluene-d8		84.3-114		**97.9**	%REC	1	06/17/2011 18:05	69068

Client: PSC Industrial Outsourcing, LP **Work Order:** 11090642

Client Project: A831-735002-012901-225Ameren Champaign 62408080120 **Report Date:** 22-Sep-11

Lab ID: 11090642-019 **Client Sample ID:** UMW-119

Matrix: GROUNDWATER **Collection Date:** 09/13/2011 17:20

Analyses	Certification	RL	Qual	Result	Units	DF	Date Analyzed	Batch
SW-846 9012A (TOTAL)								
Cyanide	NELAP	0.007		**0.026**	mg/L	1	09/20/2011 18:37	71355
SW-846 3510C, 8270C SIMS, SEMI-VOLATILE ORGANIC COMPOUNDS BY GC/MS								
2-Methylnaphthalene	NELAP	0.00010		**ND**	mg/L	1	09/19/2011 19:40	71336
Acenaphthene	NELAP	0.00010		**0.00010**	mg/L	1	09/19/2011 19:40	71336
Acenaphthylene	NELAP	0.00010		**0.00012**	mg/L	1	09/19/2011 19:40	71336
Anthracene	NELAP	0.00010		**ND**	mg/L	1	09/19/2011 19:40	71336
Benzo(a)anthracene	NELAP	0.00010		**ND**	mg/L	1	09/19/2011 19:40	71336
Benzo(a)pyrene	NELAP	0.00010		**ND**	mg/L	1	09/19/2011 19:40	71336
Benzo(b)fluoranthene	NELAP	0.00010		**ND**	mg/L	1	09/19/2011 19:40	71336
Benzo(g,h,i)perylene	NELAP	0.00010		**ND**	mg/L	1	09/19/2011 19:40	71336
Benzo(k)fluoranthene	NELAP	0.00010		**ND**	mg/L	1	09/19/2011 19:40	71336
Chrysene	NELAP	0.00010		**ND**	mg/L	1	09/19/2011 19:40	71336
Dibenzo(a,h)anthracene	NELAP	0.00010		**ND**	mg/L	1	09/19/2011 19:40	71336
Fluoranthene	NELAP	0.00010		**ND**	mg/L	1	09/19/2011 19:40	71336
Fluorene	NELAP	0.00010		**ND**	mg/L	1	09/19/2011 19:40	71336
Indeno(1,2,3-cd)pyrene	NELAP	0.00010		**ND**	mg/L	1	09/19/2011 19:40	71336
Naphthalene	NELAP	0.00010		**0.00013**	mg/L	1	09/19/2011 19:40	71336
Phenanthrene	NELAP	0.00010		**0.00011**	mg/L	1	09/19/2011 19:40	71336
Pyrene	NELAP	0.00010		**ND**	mg/L	1	09/19/2011 19:40	71336
Total PNAs except Naphthalene		0.00013		**0.00033**	mg/L	1	09/19/2011 19:40	71336
Surr: 2-Fluorobiphenyl		34.3-105		**68.0**	%REC	1	09/19/2011 19:40	71336
Surr: 2-Fluorophenol		19.9-55.7		**37.0**	%REC	1	09/19/2011 19:40	71336
Surr: Nitrobenzene-d5		36.4-127		**84.4**	%REC	1	09/19/2011 19:40	71336
Surr: Phenol-d5		8.95-38.5		**22.5**	%REC	1	09/19/2011 19:40	71336
Surr: p-Terphenyl-d14		6.05-133		**99.2**	%REC	1	09/19/2011 19:40	71336
SW-846 5030, 8260B, VOLATILE ORGANIC COMPOUNDS BY GC/MS								
Benzene	NELAP	2.0		**ND**	µg/L	1	09/16/2011 2:52	71326
Ethylbenzene	NELAP	5.0		**ND**	µg/L	1	09/16/2011 2:52	71326
Toluene	NELAP	5.0		**ND**	µg/L	1	09/16/2011 2:52	71326
Xylenes, Total	NELAP	5.0		**ND**	µg/L	1	09/16/2011 2:52	71326
Surr: 1,2-Dichloroethane-d4		74.7-129		**105.7**	%REC	1	09/16/2011 2:52	71326
Surr: 4-Bromofluorobenzene		86-119		**102.6**	%REC	1	09/16/2011 2:52	71326
Surr: Dibromofluoromethane		81.7-123		**96.4**	%REC	1	09/16/2011 2:52	71326
Surr: Toluene-d8		84.3-114		**101.6**	%REC	1	09/16/2011 2:52	71326

Client: PSC Industrial Outsourcing, LP **Work Order:** 11120083

Client Project: A831-735002-012901-225/IP Champaign **Report Date:** 08-Dec-11

Lab ID: 11120083-013 **Client Sample ID:** UMW-119

Matrix: AQUEOUS **Collection Date:** 11/30/2011 13:45

Analyses	Certification	RL	Qual	Result	Units	DF	Date Analyzed	Batch
SW-846 9012A (TOTAL)								
Cyanide	NELAP	0.007		**0.018**	mg/L	1	12/06/2011 9:39	73382
SW-846 3510C, 8270C SIMS, SEMI-VOLATILE ORGANIC COMPOUNDS BY GC/MS								
2-Methylnaphthalene	NELAP	0.00010		**ND**	mg/L	1	12/05/2011 0:18	73330
Acenaphthene	NELAP	0.00010		**ND**	mg/L	1	12/05/2011 0:18	73330
Acenaphthylene	NELAP	0.00010		**ND**	mg/L	1	12/05/2011 0:18	73330
Anthracene	NELAP	0.00010		**ND**	mg/L	1	12/05/2011 0:18	73330
Benzo(a)anthracene	NELAP	0.00010		**ND**	mg/L	1	12/05/2011 0:18	73330
Benzo(a)pyrene	NELAP	0.00010		**ND**	mg/L	1	12/05/2011 0:18	73330
Benzo(b)fluoranthene	NELAP	0.00010		**ND**	mg/L	1	12/05/2011 0:18	73330
Benzo(g,h,i)perylene	NELAP	0.00010		**ND**	mg/L	1	12/05/2011 0:18	73330
Benzo(k)fluoranthene	NELAP	0.00010		**ND**	mg/L	1	12/05/2011 0:18	73330
Chrysene	NELAP	0.00010		**ND**	mg/L	1	12/05/2011 0:18	73330
Dibenzo(a,h)anthracene	NELAP	0.00010		**ND**	mg/L	1	12/05/2011 0:18	73330
Fluoranthene	NELAP	0.00010		**ND**	mg/L	1	12/05/2011 0:18	73330
Fluorene	NELAP	0.00010		**ND**	mg/L	1	12/05/2011 0:18	73330
Indeno(1,2,3-cd)pyrene	NELAP	0.00010		**ND**	mg/L	1	12/05/2011 0:18	73330
Naphthalene	NELAP	0.00010		**ND**	mg/L	1	12/05/2011 0:18	73330
Phenanthrene	NELAP	0.00010		**ND**	mg/L	1	12/05/2011 0:18	73330
Pyrene	NELAP	0.00010		**ND**	mg/L	1	12/05/2011 0:18	73330
Total PNAs except Naphthalene		0.00013		**ND**	mg/L	1	12/05/2011 0:18	73330
Surr: 2-Fluorobiphenyl		34.3-105		**75.2**	%REC	1	12/05/2011 0:18	73330
Surr: 2-Fluorophenol		19.9-55.7		**38.0**	%REC	1	12/05/2011 0:18	73330
Surr: Nitrobenzene-d5		36.4-127		**77.9**	%REC	1	12/05/2011 0:18	73330
Surr: Phenol-d5		8.95-38.5		**18.6**	%REC	1	12/05/2011 0:18	73330
Surr: p-Terphenyl-d14		6.05-133		**86.2**	%REC	1	12/05/2011 0:18	73330
SW-846 5030, 8260B, VOLATILE ORGANIC COMPOUNDS BY GC/MS								
Benzene	NELAP	2.0		**ND**	µg/L	1	12/03/2011 7:05	73375
Ethylbenzene	NELAP	5.0		**ND**	µg/L	1	12/03/2011 7:05	73375
Toluene	NELAP	5.0		**ND**	µg/L	1	12/03/2011 7:05	73375
Xylenes, Total	NELAP	5.0		**ND**	µg/L	1	12/03/2011 7:05	73375
Surr: 1,2-Dichloroethane-d4		74.7-129		**93.0**	%REC	1	12/03/2011 7:05	73375
Surr: 4-Bromofluorobenzene		86-119		**100.8**	%REC	1	12/03/2011 7:05	73375
Surr: Dibromofluoromethane		81.7-123		**101.6**	%REC	1	12/03/2011 7:05	73375
Surr: Toluene-d8		84.3-114		**97.9**	%REC	1	12/03/2011 7:05	73375

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Laboratory Results

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Client: PSC Industrial Outsourcing, LP **Work Order:** 12031334

Client Project: A831-735002-012901-225/Ameren Champaign62412010008 **Report Date:** 04-Apr-12

Lab ID: 12031334-010 **Client Sample ID:** UMW-119

Matrix: GROUNDWATER **Collection Date:** 03/27/2012 10:40

Analyses	Certification	RL	Qual	Result	Units	DF	Date Analyzed	Batch
SW-846 9012A (TOTAL)								
Cyanide	NELAP	0.007		**0.024**	mg/L	1	04/03/2012 11:22	76773
SW-846 3510C, 8270C SIMS, SEMI-VOLATILE ORGANIC COMPOUNDS BY GC/MS								
Acenaphthene	NELAP	0.00010		**ND**	mg/L	1	03/31/2012 1:55	76574
Acenaphthylene	NELAP	0.00010		**ND**	mg/L	1	03/31/2012 1:55	76574
Anthracene	NELAP	0.00010		**ND**	mg/L	1	03/31/2012 1:55	76574
Benzo(a)anthracene	NELAP	0.00010		**ND**	mg/L	1	03/31/2012 1:55	76574
Benzo(a)pyrene	NELAP	0.00010		**ND**	mg/L	1	03/31/2012 1:55	76574
Benzo(b)fluoranthene	NELAP	0.00010		**ND**	mg/L	1	03/31/2012 1:55	76574
Benzo(g,h,i)perylene	NELAP	0.00010		**ND**	mg/L	1	03/31/2012 1:55	76574
Benzo(k)fluoranthene	NELAP	0.00010		**ND**	mg/L	1	03/31/2012 1:55	76574
Chrysene	NELAP	0.00010		**ND**	mg/L	1	03/31/2012 1:55	76574
Dibenzo(a,h)anthracene	NELAP	0.00010		**ND**	mg/L	1	03/31/2012 1:55	76574
Fluoranthene	NELAP	0.00010		**ND**	mg/L	1	03/31/2012 1:55	76574
Fluorene	NELAP	0.00010		**ND**	mg/L	1	03/31/2012 1:55	76574
Indeno(1,2,3-cd)pyrene	NELAP	0.00010		**ND**	mg/L	1	03/31/2012 1:55	76574
Naphthalene	NELAP	0.00010		**ND**	mg/L	1	03/31/2012 1:55	76574
Phenanthrene	NELAP	0.00010		**ND**	mg/L	1	03/31/2012 1:55	76574
Pyrene	NELAP	0.00010		**ND**	mg/L	1	03/31/2012 1:55	76574
Total PNAs except Naphthalene		0.00013		**ND**	mg/L	1	03/31/2012 1:55	76574
Surr: 2-Fluorobiphenyl		34.3-105		**70.4**	%REC	1	03/31/2012 1:55	76574
Surr: 2-Fluorophenol		19.9-55.7		**40.3**	%REC	1	03/31/2012 1:55	76574
Surr: Nitrobenzene-d5		36.4-127		**70.5**	%REC	1	03/31/2012 1:55	76574
Surr: Phenol-d5		8.95-38.5		**25.4**	%REC	1	03/31/2012 1:55	76574
Surr: p-Terphenyl-d14		6.05-133		**79.8**	%REC	1	03/31/2012 1:55	76574
SW-846 5030, 8260B, VOLATILE ORGANIC COMPOUNDS BY GC/MS								
Benzene	NELAP	2.0		**ND**	µg/L	1	03/29/2012 21:20	76659
Ethylbenzene	NELAP	5.0		**ND**	µg/L	1	03/29/2012 21:20	76659
Toluene	NELAP	5.0		**ND**	µg/L	1	03/29/2012 21:20	76659
Xylenes, Total	NELAP	5.0		**ND**	µg/L	1	03/29/2012 21:20	76659
Surr: 1,2-Dichloroethane-d4		74.7-129		**107.4**	%REC	1	03/29/2012 21:20	76659
Surr: 4-Bromofluorobenzene		86-119		**101.2**	%REC	1	03/29/2012 21:20	76659
Surr: Dibromofluoromethane		81.7-123		**99.8**	%REC	1	03/29/2012 21:20	76659
Surr: Toluene-d8		84.3-114		**99.1**	%REC	1	03/29/2012 21:20	76659

Client: PSC Industrial Outsourcing, LP | **Work Order:** 12060913
Client Project: Ameren Champaign 624-1201-0008-J0002 | **Report Date:** 27-Jun-12
Lab ID: 12060913-016 | **Client Sample ID:** UMW-119
Matrix: GROUNDWATER | **Collection Date:** 06/20/2012 8:24

Analyses	Certification	RL	Qual	Result	Units	DF	Date Analyzed	Batch
SW-846 9012A (TOTAL)								
Cyanide	NELAP	0.007		**0.029**	mg/L	1	06/22/2012 12:11	79204
SW-846 3510C, 8270C SIMS, SEMI-VOLATILE ORGANIC COMPOUNDS BY GC/MS								
Acenaphthene	NELAP	0.00010		**ND**	mg/L	1	06/26/2012 14:47	79146
Acenaphthylene	NELAP	0.00010		**ND**	mg/L	1	06/26/2012 14:47	79146
Anthracene	NELAP	0.00010		**ND**	mg/L	1	06/26/2012 14:47	79146
Benzo(a)anthracene	NELAP	0.00010		**ND**	mg/L	1	06/26/2012 14:47	79146
Benzo(a)pyrene	NELAP	0.00010		**ND**	mg/L	1	06/26/2012 14:47	79146
Benzo(b)fluoranthene	NELAP	0.00010		**ND**	mg/L	1	06/26/2012 14:47	79146
Benzo(g,h,i)perylene	NELAP	0.00010		**ND**	mg/L	1	06/26/2012 14:47	79146
Benzo(k)fluoranthene	NELAP	0.00010		**ND**	mg/L	1	06/26/2012 14:47	79146
Chrysene	NELAP	0.00010		**ND**	mg/L	1	06/26/2012 14:47	79146
Dibenzo(a,h)anthracene	NELAP	0.00010		**ND**	mg/L	1	06/26/2012 14:47	79146
Fluoranthene	NELAP	0.00010		**ND**	mg/L	1	06/26/2012 14:47	79146
Fluorene	NELAP	0.00010		**ND**	mg/L	1	06/26/2012 14:47	79146
Indeno(1,2,3-cd)pyrene	NELAP	0.00010		**ND**	mg/L	1	06/26/2012 14:47	79146
Naphthalene	NELAP	0.00010		**ND**	mg/L	1	06/26/2012 14:47	79146
Phenanthrene	NELAP	0.00010		**ND**	mg/L	1	06/26/2012 14:47	79146
Pyrene	NELAP	0.00010		**ND**	mg/L	1	06/26/2012 14:47	79146
Total PNAs except Naphthalene		0.00013		**ND**	mg/L	1	06/26/2012 14:47	79146
Surr: 2-Fluorobiphenyl		34.3-105		**69.0**	%REC	1	06/26/2012 14:47	79146
Surr: 2-Fluorophenol		19.9-55.7		**48.2**	%REC	1	06/26/2012 14:47	79146
Surr: Nitrobenzene-d5		36.4-127		**82.6**	%REC	1	06/26/2012 14:47	79146
Surr: Phenol-d5		8.95-38.5		**33.7**	%REC	1	06/26/2012 14:47	79146
Surr: p-Terphenyl-d14		6.05-133		**70.6**	%REC	1	06/26/2012 14:47	79146
SW-846 5030, 8260B, VOLATILE ORGANIC COMPOUNDS BY GC/MS								
Benzene	NELAP	2.0		**ND**	µg/L	1	06/22/2012 15:35	79234
Ethylbenzene	NELAP	5.0		**ND**	µg/L	1	06/22/2012 15:35	79234
Toluene	NELAP	5.0		**ND**	µg/L	1	06/22/2012 15:35	79234
Xylenes, Total	NELAP	5.0		**ND**	µg/L	1	06/22/2012 15:35	79234
Surr: 1,2-Dichloroethane-d4		74.7-129		**84.7**	%REC	1	06/22/2012 15:35	79234
Surr: 4-Bromofluorobenzene		86-119		**101.7**	%REC	1	06/22/2012 15:35	79234
Surr: Dibromofluoromethane		81.7-123		**96.5**	%REC	1	06/22/2012 15:35	79234
Surr: Toluene-d8		84.3-114		**99.5**	%REC	1	06/22/2012 15:35	79234

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Laboratory Results

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Client: PSC Industrial Outsourcing, LP | **Work Order:** 12091310

Client Project: Ameren Champaign MGP | **Report Date:** 03-Oct-12

Lab ID: 12091310-020 | **Client Sample ID:** UMW-119

Matrix: AQUEOUS | **Collection Date:** 09/24/2012 16:05

Analyses	Certification	RL	Qual	Result	Units	DF	Date Analyzed	Batch
SW-846 9012A (TOTAL)								
Cyanide	NELAP	0.007		**0.029**	mg/L	1	10/01/2012 14:11	82047
SW-846 3510C, 8270C SIMS, SEMI-VOLATILE ORGANIC COMPOUNDS BY GC/MS								
2-Methylnaphthalene	NELAP	0.00010		**ND**	mg/L	1	10/01/2012 14:43	81985
Acenaphthene	NELAP	0.00010		**ND**	mg/L	1	10/01/2012 14:43	81985
Acenaphthylene	NELAP	0.00010		**ND**	mg/L	1	10/01/2012 14:43	81985
Anthracene	NELAP	0.00010		**ND**	mg/L	1	10/01/2012 14:43	81985
Benzo(a)anthracene	NELAP	0.00010		**ND**	mg/L	1	10/01/2012 14:43	81985
Benzo(a)pyrene	NELAP	0.00010		**ND**	mg/L	1	10/01/2012 14:43	81985
Benzo(b)fluoranthene	NELAP	0.00010		**ND**	mg/L	1	10/01/2012 14:43	81985
Benzo(g,h,i)perylene	NELAP	0.00010		**ND**	mg/L	1	10/01/2012 14:43	81985
Benzo(k)fluoranthene	NELAP	0.00010		**ND**	mg/L	1	10/01/2012 14:43	81985
Chrysene	NELAP	0.00010		**ND**	mg/L	1	10/01/2012 14:43	81985
Dibenzo(a,h)anthracene	NELAP	0.00010		**ND**	mg/L	1	10/01/2012 14:43	81985
Fluoranthene	NELAP	0.00010		**ND**	mg/L	1	10/01/2012 14:43	81985
Fluorene	NELAP	0.00010		**ND**	mg/L	1	10/01/2012 14:43	81985
Indeno(1,2,3-cd)pyrene	NELAP	0.00010		**ND**	mg/L	1	10/01/2012 14:43	81985
Naphthalene	NELAP	0.00010		**ND**	mg/L	1	10/01/2012 14:43	81985
Phenanthrene	NELAP	0.00010		**ND**	mg/L	1	10/01/2012 14:43	81985
Pyrene	NELAP	0.00010		**ND**	mg/L	1	10/01/2012 14:43	81985
Total PNAs except Naphthalene		0.00013		**ND**	mg/L	1	10/01/2012 14:43	81985
Surr: 2-Fluorobiphenyl		34.3-105		**71.4**	%REC	1	10/01/2012 14:43	81985
Surr: 2-Fluorophenol		19.9-55.7		**46.4**	%REC	1	10/01/2012 14:43	81985
Surr: Nitrobenzene-d5		36.4-127		**76.7**	%REC	1	10/01/2012 14:43	81985
Surr: Phenol-d5		8.95-38.5		**25.2**	%REC	1	10/01/2012 14:43	81985
Surr: p-Terphenyl-d14		6.05-133		**87.2**	%REC	1	10/01/2012 14:43	81985
SW-846 5030, 8260B, VOLATILE ORGANIC COMPOUNDS BY GC/MS								
Benzene	NELAP	2.0		**ND**	µg/L	1	09/28/2012 15:55	82069
Ethylbenzene	NELAP	5.0		**ND**	µg/L	1	09/28/2012 15:55	82069
Toluene	NELAP	5.0		**ND**	µg/L	1	09/28/2012 15:55	82069
Xylenes, Total	NELAP	5.0		**ND**	µg/L	1	09/28/2012 15:55	82069
Surr: 1,2-Dichloroethane-d4		74.7-129		**95.5**	%REC	1	09/28/2012 15:55	82069
Surr: 4-Bromofluorobenzene		86-119		**100.7**	%REC	1	09/28/2012 15:55	82069
Surr: Dibromofluoromethane		81.7-123		**99.9**	%REC	1	09/28/2012 15:55	82069
Surr: Toluene-d8		84.3-114		**99.2**	%REC	1	09/28/2012 15:55	82069

Client: PSC Industrial Outsourcing, LP **Work Order:** 12120735

Client Project: Champaign FMGP Q4 Groundwater **Report Date:** 21-Dec-12

Lab ID: 12120735-023 **Client Sample ID:** UMW 119

Matrix: GROUNDWATER **Collection Date:** 12/13/2012 10:35

Analyses	Certification	RL	Qual	Result	Units	DF	Date Analyzed	Batch
SW-846 9012A (TOTAL)								
Cyanide	NELAP	0.007		**0.037**	mg/L	1	12/19/2012 15:46	84355
SW-846 3510C, 8270C SIMS, SEMI-VOLATILE ORGANIC COMPOUNDS BY GC/MS								
Acenaphthene	NELAP	0.00010		**ND**	mg/L	1	12/18/2012 13:23	84292
Acenaphthylene	NELAP	0.00010		**ND**	mg/L	1	12/18/2012 13:23	84292
Anthracene	NELAP	0.00010		**ND**	mg/L	1	12/18/2012 13:23	84292
Benzo(a)anthracene	NELAP	0.00010		**ND**	mg/L	1	12/18/2012 13:23	84292
Benzo(a)pyrene	NELAP	0.00010		**ND**	mg/L	1	12/18/2012 13:23	84292
Benzo(b)fluoranthene	NELAP	0.00010		**ND**	mg/L	1	12/18/2012 13:23	84292
Benzo(g,h,i)perylene	NELAP	0.00010		**ND**	mg/L	1	12/18/2012 13:23	84292
Benzo(k)fluoranthene	NELAP	0.00010		**ND**	mg/L	1	12/18/2012 13:23	84292
Chrysene	NELAP	0.00010		**ND**	mg/L	1	12/18/2012 13:23	84292
Dibenzo(a,h)anthracene	NELAP	0.00010		**ND**	mg/L	1	12/18/2012 13:23	84292
Fluoranthene	NELAP	0.00010		**ND**	mg/L	1	12/18/2012 13:23	84292
Fluorene	NELAP	0.00010		**ND**	mg/L	1	12/18/2012 13:23	84292
Indeno(1,2,3-cd)pyrene	NELAP	0.00010		**ND**	mg/L	1	12/18/2012 13:23	84292
Naphthalene	NELAP	0.00010		**ND**	mg/L	1	12/18/2012 13:23	84292
Phenanthrene	NELAP	0.00010		**ND**	mg/L	1	12/18/2012 13:23	84292
Pyrene	NELAP	0.00010		**ND**	mg/L	1	12/18/2012 13:23	84292
Surr: 2-Fluorobiphenyl		34.3-105		**80.8**	%REC	1	12/18/2012 13:23	84292
Surr: Nitrobenzene-d5		36.4-127		**77.3**	%REC	1	12/18/2012 13:23	84292
Surr: p-Terphenyl-d14		6.05-133		**87.3**	%REC	1	12/18/2012 13:23	84292
SW-846 5030, 8260B, VOLATILE ORGANIC COMPOUNDS BY GC/MS								
Benzene	NELAP	2.0		**ND**	µg/L	1	12/19/2012 6:19	84369
Ethylbenzene	NELAP	5.0		**ND**	µg/L	1	12/19/2012 6:19	84369
Toluene	NELAP	5.0		**ND**	µg/L	1	12/19/2012 6:19	84369
Xylenes, Total	NELAP	5.0		**ND**	µg/L	1	12/19/2012 6:19	84369
Surr: 1,2-Dichloroethane-d4		74.7-129		**107.5**	%REC	1	12/19/2012 6:19	84369
Surr: 4-Bromofluorobenzene		86-119		**100.5**	%REC	1	12/19/2012 6:19	84369
Surr: Dibromofluoromethane		81.7-123		**102.7**	%REC	1	12/19/2012 6:19	84369
Surr: Toluene-d8		84.3-114		**101.0**	%REC	1	12/19/2012 6:19	84369

Client: PSC Industrial Outsourcing, LP **Work Order:** 13031416

Client Project: Champaign FMGP Q1 2013 Groundwater **Report Date:** 04-Apr-13

Lab ID: 13031416-024 **Client Sample ID:** UMW-119

Matrix: GROUNDWATER **Collection Date:** 03/26/2013 13:35

Analyses	Certification	RL	Qual	Result	Units	DF	Date Analyzed	Batch
SW-846 9012A (TOTAL)								
Cyanide	NELAP	0.007		**0.033**	mg/L	1	04/01/2013 18:10	86903
SW-846 3510C, 8270C SIMS, SEMI-VOLATILE ORGANIC COMPOUNDS BY GC/MS								
Acenaphthene	NELAP	0.00010		**ND**	mg/L	1	04/02/2013 1:41	86881
Acenaphthylene	NELAP	0.00010		**ND**	mg/L	1	04/02/2013 1:41	86881
Anthracene	NELAP	0.00010		**ND**	mg/L	1	04/02/2013 1:41	86881
Benzo(a)anthracene	NELAP	0.00010		**ND**	mg/L	1	04/02/2013 1:41	86881
Benzo(a)pyrene	NELAP	0.00010		**ND**	mg/L	1	04/02/2013 1:41	86881
Benzo(b)fluoranthene	NELAP	0.00010		**ND**	mg/L	1	04/02/2013 1:41	86881
Benzo(g,h,i)perylene	NELAP	0.00010		**ND**	mg/L	1	04/02/2013 1:41	86881
Benzo(k)fluoranthene	NELAP	0.00010		**ND**	mg/L	1	04/02/2013 1:41	86881
Chrysene	NELAP	0.00010		**ND**	mg/L	1	04/02/2013 1:41	86881
Dibenzo(a,h)anthracene	NELAP	0.00010		**ND**	mg/L	1	04/02/2013 1:41	86881
Fluoranthene	NELAP	0.00010		**ND**	mg/L	1	04/02/2013 1:41	86881
Fluorene	NELAP	0.00010		**ND**	mg/L	1	04/02/2013 1:41	86881
Indeno(1,2,3-cd)pyrene	NELAP	0.00010		**ND**	mg/L	1	04/02/2013 1:41	86881
Naphthalene	NELAP	0.00010		**ND**	mg/L	1	04/02/2013 1:41	86881
Phenanthrene	NELAP	0.00010		**ND**	mg/L	1	04/02/2013 1:41	86881
Pyrene	NELAP	0.00010		**ND**	mg/L	1	04/02/2013 1:41	86881
Surr: 2-Fluorobiphenyl		34.3-105		**79.6**	%REC	1	04/02/2013 1:41	86881
Surr: Nitrobenzene-d5		36.4-127		**53.1**	%REC	1	04/02/2013 1:41	86881
Surr: p-Terphenyl-d14		6.05-133		**64.5**	%REC	1	04/02/2013 1:41	86881
SW-846 5030, 8260B, VOLATILE ORGANIC COMPOUNDS BY GC/MS								
Benzene	NELAP	2.0		**ND**	µg/L	1	04/02/2013 4:28	86958
Ethylbenzene	NELAP	5.0		**ND**	µg/L	1	04/02/2013 4:28	86958
Toluene	NELAP	5.0		**ND**	µg/L	1	04/02/2013 4:28	86958
Xylenes, Total	NELAP	5.0		**ND**	µg/L	1	04/02/2013 4:28	86958
Surr: 1,2-Dichloroethane-d4		74.7-129		**101.1**	%REC	1	04/02/2013 4:28	86958
Surr: 4-Bromofluorobenzene		86-119		**101.5**	%REC	1	04/02/2013 4:28	86958
Surr: Dibromofluoromethane		81.7-123		**101.6**	%REC	1	04/02/2013 4:28	86958
Surr: Toluene-d8		84.3-114		**97.7**	%REC	1	04/02/2013 4:28	86958

Client: PSC Industrial Outsourcing, LP **Work Order:** 13060706

Client Project: Champaign FMGP Q2 2013 Groundwater **Report Date:** 20-Jun-13

Lab ID: 13060706-011 **Client Sample ID:** UMW-119

Matrix: AQUEOUS **Collection Date:** 06/12/2013 9:24

Analyses	Certification	RL	Qual	Result	Units	DF	Date Analyzed	Batch
SW-846 9012A (TOTAL)								
Cyanide	NELAP	0.007		**0.037**	mg/L	1	06/17/2013 14:05	89266
SW-846 3510C, 8270C SIMS, SEMI-VOLATILE ORGANIC COMPOUNDS BY GC/MS								
Acenaphthene	NELAP	0.0001		**ND**	mg/L	1	06/17/2013 17:54	89247
Acenaphthylene	NELAP	0.0001		**ND**	mg/L	1	06/17/2013 17:54	89247
Anthracene	NELAP	0.0001		**ND**	mg/L	1	06/17/2013 17:54	89247
Benzo(a)anthracene	NELAP	0.0001		**ND**	mg/L	1	06/17/2013 17:54	89247
Benzo(a)pyrene	NELAP	0.0001		**ND**	mg/L	1	06/17/2013 17:54	89247
Benzo(b)fluoranthene	NELAP	0.0001		**ND**	mg/L	1	06/17/2013 17:54	89247
Benzo(g,h,i)perylene	NELAP	0.0001		**ND**	mg/L	1	06/17/2013 17:54	89247
Benzo(k)fluoranthene	NELAP	0.0001		**ND**	mg/L	1	06/17/2013 17:54	89247
Chrysene	NELAP	0.0001		**ND**	mg/L	1	06/17/2013 17:54	89247
Dibenzo(a,h)anthracene	NELAP	0.0001		**ND**	mg/L	1	06/17/2013 17:54	89247
Fluoranthene	NELAP	0.0001		**ND**	mg/L	1	06/17/2013 17:54	89247
Fluorene	NELAP	0.0001		**ND**	mg/L	1	06/17/2013 17:54	89247
Indeno(1,2,3-cd)pyrene	NELAP	0.0001		**ND**	mg/L	1	06/17/2013 17:54	89247
Naphthalene	NELAP	0.0001		**ND**	mg/L	1	06/17/2013 17:54	89247
Phenanthrene	NELAP	0.0001		**ND**	mg/L	1	06/17/2013 17:54	89247
Pyrene	NELAP	0.0001		**ND**	mg/L	1	06/17/2013 17:54	89247
Surr: 2-Fluorobiphenyl		34.3-105		**67.1**	%REC	1	06/17/2013 17:54	89247
Surr: Nitrobenzene-d5		36.4-127		**55.8**	%REC	1	06/17/2013 17:54	89247
Surr: p-Terphenyl-d14		6.05-133		**74.7**	%REC	1	06/17/2013 17:54	89247
SW-846 5030, 8260B, VOLATILE ORGANIC COMPOUNDS BY GC/MS								
Benzene	NELAP	2		**ND**	µg/L	1	06/14/2013 20:44	89264
Ethylbenzene	NELAP	5		**ND**	µg/L	1	06/14/2013 20:44	89264
Toluene	NELAP	5		**ND**	µg/L	1	06/14/2013 20:44	89264
Xylenes, Total	NELAP	5		**ND**	µg/L	1	06/14/2013 20:44	89264
Surr: 1,2-Dichloroethane-d4		74.7-129		**97.9**	%REC	1	06/14/2013 20:44	89264
Surr: 4-Bromofluorobenzene		86-119		**101.4**	%REC	1	06/14/2013 20:44	89264
Surr: Dibromofluoromethane		81.7-123		**100**	%REC	1	06/14/2013 20:44	89264
Surr: Toluene-d8		84.3-114		**96.5**	%REC	1	06/14/2013 20:44	89264

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Laboratory Results

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Client: PSC Industrial Outsourcing, LP — **Work Order:** 13091363

Client Project: Champaign FMGP Q3 2013 Groundwater — **Report Date:** 03-Oct-13

Lab ID: 13091363-029 — **Client Sample ID:** UMW-119

Matrix: GROUNDWATER — **Collection Date:** 09/25/2013 10:45

Analyses	Certification	RL	Qual	Result	Units	DF	Date Analyzed	Batch
SW-846 9012A (TOTAL)								
Cyanide	NELAP	0.007		**0.028**	mg/L	1	10/01/2013 16:30	92418
SW-846 3510C, 8270C SIMS, SEMI-VOLATILE ORGANIC COMPOUNDS BY GC/MS								
Acenaphthene	NELAP	0.0001		**ND**	mg/L	1	09/30/2013 16:02	92309
Acenaphthylene	NELAP	0.0001		**ND**	mg/L	1	09/30/2013 16:02	92309
Anthracene	NELAP	0.0001		**ND**	mg/L	1	09/30/2013 16:02	92309
Benzo(a)anthracene	NELAP	0.0001		**ND**	mg/L	1	09/30/2013 16:02	92309
Benzo(a)pyrene	NELAP	0.0001		**ND**	mg/L	1	09/30/2013 16:02	92309
Benzo(b)fluoranthene	NELAP	0.0001		**ND**	mg/L	1	09/30/2013 16:02	92309
Benzo(g,h,i)perylene	NELAP	0.0001		**ND**	mg/L	1	09/30/2013 16:02	92309
Benzo(k)fluoranthene	NELAP	0.0001		**ND**	mg/L	1	09/30/2013 16:02	92309
Chrysene	NELAP	0.0001		**ND**	mg/L	1	09/30/2013 16:02	92309
Dibenzo(a,h)anthracene	NELAP	0.0001		**ND**	mg/L	1	09/30/2013 16:02	92309
Fluoranthene	NELAP	0.0001		**ND**	mg/L	1	09/30/2013 16:02	92309
Fluorene	NELAP	0.0001		**ND**	mg/L	1	09/30/2013 16:02	92309
Indeno(1,2,3-cd)pyrene	NELAP	0.0001		**ND**	mg/L	1	09/30/2013 16:02	92309
Naphthalene	NELAP	0.0001		**ND**	mg/L	1	09/30/2013 16:02	92309
Phenanthrene	NELAP	0.0001		**ND**	mg/L	1	09/30/2013 16:02	92309
Pyrene	NELAP	0.0001		**ND**	mg/L	1	09/30/2013 16:02	92309
Surr: 2-Fluorobiphenyl		34.3-105		**67**	%REC	1	09/30/2013 16:02	92309
Surr: Nitrobenzene-d5		36.4-127		**62.5**	%REC	1	09/30/2013 16:02	92309
Surr: p-Terphenyl-d14		6.05-133		**73.3**	%REC	1	09/30/2013 16:02	92309
SW-846 5030, 8260B, VOLATILE ORGANIC COMPOUNDS BY GC/MS								
Benzene	NELAP	2		**ND**	µg/L	1	09/27/2013 22:43	92363
Ethylbenzene	NELAP	5		**ND**	µg/L	1	09/27/2013 22:43	92363
Toluene	NELAP	5		**ND**	µg/L	1	09/27/2013 22:43	92363
Xylenes, Total	NELAP	5		**ND**	µg/L	1	09/27/2013 22:43	92363
Surr: 1,2-Dichloroethane-d4		74.7-129		**108.7**	%REC	1	09/27/2013 22:43	92363
Surr: 4-Bromofluorobenzene		86-119		**103.2**	%REC	1	09/27/2013 22:43	92363
Surr: Dibromofluoromethane		81.7-123		**103.4**	%REC	1	09/27/2013 22:43	92363
Surr: Toluene-d8		84.3-114		**97**	%REC	1	09/27/2013 22:43	92363

Client: PSC Industrial Outsourcing, LP | **Work Order:** 13121150

Client Project: Champaign FMGP Q4 2013 Groundwater | **Report Date:** 31-Dec-13

Lab ID: 13121150-023 | **Client Sample ID:** UMW-119

Matrix: GROUNDWATER | **Collection Date:** 12/18/2013 15:10

Analyses	Certification	RL	Qual	Result	Units	DF	Date Analyzed	Batch
SW-846 9012A (TOTAL)								
Cyanide	NELAP	0.007		**0.024**	mg/L	1	12/24/2013 11:25	94908
SW-846 3510C, 8270C SIMS, SEMI-VOLATILE ORGANIC COMPOUNDS BY GC/MS								
Acenaphthene	NELAP	0.0001		**ND**	mg/L	1	12/23/2013 18:09	94806
Acenaphthylene	NELAP	0.0001		**ND**	mg/L	1	12/23/2013 18:09	94806
Anthracene	NELAP	0.0001		**ND**	mg/L	1	12/23/2013 18:09	94806
Benzo(a)anthracene	NELAP	0.0001		**ND**	mg/L	1	12/23/2013 18:09	94806
Benzo(a)pyrene	NELAP	0.0001		**ND**	mg/L	1	12/23/2013 18:09	94806
Benzo(b)fluoranthene	NELAP	0.0001		**ND**	mg/L	1	12/23/2013 18:09	94806
Benzo(g,h,i)perylene	NELAP	0.0001		**ND**	mg/L	1	12/23/2013 18:09	94806
Benzo(k)fluoranthene	NELAP	0.0001		**ND**	mg/L	1	12/23/2013 18:09	94806
Chrysene	NELAP	0.0001		**ND**	mg/L	1	12/23/2013 18:09	94806
Dibenzo(a,h)anthracene	NELAP	0.0001		**ND**	mg/L	1	12/23/2013 18:09	94806
Fluoranthene	NELAP	0.0001		**ND**	mg/L	1	12/23/2013 18:09	94806
Fluorene	NELAP	0.0001		**ND**	mg/L	1	12/23/2013 18:09	94806
Indeno(1,2,3-cd)pyrene	NELAP	0.0001		**ND**	mg/L	1	12/23/2013 18:09	94806
Naphthalene	NELAP	0.0001		**ND**	mg/L	1	12/23/2013 18:09	94806
Phenanthrene	NELAP	0.0001		**ND**	mg/L	1	12/23/2013 18:09	94806
Pyrene	NELAP	0.0001		**ND**	mg/L	1	12/23/2013 18:09	94806
Surr: 2-Fluorobiphenyl		34.3-105		**71.5**	%REC	1	12/23/2013 18:09	94806
Surr: Nitrobenzene-d5		36.4-127		**63.1**	%REC	1	12/23/2013 18:09	94806
Surr: p-Terphenyl-d14		6.05-133		**73.2**	%REC	1	12/23/2013 18:09	94806
SW-846 5030, 8260B, VOLATILE ORGANIC COMPOUNDS BY GC/MS								
Benzene	NELAP	2		**ND**	µg/L	1	12/24/2013 2:42	94919
Ethylbenzene	NELAP	5		**ND**	µg/L	1	12/24/2013 2:42	94919
Toluene	NELAP	5		**ND**	µg/L	1	12/24/2013 2:42	94919
Xylenes, Total	NELAP	5		**ND**	µg/L	1	12/24/2013 2:42	94919
Surr: 1,2-Dichloroethane-d4		74.7-129		**93.6**	%REC	1	12/24/2013 2:42	94919
Surr: 4-Bromofluorobenzene		86-119		**93.8**	%REC	1	12/24/2013 2:42	94919
Surr: Dibromofluoromethane		81.7-123		**99.3**	%REC	1	12/24/2013 2:42	94919
Surr: Toluene-d8		84.3-114		**97**	%REC	1	12/24/2013 2:42	94919

Laboratory Results

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Client:	PSC Industrial Outsourcing, LP	**Work Order:**	14031097
Client Project:	Champaign FMGP Q1 2014 Groundwater	**Report Date:**	09-Apr-14
Lab ID:	14031097-005	**Client Sample ID:**	UMW-119
Matrix:	AQUEOUS	**Collection Date:**	03/18/2014 10:30

Analyses	Certification	RL	Qual	Result	Units	DF	Date Analyzed	Batch
SW-846 9012A (TOTAL)								
Cyanide	NELAP	0.007		**0.034**	mg/L	1	03/21/2014 15:01	97088
SW-846 3510C, 8270C SIMS, SEMI-VOLATILE ORGANIC COMPOUNDS BY GC/MS								
Acenaphthene	NELAP	0.0001		**ND**	mg/L	1	03/21/2014 14:41	97060
Acenaphthylene	NELAP	0.0001		**ND**	mg/L	1	03/21/2014 14:41	97060
Anthracene	NELAP	0.0001		**ND**	mg/L	1	03/21/2014 14:41	97060
Benzo(a)anthracene	NELAP	0.0001		**ND**	mg/L	1	03/21/2014 14:41	97060
Benzo(a)pyrene	NELAP	0.0001		**ND**	mg/L	1	03/21/2014 14:41	97060
Benzo(b)fluoranthene	NELAP	0.0001		**ND**	mg/L	1	03/21/2014 14:41	97060
Benzo(g,h,i)perylene	NELAP	0.0001		**ND**	mg/L	1	03/21/2014 14:41	97060
Benzo(k)fluoranthene	NELAP	0.0001		**ND**	mg/L	1	03/21/2014 14:41	97060
Chrysene	NELAP	0.0001		**ND**	mg/L	1	03/21/2014 14:41	97060
Dibenzo(a,h)anthracene	NELAP	0.0001		**ND**	mg/L	1	03/21/2014 14:41	97060
Fluoranthene	NELAP	0.0001		**ND**	mg/L	1	03/21/2014 14:41	97060
Fluorene	NELAP	0.0001		**ND**	mg/L	1	03/21/2014 14:41	97060
Indeno(1,2,3-cd)pyrene	NELAP	0.0001		**ND**	mg/L	1	03/21/2014 14:41	97060
Naphthalene	NELAP	0.0001		**ND**	mg/L	1	03/21/2014 14:41	97060
Phenanthrene	NELAP	0.0001		**ND**	mg/L	1	03/21/2014 14:41	97060
Pyrene	NELAP	0.0001		**ND**	mg/L	1	03/21/2014 14:41	97060
Surr: 2-Fluorobiphenyl		34.3-105		**75.4**	%REC	1	03/21/2014 14:41	97060
Surr: Nitrobenzene-d5		36.4-127		**65.8**	%REC	1	03/21/2014 14:41	97060
Surr: p-Terphenyl-d14		6.05-133		**77**	%REC	1	03/21/2014 14:41	97060
SW-846 5030, 8260B, VOLATILE ORGANIC COMPOUNDS BY GC/MS								
Benzene	NELAP	2		**ND**	µg/L	1	03/21/2014 11:44	97084
Ethylbenzene	NELAP	5		**ND**	µg/L	1	03/21/2014 11:44	97084
Toluene	NELAP	5		**ND**	µg/L	1	03/21/2014 11:44	97084
Xylenes, Total	NELAP	5		**ND**	µg/L	1	03/21/2014 11:44	97084
Surr: 1,2-Dichloroethane-d4		74.7-129		**101.6**	%REC	1	03/21/2014 11:44	97084
Surr: 4-Bromofluorobenzene		86-119		**97.8**	%REC	1	03/21/2014 11:44	97084
Surr: Dibromofluoromethane		81.7-123		**100.5**	%REC	1	03/21/2014 11:44	97084
Surr: Toluene-d8		84.3-114		**99.5**	%REC	1	03/21/2014 11:44	97084

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Laboratory Results

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Client: PSC Industrial Outsourcing, LP **Work Order:** 14061507

Client Project: Ameren Champaign MGP 624-1201-0008 **Report Date:** 07-Jul-14

Lab ID: 14061507-014 **Client Sample ID:** UMW-119

Matrix: GROUNDWATER **Collection Date:** 06/24/2014 14:20

Analyses	Certification	RL	Qual	Result	Units	DF	Date Analyzed	Batch
SW-846 9012A (TOTAL)								
Cyanide	NELAP	0.007		**0.041**	mg/L	1	06/30/2014 13:32	100069
SW-846 3510C, 8270C SIMS, SEMI-VOLATILE ORGANIC COMPOUNDS BY GC/MS								
Acenaphthene	NELAP	0.0001		**ND**	mg/L	1	06/28/2014 2:31	100023
Acenaphthylene	NELAP	0.0001		**ND**	mg/L	1	06/28/2014 2:31	100023
Anthracene	NELAP	0.0001		**ND**	mg/L	1	06/28/2014 2:31	100023
Benzo(a)anthracene	NELAP	0.0001		**ND**	mg/L	1	06/28/2014 2:31	100023
Benzo(a)pyrene	NELAP	0.0001		**ND**	mg/L	1	06/28/2014 2:31	100023
Benzo(b)fluoranthene	NELAP	0.0001		**ND**	mg/L	1	06/28/2014 2:31	100023
Benzo(g,h,i)perylene	NELAP	0.0001		**ND**	mg/L	1	06/28/2014 2:31	100023
Benzo(k)fluoranthene	NELAP	0.0001		**ND**	mg/L	1	06/28/2014 2:31	100023
Chrysene	NELAP	0.0001		**ND**	mg/L	1	06/28/2014 2:31	100023
Dibenzo(a,h)anthracene	NELAP	0.0001		**ND**	mg/L	1	06/28/2014 2:31	100023
Fluoranthene	NELAP	0.0001		**ND**	mg/L	1	06/28/2014 2:31	100023
Fluorene	NELAP	0.0001		**ND**	mg/L	1	06/28/2014 2:31	100023
Indeno(1,2,3-cd)pyrene	NELAP	0.0001		**ND**	mg/L	1	06/28/2014 2:31	100023
Naphthalene	NELAP	0.0001		**0.00036**	mg/L	1	06/28/2014 2:31	100023
Phenanthrene	NELAP	0.0001		**ND**	mg/L	1	06/28/2014 2:31	100023
Pyrene	NELAP	0.0001		**ND**	mg/L	1	06/28/2014 2:31	100023
Surr: 2-Fluorobiphenyl		34.3-105		**73.2**	%REC	1	06/28/2014 2:31	100023
Surr: Nitrobenzene-d5		36.4-127		**55.4**	%REC	1	06/28/2014 2:31	100023
Surr: p-Terphenyl-d14		6.05-133		**68**	%REC	1	06/28/2014 2:31	100023
SW-846 5030, 8260B, VOLATILE ORGANIC COMPOUNDS BY GC/MS								
Benzene	NELAP	2		**ND**	µg/L	1	06/27/2014 21:04	100062
Ethylbenzene	NELAP	5		**ND**	µg/L	1	06/27/2014 21:04	100062
Toluene	NELAP	5		**ND**	µg/L	1	06/27/2014 21:04	100062
Xylenes, Total	NELAP	5		**ND**	µg/L	1	06/27/2014 21:04	100062
Surr: 1,2-Dichloroethane-d4		74.7-129		**90.4**	%REC	1	06/27/2014 21:04	100062
Surr: 4-Bromofluorobenzene		86-119		**100.5**	%REC	1	06/27/2014 21:04	100062
Surr: Dibromofluoromethane		81.7-123		**100.2**	%REC	1	06/27/2014 21:04	100062
Surr: Toluene-d8		84.3-114		**100.3**	%REC	1	06/27/2014 21:04	100062

Client: ERM **Work Order:** 18061924

Client Project: Champaign GW 0466251 **Report Date:** 11-Jul-18

Lab ID: 18061924-011 **Client Sample ID:** UMW-119-WG-20180626

Matrix: GROUNDWATER **Collection Date:** 06/26/2018 10:10

Analyses	Certification	RL	Qual	Result	Units	DF	Date Analyzed	Batch
SW-846 9012A (TOTAL)								
Cyanide	NELAP	0.005		**0.036**	mg/L	1	07/03/2018 14:27	143469
Results of the matrix spike have less certainty because value exceeds upper quantitation limits.								
SW-846 3005A, 6010B, METALS BY ICP (TOTAL)								
Arsenic	NELAP	0.0250		**< 0.0250**	mg/L	1	07/02/2018 18:47	143423
Barium	NELAP	0.0025		**0.0890**	mg/L	1	07/02/2018 18:47	143423
Cadmium	NELAP	0.0020		**< 0.0020**	mg/L	1	07/02/2018 18:47	143423
Chromium	NELAP	0.0050	B	**< 0.0050**	mg/L	1	07/02/2018 18:47	143423
Lead	NELAP	0.0150		**< 0.0150**	mg/L	1	07/02/2018 18:47	143423
Selenium	NELAP	0.0400		**< 0.0400**	mg/L	1	07/02/2018 18:47	143423
Silver	NELAP	0.0070		**< 0.0070**	mg/L	1	07/02/2018 18:47	143423
Contamination present in the MBLK for Cr. Sample results below the reporting limit are reportable per the TNI Standard.								
SW-846 7470A (TOTAL)								
Mercury	NELAP	0.00020	B	**< 0.00020**	mg/L	1	07/03/2018 8:26	143472
Contamination present in the MBLK for Hg. Sample results below the reporting limit are reportable per the TNI Standard.								
SW-846 3510C,8270C, SEMI-VOLATILE ORGANIC COMPOUNDS								
Acenaphthene	NELAP	0.000100		**ND**	mg/L	1	07/09/2018 11:38	143474
Acenaphthylene	NELAP	0.000100		**ND**	mg/L	1	07/09/2018 11:38	143474
Anthracene	NELAP	0.000100		**ND**	mg/L	1	07/09/2018 11:38	143474
Benzo(a)anthracene	NELAP	0.000100		**ND**	mg/L	1	07/09/2018 11:38	143474
Benzo(a)pyrene	NELAP	0.000100		**ND**	mg/L	1	07/09/2018 11:38	143474
Benzo(b)fluoranthene	NELAP	0.000100		**ND**	mg/L	1	07/09/2018 11:38	143474
Benzo(g,h,i)perylene	NELAP	0.000100		**ND**	mg/L	1	07/09/2018 11:38	143474
Benzo(k)fluoranthene	NELAP	0.000100		**ND**	mg/L	1	07/09/2018 11:38	143474
Chrysene	NELAP	0.000100		**ND**	mg/L	1	07/09/2018 11:38	143474
Dibenzo(a,h)anthracene	NELAP	0.000100		**ND**	mg/L	1	07/09/2018 11:38	143474
Fluoranthene	NELAP	0.000200		**ND**	mg/L	1	07/09/2018 11:38	143474
Fluorene	NELAP	0.000100		**ND**	mg/L	1	07/09/2018 11:38	143474
Indeno(1,2,3-cd)pyrene	NELAP	0.000100		**ND**	mg/L	1	07/09/2018 11:38	143474
Naphthalene	NELAP	0.000200		**ND**	mg/L	1	07/09/2018 11:38	143474
Phenanthrene	NELAP	0.000400		**ND**	mg/L	1	07/09/2018 11:38	143474
Pyrene	NELAP	0.000100		**ND**	mg/L	1	07/09/2018 11:38	143474
Surr: 2-Fluorobiphenyl	*	10-164		**87.6**	%REC	1	07/09/2018 11:38	143474
Surr: Nitrobenzene-d5	*	10.3-142		**82.3**	%REC	1	07/09/2018 11:38	143474
Surr: p-Terphenyl-d14	*	47.1-148		**120.5**	%REC	1	07/09/2018 11:38	143474
SW-846 5030, 8260B, VOLATILE ORGANIC COMPOUNDS BY GC/MS								
Benzene	NELAP	0.5		**ND**	µg/L	1	06/30/2018 4:00	143457
Ethylbenzene	NELAP	2.0		**ND**	µg/L	1	06/30/2018 4:00	143457
Toluene	NELAP	2.0		**ND**	µg/L	1	06/30/2018 4:00	143457
Xylenes, Total	NELAP	2.0		**ND**	µg/L	1	06/30/2018 4:00	143457
Surr: 1,2-Dichloroethane-d4	*	79.6-118		**100.6**	%REC	1	06/30/2018 4:00	143457
Surr: 4-Bromofluorobenzene	*	83.9-115		**103.4**	%REC	1	06/30/2018 4:00	143457
Surr: Dibromofluoromethane	*	84.9-113		**100.5**	%REC	1	06/30/2018 4:00	143457
Surr: Toluene-d8	*	86.7-112		**100.1**	%REC	1	06/30/2018 4:00	143457

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Laboratory Results

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Client: ERM **Work Order:** 18091324

Client Project: Champaign GW **Report Date:** 26-Sep-18

Lab ID: 18091324-011 **Client Sample ID:** UMW-119-WG-20180917

Matrix: GROUNDWATER **Collection Date:** 09/17/2018 15:45

Analyses	Certification	RL	Qual	Result	Units	DF	Date Analyzed	Batch
SW-846 9012A (TOTAL)								
Cyanide	NELAP	0.005		**0.033**	mg/L	1	09/25/2018 16:12	146037
SW-846 3005A, 6010B, METALS BY ICP (TOTAL)								
Arsenic	NELAP	0.0250		**< 0.0250**	mg/L	1	09/21/2018 16:02	145952
Barium	NELAP	0.0025		**0.102**	mg/L	1	09/21/2018 16:02	145952
Cadmium	NELAP	0.0020		**< 0.0020**	mg/L	1	09/21/2018 16:02	145952
Chromium	NELAP	0.0050		**< 0.0050**	mg/L	1	09/21/2018 16:02	145952
Lead	NELAP	0.0075		**< 0.0075**	mg/L	1	09/21/2018 16:02	145952
Selenium	NELAP	0.0400		**< 0.0400**	mg/L	1	09/21/2018 16:02	145952
Silver	NELAP	0.0070		**< 0.0070**	mg/L	1	09/21/2018 16:02	145952
SW-846 7470A (TOTAL)								
Mercury	NELAP	0.00020		**< 0.00020**	mg/L	1	09/21/2018 8:40	145939
SW-846 3510C,8270C, SEMI-VOLATILE ORGANIC COMPOUNDS								
Acenaphthene	NELAP	0.000100		**ND**	mg/L	1	09/22/2018 12:11	145965
Acenaphthylene	NELAP	0.000100		**ND**	mg/L	1	09/22/2018 12:11	145965
Anthracene	NELAP	0.000100		**ND**	mg/L	1	09/22/2018 12:11	145965
Benzo(a)anthracene	NELAP	0.000100		**ND**	mg/L	1	09/22/2018 12:11	145965
Benzo(a)pyrene	NELAP	0.000100		**ND**	mg/L	1	09/22/2018 12:11	145965
Benzo(b)fluoranthene	NELAP	0.000100		**ND**	mg/L	1	09/22/2018 12:11	145965
Benzo(g,h,i)perylene	NELAP	0.000100		**ND**	mg/L	1	09/22/2018 12:11	145965
Benzo(k)fluoranthene	NELAP	0.000100		**ND**	mg/L	1	09/22/2018 12:11	145965
Chrysene	NELAP	0.000100		**ND**	mg/L	1	09/22/2018 12:11	145965
Dibenzo(a,h)anthracene	NELAP	0.000100		**ND**	mg/L	1	09/22/2018 12:11	145965
Fluoranthene	NELAP	0.000200		**ND**	mg/L	1	09/22/2018 12:11	145965
Fluorene	NELAP	0.000100		**ND**	mg/L	1	09/22/2018 12:11	145965
Indeno(1,2,3-cd)pyrene	NELAP	0.000100		**ND**	mg/L	1	09/22/2018 12:11	145965
Naphthalene	NELAP	0.000200	B	**ND**	mg/L	1	09/22/2018 12:11	145965
Phenanthrene	NELAP	0.000400		**ND**	mg/L	1	09/22/2018 12:11	145965
Pyrene	NELAP	0.000100		**ND**	mg/L	1	09/22/2018 12:11	145965
Surr: 2-Fluorobiphenyl	*	10-164		**64.4**	%REC	1	09/22/2018 12:11	145965
Surr: Nitrobenzene-d5	*	10.3-142		**63.6**	%REC	1	09/22/2018 12:11	145965
Surr: p-Terphenyl-d14	*	47.1-148		**80.5**	%REC	1	09/22/2018 12:11	145965
Contamination present in the MBLK for Naphthalene. Sample results below the reporting limit are reportable per the TNI Standard.								
SW-846 5030, 8260B, VOLATILE ORGANIC COMPOUNDS BY GC/MS								
Benzene	NELAP	0.5		**ND**	µg/L	1	09/21/2018 14:46	146010
Ethylbenzene	NELAP	2.0		**ND**	µg/L	1	09/21/2018 14:46	146010
Toluene	NELAP	2.0		**ND**	µg/L	1	09/21/2018 14:46	146010
Xylenes, Total	NELAP	2.0		**ND**	µg/L	1	09/21/2018 14:46	146010
Surr: 1,2-Dichloroethane-d4	*	79.6-118		**100.8**	%REC	1	09/21/2018 14:46	146010
Surr: 4-Bromofluorobenzene	*	83.9-115		**100.9**	%REC	1	09/21/2018 14:46	146010
Surr: Dibromofluoromethane	*	84.9-113		**100.5**	%REC	1	09/21/2018 14:46	146010
Surr: Toluene-d8	*	86.7-112		**97.6**	%REC	1	09/21/2018 14:46	146010

Client: ERM **Work Order:** 18120405

Client Project: Champaign GW **Report Date:** 17-Dec-2018

Lab ID: 18120405-011 **Client Sample ID:** UMW-119-WG-20181203

Matrix: GROUNDWATER **Collection Date:** 12/03/2018 14:50

Analyses	Certification	RL	Qual	Result	Units	DF	Date Analyzed	Batch
SW-846 9012A (TOTAL)								
Cyanide	NELAP	0.005		**0.026**	mg/L	1	12/07/2018 15:48	148442
SW-846 3005A, 6010B, METALS BY ICP (TOTAL)								
Arsenic	NELAP	0.0250		**< 0.0250**	mg/L	1	12/07/2018 16:59	148436
Barium	NELAP	0.0025		**0.0993**	mg/L	1	12/07/2018 16:59	148436
Cadmium	NELAP	0.0020		**< 0.0020**	mg/L	1	12/07/2018 16:59	148436
Chromium	NELAP	0.0050		**< 0.0050**	mg/L	1	12/07/2018 16:59	148436
Lead	NELAP	0.0075		**< 0.0075**	mg/L	1	12/07/2018 16:59	148436
Selenium	NELAP	0.0400		**< 0.0400**	mg/L	1	12/07/2018 16:59	148436
Silver	NELAP	0.0070		**< 0.0070**	mg/L	1	12/07/2018 16:59	148436
SW-846 7470A (TOTAL)								
Mercury	NELAP	0.00020		**< 0.00020**	mg/L	1	12/07/2018 9:38	148445
SW-846 3510C,8270C, SEMI-VOLATILE ORGANIC COMPOUNDS								
Acenaphthene	NELAP	0.000100		**ND**	mg/L	1	12/07/2018 15:34	148411
Acenaphthylene	NELAP	0.000100		**ND**	mg/L	1	12/07/2018 15:34	148411
Anthracene	NELAP	0.000100	B	**ND**	mg/L	1	12/07/2018 15:34	148411
Benzo(a)anthracene	NELAP	0.000100		**ND**	mg/L	1	12/07/2018 15:34	148411
Benzo(a)pyrene	NELAP	0.000100		**ND**	mg/L	1	12/07/2018 15:34	148411
Benzo(b)fluoranthene	NELAP	0.000100		**ND**	mg/L	1	12/07/2018 15:34	148411
Benzo(g,h,i)perylene	NELAP	0.000100		**ND**	mg/L	1	12/07/2018 15:34	148411
Benzo(k)fluoranthene	NELAP	0.000100		**ND**	mg/L	1	12/07/2018 15:34	148411
Chrysene	NELAP	0.000100		**ND**	mg/L	1	12/07/2018 15:34	148411
Dibenzo(a,h)anthracene	NELAP	0.000100		**ND**	mg/L	1	12/07/2018 15:34	148411
Fluoranthene	NELAP	0.000200	B	**ND**	mg/L	1	12/07/2018 15:34	148411
Fluorene	NELAP	0.000100		**ND**	mg/L	1	12/07/2018 15:34	148411
Indeno(1,2,3-cd)pyrene	NELAP	0.000100		**ND**	mg/L	1	12/07/2018 15:34	148411
Naphthalene	NELAP	0.000200		**ND**	mg/L	1	12/07/2018 15:34	148411
Phenanthrene	NELAP	0.000400		**ND**	mg/L	1	12/07/2018 15:34	148411
Pyrene	NELAP	0.000200	B	**ND**	mg/L	1	12/07/2018 15:34	148411
Surr: 2-Fluorobiphenyl	*	10-164		**82.4**	%REC	1	12/07/2018 15:34	148411
Surr: Nitrobenzene-d5	*	10.3-142		**67.8**	%REC	1	12/07/2018 15:34	148411
Surr: p-Terphenyl-d14	*	47.1-148		**96.5**	%REC	1	12/07/2018 15:34	148411

Contamination present in the MBLK for Anthracene, Pyrene and Fluoranthene. Sample results below the reporting limit are reportable per the TNI Standard.

Analyses	Certification	RL	Qual	Result	Units	DF	Date Analyzed	Batch
SW-846 5030, 8260B, VOLATILE ORGANIC COMPOUNDS BY GC/MS								
Benzene	NELAP	0.5		**ND**	µg/L	1	12/08/2018 15:08	148501
Ethylbenzene	NELAP	2.0		**ND**	µg/L	1	12/08/2018 15:08	148501
Toluene	NELAP	2.0		**ND**	µg/L	1	12/08/2018 15:08	148501
Xylenes, Total	NELAP	2.0		**ND**	µg/L	1	12/08/2018 15:08	148501
Surr: 1,2-Dichloroethane-d4	*	79.6-118		**101.2**	%REC	1	12/08/2018 15:08	148501
Surr: 4-Bromofluorobenzene	*	83.9-115		**104.3**	%REC	1	12/08/2018 15:08	148501
Surr: Dibromofluoromethane	*	84.9-113		**101.1**	%REC	1	12/08/2018 15:08	148501
Surr: Toluene-d8	*	86.7-112		**102.4**	%REC	1	12/08/2018 15:08	148501

Client: ERM **Work Order:** 19030404

Client Project: Champaign GW **Report Date:** 14-Mar-2019

Lab ID: 19030404-011 **Client Sample ID:** UMW-119-WG-20190305

Matrix: GROUNDWATER **Collection Date:** 03/05/2019 9:20

Analyses	Certification	RL	Qual	Result	Units	DF	Date Analyzed	Batch
SW-846 9012A (TOTAL)								
Cyanide	NELAP	0.005		**0.031**	mg/L	1	03/11/2019 13:21	151002
SW-846 3005A, 6010B, METALS BY ICP (TOTAL)								
Arsenic	NELAP	0.0250		**< 0.0250**	mg/L	1	03/08/2019 20:15	151000
Barium	NELAP	0.0025		**0.0950**	mg/L	1	03/08/2019 20:15	151000
Cadmium	NELAP	0.0020		**< 0.0020**	mg/L	1	03/08/2019 20:15	151000
Chromium	NELAP	0.0050		**< 0.0050**	mg/L	1	03/08/2019 20:15	151000
Lead	NELAP	0.0075		**< 0.0075**	mg/L	1	03/08/2019 20:15	151000
Selenium	NELAP	0.0400		**< 0.0400**	mg/L	1	03/08/2019 20:15	151000
Silver	NELAP	0.0070		**< 0.0070**	mg/L	1	03/08/2019 20:15	151000
SW-846 7470A (TOTAL)								
Mercury	NELAP	0.00020		**< 0.00020**	mg/L	1	03/08/2019 9:31	151001
SW-846 3510C,8270C, SEMI-VOLATILE ORGANIC COMPOUNDS								
Acenaphthene	NELAP	0.000100		**ND**	mg/L	1	03/12/2019 15:28	151034
Acenaphthylene	NELAP	0.000100		**ND**	mg/L	1	03/12/2019 15:28	151034
Anthracene	NELAP	0.000100		**0.000144**	mg/L	1	03/12/2019 15:28	151034
Benzo(a)anthracene	NELAP	0.000100		**ND**	mg/L	1	03/12/2019 15:28	151034
Benzo(a)pyrene	NELAP	0.000100		**ND**	mg/L	1	03/12/2019 15:28	151034
Benzo(b)fluoranthene	NELAP	0.000100		**ND**	mg/L	1	03/12/2019 15:28	151034
Benzo(g,h,i)perylene	NELAP	0.000200		**ND**	mg/L	1	03/12/2019 15:28	151034
Benzo(k)fluoranthene	NELAP	0.000100		**ND**	mg/L	1	03/12/2019 15:28	151034
Chrysene	NELAP	0.000100		**ND**	mg/L	1	03/12/2019 15:28	151034
Dibenzo(a,h)anthracene	NELAP	0.000100		**ND**	mg/L	1	03/12/2019 15:28	151034
Fluoranthene	NELAP	0.000200		**ND**	mg/L	1	03/12/2019 15:28	151034
Fluorene	NELAP	0.000100		**ND**	mg/L	1	03/12/2019 15:28	151034
Indeno(1,2,3-cd)pyrene	NELAP	0.000100		**ND**	mg/L	1	03/12/2019 15:28	151034
Naphthalene	NELAP	0.000200		**ND**	mg/L	1	03/12/2019 15:28	151034
Phenanthrene	NELAP	0.000400		**ND**	mg/L	1	03/12/2019 15:28	151034
Pyrene	NELAP	0.000200		**ND**	mg/L	1	03/12/2019 15:28	151034
Surr: 2-Fluorobiphenyl	*	10-164		**78.8**	%REC	1	03/12/2019 15:28	151034
Surr: Nitrobenzene-d5	*	10.3-142		**82.4**	%REC	1	03/12/2019 15:28	151034
Surr: p-Terphenyl-d14	*	47.1-148		**69.2**	%REC	1	03/12/2019 15:28	151034
Allowable Marginal Exceedance of Fluoranthene and Pyrene in the LCSD is verified per the TNI Standard.								
SW-846 5030, 8260B, VOLATILE ORGANIC COMPOUNDS BY GC/MS								
Benzene	NELAP	0.5		**ND**	µg/L	1	03/08/2019 18:12	151025
Ethylbenzene	NELAP	2.0		**ND**	µg/L	1	03/08/2019 18:12	151025
Toluene	NELAP	2.0		**ND**	µg/L	1	03/08/2019 18:12	151025
Xylenes, Total	NELAP	2.0		**ND**	µg/L	1	03/08/2019 18:12	151025
Surr: 1,2-Dichloroethane-d4	*	79.6-118		**105.3**	%REC	1	03/08/2019 18:12	151025
Surr: 4-Bromofluorobenzene	*	83.9-115		**89.7**	%REC	1	03/08/2019 18:12	151025
Surr: Dibromofluoromethane	*	84.9-113		**101.9**	%REC	1	03/08/2019 18:12	151025
Surr: Toluene-d8	*	86.7-112		**93.4**	%REC	1	03/08/2019 18:12	151025

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Laboratory Results

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Client: ERM **Work Order:** 19051182

Client Project: Champaign GW **Report Date:** 29-May-2019

Lab ID: 19051182-011 **Client Sample ID:** UMW-119-WG-20190513

Matrix: GROUNDWATER **Collection Date:** 05/13/2019 15:45

Analyses	Certification	RL	Qual	Result	Units	DF	Date Analyzed	Batch
SW-846 9012A (TOTAL)								
Cyanide	NELAP	0.005		**0.027**	mg/L	1	05/20/2019 16:33	153413
SW-846 3005A, 6010B, METALS BY ICP (TOTAL)								
Arsenic	NELAP	0.0250		**< 0.0250**	mg/L	1	05/20/2019 21:51	153394
Barium	NELAP	0.0025		**0.0882**	mg/L	1	05/20/2019 21:51	153394
Cadmium	NELAP	0.0020		**< 0.0020**	mg/L	1	05/20/2019 21:51	153394
Chromium	NELAP	0.0050		**< 0.0050**	mg/L	1	05/20/2019 21:51	153394
Lead	NELAP	0.0075		**< 0.0075**	mg/L	1	05/20/2019 21:51	153394
Selenium	NELAP	0.0400		**< 0.0400**	mg/L	1	05/20/2019 21:51	153394
Silver	NELAP	0.0070		**< 0.0070**	mg/L	1	05/20/2019 21:51	153394
SW-846 7470A (TOTAL)								
Mercury	NELAP	0.00020		**< 0.00020**	mg/L	1	05/20/2019 10:27	153408
SW-846 3510C,8270C, SEMI-VOLATILE ORGANIC COMPOUNDS								
Acenaphthene	NELAP	0.000100		**ND**	mg/L	1	05/20/2019 18:05	153437
Acenaphthylene	NELAP	0.000100		**ND**	mg/L	1	05/20/2019 18:05	153437
Anthracene	NELAP	0.000100		**ND**	mg/L	1	05/20/2019 18:05	153437
Benzo(a)anthracene	NELAP	0.000100		**ND**	mg/L	1	05/20/2019 18:05	153437
Benzo(a)pyrene	NELAP	0.000100		**ND**	mg/L	1	05/20/2019 18:05	153437
Benzo(b)fluoranthene	NELAP	0.000100		**ND**	mg/L	1	05/20/2019 18:05	153437
Benzo(g,h,i)perylene	NELAP	0.000200		**ND**	mg/L	1	05/20/2019 18:05	153437
Benzo(k)fluoranthene	NELAP	0.000100		**ND**	mg/L	1	05/20/2019 18:05	153437
Chrysene	NELAP	0.000100		**ND**	mg/L	1	05/20/2019 18:05	153437
Dibenzo(a,h)anthracene	NELAP	0.000100		**ND**	mg/L	1	05/20/2019 18:05	153437
Fluoranthene	NELAP	0.000200		**ND**	mg/L	1	05/20/2019 18:05	153437
Fluorene	NELAP	0.000100		**ND**	mg/L	1	05/20/2019 18:05	153437
Indeno(1,2,3-cd)pyrene	NELAP	0.000100		**ND**	mg/L	1	05/20/2019 18:05	153437
Naphthalene	NELAP	0.000200		**ND**	mg/L	1	05/20/2019 18:05	153437
Phenanthrene	NELAP	0.000400		**ND**	mg/L	1	05/20/2019 18:05	153437
Pyrene	NELAP	0.000200		**ND**	mg/L	1	05/20/2019 18:05	153437
Surr: 2-Fluorobiphenyl	*	21.4-142		**76.5**	%REC	1	05/20/2019 18:05	153437
Surr: Nitrobenzene-d5	*	15-163		**81.5**	%REC	1	05/20/2019 18:05	153437
Surr: p-Terphenyl-d14	*	10-173		**110.0**	%REC	1	05/20/2019 18:05	153437
SW-846 5030, 8260B, VOLATILE ORGANIC COMPOUNDS BY GC/MS								
Benzene	NELAP	0.5		**ND**	µg/L	1	05/21/2019 0:30	153489
Ethylbenzene	NELAP	2.0		**ND**	µg/L	1	05/21/2019 0:30	153489
Toluene	NELAP	2.0		**ND**	µg/L	1	05/21/2019 0:30	153489
Xylenes, Total	NELAP	4.0		**ND**	µg/L	1	05/21/2019 0:30	153489
Surr: 1,2-Dichloroethane-d4	*	79.6-118		**97.1**	%REC	1	05/21/2019 0:30	153489
Surr: 4-Bromofluorobenzene	*	83.9-115		**103.4**	%REC	1	05/21/2019 0:30	153489
Surr: Dibromofluoromethane	*	84.9-113		**99.7**	%REC	1	05/21/2019 0:30	153489
Surr: Toluene-d8	*	86.7-112		**96.0**	%REC	1	05/21/2019 0:30	153489

Client: ERM **Work Order:** 19081552

Client Project: Champaign GW **Report Date:** 29-Aug-2019

Lab ID: 19081552-011 **Client Sample ID:** UMW-119-WG-20190819

Matrix: GROUNDWATER **Collection Date:** 08/19/2019 18:20

Analyses	Certification	RL	Qual	Result	Units	DF	Date Analyzed	Batch
SW-846 9012A (TOTAL)								
Cyanide	NELAP	0.005		**0.035**	mg/L	1	08/26/2019 14:18	156687
SW-846 3005A, 6010B, METALS BY ICP (TOTAL)								
Arsenic	NELAP	0.0250		**< 0.0250**	mg/L	1	08/26/2019 19:18	156700
Barium	NELAP	0.0025		**0.0927**	mg/L	1	08/26/2019 19:18	156700
Cadmium	NELAP	0.0020		**< 0.0020**	mg/L	1	08/26/2019 19:18	156700
Chromium	NELAP	0.0050		**< 0.0050**	mg/L	1	08/26/2019 19:18	156700
Lead	NELAP	0.0075		**< 0.0075**	mg/L	1	08/26/2019 19:18	156700
Selenium	NELAP	0.0400		**< 0.0400**	mg/L	1	08/26/2019 19:18	156700
Silver	NELAP	0.0070		**< 0.0070**	mg/L	1	08/26/2019 19:18	156700
SW-846 7470A (TOTAL)								
Mercury	NELAP	0.00020		**< 0.00020**	mg/L	1	08/25/2019 17:28	156677
SW-846 3510C,8270C, SEMI-VOLATILE ORGANIC COMPOUNDS								
Acenaphthene	NELAP	0.000100		**ND**	mg/L	1	08/26/2019 20:28	156710
Acenaphthylene	NELAP	0.000100		**ND**	mg/L	1	08/26/2019 20:28	156710
Anthracene	NELAP	0.000100		**ND**	mg/L	1	08/26/2019 20:28	156710
Benzo(a)anthracene	NELAP	0.000100		**ND**	mg/L	1	08/26/2019 20:28	156710
Benzo(a)pyrene	NELAP	0.000100		**ND**	mg/L	1	08/26/2019 20:28	156710
Benzo(b)fluoranthene	NELAP	0.000100		**ND**	mg/L	1	08/26/2019 20:28	156710
Benzo(g,h,i)perylene	NELAP	0.000200		**ND**	mg/L	1	08/26/2019 20:28	156710
Benzo(k)fluoranthene	NELAP	0.000100		**ND**	mg/L	1	08/26/2019 20:28	156710
Chrysene	NELAP	0.000100		**ND**	mg/L	1	08/26/2019 20:28	156710
Dibenzo(a,h)anthracene	NELAP	0.000100		**ND**	mg/L	1	08/26/2019 20:28	156710
Fluoranthene	NELAP	0.000200		**ND**	mg/L	1	08/26/2019 20:28	156710
Fluorene	NELAP	0.000100		**ND**	mg/L	1	08/26/2019 20:28	156710
Indeno(1,2,3-cd)pyrene	NELAP	0.000100		**ND**	mg/L	1	08/26/2019 20:28	156710
Naphthalene	NELAP	0.000200		**ND**	mg/L	1	08/26/2019 20:28	156710
Phenanthrene	NELAP	0.000400		**ND**	mg/L	1	08/26/2019 20:28	156710
Pyrene	NELAP	0.000200		**ND**	mg/L	1	08/26/2019 20:28	156710
Surr: 2-Fluorobiphenyl	*	21.4-142		**78.6**	%REC	1	08/26/2019 20:28	156710
Surr: Nitrobenzene-d5	*	15-163		**76.9**	%REC	1	08/26/2019 20:28	156710
Surr: p-Terphenyl-d14	*	10-173		**114.1**	%REC	1	08/26/2019 20:28	156710
SW-846 5030, 8260B, VOLATILE ORGANIC COMPOUNDS BY GC/MS								
Benzene	NELAP	0.5		**ND**	µg/L	1	08/23/2019 20:17	156712
Ethylbenzene	NELAP	2.0		**ND**	µg/L	1	08/23/2019 20:17	156712
Toluene	NELAP	2.0		**ND**	µg/L	1	08/23/2019 20:17	156712
Xylenes, Total	NELAP	4.0		**ND**	µg/L	1	08/23/2019 20:17	156712
Surr: 1,2-Dichloroethane-d4	*	79.6-118		**102.1**	%REC	1	08/23/2019 20:17	156712
Surr: 4-Bromofluorobenzene	*	83.9-115		**101.8**	%REC	1	08/23/2019 20:17	156712
Surr: Dibromofluoromethane	*	84.9-113		**97.2**	%REC	1	08/23/2019 20:17	156712
Surr: Toluene-d8	*	86.7-112		**102.3**	%REC	1	08/23/2019 20:17	156712

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Laboratory Results

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Client: ERM
Work Order: 19110533
Client Project: Champaign GW
Report Date: 15-Nov-2019
Lab ID: 19110533-011
Client Sample ID: UMW-119-WG-20191104
Matrix: GROUNDWATER
Collection Date: 11/04/2019 15:50

Analyses	Certification	RL	Qual	Result	Units	DF	Date Analyzed	Batch
SW-846 9012A (TOTAL)								
Cyanide	NELAP	0.005		**0.033**	mg/L	1	11/11/2019 18:17	159194
SW-846 3005A, 6010B, METALS BY ICP (TOTAL)								
Arsenic	NELAP	0.0250		**< 0.0250**	mg/L	1	11/11/2019 22:55	159165
Barium	NELAP	0.0025		**0.0855**	mg/L	1	11/11/2019 22:55	159165
Cadmium	NELAP	0.0020		**< 0.0020**	mg/L	1	11/11/2019 22:55	159165
Chromium	NELAP	0.0050		**< 0.0050**	mg/L	1	11/11/2019 22:55	159165
Lead	NELAP	0.0075		**< 0.0075**	mg/L	1	11/11/2019 22:55	159165
Selenium	NELAP	0.0400		**< 0.0400**	mg/L	1	11/11/2019 22:55	159165
Silver	NELAP	0.0070		**< 0.0070**	mg/L	1	11/11/2019 22:55	159165
SW-846 7470A (TOTAL)								
Mercury	NELAP	0.00020		**< 0.00020**	mg/L	1	11/11/2019 13:26	159178
SW-846 3510C,8270C, SEMI-VOLATILE ORGANIC COMPOUNDS								
Acenaphthene	NELAP	0.000100		**ND**	mg/L	1	11/12/2019 1:27	159229
Acenaphthylene	NELAP	0.000100		**ND**	mg/L	1	11/12/2019 1:27	159229
Anthracene	NELAP	0.000100		**ND**	mg/L	1	11/12/2019 1:27	159229
Benzo(a)anthracene	NELAP	0.000100		**ND**	mg/L	1	11/12/2019 1:27	159229
Benzo(a)pyrene	NELAP	0.000100		**ND**	mg/L	1	11/12/2019 1:27	159229
Benzo(b)fluoranthene	NELAP	0.000100		**ND**	mg/L	1	11/12/2019 1:27	159229
Benzo(g,h,i)perylene	NELAP	0.000200		**ND**	mg/L	1	11/12/2019 1:27	159229
Benzo(k)fluoranthene	NELAP	0.000100		**ND**	mg/L	1	11/12/2019 1:27	159229
Chrysene	NELAP	0.000100		**ND**	mg/L	1	11/12/2019 1:27	159229
Dibenzo(a,h)anthracene	NELAP	0.000100		**ND**	mg/L	1	11/12/2019 1:27	159229
Fluoranthene	NELAP	0.000200		**ND**	mg/L	1	11/12/2019 1:27	159229
Fluorene	NELAP	0.000100		**ND**	mg/L	1	11/12/2019 1:27	159229
Indeno(1,2,3-cd)pyrene	NELAP	0.000100		**ND**	mg/L	1	11/12/2019 1:27	159229
Naphthalene	NELAP	0.000200		**ND**	mg/L	1	11/12/2019 1:27	159229
Phenanthrene	NELAP	0.000400		**ND**	mg/L	1	11/12/2019 1:27	159229
Pyrene	NELAP	0.000200		**ND**	mg/L	1	11/12/2019 1:27	159229
Surr: 2-Fluorobiphenyl	*	21.4-142		**100.0**	%REC	1	11/12/2019 1:27	159229
Surr: Nitrobenzene-d5	*	15-163		**99.4**	%REC	1	11/12/2019 1:27	159229
Surr: p-Terphenyl-d14	*	10-173		**122.3**	%REC	1	11/12/2019 1:27	159229
SW-846 5030, 8260B, VOLATILE ORGANIC COMPOUNDS BY GC/MS								
Benzene	NELAP	0.5		**ND**	µg/L	1	11/08/2019 18:32	159224
Ethylbenzene	NELAP	2.0		**ND**	µg/L	1	11/08/2019 18:32	159224
Toluene	NELAP	2.0		**ND**	µg/L	1	11/08/2019 18:32	159224
Xylenes, Total	NELAP	4.0		**ND**	µg/L	1	11/08/2019 18:32	159224
Surr: 1,2-Dichloroethane-d4	*	79.6-118		**89.8**	%REC	1	11/08/2019 18:32	159224
Surr: 4-Bromofluorobenzene	*	83.9-115		**94.3**	%REC	1	11/08/2019 18:32	159224
Surr: Dibromofluoromethane	*	84.9-113		**103.2**	%REC	1	11/08/2019 18:32	159224
Surr: Toluene-d8	*	86.7-112		**93.4**	%REC	1	11/08/2019 18:32	159224

Client: ERM

Work Order: 20020836

Client Project: Champaign GW

Report Date: 25-Feb-2020

Lab ID: 20020836-011

Client Sample ID: UMW-119-WG-20200211

Matrix: GROUNDWATER

Collection Date: 02/11/2020 8:35

Analyses	Certification	RL	Qual	Result	Units	DF	Date Analyzed	Batch
SW-846 9012A (TOTAL)								
Cyanide	NELAP	0.005		**0.033**	mg/L	1	02/17/2020 14:44	162247
SW-846 3005A, 6010B, METALS BY ICP (TOTAL)								
Arsenic	NELAP	0.0250		**< 0.0250**	mg/L	1	02/15/2020 2:42	162216
Barium	NELAP	0.0025		**0.0844**	mg/L	1	02/15/2020 2:42	162216
Cadmium	NELAP	0.0020		**< 0.0020**	mg/L	1	02/15/2020 2:42	162216
Chromium	NELAP	0.0050		**< 0.0050**	mg/L	1	02/15/2020 2:42	162216
Lead	NELAP	0.0075		**< 0.0075**	mg/L	1	02/15/2020 2:42	162216
Selenium	NELAP	0.0400		**< 0.0400**	mg/L	1	02/15/2020 2:42	162216
Silver	NELAP	0.0070		**< 0.0070**	mg/L	1	02/15/2020 2:42	162216
SW-846 7470A (TOTAL)								
Mercury	NELAP	0.00020		**< 0.00020**	mg/L	1	02/14/2020 13:03	162224
SW-846 3510C,8270C, SEMI-VOLATILE ORGANIC COMPOUNDS								
Acenaphthene	NELAP	0.000100		**ND**	mg/L	1	02/18/2020 13:32	162284
Acenaphthylene	NELAP	0.000100		**ND**	mg/L	1	02/18/2020 13:32	162284
Anthracene	NELAP	0.000100		**ND**	mg/L	1	02/18/2020 13:32	162284
Benzo(a)anthracene	NELAP	0.000100		**ND**	mg/L	1	02/18/2020 13:32	162284
Benzo(a)pyrene	NELAP	0.000100		**ND**	mg/L	1	02/18/2020 13:32	162284
Benzo(b)fluoranthene	NELAP	0.000100		**ND**	mg/L	1	02/18/2020 13:32	162284
Benzo(g,h,i)perylene	NELAP	0.000200		**ND**	mg/L	1	02/18/2020 13:32	162284
Benzo(k)fluoranthene	NELAP	0.000100		**ND**	mg/L	1	02/18/2020 13:32	162284
Chrysene	NELAP	0.000100		**ND**	mg/L	1	02/18/2020 13:32	162284
Dibenzo(a,h)anthracene	NELAP	0.000100		**ND**	mg/L	1	02/18/2020 13:32	162284
Fluoranthene	NELAP	0.000200		**ND**	mg/L	1	02/18/2020 13:32	162284
Fluorene	NELAP	0.000100		**ND**	mg/L	1	02/18/2020 13:32	162284
Indeno(1,2,3-cd)pyrene	NELAP	0.000100		**ND**	mg/L	1	02/18/2020 13:32	162284
Naphthalene	NELAP	0.000200		**ND**	mg/L	1	02/18/2020 13:32	162284
Phenanthrene	NELAP	0.000400		**ND**	mg/L	1	02/18/2020 13:32	162284
Pyrene	NELAP	0.000200		**ND**	mg/L	1	02/18/2020 13:32	162284
Surr: 2-Fluorobiphenyl	*	21.4-142		**82.1**	%REC	1	02/18/2020 13:32	162284
Surr: Nitrobenzene-d5	*	15-163		**80.6**	%REC	1	02/18/2020 13:32	162284
Surr: p-Terphenyl-d14	*	10-173		**109.2**	%REC	1	02/18/2020 13:32	162284
SW-846 5030, 8260B, VOLATILE ORGANIC COMPOUNDS BY GC/MS								
Benzene	NELAP	0.5		**ND**	µg/L	1	02/14/2020 15:04	162244
Ethylbenzene	NELAP	2.0		**ND**	µg/L	1	02/14/2020 15:04	162244
Toluene	NELAP	2.0		**ND**	µg/L	1	02/14/2020 15:04	162244
Xylenes, Total	NELAP	4.0		**ND**	µg/L	1	02/14/2020 15:04	162244
Surr: 1,2-Dichloroethane-d4	*	80.9-113		**100.5**	%REC	1	02/14/2020 15:04	162244
Surr: 4-Bromofluorobenzene	*	88.3-109		**101.8**	%REC	1	02/14/2020 15:04	162244
Surr: Dibromofluoromethane	*	87.4-111		**99.7**	%REC	1	02/14/2020 15:04	162244
Surr: Toluene-d8	*	86.1-110		**98.7**	%REC	1	02/14/2020 15:04	162244

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Laboratory Results

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Client: ERM | **Work Order:** 20041763

Client Project: Champaign GW | **Report Date:** 07-May-2020

Lab ID: 20041763-011 | **Client Sample ID:** UMW-119-WG-20200428

Matrix: GROUNDWATER | **Collection Date:** 04/28/2020 8:30

Analyses	Certification	RL	Qual	Result	Units	DF	Date Analyzed	Batch
SW-846 9012A (TOTAL)								
Cyanide	NELAP	0.005		**0.032**	mg/L	1	05/04/2020 14:32	164773
SW-846 3005A, 6010B, METALS BY ICP (TOTAL)								
Arsenic	NELAP	0.0250		**< 0.0250**	mg/L	1	05/01/2020 16:30	164740
Barium	NELAP	0.0025		**0.0853**	mg/L	1	05/01/2020 16:30	164740
Cadmium	NELAP	0.0020		**< 0.0020**	mg/L	1	05/01/2020 16:30	164740
Chromium	NELAP	0.0050		**< 0.0050**	mg/L	1	05/01/2020 16:30	164740
Lead	NELAP	0.0075		**< 0.0075**	mg/L	1	05/01/2020 16:30	164740
Selenium	NELAP	0.0400		**< 0.0400**	mg/L	1	05/01/2020 16:30	164740
Silver	NELAP	0.0070		**< 0.0070**	mg/L	1	05/01/2020 16:30	164740
SW-846 7470A (TOTAL)								
Mercury	NELAP	0.00020		**< 0.00020**	mg/L	1	05/04/2020 9:11	164747
SW-846 3510C,8270C, SEMI-VOLATILE ORGANIC COMPOUNDS								
Acenaphthene	NELAP	0.000100		**ND**	mg/L	1	05/04/2020 11:01	164770
Acenaphthylene	NELAP	0.000100		**ND**	mg/L	1	05/04/2020 11:01	164770
Anthracene	NELAP	0.000300		**ND**	mg/L	1	05/04/2020 11:01	164770
Benzo(a)anthracene	NELAP	0.000100		**ND**	mg/L	1	05/04/2020 11:01	164770
Benzo(a)pyrene	NELAP	0.000100		**ND**	mg/L	1	05/04/2020 11:01	164770
Benzo(b)fluoranthene	NELAP	0.000100		**ND**	mg/L	1	05/04/2020 11:01	164770
Benzo(g,h,i)perylene	NELAP	0.000200		**ND**	mg/L	1	05/04/2020 11:01	164770
Benzo(k)fluoranthene	NELAP	0.000100		**ND**	mg/L	1	05/04/2020 11:01	164770
Chrysene	NELAP	0.000100		**ND**	mg/L	1	05/04/2020 11:01	164770
Dibenzo(a,h)anthracene	NELAP	0.000100		**ND**	mg/L	1	05/04/2020 11:01	164770
Fluoranthene	NELAP	0.000300		**ND**	mg/L	1	05/04/2020 11:01	164770
Fluorene	NELAP	0.000200		**ND**	mg/L	1	05/04/2020 11:01	164770
Indeno(1,2,3-cd)pyrene	NELAP	0.000100		**ND**	mg/L	1	05/04/2020 11:01	164770
Naphthalene	NELAP	0.000400		**ND**	mg/L	1	05/04/2020 11:01	164770
Phenanthrene	NELAP	0.000600		**ND**	mg/L	1	05/04/2020 11:01	164770
Pyrene	NELAP	0.000200		**ND**	mg/L	1	05/04/2020 11:01	164770
Surr: 2-Fluorobiphenyl	*	21.4-142		**87.3**	%REC	1	05/04/2020 11:01	164770
Surr: Nitrobenzene-d5	*	15-163		**81.2**	%REC	1	05/04/2020 11:01	164770
Surr: p-Terphenyl-d14	*	10-173		**94.0**	%REC	1	05/04/2020 11:01	164770
LCS recovered outside upper control limits. Sample results are below the reporting limit. Data is reportable per the TNI Standard.								
SW-846 5030, 8260B, VOLATILE ORGANIC COMPOUNDS BY GC/MS								
Benzene	NELAP	0.5		**ND**	µg/L	1	05/01/2020 0:19	164754
Ethylbenzene	NELAP	2.0		**ND**	µg/L	1	05/01/2020 0:19	164754
Toluene	NELAP	2.0		**ND**	µg/L	1	05/01/2020 0:19	164754
Xylenes, Total	NELAP	4.0		**ND**	µg/L	1	05/01/2020 0:19	164754
Surr: 1,2-Dichloroethane-d4	*	80.9-113		**94.1**	%REC	1	05/01/2020 0:19	164754
Surr: 4-Bromofluorobenzene	*	88.3-109		**98.7**	%REC	1	05/01/2020 0:19	164754
Surr: Dibromofluoromethane	*	87.4-111		**101.3**	%REC	1	05/01/2020 0:19	164754
Surr: Toluene-d8	*	86.1-110		**94.9**	%REC	1	05/01/2020 0:19	164754

Appendix F

Tier 2 Evaluation Supporting Documents

Tier 2 Calculation Input Parameters

507 East Washington Street
Champaign, Illinois

Parameter	Value	Units	Source
Fraction organic carbon f_{oc}	0.005	gm/gm	(3 to 10 feet) Site specific value from B-814 (7.0-8.0). Approved by IEPA in letter dated October 6, 2014.
Fraction organic carbon f_{oc}	0.0104	gm/gm	(>10 feet) Site specific value (Project Status Report).
Soil bulk density ρ_b	1.7	gm/cm^3	Default Value (TACO 742 Appendix C, Table B for clay)
Soil particle density ρ_s	2.65	gm/cm^4	Default Value (TACO 742 Appendix C, Table B)
Air-filled soil porosity θ_a	0.13	unitless	Default Value (TACO 742 Appendix C, Table B for soil below 1 meter)
Water-filled porosity θ_w	0.3	unitless	Default Value (TACO 742 Appendix C, Table B for soil below 1 meter)
Total soil porosity η	0.43	unitless	Default Value (TACO 742 Appendix C, Table B)
Saturated hydraulic conductivity K_s	8	m/yr	(TACO parameter from Appendix C Table K, silty clay)
Exponential parameter 1/(2b=3)	0.042	unitless	(TACO parameter from Appendix C Table K, silty clay)
Infiltration Rate	0.3	m/yr	Default Value (TACO 742 Appendix C, Table B)
Total porosity θ_T	0.36	unitless	Default Value (TACO 742 Appendix C, Table D for clay)
Organic Carbon Partition Coefficient K_{oc}	(1)	cm^3/g	Default Value (TACO 742 Appendix C, Table E)
Henry's Constant H'	(1)	l/gm	Default Value (TACO 742 Appendix C, Table E)
Solubility S	(1)	mg/l	Default Value (TACO 742 Appendix C, Table E)
Diffusivity in Air D^i	(1)	cm^2/sec	Default Value (TACO 742 Appendix C, Table E)
Diffusivity in Water D_w	(1)	cm^2/sec	Default Value (TACO 742 Appendix C, Table E)
Degradation Constant	(1)	day^{-1}	Default Value (TACO 742 Appendix C, Table E)
Inhalation Unit Risk Factor	(2)	$(ug/m^3)^{-1}$	Integrated Risk Information System (IRIS) EPA Database
Inhalation Reference Concentration	(3)	mg/m^3	Integrated Risk Information System (IRIS) EPA Database

Notes:

'(1) Compound specific value from 35 IAC Part 742 Appendix C, Table E.

'(2) Compund specific value from the Integrated Risk Information System (IRIS) for carcinogenic compounds.

'(3) Compund specific value from the Integrated Risk Information System (IRIS) for non-carcinogenic compounds.

EQUATION FOR REMEDIATION OBJECTIVE - CARCINOGENICS
EQUATION S10 WORKSHEET - APPARENT DIFFUSIVITY
BENZENE
SOIL INHALATION EXPOSURE ROUTE - ORGANIC CONSTITUENTS
507 EAST WASHINGTON
CHAMPAIGN, ILLINOIS
RESIDENTIAL

$$D_A = [[(\theta_a^{3.33} * D_i * H') + (\theta_w^{3.33} * D_w)]/\eta^2] * [1/((\rho_b * K_d) + \theta_w + (\theta_a * H'))]$$

Henry's constant	H'		**0.23**	unitless (default value)
Diffusivity in Air	D_i	=	**0.088**	cm^2/sec
Diffusivity in Water	D_w	=	**0.0000102**	cm^2/sec
soil bulk density	ρ_b	=	**1.7**	gm/cm^3 (site specific)
total soil porosity	η	=	**0.358**	unitless (calculated value based on site-specific bulk density and soil particle density)
water filled soil porosity	θ_w	=	**0.312**	unitless (calculated value based on calculated total soil porosity and soil density (equation S24))
air filled soil porosity	θ_a	=	**0.046**	unitless (calculated value based on calculated total soil porosity and soil density (equation S24))
default total soil porosity	$\eta_{(default)}$	=	**0.43**	unitless (default value from Appendix C; Table B)
default water filled soil porosity	θ_w	=	**0.300**	unitless (calculated value using default total soil porosity η)
default air filled soil porosity	θ_a	=	**0.130**	unitless (calculated value using default total soil porosity η)

Apparent Diffusivity D_A (cm^2/s)	Interim Calculated Value β_1 $= (\theta_a^{3.33} * D_i * H)$	Interim Calculated Value β_2 $= (\theta_w^{3.33} * D_w)$	Interim Calculated Value β_3 $1/[(\rho_b * K_d) + \theta_w + (\theta_a * H'$	Air-Filled Soil Porosity θ_a (unitless)	Water-Filled Soil Porosity θ_w (unitless)	Soil-Water Partition K_d (cm^3/g)	Soil Porosity η (unitless)	Soil Bulk Density ρ_b (gm/cm^3)	Diffusivity in Air D_i (cm^2/sec)	Henry's Constant H' (unitless)	Diffusivity in Water D_w (cm^2/sec)
0.000163812	2.26799E-05	1.85103E-07	1.324678765	**0.130**	**0.300**	**0.250**	**0.430**	1.700	0.088	0.23	0.0000102

TIER 2 EVALUATION
SOIL INHALATION, RESIDENTIAL PROPERTY

DATA INPUT PARAMETERS			UNITS	SOURCE
Constituent		BENZENE		
Site Name		507 EAST WASHINGTON		
Site Location		CHAMPAIGN, ILLINOIS		
Constituent based parameters				
Organic-carbon partition coefficient	K_{oc}	50	cm^3/g	Default Value (TACO 742 Appendix C, Table E)
Henry's Constant	H'	0.23	l/gm	Default Value (TACO 742 Appendix C, Table E)
Solubility	S	1800	mg/l	Default Value (TACO 742 Appendix C, Table E)
Diffusivity in Air	D_i	0.088	cm2/sec	Default Value (TACO 742 Appendix C, Table E)
Diffusivity in Water	D_w	1.02E-05	cm2/sec	Default Value (TACO 742 Appendix C, Table E)
Inhalation Unit Risk Factor	URF	7.80E-06	$(\mu g/m^3)^{-1}$	Integrated Risk Information System (IRIS) EPA Database
FOR SSL EQUATIONS - S6, S7, S8, S10, S19, S20, S21, and S24				
Site Specific Data				
Site Setting - Residential/Commercial/Construction Worker		**1**	**Enter 1 for residential, 2 for commercial, 3 for construction worker**	
Fraction organic carbon content	f_{oc}	0.005	gm/gm	Site Specific f_{oc} from B-814
Soil bulk density	ρ_b	1.7	gm/cm^3	Default Value (TACO 742 Appendix C, Table B)
Soil particle density	ρ_s	2.65	gm/cm^3	Default Value (TACO 742 Appendix C, Table B)
Air-filled soil porosity	θ_a	0.13	unitless	Default Value (TACO 742 Appendix C, Table B)
Water-filled soil porosity	θ_w	0.3	unitless	Default Value (TACO 742 Appendix C, Table B)
Total porosity (2)	η	0.43	unitless	Default Value (TACO 742 Appendix C, Table B)
Conditions (2) :	Use equation S24 for calculating total soil porosity?			**2** 1 = YES 2 = NO
Soil Type Specific				
Saturated hydraulic conductivity	K_s	8	m/yr	Default Value (TACO 742 Appendix C, Table K)
Exponential parameter	1/(2b+3)	0.042	unitless	Default Value (TACO 742 Appendix C, Table K)

EQUATION FOR REMEDIATION OBJECTIVE - CARCINOGENICS
EQUATION S6 AND S7 WORKSHEET - REMEDIATION OBJECTIVES
BENZENE
SOIL INHALATION EXPOSURE ROUTE - ORGANIC CONSTITUENTS
507 EAST WASHINGTON
CHAMPAIGN, ILLINOIS
RESIDENTIAL

$$RO = TR * AT_c * 365 / [URF * 1000 * EF * ED * (1/VF))]$$

Site Setting Code **1** (residential=1; commercial=2; construction worker=3)

URF = **0.0000078** $(\mu g/m^3)^{-1}$

RO Remediation Objective (mg/kg)	Interim Calculated Value β_1 =TR*AT_c*365	Interim Calculated Value β_2 =URF*EF*ED*1000*(1/VF)	Target Cancer Risk TR (unitless)	Average Time AT_c (year)	Exposure Frequent EF (day/year)	Exposure Duration ED (year)	Inhalation Unit Risk Factor URF $(\mu g/m^3)^{-1}$	Volatilization Factor for Construction Worker VF' (m^3/kg)	Volatilization Factor VF (m^3/kg)
2.6942	**0.0255500**	**0.009483256**	0.000001	70	350	30	**0.0000078**	863.627	8636.274

EQUATION FOR AIR-FILLED POROSITY (θ_a), WATER-FILLED SOIL POROSITY (θ_w), PARTITION COEFFICIENT (K_d)
EQUATION S19, S20, S21, AND S24 WORKSHEET - SOIL PROPERTIES
BENZENE
507 EAST WASHINGTON
CHAMPAIGN, ILLINOIS
RESIDENTIAL

$\eta = 1-(\rho_b)/(\rho_s)$

$\theta_a = \eta - \theta_w$

$\theta_w = \eta * (I/K_s)^{(1/(2b+3))}$

$Kd = K_{oc} * f_{oc}$

K_s	=	**8**	m/yr (by soil type)	saturated hydraulic conductivity
1/(2b+3)	=	**0.042**	unitless (by soil type)	exponential parameter
ρ_s	=	**2.65**	gm/cm^3 (default value)	soil particle density
f_{oc}	=	**0.005**	gm/gm (site specific)	fraction organic carbon content
ρ_b	=	**1.7**	gm/cm^3 (site specific)	soil bulk density
η	=	**0.43**	unitless (by soil type)	total soil porosity (default)
θ_a	=	**0.13**	unitless (by soil type)	air-filled soil porosity (default)
θ_w	=	**0.3**	unitless (by soil type)	water-filled soil porosity (default)
K_{oc}	=	**50**	cm^3/g	Organic Carbon Partition Coefficient
I	=	0.3	meters/year (default value)	infiltration rate

Use Equation S24 for total soil porosity (η)	Calculated Water-Filled Soil Porosity θ_w unitless	Calculated Air-Filled Soil Porosity θ_a unitless	Default Water-Filled Soil Porosity θ_w unitless	Default Air-Filled Soil Porosity θ_a unitless	Constant Value 1/(2b+3) (unitless)	Saturated Hydraulic Conductivity K_s (m/yr)	Infiltration Rate I (m/yr)	Soil-Water Partition K_d (cm^3/g)	Organic Carbon Partition Coefficient K_{oc} (cm^3/g)	Fraction Organic Carbon f_{oc} (gm/gm)	Default Porosity Soil η (default) (unitless)	Calculated Soil Porosity η (unitless)	ρ_b ρ_b (gm/cm^3)	ρ_s ρ_s (gm/cm^3)
YES	**0.312**	**0.046**			**0.042**	**8**	0.3	**0.25**	**50**	**0.005**		**0.358**	**1.7**	**2.65**
NO			**0.300**	**0.130**							**0.43**			

EQUATION FOR REMEDIATION OBJECTIVE - CARCINOGENICS
EQUATION S8 WORKSHEET - VOLATILIZATION FACTOR
BENZENE
SOIL INHALATION EXPOSURE ROUTE - ORGANIC CONSTITUENTS
507 EAST WASHINGTON
CHAMPAIGN, ILLINOIS
RESIDENTIAL

VF $= Q/C * [(3.14*D_A*T)^{1/2}/(2*\rho_b*D_A)]*10^{-4}$

Site Setting Code **1** (residential=1; commercial=2; construction worker=3)

Q/C = **68.810** $(gm/m^2\text{-}s)/(kg/m^3)$
ρ_b = **1.7** gm/cm^3 (site specific)

Volatilization Factor VF (mg^3/kg)	Interim Calculated Value β_1 $=(3.14*D_A*T)^{1/2}$	Interim Calculated Value β_2 $=(2*\rho_b*D_A)$	Q/C (unitless)	Apparent Diffusivity D_A (cm^2/s)	Exposure Interval T (sec)	Exposure Duration ED (year)	Soil Bulk Density ρ_b (gm/cm^3)
8636.274493	**699.0358624**	**0.000556961**	**68.81**	**0.000163812**	950000000	30	**1.700**

EQUATION FOR REMEDIATION OBJECTIVE - CARCINOGENICS
EQUATION S10 WORKSHEET - APPARENT DIFFUSIVITY
BENZENE
SOIL INHALATION EXPOSURE ROUTE - ORGANIC CONSTITUENTS
507 EAST WASHINGTON STREET
CHAMPAIGN, ILLINOIS
COMMERCIAL/INDUSTRIAL

$D_A = [[(\theta_a^{3.33} * D_i * H') + (\theta_w^{3.33} * D_w)]/\eta^2] * [1/((\rho_b * K_d)+\theta_w+(\theta_a * H'))]$

Henry's constant	H'		**0.23**	unitless (default value)
Diffusivity in Air	D_i	=	**0.088**	cm^2/sec
Diffusivity in Water	D_w	=	**0.0000102**	cm^2/sec
soil bulk density	ρ_b	=	**1.7**	gm/cm^3 (site specific)
total soil porosity	η	=	**0.358**	unitless (calculated value based on site-specific bulk density and soil particle density)
water filled soil porosity	θ_w	=	**0.312**	unitless (calculated value based on calculated total soil porosity and soil density (equation S24))
air filled soil porosity	θ_a	=	**0.046**	unitless (calculated value based on calculated total soil porosity and soil density (equation S24))
default total soil porosity	$\eta_{(default)}$	=	**0.43**	unitless (default value from Appendix C; Table B)
default water filled soil porosity	θ_w	=	**0.300**	unitless (calculated value using default total soil porosity η)
default air filled soil porosity	θ_a	=	**0.130**	unitless (calculated value using default total soil porosity η)

Apparent Diffusivity D_A (cm^2/s)	Interim Calculated Value β_1 = $(\theta_a^{3.33} * D_i * H)$	Interim Calculated Value β_2 = $(\theta_w^{3.33} * D_w)$	Interim Calculated Value β_3 $1/[(\rho_b * K_d)+\theta_w+(\theta_a * H'$	Air-Filled Soil Porosity θ_a (unitless)	Water-Filled Soil Porosity θ_w (unitless)	Soil-Water Partition K_d (cm^3/g)	Soil Porosity η (unitless)	Soil Bulk Density ρ_b (gm/cm^3)	Diffusivity in Air D_i (cm^2/sec)	Henry's Constant H' (unitless)	Diffusivity in Water D_w (cm^2/sec)
0.000163812	2.26799E-05	1.85103E-07	1.324678765	**0.130**	**0.300**	**0.250**	**0.430**	1.700	0.088	0.23	0.0000102

DATA INPUT PARAMETERS			UNITS	SOURCE
Constituent Site Name Site Location		**BENZENE** **507 EAST WASHINGTON STREET** **CHAMPAIGN, ILLINOIS**		
Constituent based parameters				
Organic-carbon partition coefficient	K_{oc}	50	cm^3/g	Default Value (TACO 742 Appendix C, Table E)
Henry's Constant	H'	0.23	l/gm	Default Value (TACO 742 Appendix C, Table E)
Solubility	S	1800	mg/l	Default Value (TACO 742 Appendix C, Table E)
Diffusivity in Air	D_i	0.088	cm2/sec	Default Value (TACO 742 Appendix C, Table E)
Diffusivity in Water	D_w	1.02E-05	cm2/sec	Default Value (TACO 742 Appendix C, Table E)
Inhalation Unit Risk Factor	URF	7.80E-06	$(\mu g/m^3)^{-1}$	Integrated Risk Information System (IRIS) EPA Database

FOR SSL EQUATIONS - S6, S7, S8, S10, S19, S20, S21, and S24

Site Specific Data				
Site Setting - Residential/Commercial/Construction Worker		**2**	**Enter 1 for residential, 2 for commercial, 3 for construction worker**	
Fraction organic carbon content	f_{oc}	0.005	gm/gm	Site Specific f_{oc} from B-814
Soil bulk density	ρ_b	1.7	gm/cm^3	Default Value (TACO 742 Appendix C, Table B)
Soil particle density	ρ_s	2.65	gm/cm^3	Default Value (TACO 742 Appendix C, Table B)
Air-filled soil porosity	θ_a	0.13	unitless	Default Value (TACO 742 Appendix C, Table B)
Water-filled soil porosity	θ_w	0.3	unitless	Default Value (TACO 742 Appendix C, Table B)
Total porosity (2)	η	0.43	unitless	Default Value (TACO 742 Appendix C, Table B)
Conditions (2) :		Use equation S24 for calculating total soil porosity?		**2** 1 = YES 2 = NO
Soil Type Specific				
Saturated hydraulic conductivity	K_s	8	m/yr	Default Value (TACO 742 Appendix C, Table K)
Exponential parameter	1/(2b+3)	0.042	unitless	Default Value (TACO 742 Appendix C, Table K)

EQUATION FOR REMEDIATION OBJECTIVE - CARCINOGENICS
EQUATION S6 AND S7 WORKSHEET - REMEDIATION OBJECTIVES
BENZENE
SOIL INHALATION EXPOSURE ROUTE - ORGANIC CONSTITUENTS
507 EAST WASHINGTON STREET
CHAMPAIGN, ILLINOIS
COMMERCIAL/INDUSTRIAL

RO = TR * AT_c * 365 / [URF * 1000 * EF * ED * (1/VF))]

Site Setting Code **2** (residential=1; commercial=2; construction worker=3)
URF = **0.0000078** $(\mu g/m^3)^{-1}$

RO Remediation Objective (mg/kg)	Interim Calculated Value β_1 =TR*AT_c*365	Interim Calculated Value β_2 =URF*EF*ED*1000*(1/VF)	Target Cancer Risk TR (unitless)	Average Time AT_c (year)	Exposure Frequent EF (day/year)	Exposure Duration ED (year)	Inhalation Unit Risk Factor URF $(\mu g/m^3)^{-1}$	Volatilization Factor for Construction Worker VF' (m^3/kg)	Volatilization Factor VF (m^3/kg)
5.1473	**0.0255500**	**0.004963752**	0.000001	70	250	25	**0.0000078**	982.120	9821.199

EQUATION FOR AIR-FILLED POROSITY (θ_a), WATER-FILLED SOIL POROSITY (θ_w), PARTITION COEFFICIENT (K_d)
EQUATION S19, S20, S21, AND S24 WORKSHEET - SOIL PROPERTIES
BENZENE
507 EAST WASHINGTON STREET
CHAMPAIGN, ILLINOIS
COMMERCIAL/INDUSTRIAL

$\eta = 1-(\rho_b)/(\rho_s)$

$\theta_a = \eta - \theta_w$

$\theta_w = \eta * (I/K_s)^{(1/(2b+3))}$

$Kd = K_{oc} * f_{oc}$

K_s	=	**8**	m/yr (by soil type)	saturated hydraulic conductivity
1/(2b+3)	=	**0.042**	unitless (by soil type)	exponential parameter
ρ_s	=	**2.65**	gm/cm^3 (default value)	soil particle density
f_{oc}	=	**0.005**	gm/gm (site specific)	fraction organic carbon content
ρ_b	=	**1.7**	gm/cm^3 (site specific)	soil bulk density
η	=	**0.43**	unitless (by soil type)	total soil porosity (default)
θ_a	=	**0.13**	unitless (by soil type)	air-filled soil porosity (default)
θ_w	=	**0.3**	unitless (by soil type)	water-filled soil porosity (default)
K_{oc}	=	**50**	cm^3/g	Organic Carbon Partition Coefficient
I	=	0.3	meters/year (default value)	infiltration rate

Use Equation S24 for total soil porosity (η)	Calculated Water-Filled Soil Porosity θ_w unitless	Calculated Air-Filled Soil Porosity θ_a unitless	Default Water-Filled Soil Porosity θ_w unitless	Default Air-Filled Soil Porosity θ_a unitless	Constant Value 1/(2b+3) (unitless)	Saturated Hydraulic Conductivity K_s (m/yr)	Infiltration Rate I (m/yr)	Soil-Water Partition K_d (cm^3/g)	Organic Carbon Partition Coefficient K_{oc} (cm^3/g)	Fraction Organic Carbon f_{oc} (gm/gm)	Default Porosity Soil η (default) (unitless)	Calculated Soil Porosity η (unitless)	ρ_b ρ_b (gm/cm^3)	ρ_s ρ_s (gm/cm^3)
YES	**0.312**	**0.046**			**0.042**	**8**	0.3	**0.25**	**50**	**0.005**		**0.358**	**1.7**	**2.65**
NO			**0.300**	**0.130**							**0.43**			

EQUATION FOR REMEDIATION OBJECTIVE - CARCINOGENICS
EQUATION S8 WORKSHEET - VOLATILIZATION FACTOR
BENZENE
SOIL INHALATION EXPOSURE ROUTE - ORGANIC CONSTITUENTS
507 EAST WASHINGTON STREET
CHAMPAIGN, ILLINOIS
COMMERCIAL/INDUSTRIAL

$$VF = Q/C * [(3.14*D_A*T)^{1/2}/(2*\rho_b*D_A)]*10^{-4}$$

Site Setting Code **2** (residential=1; commercial=2; construction worker=3)

Q/C = **85.810** $(gm/m^2\text{-}s)/(kg/m^3)$
ρ_b = **1.7** gm/cm^3 (site specific)

Volatilization Factor **VF** **(mg^3/kg)**	Interim Calculated Value β_1 **$=(3.14*D_A*T)^{1/2}$**	Interim Calculated Value β_2 **$=(2*\rho_b*D_A)$**	Q/C (unitless)	Apparent Diffusivity D_A (cm^2/s)	Exposure Interval T (sec)	Exposure Duration ED (year)	Soil Bulk Density ρ_b (gm/cm^3)
9821.199307	**637.4574481**	**0.000556961**	**85.81**	**0.000163812**	790000000	25	**1.700**

EQUATION FOR REMEDIATION OBJECTIVE - CARCINOGENICS
EQUATION S10 WORKSHEET - APPARENT DIFFUSIVITY
BENZENE
SOIL INHALATION EXPOSURE ROUTE - ORGANIC CONSTITUENTS
507 EAST WASHINGTON
CHAMPAIGN, ILLINOIS
CONSTRUCTION WORKER

D_A = $[[(\theta_a^{3.33} * D_i * H') + (\theta_w^{3.33} * D_w)]/\eta^2] * [1/((\rho_b * K_d) + \theta_w + (\theta_a * H'))]$

Henry's constant	H'		**0.23**	unitless (default value)
Diffusivity in Air	D_i	=	**0.088**	cm^2/sec
Diffusivity in Water	D_w	=	**0.0000102**	cm^2/sec
soil bulk density	ρ_b	=	**1.7**	gm/cm^3 (site specific)
total soil porosity	η	=	**0.358**	unitless (calculated value based on site-specific bulk density and soil particle density)
water filled soil porosity	θ_w	=	**0.312**	unitless (calculated value based on calculated total soil porosity and soil density (equation S24))
air filled soil porosity	θ_a	=	**0.046**	unitless (calculated value based on calculated total soil porosity and soil density (equation S24))
default total soil porosity	$\eta_{(default)}$	=	**0.43**	unitless (default value from Appendix C; Table B)
default water filled soil porosity	θ_w	=	**0.300**	unitless (calculated value using default total soil porosity η)
default air filled soil porosity	θ_a	=	**0.130**	unitless (calculated value using default total soil porosity η)

Apparent Diffusivity D_A (cm^2/s)	Interim Calculated Value β_1 $= (\theta_a^{3.33} * D_i * H)$	Interim Calculated Value β_2 $= (\theta_w^{3.33} * D_w)$	Interim Calculated Value β_3 $1/[(\rho_b * K_d) + \theta_w + (\theta_a * H'$	Air-Filled Soil Porosity θ_a (unitless)	Water-Filled Soil Porosity θ_w (unitless)	Soil-Water Partition K_d (cm^3/g)	Soil Porosity η (unitless)	Soil Bulk Density ρ_b (gm/cm^3)	Diffusivity in Air D_i (cm^2/sec)	Henry's Constant H' (unitless)	Diffusivity in Water D_w (cm^2/sec)
0.000163812	2.26799E-05	1.85103E-07	1.324678765	**0.130**	**0.300**	**0.250**	**0.430**	1.700	0.088	0.23	0.0000102

TIER 2 EVALUATION
SOIL INHALATION, CONSTRUCTION WORKER

DATA INPUT PARAMETERS			UNITS	SOURCE
Constituent		**BENZENE**		
Site Name		**507 EAST WASHINGTON**		
Site Location		**CHAMPAIGN, ILLINOIS**		
Constituent based parameters				
Organic-carbon partition coefficient	K_{oc}	50	cm^3/g	Default Value (TACO 742 Appendix C, Table E)
Henry's Constant	H'	0.23	l/gm	Default Value (TACO 742 Appendix C, Table E)
Solubility	S	1800	mg/l	Default Value (TACO 742 Appendix C, Table E)
Diffusivity in Air	D_i	0.088	cm2/sec	Default Value (TACO 742 Appendix C, Table E)
Diffusivity in Water	D_w	1.02E-05	cm2/sec	Default Value (TACO 742 Appendix C, Table E)
Inhalation Unit Risk Factor	URF	7.80E-06	$(\mu g/m^3)^{-1}$	Integrated Risk Information System (IRIS) EPA Database

FOR SSL EQUATIONS - S6, S7, S8, S10, S19, S20, S21, and S24

Site Specific Data

Site Setting - Residential/Commercial/Construction Worker		**3**	**Enter 1 for residential, 2 for commercial, 3 for construction worker**	
Fraction organic carbon content	f_{oc}	0.005	gm/gm	Site Specific f_{oc} from B-814
Soil bulk density	ρ_b	1.7	gm/cm^3	Default Value (TACO 742 Appendix C, Table B)
Soil particle density	ρ_s	2.65	gm/cm^3	Default Value (TACO 742 Appendix C, Table B)
Air-filled soil porosity	θ_a	0.13	unitless	Default Value (TACO 742 Appendix C, Table B)
Water-filled soil porosity	θ_w	0.3	unitless	Default Value (TACO 742 Appendix C, Table B)
Total porosity (2)	η	0.43	unitless	Default Value (TACO 742 Appendix C, Table B)

Conditions (2) : Use equation S24 for calculating total soil porosity? **2**

1 = YES
2 = NO

Soil Type Specific

Saturated hydraulic conductivity	K_s	8	m/yr	Default Value (TACO 742 Appendix C, Table K)
Exponential parameter	1/(2b+3)	0.042	unitless	Default Value (TACO 742 Appendix C, Table K)

EQUATION FOR REMEDIATION OBJECTIVE - CARCINOGENICS
EQUATION S6 AND S7 WORKSHEET - REMEDIATION OBJECTIVES
BENZENE
SOIL INHALATION EXPOSURE ROUTE - ORGANIC CONSTITUENTS
507 EAST WASHINGTON
CHAMPAIGN, ILLINOIS
CONSTRUCTION WORKER

RO = $TR * AT_c * 365 / [URF * 1000 * EF * ED * (1/VF)]$

Site Setting Code **3** (residential=1; commercial=2; construction worker=3)

URF = **0.0000078** $(\mu g/m^3)^{-1}$

RO Remediation Objective (mg/kg)	Interim Calculated Value β_1 $=TR*AT_c*365$	Interim Calculated Value β_2 =URF*EF*ED*1000*(1/VF)	Target Cancer Risk TR (unitless)	Average Time AT_c (year)	Exposure Frequent EF (day/year)	Exposure Duration ED (year)	Inhalation Unit Risk Factor URF $(\mu g/m^3)^{-1}$	Volatilization Factor for Construction Worker VF' (m^3/kg)	Volatilization Factor VF (m^3/kg)
7.2390	**0.0255500**	**0.003529504**	0.000001	70	30	1	**0.0000078**	66.298	662.983

EQUATION FOR AIR-FILLED POROSITY (θ_a), WATER-FILLED SOIL POROSITY (θ_w), PARTITION COEFFICIENT (K_d)
EQUATION S19, S20, S21, AND S24 WORKSHEET - SOIL PROPERTIES
BENZENE
507 EAST WASHINGTON
CHAMPAIGN, ILLINOIS
CONSTRUCTION WORKER

$\eta = 1-(\rho_b)/(\rho_s)$

$\theta_a = \eta - \theta_w$

$\theta_w = \eta * (I/K_s)^{(1/(2b+3))}$

$Kd = K_{oc} * f_{oc}$

K_s	=	**8**	m/yr (by soil type)	saturated hydraulic conductivity
1/(2b+3)	=	**0.042**	unitless (by soil type)	exponential parameter
ρ_s	=	**2.65**	gm/cm^3 (default value)	soil particle density
f_{oc}	=	**0.005**	gm/gm (site specific)	fraction organic carbon content
ρ_b	=	**1.7**	gm/cm^3 (site specific)	soil bulk density
η	=	**0.43**	unitless (by soil type)	total soil porosity (default)
θ_a	=	**0.13**	unitless (by soil type)	air-filled soil porosity (default)
θ_w	=	**0.3**	unitless (by soil type)	water-filled soil porosity (default)
K_{oc}	=	**50**	cm^3/g	Organic Carbon Partition Coefficient
I	=	0.3	meters/year (default value)	infiltration rate

Use Equation S24 for total soil porosity (η)	Calculated Water-Filled Soil Porosity θ_w unitless	Calculated Air-Filled Soil Porosity θ_a unitless	Default Water-Filled Soil Porosity θ_w unitless	Default Air-Filled Soil Porosity θ_a unitless	Constant Value 1/(2b+3) (unitless)	Saturated Hydraulic Conductivity K_s (m/yr)	Infiltration Rate I (m/yr)	Soil-Water Partition K_d (cm^3/g)	Organic Carbon Partition Coefficient K_{oc} (cm^3/g)	Fraction Organic Carbon f_{oc} (gm/gm)	Default Porosity Soil η (default) (unitless)	Calculated Soil Porosity η (unitless)	ρ_b ρ_b (gm/cm^3)	ρ_s ρ_s (gm/cm^3)
YES	**0.312**	**0.046**			**0.042**	**8**	0.3	**0.25**	**50**	**0.005**		**0.358**	**1.7**	**2.65**
NO			**0.300**	**0.130**							**0.43**			

EQUATION FOR REMEDIATION OBJECTIVE - CARCINOGENICS
EQUATION S8 WORKSHEET - VOLATILIZATION FACTOR
BENZENE
SOIL INHALATION EXPOSURE ROUTE - ORGANIC CONSTITUENTS
507 EAST WASHINGTON
CHAMPAIGN, ILLINOIS
CONSTRUCTION WORKER

$$VF = Q/C * [(3.14*D_A*T)^{1/2}/(2*\rho_b*D_A)]*10^{-4}$$

Site Setting Code **3** (residential=1; commercial=2; construction worker=3)

Q/C = 85.810 $(gm/m^2\text{-}s)/(kg/m^3)$
ρ_b = 1.7 gm/cm^3 (site specific)

Volatilization Factor VF (mg^3/kg)	Interim Calculated Value β_1 $=(3.14*D_A*T)^{1/2}$	Interim Calculated Value β_2 $=(2*\rho_b*D_A)$	Q/C (unitless)	Apparent Diffusivity D_A (cm^2/s)	Exposure Interval T (sec)	Exposure Duration ED (year)	Soil Bulk Density ρ_b (gm/cm^3)
662.9827508	43.03173973	0.000556961	85.81	0.000163812	3600000	1	1.700

TIER 2 EVALUATION
SOIL INHALATION, RESIDENTIAL PROPERTY

DATA INPUT PARAMETERS		INPUT VALUES BELOW	UNITS	SOURCE
Constituent Site Name Site Location Sample Location Sample Depth		**ETHYLBENZENE 507 EAST WASHINGTON STREET CHAMPAIGN, ILLINOIS**		
Constituent based parameters				
Organic-carbon partition coefficient	K_{oc}	320	cm^3/g	Default Value (TACO 742 Appendix C, Table E)
Henry's Constant	H'	0.324	l/gm	Default Value (TACO 742 Appendix C, Table E)
Solubility	S	170	mg/l	Default Value (TACO 742 Appendix C, Table E)
Diffusivity in Air	D_i	0.075	cm2/sec	Default Value (TACO 742 Appendix C, Table E)
Diffusivity in Water	D_w	7.80E-06	cm2/sec	Default Value (TACO 742 Appendix C, Table E)
Inhalation Reference Concentration	R*f*C	1.00E+00	mg/m3	Integrated Risk Information System (IRIS) EPA Database
FOR SSL EQUATIONS - S4, S5, S8, S10, S19, S20, S21, and S24				
Site Specific Data				
Site Setting - Residential/Commercial/Construction Worker		**1**	**Enter 1 for residential, 2 for commercial, 3 for construction worker**	
Fraction organic carbon content	f_{oc}	0.005	gm/gm	Site Specific f_{oc} from B-814
Soil bulk density	ρ_b	1.7	gm/cm^3	Default Value (TACO 742 Appendix C, Table B)
Soil particle density	ρ_s	2.65	gm/cm^3	Default Value (TACO 742 Appendix C, Table B)
Air-filled soil porosity	θ_a	0.13	unitless	Default Value (TACO 742 Appendix C, Table B)
Water-filled soil porosity	θ_w	0.3	unitless	Default Value (TACO 742 Appendix C, Table B)
Total porosity	η	0.43	unitless	Default Value (TACO 742 Appendix C, Table B)
Conditions:		Use equation S24 for calculating total soil porosity?		**2** 1 = YES 2 = NO
Soil Type Specific				
Saturated hydraulic conductivity	K_s	8	m/yr	Default Value (TACO 742 Appendix C, Table K)
Exponential parameter	1/(2b+3)	0.042	unitless	Default Value (TACO 742 Appendix C, Table K)

EQUATION FOR REMEDIATION OBJECTIVE - NONCARCINOGENICS
EQUATION S4 AND S5 WORKSHEET - REMEDIATION OBJECTIVES
ETHYLBENZENE
SOIL INHALATION EXPOSURE ROUTE - ORGANIC CONSTITUENTS
507 EAST WASHINGTON STREET
CHAMPAIGN, ILLINOIS
RESIDENTIAL

RO = THQ * AT * 365 / [EF * ED * ((1/R*f*C) * (1/VF))]

Site Setting Code = **1** (residential=1; commercial=2; construction worker=3)
R*f*C = **1** mg/m^3 **Inhalation Reference Concentration**

Borehole Location	Depth Interval (feet)	**RO** Remediation Objective (mg/kg)	Target Hazard Quotient THQ (unitless)	Average Time AT (year)	Exposure Frequent EF (day/year)	Exposure Duration ED (year)	Inhalation Reference Concentration R*f*C (mg/m^3)	Volatilization Factor for Construction Worker VF' (m^3/kg)	Volatilization Factor VF (m^3/kg)
0	0	**16579.0229**	1	30	350	30	**1.000**	1589.769	15897.693

SOIL INHALATION EXPOSURE ROUTE - ORGANIC CONSTITUENTS
507 EAST WASHINGTON STREET
CHAMPAIGN, ILLINOIS
RESIDENTIAL

$D_A = [[(\theta_a^{3.33} * D_i * H') + (\theta_w^{3.33} * D_w)]/\eta^2] * [1/((\rho_b * K_d)+\theta_w+(\theta_a * H'))]$

Henry's constant	H'	=	**0.324**	unitless (default value)
Diffusivity in Air	D_i	=	**0.075**	cm^2/sec
Diffusivity in Water	D_w	=	**0.0000078**	cm^2/sec
soil bulk density	ρ_b	=	**1.7**	gm/cm^3 (site specific)
total soil porosity	η	=	**0.358**	unitless (calculated value based on site-specific bulk density and soil particle density)
water filled soil porosity	θ_w	=	**0.312**	unitless (calculated value based on calculated total soil porosity (equation S24))
air filled soil porosity	θ_a	=	**0.046**	unitless (calculated value based on calculated total soil porosity (equation S24))
default total soil porosity	$\eta_{(default)}$	=	**0.430**	unitless (default value from Appendix C; Table B)
default water filled soil porosity	θ_w	=	**0.300**	unitless (calculated value using default total soil porosity η)
default air filled soil porosity	θ_a	=	**0.130**	unitless (calculated value using default total soil porosity η)

Apparent Diffusivity D_A (cm^2/s)	Interim Calculated Value $\beta_1 = (\theta_a^{3.33} * D_i * H)$	Interim Calculated Value $\beta_2 = (\theta_w^{3.33} * D_w)$	Interim Calculated Value $\beta_3 = 1/[(\rho_b * K_d)+\theta_w+(\theta_a * H')]$	Air-Filled Soil Porosity θ_a (unitless)	Water-Filled Soil Porosity θ_w (unitless)	Soil-Water Partition K_d (cm^3/g)	Soil Porosity η (unitless)	Soil Bulk Density ρ_b (gm/cm^3)	Diffusivity in Air D_i (cm^2/sec)	Henry's Constant H' (unitless)	Diffusivity in Water D_w (cm^2/sec)
4.83426E-05	2.72294E-05	1.4155E-07	0.326571134	**0.130**	**0.300**	**1.600**	**0.430**	**1.700**	**0.075**	**0.324**	**0.0000078**

EQUATION FOR REMEDIATION OBJECTIVE - NONCARCINOGENICS
EQUATION S8 WORKSHEET - VOLATILIZATION FACTOR
ETHYLBENZENE
SOIL INHALATION EXPOSURE ROUTE - ORGANIC CONSTITUENTS
507 EAST WASHINGTON STREET
CHAMPAIGN, ILLINOIS
RESIDENTIAL

$$VF = Q/C * [(3.14*D_A*T)^{1/2}/(2*\rho_b*D_A)]*10^{-4}$$

Site Setting Code **1** (residential=1; commercial=2; construction worker=3)

Q/C = **68.810** $(gm/m^2\text{-}s)/(kg/m^3)$ Inverse mean concentration @ center of square source

ρ_b = **1.7** gm/cm^3 (site specific) soil bulk density

Volatilization Factor	Interim Calculated Value	Interim Calculated Value		Apparent Diffusivity	Exposure Interval	Exposure Duration	Soil Bulk Density
VF **(mg^3/kg)**	β_1 **$=(3.14*D_A*T)^{1/2}$**	β_2 **$=(2*\rho_b*D_A)$**	Q/C (unitless)	D_A (cm^2/s)	T (sec)	ED (year)	ρ_b (gm/cm^3)
15897.69317	**379.7447544**	**0.000164365**	**68.81**	**4.83426E-05**	950000000	30	**1.700**

ETHYLBENZENE
507 EAST WASHINGTON STREET
CHAMPAIGN, ILLINOIS
RESIDENTIAL

η = $1-(\rho_b)/(\rho_s)$

θ_a = $\eta - \theta_w$

θ_w = $\eta * (I/K_s)^{(1/(2b+3))}$

Kd = $K_{oc} * f_{oc}$

K_s	=	8	m/yr (by soil type)	saturated hydraulic conductivity
1/(2b+3)	=	0.042	unitless (by soil type)	exponential parameter
ρ_s	=	2.65	gm/cm^3 (default value)	soil particle density
f_{oc}	=	0.005	gm/gm (site specific)	fraction organic carbon content
ρ_b	=	1.7	gm/cm^3 (site specific)	soil bulk density
η	=	0.43	unitless (by soil type)	total soil porosity (default)
θ_a	=	0.13	unitless (by soil type)	air-filled soil porosity (default)
θ_w	=	0.3	unitless (by soil type)	water-filled soil porosity (default)
K_{oc}	=	320	cm^3/g	Organic Carbon Partition Coefficient
I	=	0.3	meters/year (default value)	infiltration rate

Use Equation S24 for total soil porosity (η)	Calculated Water-Filled Soil Porosity θ_w unitless	Calculated Air-Filled Soil Porosity θ_a unitless	Default Water-Filled Soil Porosity θ_w unitless	Default Air-Filled Soil Porosity θ_a unitless	Constant Value 1/(2b+3) (unitless)	Saturated Hydraulic Conductivity K_s (m/yr)	Infiltration Rate I (m/yr)	Soil-Water Partition K_d (cm^3/g)	Organic Carbon Partition Coefficient K_{oc} (cm^3/g)	Fraction Organic Carbon f_{oc} (gm/gm)	Default Porosity Soil η (default) (unitless)	Calculated Soil Porosity η (unitless)	ρ_b ρ_b (gm/cm^3)	ρ_s ρ_s (gm/cm^3)
YES	0.312	0.046			0.042	8	0.3	1.6	320	0.005		0.358	1.7	2.65
NO			0.300	0.130							0.43			

TIER 2 EVALUATION
SOIL INHALATION, INDUSTRIAL/COMMERCIAL PROPERTY

DATA INPUT PARAMETERS		INPUT VALUES BELOW	UNITS	SOURCE
Constituent Site Name Site Location Sample Location Sample Depth		**ETHYLBENZENE** **507 EAST WASHINGTON STREET** **CHAMPAIGN, ILLINOIS**		
Constituent based parameters				
Organic-carbon partition coefficient	K_{oc}	320	cm^3/g	Default Value (TACO 742 Appendix C, Table E)
Henry's Constant	H'	0.324	l/gm	Default Value (TACO 742 Appendix C, Table E)
Solubility	S	170	mg/l	Default Value (TACO 742 Appendix C, Table E)
Diffusivity in Air	D_i	0.075	cm2/sec	Default Value (TACO 742 Appendix C, Table E)
Diffusivity in Water	D_w	7.80E-06	cm2/sec	Default Value (TACO 742 Appendix C, Table E)
Inhalation Reference Concentration	R*f*C	1.00E+00	mg/m3	Integrated Risk Information System (IRIS) EPA Database

FOR SSL EQUATIONS - S4, S5, S8, S10, S19, S20, S21, and S24

Site Specific Data

Site Setting - Residential/Commercial/Construction Worker		**2**	**Enter 1 for residential, 2 for commercial, 3 for construction worker**	
Fraction organic carbon content	f_{oc}	0.005	gm/gm	Site Specific f_{oc} from B-814
Soil bulk density	ρ_b	1.7	gm/cm^3	Default Value (TACO 742 Appendix C, Table B)
Soil particle density	ρ_s	2.65	gm/cm^3	Default Value (TACO 742 Appendix C, Table B)
Air-filled soil porosity	θ_a	0.13	unitless	Default Value (TACO 742 Appendix C, Table B)
Water-filled soil porosity	θ_w	0.3	unitless	Default Value (TACO 742 Appendix C, Table B)
Total porosity	η	0.43	unitless	Default Value (TACO 742 Appendix C, Table B)

Conditions: Use equation S24 for calculating total soil porosity? **2**

1 = YES
2 = NO

Soil Type Specific

Saturated hydraulic conductivity	K_s	8	m/yr	Default Value (TACO 742 Appendix C, Table K)
Exponential parameter	1/(2b+3)	0.042	unitless	Default Value (TACO 742 Appendix C, Table K)

EQUATION FOR REMEDIATION OBJECTIVE - NONCARCINOGENICS
EQUATION S4 AND S5 WORKSHEET - REMEDIATION OBJECTIVES
ETHYLBENZENE
SOIL INHALATION EXPOSURE ROUTE - ORGANIC CONSTITUENTS
507 EAST WASHINGTON STREET
CHAMPAIGN, ILLINOIS
COMMERCIAL/INDUSTRIAL

RO = THQ * AT * 365 / [EF * ED * ((1/RfC) * (1/VF))]

Site Setting Code = **2** (residential=1; commercial=2; construction worker=3)
RfC = **1** mg/m^3 **Inhalation Reference Concentration**

Borehole Location	Depth Interval (feet)	**RO** Remediation Objective (mg/kg)	Target Hazard Quotient THQ (unitless)	Average Time AT (year)	Exposure Frequent EF (day/year)	Exposure Duration ED (year)	Inhalation Reference Concentration RfC (mg/m^3)	Volatilization Factor for Construction Worker VF' (m^3/kg)	Volatilization Factor VF (m^3/kg)
0	0	**26395.2059**	1	25	250	25	**1.000**	1807.891	18078.908

SOIL INHALATION EXPOSURE ROUTE - ORGANIC CONSTITUENTS
507 EAST WASHINGTON STREET
CHAMPAIGN, ILLINOIS
COMMERCIAL/INDUSTRIAL

$$D_A = [[(\theta_a^{3.33} * D_i * H') + (\theta_w^{3.33} * D_w)]/\eta^2] * [1/((\rho_b * K_d)+\theta_w+(\theta_a * H'))]$$

Henry's constant	H'	=	**0.324**	unitless (default value)
Diffusivity in Air	D_i	=	**0.075**	cm^2/sec
Diffusivity in Water	D_w	=	**0.0000078**	cm^2/sec
soil bulk density	ρ_b	=	**1.7**	gm/cm^3 (site specific)
total soil porosity	η	=	**0.358**	unitless (calculated value based on site-specific bulk density and soil particle density)
water filled soil porosity	θ_w	=	**0.312**	unitless (calculated value based on calculated total soil porosity (equation S24))
air filled soil porosity	θ_a	=	**0.046**	unitless (calculated value based on calculated total soil porosity (equation S24))
default total soil porosity	$\eta_{(default)}$	=	**0.430**	unitless (default value from Appendix C; Table B)
default water filled soil porosity	θ_w	=	**0.300**	unitless (calculated value using default total soil porosity η)
default air filled soil porosity	θ_a	=	**0.130**	unitless (calculated value using default total soil porosity η)

Apparent Diffusivity D_A (cm^2/s)	Interim Calculated Value β_1 $= (\theta_a^{3.33} * D_i * H)$	Interim Calculated Value β_2 $= (\theta_w^{3.33} * D_w)$	Interim Calculated Value β_3 $= 1/[(\rho_b * K_d)+\theta_w+(\theta_a * H')]$	Air-Filled Soil Porosity θ_a (unitless)	Water-Filled Soil Porosity θ_w (unitless)	Soil-Water Partition K_d (cm^3/g)	Soil Porosity η (unitless)	Soil Bulk Density ρ_b (gm/cm^3)	Diffusivity in Air D_i (cm^2/sec)	Henry's Constant H' (unitless)	Diffusivity in Water D_w (cm^2/sec)
4.83426E-05	2.72294E-05	1.4155E-07	0.326571134	**0.130**	**0.300**	**1.600**	**0.430**	1.700	**0.075**	**0.324**	**0.0000078**

EQUATION FOR REMEDIATION OBJECTIVE - NONCARCINOGENICS
EQUATION S8 WORKSHEET - VOLATILIZATION FACTOR
ETHYLBENZENE
SOIL INHALATION EXPOSURE ROUTE - ORGANIC CONSTITUENTS
507 EAST WASHINGTON STREET
CHAMPAIGN, ILLINOIS
COMMERCIAL/INDUSTRIAL

$VF = Q/C * [(3.14*D_A*T)^{1/2}/(2*\rho_b*D_A)]*10^{-4}$

Site Setting Code **2** (residential=1; commercial=2; construction worker=3)

Q/C = **85.810** $(gm/m^2\text{-}s)/(kg/m^3)$ Inverse mean concentration @ center of square source

ρ_b = **1.7** gm/cm^3 (site specific) soil bulk density

Volatilization Factor **VF** **(mg^3/kg)**	Interim Calculated Value β_1 **$=(3.14*D_A*T)^{1/2}$**	Interim Calculated Value β_2 **$=(2*\rho_b*D_A)$**	Q/C (unitless)	Apparent Diffusivity D_A (cm^2/s)	Exposure Interval T (sec)	Exposure Duration ED (year)	Soil Bulk Density ρ_b (gm/cm^3)
18078.90813	**346.2928515**	**0.000164365**	**85.81**	**4.83426E-05**	790000000	25	**1.700**

EQUATION FOR AIR-FILLED POROSITY (θ_a), WATER-FILLED SOIL POROSITY (θ_w), PARTITION COEFFICIENT (K_d)
EQUATION S19, S20, S21, AND S24 WORKSHEET - SOIL PROPERTIES
ETHYLBENZENE
507 EAST WASHINGTON STREET
CHAMPAIGN, ILLINOIS
COMMERCIAL/INDUSTRIAL

$\eta = 1-(\rho_b)/(\rho_s)$

$\theta_a = \eta - \theta_w$

$\theta_w = \eta * (I/K_s)^{(1/(2b+3))}$

$Kd = K_{oc} * f_{oc}$

K_s	=	**8**	m/yr (by soil type)	saturated hydraulic conductivity
1/(2b+3)	=	**0.042**	unitless (by soil type)	exponential parameter
ρ_s	=	**2.65**	gm/cm^3 (default value)	soil particle density
f_{oc}	=	**0.005**	gm/gm (site specific)	fraction organic carbon content
ρ_b	=	**1.7**	gm/cm^3 (site specific)	soil bulk density
η	=	**0.43**	unitless (by soil type)	total soil porosity (default)
θ_a	=	**0.13**	unitless (by soil type)	air-filled soil porosity (default)
θ_w	=	**0.3**	unitless (by soil type)	water-filled soil porosity (default)
K_{oc}	=	**320**	cm^3/g	Organic Carbon Partition Coefficient
I	=	0.3	meters/year (default value)	infiltration rate

Use Equation S24 for total soil porosity (η)	Calculated Water-Filled Soil Porosity θ_w unitless	Calculated Air-Filled Soil Porosity θ_a unitless	Default Water-Filled Soil Porosity θ_w unitless	Default Air-Filled Soil Porosity θ_a unitless	Constant Value 1/(2b+3) (unitless)	Saturated Hydraulic Conductivity K_s (m/yr)	Infiltration Rate I (m/yr)	Soil-Water Partition K_d (cm^3/g)	Organic Carbon Partition Coefficient K_{oc} (cm^3/g)	Fraction Organic Carbon f_{oc} (gm/gm)	Default Porosity Soil η (default) (unitless)	Calculated Soil Porosity η (unitless)	ρ_b ρ_b (gm/cm^3)	ρ_s ρ_s (gm/cm^3)
YES	**0.312**	**0.046**			**0.042**	**8**	0.3	**1.6**	**320**	**0.005**		**0.358**	**1.7**	**2.65**
NO			**0.300**	**0.130**							**0.43**			

TIER 2 EVALUATION
SOIL INHALATION, CONSTRUCTION WORKER EXPOSURE

DATA INPUT PARAMETERS		INPUT VALUES BELOW	UNITS	SOURCE
Constituent Site Name Site Location Sample Location Sample Depth		**ETHYLBENZENE** **507 EAST WASHINGTON STREET** **CHAMPAIGN, ILLINOIS**		
Constituent based parameters				
Organic-carbon partition coefficient	K_{oc}	320	cm^3/g	Default Value (TACO 742 Appendix C, Table E)
Henry's Constant	H'	0.324	l/gm	Default Value (TACO 742 Appendix C, Table E)
Solubility	S	170	mg/l	Default Value (TACO 742 Appendix C, Table E)
Diffusivity in Air	D_i	0.075	cm2/sec	Default Value (TACO 742 Appendix C, Table E)
Diffusivity in Water	D_w	7.80E-06	cm2/sec	Default Value (TACO 742 Appendix C, Table E)
Inhalation Reference Concentration	$R f C$	1.00E+00	mg/m3	Integrated Risk Information System (IRIS) EPA Database

FOR SSL EQUATIONS - S4, S5, S8, S10, S19, S20, S21, and S24

Site Specific Data

Site Setting - Residential/Commercial/Construction Worker		**3**	**Enter 1 for residential, 2 for commercial, 3 for construction worker**	
Fraction organic carbon content	f_{oc}	0.005	gm/gm	Site Specific f_{oc} from B-814
Soil bulk density	ρ_b	1.7	gm/cm^3	Default Value (TACO 742 Appendix C, Table B)
Soil particle density	ρ_s	2.65	gm/cm^3	Default Value (TACO 742 Appendix C, Table B)
Air-filled soil porosity	θ_a	0.13	unitless	Default Value (TACO 742 Appendix C, Table B)
Water-filled soil porosity	θ_w	0.3	unitless	Default Value (TACO 742 Appendix C, Table B)
Total porosity	η	0.43	unitless	Default Value (TACO 742 Appendix C, Table B)

Conditions: Use equation S24 for calculating total soil porosity? **2**

1 = YES
2 = NO

Soil Type Specific

Saturated hydraulic conductivity	K_s	8	m/yr	Default Value (TACO 742 Appendix C, Table K)
Exponential parameter	1/(2b+3)	0.042	unitless	Default Value (TACO 742 Appendix C, Table K)

EQUATION FOR REMEDIATION OBJECTIVE - NONCARCINOGENICS
EQUATION S4 AND S5 WORKSHEET - REMEDIATION OBJECTIVES
ETHYLBENZENE
SOIL INHALATION EXPOSURE ROUTE - ORGANIC CONSTITUENTS
507 EAST WASHINGTON STREET
CHAMPAIGN, ILLINOIS
CONSTRUCTION WORKER

RO = THQ * AT * 365 / [EF * ED * ((1/R*f*C) * (1/VF))]

Site Setting Code = **3** (residential=1; commercial=2; construction worker=3)
R*f*C = **1** mg/m^3 **Inhalation Reference Concentration**

Borehole Location	Depth Interval (feet)	**RO** Remediation Objective (mg/kg)	Target Hazard Quotient THQ (unitless)	Average Time AT (year)	Exposure Frequent EF (day/year)	Exposure Duration ED (year)	Inhalation Reference Concentration R*f*C (mg/m^3)	Volatilization Factor for Construction Worker VF' (m^3/kg)	Volatilization Factor VF (m^3/kg)
0	0	**170.7573**	1	0.115	30	1	**1.000**	122.042	1220.422

ETHYLBENZENE
507 EAST WASHINGTON STREET
CHAMPAIGN, ILLINOIS
CONSTRUCTION WORKER

$\eta = 1-(\rho_b)/(\rho_s)$

$\theta_a = \eta - \theta_w$

$\theta_w = \eta * (I/K_s)^{(1/(2b+3))}$

$Kd = K_{oc} * f_{oc}$

K_s	=	8	m/yr (by soil type)	saturated hydraulic conductivity
1/(2b+3)	=	0.042	unitless (by soil type)	exponential parameter
ρ_s	=	2.65	gm/cm^3 (default value)	soil particle density
f_{oc}	=	0.005	gm/gm (site specific)	fraction organic carbon content
ρ_b	=	1.7	gm/cm^3 (site specific)	soil bulk density
η	=	0.43	unitless (by soil type)	total soil porosity (default)
θ_a	=	0.13	unitless (by soil type)	air-filled soil porosity (default)
θ_w	=	0.3	unitless (by soil type)	water-filled soil porosity (default)
K_{oc}	=	320	cm^3/g	Organic Carbon Partition Coefficient
I	=	0.3	meters/year (default value)	infiltration rate

Use Equation S24 for total soil porosity (η)	Calculated Water-Filled Soil Porosity θ_w unitless	Calculated Air-Filled Soil Porosity θ_a unitless	Default Water-Filled Soil Porosity θ_w unitless	Default Air-Filled Soil Porosity θ_a unitless	Constant Value 1/(2b+3) (unitless)	Saturated Hydraulic Conductivity K_s (m/yr)	Infiltration Rate I (m/yr)	Soil-Water Partition K_d (cm^3/g)	Organic Carbon Partition Coefficient K_{oc} (cm^3/g)	Fraction Organic Carbon f_{oc} (gm/gm)	Default Porosity Soil $\eta_{(default)}$ (unitless)	Calculated Soil Porosity η (unitless)	ρ_b ρ_b (gm/cm^3)	ρ_s ρ_s (gm/cm^3)
YES	0.312	0.046			0.042	8	0.3	1.6	320	0.005		0.358	1.7	2.65
NO			0.300	0.130							0.43			

SOIL INHALATION EXPOSURE ROUTE - ORGANIC CONSTITUENTS
507 EAST WASHINGTON STREET
CHAMPAIGN, ILLINOIS
CONSTRUCTION WORKER

$D_A = [[(\theta_a^{3.33} * D_i * H') + (\theta_w^{3.33} * D_w)]/\eta^2] * [1/((\rho_b * K_d)+\theta_w+(\theta_a * H'))]$

Henry's constant	H'	=	**0.324**	unitless (default value)
Diffusivity in Air	D_i	=	**0.075**	cm^2/sec
Diffusivity in Water	D_w	=	**0.0000078**	cm^2/sec
soil bulk density	ρ_b	=	**1.7**	gm/cm^3 (site specific)
total soil porosity	η	=	**0.358**	unitless (calculated value based on site-specific bulk density and soil particle density)
water filled soil porosity	θ_w	=	**0.312**	unitless (calculated value based on calculated total soil porosity (equation S24))
air filled soil porosity	θ_a	=	**0.046**	unitless (calculated value based on calculated total soil porosity (equation S24))
default total soil porosity	$\eta_{(default)}$	=	**0.430**	unitless (default value from Appendix C; Table B)
default water filled soil porosity	θ_w	=	**0.300**	unitless (calculated value using default total soil porosity η)
default air filled soil porosity	θ_a	=	**0.130**	unitless (calculated value using default total soil porosity η)

Apparent Diffusivity D_A (cm^2/s)	Interim Calculated Value β_1 $= (\theta_a^{3.33} * D_i * H)$	Interim Calculated Value β_2 $= (\theta_w^{3.33} * D_w)$	Interim Calculated Value β_3 $= 1/[(\rho_b * K_d)+\theta_w+(\theta_a * H')]$	Air-Filled Soil Porosity θ_a (unitless)	Water-Filled Soil Porosity θ_w (unitless)	Soil-Water Partition K_d (cm^3/g)	Soil Porosity η (unitless)	Soil Bulk Density ρ_b (gm/cm^3)	Diffusivity in Air D_i (cm^2/sec)	Henry's Constant H' (unitless)	Diffusivity in Water D_w (cm^2/sec)
4.83426E-05	2.72294E-05	1.4155E-07	0.326571134	**0.130**	**0.300**	**1.600**	**0.430**	1.700	**0.075**	**0.324**	**0.0000078**

EQUATION FOR REMEDIATION OBJECTIVE - NONCARCINOGENICS
EQUATION S8 WORKSHEET - VOLATILIZATION FACTOR
ETHYLBENZENE
SOIL INHALATION EXPOSURE ROUTE - ORGANIC CONSTITUENTS
507 EAST WASHINGTON STREET
CHAMPAIGN, ILLINOIS
CONSTRUCTION WORKER

$$VF = Q/C * [(3.14*D_A*T)^{1/2}/(2*\rho_b*D_A)]*10^{-4}$$

Site Setting Code **3** (residential=1; commercial=2; construction worker=3)

Q/C = **85.810** $(gm/m^2\text{-}s)/(kg/m^3)$ Inverse mean concentration @ center of square source

ρ_b = **1.7** gm/cm^3 (site specific) soil bulk density

Volatilization Factor **VF** **(mg^3/kg)**	Interim Calculated Value β_1 **$=(3.14*D_A*T)^{1/2}$**	Interim Calculated Value β_2 **$=(2*\rho_b*D_A)$**	Q/C (unitless)	Apparent Diffusivity D_A (cm^2/s)	Exposure Interval T (sec)	Exposure Duration ED (year)	Soil Bulk Density ρ_b (gm/cm^3)
1220.421648	**23.37659384**	**0.000164365**	**85.81**	**4.83426E-05**	3600000	1	**1.700**

TABLE AA
CALCULATION OF THE DISTANCE TO MEET TIER 1 ROs FOR THE
SOIL COMPONENT OF THE GROUND WATER INGESTION EXPOSURE PATHWAY
507 E WASHINGTON STREET
CHAMPAIGN , ILLINOIS

Parameter	*CAS #*	*Maximum Concentration (mg/kg)*	*Location*	*Source Width (Parallel to GW flow in horizontal plane) (feet)*	*Source Width (Perpendicular to GW flow in horizontal plane) (feet)*	*Distance from Source to Compliance Point [1] (feet)*	*Class II GW RO for SCGW Pathway (mg/L)*	*Distance from Source to Meet Tier 1 GW RO [2] (feet)*	*Calculated Ground Water Concentration at Distance X (mg/L)*
Benzene	71-43-2	3.16	B-846 (20-21')	90	66	100	0.025	86	2.45E-02
Ethyl benzene	100-41-4	62.8	B-847 (22-23')	90	66	100	1.0	13	9.48E-01

Key:

GW = Ground water
NA = Not applicable; the ground water concentration at the source is below the Tier 1 Class I GW RO (see Appendix Table X-2).
RO = Remediation objective
SCGW = Soil component of ground water

[1] TACO compounds ROs are from IEPA's TACO of July 15, 2013.
[2] Distance was varied until the Class I ground water RO for the SCGW pathway was met.

TABLE BB
CALCULATION OF THE DISTANCE TO MEET SURFACE WATER QUALITY CRITERIA FOR THE SOIL COMPONENT OF THE GROUND WATER INGESTION PATHWAY
507 EAST WASHINGTON STREET
CHAMPAIGN, I LLINOIS

Parameter	*Maximum Soil Concentration (mg/kg)*	*Location*	*Source Width (Parallel to GW flow in horizontal plane) (feet)*	*Source Width (Perpendicular to GW flow in horizontal plane) (feet)*	*Distance from Source to Surface Water (feet)*	*Surface Water Quality Criteria [1] (mg/L)*	*Distance from Source to Meet Surface Water Quality Criteria [2] (feet)*	*Ground Water Concentration at the Source [2] Csource (mg/L)*	*Calculated Ground Water Concentration at Distance X to Meet Criteria (mg/L)*
Benzene	3.16	B-846 (20-21')	90	60	1700	3.10E-01	23	7.00E-01	3.08E-01
Ethyl benzene	62.8	B-847 (22-23')	90	60	1700	1.40E-02	63	4.05E+00	1.36E-02

Key:

GW = Ground water
IEPA = Illinois Environmental Protection Agency
NE = IEPA has not developed a Surface Water Quality Criterion for this compound
NA = Not applicable
RO = Remediation objective
SCGWI = Soil component of ground water

[1] Surface Water Quality Criteria are from 35 IAC 302 or the IEPA Derived Water Quality Standards list.
[2] ERM varied the distance until the Surface Water Quality Criteria was met.

APPENDIX F, TABLE F-1
CALCULATION OF STEADY-STATE ATTENUATION ALONG THE CENTERLINE OF A DISSOLVED PLUME
DISTANCE TO TIER 1 RO CALCULATION
507 EAST WASHINGTON STREET
CHAMPAIGN , ILLINOIS

Analyte	CAS #	*Distance from Downgradient Edge of Plume* X *(cm)*	*Longitudinal Dispersivity* α_x *(cm)*	*Transverse Dispersivity* α_y *(cm)*	*Vertical Dispersivity* α_z *(cm)*	*First Order Degradation Constant* λ *(day-1)*	*Organic Carbon-Water Partition Coefficient* k_{oc} *(cm3 water/g carbon)*	*Organic Carbon Content of Soil* foc *(g carbon/g soil)*	*Soil-Water Partition Coefficient* k_s *(cm3 water/g soil)*	*Total Soil Porosity* θ_t *(cm3 air/cm3 soil)*	*Soil Bulk Density* ρ_s *(g soil/cm3 soil)*	*Aquifer Hydraulic Conductivity* K *(cm/s)*	*Hydraulic Gradient* i *(cm/cm)*	*Specific Discharge* U *(cm/day)*	*Source Width (perpendicular to flow in horizontal plane)* S_w *(cm)*	*Source Width (perpendicular to flow in vertical plane)* S_d *(cm)*	*First Term Dispersion and Decay*	*Second Term Transverse Dispersion*	*Third Term Vertical Dispersion*	*Steady-State Attenuation Along Centerline of Dissolved Plume* *C[x]/C[source]*
Benzene	71-43-2	2,621.3	2.62E+02	8.74E+01	1.31E+01	9.00E-04	5.00E+01	2.00E-03	1.00E-01	0.36	1.7	4.26E-05	0.070	7.16E-01	2.01E+03	2.00E+02	7.33E-02	8.63E-01	5.55E-01	3.51E-02
Ethyl benzene	100-41-4	396.24	3.96E+01	1.32E+01	1.98E+00	3.00E-03	3.20E+02	2.00E-03	6.40E-01	0.36	1.7	4.26E-05	0.070	7.16E-01	2.01E+03	2.00E+02	2.34E-01	1.00E+00	1.00E+00	2.34E-01

Key:

GW = Ground water
NA = Not applicable
RO = Remediation objective
SCGWI = Soil component of the ground water ingestion pathway

Data Sources:

X = Distance at which the detected concentrations would meet the Tier 1 RO for Class I ground water, varied until the Tier 1 RO for the Class I ground water ingestion exposure route was met
K = Slug testing data from 2011
i = Estimated maximum site gradient
foc = Default subsurface concentration
Sw = Source width for waste area where analyte was detected at the highest concentration
λ = From TACO's Appendix C, Table E
All other = Default values in Tiered Approach to Corrective Action Objectives (July 15, 2013)

APPENDIX F - TABLE F-2
CALCULATION OF CONCENTRATION AT THE DISTANCE TO MEET THE TIER 1 RO
SOIL COMPONENT OF THE CLASS I GROUND WATER INGESTION PATHWAY
507 EAST WASHINGTON STREET
CHAMPAIGN, ILLINOIS

Analyte	*CAS #*	*C[x]/C[source] Steady-State Attenuation Along Centerline of Dissolved Plume* [1]	*Dilution Factor DF (unitless)*	*Henry's Law Constant H (unitless)*	*Organic Carbon-Water Partition Coefficient k_{OC} (cm^3/g)*	*Soil-Water Partition Coefficient K_d (cm^3/g)*	*Solubility S (mg/L)*	*Concentration in Soil at the Source (mg/kg)*	*Soil Leachate Concentration C_w (mg/L)*	*Ground Water Concentration at the Source* [2] *C_{source} (mg/L)*	*Ground Water Concentration at Calculated Distance (mg/L)*
Benzene	71-43-2	3.51E-02	20	2.30E-01	5.00E+01	1.00E-01	1.80E+03	3.16E+00	1.40E+01	0.70	0.0245
Ethyl benzene	100-41-4	2.34E-01	20	3.24E-01	3.20E+02	6.40E-01	1.70E+02	6.28E+01	8.09E+01	4.05	0.948

Key:
NA = Not applicable
RO = Remediation objective
SCGWI = Soil component of the ground water ingestion pathway

[1] See Table X-1 for the calculations.
[2] This calculation uses the minimum of the calculated target soil leachate concentration and the solubility to calculate the ground water concentration.

Table F-3
Variables

		Pick from this list
Site Name:	507 East Washington Street	Default Geology
Location:	Champaign, IL	Surficial soil (default)
Date:	1/16/2021	Subsurface soil (default)
		Gravel
		Sand
		Silt
Soil Type:	Clay	Clay
		Site Specific
Do you wish to consider retardation (Y/N)	N	
Do you wish to use the Domenico equation (Y/N)	Y	

Variable	Description	Units	Value	
θ_a	Volumetric Air Content in Vadose Zone Soils	cm3 air/cm3 total volume	0.19	
θ_w	Volumetric Water Content in Vadose Zone Soils	cm3 water/cm3 total volum	0.17	
η/θ_T	Total Soil Porosity	cm3 air/cm3 soil	0.36	
ρ_b/ρ_s	Soil Bulk Density	g soil/cm3 soil	1.7	
f_{oc}	Fraction of Organic Carbon in Soil	g Carbon/g soil	0.002	
d	Ground Water Mixing Zone Thickness	cm	200	
I	Infiltration Rate	cm/yr	30	
K	Saturated Hydraulic Conductivity	cm/s	4.26E-05	Highest geometric mean from 2011 test results around the site
i	Ground Water Gradient	cm/cm	0.0700	Highest estimated gradient in top 25 feet from ground surface, Class II ground water
S_d	Source Width (perpendicular to flow in vertical plane)	cm	200	

APPENDIX G, TABLE G-1
CALCULATION OF STEADY-STATE ATTENUATION ALONG THE CENTERLINE OF A DISSOLVED PLUME
DISTANCE TO MEET SURFACE WATER QUALITY CRITERIA CALCULATION
507 EAST WASHINGTON STREET
CHAMPAIGN, ILLINOIS

Analyte	CAS #	*Distance from Downgradient Edge of Plume* X *(cm)*	*Longitudinal Dispersivity* α_x *(cm)*	*Transverse Dispersivity* α_y *(cm)*	*Vertical Dispersivity* α_z *(cm)*	*First Order Degradation Constant* λ *(day-1)*	*Organic Carbon-Water Partition Coefficient* k_{oc} *(cm3 water/g carbon)*	*Organic Carbon Content of Soil* foc *(g carbon/g soil)*	*Soil-Water Partition Coefficient* k_s *(cm3 water/g soil)*	*Total Soil Porosity* θ_t *(cm3 air/cm3 soil)*	*Soil Bulk Density* ρ_s *(g soil/cm3 soil)*	*Aquifer Hydraulic Conductivity* K *(cm/s)*	*Hydraulic Gradient* i *(cm/cm)*	*Specific Discharge* U *(cm/day)*	*Source Width (perpendicular to flow in horizontal plane)* S_w *(cm)*	*Source Width (perpendicular to flow in vertical plane)* S_d *(cm)*	*First Term Dispersion and Decay*	*Second Term Transverse Dispersion*	*Third Term Vertical Dispersion*	*Steady-State Attenuation Along Centerline of Dissolved Plume* *C[x]/C[source]*
Benzene	71-43-2	701.0	7.01E+01	2.34E+01	3.51E+00	9.00E-04	5.00E+01	2.00E-03	1.00E-01	0.36	1.7	4.26E-05	0.070	7.16E-01	1.83E+03	2.00E+02	4.43E-01	1.00E+00	9.96E-01	4.41E-01
Ethyl benzene	100-41-4	1,920.2	1.92E+02	6.40E+01	9.60E+00	3.00E-03	3.20E+02	2.00E-03	6.40E-01	0.36	1.7	4.26E-05	0.070	7.16E-01	1.83E+03	2.00E+02	5.14E-03	9.35E-01	7.02E-01	3.37E-03

Data Sources:

X = Distance at which the detected concentrations would meet the Surface Water Quality Criteria, varied until the Surface Water Quality Criteria was met
K = Slug testing data from 2011
i = Estimated maximum site gradient
foc = Default subsurface concentration
Sw = Source width for waste area where analyte was detected at the highest concentration
λ = From TACO's Appendix C, Table E
All other = Default values in Tiered Approach to Corrective Action Objectives (July 15, 2013)

APPENDIX G, TABLE G-2
CALCULATION OF CONCENTRATION AT THE DISTANCE TO MEET THE SURFACE WATER QUALITY CRITERIA
SOIL COMPONENT OF THE GROUND WATER INGESTION PATHWAY
507 EAST WASHINGTON STREET
CHAMPAIGN, ILLINOIS

Analyte	*CAS #*	*C[x]/C[source] Steady-State Attenuation Along Centerline of Dissolved Plume* [1]	*Dilution Factor DF (unitless)*	*Henry's Law Constant H (unitless)*	*Organic Carbon-Water Partition Coefficient k_{OC} (cm^3/g)*	*Soil-Water Partition Coefficient K_d (cm^3/g)*	*Solubility S (mg/L)*	*Concentration in Soil at the Source (mg/kg)*	*Soil Leachate Concentration C_w (mg/L)*	*Ground Water Concentration at the Source* [2] *C_{source} (mg/L)*	*Calculated Ground Water Concentration at Distance X to Meet Criteria (mg/L)*
Benzene	71-43-2	4.41E-01	20	2.30E-01	5.00E+01	1.00E-01	1.80E+03	3.16E+00	1.40E+01	7.00E-01	3.08E-01
Ethyl benzene	100-41-4	3.37E-03	20	3.24E-01	3.20E+02	6.40E-01	1.70E+02	6.28E+01	8.09E+01	4.05E+00	1.36E-02

Key:
NA = Not applicable
RO = Remediation objective

[1] See Table X-3 for the calculations.
[2] This calculation uses the minimum of the calculated target soil leachate concentration and the solubility to calculate the ground water concentration.

APPENDIX G, TABLE G-2
CALCULATION OF CONCENTRATION AT THE DISTANCE TO MEET THE SURFACE WATER QUALITY CRITERIA
SOIL COMPONENT OF THE GROUND WATER INGESTION PATHWAY
507 EAST WASHINGTON STREET
CHAMPAIGN, ILLINOIS

Table G-3
Variables

		Pick from this list
Site Name:	507 East Washington Street	Default Geology
Location:	Champaign, IL	Surficial soil (default)
Date:	1/16/2021	Subsurface soil (default)
		Gravel
		Sand
		Silt
Soil Type:	Clay	Clay
		Site Specific
Do you wish to consider retardation (Y/N)	N	
Do you wish to use the Domenico equation (Y/N)	Y	

Variable	Description	Units	Value	
θ_a	Volumetric Air Content in Vadose Zone Soils	cm3 air/cm3 total volume	0.19	
θ_w	Volumetric Water Content in Vadose Zone Soils	cm3 water/cm3 total volum	0.17	
η/θ_T	Total Soil Porosity	cm3 air/cm3 soil	0.36	
ρ_b/ρ_s	Soil Bulk Density	g soil/cm3 soil	1.7	
f_{oc}	Fraction of Organic Carbon in Soil	g Carbon/g soil	0.002	
d	Ground Water Mixing Zone Thickness	cm	200	
I	Infiltration Rate	cm/yr	30	
K	Saturated Hydraulic Conductivity	cm/s	4.26E-05	Highest geometric mean from 2011 test results around the site
i	Ground Water Gradient	cm/cm	0.0700	Highest estimated gradient in top 25 feet from ground surface, Class II ground water
S_d	Source Width (perpendicular to flow in vertical plane)	cm	200	

Distance to nearest surface water

Boneyard Creek west-southwest of the Site

Appendix G

Environmental Land Use Control to be Applied to the Site

Environmental Land Use Control

PREPARED BY:

Name: ____________________

Address: ____________________
____

RETURN TO:

Name: ____________________

Address: ____________________
____

THE ABOVE SPACE FOR RECORDER'S OFFICE

Environmental Land Use Control

THIS ENVIRONMENTAL LAND USE CONTROL ("ELUC"), is made this ________ day of______________, 20__, by Ameren Services, ("Property Owner") of the real property located at the common address 507 East Washington Street, Champaign, IL 61820 ("Property").

WHEREAS, 415 ILCS 5/58.17 and 35 Ill. Adm. Code 742 provide for the use of an ELUC as an institutional control in order to impose land use limitations or requirements related to environmental contamination so that persons conducting remediation can obtain a No Further Remediation determination from the Illinois Environmental Protection Agency ("IEPA"). The reason for an ELUC is to ensure protection of human health and the environment. The limitations and requirements contained herein are necessary in order to protect against exposure to contaminated soil, groundwater, or soil gas that may be present on the property as a result of previous manufactured gas plant activities. Under 35 Ill. Adm. Code 742, the use of risk-based, site-specific remediation objectives may require the use of an ELUC on real property, and the ELUC may apply to certain physical features (e.g., engineered barriers, indoor inhalation building control technologies, monitoring wells, caps, etc.).

WHEREAS, Ameren Services intends to request risk-based, site specific soil, groundwater, or soil gas remediation objectives from IEPAunder 35 Ill. Adm. Code 742 to obtain risk-based closure of the site, identified by Bureau of Land 0190100008, utilizing an ELUC.

NOW, THEREFORE, the recitals set forth above are incorporated by reference as if fully set forth herein, and the Property Owner agrees as follows:

Section One. Property Owner does hereby establish an ELUC on the real estate, situated in the County of Champaign, State of Illinois and further described in Exhibit A attached hereto and incorporated herein by reference (the "Property").

Attached as Exhibit B are site maps that show the legal boundary of the Property, any physical features to which the ELUC applies, the horizontal and vertical extent of the contaminants of concern above the applicable remediation objectives for soil, groundwater, or soil gas, and the nature, location of the source, and direction of movement of the contaminants of concern, as required under 35 Ill. Adm. Code 742.

Section Two. Property Owner represents and warrants it is the current owner of the Property and has the authority to record this ELUC on the chain of title for the Property with the Office of the Recorder or Registrar of Titles in Champaign County, Illinois.

Section Three. The Property Owner hereby agrees, for itself, and its heirs, grantees, successors, assigns, transferees and any other owner, occupant, lessee, possessoror user of the Property or the holder of any portion thereof or interest therein, that

Parcel 46-21-07-332-018 in its entirety:

1. Construction worker notification is required for any surface or subsurface excavation or work. Construction workers must be notified of conditions at the Property exceeding worker protection ROs, and any future constructions activities shall be conducted in accordance with applicable OSHA HAZWOPER regulations pursuant to 29 CFR 1910.120; and
2. The groundwater under the Property shall not be used as a potable supply of water, installation of groundwater supply wells is prohibited, and any contaminated groundwater that is removed or disturbed from the Property described in Exhibit A must be handled in accordance with all applicable laws and regulations;

Section Four. This ELUC is binding on the Property Owner, its heirs, grantees, successors, assigns, transferees and any other owner, occupant, lessee, possessor or user of the Property or the holder of any portion thereof or interest therein. This ELUC shall apply in perpetuity against the Property and shall not be released until the IEPA determines there is no longer a need for this ELUC as an institutional control; until the IEPA, upon written request, issues to the site that received the no further remediation determination a new no further remediation determination approving modification or removal of the limitation(s) or requirement(s); the new no further remediation determination is filed on the chain of title of the site subject to the no further remediation determination; and until a release or modification of the land use limitation or requirement is filed on the chain of title for the Property.

Section Five. Information regarding the remediation performed on the Property may be obtained from the IEPA through a request under the Freedom of Information Act (5 ILCS 140) and rules promulgated thereunder by providing the IEPA with the 0190100008 identification number listed above.

Section Six. The effective date of this ELUC shall be the date that it is officially recorded in the chain of title for the Property to which the ELUC applies.

WITNESS the following signatures:

Property Owner(s)

By:____

Its: ____

Date: ____

STATE OF ILLINOIS)
) SS:
COUNTY OF)

I,____________________________the undersigned, a Notary Public for said County and State, DO HEREBY CERTIFY, that_____________________and____________________, personally known to me to be the Property Owner(s) of__________________________, and personally known to me to be the same persons whose names are subscribed to the foregoing instrument, appeared before me this day in person and severally acknowledged that in said capacities they signed and delivered the said instrument as their free and voluntary act for the uses and purposes therein set forth.

Given under my hand and official seal, this______day of____________________, 20_.

Notary Public

STATE OF __________)
) S.S.
COUNTY OF _________)

I,_______________, a notary public, do hereby certify that before me this day in person appeared ____________________________, personally known to me to be the Property Owner(s), of _________________________, each severally acknowledged that they signed and delivered the foregoing instrument as the Property Owner(s) herein set forth, and as their own free and voluntary act, for the uses and purposes herein set forth.

Given under my hand and seal this_________day of________________, 20_.

Notary Public

PIN NO. 46-21-07-332-018
(Parcel Index Number)

Exhibit A

The subject property is located in the City of Champaign, Champaign County, State of Illinois, commonly known as 308 North Fifth Street, Champaign, Illinois and moreparticularly described as:

COMMON ADDRESS:

507 East Washington Street, Champaign, IL 61820

LEGAL DESCRIPTION:

Lot 3 in Block 29 of Seminary Addition to Urbana, now part of the City of Champaign, less the railroad right-of-way through said Lot, as per plat recorded in Deed Record “T” at Page 30, situated in Champaign County, Illinois

REAL ESTATE TAX INDEX OR PARCEL #
(PURSUANT TO SECTION 742. 1010(d)(2)):

Parcel # 46-21-07-330-005

PIN NO. 46-21-07-332-018

Exhibit B

IN ACCORDANCE WITH SECTION 742.1010(d)(8)(A) through (D), PROVIDE ALL THE FOLLOWING ELEMENTS. ATTACH SEPARATE SHEETS, LABELED AS EXHIBIT B, WHERE NECESSARY.

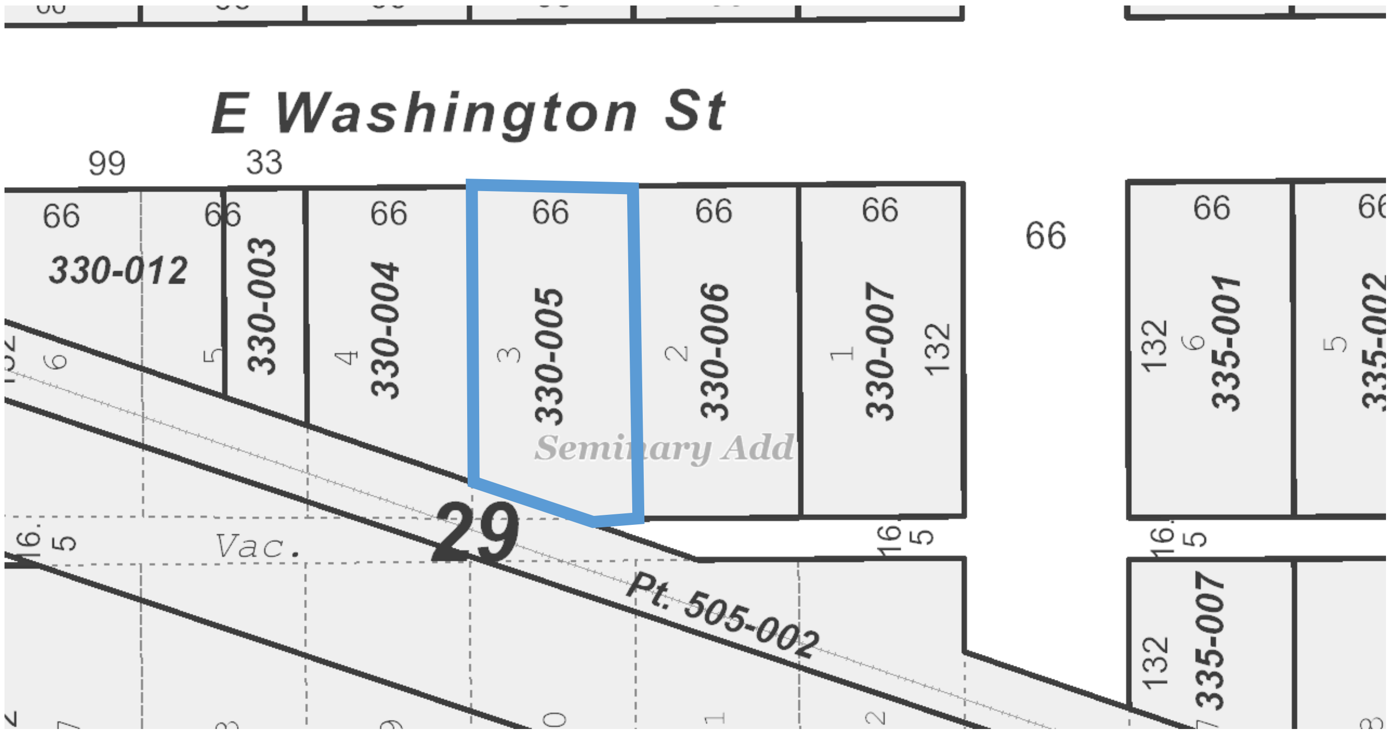
(A) A scaled map showing the legal boundary of the property to which the ELUC applies.

(B) Scaled maps showing the horizontal and vertical extent of contaminants of concern above the applicable remediation objectives for soil, groundwater, and soil gas to which the ELUC applies.

(C) Scaled maps showing the physical features to which an ELUC applies (e.g., engineered barriers, indoor inhalation building control technologies, monitoring wells, caps, etc.).

(D) Scaled maps showing the nature, location of the source, and direction of movement of the contaminants of concern.

(Source: Amended at 37 Ill. Reg. 7506, effective July 15



N

50 feet

Legend — Property Boundary

Source: Champaign County GIS https://www.maps.ccgisc.org/public/Default.aspx#

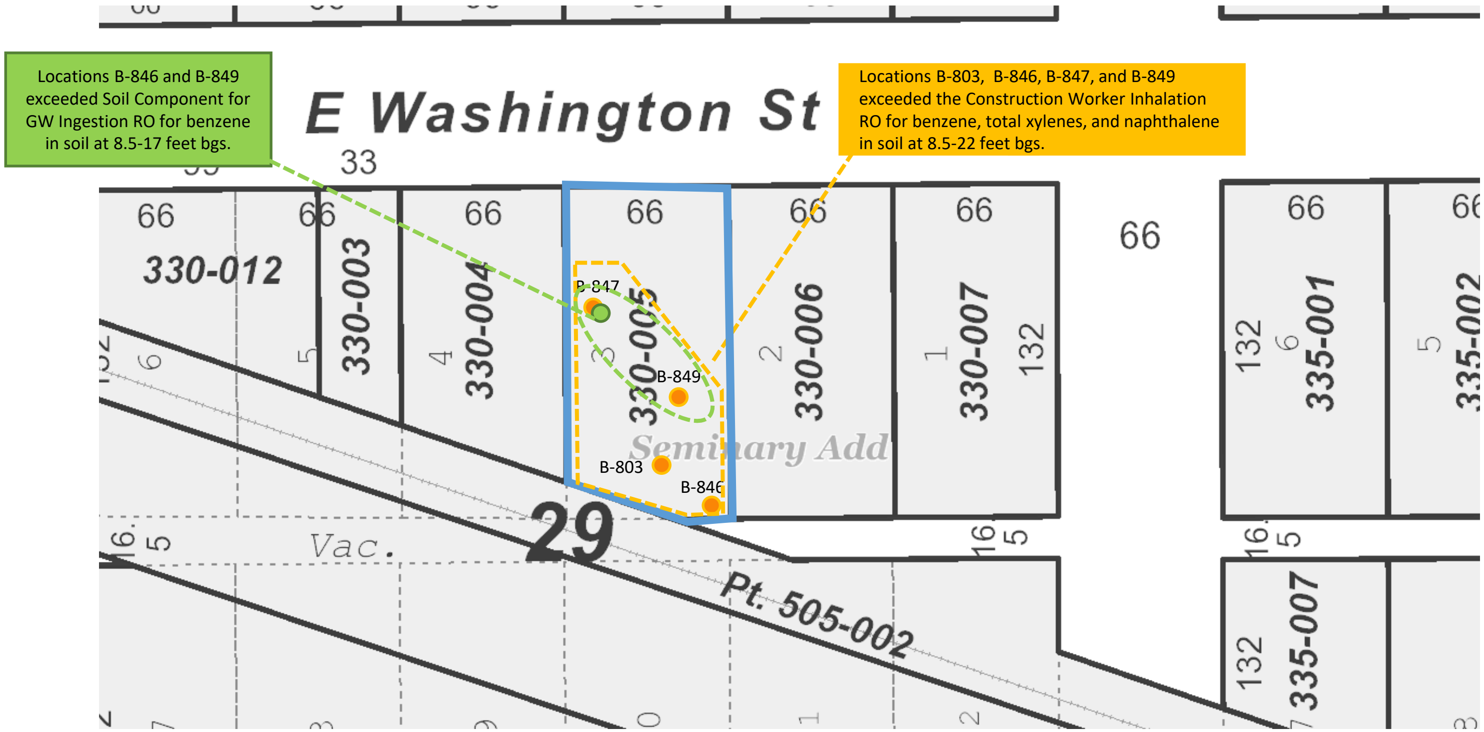
ERM Inc.
2 CityPlace
Suite 70
St. Louis, MO 63141
Ph: +1 913 981 9416

Property for Environmental Land Use Control

507 East Washington Street, Champaign, IL

Exhibit:

B-A



N

50 feet

Source: *Champaign County GIS https://www.maps.ccgisc.org/public/Default.aspx#*

Legend

Property Boundary

- **Extent of GW Use Restriction ELUC**
- **Extent of Construction Worker Notification ELUC**

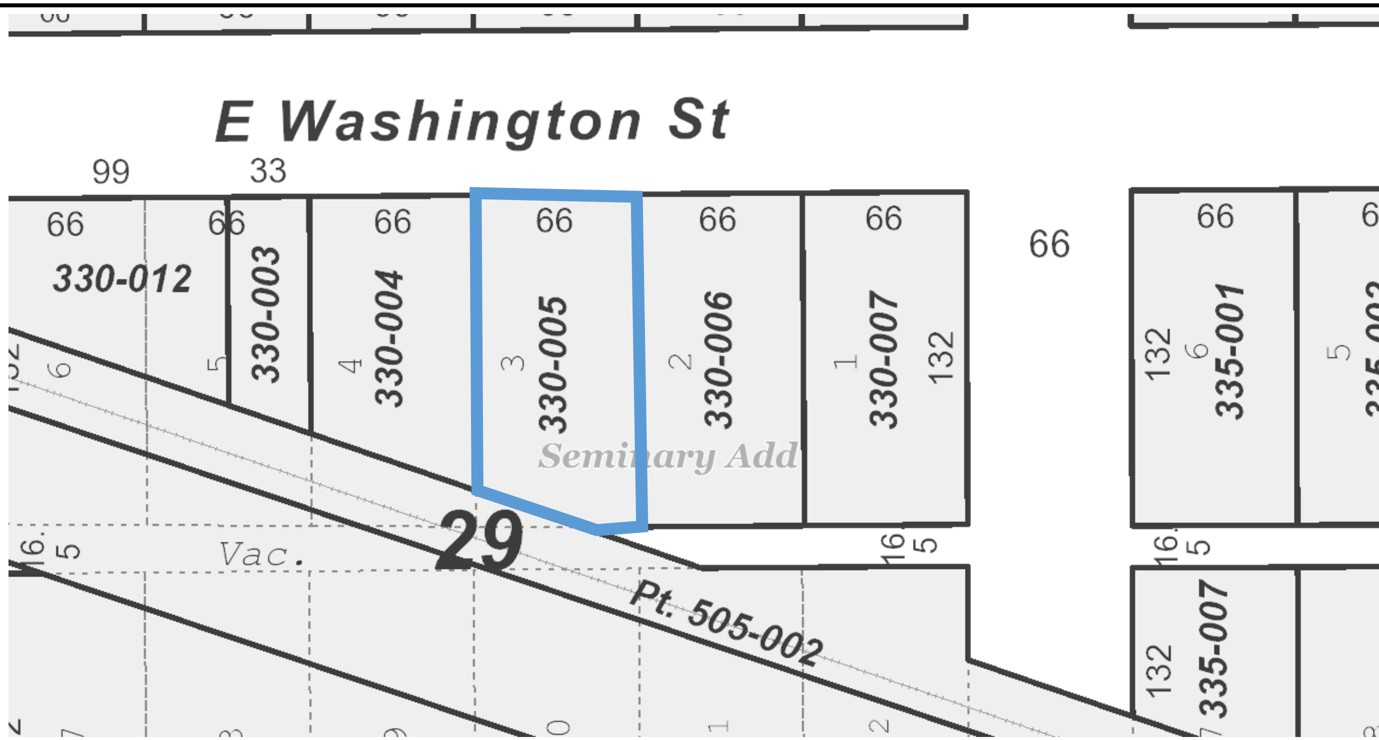
ERM Inc.
2 CityPlace
Suite 70
St. Louis, MO 63141
Ph: +1 913 981 9416

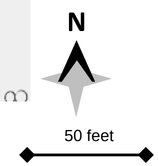
Contaminants of Concern – Locations and Media

507 East Washington Street, Champaign, IL

Exhibit:

B-B





Legend

Property Boundary

- **Extent of GW Use Restriction ELUC**
- **Extent of Construction Worker Notification ELUC**

Source: Champaign County GIS https://www.maps.ccgisc.org/public/Default.aspx#

ERM Inc.
2 CityPlace
Suite 70
St. Louis, MO 63141
Ph: +1 913 981 9416

Extent of Institutional Controls

507 East Washington Street, Champaign, IL

Exhibit:

B-C