

R E P O R T

SUBSURFACE INVESTIGATION

Route 111/Rand Avenue Vicinity Investigation Roxana, Illinois

Prepared for:

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August 2008

Revised January 21, 2009



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EXECUTIVE SUMMARY

Shell Oil Products US (SOPUS) conducted subsurface investigation activities at and outside the WRB Refining LLC (WRB) Wood River Refinery (WRR) in Roxana, Illinois. The investigation area is generally located in a mixed use area (e.g., commercial/industrial and residential). The purpose of the investigation was to further assess a benzene release which apparently occurred from an underground line on January 30, 1986. URS Corporation (URS), on behalf of SOPUS, performed an initial study in 2006 to help gather information on the extent of the benzene impact. The work described in this report was conducted based on a work plan *provided submitted* to the Illinois Environmental Protection Agency (IEPA) on February 15, 2008. *The IEPA provided comments regarding implementation of the work.*

This report was initially submitted to IEPA in August 2008 and IEPA provided comments on this report in a letter dated November 25, 2008. Based on IEPA's November 25, 2008 letter, this report has been revised. The "Response to Comments" document summarizes the revisions to the report. Text additions as a result of those comments are shown in italic font, and text removed from the report as a result of those comments is shown in strike-through format.

The field investigation included direct-push rig soil sampling, small diameter well installation, well development, vapor monitoring point sampling, and monitoring well gauging and sampling. Field activities were conducted between May and July 2008.

The surface topography across the investigation area generally slopes downward to the west-southwest, with a total drop in elevation of approximately 15 feet across the area. The stratigraphy beneath the area consists of the following materials, from top down: fill (gravel, clay, cinders, etc.) extending to a maximum depth 6 feet below ground surface (bgs); clay extending to a maximum depth of 20 feet bgs; and sand, consisting of glacial outwash, primarily silty sand grading to poorly graded, fine grained sand which coarsens with depth. The sand unit is water saturated below a depth of approximately 35 to 50 feet bgs (approximately elevation 397 to 395). Groundwater contours for the sand indicate flow toward the northeast, toward WRR production water pumping centers.

Soil samples were collected from each boring and analyzed for volatile organic compounds (VOCs). The soil borings generally exhibited low levels of impact or were non-detect, consistent with that expected given their distance from the 1986 release point. The borings closest to the benzene line tended to exhibit relatively higher concentrations of benzene, toluene, ethylbenzene and xylenes (BTEX) (less than 1 mg/kg). The highest concentrations were found in samples between depths of 14 and 24 feet bgs. This is in the area where the clayey soils are thickest, and may indicate residual hydrocarbons sorbed to the fine grained soils.



EXECUTIVE SUMMARY

Groundwater samples were collected from six new monitoring wells and seven existing monitoring wells and analyzed for VOCs. The cumulative analytical information (i.e., including the 2006 data) depicts the highest concentrations generally in a band on the order of 200 feet wide extending between the 1986 release point and the refinery. This area generally underlies the Village Public Works yard and wastewater treatment facility. The core area of impact widens closer to the refinery, consistent with groundwater flow toward pumping centers on WRR North and Main properties. Benzene concentrations in the core area have been identified in the hundreds to thousands of parts per million (ppm). Wells on the north and south sides of this band bound the core area, exhibiting part per billion (ppb) or non-detect concentrations.

Soil vapor samples were collected from four existing probe locations that overlie the highest observed groundwater concentrations. The results show relatively low and sporadic BTEX concentrations. The highest detected benzene concentration was in a probe at the 20 foot depth (37 ppb). Concentrations in the shallower samples (from 5, 10 and 15 feet) were lower or non-detect. Benzene concentrations were non-detect in the other probe locations. This marked attenuation from groundwater to shallow soil vapor is attributed to the distance to groundwater (approximately 45 feet) and biodegradation in the subsurface. It is expected that soil vapor concentrations would be lower in areas where groundwater concentrations are lower (e.g., north or south of the “core”).

Based on discussions with IEPA, and SOPUS’ Proposed Compliance Commitment Agreement, a work plan is being developed to assess the nature and extent of any mixed hydrocarbons identified along the WRR’s west fenceline, generally north of the area investigated for this report. This work plan will also address the following data needs identified in this investigation, including:

- Characterization of soils in the area of the 1986 release
- Refinement of the northern extent of benzene-related groundwater impact north of Eighth Street and east of Highway 111.
- Collection of additional soil vapor data in areas north of the existing vapor probes.
- Collection of reproducible groundwater data over time in the area of highest concentrations (i.e., installation of monitoring wells).

This work plan was initially submitted on September 5, 2008. IEPA provided comments in a letter dated November 25, 2008, and the revised work plan is being submitted to the IEPA concurrent with this report.



Shell Oil Products U.S. (SOPUS) conducted subsurface investigation activities at and outside the WRB Refining LLC (WRB)¹ Wood River Refinery (WRR) in Roxana, Illinois. The investigation area is generally located between the intersection of Illinois Route 111 and Rand Avenue and the west fenceline of the refinery (**Figure 1**).

The area is being investigated to further assess a benzene release which apparently occurred on January 30, 1986, from an underground pipeline located just northwest of the Route 111 and Rand Avenue intersection. The pipeline extended from the refinery to barge loading facilities on the Mississippi River, along a route parallel to and just north of Rand Avenue. Beginning in 2005, increased benzene concentrations in groundwater have been observed in the WRR P-93 monitoring well cluster (i.e., P-93A and P-93B) located along the west fenceline of the refinery's North Property. URS Corporation (URS), on behalf of SOPUS, performed a subsurface investigation in 2006 to help gather information on the extent of the benzene impact (URS, 2007). The 2006 investigation provided initial information on the distribution of benzene in groundwater in the area, focusing primarily on screening technologies (e.g., cone penetration testing (CPT), membrane interface probe (MIP) and groundwater profiling).

The work described in this report was conducted based on a work plan ~~provided submitted~~ to the Illinois Environmental Protection Agency (IEPA) on February 15, 2008. In an April 18, 2008 letter to SOPUS and the WRR, the IEPA ~~approved the work plan and~~ provided: 1) conditions related to information to be included in the report for this work; and 2) a condition requiring a Water Well Survey.

This report was initially submitted to IEPA in August 2008 and IEPA provided comments on this report in a letter dated November 25, 2008. Based on IEPA's November 25, 2008 letter, this report has been revised. The "Response to Comments" document summarizes the revisions to the report. Text additions based on those comments are shown in italic font, and text removed from the report based on those comments is shown in strike-through format.

¹ WRB, formed January 1, 2007, is a 50/50 joint venture between ConocoPhillips (ConocoPhillips) and EnCana US Refineries LLC. The facility is owned by WRB and operated by ConocoPhillips.

The field investigation was performed in accordance with the work plan developed for this project, and included direct push rig soil sampling, small diameter well installation, well development, vapor monitoring point sampling, and monitoring well gauging and sampling.

Soil sampling and well installation was conducted between May 14 and 23, 2008. Well development was conducted between May 27 and June 2, 2008. Soil vapor sampling was conducted on June 3 and 4, 2008. Groundwater sampling was conducted between June 9 and 13, 2008.

2.1 PREFIELD ACTIVITIES

A meeting was held on April 22, 2008 between representatives of SOPUS, ConocoPhillips, URS and the Village of Roxana to discuss logistical issues regarding the upcoming work (e.g., site access, underground utilities, work schedule, etc.).

On May 30, 2008, at the request of the Village of Roxana, URS (on behalf of SOPUS) mailed fact sheets to residents in the investigation area. The fact sheet provided background information on the release, described the planned field activities and provided contact information.

The field activities in Roxana were conducted on village property or rights-of-way. This work was performed in accordance with an access agreement, signed May 8, 2008, between SOPUS and the Village of Roxana.

A utility locate was arranged for the drilling locations using Illinois' Joint Utility Locating Information for Excavators (JULIE) services. The Roxana Public Works Department also provided information concerning utilities in the area.

Prior to beginning site work, and at the start of work each day, a daily safety meeting was held. The purpose of this meeting was to discuss the day's planned activities and to address any potential health and safety concerns. URS and subcontract employees attended these daily meetings.

2.2 SOIL SAMPLING, WELL INSTALLATION AND DEVELOPMENT AND IEPA OVERSIGHT

URS subcontracted Roberts Environmental Drilling Inc. (REDI) of Millstadt, Illinois to perform the drilling activities associated with this project. Prior to direct push advancement, non-mechanized advancement techniques (i.e., air vacuum, water jetting, and hand augering) were used from ground surface to a depth of approximately seven feet below ground surface (bgs) in order to clear subsurface utilities and/or other obstructions that were not uncovered with the hand auger, per SOPUS protocol.

Shallow soil samples were collected for logging (detected stratigraphic information) and sampling purposes by utilizing a hand auger to a depth of seven feet bgs. At seven feet bgs, the borings were further advanced with direct push, dual-tube advancement techniques (e.g., Geoprobe®). The eight borings that were advanced as part of this investigation are shown in **Figure 2** and described as follows:

- Borings B-1 through B-4 are located in alleys between Sixth Street and Eighth Street.
- Borings B-5, GP-7(11) and GP-12(11) are located at the Roxana Public Works yard south of Eighth Street.
- Boring B-6 is located along the Route 111 frontage road, just south of the entrance to the WRR.

Borings B-1 through B-6 were advanced approximately 10 feet below the depth at which groundwater was observed during probing. Total boring depths ranged from 48 to 64 feet bgs.

Borings GP-7 (11) and GP-12 (11) were advanced at locations adjacent to two existing vapor monitoring points. These borings were advanced to a depth of 20 feet bgs to collect more detailed stratigraphic information.

Below seven feet bgs, soil samples were continuously collected using a 2-inch diameter by 4-foot long Dual-Tube® soil sampler with acetate liners. This technique uses an outer 2.25-inch diameter casing to maintain borehole integrity while samples are obtained using an 1.125 inch inner casing. The subsurface stratigraphy was logged by a qualified field scientist in accordance with the Unified Soil Classification System (USCS). Soil cores from each boring were visually evaluated for evidence of impact and screened in the field for organic vapors using a photoionization detector (PID). The field scientist noted attributes such as color, particle size, consistency, moisture content, structure, plasticity, odor and organic content. PID headspace measurements were obtained at approximately 2-foot intervals by placing a small amount of soil in a ziploc-type bag, and measuring the headspace after approximately 10 minutes (**Table 1**). Boring logs for each of the borings are included in **Appendix A**.

In general, the surface of the project area is covered by a thin layer of fill material, including gravel, clay, and topsoil, with occasional cinders. This is generally underlain by a layer of clay and clayey sand ranging in thickness from 3 to 15 feet. Below the clay lies medium dense sand to the depth probed during this investigation.

For this investigation, URS collected one soil sample from the top seven feet and another soil sample at the depth of greatest apparent impact above the water table. Soil samples were not collected for analysis from below the water table. Groundwater typically entered the boreholes at an approximate elevation of 390 feet (36 to 50 feet bgs).

The soil samples were collected for analysis of volatile organic compounds (VOCs) via Method 8260B. **Table 2** summarizes the soil samples collected for chemical analysis at each of the soil boring locations. Additional information regarding sample preparation and shipment, and laboratory testing, is provided in **Section 2.7** of this report. IEPA personnel were onsite on May 20th and 22nd, 2008 to observe soil sampling and well installation activities.

Small diameter wells were installed at locations B-1 through B-6 to obtain fluid level data and groundwater samples. These wells were constructed of 1-inch diameter threaded PVC, schedule 40 casing, installed through the dual-tube casing. Each well was installed with 15-feet of 0.010-inch slotted PVC well screen extending from the bottom of each boring. The well screens were placed to intersect the groundwater surface. *This length of screen allowed for accurate determination of the water table under variable, but at the same time unknown, fluctuations of the water table.* The native sand was allowed to collapse to approximately 5 feet above the top of the well screen. The remainder of each boring's annulus was filled with a high solids bentonite cement grout and topped with an 8-inch diameter flush-mount well vault. Well construction diagrams are provided in **Appendix B** and **Table 3** provides a well completion summary.

The drill rods and tools were decontaminated between borings. Additional information regarding decontamination practices and waste disposal is provided in **Section 2.6** of this report.

Between May 27 and June 2, 2008, the newly installed small diameter wells were developed in an attempt to remove fines from the sand pack. Development was performed via pumping and/or bailing a minimum of five well volumes of water. During well development, water quality parameters, including pH, temperature, conductivity, turbidity, dissolved oxygen (DO), and oxidation-reduction potential (ORP), were measured and recorded on the field sheets (**Appendix C**) after each well volume was removed. Development continued until the water quality parameters stabilized over two consecutive well volumes after the removal of the required well volumes.

2.3 SOIL VAPOR SAMPLING

Eighteen soil vapor samples were collected at four different vapor monitoring point (VMP) locations on or adjacent to the Roxana Public Works yard. Six VMP locations were originally



planned to be sampled, but only four were located and determined to be accessible. These four VMP locations, designated GP-9, GP-11, GP-12 and GP-13 were installed by Equilon in 1999/2000. The two VMP locations which could not be located included GP-7 and GP-8.

Each VMP location consists of four separate *0.375-inch (³/₈-inch) diameter thin-walled polyethylene* tubes with 6-inch long ~~sampling ports screened~~ *stainless steel screens at depths of* approximately 5, 10, 15, and 20 feet bgs. These different sample depths are designated as A, B, C, and D, respectively, in the sample IDs used during this field investigation.

Prior to sampling from a vapor port, the vacuum/pressure reading was collected utilizing a three-way plastic micro-valve and a digital manometer. Readings from the manometer were allowed to stabilize. These initial measurements were then recorded on vapor monitoring sampling field sheets, and any fluctuations during data collection were also noted.

After vacuum/pressure readings were determined, ~~a total of three well volumes~~ *one well volume* of air ~~were~~ *was* purged utilizing a 60 milliliter (mL) syringe.

Once purging was completed, a peristaltic pump, one-liter Tedlar bag, and one-liter Summa canister were readied for sampling.

The summa canister, regulator, and assembly were inspected for damage or defects. The Summa canister was prepared for sampling by labeling with the sample information. *A pressure gauge was used prior to sampling to verify there were no leaks in the sampling apparatus.* The 30-minute flow regulator and the initial vacuum of the canister were then verified to be at 25 to 30 inches of mercury (Hg). The canister identification number, flow regulator identification number, and initial inches of Hg were recorded on the field sampling sheets. *The flow regulator and summa canister are connected to the vapor port via rigid-walled Teflon tubing and the setup* was configured in order to allow extraction from the monitoring port only and shut off from the atmosphere. Once setup was complete, the valve on the canister was opened and the sample start time was recorded. The sample was collected with a minimum change of 15 inches of Hg while not allowing the canister vacuum to go below 2 inches of Hg. Once the sample collection was completed, the valve on the canister was closed and the sample end time was recorded. *Leak detection methods (e.g., using a tracer) were not used during sampling.*

The Tedlar bag was then filled using a peristaltic pump *and the Teflon tubing.* A rotometer was used to adjust the flow to a rate of less than or equal 200 mL/minute. The flow was adjusted as quickly as possible in order to reduce unnecessary purging. Once the flow rate was adjusted, the rotometer was removed and the Tedlar bag was attached, allowing the sample to be collected. Once the sample was collected, a PID meter and a 4-Gas (carbon monoxide, hydrogen sulfide,

oxygen, and the lower explosive limit) meter were inserted and the readings recorded on the field sampling sheets.

The field sampling sheets for this soil vapor sampling event are provided in **Appendix D**.

The soil vapor samples were collected for analysis of VOCs via Method TO-15 and for analysis of relevant natural gases (such as carbon dioxide, carbon monoxide, ethane, ethane, methane, nitrogen, and oxygen) via Method ASTM D-1946. **Table 2** summarizes the soil vapor samples collected for chemical analysis. Additional information regarding sample preparation and shipment, and laboratory testing, is provided in **Section 2.7** of this report.

Once the sampling was complete, the micro-valve was left in place on the monitoring port, but was closed to ensure that the line was not open to the atmosphere. The remaining equipment was dismantled. Information regarding equipment decontamination and material disposal is provided in **Section 2.6** of this report.

2.4 GROUNDWATER GAUGING AND SAMPLING

After development of the newly installed small diameter monitoring wells, sufficient time was allowed for the new wells to equilibrate with the groundwater.

The wells were gauged utilizing a Heron interface probe in order to detect the presence of any free-phase hydrocarbons and determine groundwater levels. Fluid levels in the wells were gauged on June 9, 2008, prior to sampling. In addition, fluid levels were also gauged on July 2, 2008 following the investigation. **Table 3** displays the fluid level summary for both events.

The comprehensive groundwater sampling event utilizing low-flow procedures was performed between June 9 and 13, 2008, utilized low-flow purging and sampling procedures. ConocoPhillips monitoring wells P-54, P-56, P-58, P-66, P-73, and P-75 were purged and sampled utilizing a 1.82-inch diameter Proactive Stainless Steel Monsoon submersible pump and disposable polyethylene tubing. The newly installed small diameter wells and ConocoPhillips well P-57 were purged and sampled utilizing a 0.850-inch diameter stainless steel submersible bladder pump, powered by the Geotech Geocontrol PRO™, and bonded disposable polyethylene tubing. New tubing was used at each well.

The submersible groundwater pump with the proper length of disposable polyethylene tubing was slowly lowered into the well to be sampled and set with the pump intake near the mid-point of the ~~screen or water column, whichever was deeper~~ *which was deeper than the mid-point of the screen (i.e., the water surface was within the well screen)*. *For the WRR wells, the pump intake was positioned approximately 6.5 to 9.5 feet below the top of the water column. For the small*

diameter wells (in Roxana), the pump intake was positioned approximately 5 to 6.5 feet below the top of the water column. The tubing from the pump was connected to a flow-through cell, which discharged into a 5-gallon plastic bucket. Pumping was performed at a low flow rate (≤ 500 mL/minute) so as to not create drawdown of the water level within the well. During groundwater purging, water quality parameters (pH, temperature, conductivity, turbidity, DO and ORP) were measured and recorded on the field sheets (**Appendix C**) after every flow-through cell volume. Purging continued until a minimum of three flow-through cell volumes of water were removed and the water quality parameters stabilized.

Once stabilization was achieved, the groundwater flow was diverted from the flow-through cell and the groundwater sample was collected. The groundwater samples were collected for analysis of VOCs via Method 8260B. **Table 2** summarizes the groundwater samples collected for chemical analysis. Additional information regarding sample preparation and shipment, and laboratory testing, is provided in **Section 2.7** of this report.

ConocoPhillips well P-54 was re-sampled on July 25, 2008 utilizing a HydraSleeve® groundwater sampler². This passive sampler was lowered into the well and positioned to collect a groundwater sample from the midpoint of the well screen. When activated, the HydraSleeve® collected a representative water sample from an approximately two-foot interval without mixing fluid from other intervals. Once the sampler was full, the one-way reed valve collapsed, preventing mixing of extraneous, non-representative fluid during recovery. A short plastic discharge tube was then used to fill the sample containers. This sample was collected for analysis of VOCs via Method 8260B. This method of passive sampling does not create drawdown, and causes only minimal agitation or displacement of the water column.

Reusable equipment was decontaminated between well locations. Additional information regarding decontamination practices and waste disposal is provided in **Section 2.6** of this report.

2.5 SURVEYING

On July 2, 2008 Crawford, Murphy, and Tilly, Inc. (CMT) of Edwardsville, Illinois, conducted a closed circuit survey of points associated with the field activities (under contract to URS). The horizontal coordinates as well as the elevation were determined for each newly installed small diameter wells, four existing wells along the refinery's west fenceline, the four vapor points that were sampled, and the locations of five previously sampled investigation points (2006) in the Village of Roxana.

² Re-sampling to confirm the validity of the original sample result was discussed in the meeting with IEPA on July 3, 2008.

Each location was surveyed relative to Illinois State Plane Coordinates (NAD 83), while elevations were determined using the 1988 USGS datum.

The following general procedures were used for the survey.

- The top of the casing elevation and location were measured at each monitoring well. Typically, the measurement was taken on the north side of the well casing. Well casings were marked to indicate the measuring point. The ground surface elevation was also measured at each monitoring well. The ground surface measurement was taken one foot north of the center of the well completion.
- The location and elevation of each vapor monitoring point were measured. Each vapor monitoring point is completed flush with the surrounding ground surface. Therefore, the location and elevation of each vapor monitoring point were taken from the center of the flush mount vault cover while the cover was closed.
- The ground surface location and elevation for the former investigation points were surveyed near the approximate location of the investigation point.

Survey data supplied by CMT was used to develop soil borings, well completion logs, pertinent figures (groundwater and stratum contours), and geologic cross-sections included within this report.

2.6 DECONTAMINATION AND INVESTIGATION-DERIVED WASTE

The drill rods and tools were decontaminated between borings at a temporary decontamination pad located at the Public Works yard. Decontamination consisted of a high-pressure hot water wash. The soil cuttings and decontamination water was containerized in 55-gallon drums, labeled and staged on-site. The soil sampler was cleaned between each run at the boring location.

Non-disposable soil vapor and groundwater sampling equipment was dismantled and decontaminated prior to the collection of each analytical sample, between sample locations, and prior to leaving the site by washing with Alconox[®], a desorbing agent (i.e., isopropyl alcohol), and a distilled water rinse.

Decontamination water and purge water accumulated while sampling ConocoPhillips wells within the WRR was disposed daily at Site 9 of the Main Property, in accordance with WRR procedures. Decontamination water and purge water accumulated during sampling activities outside the WRR was collected and containerized in 55-gallon drums, labeled and staged on-site.

Field personnel wore disposable, chemical resistant nitrile gloves when environmental media or equipment was handled, to reduce the potential for personal exposure to potential chemical hazards. Clean gloves were also worn for the collection of analytical samples. With a low probability of impact, disposable materials, such as sample liners, gloves, and other investigation derived waste (IDW), were bagged and disposed as municipal waste.

The water and soil cuttings generated during this investigation were characterized for waste disposal purposes and the results are provided in **Appendix E**. The soil and water will be properly disposed following SOPUS procedures.

2.7 QA/QC, LABORATORY TESTING AND DATA QUALITY REVIEW

Once samples were collected, they were logged onto a Chain-of-Custody (COC) noting all of the sample information. Duplicate samples were collected at a frequency of 10 percent for all samples collected. Equipment blank samples were collected at a frequency of 10 percent, and MS/MSD sample pairs were collected at a frequency of 5 percent for the groundwater samples collected.

Soil and groundwater samples were collected for analysis of VOCs via Method 8260B and were submitted to Xenco Laboratories (Xenco) in Stafford, Texas (under contract to SOPUS). One trip blank accompanied each sample cooler containing samples to be analyzed for VOCs.

Soil vapor samples were collected for analysis of VOCs via Method TO-15 and for relevant natural gases (such as carbon dioxide, carbon monoxide, ethane, ethane, methane, nitrogen, and oxygen) via Method ASTM D-1946. These vapor samples were submitted for analysis to Air Toxics laboratory in Folsom, California (under contract to SOPUS).

The samples, with their corresponding COCs, were packaged and shipped via overnight delivery service to the appropriate laboratory.

Laboratory data from both laboratories were provided in electronic form for Level 4 reporting format. URS conducted an independent review of the analytical data following procedures outlined in the USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review, 1999, and the work plan for this project. A total of 46 investigative samples (soil and groundwater), six duplicates, two equipment blanks, two MS and MSD pairs, and seven trip blanks (*each consisting of a set of two 40-mL vials*) were submitted as part of this sampling program. Qualifiers were assigned to data when results from the review were outside control limits. These qualifiers are included in the data tables (**Tables 4 through 7**) and the analytical reports included in **Appendix F**. Based on the above mentioned criteria, results reported for the analyses performed were accepted for their intended use. Acceptable levels of accuracy and

precision, based on MS/MSD, laboratory control sample (LCS), surrogate and field duplicate data, were achieved for the work orders to meet the project objectives. Completeness, which is defined to be the percentage of analytical results that are judged to be valid, including estimated (J/UJ) data, was 100 percent for the soil vapor analytical data, and 98.5 percent for the soil and groundwater analytical data.

The data for the investigative and field QA/QC samples for the various media (e.g., soil, soil vapor and groundwater) are provided in **Appendix F**. The **Appendix F** data are organized by investigative media type and then listed by sample delivery group (SDG) or work order associated with the sample media.

2.8 RELATED ACTIVITIES

Water Well Survey

As requested by IEPA (April 18, 2008 letter to SOPUS), URS conducted a Water Well Survey, in accordance with 35 Ill. Adm. Code, Part 1600. The survey identified water wells within 2,500 feet of the 1986 release site. No public water wells were identified within the survey area. Four wells were found to be active, with three being identified as being for commercial/industrial (i.e., non-potable) use and one for private (residential) use. The private (residential) well identified in the survey was found to be miss-located, with the actual location being outside the survey area in Wood River, Illinois. Nine additional wells within the survey area were identified as sealed or abandoned. There were no set-back zones, well head protection areas, or regulated recharge areas relating to public water supply wells identified within the water well survey area.

The well survey was submitted to IEPA on June 16, 2008.

Violation Notice

A Violation Notice (VN) was issued to SOPUS by the IEPA on May 2, 2008 regarding the groundwater conditions as presented in the investigation report dated September 28, 2007. After timely response, SOPUS and URS met with IEPA on July 3, 2008 to discuss the “suggested resolutions” described in the VN. Preliminary data from the subject investigation was conveyed. Subsequent to this meeting, SOPUS submitted a Compliance Commitment Agreement to IEPA on July 22, 2008.

Community Relations

As mentioned in Section 2.1, SOPUS mailed a fact sheet to residents in the investigative area on May 30, 2008, informing them of the basic history of the site, upcoming investigative activities, and contact information. A copy of the fact sheet was also sent to IEPA on May 15, 2008.



On June 13, 2008, IEPA notified SOPUS and WRR that it was their interpretation that the Illinois Administrative Code Part 1600 rules (aka Right to Know) apply to this site. SOPUS and URS met with IEPA on July 22, 2008 to discuss this topic. As a result of this meeting, IEPA stated that Shell would be issued a revised letter, allegedly expanding the area to be part of any community relations effort. Purportedly, this expanded boundary would include the area west of Route 111 to the western fence line of WRR and north of Eight Street to approximately 1st Street.

Village of Roxana Groundwater Ordinance

The Village of Roxana has enacted an ordinance which prohibits the installation and use of private potable water supply wells. The ordinance was adopted on June 2, 2008 (Ordinance No. 867). The ordinance applies to a portion of the Village which does not have private wells. The subject investigation area is contained within the ordinance area.

3.1 DESCRIPTION OF SITE CONDITIONS

A total of eight Geoprobe[®] soil probes and six groundwater monitoring wells were completed at the investigative area in May and June 2008 as part of the field activities. These, in addition to cone penetration testing (CPT) locations from URS investigative work performed in 2006, and monitoring well logs for monitoring wells in the vicinity of the investigation area were used to help refine the current understanding of the investigative site geologic and hydrogeologic conditions.

3.1.1 Site Geology

The investigative site and surrounding area are located on a broad floodplain of the Mississippi River known as the American Bottoms. The site is located approximately 0.7 miles east of the Mississippi River. The surface topography across the investigation area generally slopes downward to the west-southwest, with a total drop in elevation of approximately 15 feet across the area. The floodplain deposits consist of recent alluvial (i.e., river) deposits overlying Pleistocene (i.e., Ice Age) glacial outwash. The recent alluvial deposits consist of a complex, heterogeneous sequence of sands, silts, and clays. The underlying glacial outwash deposits consist of more uniform sands and gravels that extend to bedrock. The depth to bedrock in the area typically exceeds 100 feet.

The stratigraphy beneath the investigative site area consists of the following materials, from top down:

- Fill (gravel, clay, cinders, etc.) extending between 1 and 6 feet in depth
- Clay extending between 2 to 20 feet in depth, an intermittent layer of silty clayey sand (0 to 4 feet thick)
- Sand, consisting of glacial outwash, primarily silty sand grading to poorly graded, fine grained sand which coarsens with depth.

The depth to the top of the sand ranges between approximately 3 and 24 feet bgs. This unit was explored to a depth of about 60 feet bgs at the boring locations.

Cross-section locations can be viewed in **Figure 3** and typical subsurface cross-sections are shown in **Figures 4** through **7**.

3.1.2 Site Hydrogeology

The glacial outwash deposits (i.e., sands) underlying the area are the primary source for large volume water production in the area (e.g., industrial and municipal supply). Prior to development in

the area, the natural movement of groundwater through the valley material was toward the west (toward the Mississippi River) (Schicht, 1965).

Since development in the area, groundwater pumping has significantly altered this pattern. Regional groundwater flow in the area is directed toward pumping centers, locally the WRR to the east and the BP former Wood River refinery to the west.

The sand unit is water saturated below a depth of approximately 35 to 50 feet bgs (approximately elevation 397 to 395).

The groundwater contours for the sand are shown in **Figure 8**, based on gauging conducted on July 2, 2008. Groundwater flow in the sand is generally toward the northeast, toward WRR pumping wells.

Potentiometric surfaces are also interpreted on the cross sections shown in **Figures 4** through **7**.

3.2 SOIL ANALYTICAL RESULTS

The laboratory analytical results for the soil samples collected during this investigation can be viewed in **Appendix F**. A tabular summary of the analytical detections is presented in **Table 4** and the BTEX/MTBE results are also depicted in **Figure 9** of this report.

The following analytes were detected at concentrations ranging to a maximum of 5.59 mg/kg.

Benzene	Isopropylbenzene
Ethylbenzene	Methylene Chloride
Toluene	Naphthalene
m,p-Xylenes	n-Butylbenzene
o-Xylenes	n-Propylbenzene
1,2,4-Trimethylbenzene	p-Isopropyltoluene
1,3,5-Trimethylbenzene	sec-Butylbenzene
2-Butanone (MEK)	tert-Butylbenzene
Acetone	

These are hydrocarbon constituents, except for MEK, acetone and methylene chloride which are common laboratory artifacts.

The analytical detections were compared with Tier 1 soil remediation objectives for residential properties outlined in the Tiered Approach to Corrective Action Objectives (TACO) rules (35 IAC Part 742 Appendix B). This comparison is also presented in **Table 4**.

The analytical results for organics generally meet the residential property screening criteria except for two organic exceedances: B-2 at a depth of 41 feet; and GP-7(II) at a depth of 19 feet.

- The soil component of the groundwater ingestion pathway screening criterion for benzene (0.03 mg/kg) was exceeded in the soil sample at B-2 at a depth of 41 feet (0.0927 mg/kg). At this depth, the detection is likely related to residual groundwater impact (described in Section 3.4).
- The soil component of the groundwater ingestion pathway screening criterion for benzene (0.03 mg/kg) was exceeded in the soil sample and duplicate sample at GP-7(II) at a depth of 19 feet (0.344 and 0.795 mg/kg).

Soil data collected in 2007 for a subsurface investigation ConocoPhillips conducted were also reviewed for this report. These data were collected in early 2007 by ATC Associates Inc. and provided by ConocoPhillips to IEPA in a report dated April 24, 2007. These soil samples were analyzed by Teklab, Inc. in Collinsville, Illinois for BTEX and MTBE via USEPA Method 8260B. The table of soil analytical results from this investigation report is presented in **Appendix G** and the BTEX/MTBE results are depicted in **Figure 9** of this report. The analytical results generally meet the residential property screening criteria except for benzene exceedances at ConocoPhillips B-3 at depths of 14 to 16, 22 to 24, and 34 to 36 feet, and at ConocoPhillips B-5 at a depth of 38 to 40 feet.

3.3 SOIL VAPOR ANALYTICAL RESULTS

The laboratory analytical results for the soil vapor samples collected during this investigation can be viewed in **Appendix F**. A tabular summary of the volatile organic analytical detections is presented in **Table 5** and a tabular summary of the natural or fixed gas detections is presented in **Table 6**. The results for BTEX and MTBE are depicted in **Figure 10**.

The soil vapor analytical results indicate that benzene, the target constituent, is not present to any significant degree in the locations sampled. Benzene was only detected in 2 of the 16 samples, at concentrations of 1.4 and 37 parts per billion (ppb) in samples from location GP-12 at depths of 10 feet and 20 feet bgs (samples were non-detect at depths of 5 feet and 15 feet). Low ppb concentrations of toluene and xylenes were detected more frequently and at more locations.

3.4 GROUNDWATER ANALYTICAL RESULTS

The laboratory analytical results for the groundwater samples collected during this investigation can be viewed in **Appendix F**. A tabular summary of the analytical detections is presented in **Table 7** and the results for BTEX and MTBE are depicted in **Figure 11**. The analytical

detections were compared with the groundwater remediation objectives outlined in the TACO rules. This comparison is also presented in **Table 7** and in **Figure 11**.

The following analytes were detected at concentrations ranging to a maximum of 366 mg/L.

Benzene	Dibromomethane
Ethylbenzene	Dichlorodifluoromethane
Toluene	Isopropylbenzene
m,p-Xylenes	Methyl tert-Butyl Ether
o-Xylenes	Methylene chloride
1,2,4-Trimethylbenzene	Naphthalene
1,2-Dichloropropane	n-Butylbenzene
1,3,5-Trimethylbenzene	n-Propylbenzene
Acetone	p-Isopropylbenzene
Bromomethane	sec-Butylbenzene
Carbon disulfide	tert-Butylbenzene
Chlorobenzene	

The analytical results for organics generally meet the groundwater screening criteria except for exceedances of benzene, ethylbenzene, toluene, 1,2,4-trimethylbenzene, MTBE, methylene chloride and naphthalene.

- The groundwater screening criterion for benzene (0.005 mg/L) was exceeded in the samples from wells B-2 (1.1 and 1.12 mg/L) and B-5 (0.0338 mg/L), and in all but one of the ConocoPhillips wells sampled³ (with a maximum of 366 mg/L).
- The groundwater screening criterion for ethylbenzene (0.7 mg/L) was exceeded in the samples from well B-2 (1.62 and 1.53 mg/L), and in ConocoPhillips well P-56 (1.67 mg/L), ConocoPhillips well P-58 (0.87 and 0.914 mg/L) and ConocoPhillips well P-73 (0.89 mg/L).
- The groundwater screening criterion for toluene (1.0 mg/L) was exceeded in the samples from well B-2 (3 and 3.03 mg/L), and in ConocoPhillips well P-73 (1.37 mg/L).
- The groundwater screening criterion for 1,2,4-trimethylbenzene (0.35 mg/L) was exceeded in the samples from well B-2 (0.718 and 0.689 mg/L), and in ConocoPhillips

³ The sample collected from well P-54 on June 10, 2008 had a benzene detection of 0.00629 mg/L. The detection was considered suspect due to its location. It was resampled on July 25, 2008 and benzene was non-detect (<0.005 mg/L). The June 10th data is considered anomalous.

well P-56 (0.338 mg/L), ConocoPhillips well P-58 (0.734 to 0.82 mg/L), and ConocoPhillips well P-73 (0.596 mg/L).

- The groundwater screening criterion for MTBE (0.07 mg/L) was exceeded in the sample from ConocoPhillips well P-75 (0.125 mg/L).
- The groundwater screening criterion for methylene chloride (0.005 mg/L) was exceeded in the samples from wells B-2 (0.0422 and 0.0472 mg/L) and B-5 (0.00518 mg/L). Methylene chloride is a common laboratory artifact and its presence is judged not to be site related.
- The groundwater screening criterion for naphthalene (0.14 mg/L) was exceeded in the samples from well B-2 (0.145 mg/L), and in ConocoPhillips well P-56 (0.18 mg/L), ConocoPhillips well P-58 (0.179 to 0.202 mg/L), ConocoPhillips well P-73 (0.145 mg/L) and ConocoPhillips well P-75 (0.162 mg/L).

Groundwater data collected during second quarter 2008 from ConocoPhillips wells (collected April 30, 2008) were also reviewed for this report⁴. These data will be included in the upcoming semiannual report to IEPA which ConocoPhillips submits on Shell's behalf. The analytical detections for VOCs are included in **Table 7** and the analytical results for BTEX and MTBE are depicted in **Figure 11** of this report. These analytical results for VOCs generally meet the groundwater criteria except for exceedances of benzene and MTBE at wells P-93A and P-93B.

Groundwater analytical data collected during the 2006 West Fenceline P-93 investigation were also reviewed for this report. These groundwater samples were collected during profiling (e.g., grab samples) in the spring of 2006 by URS and provided in a report dated September 2007. The samples were analyzed by TestAmerica Laboratories (TestAmerica) in Nashville, Tennessee for VOCs via USEPA Method 8260B. A table of these groundwater analytical results compared to the screening criteria is presented in **Appendix H** and the analytical detections for BTEX and MTBE are depicted in **Figure 11** of this report. These analytical results for organics generally meet the groundwater criteria except for exceedances of benzene, ethylbenzene, toluene, xylenes, 1,2,4-trimethylbenzene, 1,3,5-trimethylbenzene, MTBE, naphthalene, and n-propylbenzene at various wells and groundwater profile locations in the study area.

Groundwater data collected in 2007 for a subsurface investigation ConocoPhillips conducted were also reviewed for this report. These data were collected in early 2007 by ATC Associates

⁴ Well P-93A was included in the subject sampling plan, however, obstructions in the well precluded the ability to sample using low-flow techniques.

Inc. and provided by ConocoPhillips to IEPA in a report dated April 24, 2007. These groundwater samples were analyzed by Teklab, Inc. in Collinsville, Illinois for BTEX and MTBE via USEPA Method 8260B. The table of groundwater analytical results from this investigation is presented in **Appendix G** and the BTEX/MTBE results are depicted in **Figure 11** of this report. These analytical results for organics generally meet the residential property screening criteria except for benzene exceedances at ConocoPhillips B-1 and ConocoPhillips B-5.

URS conducted a subsurface investigation on behalf of SOPUS at and outside the WRR. The activities performed during this subsurface investigation expanded upon the 2006 investigation and furthered information on the extent of the groundwater impacts for the area.

The following conclusions are based on the data collected as part of this work plan, as integrated with previous site work.

Soil

- Subsurface conditions generally consist of a variable thickness of surficial fill and lower permeability soils (e.g., clay, silt, clayey sand) underlain by the sands to the depths explored. The maximum thickness of lower permeability soils, up to 24 feet, occurs to the west and southwest, near the intersection of Rand Avenue and Route 111. This material thins toward the east, coincident with the rise in surface topography, and is approximately 4 to 7 feet thick beneath the rest of the investigation area.
- The soil borings generally exhibited low levels of impact or were non-detect, consistent with that expected given their distance from the 1986 release point⁵. The borings closest to the benzene line, e.g., GP-7(II) and the ConocoPhillips borings, tended to exhibit relatively higher concentrations of BTEX (less than 1 mg/kg). The highest concentrations were found in samples between depths of 14 and 24 feet bgs. This is in the area where the clayey soils are thickest, and may indicate residual hydrocarbons sorbed to the fine grained soils. One exception to this was found in the sample at location B-2 from a depth of 41 feet bgs. The highest concentrations were in the low ppm range, and this likely reflects residual impact from groundwater.

Soil Vapor

- Soil vapor samples were collected from existing probe locations that overlie the highest observed groundwater concentrations. The results show relatively low and sporadic BTEX concentrations. The highest detected benzene concentration was in a probe at the 20 foot depth (37 ppb). Concentrations in the shallower samples (from 5, 10 and 15 feet) were lower or non detect. Benzene concentrations were non detect in the other probe locations. This marked attenuation from groundwater to shallow soil vapor is attributed to the distance to groundwater (approximately 45 feet) and biodegradation in the subsurface.

⁵ It should be noted that characterization of soils in the immediate release area was not part of this scope of work.

It is expected that soil vapor concentrations would be lower in areas where groundwater concentrations are lower (e.g., north or south of the “core”).

Groundwater

- Groundwater occurs at depths varying from approximately 35 to 50 feet bgs in the areas investigated, as a result of the change in surface elevation. This corresponds to a groundwater elevation of approximately 397 to 395 feet, from west to east. The groundwater contours show a clear gradient toward WRR pumping centers.
- The cumulative analytical information (i.e., including the 2006 data and 2007 ConocoPhillips’ results) depicts the highest concentrations generally in a band on the order of 200 feet wide extending between the 1986 release point and the refinery. This area generally underlies the Village Public Works yard and wastewater treatment facility. The core area of impact widens closer to the refinery, consistent with groundwater flow toward pumping centers on WRR North and Main properties. Benzene concentrations in the core area have been identified in the hundreds to thousands of ppm. Wells on the north and south sides of this band bound the core area, exhibiting ppb or non detect concentrations.

Based on discussions with IEPA, and SOPUS' Compliance Commitment Agreement, a work plan is being developed to assess the nature and extent of the mixed hydrocarbons identified along the WRR's west fenceline, generally north of the area investigated for this report. This work plan will also address the following data needs identified in this investigation, including:

- Characterization of soils in the area of the 1986 release
- Refinement of the northern extent of benzene-related groundwater impact north of Eighth Street to approximately 1st Street and east of Route 111.
- Collection of additional soil vapor data in areas north of the existing vapor probes.
- Collection of reproducible groundwater data over time in the area of highest concentrations (i.e., installation of monitoring wells).

*As discussed in **Section 1**, IEPA commented on the work plan as submitted in September 2008, and the revised work plan is being submitted to the IEPA concurrent with this report.*

- ATC Associates Inc., 2007; *Subsurface Investigation Report on #1 and #4 Dock Lines Report*; Prepared for ConocoPhillips – WRR; dated April 24, 2007.
- Illinois Environmental Protection Agency (IEPA); Tiered Approach to Corrective Action Objectives (TACO); Title 35 of the Illinois Administrative Code, Part 742.
- Illinois Environmental Protection Agency (IEPA); Notice of Violation L-2008-01134 letter; Issued to Shell Oil Products U.S. (SOPUS); dated May 2, 2008.
- Illinois Environmental Protection Agency (IEPA); Letter regarding the review of submitted materials and planned future activities; Issued to Shell Oil Products U.S. (SOPUS); dated April 18, 2008.
- Schicht, R.J., 1965; *Groundwater Development in the East St. Louis Area, Illinois*; Illinois State Water Survey Report of Investigation 51.
- URS Corporation (URS), 2007; *West Fenceline P-93 Dissolved Phase Benzene Investigation Report – Roxana, Illinois*; Prepared for Shell Oil Products U.S. (SOPUS) and WRB Refining LLC (WRB) Wood River Refinery (WRR); dated September 2007.
- URS Corporation (URS), 2008; *Route 111/Rand Avenue Vicinity Investigation Health and Safety Plan – Roxana, Illinois*; Prepared for Shell Oil Products U.S. (SOPUS); dated May 2008.
- URS Corporation (URS), 2008; *Route 111/Rand Avenue Vicinity Investigation Work Plan – Roxana, Illinois*; Prepared for Shell Oil Products U.S. (SOPUS); dated February 15, 2008.
- US Environmental Protection Agency (USEPA), 1999; Contract Laboratory Program National Functional Guidelines for Organic Data Review.

**TABLE 1
ORGANIC VAPOR HEADSPACE MEASUREMENTS**

Boring	Depth (ft bgs)	PID (ppm)	Boring	Depth (ft bgs)	PID (ppm)	Boring	Depth (ft bgs)	PID (ppm)	Boring	Depth (ft bgs)	PID (ppm)
B-1	1	0.0	B-3	1	0.0	B-5	1	0.0	GP-7(II)	1	0.0
	3	0.0		3	0.0		3	0.0		3	0.0
	5	0.0		9	0.9		5	0.0		5	0.0
	7	0.0		11	0.2		7	3.6		9	0.7
	9	2.1		13	1.3		9	2.6		11	118
	11	3.7		15	1.8		11	1.8		13	537
	14	3.0		17	1.6		13	2.3		15	293
	17	0.9		19	1.4		15	2.6		17	403
	19	1.4		21	2.4		17	1.8		19	541
	21	2.1		23	1.5		19	2.3	GP-12(II)	6.5	0.8
	23	1.8		25	0.8		21	0.6		9	1.2
	25	0.2		27	0.7		23	1.8		11	0.7
	27	4.1		29	1.3		25	2.8		13	1.8
	29	1.8		31	1.8		27	4.7		15	1.5
	31	1.1		33	2.7		29	2.2		17	2.3
	33	1.7		35	1.6		31	2.5		19	1.9
	35	2.0		37	1.8		33	3.3			
	37	1.8		39	2.3		35	4.2			
	39	1.4		41	2.7		37	3.1			
	41	1.8		43	1.5		39	2.8			
	43	0.4		45	12.1		41	4.3			
	45	0.3		47	13.6		43	6.5			
	47	1.3	B-4	1	0.0	B-6	45	14.5			
	49	0.4		3	0.0		47	19.2			
	51	1.8		5	0.0		1	0.0			
B-2	9	2.7		7	0.0		3	0.0			
	11	11.0		10	0.3		5	0.0			
	13	3.1		13	1.2		6.5	0.5			
	15	31.4		15	0.8		7.5	1.4			
	17	5.9		17	0.8		9	2.3			
	19	6.1		19	1.2		11	2.2			
	21	2.4		21	1.2		13	3.9			
	23	4.5		23	0.0		15	4.3			
	25	10.1		25	1.2		17	3.9			
	27	18.5		27	1.6		19	3.4			
	29	5.5		29	0.8		21	4.2			
	31	7.3		31	1.7		23	4.7			
	33	16.5		33	1.4		25	3.2			
	35	9.5		35	2.1		27	2.3			
	37	10.3		39	1.5		29	2.3			
	39	39.9		41	0.8		31	2.0			
	41	192		43	0.2		33	2.2			
	43	167		47	0.9		35	2.3			
	45	20.7		49	9.5		37	2.2			
	47	11.1		51	18.7		39	1.8			
	49	69.0		53	28.4		41	0.0			
	51	530					43	0.0			
	53	597					45	0.0			
	55	1134					47	0.0			
	57	1122									

NOTES:

- 1) Headspace measurements were obtained using a photoionization detector (PID) with a 10.6-eV lamp.
- 2) v Denotes the level of groundwater in the boring at the time of drilling.

TABLE 2
SAMPLE SUMMARY FOR SOIL, SOIL VAPOR, AND GROUNDWATER

Sample Location	Sample ID	Sample Date	Sample Time	Analysis
SOIL SAMPLES COLLECTED				
B-1	B-1-03	5/14/2008		VOCs 8260 B
	B-1-27	5/20/2008	1445	VOCs 8260 B
B-2	B-2-04	5/14/2008		VOCs 8260 B
	B-2-41	5/20/2008	1000	VOCs 8260 B
B-3	B-3-06	5/14/2008		VOCs 8260 B
	B-3-33	5/21/2008	1100	VOCs 8260 B
B-4	B-4-06	5/15/2008	945	VOCs 8260 B
	B-4-35	4/22/2008	935	VOCs 8260 B
B-5	B-5-04.5	5/15/2008	1345	VOCs 8260 B
	B-5-27	5/21/2008	1400	VOCs 8260 B
B-6	B-6-04	5/15/2008	1250	VOCs 8260 B
	B-6-23	5/19/2008	1205	VOCs 8260 B
GP-7(II)	GP-7(II)-03	5/15/2008	1115	VOCs 8260 B
	GP-7(II)-19	5/19/2008	1635	VOCs 8260 B
	GP-7(II)-19-Dup	5/19/2008	1635	VOCs 8260 B
GP-12(II)	GP-12(II)-04	5/15/2008	1025	VOCs 8260 B
	GP-12(II)-17	5/22/2008	1425	VOCs 8260 B
	GP-12(II)-17-Dup	5/22/2008	1425	VOC 8260 B
SOIL VAPOR SAMPLES COLLECTED				
GP-9	GP-9-A-060408	6/4/2008	1045	VOCs by TO-15; Natural Gas by ASTM D-1946
	GP-9-B-060408	6/4/2008	1050	VOCs by TO-15; Natural Gas by ASTM D-1946
	GP-9-C-060408	6/4/2008	1055	VOCs by TO-15; Natural Gas by ASTM D-1946
	GP-9-C-060408-DUP	6/4/2008	1055	VOCs by TO-15; Natural Gas by ASTM D-1946
	GP-9-D-060408	6/4/2008	1115	VOCs by TO-15; Natural Gas by ASTM D-1946
GP-11	GP-11-A-060308	6/3/2008	1345	VOCs by TO-15; Natural Gas by ASTM D-1946
	GP-11-B-060308	6/3/2008	1350	VOCs by TO-15; Natural Gas by ASTM D-1946
	GP-11-B-060308-DUP	6/3/2008	1350	VOCs by TO-15; Natural Gas by ASTM D-1946
	GP-11-C-060308	6/3/2008	1355	VOCs by TO-15; Natural Gas by ASTM D-1946
	GP-11-D-060308	6/3/2008	1410	VOCs by TO-15; Natural Gas by ASTM D-1946
GP-12	GP-12-A-060308	6/3/2008	925	VOCs by TO-15; Natural Gas by ASTM D-1946
	GP-12-B-060308	6/3/2008	929	VOCs by TO-15; Natural Gas by ASTM D-1946
	GP-12-C-060308	6/3/2008	935	VOCs by TO-15; Natural Gas by ASTM D-1946
	GP-12-D-060308	6/3/2008	940	VOCs by TO-15; Natural Gas by ASTM D-1946
	GP-12-E-060308	6/3/2008	940	VOCs by TO-15; Natural Gas by ASTM D-1946
GP-13	GP-13-A-060408	6/4/2008	850	VOCs by TO-15; Natural Gas by ASTM D-1946
	GP-13-B-060408	6/4/2008	855	VOCs by TO-15; Natural Gas by ASTM D-1946
	GP-13-C-060408	6/4/2008	900	VOCs by TO-15; Natural Gas by ASTM D-1946
	GP-13-D-060408	6/4/2008	905	VOCs by TO-15; Natural Gas by ASTM D-1946
	GP-13-E-060408	6/4/2008	905	VOCs by TO-15; Natural Gas by ASTM D-1946
GROUNDWATER SAMPLES COLLECTED				
P-54	P54-061008	6/10/2008	1612	VOCs 8260 B
	P54072508	7/25/2008	1430	VOCs 8260 B
P-56	P56-060908	6/9/2008	1615	VOCs 8260 B
P-57	P57-061108	6/11/2008	1310	VOCs 8260 B
P-58	P58-060908	6/9/2008	1425	VOCs 8260 B
	P58-060908D	6/9/2008	1425	VOCs 8260 B
P-66	P66-061008	6/10/2008	1340	VOCs 8260 B
P-73	P73-061008	6/10/2008	943	VOCs 8260 B
P-75	P75-061008	6/10/2008	1040	VOCs 8260 B
P-93	USED COP MONITORING DATA FROM 2Q08			
B-1	B1-061208	6/12/2008	1045	VOCs 8260 B
B-2	B2-061208	6/12/2008	1245	VOCs 8260 B
	B2-061208D	6/12/2008	1245	VOCs 8260 B
B-3	B3-061208	6/12/2008	1500	VOCs 8260 B
B-4	B4-061208	6/12/2008	1630	VOCs 8260 B
B-5	B5-061308	6/13/2008	1005	VOCs 8260 B
B-6	B6-061308	6/13/2008	1200	VOCs 8260 B

NOTES:

- 1) The natural gases analyzed for include: Carbon Dioxide, Carbon Monoxide, Ethane, Ethene, Methane, Nitrogen, and Oxygen.
- 2) The sample times for samples B-1-03, B-2-04, and B-3-06 were inadvertently not recorded at the time of sample collection.

TABLE 3
MONITORING WELL COMPLETION SUMMARY AND GROUNDWATER GAUGING

Well ID	Surface Completion	Well Diameter (in)	Top of Casing Elevation (ft MSL)	Ground Surface Elevation (ft MSL)	Height Above Ground Surface (ft)	Constructed Well Depth (ft btoc)	Bottom of Well Elevation (ft MSL)	Screened Interval (ft btoc)		Screen Length (ft)	Screened Interval Elevation (ft MSL)		Depth to Water 6/9/2008 (ft btoc)	Product Thickness (ft)	Corrected Water Elevation 6/9/2008 (ft MSL)	Depth to Water 7/2/2008 (ft btoc)	Product Thickness (ft)	Corrected Water Elevation 7/2/2008 (ft MSL)
SOPUS WELLS - VILLAGE OF ROXANA																		
B-1	FM	1	442.86	443.24	-0.38	58.18	384.68	42.93	57.93	15	399.93	384.93	47.78	NE	395.08	46.84	NE	396.02
B-2	FM	1	443.93	444.21	-0.28	63.46	380.47	48.21	63.21	15	395.72	380.72	49.38	NE	394.55	48.43	NE	395.5
B-3	FM	1	430.36	430.69	-0.33	45.99	384.37	30.74	45.74	15	399.62	384.62	34.16	NE	396.2	33.17	NE	397.19
B-4	FM	1	441.58	441.86	-0.28	57.70	383.88	42.45	57.45	15	399.13	384.13	46.03	NE	395.55	45.09	NE	396.49
B-5	FM	1	429.73	429.98	-0.25	46.20	383.53	30.95	45.95	15	398.78	383.78	33.49	NE	396.24	32.49	NE	397.24
B-6	FM	1	432.42	432.75	-0.33	47.64	384.78	32.39	47.39	15	400.03	385.03	35.89	NE	396.53	34.97	NE	397.45
COP WELLS - WRR & VILLAGE OF ROXANA																		
P-54	FM	2	442.44	442.62	-0.18	62.82	379.62	37.82	62.82	25	404.62	379.62	47.09	NE	395.35	46.16	NE	396.28
P-56	SU	2	446.22	444.41	1.81	65.31	380.91	40.31	65.31	25	405.91	380.91	52.08	NE	394.14	51.17	NE	395.05
P-57	SU	2	447.22	445.22	2.0	65.5	381.72	40.50	65.50	25	406.72	381.72	51.82	NE	395.4	50.91	NE	396.31
P-58	SU	2	445.60	NRA	NRA	63.5	382.10	38.50	63.50	25	407.10	382.10	49.93	0.34	395.92	48.84	0.12	396.85
P-59	SU	2	447.53	445.03	2.5	72.5	375.03	47.50	72.50	25	400.03	375.03	NM	NM	NA	52.25	NE	395.28
P-66	FM	2	436.91	437.23	-0.32	59.68	377.23	34.68	59.68	25	402.23	377.23	41.00	NE	395.91	40.11	NE	396.80
P-73	SU	4	444.51	442.01	2.5	67.5	377.01	42.50	67.50	25	402.01	377.01	49.82	NE	394.69	48.96	NE	395.55
P-75	SU	4	446.96	444.46	2.5	68.5	378.46	43.50	68.50	25	403.46	378.46	51.01	NE	395.95	50.14	NE	396.82
P-93A	SU	2	446.73	444.58	2.15	63.15	383.58	48.15	63.15	15	398.58	383.58	51.68	NE	395.05	50.79	NE	395.94
P-93B	SU	2	447.18	NRA	NRA	76.53	370.65	74.58	76.53	1.95	372.60	370.65	NM	NM	NA	NM	NM	NA
P-93C	SU	2	447.55	NRA	NRA	96.84	350.71	94.85	96.84	1.99	352.70	350.71	NM	NM	NA	NM	NM	NA
P-93D	SU	2	447.13	NRA	NRA	128.02	319.11	126.03	128.02	1.99	321.10	319.11	NM	NM	NA	50.6	NE	396.53
T-6	SU	4	447.37	NRA	NRA	66.83	380.54	NRA	NRA	NRA	NRA	NRA	NM	NM	NA	51.10	NE	396.27
T-12	SU	4	445.37	NRA	NRA	72.83	372.54	NRA	NRA	NRA	NRA	NRA	NM	NM	NA	50.72	NE	394.65

NOTES:

- 1) The corrected water elevations presented in this table were corrected by a specific gravity of 0.74 for the wells in which product was identified.
- 2) Elevations presented in this table are relative to the 1988 USGS datum.
- 3) NA = Not Applicable
- 4) NE = Not Encountered
- 5) NM = Not Measured
- 6) NRA = Not Readily Available

TABLE 4
SUMMARY OF SOIL ANALYTICAL DETECTIONS AND SCREENING

EXCEEDANCES ARE HIGHLIGHTED IN YELLOW

Analyte (Results in mg/kg)			Benzene			Ethylbenzene			Toluene			m,p-Xylenes		o-Xylenes	1,2,4-Trimethylbenzene			1,3,5-Trimethylbenzene			2-Butanone (MEK)			Acetone		
Ingestion / Inhalation / Soil to GW			12	0.8	0.03	7,800	400	13	16,000	650	12	16,000	420	200	39,000*	73*	18*	39,000*	45*	10*	47,000*	25,000*	17*	70,000	100,000	25
Screening Values (mg/kg)																										
Location	Sample ID	Date																								
B-1	B-1-03	5/14/2008	<0.00394			<0.00394			<0.00394			<0.00787		<0.00394	<0.00394			<0.00394			<0.0394			<0.0787		
	B-1-27	5/20/2008	<0.00575			0.00208 J			0.00204 J			<0.0115		<0.00575	<0.00575			<0.00575			<0.0575			<0.115		
B-2	B-2-04	5/14/2008	<0.00517			<0.00517			<0.00517			<0.0103		<0.00517	<0.00517			<0.00517			0.0142 J			0.0404 J		
	B-2-41	5/20/2008	0.0927 J			4.39 D			0.0136			2.45 D		0.0246 J	5.59 D			0.184 J			<0.0626			<0.125		
B-3	B-3-06	5/14/2008	<0.005			<0.005			<0.005			<0.010		<0.005	<0.005			<0.005			<0.050			<0.100		
	B-3-33	5/21/2008	<0.00567			<0.00567			0.00137 J J			<0.0113		<0.00567	<0.00567			<0.00567			<0.0567			<0.113		
B-4	B-4-06	5/15/2008	<0.00479			<0.00479			<0.00479			<0.00958		<0.00479	<0.00479			<0.00479			<0.0479			0.0197 J		
	B-4-35	5/22/2008	<0.00591			<0.00591			0.00176 J			<0.0118		<0.00591	<0.00591			<0.00591			<0.0591			<0.118		
B-5	B-5-04.5	5/15/2008	<0.00498			<0.00498			<0.00498			<0.00996		<0.00498	<0.00498			<0.00498			<0.0498			<0.0996		
	B-5-27	5/21/2008	<0.00533			<0.00533			<0.00533			<0.0107		<0.00533	<0.00533			<0.00533			<0.0533			<0.107		
B-6	B-6-04	5/15/2008	<0.00391			<0.00391			<0.00391			<0.00782		<0.00391	<0.00391			<0.00391			<0.0391			<0.0782		
	B-6-23	5/19/2008	<0.00513			<0.00513			<0.00513			<0.0103		<0.00513	<0.00513			<0.00513			<0.0513			<0.103		
GP-7(II)	GP-7(II)-19	5/19/2008	0.344 E J			<0.00529			0.00115 J			<0.0106		<0.00529	<0.00529			<0.00529			<0.0529			<0.106		
	GP-7(II)-19-Dup	5/19/2008	0.795 E J			<0.0051			0.00109 J			<0.0102		<0.0051	<0.0051			<0.0051			<0.051			<0.102		
GP-12(II)	GP-12(II)-17	5/22/2008	<0.00549			0.00132 J			0.00206 J			<0.011		<0.00549	<0.00549			<0.00549			<0.0549			<0.110		
	GP-12(II)-17-Dup	5/22/2008	<0.0055			<0.0055			0.00116 J			<0.011		<0.0055	<0.0055			<0.0055			<0.055			0.0323 JB		

Analyte (Results in mg/kg)			Isopropylbenzene		Methylene Chloride		Naphthalene			n-Butylbenzene	n-Propylbenzene	p-Isopropyltoluene		sec-Butylbenzene	tert-Butylbenzene	
Ingestion / Inhalation / Soil to GW			570**		85	13	0.02	1,600	170	12	240**	240**		220**	390**	
Location	Sample ID	Date														
B-1	B-1-03	5/14/2008	<0.00394		<0.0157		<0.00787		<0.00394		<0.00394		<0.00394		<0.00394	
	B-1-27	5/20/2008	<0.00575		<0.023		<0.0115		<0.00575		<0.00575		<0.00575		<0.00575	
B-2	B-2-04	5/14/2008	<0.00517		<0.0207		<0.0103		<0.00517		<0.00517		<0.00517		<0.00517	
	B-2-41	5/20/2008	0.115 J		0.0123 JB		0.0406 J		0.0913 J		1.73 D		0.0251 J		0.0413 J	
B-3	B-3-06	5/14/2008	<0.005		<0.020		<0.010		<0.005		<0.005		<0.005		<0.005	
	B-3-33	5/21/2008	<0.00567		0.00922 JB		<0.0113		<0.00567		<0.00567		<0.00567		<0.00567	
B-4	B-4-06	5/15/2008	<0.00479		<0.0192		<0.00958		<0.00479		<0.00479		<0.00479		<0.00479	
	B-4-35	5/22/2008	<0.00591		0.0136 JB		<0.0118		<0.00591		<0.00591		<0.00591		<0.00591	
B-5	B-5-04.5	5/15/2008	<0.00498		<0.0199		<0.00996		<0.00498		<0.00498		<0.00498		<0.00498	
	B-5-27	5/21/2008	<0.00533		<0.0213		<0.0107		<0.00533		<0.00533		<0.00533		<0.00533	
B-6	B-6-04	5/15/2008	<0.00391		<0.0156		<0.00782		<0.00391		<0.00391		<0.00391		<0.00391	
	B-6-23	5/19/2008	<0.00513		<0.0205		<0.0103		<0.00513		<0.00513		<0.00513		<0.00513	
GP-7(II)	GP-7(II)-19	5/19/2008	<0.00529		<0.0212		<0.0106		<0.00529		<0.00529		<0.00529		<0.00529	
	GP-7(II)-19-Dup	5/19/2008	<0.0051		<0.0204		<0.0102		<0.0051		<0.0051		<0.0051		<0.0051	
GP-12(II)	GP-12(II)-17	5/22/2008	<0.00549		0.0109 JB		<0.011		<0.00549		<0.00549		<0.00549		<0.00549	
	GP-12(II)-17-Dup	5/22/2008	<0.0055		0.00605 JB		<0.011		<0.0055		<0.0055		<0.0055		<0.0055	

NOTES:

- Screening values shown above are the Tier 1 Soil Remediation Objectives for Residential Properties.
- <#.# denoted the result was not detected below the indicated reporting limit.
- BOLD** indicates the analytical detection of the analyte.
- Sample ID explanation --> X-XX-ZZ --> X-XX is the boring location at which the sample was collected; ZZ is the depth at which the sample was collected.
- The soil borings at GP-7(II) and GP-12(II) were located adjacent to the location of the vapor monitoring points GP-7 and GP-12, respectively.
- The screening values provided are for Xylenes (total), which is the summation of m,p-Xylenes and o-Xylenes.

REFERENCES

Illinois Environmental Protection Agency (IEPA); Tiered Approach to Corrective Action Objectives (TACO); Title 35 of the Illinois Administrative Code, Part 742, Appendix B, Table A.

* IEPA; Tiered Approach to Corrective Action Objectives (TACO); Chemicals not in TACO Tier 1 Tables; Table A; May 1, 2007.

** U.S. Environmental Protection Agency (USEPA), Region 9; Preliminary Remediation Goals (PRGs) Table; October 2004.

LAB QUALIFIERS

- B = A target analyte or common laboratory contaminant was identified in the method blank. Its presence indicates possible field or laboratory contamination.
- D = The sample(s) were diluted due to targets detected over the highest point of the calibration curve, or due to matrix interference. Dilution factors are included in the final results. The result is from a diluted sample.
- E = The data exceeds the upper calibration limit; therefore, the concentration is reported as estimated.
- J = The target analyte was positively identified below the RL and above the MDL.

URS QUALIFIERS

- J = The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.

**TABLE 5
SUMMARY OF SOIL VAPOR ANALYTICAL DETECTIONS**

Location	Sample ID	Depth (ft)	Date	Analyte (Results in ppbV)								
				Benzene	Toluene	m,p-Xylene	1,2,4-Trimethylbenzene	1,3-Dichlorobenzene	2-Butanone (MEK)	2-Propanol	4-Ethyltoluene	Acetone
GP-9	GP-9-A-060408	5	6/4/2008	<5.6	12	<5.6	<5.6	12	<5.6	2,800 E J	<5.6	71
	GP-9-B-060408	10	6/4/2008	<2.9	9.9	<2.9	<2.9	11	17	1,600 E J	<2.9	180
	GP-9-C-060408	15	6/4/2008	<140	<140	<140	<140	<140	<140	120,000 E J	<140	1,000
	GP-9-C-060408-DUP	15	6/4/2008	<140	<140	<140	<140	<140	<140	94,000 E J	<140	1,300
	GP-9-D-060408	20	6/4/2008	<1.3	10	2.2	<1.3	14	4.6	1,900 E J	<1.3	83
GP-11	GP-11-A-060308	5	6/3/2008	<11	24	<11	<11	18	<11	21,000 E J	<11	130
	GP-11-B-060308	10	6/3/2008	<60	<60	<60	<60	<60	<60	20,000	<60	<240
	GP-11-B-060308-DUP	10	6/3/2008	<11	13	<11	<11	18	<11	20,000 E J	<11	83
	GP-11-C-060308	15	6/3/2008	<11	18	<11	<11	16	<11	17,000 E J	<11	89
	GP-11-D-060308	20	6/3/2008	<300	<300	<300	<300	<300	<300	370,000 E J	<300	<1200
GP-12	GP-12-A-060308	5	6/3/2008	<1.5	2.5	1.8	<1.5	<1.5	4	10	<1.5	32
	GP-12-B-060308	10	6/3/2008	1.4	2.7	1.9	<1.4	<1.4	5.8	14	<1.4	43
	GP-12-C-060308	15	6/3/2008	<1.4	2.6	1.8	<1.4	<1.4	4.5	12	<1.4	40
	GP-12-D-060308	20	6/3/2008	37	2.6	2	<1.3	<1.3	12	12	<1.3	54
GP-13	GP-13-A-060408	5	6/4/2008	<150	<150	<150	<150	<150	<150	220,000 E J	<150	2,700
	GP-13-B-060408	10	6/4/2008	<140	<140	250	150	<140	<140	32,000	140	<580
	GP-13-C-060408	15	6/4/2008	<130	<130	<130	<130	<130	<130	280,000 E J	<130	2,800
	GP-13-D-060408	20	6/4/2008	<140	<140	<140	<140	<140	<140	38,000	<140	<580

Location	Sample ID	Depth (ft)	Date	Analyte (Results in ppbV)							
				cis-1,2-Dichloroethene	Cyclohexane	Ethanol	Heptane	Hexachlorobutadiene	Hexane	Tetrahydrofuran	Trichloroethene
GP-9	GP-9-A-060408	5	6/4/2008	<5.6	<5.6	610	<5.6	<23	<5.6	6.2	<5.6
	GP-9-B-060408	10	6/4/2008	<2.9	<2.9	550	<2.9	<12	<2.9	3.6	<2.9
	GP-9-C-060408	15	6/4/2008	<140	<140	<580	<140	<580	<140	<140	<140
	GP-9-C-060408-DUP	15	6/4/2008	<140	<140	<580	<140	<580	<140	140	<140
	GP-9-D-060408	20	6/4/2008	<1.3	<1.3	690 E	<1.3	<5.4	<1.3	3.7	<1.3
GP-11	GP-11-A-060308	5	6/3/2008	<11	<11	7,800 E J	<11	<45	<11	<11	<11
	GP-11-B-060308	10	6/3/2008	<60	<60	1,800	<60	240 UJ J	<60	<60	<60
	GP-11-B-060308-DUP	10	6/3/2008	<11	<11	2,500	<11	44 UJ UJ	<11	<11	<11
	GP-11-C-060308	15	6/3/2008	<11	<11	4,400	<11	45 UJ UJ	<11	<11	<11
	GP-11-D-060308	20	6/3/2008	<300	<300	2,100	<300	1,200 UJ UJ	<300	<300	<300
GP-12	GP-12-A-060308	5	6/3/2008	1.5	<1.5	37	<1.5	5.9 UJ UJ	<1.5	7.3	16
	GP-12-B-060308	10	6/3/2008	<1.4	<1.4	57	<1.4	5.5 UJ UJ	<1.4	8	<1.4
	GP-12-C-060308	15	6/3/2008	<1.4	<1.4	54	1.7	5.6 UJ UJ	2.1	7.8	2.1
	GP-12-D-060308	20	6/3/2008	<1.3	27	49	<1.3	5.4 UJ UJ	3.5	7.9	<1.3
GP-13	GP-13-A-060408	5	6/4/2008	<150	<150	<610	<150	<610	<150	<150	<150
	GP-13-B-060408	10	6/4/2008	<140	<140	1,100	<140	<580	<140	<140	<140
	GP-13-C-060408	15	6/4/2008	<130	<130	<540	<130	<540	<130	<130	<130
	GP-13-D-060408	20	6/4/2008	<140	<140	<580	<140	<580	<140	200	<140

NOTES:

- 1) <#.# Denotes the result was not detected low the indicated reporting limit.
- 2) **BOLD** indicates the analytical detection of the analyte.
- 3) Sample ID explanation --> GP-XX-Y-DDDDDD --> GP-XX is the VMP location at which the sample was collected; Y is the VMP port at which the sample was collected; DDDDDD is the date on which the sample was collected.
- 4) VMP port A is screened at about 5 ft bgs; port B is screened at about 10 ft bgs; port C is screened at about 15 ft bgs; and port D is screened at about 20 ft bgs.

LAB QUALIFIERS

E = Exceeds instrument calibration range.
UJ = Non-detected compound associated with low bias in the CCV.

URS QUALIFIERS

J = The analyte was positively identified; however, the concentration given is approximate.
UJ = The analyte was not detected above the reported quantitation limit; however, the reported quantitation limit is approximate.

TABLE 6
SUMMARY OF SOIL VAPOR NATURAL GAS DETECTIONS

Location	Sample ID	Depth (ft)	Date	Analyte (Results in %)			
				Carbon Dioxide	Methane	Nitrogen	Oxygen
GP-9	GP-9-A-060408	5	6/4/2008	8.5	ND	83	8.9
	GP-9-B-060408	10	6/4/2008	9.2	ND	83	7.5
	GP-9-C-060408	15	6/4/2008	9.5	ND	84	7
	GP-9-C-060408-DUP	15	6/4/2008	9.4	ND	83	7.2
	GP-9-D-060408	20	6/4/2008	10	ND	84	5.6
GP-11	GP-11-A-060308	5	6/3/2008	6.1	ND	80	14
	GP-11-B-060308	10	6/3/2008	6.9	ND	80	13
	GP-11-B-060308-DUP	10	6/3/2008	7	ND	80	13
	GP-11-C-060308	15	6/3/2008	7.8	ND	80	12
	GP-11-D-060308	20	6/3/2008	10	ND	82	8.5
GP-12	GP-12-A-060308	5	6/3/2008	12	ND	81	7
	GP-12-B-060308	10	6/3/2008	15	ND	80	4.7
	GP-12-C-060308	15	6/3/2008	16	0.00047	80	3.4
	GP-12-D-060308	20	6/3/2008	17	0.0014	80	2.9
GP-13	GP-13-A-060408	5	6/4/2008	10	0.00039	81	9.3
	GP-13-B-060408	10	6/4/2008	12	0.0026	81	6.5
	GP-13-C-060408	15	6/4/2008	14	0.00084	81	4.9
	GP-13-D-060408	20	6/4/2008	16	0.003	81	3.2

NOTES:

- 1) **BOLD** indicates the analytical detection of the analyte.
- 2) Natural gases which were analyzed for but not detected in any of the samples include Carbon Monoxide, Ethane, and Ethene.
- 3) ND = Not Detected

**TABLE 7
SUMMARY OF GROUNDWATER ANALYTICAL DETECTIONS AND SCREENING**

EXCEEDANCES HIGHLIGHTED IN YELLOW											
Analyte (Results in mg/L)			Benzene	Ethylbenzene	Toluene	m,p-Xylene	o-Xylene	1,2,4-Trimethylbenzene	1,3,5-Trimethylbenzene	Chlorobenzene	Dichlorodifluoro methane
Ingestion Screening Values (mg/L)			0.005	0.7	1.0	10		0.35*	0.35*	0.1	1.4*
Location	Sample ID	Date									
SOPUS WELLS											
B-1	B1-061208	6/12/2008	0.00101 J	<0.005	<0.005	< 0.010	<0.005	<0.005	<0.005	<0.005	<0.005
B-2	B2-061208	6/12/2008	1.1 D	1.62 D	3 D	3.13 D	0.933 D	0.718	0.188	< 0.025	< 0.025
	B2-061208D	6/12/2008	1.12 D	1.53 D	3.03 D	3 D	0.867 D	0.689 D	0.202	< 0.025	< 0.025
B-3	B3-061208	6/12/2008	0.00159 J	0.00797	0.0501	0.0894	0.007	<0.005	<0.005	<0.005	<0.005
B-4	B4-061208	6/12/2008	<0.005	<0.005	<0.005	< 0.010	<0.005	<0.005	<0.005	<0.005	<0.005
B-5	B5-061308	6/13/2008	0.0338	0.003 J	0.00617	< 0.010	<0.005	<0.005	<0.005	<0.005	<0.005
B-6	B6-061308	6/13/2008	<0.005	<0.005	<0.005	< 0.010	<0.005	<0.005	<0.005	<0.005	<0.005
COP WELLS											
P-54	P54-061008	6/10/2008	0.00629	0.00101 J	<0.005	<0.010	<0.005	0.00294 J	<0.005	<0.005	<0.005
	P54072508	7/25/2008	<0.005	<0.005	<0.005	<0.010	<0.005	<0.005	<0.005	<0.005	<0.005
P-56	P56-060908	6/9/2008	0.383 D	1.67 D	0.46 D	2.22 D	0.233 D	0.388 D	0.0937	<0.005	<0.005
P-57	P57-061108	6/11/2008	257 D	0.624	0.133	0.76	0.117	0.106	0.0285 J	<0.050	0.127 J
P-58	P58-060908	6/9/2008	349 D J	0.87 J	0.148 J	0.769 J	0.157 J	0.734 J	0.116 J	<0.050	0.115 J
	P58-060908D	6/9/2008	348 D J	0.914 J	0.155 J	0.805 J	0.168 J	0.82 J	0.129 J	<0.050	0.122 J
P-66	P66-061008	6/10/2008	0.659 D	0.288 D	0.00167 J	0.00387 J	<0.005	0.0903	0.00569	<0.005	<0.005
P-73	P73-061008	6/10/2008	4 D	0.89 D	1.37 D	1.76 D	0.52 D	0.596 D	0.137	0.00312 J	<0.005
P-75	P75-061008	6/10/2008	3.62 D	0.0836	0.0464	0.0345	0.00674 J	0.0382	0.0108	<0.010	<0.010
P-93A	P-93A	4/30/2008	366 D	0.238	0.0187	0.347	0.0255	0.105	0.0145	<0.010	<0.010
P-93B	P-93B	4/30/2008	232 D	0.0907	0.11	0.174	0.0394	0.0118	<0.010	<0.010	<0.010

Analyte (Results in mg/L)			Isopropyl benzene	Methyl tert-Butyl Ether	Methylene chloride	Naphthalene	n-Butylbenzene	n-Propylbenzene	p-Isopropyltoluene	sec-Butylbenzene	tert-Butylbenzene
Ingestion Screening Values (mg/L)			0.66**	0.07	0.005	0.14	0.24***	0.24***		0.24***	0.24***
Location	Sample ID	Date									
SOPUS WELLS											
B-1	B1-061208	6/12/2008	<0.005	0.00438 J	0.00321 J	< 0.010	<0.005	<0.005	<0.005	<0.005	<0.005
B-2	B2-061208	6/12/2008	0.0539	< 0.025	0.0422 B	0.129	< 0.025	0.117	< 0.025	< 0.025	< 0.025
	B2-061208D	6/12/2008	0.0546	< 0.025	0.0472 B	0.145	< 0.025	0.124	< 0.025	< 0.025	< 0.025
B-3	B3-061208	6/12/2008	0.0295	<0.005	<0.005	< 0.010	0.00269 J	0.0549	<0.005	0.00229 J	0.00216 J
B-4	B4-061208	6/12/2008	<0.005	<0.005	0.00482 J	< 0.010	<0.005	<0.005	<0.005	<0.005	<0.005
B-5	B5-061308	6/13/2008	0.00193 J	<0.005	0.00518	< 0.010	<0.005	0.00257 J	<0.005	<0.005	0.00172 J
B-6	B6-061308	6/13/2008	<0.005	0.00104 J	0.00157 J	< 0.010	<0.005	<0.005	<0.005	<0.005	<0.005
COP WELLS											
P-54	P54-061008	6/10/2008	<0.005	<0.005	0.00207 JB	<0.010	<0.005	<0.005	<0.005	<0.005	<0.005
	P54072508	7/25/2008	<0.005	<0.005	0.00384 J	<0.010	<0.005	<0.005	<0.005	<0.005	<0.005
P-56	P56-060908	6/9/2008	0.0611	<0.005	<0.005	0.18 D	0.0094	0.0869	0.00415 J	<0.005	<0.005
P-57	P57-061108	6/11/2008	0.0183 J	<0.050	<0.050	0.065 J	<0.050	0.0171 J	<0.050	<0.050	<0.050
P-58	P58-060908	6/9/2008	0.0766 J	<0.050	<0.050	0.179 J	0.0189 J J	0.109 J	<0.050	<0.050	0.0371 J J
	P58-060908D	6/9/2008	0.0868 J	<0.050	<0.050	0.202 J	0.0212 J J	0.124 J	0.0118 J J	<0.050	0.0425 J J
P-66	P66-061008	6/10/2008	0.0915	<0.005	<0.005	0.0755	0.0175	0.114	0.00445 J	0.0196	0.00596
P-73	P73-061008	6/10/2008	0.0497	<0.005	<0.005	0.145	0.0255	0.0809	0.0124	0.0199	0.0478
P-75	P75-061008	6/10/2008	0.126	0.125	<0.010	0.162	0.0268	0.0607	0.00398 J	0.0241	0.00496 J
P-93A	P-93A	4/30/2008	<0.010	6.26 D	<0.050	<0.050	<0.010	0.0117	<0.010	<0.010	<0.010

NOTES:

- Screening values shown above are the Tier 1 Groundwater Remediation Objectives for the Ingestion Route.
- BOLD** indicates the analytical detection of the analyte.
- Sample ID explanation -> XX-DDDDDD -> XX is the well location at which the sample was collected; DDDDDDD is the date on which the sample was collected.
- The screening values provided are for Xylenes (total), which is the summation of m,p-Xylenes and o-Xylenes.
- Analytical results for P-93A are from the 2Q08 monitoring event for the Wood River Refinery and were provided by COP.
- The 6/10/2008 data for well P-54 are considered suspect.

REFERENCES

Illinois Environmental Protection Agency (IEPA); Tiered Approach to Corrective Action Objectives (TACO); Title 35 of the Illinois Administrative Code, Part 742, Appendix B, Table E.
 * IEPA; TACO; Groundwater Remediation Objectives for Chemicals not listed in TACO; May 1, 2007.
 ** U.S. Environmental Protection Agency (USEPA); Region 6 Human Health Medium Specific Screening Levels; December 2007.
 *** U.S. Environmental Protection Agency (USEPA), Region 9; Preliminary Remediation Goals (PRGs) Table; October 2004.

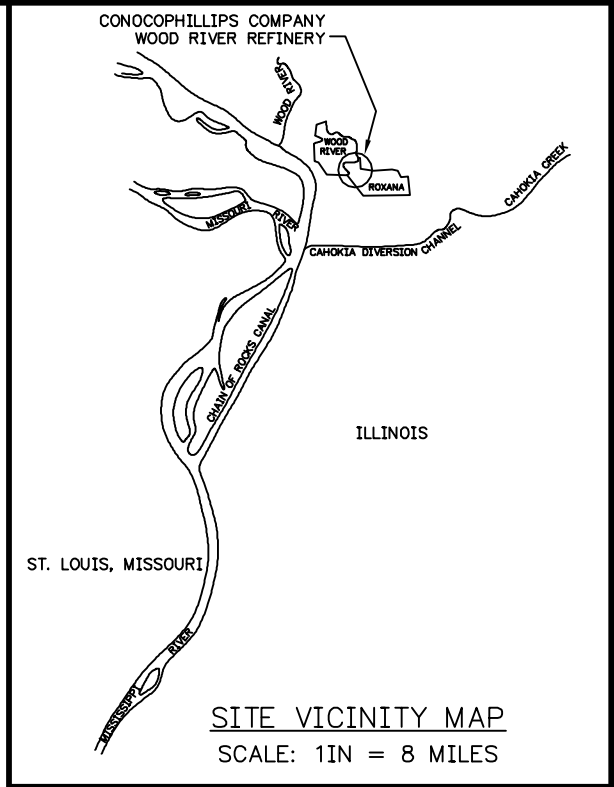
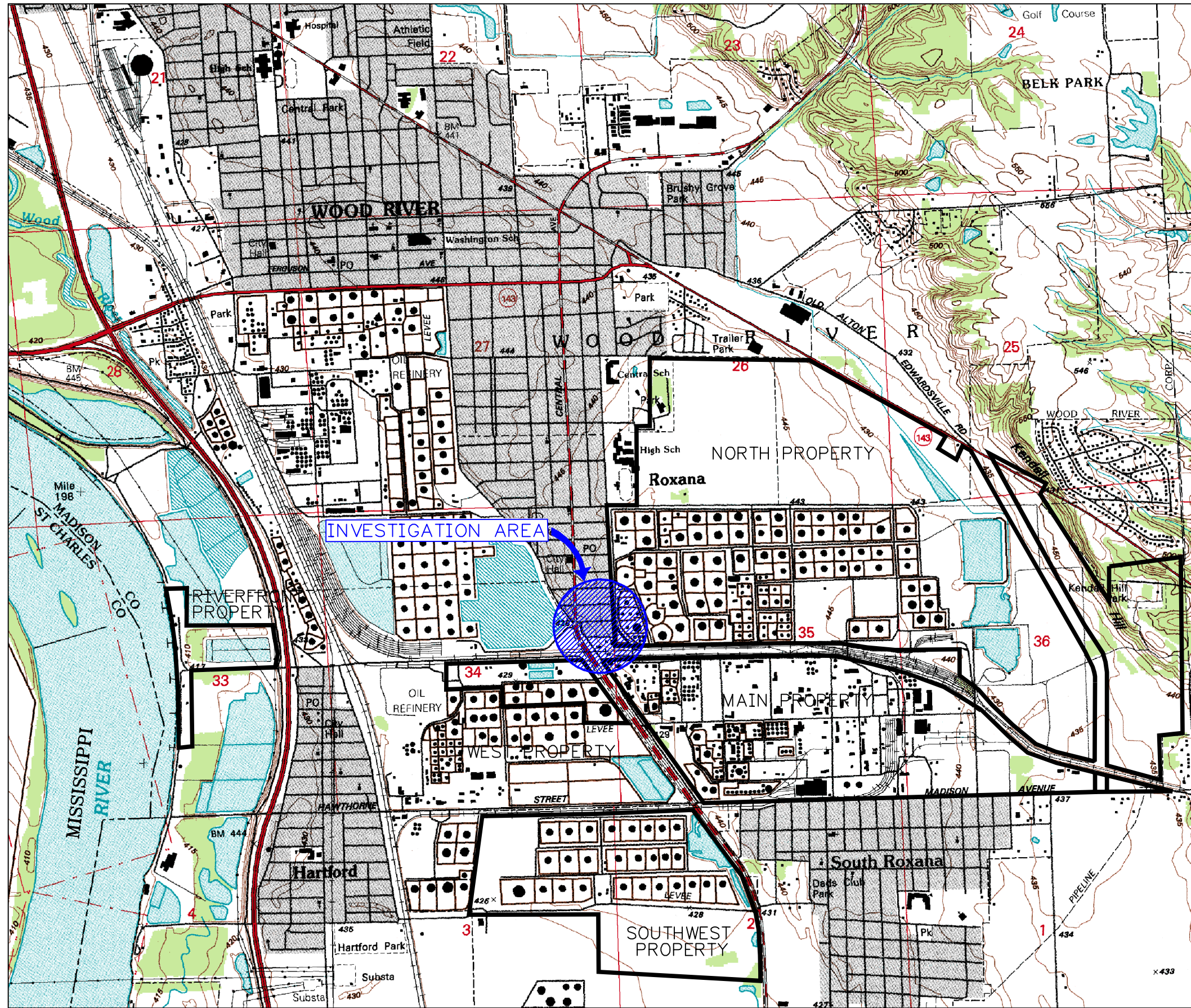
LAB QUALIFIERS

B = A target analyte or common laboratory contaminant was identified in the method blank. Its presence indicates possible field or laboratory contamination.
 D = The sample(s) were diluted due to targets detected over the highest point of the calibration curve, or due to matrix interference. Dilution factors are included in the final results. The result is from a diluted sample.
 J = The target analyte was positively identified below the RL and above the MDL.

URS QUALIFIERS

J = The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.

File: P:\ENVIRONMENTAL\21561979 SOPUS ROUTE 111 RAND AVE VICINITY INVESTIGATION\REPORT 081108\FIGURES\FIGURE 1 SITE LOCATION MAP.DWG Last edited: 08/19/08 @ 10:16 a.m. © WCC-ST. LOUIS



LEGEND

- WOOD RIVER REFINERY PROPERTY BOUNDARY
- INVESTIGATION AREA

SOURCE: MAP TAKEN FROM ELECTRONIC USGS DIGITAL RASTER GRAPHIC 7.5 MINUTE TOPOGRAPHIC MAP OF WOOD RIVER, ILL-MO REVISED 1994.

CONTOUR INTERVAL = 10FT

0 2000

SCALE FEET

SHELL OIL PRODUCTS US
ROUTE 111/RAND AVENUE VICINITY INVESTIGATION
ROXANA, ILLINOIS

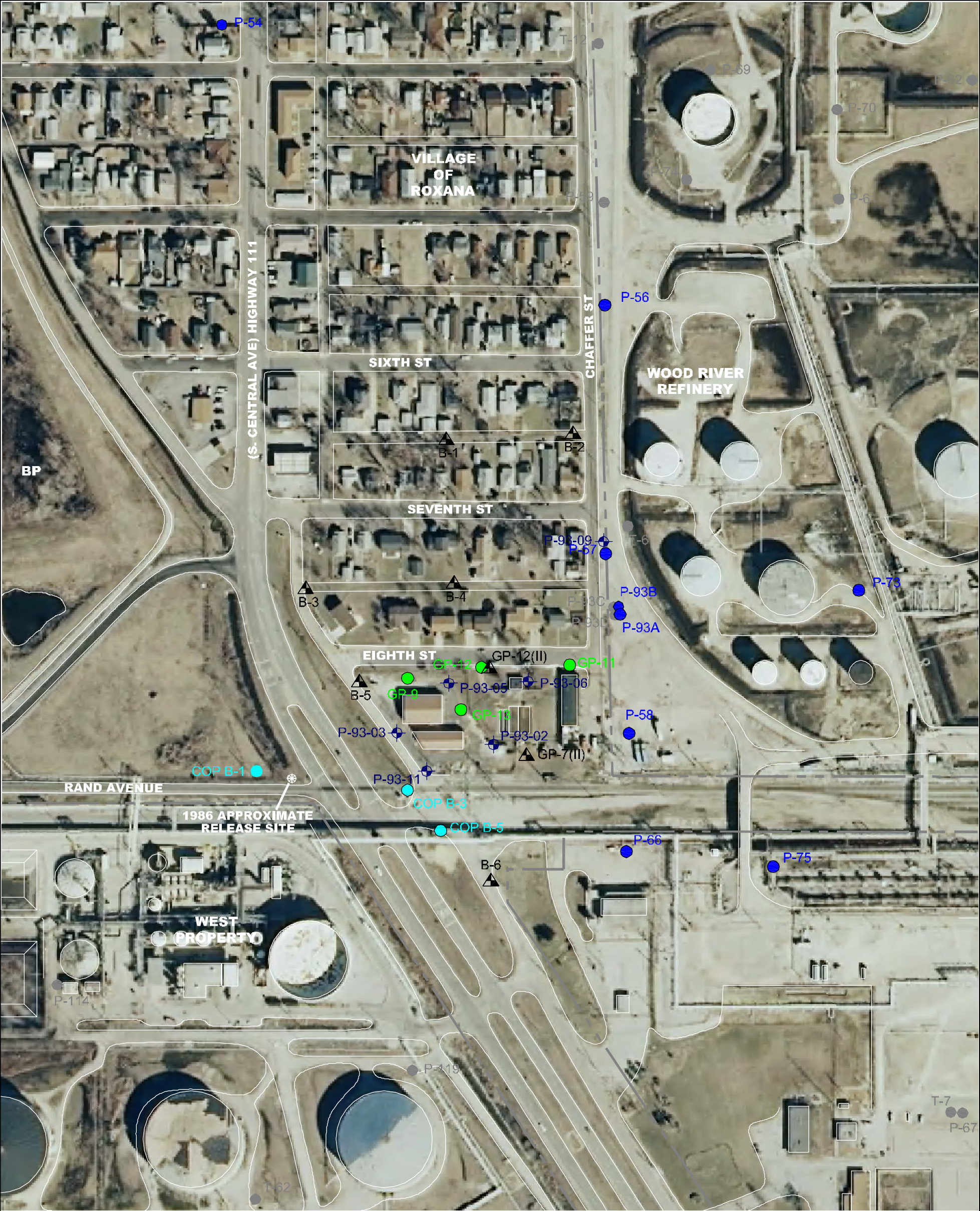
PROJECT NO.
21561979

URS

DRN. BY: djd 7/19/06
DSGN. BY: gh
CHKD. BY: wmp

Site Location Map

FIG. NO.
1

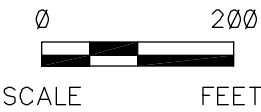


LEGEND

- ▲ URS SOIL/GROUNDWATER SAMPLING LOCATION (MAY-JUNE 2008)
- ⊕ URS GROUNDWATER PROFILING LOCATION (MARCH-APRIL 2006)
- EXISTING COP MONITORING WELL SAMPLED (JUNE 2008)
- EXISTING VAPOR MONITORING POINT SAMPLED (JUNE 2008)
- COP SOIL/GROUNDWATER SAMPLING LOCATION (MARCH 2007)

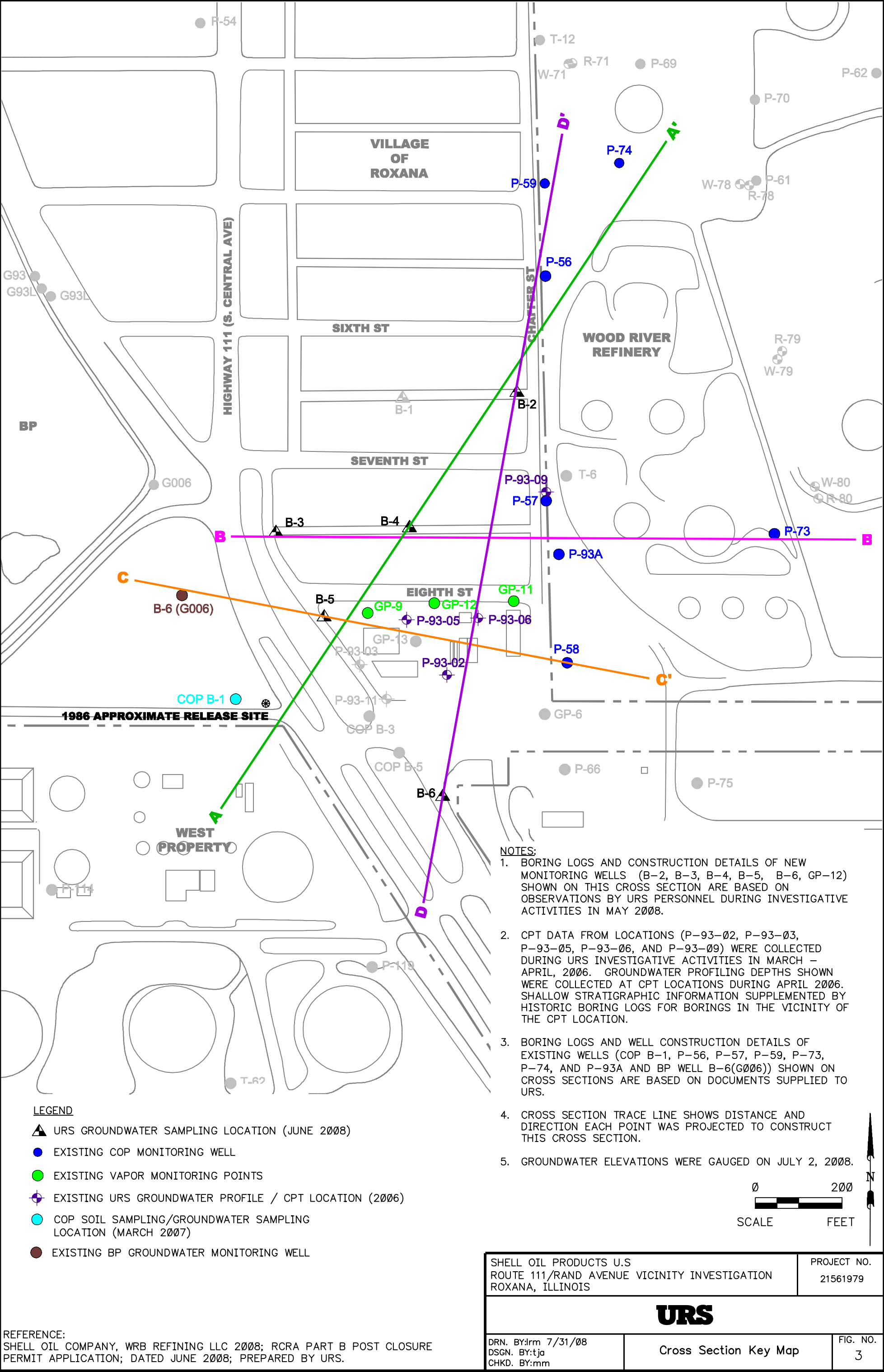
NOTES:

- LOCATION OF "COP" BORINGS PROVIDED BY CONOCOPHILLIPS.

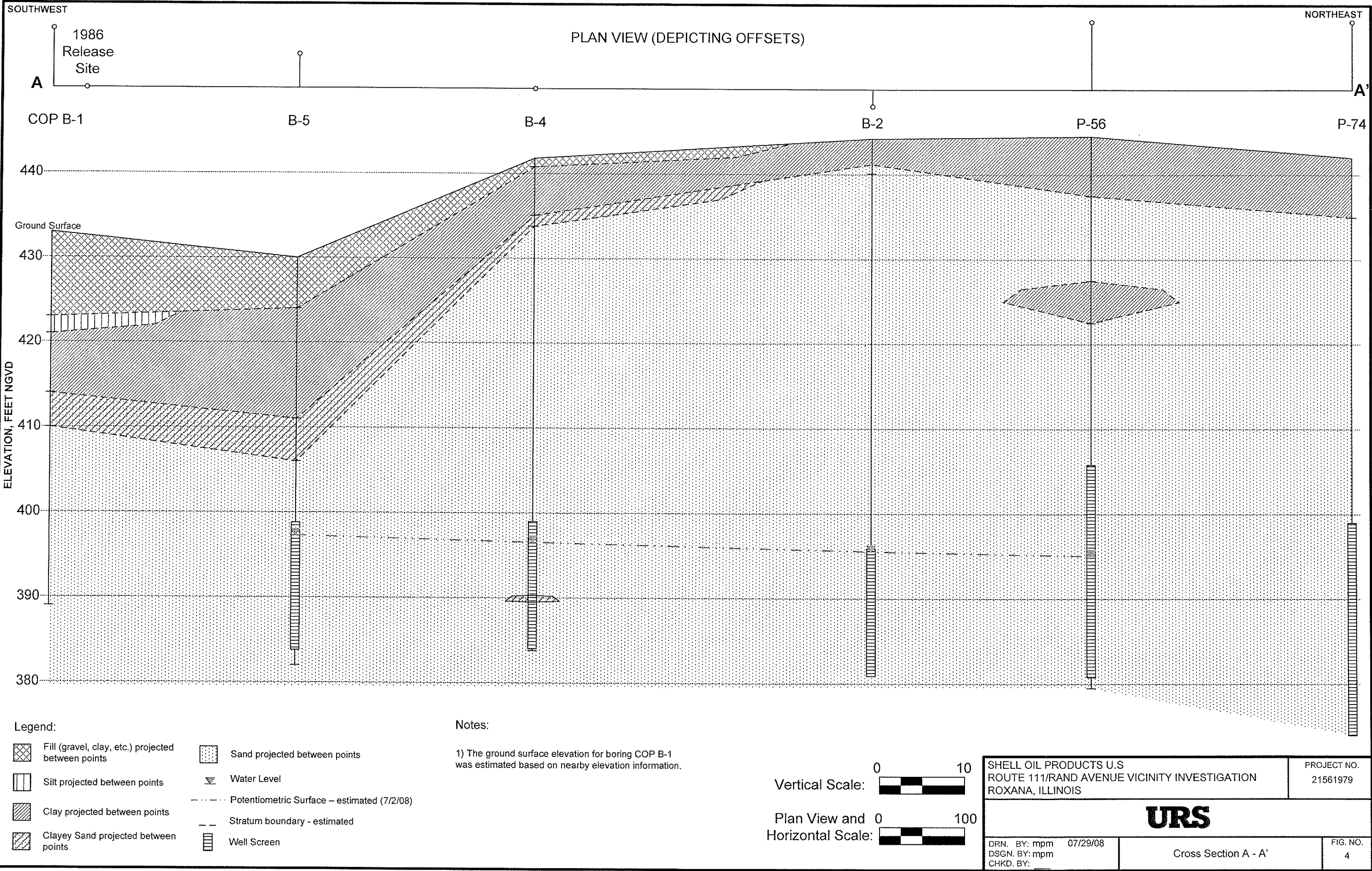


REFERENCE:
SHELL OIL COMPANY, WRB REFINING LLC 2008; RCRA PART B POST CLOSURE PERMIT APPLICATION; DATED JUNE 2008; PREPARED BY URS.

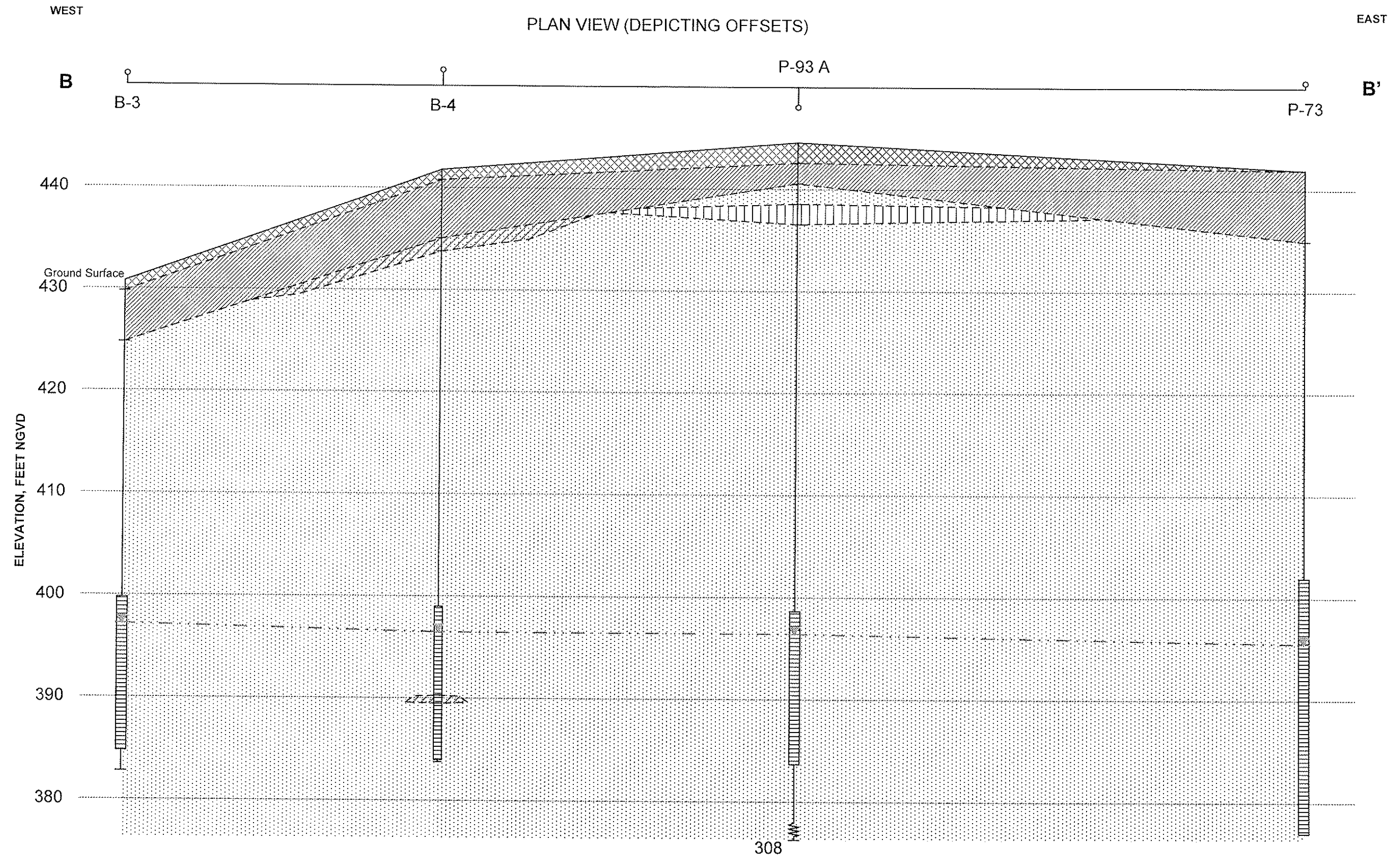
SHELL OIL PRODUCTS U.S ROUTE 111/RAND AVENUE VICINITY INVESTIGATION ROXANA, ILLINOIS		PROJECT NO. 21561979
URS		
DRN. BY:djd 7/1/08 DSGN. BY:taj CHKD. BY:b3	Investigation Locations	FIG. NO. 2



P:\Environmental\21561979 SOPUS Route 111 Rand Ave Vicinity Investigation\Investigation Report 081108\Figures\Figure 4 Cross Section A-A'.vsd Last edit: 8/5/2008 4:42:50 PM



P:\Environmental\21561979 SOP\US Route 111 Rand Ave Vicinity Investigation\Investigation Report 081108\Figures\Figure 5 Cross Section B-B'.vsd Last edit: 8/5/2008 4:43:19 PM



Legend:

- | | |
|--|----------------------------------|
| Fill (gravel, clay, etc.) projected between points | Sand projected between points |
| Silt projected between points | Water Level |
| Clay projected between points | Potentiometric Surface - assumed |
| Clayey Sand projected between points | Stratum boundary - assumed |
| | Well Screen |

Vertical Scale:

Plan View and Horizontal Scale:

SHELL OIL PRODUCTS U.S.
ROUTE 111/RAND AVENUE VICINITY INVESTIGATION
ROXANA, ILLINOIS

PROJECT NO.
21561979

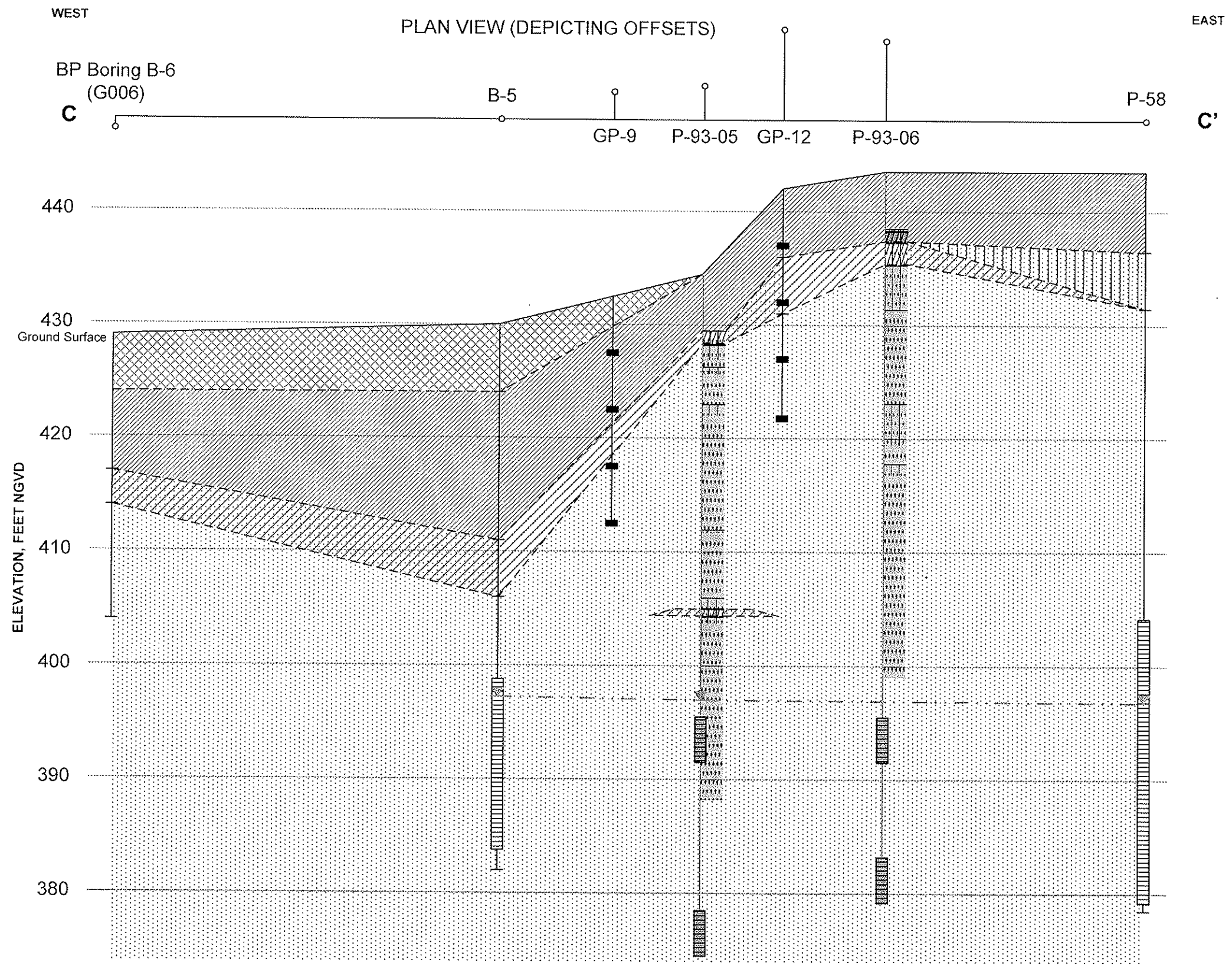
URS

DRN. BY: mpm 07/29/08
DSGN. BY: mpm
CHKD. BY:

Cross Section B - B'

FIG. NO.
5

P:\Environmental\21561979 SOPUS Route 111 Rand Ave Vicinity Investigation\Investigation Report 081108\Figures\Figure 6 Cross Section C-C'.vsd Last edit: 8/8/2008 1:49:31 PM



Legend:

- | | | |
|--|-------------------------------|----------------------------------|
| Fill (gravel, clay, etc.) projected between points | Sand projected between points | Water Level |
| Silt projected between points | CPT interpreted Clay | Potentiometric Surface - assumed |
| Clay projected between points | CPT interpreted Sandy Clay | Stratum boundary - assumed |
| Clayey Sand projected between points | CPT interpreted Sand | Well Screen |
| | | Groundwater Profiling Interval |
| | | Vapor Port Screen |

NOTES:
1) GP-9 is included to illustrate vapor screen depths. This boring was not used to create this cross section.

Vertical Scale:

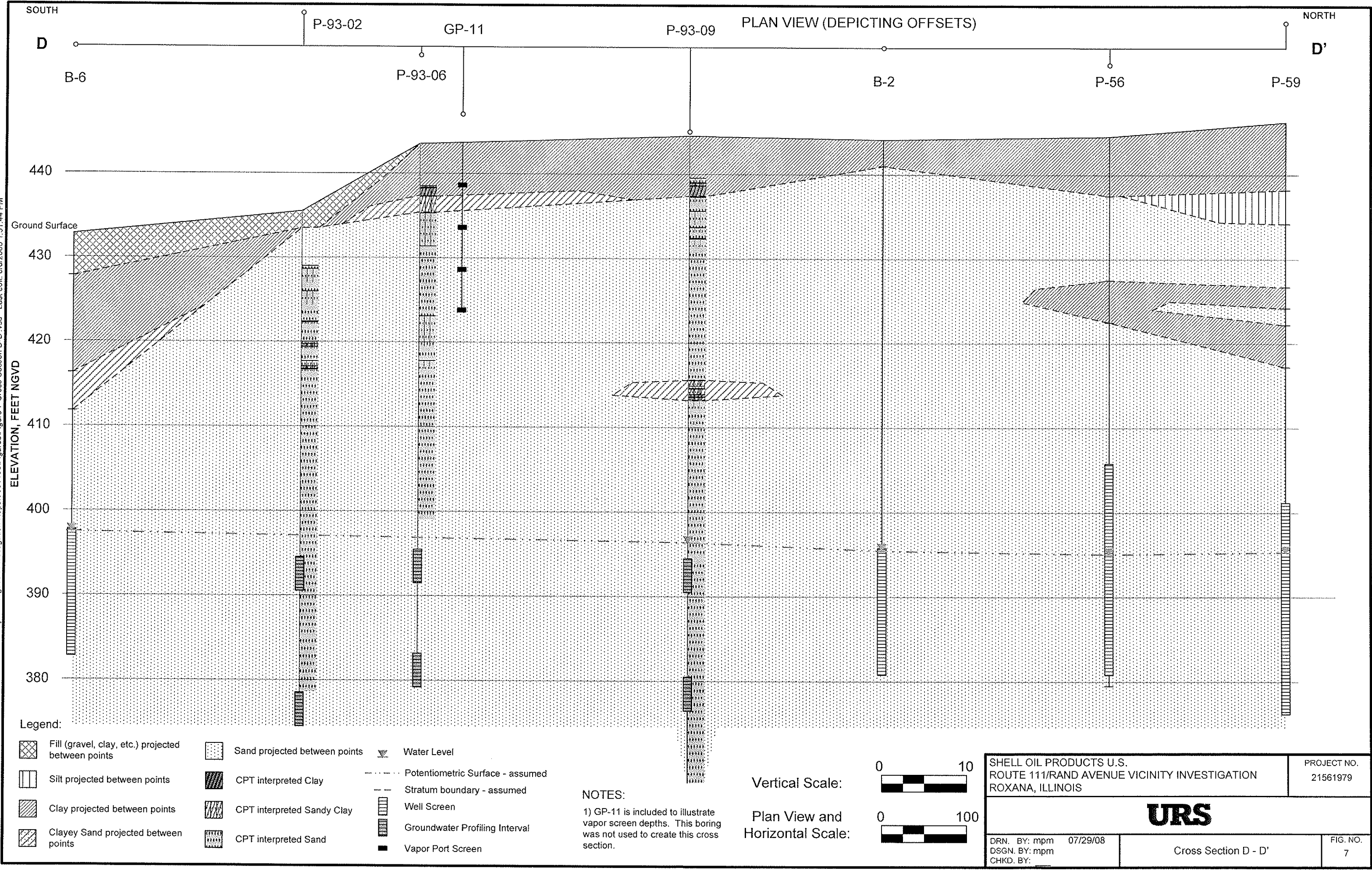


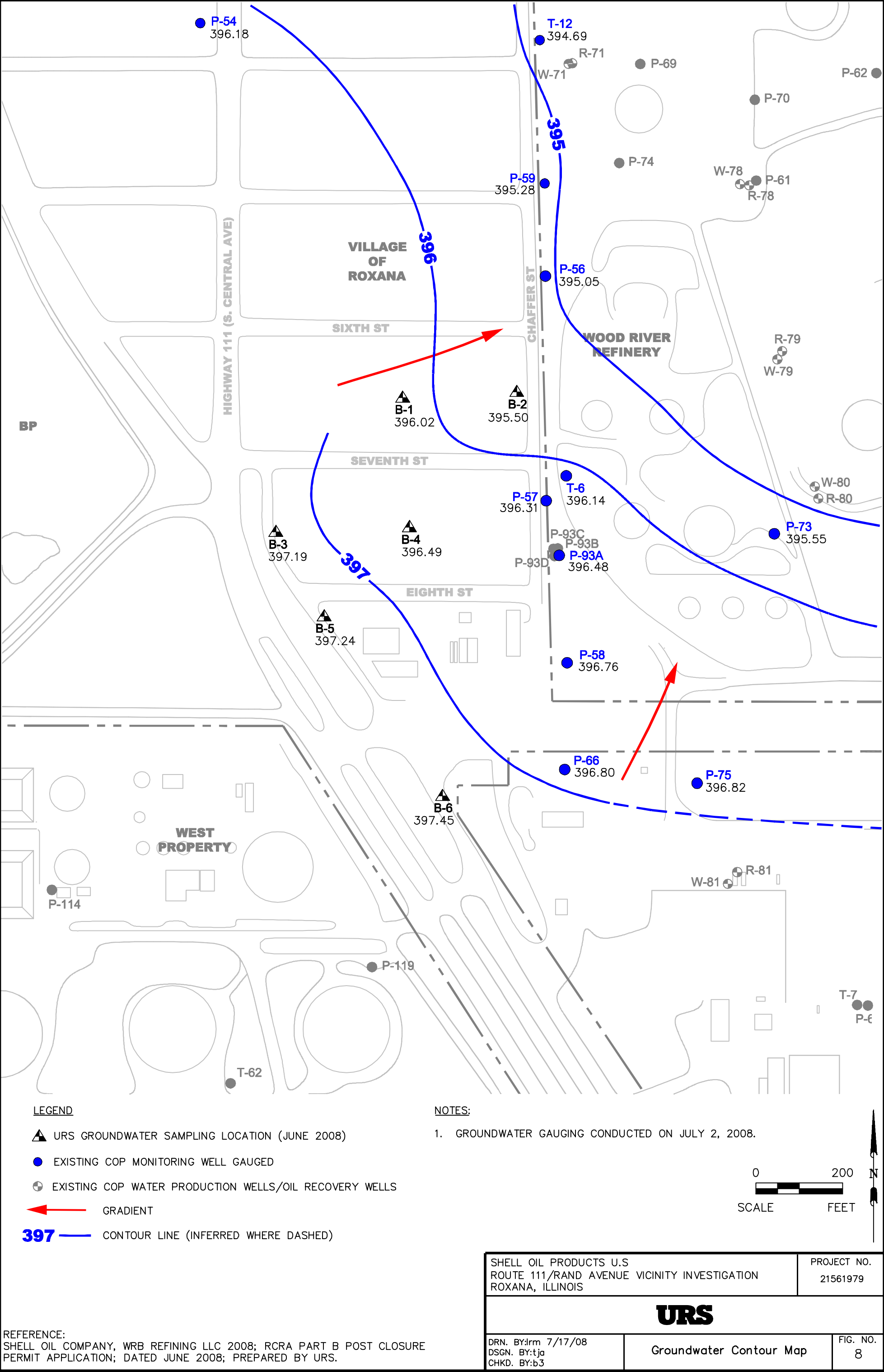
Plan View and Horizontal Scale:

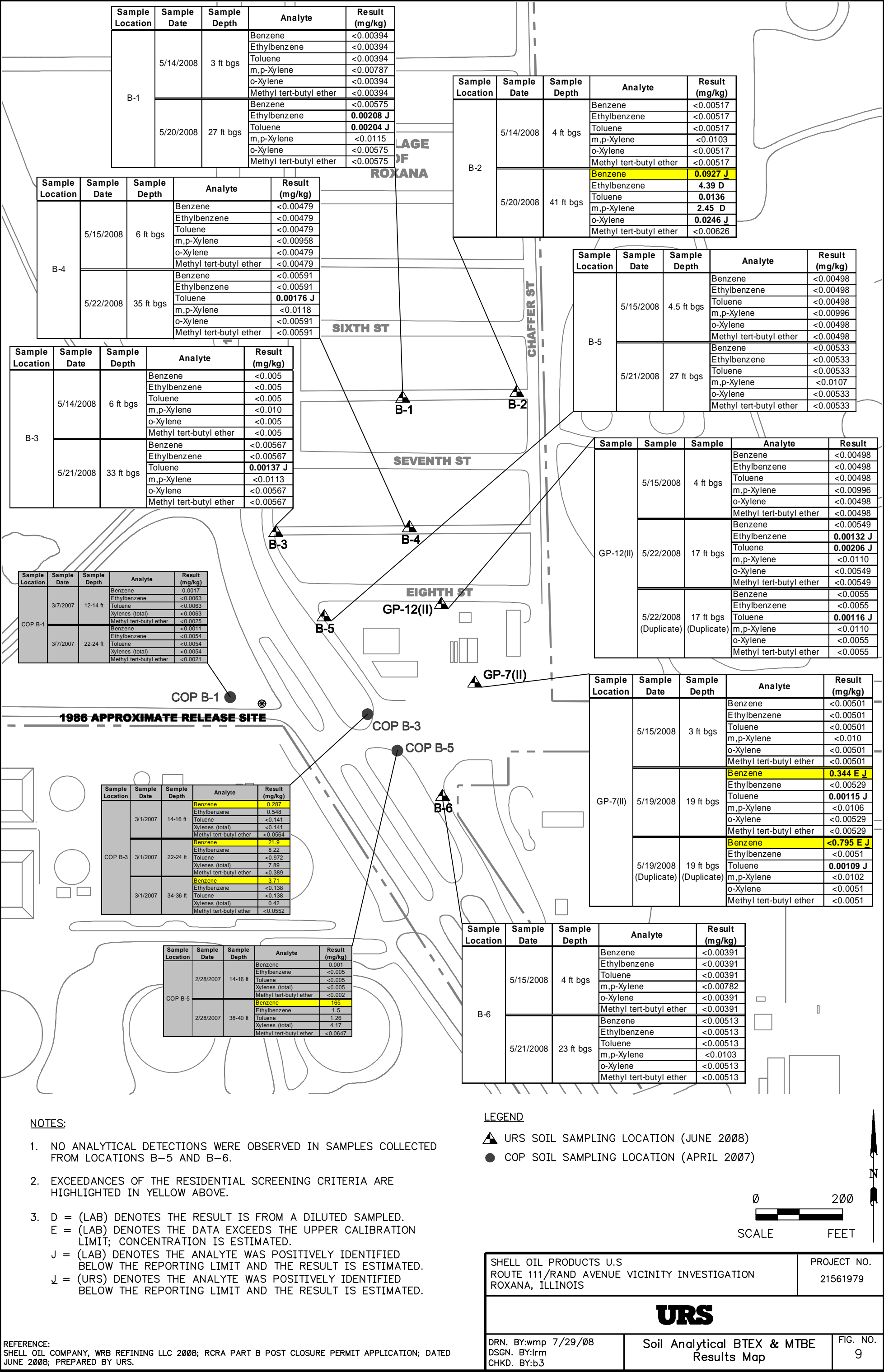


SHELL OIL PRODUCTS U.S. ROUTE 111/RAND AVENUE VICINITY INVESTIGATION ROXANA, ILLINOIS		PROJECT NO. 21561979
URS		FIG. NO. 6
DRN. BY: mpm 07/29/08 DSGN. BY: mpm CHKD. BY:	Cross Section C - C'	

P:\Environmental\21561979 SOPUS Route 111 Rand Ave Vicinity Investigation\Investigation Report 081108\Figures\Figure 7 Cross Section D-D'.vsd Last edit: 8/6/2008 1:51:44 PM







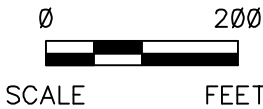
Sample Location	Sample Date	Vapor Port	Analyte	Result (ppbV)
GP-9	6/4/2008	A (5 ft)	Benzene	<5.6
			Ethylbenzene	<5.6
			Toluene	12
			m,p-Xylene	<5.6
			o-Xylene	<5.6
			Methyl tert-butyl Ether	<5.6
	6/4/2008	B (10 ft)	Benzene	<2.9
			Ethylbenzene	<2.9
			Toluene	9.9
			m,p-Xylene	<2.9
			o-Xylene	<2.9
			Methyl tert-butyl Ether	<2.9
	6/4/2008	C (15 ft)	Benzene	<140
			Ethylbenzene	<140
			Toluene	<140
			m,p-Xylene	<140
			o-Xylene	<140
			Methyl tert-butyl Ether	<140
	6/4/2008 (Duplicate)	C (Duplicate)	Benzene	<140
			Ethylbenzene	<140
			Toluene	<140
			m,p-Xylene	<140
			o-Xylene	<140
	6/4/2008	D (20 ft)	Methyl tert-butyl Ether	<140
			Benzene	<1.3
			Ethylbenzene	<1.3
			Toluene	10
			m,p-Xylene	2.2
			o-Xylene	<1.3
			Methyl tert-butyl Ether	<1.3

Sample Location	Sample Date	Vapor Port	Analyte	Result (ppbV)
GP-12	6/3/2008	A (5 ft)	Benzene	<1.5
			Ethylbenzene	<1.5
			Toluene	2.5
			m,p-Xylene	1.8
			o-Xylene	<1.5
			Methyl tert-butyl Ether	<1.5
	6/3/2008	B (10 ft)	Benzene	1.4
			Ethylbenzene	<1.4
			Toluene	2.7
			m,p-Xylene	1.9
			o-Xylene	<1.4
			Methyl tert-butyl Ether	<1.4
	6/3/2008	C (15 ft)	Benzene	<1.4
			Ethylbenzene	<1.4
			Toluene	2.6
			m,p-Xylene	1.8
			o-Xylene	<1.4
	6/3/2008	D (20 ft)	Methyl tert-butyl Ether	<1.4
			Benzene	37
			Ethylbenzene	<1.3
			Toluene	2.6
			m,p-Xylene	2
			o-Xylene	<1.3
			Methyl tert-butyl Ether	<1.3

Sample Location	Sample Date	Vapor Port	Analyte	Result (ppbV)
GP-11	6/3/2008	A (5 ft)	Benzene	<11
			Ethylbenzene	<11
			Toluene	24
			m,p-Xylene	<11
			o-Xylene	<11
			Methyl tert-butyl Ether	<11
	6/3/2008	B (10 ft)	Benzene	<60
			Ethylbenzene	<60
			Toluene	<60
			m,p-Xylene	<60
			o-Xylene	<60
			Methyl tert-butyl Ether	<60
	6/3/2008 (Duplicate)	B (Duplicate)	Benzene	<11
			Ethylbenzene	<11
			Toluene	13
			m,p-Xylene	<11
			o-Xylene	<11
	6/3/2008	C (15 ft)	Methyl tert-butyl Ether	<11
			Benzene	<11
			Ethylbenzene	<11
			Toluene	18
			m,p-Xylene	<11
	6/3/2008	D (20 ft)	o-Xylene	<11
			Methyl tert-butyl Ether	<11
			Benzene	<300
			Ethylbenzene	<300
			Toluene	<300
			m,p-Xylene	<300
			o-Xylene	<300
			Methyl tert-butyl Ether	<300

LEGEND

● EXISTING VAPOR MONITORING POINT SAMPLED



SHELL OIL PRODUCTS U.S./WRB REFINING LLC
ROUTE 111/RAND AVENUE VICINITY INVESTIGATION
ROXANA, ILLINOIS

PROJECT NO.
21561979

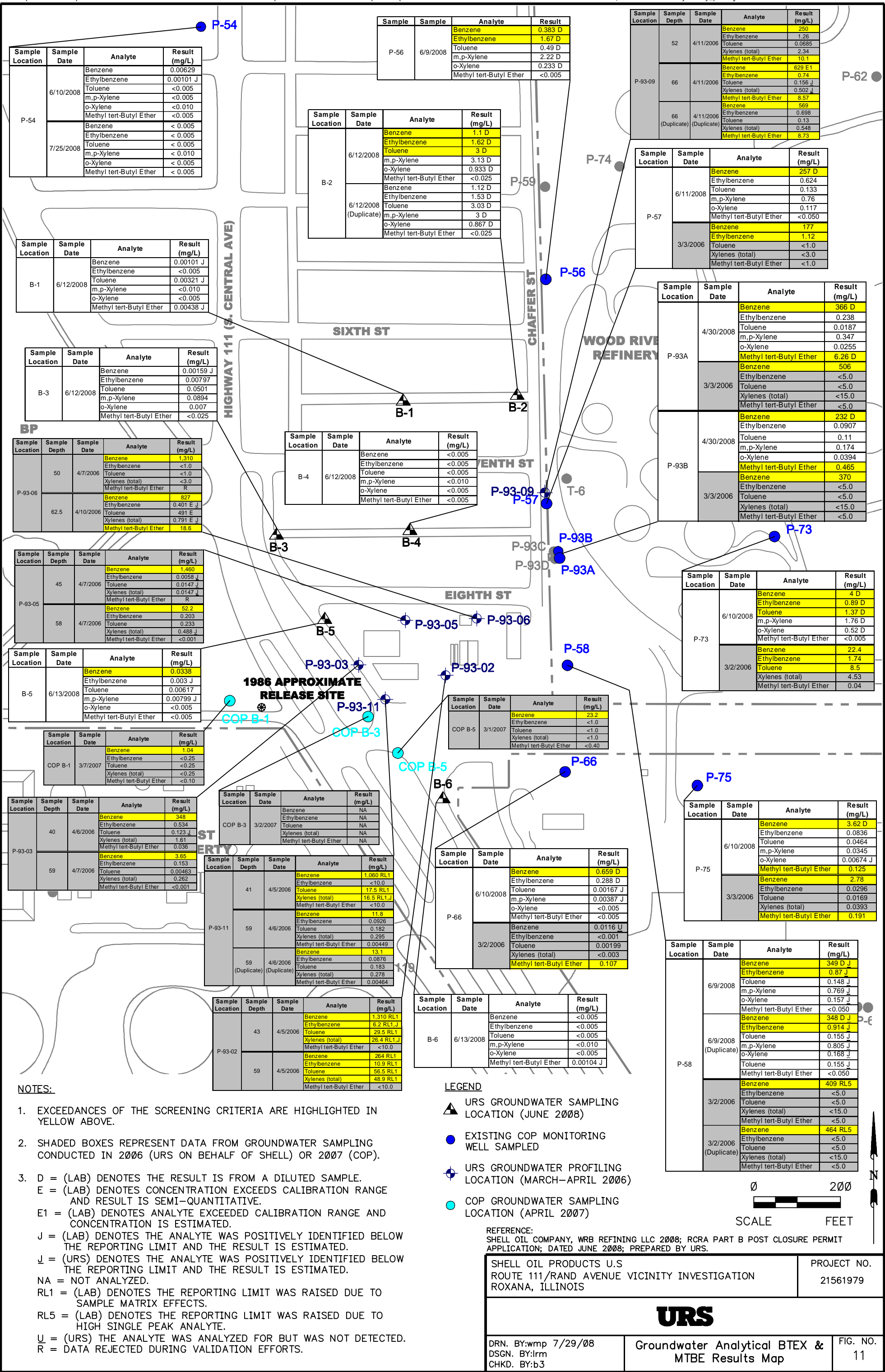
URS

DRN. BY:wmp 7/29/08
DSGN. BY:lrn
CHKD. BY:b3

Soil Vapor Analytical BTEX &
MTBE Results Map

FIG. NO.
10







REFERENCE:
SHELL OIL COMPANY, WRB REFINING LLC 2008; RCRA PART B POST CLOSURE PERMIT APPLICATION; DATED JUNE 2008; PREPARED BY URS.



KEY TO BORING LOGS

SUBSURFACE MATERIAL LEGEND

SAMPLER LEGEND

Graphic Symbol	Description	USCS Classification
SAND		SAND with little or no fines SP
		Silty SAND SM
		Clayey SAND SC
LOW PLASTIC SILTS AND CLAYS		Low plastic SILT ML
		Low plastic CLAY Medium plastic CLAY Silty CLAY or Sandy CLAY CL
SURFACE MATERIALS		FILL



Air Knife / Hand Auger Sampler



Split Spoon Sampler



Geoprobe - Soil sampling not performed



Geoprobe Dual-Tube Sampler












Depth Groundwater enters at time of drilling.

NOTES:

Boring log details shown on the following logs are based upon ground surface and field conditions at the time of drilling and well installation.

LOG OF BORING B-1

Start Date: 5/14/08 Completion Date: 5/21/08 Coordinates: Northing: 792528.13
Easting: 2321982.84
Boring Location: Village of Roxana Ground Elevation: 443.24

Depth In feet	Inches Driven	Inches Recovered	PID (ppm)	Sampler Graphic	Symbol	USCS	DESCRIPTION	NOTES
5			0.0			FILL	Gravel base coarse, gravel asphalt, and gravel FILL (FILL)	Boring advanced to a depth of 8' via hand auger, then continued with geoprobe Slight tar odor (05/14/08) Sample B-1-03 collected for VOCs
			0.0			CL	Soft to medium stiff, moist, brown and gray, medium plastic CLAY (CL), trace gravel	
			0.0				Becomes reddish brown	
			0.0			CL	Soft, moist, brown, low plastic silty CLAY (CL)	
10	48	32	2.1			SC	Medium dense, moist to wet, brown, fine grained clayey SAND (SC)	Air knife completed deeper than hand auger. Soil contact not observed.
			3.7				Dark and light brown banding	
15	48	20	3.0			SP	Loose, dry, tan, fine grained SAND (SP)	
			0.9					
	48	32	1.4					
			2.1				Becomes medium dense, fine to medium grained	
20	48	32	1.8					

Completion Depth: 60.00 ft bgs
 Project No.: 21561979
 Project Name: Route 111 and Rand Avenue Vicinity
 Drilling Contractor: Roberts Environmental Drilling, Inc.
 Drilling method: Hand Auger / Dual-Tube Geoprobe Rig Type: 6610DT
 Drilled by: J. Cox
 Logged by: W. Pennington / M. Miller



































URS

Water Depth: 49 ft., After ATD hrs.
 Water Depth: _____ ft., After _____ hrs.
☒ Water level ATD
☐ Water level after drilling
☒ Air Knife /
 Hand Auger Sampler
 Unified Soil Classification
 based on field visual
 observations.
☐ ATD - At time of drilling
☐ Hollow Stem Auger - Soil
 sampling not performed
☒ Split Spoon Sampler
☒ Geoprobe - Soil sampling
 not performed
☒ Geoprobe Dual-Tube Sampler

LOG OF BORING B-1

Start Date: 5/14/08 Completion Date: 5/21/08
Boring Location: Village of Roxana

Coordinates: Northing: 792528.13
Easting: 2321982.84
Ground Elevation: 443.24

Depth In feet	Inches Driven	Inches Recovered	PID (ppm)	Sampler Graphic	Symbol	USCS	DESCRIPTION	NOTES
30	48	32	0.2				SAME: Medium dense, dry, tan, fine to medium grained SAND (SP)	
			4.1					
	48	32	1.8					
			1.1					
	48	32	1.7					
35			2.0					
			1.8					
	48	32	1.4			SP	With interbedded clay seams	Black staining (8 inches)
							Clay grades out	Slight black staining
40			1.8				Becomes medium grained	
	48	32	0.4				Becomes dense, fine grained, trace silt	
								
							Becomes medium grained	
45			0.3					
	48	30	1.3					
								
	48	30	0.4				Becomes wet	

Completion Depth: 60.00 ft bgs

Project No.: 21561979

Project Name: Route 111 and Rand Avenue Vicinity

Drilling Contractor: Roberts Environmental Drilling, Inc.

Drilling method: Hand Auger / Dual-Tube Geoprobe Rig Type: 6610DT

Drilled by: J. Cox

Logged by: W. Pennington / M. Miller

URS

Water Depth: 49 ft., After ATD hrs.

Water Depth: _____ ft., After _____ hrs.

☒ Water level ATD

☒ Water level after drilling

☒ Air Knife /
Hand Auger Sampler

Unified Soil Classification
based on field visual
observations.

ATD - At time of drilling

☐ Hollow Stem Auger - Soil
sampling not performed

☒ Split Spoon Sampler


☒ Geoprobe - Soil sampling
not performed

☒ Geoprobe Dual-Tube Sampler

LOG OF BORING B-1

Start Date: 5/14/08 Completion Date: 5/21/08
Boring Location: Village of Roxana

Coordinates: Northing: 792528.13
Easting: 2321982.84
Ground Elevation: 443.24

Depth In feet	Inches Driven	Inches Recovered	PID (ppm)	Sampler Graphic	Symbol	USCS	DESCRIPTION	NOTES
55	48	0	1.8				SAME: Dense, wet, tan, medium grained, SAND (SP)	Bottom of liner from 48 - 52 ft crushed. Liner from 42 - 56 ft crushed at end; no recovery
60	48	0						Liner from 56 - 60 ft stuck in rods; no recovery
65							Bottom of boring at 60 ft bgs	
70								

Completion Depth: 60.00 ft bgs

Project No.: 21561979

Project Name: Route 111 and Rand Avenue Vicinity

Drilling Contractor: Roberts Environmental Drilling, Inc.


Drilling method: Hand Auger / Dual-Tube Geoprobe Rig Type: 6610DT


Drilled by: J. Cox


Logged by: W. Pennington / M. Miller

Water Depth: 49 ft., After ATD hrs.

Water Depth: _____ ft., After _____ hrs.

 Water level ATD

 Water level after drilling

 Air Knife /
Hand Auger Sampler

Unified Soil Classification
based on field visual
observations.

ATD - At time of drilling

☐ Hollow Stem Auger - Soil
sampling not performed

☒ Split Spoon Sampler

☐ Geoprobe - Soil sampling
not performed

☒ Geoprobe Dual-Tube Sampler

URS

LOG OF BORING B-2

Start Date: 5/14/08 Completion Date: 5/20/08
Boring Location: Village of Roxana

Coordinates: Northing: 792541.10
Easting: 2322245.99
Ground Elevation: 444.21

Depth In feet	Inches Driven	Inches Recovered	PID (ppm)	Sampler Graphic	Symbol	USCS	DESCRIPTION	NOTES
						TOPSOIL	TOPSOIL	Boring advanced to a depth of 8' via hand auger, then continued with geoprobe
						CL	Soft, moist, brown, low plastic, silty CLAY (CL)	
5							Loose to medium dense, moist, brown, fine grained, SAND (SP)	(05/14/08) Sample B-2-04 collected for VOCs
10	48	24	2.7				Becomes loose, tan, trace silt	
			11.0				Silt grades out	
15	48	30	3.1				Becomes medium dense, dry	
			31.4			SP		
20	48	30	5.9				Becomes fine to medium grained	
			6.1					
	48	30	2.4					
			4.5					

Completion Depth: 64.00 ft bgs

Project No.: 21561979

Project Name: Route 111 and Rand Avenue Vicinity

Drilling Contractor: Roberts Environmental Drilling, Inc.

Drilling method: Hand Auger / Dual-Tube Geoprobe Rig Type: 6610DT

Drilled by: J. Cox

Logged by: W. Pennington / M. Miller

Water Depth: 53 ft., After ATD hrs.

Water Depth: _____ ft., After _____ hrs.

☒ Water level ATD

☐ Water level after drilling

☒ Air Knife /
Hand Auger Sampler

Unified Soil Classification
based on field visual
observations.

ATD - At time of drilling

☐ Hollow Stem Auger - Soil
sampling not performed

☒ Split Spoon Sampler

☐ Geoprobe - Soil sampling
not performed

☒ Geoprobe Dual-Tube Sampler

URS

LOG OF BORING B-2

Start Date: 5/14/08 Completion Date: 5/20/08
Boring Location: Village of Roxana

Coordinates: Northing: 792541.10
Easting: 2322245.99
Ground Elevation: 444.21

							LOG OF BORING B-2	
Depth in feet	Inches Driven	Inches Recovered	PID (ppm)	Sampler Graphic	Symbol	USCS	Start Date: 5/14/08 Completion Date: 5/20/08 Boring Location: Village of Roxana	Coordinates: Northing:792541.10

Completion Depth: 64.00 ft bgs

Project No.: 21561979

Project Name: Route 111 and Rand Avenue Vicinity

Drilling Contractor: Roberts Environmental Drilling, Inc.

Drilling method: Hand Auger / Dual-Tube Geoprobe Rig Type: 6610DT

Drilled by: J. Cox

Logged by: W. Pennington / M. Miller

Water Depth: 53 ft., After ATD hrs.

Water Depth: _____ ft., After _____ hrs.

Water level ATD

Water level after drilling

Air Knife /
Hand Auger Sampler

Unified Soil Classification
based on field visual
observations.

ATD - At time of drilling

☐ Hollow Stem Auger - Soil
sampling not performed

☒ Split Spoon Sampler

☐ Geoprobe - Soil sampling
not performed

☒ Geoprobe Dual-Tube Sampler

URS

LOG OF BORING B-2

Start Date: 5/14/08 Completion Date: 5/20/08 Coordinates: Northing: 792541.10
Easting: 2322245.99
Boring Location: Village of Roxana Ground Elevation: 444.21

Depth In feet	Inches Driven	Inches Recovered	PID (ppm)	Sampler Graphic	Symbol	USCS	DESCRIPTION	NOTES
55	48	34	530				SAME: Medium dense, gray, dry, fine to medium grained, SAND (SP) Becomes moist	
			597				Becomes wet	▽
	48	42	1134					
			1122					
60	24	2						Sample liner broke off within rods. Pull rods to collect sample. Blind drill to 64' bgs
	48	0						
65							Bottom of boring at 64 ft bgs	
70								

Completion Depth: 64.00 ft bgs
 Project No.: 21561979
 Project Name: Route 111 and Rand Avenue Vicinity
 Drilling Contractor: Roberts Environmental Drilling, Inc.
 Drilling method: Hand Auger / Dual-Tube Geoprobe Rig Type: 6610DT
 Drilled by: J. Cox
 Logged by: W. Pennington / M. Miller

Water Depth: 53 ft., After ATD hrs.
 Water Depth: _____ ft., After _____ hrs.
☒ Water level ATD
☒ Water level after drilling
☒ Air Knife / Hand Auger Sampler
☐ Unified Soil Classification based on field visual observations.
 ATD - At time of drilling
☐ Hollow Stem Auger - Soil sampling not performed
☒ Split Spoon Sampler
☒ Geoprobe - Soil sampling not performed
☒ Geoprobe Dual-Tube Sampler

URS

LOG OF BORING B-3

Start Date: 5/14/08 Completion Date: 5/21/08
Boring Location: Village of Roxana

Coordinates: Northing: 792218.77
Easting: 2321690.48
Ground Elevation: 430.69

Depth In feet	Inches Driven	Inches Recovered	PID (ppm)	Sampler Graphic	Symbol	USCS	DESCRIPTION	NOTES
			0.0			TOPSOIL	TOPSOIL	Boring advanced to a depth of 8' via hand auger, then continued with geoprobe
			0.0			FILL	Clayey FILL (FILL) with gravel and asphalt Medium stiff, moist, brown, medium plastic CLAY (CL) With sand	
5			0.0			CL	Becomes gray and brown mottled, sandy	
10	48	24	0.9			SP	Loose to medium dense, moist, brown, fine to medium grained SAND (SP) Becomes loose, tan, trace silt	(05/14/08) Sample B-3-06 collected for VOCs
			0.2				Silt grades out	
15	48	32	1.3					
			1.8				Becomes medium dense	
	48	32	1.6				Becomes reddish brown	
			1.4					
20	48	32	2.4				Becomes tan	
			1.5					

Completion Depth: 48.00 ft bgs

Project No.: 21561979

Project Name: Route 111 and Rand Avenue Vicinity

Drilling Contractor: Roberts Environmental Drilling, Inc.

Drilling method: Hand Auger / Dual-Tube Geoprobe Rig Type: 6610DT

Drilled by: J. Cox

Logged by: W. Pennington / M. Miller

Water Depth: 35.5 ft., After ATD hrs.

Water Depth: _____ ft., After _____ hrs.

Water level ATD

Water level after drilling

Air Knife /
Hand Auger Sampler

Unified Soil Classification
based on field visual
observations.

ATD - At time of drilling

☐ Hollow Stem Auger - Soil
sampling not performed

☒ Split Spoon Sampler

























☒ Geoprobe - Soil sampling
not performed

☒ Geoprobe Dual-Tube Sampler

URS




LOG OF BORING B-3

Start Date: 5/14/08 Completion Date: 5/21/08 Coordinates: Northing: 792218.77
Easting: 2321690.48
Boring Location: Village of Roxana Ground Elevation: 430.69

Depth In feet	Inches Driven	Inches Recovered	PID (ppm)	Sampler Graphic	Symbol	USCS	DESCRIPTION	NOTES
30	48	32	0.8				SAME: Medium dense, moist, tan, fine to medium grained SAND (SP)	
			0.7					
	48	30	1.3					
			1.8					
35	48	34	2.7					
			1.6					1100 (05/21/08) Sample B-3-33 collected for VOCs
			1.8			SP	Becomes wet	
	48	36	2.3				Becomes gray, medium grained	
40			2.7				Becomes dense, fine to medium grained	
	48	36	1.5					
45			12.1					
	48	40	13.6					
							Bottom of boring at 48 ft bgs	

Completion Depth: 48.00 ft bgsProject No.: 21561979Project Name: Route 111 and Rand Avenue VicinityDrilling Contractor: Roberts Environmental Drilling, Inc.Drilling method: Hand Auger / Dual-Tube Geoprobe Rig Type: 6610DTDrilled by: J. CoxLogged by: W. Pennington / M. MillerWater Depth: 35.5 ft., After ATD hrs.

Water Depth: _____ ft., After _____ hrs.

 Water level ATD Water level after drilling Air Knife / Hand Auger Sampler

Unified Soil Classification based on field visual observations.

ATD - At time of drilling

☐ Hollow Stem Auger - Soil sampling not performed☒ Split Spoon Sampler☐ Geoprobe - Soil sampling not performed☒ Geoprobe Dual-Tube Sampler


LOG OF BORING B-4

Start Date: 5/15/08 Completion Date: 5/22/08 Coordinates: Northing: 792229.68
Easting: 2321998.37
Boring Location: Village of Roxana Ground Elevation: 441.86

Depth In feet	Inches Driven	Inches Recovered	PID (ppm)	Sampler Graphic	Symbol	USCS	DESCRIPTION	NOTES
			0.0			FILL	Asphalt, gravel base coarse FILL (FILL)	Boring advanced to a depth of 8' via hand auger, then continued with geoprobe 0945 (05/15/08) Sample B-4-06 collected for VOCs
			0.0			CL	Medium stiff, moist, brownish gray, silty CLAY (CL) Becomes brown, sandy, with small sand zones	
5			0.0			CH	Stiff, moist, brown and red, mottled, medium to high plastic CLAY (CH) with sand	
			0.0			CL	Medium stiff, moist, brown with red mottled, low to medium plastic CLAY (CL)	
						SC	Loose to medium dense, moist, brown, clayey SAND (SC)	
10	48	16	0.3			SP	Loose, moist, orangish brown, fine to medium grained, SAND (SP)	
							Becomes medium dense	
	48	30	1.2					
15			0.8					
	48	32	0.8					
			1.2			SP		
20							Becomes tan	
	48	32	1.2					
			1.2				Becomes dry	
	48	32	0.0					

Completion Depth: 58.00 ft bgs
 Project No.: 21561979
 Project Name: Route 111 and Rand Avenue Vicinity
 Drilling Contractor: Roberts Environmental Drilling, Inc.
 Drilling method: Hand Auger / Dual-Tube Geoprobe Rig Type: 6610DT
 Drilled by: J. Cox
 Logged by: W. Pennington / M. Miller

























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Water Depth: 48.5 ft., After ATD hrs.
 Water Depth: _____ ft., After _____ hrs.
☒ Water level ATD ATD - At time of drilling
☒ Water level after drilling ☐ Hollow Stem Auger - Soil sampling not performed
☒ Air Knife / Hand Auger Sampler ☒ Split Spoon Sampler
☐ Unified Soil Classification based on field visual observations. ☐ Geoprobe - Soil sampling not performed
☒ Geoprobe Dual-Tube Sampler

LOG OF BORING B-4

Start Date: 5/15/08 Completion Date: 5/22/08
Boring Location: Village of Roxana

Coordinates: Northing: 792229.68
Easting: 2321998.37
Ground Elevation: 441.86

Depth In feet	Inches Driven	Inches Recovered	PID (ppm)	Sampler Graphic	Symbol	USCS	DESCRIPTION	NOTES
30	48	32	1.2				SAME: Medium dense, dry, tan, fine to medium grained, SAND (SP)	
			1.6					
			0.8					
	48	32	1.7					Dark gray staining (4 inches)
			1.4				Becomes orangish brown	
35	48	36	2.1				Becomes tan	0935 (05/22/08) Sample B-4-35 collected for VOCs
			1.5					
	48	4	0.8			SP	Becomes dense	
40	48	32	0.2				Trace silt (4 inches)	Trace dark brown staining (varved layers)
			0.9					
45	48	4						
			9.5				Becomes moist Becomes silty Becomes wet, gray, medium grained	

Completion Depth: 58.00 ft bgs

Project No.: 21561979

Project Name: Route 111 and Rand Avenue Vicinity

Drilling Contractor: Roberts Environmental Drilling, Inc.


Drilling method: Hand Auger / Dual-Tube Geoprobe Rig Type: 6610DT


Drilled by: J. Cox


Logged by: W. Pennington / M. Miller

Water Depth: 48.5 ft., After ATD hrs.

Water Depth: _____ ft., After _____ hrs.

 Water level ATD

 Water level after drilling

 Air Knife / Hand Auger Sampler

Unified Soil Classification based on field visual observations.

ATD - At time of drilling

☐ Hollow Stem Auger - Soil sampling not performed

☒ Split Spoon Sampler









☐ Geoprobe - Soil sampling not performed

☒ Geoprobe Dual-Tube Sampler

URS

LOG OF BORING B-4

Start Date: 5/15/08 Completion Date: 5/22/08 Coordinates: Northing: 792229.68
Easting: 2321998.37
Boring Location: Village of Roxana Ground Elevation: 441.86

Depth In feet	Inches Driven	Inches Recovered	PID (ppm)	Sampler Graphic	Symbol	USCS	DESCRIPTION	NOTES
			18.7			SP	SAME: Dense, wet, gray, medium grained, SAND (SP)	
			28.4			SC	Medium dense, wet, gray, fine grained, clayey SAND (SC)	
55	48	48				SP	Dense, wet, gray, medium to fine grained SAND (SP)	
	24	0				SP		Solid tip driven to 58' bgs due to recovery issues
60							Bottom of boring at 58 ft bgs	
65								
70								

Completion Depth: 58.00 ft bgs
 Project No.: 21561979
 Project Name: Route 111 and Rand Avenue Vicinity
 Drilling Contractor: Roberts Environmental Drilling, Inc.
 Drilling method: Hand Auger / Dual-Tube Geoprobe Rig Type: 6610DT
 Drilled by: J. Cox
 Logged by: W. Pennington / M. Miller

URS

Water Depth: 48.5 ft., After ATD hrs.
 Water Depth: _____ ft., After _____ hrs.
☒ Water level ATD
☒ Water level after drilling
☒ Air Knife / Hand Auger Sampler
 Unified Soil Classification based on field visual observations.
 ATD - At time of drilling
☐ Hollow Stem Auger - Soil sampling not performed
☒ Split Spoon Sampler
☒ Geoprobe - Soil sampling not performed
☒ Geoprobe Dual-Tube Sampler

LOG OF BORING B-5

Start Date: 5/15/08 Completion Date: 5/21/08
Boring Location: Village of Roxana

Coordinates: Northing: 792023.99
Easting: 2321801.86
Ground Elevation: 429.98

Depth In feet	Inches Driven	Inches Recovered	PID (ppm)	Sampler Graphic	Symbol	USCS	DESCRIPTION	NOTES
5			0.0			FILL	Gravel and asphalt FILL (FILL) Gray, silty CLAY (FILL) Dark gray clayey GRAVEL (FILL) Brown, silty CLAY (FILL) Dark gray to black, clayey GRAVEL (FILL)	Boring advanced to a depth of 6' via hand auger, then continued with geoprobe 1345 (05/15/08) Sample B-5-04.5 collected for VOCs
			0.0					
			0.0				Soft, wet, grayish brown, low plastic, silty CLAY (CL)	
10	24	18	3.6			CL	Becomes medium stiff, dark brown	
			2.6					
	48	48	1.8				Trace fine grained sand	
15			2.3					
	48	48	2.6				Becomes soft, grayish brown	
			1.8				Becomes sandy	
20	48	48	2.3			SC	Medium dense, wet, brown, fine grained, clayey SAND (SC)	
			0.6					
	48	48	1.8				Medium dense, moist, tan, fine to medium grained, SAND (SP)	
						SP		

Completion Depth: 48.00 ft bgs

Project No.: 21561979

Project Name: Route 111 and Rand Avenue Vicinity

Drilling Contractor: Roberts Environmental Drilling, Inc.

Drilling method: Hand Auger / Dual-Tube Geoprobe Rig Type: 6610DT

Drilled by: J. Cox

Logged by: W. Pennington / M. Miller

Water Depth: 35.5 ft., After ATD hrs.

Water Depth: _____ ft., After _____ hrs.

Water level ATD

Water level after drilling

Air Knife /
Hand Auger Sampler

Unified Soil Classification
based on field visual
observations.

ATD - At time of drilling

☐ Hollow Stem Auger - Soil
sampling not performed

☒ Split Spoon Sampler

























☐ Geoprobe - Soil sampling
not performed

☒ Geoprobe Dual-Tube Sampler

URS

LOG OF BORING B-5

Start Date: 5/15/08 Completion Date: 5/21/08 Coordinates: Northing: 792023.99
Easting: 2321801.86
Boring Location: Village of Roxana Ground Elevation: 429.98

Depth In feet	Inches Driven	Inches Recovered	PID (ppm)	Sampler Graphic	Symbol	USCS	DESCRIPTION	NOTES
30	48	30	2.8				SAME: Medium dense, moist, tan, fine to medium grained, SAND (SP) Becomes dry to moist	
			4.7					
	48	32	2.2				Becomes moist	
			2.5					
35	48	36	3.3					
			4.2				Becomes wet	
			3.1			SP		
	48	36	2.8				Becomes dense, gray	
40			4.3					
	48	48	6.5					
			14.5					
45	48	42	19.2					
							Bottom of boring at 48 ft bgs	

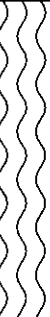


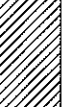






Completion Depth: 48.00 ft bgs
 Project No.: 21561979
 Project Name: Route 111 and Rand Avenue Vicinity
 Drilling Contractor: Roberts Environmental Drilling, Inc.
 Drilling method: Hand Auger / Dual-Tube Geoprobe Rig Type: 6610DT
 Drilled by: J. Cox
 Logged by: W. Pennington / M. Miller

Water Depth: 35.5 ft., After ATD hrs.
 Water Depth: _____ ft., After _____ hrs.
☒ Water level ATD
☒ Water level after drilling
☒ Air Knife / Hand Auger Sampler
 Unified Soil Classification based on field visual observations.
 ATD - At time of drilling
☐ Hollow Stem Auger - Soil sampling not performed
☒ Split Spoon Sampler
☒ Geoprobe - Soil sampling not performed
☒ Geoprobe Dual-Tube Sampler

URS

LOG OF BORING B-6

Start Date: 5/15/08 Completion Date: 5/19/08
 Boring Location: Village of Roxana
 Coordinates: Northing: 791610.47
 Easting: 2322074.96
 Ground Elevation: 432.75

Depth In feet	Inches Driven	Inches Recovered	PID (ppm)	Sampler Graphic	Symbol	USCS	DESCRIPTION	NOTES
5			0.0			FILL	Gravel (FILL) Dark gray and black, mottled, silty CLAY (FILL) Becomes soft, moist, gray and brown Becomes gray, with brown Black cinders and gravel (FILL), trace clay	Boring advanced to a depth of 6' via hand auger, then continued with geoprobe 1250 (05/15/08) Sample B-6-04 collected for VOCs
10	24	24	0.5 1.4			CL	Soft, moist, dark gray, low plastic, silty CLAY (CL) Becomes medium stiff, dark brown Becomes soft, brown Becomes dark brown Becomes medium stiff	
15	48	30	2.3 2.2			CL	Becomes medium stiff to stiff, brown, with orange mottling	
20	48	30	3.9 4.3			SC	Dense, moist, brown, fine grained clayey SAND (SC)	
	48	36	4.2 4.7			SP	Loose, moist, brownish gray, fine to medium grained SAND (SP), trace silt Silt grades out Becomes moist to dry	1205 (05/19/08) Sample B-6-23 collected for VOCs

Completion Depth: 50.00 ft bgs
 Project No.: 21561979
 Project Name: Route 111 and Rand Avenue Vicinity
 Drilling Contractor: Roberts Environmental Drilling, Inc.
 Drilling method: Hand Auger / Dual-Tube Geoprobe Rig Type: 6610DT
 Drilled by: J. Cox
 Logged by: W. Pennington / M. Miller









































URS

Water Depth: 38 ft., After ATD hrs.
 Water Depth: _____ ft., After _____ hrs.
☒ Water level ATD
☒ Water level after drilling
☒ Air Knife / Hand Auger Sampler
☐ Unified Soil Classification based on field visual observations.
 ATD - At time of drilling
☐ Hollow Stem Auger - Soil sampling not performed
☒ Split Spoon Sampler
☐ Geoprobe - Soil sampling not performed
☒ Geoprobe Dual-Tube Sampler

LOG OF BORING B-6

Start Date: 5/15/08 Completion Date: 5/19/08
Boring Location: Village of Roxana

Coordinates: Northing: 791610.47
Easting: 2322074.96
Ground Elevation: 432.75

Depth In feet	Inches Driven	Inches Recovered	PID (ppm)	Sampler Graphic	Symbol	USCS	DESCRIPTION	NOTES
	48	36	3.2				SAME: Loose, moist to dry, brownish gray, fine to medium grained SAND (SP)	
			2.3					
30	48	30	2.3					
			2.0				Becomes tan	
			2.2					
35	48	30	2.3				Becomes medium dense, moist	
			2.2					
			1.8			SP	Becomes wet	▽
40	48	36	0.0					
			0.0					
			0.0					
45	48	30	0.0					
			0.0					
	24	0						
								
								
								
								
								
								

LOG OF BORING GP-12(II)

Start Date: 5/15/08 Completion Date: 5/22/08
Boring Location: Village of Roxana

Coordinates: Northing: N/A
Easting: N/A
Ground Elevation: N/A

Depth In feet	Inches Driven	Inches Recovered	PID (ppm)	Sampler Graphic	Symbol	USCS	DESCRIPTION	NOTES
						TOPSOIL	TOPSOIL	Boring advanced to a depth of 5' via hand auger, then continued with geoprobe
						CL	Soft, moist, brown, low plastic, silty CLAY (CL)	
						CL	Medium stiff, moist, brown, low to medium plastic CLAY (CL)	
5						CL	Trace small roots Medium stiff, moist, red brown, low plastic, silty CLAY (CL)	1025 (05/15/08) Sample GP-12(II)-04 collected for VOCs
	36	24	0.8			SC/CL	Soft, wet, brown, sandy CLAY to clayey SAND (CL/SC)	
						SC/CL	Trace silt	
10	48	24	1.2			SP	Loose, moist to dry, tan, fine grained SAND (SP), trace silt	
			0.7			SP	Silt grades out	
			1.8			SP		
15	48	32	1.5			SP		
			2.3			SP		
	48	32	1.9			SP		1425 (05/22/08) Sample GP-12(II)-17 and GP-12(II)-17-DUP collected for VOCs
20							Bottom of boring at 20 ft bgs	

Completion Depth: 20.00 ft bgs

Project No.: 21561979

Project Name: Route 111 and Rand Avenue Vicinity

Drilling Contractor: Roberts Environmental Drilling, Inc.

Drilling method: Hand Auger / Dual-Tube Geoprobe Rig Type: 6610DT

Drilled by: J. Cox

Logged by: W. Pennington / M. Miller

Water Depth: _____ ft., After _____ hrs.

Water Depth: _____ ft., After _____ hrs.

▼ Water level ATD

▽ Water level after drilling

▨ Air Knife / Hand Auger Sampler

Unified Soil Classification based on field visual observations.

ATD - At time of drilling

☐ Hollow Stem Auger - Soil sampling not performed

☒ Split Spoon Sampler

☐ Geoprobe - Soil sampling not performed





































☒ Geoprobe Dual-Tube Sampler

URS

LOG OF BORING GP-7(II)

Start Date: 5/15/08 Completion Date: 5/19/08
Boring Location: Village of Roxana

Coordinates: Northing: N/A
Easting: N/A
Ground Elevation: N/A

Depth In feet	Inches Driven	Inches Recovered	PID (ppm)	Sampler Graphic	Symbol	USCS	DESCRIPTION	NOTES
			0.0			FILL	Gravel with sand FILL (FILL) (2 inches) Asphalt with base coarse (FILL) (4 inches) Black gravel and cinders FILL (FILL) with clay	Boring advanced to a depth of 8' via hand auger, then continued with geoprobe
			0.0				Loose, moist, brown, fine to medium grained SAND (SP)	
5			0.0					1115 (05/15/08) Sample GP-7(II)-03 collected for VOCs
								
								
10	48	30	0.7				Becomes tan, trace clay	
			118			SP		
							Becomes gray	
								
15	48	36	537					
			293					
							Becomes dry, tan	
								
								
20	48	36	403					1635 (05/19/08) Sample GP-7(II)-19 and GP-12(II)-19-DUP collected for VOCs
			541					
								
							Bottom of boring at 20 ft bgs	

Completion Depth: 20.00 ft bgs

Project No.: 21561979

Project Name: Route 111 and Rand Avenue Vicinity

Drilling Contractor: Roberts Environmental Drilling, Inc.


Drilling method: Hand Auger / Dual-Tube Geoprobe Rig Type: 6610DT


Drilled by: J. Cox


Logged by: W. Pennington / M. Miller

Water Depth: _____ ft., After _____ hrs.

Water Depth: _____ ft., After _____ hrs.

 Water level ATD

 Water level after drilling

 Air Knife /
Hand Auger Sampler

Unified Soil Classification
based on field visual
observations.

ATD - At time of drilling

☐ Hollow Stem Auger - Soil
sampling not performed

☒ Split Spoon Sampler

☐ Geoprobe - Soil sampling
not performed

☒ Geoprobe Dual-Tube Sampler

URS

2008 WELLS

B-1

B-2

B-3

B-4

B-5

B-6

ConocoPhillips WELLS

P-54

P-56

P-57

P-58

P-66

P-73

P-75

P-93

FLUSH MOUNT MONITORING WELL CONSTRUCTION DIAGRAM

GROUND SURFACE ELEVATION 443.24

JOB NUMBER 21561979

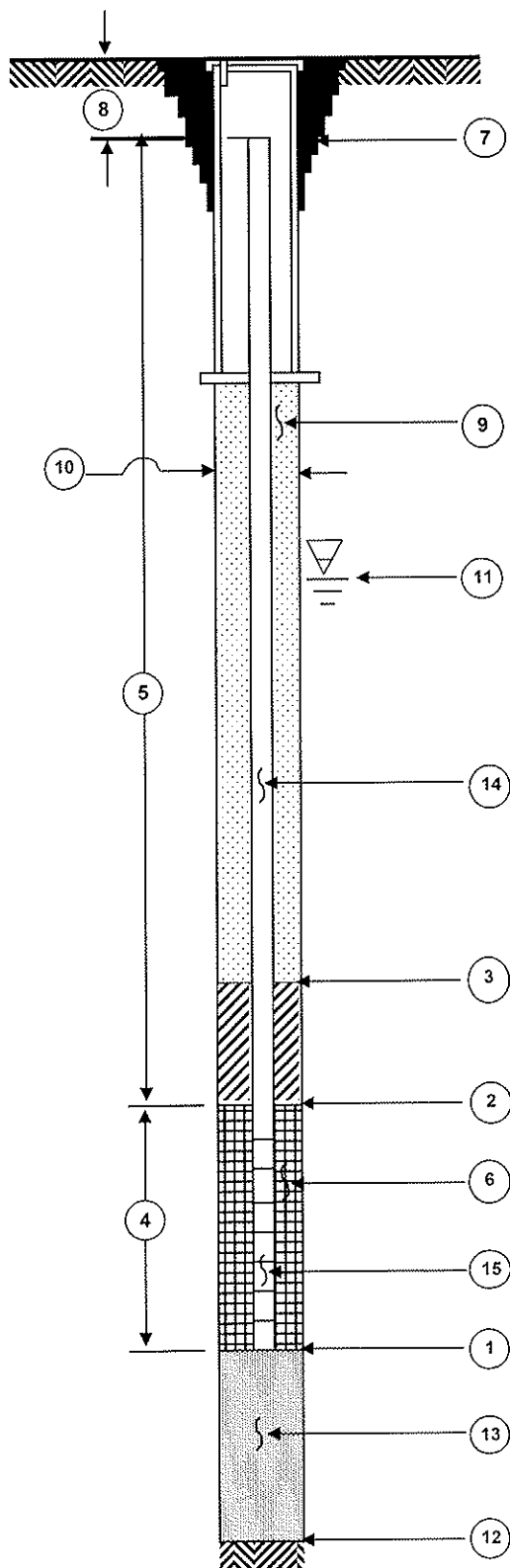
TOP OF INNER WELL CASING ELEVATION 442.86

BORING NUMBER B-1

DATUM NAVD 88 - 1988 USGS Datum

INSTALLATION DATE 21-May-08

LOCATION Roxana, Illinois



- ① DEPTH TO BOTTOM OF WELL POINT OR SLOTTED PIPE
58.56 FEET.*
- ② DEPTH TO BOTTOM OF SEAL (IF INSTALLED) N/A
FEET.*
- ③ DEPTH TO TOP OF SEAL (IF INSTALLED) N/A FEET.*
- ④ LENGTH OF WELL SCREEN 15 FEET.
SLOT SIZE 0.010 INCHES.
- ⑤ TOTAL LENGTH OF RISER PIPE 43.18 FEET AT
1 INCH DIAMETER.
- ⑥ TYPE OF PACK AROUND WELL POINT OR SLOTTED PIPE
Native Sand
- ⑦ CONCRETE CAP? ☒ YES NO (CIRCLE ONE)
- ⑧ DEPTH TO TOP OF INNER CASING BELOW GROUND
SURFACE 0.38 FEET.
- ⑨ TYPE OF UPPER BACKFILL High solids bentonite grout
- ⑩ BOREHOLD DIAMETER 2.125 INCHES.
- ⑪ DEPTH TO GROUNDWATER 48.00 FEET BTOC ON 5/22/08
- ⑫ TOTAL DEPTH OF BOREHOLE 60 FEET.*
- ⑬ TYPE OF LOWER BACKFILL Native soil (cave in)
- ⑭ PIPE MATERIAL Schedule 40 PVC
- ⑮ SCREEN MATERIAL Schedule 40 PVC

*(DEPTH FROM GROUND SURFACE)

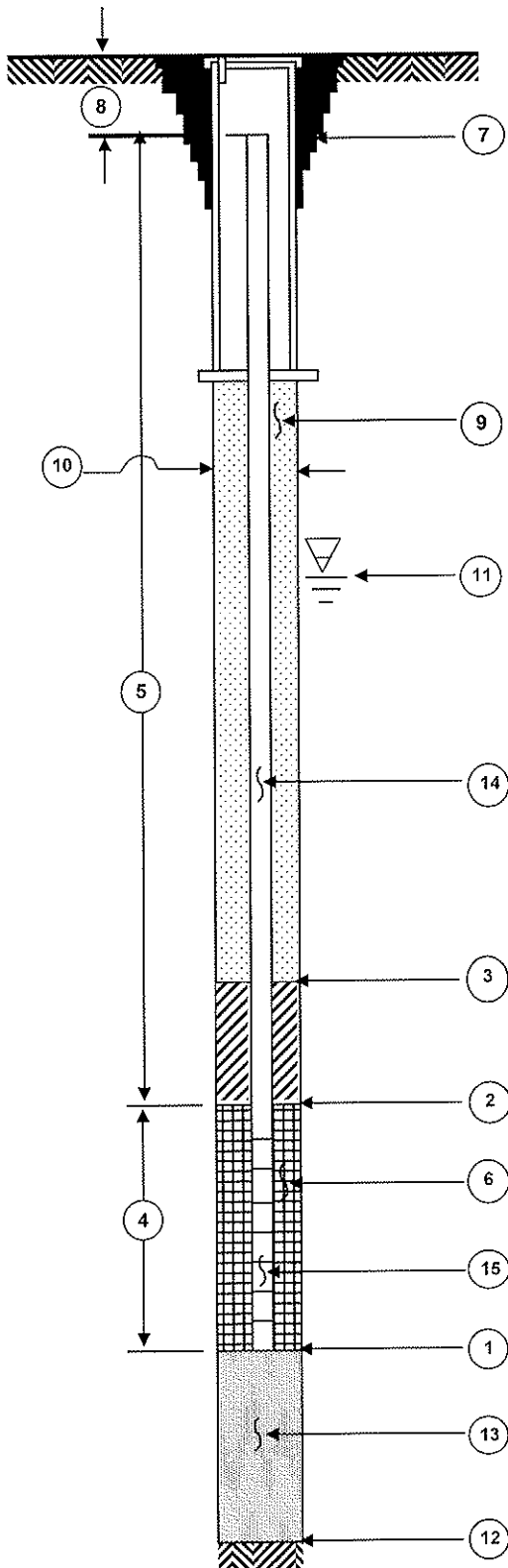
MONITOR WELL INSTALLATION DETAILS

URS
Corporation

FLUSH MOUNT MONITORING WELL CONSTRUCTION DIAGRAM

GROUND SURFACE ELEVATION 444.21
 TOP OF INNER WELL CASING ELEVATION 443.93
 DATUM NAVD 88 - 1988 USGS Datum

JOB NUMBER 21561979
 BORING NUMBER B-2
 INSTALLATION DATE 20-May-08
 LOCATION Roxana, Illinois



- ① DEPTH TO BOTTOM OF WELL POINT OR SLOTTED PIPE 63.74 FEET.*
- ② DEPTH TO BOTTOM OF SEAL (IF INSTALLED) N/A FEET.*
- ③ DEPTH TO TOP OF SEAL (IF INSTALLED) N/A FEET.*
- ④ LENGTH OF WELL SCREEN 15 FEET.
SLOT SIZE 0.010 INCHES.
- ⑤ TOTAL LENGTH OF RISER PIPE 48.46 FEET AT
1 INCH DIAMETER.
- ⑥ TYPE OF PACK AROUND WELL POINT OR SLOTTED PIPE
Native Sand
- ⑦ CONCRETE CAP? ☒ YES ☐ NO (CIRCLE ONE)
- ⑧ DEPTH TO TOP OF INNER CASING BELOW GROUND SURFACE 0.28 FEET.
- ⑨ TYPE OF UPPER BACKFILL High solids bentonite grout
- ⑩ BOREHOLE DIAMETER 2.125 INCHES.
- ⑪ DEPTH TO GROUNDWATER 49.67 FEET BTOC ON 5/22/08
- ⑫ TOTAL DEPTH OF BOREHOLE 64 FEET.*
- ⑬ TYPE OF LOWER BACKFILL Native soil (cave in)
- ⑭ PIPE MATERIAL Schedule 40 PVC
- ⑮ SCREEN MATERIAL Schedule 40 PVC

*(DEPTH FROM GROUND SURFACE)

MONITOR WELL INSTALLATION DETAILS

URS
 Corporation

FLUSH MOUNT MONITORING WELL CONSTRUCTION DIAGRAM

GROUND SURFACE ELEVATION 430.69

JOB NUMBER 21561979

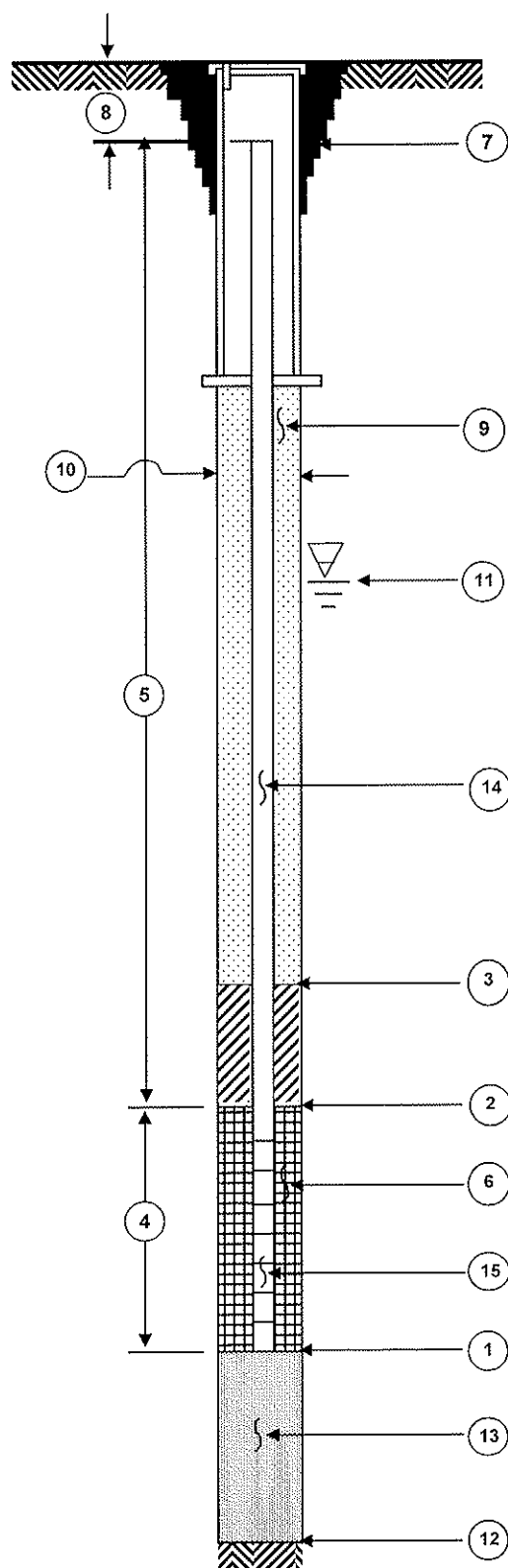
TOP OF INNER WELL CASING ELEVATION 430.36

BORING NUMBER B-3

DATUM NAVD 88 - 1988 USGS Datum

INSTALLATION DATE 21-May-08

LOCATION Roxana, Illinois



- ① DEPTH TO BOTTOM OF WELL POINT OR SLOTTED PIPE
46.32 FEET.*
- ② DEPTH TO BOTTOM OF SEAL (IF INSTALLED)
FEET.* N/A
- ③ DEPTH TO TOP OF SEAL (IF INSTALLED) N/A FEET.*
- ④ LENGTH OF WELL SCREEN 15 FEET.
SLOT SIZE 0.010 INCHES.
- ⑤ TOTAL LENGTH OF RISER PIPE 30.99 FEET AT
1 INCH DIAMETER.
- ⑥ TYPE OF PACK AROUND WELL POINT OR SLOTTED PIPE
Native Sand
- ⑦ CONCRETE CAP? ☒ YES NO (CIRCLE ONE)
- ⑧ DEPTH TO TOP OF INNER CASING BELOW GROUND
SURFACE 0.33 FEET.
- ⑨ TYPE OF UPPER BACKFILL High solids bentonite grout
- ⑩ BOREHOLD DIAMETER 2.125 INCHES.
- ⑪ DEPTH TO GROUNDWATER 34.47 FEET BTOC ON 5/22/08
- ⑫ TOTAL DEPTH OF BOREHOLE 48 FEET.*
- ⑬ TYPE OF LOWER BACKFILL Native soil (cave in)
- ⑭ PIPE MATERIAL Schedule 40 PVC
- ⑮ SCREEN MATERIAL Schedule 40 PVC

*(DEPTH FROM GROUND SURFACE)

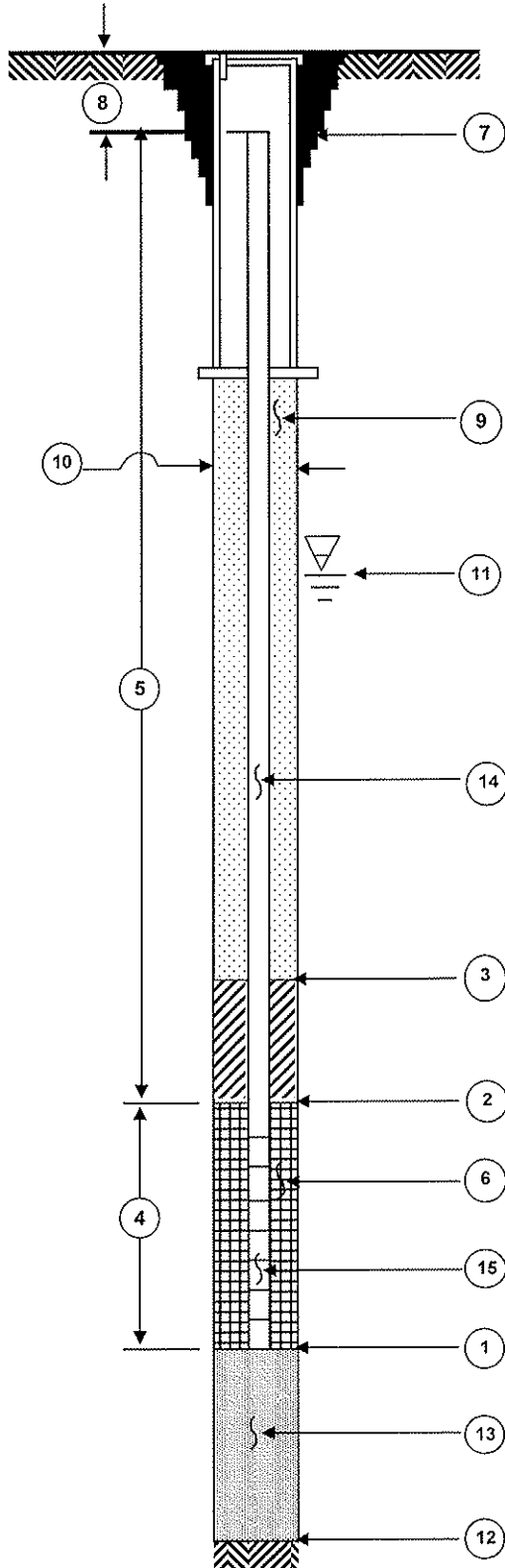
MONITOR WELL INSTALLATION DETAILS

URS
Corporation

FLUSH MOUNT MONITORING WELL CONSTRUCTION DIAGRAM

GROUND SURFACE ELEVATION 441.86
 TOP OF INNER WELL CASING ELEVATION 441.58
 DATUM NAVD 88 - 1988 USGS Datum

JOB NUMBER 21561979
 BORING NUMBER B-4
 INSTALLATION DATE 22-May-08
 LOCATION Roxana, Illinois



- ① DEPTH TO BOTTOM OF WELL POINT OR SLOTTED PIPE
57.98 FEET.*
- ② DEPTH TO BOTTOM OF SEAL (IF INSTALLED)
FEET.* N/A
- ③ DEPTH TO TOP OF SEAL (IF INSTALLED) N/A FEET.*
- ④ LENGTH OF WELL SCREEN 15 FEET.
SLOT SIZE 0.010 INCHES.
- ⑤ TOTAL LENGTH OF RISER PIPE 42.70 FEET AT
1 INCH DIAMETER.
- ⑥ TYPE OF PACK AROUND WELL POINT OR SLOTTED PIPE
Native Sand
- ⑦ CONCRETE CAP? ☒ YES NO (CIRCLE ONE)
- ⑧ DEPTH TO TOP OF INNER CASING BELOW GROUND
SURFACE 0.28 FEET.
- ⑨ TYPE OF UPPER BACKFILL High solids bentonite grout
- ⑩ BOREHOLE DIAMETER 2.125 INCHES.
- ⑪ DEPTH TO GROUNDWATER 46.45 FEET BTOC ON 5/22/08
- ⑫ TOTAL DEPTH OF BOREHOLE 58 FEET.*
- ⑬ TYPE OF LOWER BACKFILL Native soil (cave in)
- ⑭ PIPE MATERIAL Schedule 40 PVC
- ⑮ SCREEN MATERIAL Schedule 40 PVC

*(DEPTH FROM GROUND SURFACE)

MONITOR WELL INSTALLATION DETAILS

URS
 Corporation

FLUSH MOUNT MONITORING WELL CONSTRUCTION DIAGRAM

GROUND SURFACE ELEVATION 429.98

JOB NUMBER 21561979

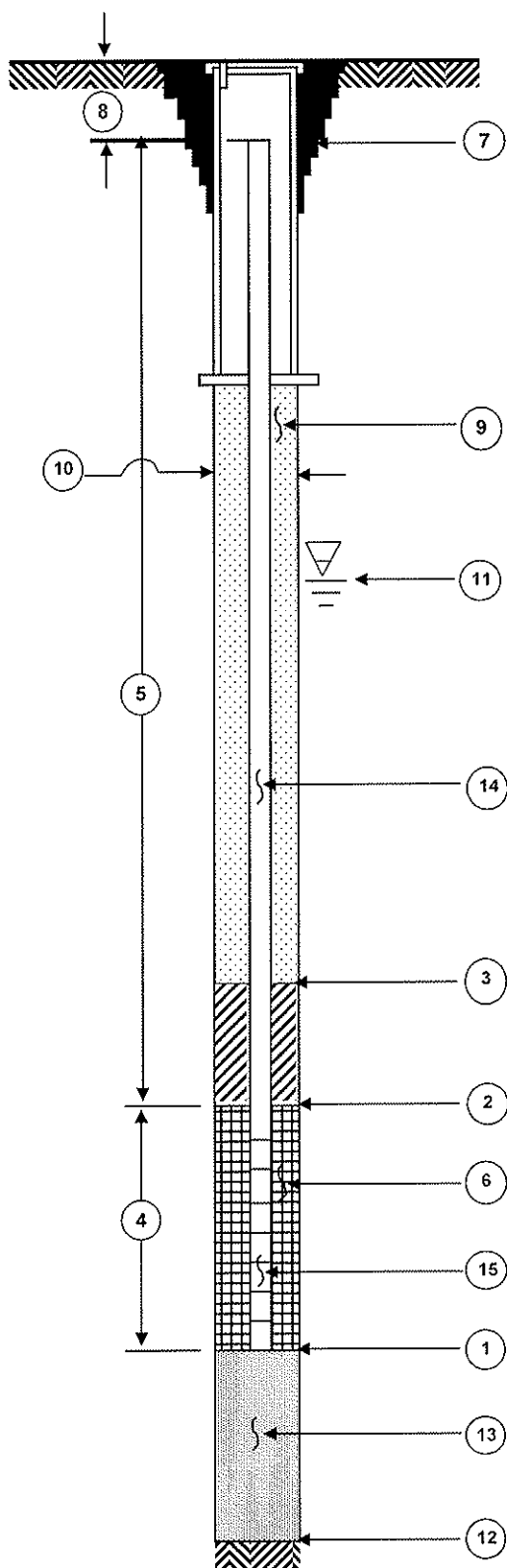
TOP OF INNER WELL CASING ELEVATION 429.73

BORING NUMBER B-5

DATUM NAVD 88 - 1988 USGS Datum

INSTALLATION DATE 21-May-08

LOCATION Roxana, Illinois



- ① DEPTH TO BOTTOM OF WELL POINT OR SLOTTED PIPE 46.45 FEET.*
- ② DEPTH TO BOTTOM OF SEAL (IF INSTALLED) N/A FEET.*
- ③ DEPTH TO TOP OF SEAL (IF INSTALLED) N/A FEET.*
- ④ LENGTH OF WELL SCREEN 15 FEET.
SLOT SIZE 0.010 INCHES.
- ⑤ TOTAL LENGTH OF RISER PIPE 31.20 FEET AT
1 INCH DIAMETER.
- ⑥ TYPE OF PACK AROUND WELL POINT OR SLOTTED PIPE
Native Sand
- ⑦ CONCRETE CAP? ☒ YES ☐ NO (CIRCLE ONE)
- ⑧ DEPTH TO TOP OF INNER CASING BELOW GROUND SURFACE 0.25 FEET.
- ⑨ TYPE OF UPPER BACKFILL High solids bentonite grout
- ⑩ BOREHOLE DIAMETER 2.125 INCHES.
- ⑪ DEPTH TO GROUNDWATER 33.88 FEET BTOC ON 5/22/08
- ⑫ TOTAL DEPTH OF BOREHOLE 48 FEET.*
- ⑬ TYPE OF LOWER BACKFILL Native soil (cave in)
- ⑭ PIPE MATERIAL Schedule 40 PVC
- ⑮ SCREEN MATERIAL Schedule 40 PVC

*(DEPTH FROM GROUND SURFACE)

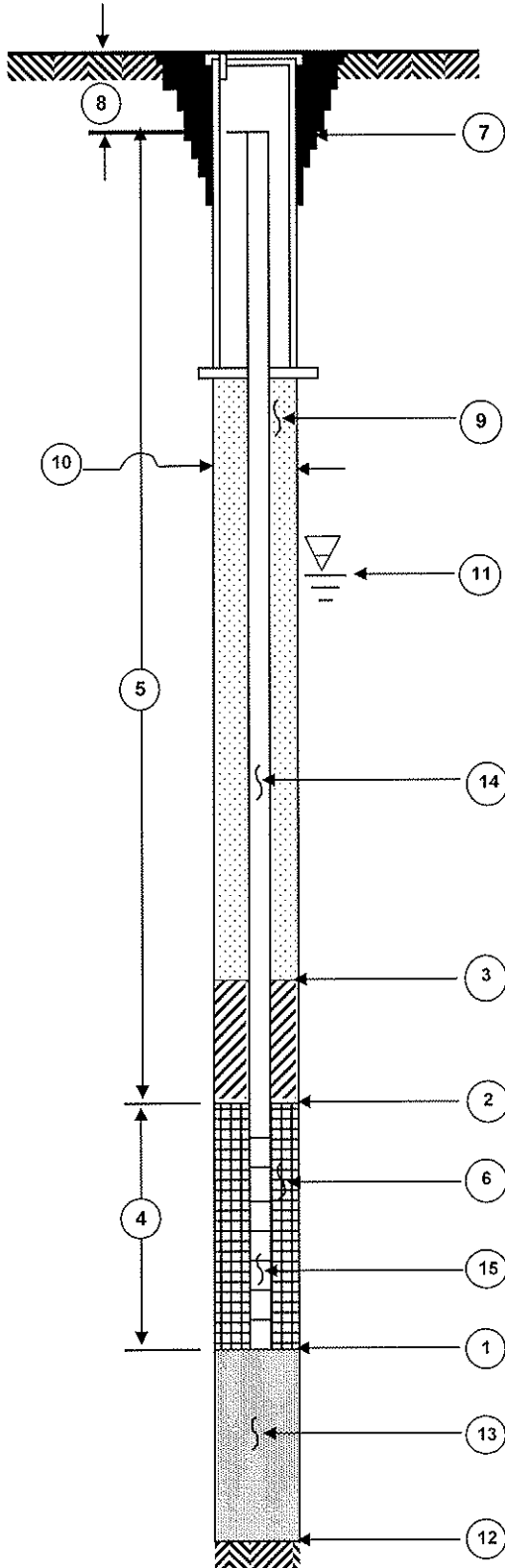
MONITOR WELL INSTALLATION DETAILS

URS
Corporation

FLUSH MOUNT MONITORING WELL CONSTRUCTION DIAGRAM

GROUND SURFACE ELEVATION 432.75
 TOP OF INNER WELL CASING ELEVATION 432.42
 DATUM NAVD 88 - 1988 USGS Datum

JOB NUMBER 21561979
 BORING NUMBER B-6
 INSTALLATION DATE 19-May-08
 LOCATION Roxana, Illinois



- ① DEPTH TO BOTTOM OF WELL POINT OR SLOTTED PIPE
49.75 FEET.*
- ② DEPTH TO BOTTOM OF SEAL (IF INSTALLED) N/A FEET.*
- ③ DEPTH TO TOP OF SEAL (IF INSTALLED) N/A FEET.*
- ④ LENGTH OF WELL SCREEN 15 FEET.
SLOT SIZE 0.010 INCHES.
- ⑤ TOTAL LENGTH OF RISER PIPE 34.42 FEET AT
1 INCH DIAMETER.
- ⑥ TYPE OF PACK AROUND WELL POINT OR SLOTTED PIPE
Native Sand
- ⑦ CONCRETE CAP? ☒ YES ☐ NO (CIRCLE ONE)
- ⑧ DEPTH TO TOP OF INNER CASING BELOW GROUND SURFACE 0.33 FEET.
- ⑨ TYPE OF UPPER BACKFILL High solids bentonite grout
- ⑩ BOREHOLE DIAMETER 2.125 INCHES.
- ⑪ DEPTH TO GROUNDWATER 36.60 FEET BTOC ON 5/22/08
- ⑫ TOTAL DEPTH OF BOREHOLE 50 FEET.*
- ⑬ TYPE OF LOWER BACKFILL Native soil (cave in)
- ⑭ PIPE MATERIAL Schedule 40 PVC
- ⑮ SCREEN MATERIAL Schedule 40 PVC

*(DEPTH FROM GROUND SURFACE)

MONITOR WELL INSTALLATION DETAILS

URS
 Corporation

LOCATION MAP										SHELL OIL COMPANY — WELL LOG		PAGE 1 OF 1					
										WELL NUMBER ▶ P-54		LOCATION ▶ Roxana Village Hall Southern Parking Lot					
										DATE ▶ 03-29-89		WEATHER ▶ Cloudy, low 70s					
										LOGGED BY ▶ R. Chapin & J. Pawlik		DRILLED BY ▶ Mathes Drilling					
										DRILLING METHOD ▶ 4 1/4" Hollow-Stem Auger		SAMPLING METHOD ▶ 1 1/2" split spoon					
										GRAVEL PACK ▶ 63' to 36' (27') MB40 Sand		SEAL ▶ 36' to 34' (2') Bentonite 34' to surface (34') cement					
CASING ▶ TYPE Schedule 40 PVC										DIAMETER 2"		LENGTH 38'		HOLE 8 1/4" DIA			
SCREEN ▶ TYPE Schedule 40 PVC										SLOT 0.01"		DIAMETER 2"		LENGTH 2.5'		TOTAL DEPTH 63'	
MOISTURE CONTENT	BORING	DENSITY	PLASTICITY	SAMPLE NO.	TIP READING (PPM)	DEPTH	SAMPLE RECOVERY	PENETRATION RESISTANCE	LITHOLOGY/REMARKS		WELL COMPLETION						
											FLUSH MOUNT						
						0											
						1											
						2											
						3											
dry	prec.	loose				4	1.11	2	0.00'-0.06'	FILL, crush lime rock and asphalt.							
damp		soft	sl.	1	0.8	5		3	0.06'-0.58'	CLAY, mottled dark brown and gray, silty.							
damp		soft	sl. plas.			6		5	0.58'-1.11'	CLAY, mottled dark brown and red brown, silty.							
			sl. plas.			7											
						8											
						9		3									
damp	mod.	loose		2	1.0	10	0.51	5	0.00'-0.51'	SAND, dark brown, very fine-to fine-grained.							
						11		4									
						12											
						13											
damp		soft	sl. plas.			14		2	0.00'-0.18'	CLAY, light brown to tan, some orange layers, silty, and sandy.							
damp	mod.	loose		3	0.4	15	1.18	5	0.18'-0.70'	SAND, tan, fine-to very fine-grained, slightly silty.							
damp	mod.	loose				16		7	0.70'-0.74'	CLAY, light brown to tan, sandy.							
damp	mod.	loose				17			0.74'-1.18'	SAND, light tan to tan, fine-to very fine-grained.							
						18											
						19											
damp	mod.	loose				20			0.00'-0.18'	SAND, tan to brown, fine-grained, silty.							
damp	mod.	loose				21			0.18'-0.45'	SAND, dirty white to tan, fine-grained.							
damp	mod.	loose				22			0.45'-0.65'	SAND, layered tan and orange, fine-to very fine-grained, slightly silty.							
damp		soft	sl. plas.	4	0.4	23	0.85	4	0.65'-0.85'	CLAY, light tan, silty, sandy.							
						24		4									
						25		4									
						26											
						27											
						28											
						29											
						30											

LOCATION MAP										SHELL OIL COMPANY — WELL LOG										PAGE 1 OF 4						
										WELL NUMBER P-54					LOCATION Roxana Village Hall Southern Parking Lot											
										DATE 03-29-89					WEATHER Cloudy, low 70s											
										LOGGED BY R. Chapin & J. Pawlik					DRILLED BY Mathes Drilling											
										DRILLING METHOD 4 1/4" Hollow-Stem Auger					SAMPLING METHOD 18" split spoon											
GRAVEL PACK 63' to 36' (27') MB40 sand										SEAL 36' to 34' (2') Bentonite 34' to surface (34') Cement																
CASING TYPE Schedule 40 PVC										DIAMETER 2"					LENGTH 38'					HOLE DIA 8 1/4"						
SCREEN TYPE Schedule 40 PVC										SLOT 0.01"					DIAMETER 2"					LENGTH 25'					TOTAL DEPTH 63'	
MOISTURE CONTENT	BORING	DENSITY	PLASTICITY	SAMPLE NO.	TIP READING (PPM)	DEPTH	SAMPLE RECOVERY	PENETRATION RESISTANCE	LITHOLOGY/REMARKS										WELL COMPLETION							
damp	mod.	loose		5	0.2	4	1.5'	4	0.00'-1.50' SAND, light tan, fine-to medium-grained, rounded to subround grains.										CASING							
damp	mod. well	loose		6	0.6	9	1.26	5	0.00'-0.80' SAND, yellow to tan, fine-to medium-grained composed of clear, white, black, red and orange, rounded grains, possible yellow staining.																	
damp	mod. well	loose				30		10	0.80-1.22' SAND, light tan to white, medium-grained, increase in white and clear grains.																	
damp	mod. well	loose		7	0.4	4	1.26	5	0.00'-0.45' SAND, light gray to white, medium-to coarse-grained.																	
damp	mod. well	loose				5		11	0.45'-1.14' SAND, light tan to light gray, orange and tan grains increasing percentages, which gives sand a tan color.																	
damp	mod. well	loose				6			1.14'-1.26' SAND, tan, medium-grained, orange and tan grains becoming dominate.																	
mois	mod. loose					7			0.00'-0.15' SAND, tan to orange, medium-grained.																	
mois	mod. loose					8			0.15'-0.23' SAND, light gray, medium-grained, white and clear grains predominate.																	
mois	mod. loose					9		8	0.23'-0.26' SAND, dark gray to black, composed of 45% black organic material, appears to be natural.																	
mois	mod. loose			8	0.4	9	1.35	10	0.26'-0.76' SAND, light gray, medium-to coarse-grained.																	
						40		10	0.76'-1.35' SAND, light tan to white, coarse-grained.										SCREEN							

LOCATION MAP										SHELL OIL COMPANY — WELL LOG		PAGE 1 OF 4					
										WELL NUMBER P-54		LOCATION Roxana Village Hall Southern Parking Lot					
										DATE 03-29-89		WEATHER Cloudy, low 70's					
										LOGGED BY R. Chapin & J. Pavlik		DRILLED BY Mathes Drilling					
										DRILLING METHOD 4 1/4" Hollow-Stem Auger		SAMPLING METHOD 18" Split Spoon					
										GRAVEL PACK 63' to 36' (27') MB40 sand		SEAL 36' to 34' (2') Bentonite 34' to surface (34') cement					
CASING TYPE Schedule 40 PVC										DIAMETER 2"		LENGTH 38'		MOLE DIA 8 1/4"			
SCREEN TYPE Schedule 40 PVC										SLOT 0.01"		DIAMETER 2"		LENGTH 25'		TOTAL DEPTH 63'	
MOISTURE CONTENT	SORTING	DENSITY	PLASTICITY	SAMPLE NO.	TIP READING (PPM)	DEPTH	SAMPLE RECOVERY	PENETRATION RESISTANCE	LITHOLOGY/REMARKS				WELL COMPLETION				
moist	mod. well	loose to med. dense		9	0.8	40			0.00'-1.29' SAND, light gray, medium-to coarse-grained, composed of clear, white, black, red, and orange, rounded grains.								
						1											
						2											
						3											
sat.	well	med. dense		10	1.0	4	1.29	6	0.00'-1.19' SAND, light gray, coarse-grained.								
						5		12									
						6		15									
						7											
sat.	well	loose to med. dense		11	0.3	9		10	0.00'-1.50' SAND, gray, coarse-grained, rounded grains.								
						10		21									
						11		22									
						12											
sat.	well	loose		12	1.1	9	1.50	6	0.00'-1.50' SAND, light to medium gray, coarse-to medium-grained.								
						10		11									
						11		17									
						12											

GRAVEL PACK
SCREEN

LOCATION MAP										SHELL OIL COMPANY — WELL LOG				PAGE 4 OF 4			
										WELL NUMBER ▶ P-54		LOCATION ▶ Roxana Village Hall Southern Parking Lot					
										DATE ▶ 03-29-89		WEATHER ▶ Cloudy, low 70s					
										LOGGED BY ▶ R. Chapin & J. Pavlik		DRILLED BY ▶ Mathes Drilling					
										DRILLING METHOD ▶ 4 1/4" Hollow-Stem Auger		SAMPLING METHOD ▶ 18" Split Spoon					
GRAVEL PACK ▶ 63' to 36' (27') MB40 sand										SEAL ▶ 36' to 34' (2') Bentonite 34' to surface (34') cement							
CASING ▶ TYPE Schedule 40 PVC										DIAMETER 2"		LENGTH 38'		HOLE DIA 8 1/4"			
SCREEN ▶ TYPE Schedule 40 PVC										SLOT 0.01"		DIAMETER 2"		LENGTH 25'		TOTAL DEPTH 63'	
MOISTURE CONTENT	SORTING	DENSITY	PLASTICITY	SAMPLE NO.	TIP READING (PPM)	DEPTH	SAMPLE RECOVERY	PENETRATION RESISTANCE	LITHOLOGY/REMARKS				WELL COMPLETION				
						00			NO SAMPLE TAKEN 63.5' - 65'				GRAVEL PACK	SCREEN			
						1											
						2											
						3											
						4											
						5											
						6											
						7											
						8											
						9											
						70							TD				
						1											
						2											
						3											
						4											
						5											
						6											
						7											
						8											
						9											
						80											

LOCATION MAP				TANK FARM				SHELL OIL COMPANY — WELL LOG				PAGE 1 OF 4					
				WELL NUMBER ▶ P-56				LOCATION ▶ North Property West Fence Line									
				DATE ▶ 4-2-89				WEATHER ▶ Raining, 50's									
				LOGGED BY ▶ J. Pawlik				DRILLED BY ▶ Haches Drilling									
				DRILLING METHOD ▶ 4 1/4" Hollow-Stem Auger GRAVEL PACK ▶ 63.5' to 36.5' (27') HB40 sand				SAMPLING METHOD ▶ 18" Split Spoon SEAL ▶ 36.5' to 34.5' (2') Bentonite 34.5' to 0' (34.5') cement									
CASING ▶ TYPE Schedule 40 PVC				DIAMETER 2"				LENGTH 38.5'				MOLE DIA 8 1/4"					
SCREEN ▶ TYPE Schedule 40 PVC				SLOT 0.01"				DIAMETER 2"				LENGTH 25'				TOTAL 63.5' DEPTH	
MOISTURE CONTENT	SORTING	DENSITY	PLASTICITY	SAMPLE NO.	TIP READING (PPM)	DEPTH	SAMPLE RECOVERY	PENETRATION RESISTANCE	LITHOLOGY/REMARKS				WELL COMPLETION				
moist				1	704	0			0.00' - 1.50' CLAY, dark black, some very fine-grained sand, strong hydrocarbon odor.								
						1											
						2											
						3											
moist	V. Well	V. loose		2	647	0			0.00' - 0.95' SAND, dark brown, very fine-grained.								
						1											
						2											
						3											
moist	V. Well	loose		3	109	0			0.00' - 1.30' SAND, tan, fine-grained.								
						1											
						2											
						3											
moist				4	782	0			0.00' - 0.75' CLAY, gray with thin laminations of brown, fine-grained sand.								
						1											
						2											
						3											

LOCATION MAP										TANK FARM		SHELL OIL COMPANY — WELL LOG		PAGE 1 OF 2			
										WELL NUMBER ▶ P-56		LOCATION ▶ North Property West Fence Line					
										DATE ▶ 4-2-89		WEATHER ▶ Raining, 50's					
										LOGGED BY ▶ J. Pavlik		DRILLED BY ▶ Haches Drilling					
										DRILLING METHOD ▶ 4 1/4" Hollow Stem Auger		SAMPLING METHOD ▶ 18" Split Spoon					
GRAVEL PACK ▶ 63.5' to 36.5' (27') HR40 sand										36.5' to 34.5' (2') Bentonite seal		34.5' to 0' (34.5') cement					
CASING ▶ TYPE Schedule 40 PVC										DIAMETER 2"		LENGTH 38.5'		MOLE 8 1/4" DIA			
SCREEN ▶ TYPE Schedule 40 PVC										SLOT 0.01"		DIAMETER 2"		LENGTH 25'		TOTAL DEPTH 63.5'	
MOISTURE CONTENT	SOLIDS	DENSITY	PLASTICITY	SAMPLE NO.	TIP READING (PPH)	DEPTH	SAMPLE RECOVERY	PENETRATION RESISTANCE	LITHOLOGY/REMARKS				WELL COMPLETION				
moist	mod.	loose		5	565	0			0.00' - 1.50' SAND, tan, fine- to medium-grained, subangular to angular grains.	CEMENT	CASING						
						1											
						2											
						3											
						4											
						5											
						6											
						7											
						8											
						9											
moist	mod.	loose	6	775	0			0.00' - 1.50' SAND, tan, fine- to medium-grained, black laminations, subrounded grains, hydrocarbon odor.	CEMENT	CASING							
					1												
					2												
					3												
					4												
					5												
					6												
					7												
					8												
					9												
moist	mod.	loose	7	290	0			0.00' - 1.50' SAND, tan, medium-grained, trace of fine gravel, subrounded grains, black laminations, hydrocarbon odor.	BENTONITE	GRAVEL PACK							
					1												
					2												
					3												
					4												
					5												
					6												
					7												
					8												
					9												
moist	mod.	loose	8	811	0			0.00' - 1.50' SAND, tan, medium-grained, trace of coarse-grained sand and fine-gravel, subrounded to rounded grains, black vertical streaking, hydrocarbon odors.	SCREEN								
					1												
					2												
					3												
					4												
					5												
					6												
					7												
					8												
					9												

LOCATION MAP										TANK FARM		SHELL OIL COMPANY — WELL LOG		PAGE 1 OF 4			
										WELL NUMBER ▶ P-56		LOCATION ▶ North Property West Fence Line					
										DATE ▶ 4-2-89		WEATHER ▶ Raining, 50's					
										LOGGED BY ▶ J. Pawlik		DRAILED BY ▶ Mathes Drilling					
										DRILLING METHOD ▶ 4 1/4" Hollow-Stem Auger		SAMPLING METHOD ▶ 18" Split Spoon					
GRAVEL PACK ▶ 63.5' to 36.5' (27') NR60 sand										36.5' to 34.5' (2') Bentonite seal		34.5' to 0' (34.5') cement					
CASING ▶ TYPE Schedule 40 PVC										DIAMETER 2"		LENGTH 38.5'		HOLE 8 1/4" DIA			
SCREEN ▶ TYPE Schedule 40 PVC										SLOT 0.01"		DIAMETER 2"		LENGTH 25'		TOTAL DEPTH 63.5'	
MOISTURE CONTENT	SORTING	DENSITY	PLASTICITY	SAMPLE NO.	TIP READING (PPH)	DEPTH	SAMPLE RECOVERY	PENETRATION RESISTANCE	LITHOLOGY/REMARKS				WELL COMPLETION				
moist	mod.	med. dense		9	627	40			0.00' - 1.50' SAND, gray, medium-grained, subrounded grains, black laminations, hydrocarbon odors.								
						1											
						2											
						3											
wet	mod.	med. dense		10	685	4	1.50'	6	0.00' - 1.50' SAND, gray, medium-grained, trace of coarse-grained, subrounded grains, black lamination hydrocarbon odor and hydrocarbon sheen.								
						5		11									
						6		17									
						7											
sat.	poor	med. dense		11	300	4	1.50'	8	0.00' - 1.50' SAND, gray, medium- and coarse-grained, trace of fine gravel, subrounded to rounded grains, hydrocarbon odor and hydrocarbon sheen.								
						5		13									
						6		29									
						7											
sat.	poor	med. dense		12	749	4	1.50'	6	0.00' - 1.50' SAND, gray, medium- to coarse-grained, trace of fine-gravel, hydrocarbon odor, and hydrocarbon sheen.								
						5		14									
						6		23									
						7											

GRAVEL PACK
SCREEN

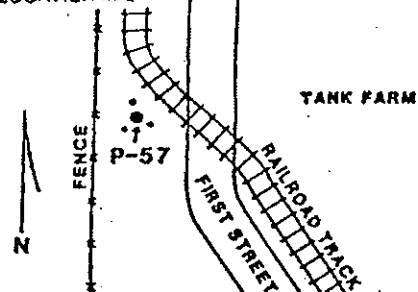
LOCATION MAP										TANK FARM		SHELL OIL COMPANY — WELL LOG		PAGE 1 OF 4			
										WELL NUMBER ▶ P-56		LOCATION ▶ North Property West Fence Line					
										DATE ▶ 4-2-89		WEATHER ▶ Raining, 50's					
										LOGGED BY ▶ J. Pavlik		DRILLED BY ▶ Haches Drilling					
										DRILLING METHOD ▶ 4 1/4" Hollow-Stem Auger		SAMPLING METHOD ▶ 18" Split Spoon					
GRAVEL PACK ▶ 63.5' to 36.5' (27')										36.5' to 36.5' (2') Bentonite SEAL		36.5' to 0' (36.5') cement					
CASING ▶ TYPE Schedule 40 PVC										DIAMETER 2"		LENGTH 38.5'		MOLE 8 1/4" DIA			
SCREEN ▶ TYPE Schedule 40 PVC										SLOT 0.01"		DIAMETER 2"		LENGTH 25'		TOTAL DEPTH 63.5'	
MOISTURE CONTENT	SORTING	DENSITY	PLASTICITY	SAMPLE NO.	TIP READING (PPH)	DEPTH	SAMPLE RECOVERY	PENETRATION RESISTANCE	LITHOLOGY/REMARKS				WELL COMPLETION				
wet	poor	mod.		13	749	0.0			0.00' - 1.50' SAND, medium- to coarse-grained, trace of fine-gravel, rounded to subrounded grains, hydrocarbon sheen.			GRAVEL PACK	SCREEN	TO			
						1											
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LOCATION MAP										SHELL OIL COMPANY — WELL LOG				PAGE 1 OF 4			
										WELL NUMBER ▶ P-57				LOCATION ▶ North Property West Fence Line			
										DATE ▶ 4-1-89				WEATHER ▶ Sunny, 40's			
										LOGGED BY ▶ J. Pawlik				DRILLED BY ▶ Mathes Drilling			
										DRILLING METHOD ▶ 4 1/4" Hollow-Stem Auger				SAMPLING METHOD ▶ 18" Split Spoon			
GRAVEL PACK ▶ 63.5' to 36.5' (27') NB40 sand				36.5' to 34.5' (2') Bentonite seal				34.5' to 0' (34.5') cement									
CASING ▶ TYPE Schedule 40 PVC										DIAMETER 2"		LENGTH 38.5'		HOLE DIA 8 1/4"			
SCREEN ▶ TYPE Schedule 40 PVC										SLOT 0.01"		DIAMETER 2"		LENGTH 25'		TOTAL DEPTH 63.5'	
MOISTURE CONTENT	SORTING	DENSITY	PLASTICITY	SAMPLE NO.	TIP READING (PPH)	DEPTH	SAMPLE RECOVERY	PENETRATION RESISTANCE	LITHOLOGY/REMARKS				WELL COMPLETION				
moist	v.	soft	plas	1	1.5	0	1.00	1	0.00'-0.85' CLAY, brown-orange, black streaks.				CEMENT CASING				
moist	well	loose				1		3	0.00'-1.00' SAND, tan, very fine-grained, subangular grains silty.								
moist		soft	plas	2	399	2	1.40	2	0.00'-0.20' CLAY, dark gray.				CEMENT CASING				
						2		2	0.20'-1.40' SAND, tan, fine grained.								
moist	well	loose		3	588	4	2.20	2	0.00'-1.20' SAND, tan to light brown, fine-grained, subangular to subrounded grains, slight hydrocarbon odor.				CEMENT CASING				
						3		3									
moist	well	loose		4	635	8	1.04	4	0.00'-0.85' SAND, tan, fine-grained, subangular to subrounded grains.				CEMENT CASING				
moist		soft	plas			20		3									

SHELL OIL COMPANY — WELL LOG

PAGE 2 OF 2

LOCATION MAP



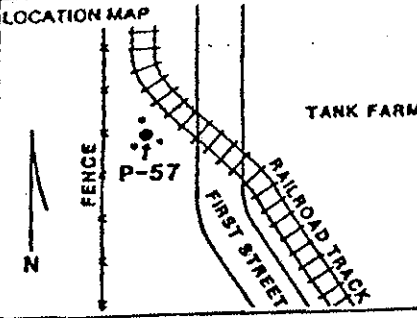
WELL NUMBER	P-57	LOCATION	North Property West Fence Line
DATE	4-1-89	WEATHER	Sunny, 40's
LOGGED BY	J. Paulik	DRILLED BY	Mathes Drilling
DRILLING METHOD	4 1/4" Hollow-Stem Auger	SAMPLING METHOD	18" Split Spoon
GRAVEL PACK	63.5' to 36.5' (27') MB40 sand	36.5' to 34.5' (2') Bentonite seal	34.5' to 0' (34.5') cement

CASING	TYPE	Schedule 40 PVC	DIAMETER	2"	LENGTH	38.5'	HOLE DIA	8 1/4"
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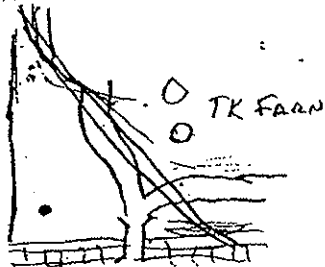
SCREEN	TYPE	Schedule 40 PVC	SLOT	0.01"	DIAMETER	2"	LENGTH	25'	TOTAL DEPTH	63.5'
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MOISTURE CONTENT	LOGGING	DENSITY	PLASTICITY	SAMPLE NO.	TIP READING (PPM)	DEPTH	SAMPLE RECOVERY	PENETRATION RESISTANCE	LITHOLOGY/REMARKS	WELL COMPLETION
moist	well	loose		5	174	4	2	3	0.00'-1.25' SAND, tan, fine-grained, subrounded grains, black laminations throughout.	CEMENT CASING
						1				
						2				
						3				
						4	2	3		
						5		4		
						6				
						7				
						8				
moist	well	soft	plas	6	367	9	1	5	0.00'-1.08' CLAY, mottled olive green & orange.	
moist	well	loose				1.50'	5	3	1.08'-1.34' SAND, brown, medium grained, subrounded grains.	CEMENT CASING
moist		soft	plas			30		3	1/34'-1.50' CLAY, brown.	
						1				
						2				
						3				
						4	3	8	0.00'-1.25' SAND, tan, fine-to medium grained, subrounded grains.	
						5		9		
						6				
						7				
						8				
wet	poor	loose				9	1	9	0.00'-0.45' SAND, brown to olive green, medium-to fine-grained, subrounded grains, hydrocarbon odor.	BENTONITE GRAVEL PACK SCREEN
moist		soft	plas	8	681	1.50'	9	10	0.45'-0.60' CLAY, dark olive.	
damp	well	loose				40			0.60'-1.50' SAND, orange-brown, fine-grained, subrounded grains.	

LOCATION MAP										SHELL OIL COMPANY — WELL LOG			PAGE 3 OF 5				
										WELL NUMBER ▶ P-57		LOCATION ▶ North Property West Fence Line					
										DATE ▶ 4-1-89		WEATHER ▶ Sunny, 40's					
										LOGGED BY ▶ J. Pavlik		DRILLED BY ▶ Hatcher Drilling					
										DRILLING METHOD ▶ 4 1/4" Hollow-Stem Auger		SAMPLING METHOD ▶ 18" Split Spoon					
GRAVEL PACK ▶ 63.5' to 36.5' (27') HB40 sand		36.5' to 34.5' (2')		Bentonite cement													
CASING ▶ TYPE Schedule 40 PVC										DIAMETER 2"		LENGTH 38.5'		MOLE DIA 8 1/4"			
SCREEN ▶ TYPE Schedule 40 PVC										SLOT 0.01"		DIAMETER 2"		LENGTH 25'		TOTAL DEPTH 63.5'	
MOISTURE CONTENT	SORTING	DENSITY	PLASTICITY	SAMPLE NO.	TIP READING (PPM)	DEPTH	SAMPLE RECOVERY	PERMEATION RESISTANCE	LITHOLOGY/REMARKS			WELL COMPLETION					
moist	mod.	loose				40											
moist	mod.	loose				1											
						2											
						3											
				9	1041	4	1.50	3	0.00'-0.70'	SAND, gray, fine-grained, subangular grains, hydrocarbon odor.							
						5		7	0.70'-1.50'	SAND, brown, medium-grained, trace fine-gravel, subangular to subrounded grains, hydrocarbon odor.							
						6		8									
						7											
						8											
moist	mod.	med.		10	828	9	1.50	8	0.00'-1.50'	SAND, brown, fine-to medium-grained, trace of fine-gravel, subangular to subrounded grains, hydrocarbon odor.							
						10		24									
						11											
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SHELL OIL COMPANY — WELL LOG										PAGE 4 OF 4							
LOCATION MAP 										WELL NUMBER ▶ P-57		LOCATION ▶ North Property West Fence					
										DATE ▶ 6-1-89		WEATHER ▶ Sunny, 40°s					
										LOGGED BY ▶ J. Pavlik		DRILLED BY ▶ Mathes Drilling					
										DRILLING METHOD ▶ 4 1/4" Hollow Stem Auger		SAMPLING METHOD ▶ 18" Split Spoon					
										GRAVEL PACK ▶ 63.5' to 36.5' (27') MB40 sand		36.5' to 34.5' (2') Bentonite 34.5' to 0' (34.5') cement					
CASING ▶ TYPE Schedule 40 PVC										DIAMETER 2"		LENGTH 38.5'		HOLE DIA 8 1/4"			
SCREEN ▶ TYPE Schedule 40 PVC										SLOT 0.01"		DIAMETER 2"		LENGTH 25'		TOTAL DEPTH 63.5'	
MOISTURE CONTENT	SORTING	DENSITY	PLASTICITY	SAMPLE NO.	TYP READING (PPM)	DEPTH	SAMPLE RECOVERY	PENETRATION RESISTANCE	LITHOLOGY/REMARKS				WELL COMPLETION				
sat. poor loose		v.		13	695	0			0.00'-1.50' SAND, dark gray, medium-to coarse-grained, rounded to subrounded grains, traces of angular fine-gravel, hydrocarbon odor.	GRAVEL PACK SCREEN TO							
						1											
						2											
						3											
						4	1.50	2									
						5		1									
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LOCATION MAP



SHELL OIL COMPANY — WELL LOG

PAGE 1 OF 4

WELL
NUMBERP-58
E5 4

LOCATION

NORTH PROP. SO. CORNER

DATE

3-30-89

WEATHER

Cloudy, Raining, 50°

LOGGED
BY

JP

DRILLED
BY

MATHES

DRILLING
METHOD

8" Hollow Stem Auger

SAMPLING
METHOD

18" Split Spoon

ELEVATION

GRAVEL
PACK

63.5' - 36.5' = 27'

SEAL

36.5' - 34.5' = 2'
34.5' - 0' = 34.5'

CASING TYPE

S-40 PVC

DIAMETER

2"

LENGTH

38.5'

HOLE
DIA

8"

SCREEN TYPE

S-40 PVC

SLOT

0.01"

DIAMETER

2"

LENGTH

25'

TOTAL
DEPTH

63.5'

MOISTURE CONTENT	SORTING	DENSITY	PLASTICITY	SAMPLE NO.	DEPTH	SAMPLE RECOVERY	PENETRATION RESISTANCE	LITHOLOGY/REMARKS	WELL COMPLETION
					0				
					1				
					2				
					3				
moist	Soft Plastic			1	4	1.5	1	0-0.6 - light brown clay	
moist	Soft Plastic			15.3	5		3	0.6-1.5 - olive green clay, black streaking	
					6				
					7				
					8				
moist	very loose	Loose		2	9	1.0	3	0-0.4 - brown vfg sd. slightly silty	
moist	very loose	med. plastic		10.8	10		4	0.4-0.6 - olive clay, silty	
moist	very loose	Loose			11		4	0.6-1.0 - tan, vfg sd	
					12				
					13				
					14				
moist	very loose	Loose		3	15	0.97	5	0-0.7 - Tan sand, vfg, black streaking throughout	
moist	very loose	Loose		50.4	16		5	0.7-0.97 - tan sand, vfg, some streaking	
					17		7		
					18				
					19				
					20				
moist	well	Loose		4	21		5	0-1.15 - tan sand, medium grain, subangular, subrounded	
				9.1	22	1.15	7		

LOCATION MAP										SHELL OIL COMPANY — WELL LOG		PAGE 1 OF 4	
										WELL NUMBER ▶ P-58		LOCATION ▶ North Property Southwest Corner	
										DATE ▶ 1-10-89		WEATHER ▶ Cloudy, Raining 50's	
										LOGGED BY ▶ J. Pawlik		DRILLED BY ▶ Mathes Drilling	
										DRILLING METHOD ▶ 4 1/4" Hollow-Stem Auger		SAMPLING METHOD ▶ 18" Split Spoon	
GRAVEL PACK ▶ 61.5' to 34.5' (27')		34.5' to 0' (34.5') cement											
CASING ▶ TYPE Schedule 40 PVC		DIAMETER 2"		LENGTH 38.5'		HOLE DIA 8 1/4"							
SCREEN ▶ TYPE Schedule 40 PVC		SLOT 0.01"		DIAMETER 2"		LENGTH 25'		TOTAL DEPTH 63.5'					
MOISTURE CONTENT	SOILING	DENSITY	PLASTICITY	SAMPLE NO.	TIP READING (PPM)	DEPTH	SAMPLE RECOVERY	PENETRATION RESISTANCE	LITHOLOGY/REMARKS	WELL COMPLETION			
moist	well	loose		5	24.8	4	1.50	11	0.00'-0.30' SAND, tan, medium-grained, subangular to subrounded grains, contains black streaks.	CEMENT CASING BENTONITE GRAVEL PACK SCREEN			
moist	well	med.				5		11	0.30'-1.50' SAND, tan, medium-grained, subangular to subrounded grains.				
moist	v. soft	plastic		6	71.1	8	1.25	11	0.00'-0.80' CLAY, mottled light brown & olive.				
moist	well	med.				9		11	0.80'-1.25' SAND, tan, very fine-grained, organic material showing bedding plane laminations.				
moist	v. soft	med.				10							
moist	well	med.		7	18.6	4	1.50	9	0.00'-0.50' SAND, dark brown, very fine-grained.				
moist	well	med.				5		12	0.50'-1.50' SAND, dark brown, medium-grained, subangular to grains.				
moist	well	loose		8	232	8	1.00	11	0.00'-0.20' SAND, olive, medium-grained, subangular to subrounded grains.				
moist	well	med.				9		11	0.20'-1.00' SAND, dark brown, medium-grained, subangular to subrounded grains.				
						40							

LOCATION MAP										SHELL OIL COMPANY — WELL LOG		PAGE 3 OF 4					
										WELL NUMBER P-58		LOCATION North Property Southwest Corner					
										DATE 1-30-89		WEATHER Cloudy, Raining, 50°s					
										LOGGED BY J. Pavlik		DRIELLED BY Mathes Drilling					
										DRILLING METHOD 4 1/4" Hollow-Stem Auger		SAMPLING METHOD 18" Split Spoon					
GRAVEL PACK 60' to 36.5' (27') MB40 sand		36.5' to 34.5' (2') Bentonite		34.5' to 0' (34.5') cement													
CASING TYPE Schedule 40 PVC										DIAMETER 2"		LENGTH 38.5'		HOLE DIA 8 1/4"			
SCREEN TYPE Schedule 40 PVC										SLOT 0.01"		DIAMETER 2"		LENGTH 25'		TOTAL DEPTH 63.5'	
MOISTURE CONTENT	SOILING	DENSITY	PLASTICITY	SAMPLE NO.	TIP READING (PPM)	DEPTH	SAMPLE RECOVERY	PENETRATION RESISTANCE	LITHOLOGY/REMARKS				WELL COMPLETION				
						40			0.00'-1.50' SAND, dark brown, medium-to coarse-grained, subangular to subrounded grains, trace of fine-gravel, hydrocarbon odor.				SCREEN				
						1											
						2											
						3			0.00'-0.20' SAND, dark brown, medium-to coarse-grained, subangular to subrounded grains, trace of fine-gravel, gas odor.				GRAVEL PACK				
						4											
						5											
						6			0.20'-1.25' SAND, dark brown, medium-grained, subangular to subrounded grains, gas odor.				SCREEN				
						7											
						8											
						9			0.00'-1.25' SAND, dark brown, medium-to coarse grained, subrounded grains, trace of angular, fine-gravel, gas odor.				SCREEN				
						10											
						11											
						12			1.25'-1.50' CLAY, dark green.				SCREEN				
						13											
						14											
						15			0.00'-0.55' SAND, dark brown, medium-to fine-grained, subrounded grains.				SCREEN				
						16											
						17											
						18			0.55'-1.00' SAND, dark brown, very fine-grained, silty.				SCREEN				
						19											
						20											
						21			1.00'-1.50' SAND, dark brown, very fine-grained, silty, laminated with thin beds of organic materials				SCREEN				
						22											
						23											
						24			1.00'-1.50' SAND, dark brown, very fine-grained, silty, laminated with thin beds of organic materials				SCREEN				
						25											
						26											

LOCATION MAP										SHELL OIL COMPANY — WELL LOG		PAGE 4 OF 4					
										WELL NUMBER ▶ P-58		LOCATION ▶ North Property Southwest Corner					
										DATE ▶ 1-30-89		WEATHER ▶ Cloudy, Raining. 50's					
										LOGGED BY ▶ J. Pavlik		DRILLED BY ▶ Mathes Drilling					
										DRILLING METHOD ▶ 4 1/4" Hollow-Stem Auger		SAMPLING METHOD ▶ 18" Split Spoon					
GRAVEL PACK ▶ 63.5 to 36.5 (27') HB40 sand		36.5' to 34.5' (2') Bentonite seal		34.5' to 0' (34.5') cement													
CASING ▶ TYPE Schedule 40 PVC										DIAMETER 2"		LENGTH 38.5'		HOLE DIA 1 1/4"			
SCREEN ▶ TYPE Schedule 40 PVC										SLOT 0.01"		DIAMETER 2"		LENGTH 25'		TOTAL DEPTH 63.5'	
MOISTURE CONTENT	SORTING	DENSITY	PLASTICITY	SAMPLE NO.	TIP READING (PPM)	DEPTH	SAMPLE RECOVERY	PENETRATION RESISTANCE	LITHOLOGY/REMARKS				WELL COMPLETION				
sec.	poor	med.		13	51.3	40			0.00'-1.50' SAND, dark brown, medium-to coarse-grained, subrounded grains.								
						1											
						2											
						3											
						4	1.5'	5									
						5		13									
						6		18									
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LOCATION MAP		SHELL OIL COMPANY-WELL LOG		PAGE 1 OF 3
	WELL NUMBER	P-66	LOCATION	LOADING RACK
	DATE	9-27-89	WEATHER	CLEAR, LIGHT WIND TEMP. 60'S
	LOGGED BY	J. PAWLIK	DRILLED BY	MATHES
	DRILLING METHOD	6.25" HSA	SAMPLING METHOD	2.0' SPLIT-SPOON
	GRAVEL PACK	60'-33'(27') WB-40 Sd	SEAL	33'-31' BENTONITE 31'-0' GROUT

CASING ▶ TYPE SCHEDULE-40 PVC DIAMETER 2" LENGTH 35' HOLE DIA. 8"

SCREEN ▶ TYPE S-40 PVC SLOT 0.02" DIAMETER 2" LENGTH 25' TOTAL DEPTH 60'

MOISTURE CONTENT	SORTING	DENSITY	PLASTICITY	SAMPLE NUMBER	TIP READING (PPH)	DEPTH	SAMPLE RECOVERY	PENETRATION RESISTANCE	LITHOLOGY/REMARKS	WELL COMPLETION
										FLUSH MOUNT
moist	mod	loose		1	7.6	0			0.0'-1.50' Sand, very fine-grained, gray, very silty. * Split-spoon pushed for 3'-5' sample.	
						1				
						2				
						3				
						4	1.50	0		
						5		0		
						6				
						7				
moist	mod	loose		2	7.3	8		1	0.0'-1.02' Sand, very fine-grained, gray, very silty.	
moist	mod	loose				9	1.55	1	1.02'-1.55' Sand, fine-grained, tan, black laminations.	
						10		1		
						11				
						12				
wet	mod	loose		3	3.6	13		4	0.0'-0.25' Sand, very fine-grained, tan, very silty.	
moist	mod	loose				14	0.75	8	0.25'-0.75' Sand, very fine-grained, gray, black laminations.	
						15		10		
						16		11		
						17				
						18				
moist	mod	loose		4	2.1	19	1.40	3	0.0'-1.40' Sand, fine and medium-grained, tan.	
						20		6		
								6		
								10		

35-60'

EXPLANATION GROUT SAND SCREEN

LOCATION MAP		SHELL OIL COMPANY-WELL LOG		PAGE 2 OF 3
	WELL NUMBER	P-66	LOCATION	LOADING RACK
	DATE	9-27-89	WEATHER	CLEAR, LIGHT WIND TEMP. 60'S
	LOGGED BY	J. PAWLIK	DRILLED BY	MATHES
	DRILLING METHOD	6.25" HSA	SAMPLING METHOD	2.0" SPLIT-SPOON
	GRAVEL PACK	60'-33'(27') WB-40 Sd	SEAL	33'-31' BENTONITE 31'-0' GROUT

CASING	TYPE SCHEDULE-40 PVC	DIAMETER 2"	LENGTH 35'	HOLE DIA. 8"
SCREEN	TYPE S-40 PVC SLOT 0.02"	DIAMETER 2"	LENGTH 25'	TOTAL DEPTH 60'

MOISTURE CONTENT	SORTING	DENSITY	PLASTICITY	SAMPLE NUMBER	TIP READING (PPH)	DEPTH	SAMPLE RECOVERY	PENETRATION RESISTANCE	LITHOLOGY/REMARKS	WELL COMPLETION
moist	well	loose		5	21.3	20				
						21				
						22				
						23				
						24	1.54	2	0.0'-1.54' Sand, medium-grained, tan, hydrocarbon odor.	
						25		4		
						26		8		
						27		9		
moist	mod	loose		6	38.9	28		4	0.0'-1.45' Sand, fine and medium-grained, tan, hydrocarbon odor.	
						29	1.45	8		
						30		10		
						31		12		
moist	mod	mdense		7	350	32				
						33		6	0.0'-1.75' Sand, medium and coarse-grained, tan, trace of fine gravel, hydrocarbon odor.	
						34	1.75	16		
						35		25		
						36		33		
moist	mod	mdense		8	335	37				
						38		5	0.0'-1.21' Sand, fine and medium-grained, tan, hydrocarbon odor.	
						39	1.21	10		
						40		12		
								14		

EXPLANATION GROUT SAND SCREEN

LOCATION MAP				SHELL OIL COMPANY-WELL LOG				PAGE 3 OF 3		
				WELL NUMBER ► P-66		LOCATION ► LOADING RACK				
				DATE ► 9-27-89		WEATHER ► CLEAR, LIGHT WIND TEMP. 60'S				
				LOGGED BY ► J. PAWLIK		DRILLED BY ► MATHES				
				DRILLING METHOD ► 6.25" HSA		SAMPLING METHOD ► 2.0' SPLIT-SPOON				
				GRAVEL PACK ► 60'-33'(27') WB-40 Sd		SEAL ► 33'-31' BENTONITE 31'-0' GROUT				
CASING ► TYPE SCHEDULE-40 PVC				DIAMETER 2"		LENGTH 35'		HOLE DIA. 8"		
SCREEN ► TYPE S-40 PVC SLOT 0.02"				DIAMETER 2"		LENGTH 25'		TOTAL DEPTH 60'		
MOISTURE CONTENT	SORTING	DENSITY	PLASTICITY	SAMPLE NUMBER	TIP READING (PPM)	DEPTH	SAMPLE RECOVERY	PENETRATION RESISTANCE	LITHOLOGY/REMARKS	WELL COMPLETION
wet	mod	ndense		9	141	40			0.0'-1.81' Sand, medium and coarse-grained, tan, trace of fine gravel, hydrocarbon odor.	
						41				
						42				
						43		5		
						44	1.81'	13		
sat	mod	ndense		10	233	45		18	0.0'-1.78' Sand, fine and medium-grained, tan, some coarse-grained, trace of fine gravel, hydrocarbon odor.	
						46		24		
						47				
						48		6		
						49	1.78'	12		
sat	mod	ndense		11	107	50		18	0.0'-2.0' Sand, medium and coarse-grained, tan, hydrocarbon odor.	
						51		24		
						52				
						53		3		
						54	2.0'	9		
sat	mod	ndense		12	112	55		12	0.0'-0.10' Coal, black. 0.10'-0.25' Sand, medium and coarse-grained, tan. 0.25'-0.70' Sand, coarse-grained, tan, some fine and coarse gravel	
						56		17		
						57				
						58		6		
						59	0.70'	9		
60		12		17						
<div style="display: flex; justify-content: space-between;"> <div>EXPLANATION</div> <div> GROUT SAND SCREEN </div> </div>										

LOCATION MAP			SHELL OIL COMPANY-WELL LOG				PAGE 1 OF 4			
			WELL NUMBER ► P-73		LOCATION ► TANK A-22					
			DATE ► 10-7-89		WEATHER ► CLEAR, WINDY TEMP. 50'S					
			LOGGED BY ► J. PAWLIK		DRILLED BY ► MATHES					
			DRILLING METHOD ► 8.25" HSA		SAMPLING METHOD ► 2.0' SPLIT-SPOON					
			GRAVEL PACK ► 65'-38'(27') WB-40 Sd		SEAL ► 38'-36' BENTONITE 36'-0' GROUT					
CASING ► TYPE SCHEDULE 40 PVC DIAMETER 4" LENGTH 40' HOLE DIA. 10" SCREEN ► TYPE S-40 PVC SLOT 0.02" DIAMETER 4" LENGTH 25' TOTAL DEPTH 65'										
MOISTURE CONTENT	SORTING	DENSITY	PLASTICITY	SAMPLE NUMBER	TIP READING (PPM)	DEPTH	SAMPLE RECOVERY	PENETRATION RESISTANCE	LITHOLOGY/REMARKS	WELL COMPLETION
moist			soft plastic	1	4.2	0			0.0'-1.30' Clay, green, very silty. * Split-spoon pushed for 3'-5' sample.	2.5'
						1				
						2				
						3				
wet	well			2	4.2	4	1.30	0	0.0'-1.80' Sand, very fine-grained, dark brown grading to black, very silty, hydrocarbon odor.	
						5		0		
						6		0		
						7		0		
moist	well			3	2.5	8		3	0.0'-1.80' Sand, very fine-grained, tan, black mottled, very silty, hydrocarbon odor.	
						9	1.80	3		
						10		3		
						11		5		
moist	mod			4	3.1	12		4	0.0'-1.42' Sand, very fine-grained, some fine-grained, tan, hydrocarbon odor.	
						13		4		
						14	1.80	6		
						15		7		
						16				
						17				
						18				
						19	1.42			
						20				

EXPLANATION GROUT SAND SCREEN
 BENTONITE CASING WATER LEVEL

LOCATION MAP				SHELL OIL COMPANY-WELL LOG				PAGE 2 OF 4			
				WELL NUMBER ► P-73		LOCATION ► TANK A-22					
				DATE ► 10-7-89		WEATHER ► CLEAR, WINDY TEMP. 50'S					
				LOGGED BY ► J. PAWLIK		DRILLED BY ► MATHES					
				DRILLING METHOD ► 8.25" HSA		SAMPLING METHOD ► 2.0' SPLIT-SPOON					
				GRAVEL PACK ► 65'-38'(27') WB-40 Sd		SEAL ► 38'-36' BENTONITE 36'-0" GROUT					
CASING ► TYPE SCHEDULE 40 PVC						DIAMETER 4"		LENGTH 40'		HOLE DIA. 10"	
SCREEN ► TYPE S-40 PVC SLOT 0.02"						DIAMETER 4"		LENGTH 25'		TOTAL DEPTH 65'	
MOISTURE CONTENT	SORTING	DENSITY	PLASTICITY	SAMPLE NUMBER	TIP READING (PPM)	DEPTH	SAMPLE RECOVERY	PENETRATION RESISTANCE	LITHOLOGY/REMARKS		WELL COMPLETION
moist	mod	loose		5	7.0	20			0.0'-1.69' Sand, very fine and fine-grained, tan, trace of medium-grained.		
						21					
						22					
						23		4			
						24		4			
moist	mod	loose		6	8.4	25		3	0.0'-1.37' Sand, fine and medium-grained, tan.		
						26					
						27					
						28		3			
						29		6			
moist	mod	loose		7	1.5	30		7	0.0'-1.39' Sand, medium and coarse-grained, tan.		
						31					
						32					
						33		9			
						34		10			
moist	mod	dense		8	310	35		4	0.0'-1.55' Sand, medium and coarse-grained, tan, hydrocarbon odor.		
						36					
						37					
						38		8			
						39		12			
						40		17			
EXPLANATION GROUT SAND SCREEN BENTONITE CASING WATER LEVEL											

LOCATION MAP				SHELL OIL COMPANY-WELL LOG				PAGE 3 OF 4			
				WELL NUMBER ▶ P-73		LOCATION ▶ TANK A-22					
				DATE ▶ 10-7-89		WEATHER ▶ CLEAR, WINDY TEMP. 50'S					
				LOGGED BY ▶ J. PAWLIK		DRILLED BY ▶ MATHES					
				DRILLING METHOD ▶ 8.25" HSA		SAMPLING METHOD ▶ 2.0' SPLIT-SPOON					
				GRAVEL PACK ▶ 65'-38'(27') WB-40 Sd		SEAL ▶ 38'-36' BENTONITE 36'-0' GROUT					
CASING ▶ TYPE SCHEDULE 40 PVC						DIAMETER 4"		LENGTH 40'		HOLE DIA. 10"	
SCREEN ▶ TYPE S-40 PVC SLOT 0.02"						DIAMETER 4"		LENGTH 25'		TOTAL DEPTH 65'	
MOISTURE CONTENT	SORTING	DENSITY	PLASTICITY	SAMPLE NUMBER	TIP READING (PPM)	DEPTH	SAMPLE RECOVERY	PENETRATION RESISTANCE	LITHOLOGY/REMARKS		WELL COMPLETION
moist	mod	mdense		9	364	40			0.0'-1.31' Sand, fine and medium-grained, tan, hydrocarbon odor.		
						41					
						42					
						43		6			
						44	1.31	16			
wet	mod	mdense		10	317	45		20	0.0'-2.0' Sand, fine and medium-grained, some coarse-grained, tan, hydrocarbon odor.		
						46					
						47					
						48		4			
						49	2.0'	10			
sat	mod	mdense		11	238	50		17	0.0'-2.0' Sand, medium and coarse-grained, trace of fine-grained, tan, hydrocarbon odor.		
						51					
						52					
						53		1			
						54	2.0'	6			
sat	mod	loose		12	221	55		27	0.0'-2.0' Sand, medium and coarse-grained, tan, trace of fine gravel.		
						56					
						57					
						58		1			
						59	2.0'	1			
						60		7			
								9			

EXPLANATION

GROUT

SAND

SCREEN

BENTONITE

CASING

WATER LEVEL

LOCATION MAP										SHELL OIL COMPANY-WELL LOG				PAGE 4 OF 4	
										WELL NUMBER ▶ P-73		LOCATION ▶ TANK A-22			
										DATE ▶ 10-7-89		WEATHER ▶ CLEAR, WINDY TEMP. 50'S			
										LOGGED BY ▶ J. PAWLIK		DRILLED BY ▶ MATHES			
										DRILLING METHOD ▶ 8.25" HSA		SAMPLING METHOD ▶ 2.0' SPLIT-SPOON			
										GRAVEL PACK ▶ 65'-38'(27') WB-40 Sd		SEAL ▶ 38'-36' BENTONITE 36'-0' GROUT			
CASING ▶ TYPE SCHEDULE 40 PVC										DIAMETER 4"		LENGTH 40'		HOLE DIA. 10"	
SCREEN ▶ TYPE S-40 PVC SLOT 0.02"										DIAMETER 4"		LENGTH 25'		TOTAL DEPTH 65'	
MOISTURE CONTENT	SORTING	DENSITY	PLASTICITY	SAMPLE NUMBER	TIP READING (PPM)	DEPTH	SAMPLE RECOVERY	PENETRATION RESISTANCE	LITHOLOGY/REMARKS				WELL COMPLETION		
						60			0.0'-1.90' Sand, medium and coarse-grained, tan, hydrocarbon odor. 1.90'-2.0' Sand, coarse-grained, tan, and fine gravel, some coarse gravel.						
						61									
						62									
						63									
sat	mod	loose		13	296	64	2.0'	1							
						65		6							
sat	poor	ndense				66		17							
						67		27							
						68									
						69									
						70									
						71									
						72									
						73									
						74									
						75									
						76									
						77									
						78									
						79									
						80									
EXPLANATION															

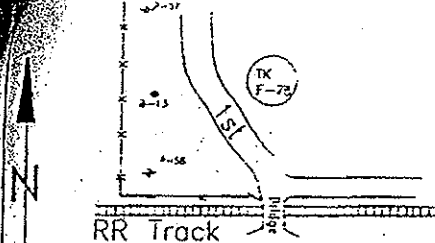
LOCATION MAP		SHELL OIL COMPANY-WELL LOG		PAGE <u>1</u> OF <u>4</u>						
		WELL NUMBER ► P-75		LOCATION ► TK CAR LOADING RACK						
		DATE ► 10-10-89		WEATHER ► CLEAR, LIGHT WIND TEMP. 60'S						
		LOGGED BY ► J. PAWLIK		DRILLED BY ► MATHES						
		DRILLING METHOD ► 8.25'		SAMPLING METHOD ► 1.50' SPLIT-SPOON						
		GRAVEL PACK ► 66'-39'(27') WB-40 Sd		SEAL ► 39'-37' BENTONITE 37'-0' GROUT						
CASING ► TYPE SCHEDULE-40 PVC				DIAMETER 4" LENGTH 41'						
SCREEN ► TYPE S-40 PVC SLOT 0.02"				DIAMETER 4" LENGTH 25'						
				HOLE DIA. 10"						
				TOTAL DEPTH 66'						
MOISTURE CONTENT	SORTING	DENSITY	PLASTICITY	SAMPLE NUMBER	TIP READING (PPH)	DEPTH	SAMPLE RECOVERY	PENETRATION RESISTANCE	LITHOLOGY/REMARKS	WELL COMPLETION
						0				
						1				
						2				
						3				
						4				
moist		soft	plastic	1	124	5	0.95	2	0.0'-0.95' Clay, green, black laminations, very silty.	
						6		3		
						7		4		
						8				
						9				
moist	well	loose		2	523	10	0.73	3	0.0'-0.73' Sand, very fine-grained, tan, slightly silty, hydrocarbon odor.	
						11		9		
						12		3		
						13		5		
moist	mod	loose		3	705	14	0.88	9	0.0'-0.88' Sand, very fine-grained, little fine-grained, tan, hydrocarbon odor.	
						15				
						16				
						17				
						18				
wet	mod	loose		4	517	19	0.88	2	0.0'-0.88' Sand, very fine and fine-grained, tan, hydrocarbon odor.	
						20		7		
								12		
<div style="display: flex; justify-content: space-between;"> <div> <p>EXPLANATION</p> <p> GROUT BENTONITE </p> </div> <div> <p> SAND CASING </p> </div> <div> <p> SCREEN WATER LEVEL </p> </div> </div>										

LOCATION MAP				SHELL OIL COMPANY-WELL LOG				PAGE 2 OF 4		
				WELL NUMBER ► P-75		LOCATION ► TANK CAR LOADING RACK				
				DATE ► 10-10-89		WEATHER ► CLEAR, LIGHT WIND TEMP. 60'S				
				LOGGED BY ► J. PAWLIK.		DRILLED BY ► MATHES				
				DRILLING METHOD ► 8.25'		SAMPLING METHOD ► 1.50' SPLIT-SPOON				
				GRAVEL PACK ► 66'-39'(27') WB-40 Sd		SEAL ► 39'-37' BENTONITE 37'-0' GROUT				
CASING ► TYPE SCHEDULE-40 PVC						DIAMETER 4"		LENGTH 41'		HOLE DIA. 10"
SCREEN ► TYPE S-40 PVC SLOT 0.02"						DIAMETER 4"		LENGTH 25'		TOTAL DEPTH 66'
MOISTURE CONTENT	SORTING	DENSITY	PLASTICITY	SAMPLE NUMBER	TIP READING (PPM)	DEPTH	SAMPLE RECOVERY	PENETRATION RESISTANCE	LITHOLOGY/REMARKS	WELL COMPLETION
moist	mod	ndense		5	612	20			0.0'-0.91' Sand, very fine and fine-grained, tan, trace of medium-grained.	
						21				
						22				
						23	0.91	3		
moist	mod	loose		6	624	24			0.0'-1.11' Sand, very fine and fine-grained, trace of medium-grained, black laminations throughout, hydrocarbon odor	
						25				
						26				
						27	1.11	5		
moist	well	loose		7	913	28			0.0'-0.20' Sand, very fine and fine-grained, tan. 0.20'-1.12' Sand, fine and medium-grained, some coarse, tan, trace of fine gravel, hydrocarbon odor.	
						29				
						30				
						31		7		
moist	mod	ndense		8	989	32	1.12	12	0.0'-1.18' Sand, medium and coarse-grained, trace of fine and coarse gravel, hydrocarbon odor.	
						33		16		
						34				
						35				
moist	mod	ndense				36		9		
						37	1.18	19		
						38		26		
						39				
						40				
<div style="display: flex; justify-content: space-between;"> <div> EXPLANATION GROUT BENTONITE </div> <div> SAND CASING </div> <div> SCREEN WATER LEVEL </div> </div>										

LOCATION MAP				SHELL OIL COMPANY-WELL LOG				PAGE 3 OF 4		
				WELL NUMBER ► P-75		LOCATION ► TANK CAR LOADING RACK				
				DATE ► 10-10-89		WEATHER ► CLEAR, LIGHT WIND TEMP. 60'S				
				LOGGED BY ► J. PAWLIK		DRILLED BY ► MATHES				
				DRILLING METHOD ► 8.25'		SAMPLING METHOD ► 1.50' SPLIT-SPOON				
				GRAVEL PACK ► 66'-39'(27') WB-40 Sd		SEAL ► 39'-37' BENTONITE 37'-0' GROUT				
CASING ► TYPE SCHEDULE-40 PVC				DIAMETER 4"		LENGTH 41'		HOLE DIA. 10"		
SCREEN ► TYPE S-40 PVC SLOT 0.02"				DIAMETER 4"		LENGTH 25'		TOTAL DEPTH 66'		
MOISTURE CONTENT	SORTING	DENSITY	PLASTICITY	SAMPLE NUMBER	TIP READING (PPH)	DEPTH	SAMPLE RECOVERY	PENETRATION RESISTANCE	LITHOLOGY/REMARKS	WELL COMPLETION
moist	mod	ndense		9	1079	40		7	0.0'-1.31' Sand, medium and coarse-grained, tan, trace of fine and coarse gravel, hydrocarbon odor.	
						41	1.31	19		
						42		34		
						43				
						44				
wet	mod	ndense		10	416	45		5	0.0'-1.11' Sand, medium and coarse-grained, tan, trace of fine and coarse gravel, hydrocarbon odor.	
						46	1.11	15		
						47		36		
						48				
						49				
sat	mod	ndense		11	613	50	1.5'	9	0.0'-1.50' Sand, medium and coarse-grained, tan, hydrocarbon odor.	
						51		19		
						52		27		
						53				
						54				
sat	mod	ndense		12	775	55	1.18	3	0.0'-1.18' Sand, medium and coarse-grained, tan, trace of fine-gravel, hydrocarbon odor.	
						56		19		
						57		25		
						58				
						59				
sat	mod	ndense		13	465	60	1.5'	5	0.0'-1.50' Sand, medium and coarse-grained, tan, trace of fine and coarse gravel, hydrocarbon odor.	
								15		
								27		
<div style="display: flex; justify-content: space-between;"> <div> <p>EXPLANATION</p> <p> GROUT SAND SCREEN BENTONITE CASING WATER LEVEL </p> </div> </div>										

SHELL OIL COMPANY-WELL LOG										PAGE 4 OF 4											
<div style="display: flex; align-items: center;"> <div style="flex: 1;"> <p>LOCATION MAP</p> </div> <div style="flex: 2;"> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 50%;">WELL NUMBER ▶ P-75</td> <td style="width: 50%;">LOCATION ▶ TANK CAR LOADING RACK</td> </tr> <tr> <td>DATE ▶ 10-10-89</td> <td>WEATHER ▶ CLEAR, LIGHT WIND TEMP. 60'S</td> </tr> <tr> <td>LOGGED BY ▶ J. PAWLIK</td> <td>DRILLED BY ▶ MATHES</td> </tr> <tr> <td>DRILLING METHOD ▶ 8.25'</td> <td>SAMPLING METHOD ▶ 1.50' SPLIT-SPOON</td> </tr> <tr> <td>GRAVEL PACK ▶ 66'-39'(27') WB-40 Sd</td> <td>SEAL ▶ 39'-37' BENTONITE 37'-0' GROUT</td> </tr> </table> </div> </div>										WELL NUMBER ▶ P-75	LOCATION ▶ TANK CAR LOADING RACK	DATE ▶ 10-10-89	WEATHER ▶ CLEAR, LIGHT WIND TEMP. 60'S	LOGGED BY ▶ J. PAWLIK	DRILLED BY ▶ MATHES	DRILLING METHOD ▶ 8.25'	SAMPLING METHOD ▶ 1.50' SPLIT-SPOON	GRAVEL PACK ▶ 66'-39'(27') WB-40 Sd	SEAL ▶ 39'-37' BENTONITE 37'-0' GROUT	HOLE DIA. 10"	
										WELL NUMBER ▶ P-75	LOCATION ▶ TANK CAR LOADING RACK										
										DATE ▶ 10-10-89	WEATHER ▶ CLEAR, LIGHT WIND TEMP. 60'S										
										LOGGED BY ▶ J. PAWLIK	DRILLED BY ▶ MATHES										
										DRILLING METHOD ▶ 8.25'	SAMPLING METHOD ▶ 1.50' SPLIT-SPOON										
GRAVEL PACK ▶ 66'-39'(27') WB-40 Sd	SEAL ▶ 39'-37' BENTONITE 37'-0' GROUT																				
CASING ▶ TYPE SCHEDULE-40 PVC										DIAMETER 4" LENGTH 41'											
SCREEN ▶ TYPE S-40 PVC SLOT 0.02"										DIAMETER 4" LENGTH 25'											
										TOTAL DEPTH 66'											
MOISTURE CONTENT	SORTING	DENSITY	PLASTICITY	SAMPLE NUMBER	TIP READING (PPM)	DEPTH	SAMPLE RECOVERY	PENETRATION RESISTANCE	LITHOLOGY/REMARKS		WELL COMPLETION										
sat	mod	ndense		14	-	60			<p>0.0'-1.5' No recovery.</p> <p>Well was overdrilled to 70', sample was not taken due to heaving sands, final depth of well was 66 feet.</p>												
						61															
						62															
						63															
						64															
						65															
						66															
						67															
						68															
						69															
						70															
						71															
						72															
						73															
						74															
						75															
						76															
77																					
78																					
79																					
80																					
<div style="display: flex; justify-content: space-between;"> <div>EXPLANATION</div> <div> GROUT SAND SCREEN BENTONITE CASING WATER LEVEL </div> </div>																					

LOCATION MAP



SHELL OIL COMPANY

WELL NUMBER	WELL P-93	LOCATION	1st STREET, NO. PROPERTY
DATE	3-11-91-3-22-91	WEATHER	CLOUDY, WINDY TEMP. 50'S
LOGGED BY	J. PAWLIK	DRILLED BY	MATHES
DRILLING METHOD	MUD ROTARY 7 7/8" TRI-CONE	SAMPLING METHOD	2.0' SPLIT- SPOON ON JARS
GRAVEL PACK	NONE	SEAL	GROUT TO SURFACE

CASING TYPE SCHEDULE 40 PVC DIAMETER 8" LENGTH 60' HOLE DIA. 12" TO 60" DIA. 60"-70.77/3"

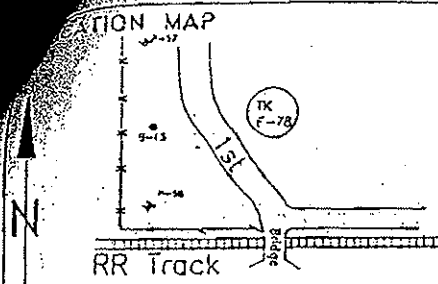
SCREEN TYPE NA SLOT NA DIAMETER NA LENGTH NA TOTAL DEPTH 136'

MOISTURE CONTENT	SORTING	DENSITY	PLASTICITY	SAMPLE NUMBER	TIP READING (PPM)	DEPTH	SAMPLE RECOVERY	PENETRATION RESISTANCE	LITHOLOGY/REMARKS.	WELL COMPLETION
moist		soft	plas	1	-	0			*Lithology descriptions from 0'-6' are from spud auger cuttings.	
						1-2.0'			0.00'-2.00' Limestone gravel and clay.	
moist		soft	plas	2	5.3	2			2.00'-4.00' CLAY, black, some very fine-grained sand and silt.	
						3-2.0'				
damp	well	loose		3	8.6	4			4.00'-6.00' SAND, tan, very fine-grained and silt.	
						5-2.0'				
moist	well	loose		4	3.0	6			0.00'-2.00' SILT, tan to brown, some clay.	
						7-2.0'				
moist	well	loose		5	3.0	8			0.00'-1.03' SAND, black to gray to tan, very fine-grained and fine-grained, little silt.	
						9-1.03'				
moist	well	loose		6	9.1	10			0.00'-1.00' SAND, gray to tan, very fine-grained and fine-grained, little silt.	
						11-1.0'				
moist	well	loose		7	11	12			0.00'-0.99' SAND, tan, fine-grained, some very fine-grained, trace of silt.	
						13-0.99'				
moist	well	loose		8	7	14			0.00'-1.12' SAND, tan, fine-grained, some very fine-grained, trace of silt.	
						15-1.12'				
moist	well	loose		9	16	16			0.00'-1.14' SAND, tan, fine-grained, little very fine-grained, trace of silt.	
						17-1.14'				
moist	well	loose		10	12	18			0.00'-1.21' SAND, tan to black, fine-grained, some very fine-grained, little silt.	
						19-1.21'				
						20				

EXPLANATION

●●●●● GROUT	□□□□□ SAND	▬ SCREEN
▬ BENTONITE	▬ CASING	▽ WATER LEVEL

LOCATION MAP



SHELL OIL COMPANY

PAGE 2 OF 2

WELL NUMBER	WELL P-93	LOCATION	1st STREET, NO. PROPERTY
DATE	3-11-91-3-22-91	WEATHER	CLOUDY, WINDY TEMP. 50'S
LOGGED BY	J. PAWLIK	DRILLED BY	MATHES
DRILLING METHOD	MUD ROTARY 7 7/8" TRI-CONE	SAMPLING METHOD	2.0" SPLIT- SPOON ON JARS
GRAVEL PACK	NONE	SEAL	GROUT TO SURFACE

CASING TYPE SCHEDULE 40 PVC DIAMETER 8" LENGTH 60' HOLE 12" TO 60"
DIA. 60" TO 10:77/8"

SCREEN TYPE NA SLOT NA DIAMETER NA LENGTH NA TOTAL DEPTH 136'

MOISTURE CONTENT	SORTING	DENSITY	PLASTICITY	SAMPLE NUMBER	TIP READING (PPM)	DEPTH	SAMPLE RECOVERY	PENETRATION RESISTANCE	LITHOLOGY/REMARKS	WELL COMPLETION
moist	well	loose		11	2	20			0.00'-1.30' SAND, tan, fine-grained, some very fine-grained, little silt.	
moist	well	loose		12	28	21	1.30			
moist	well	loose		12	28	22			0.00'-0.93' SAND, tan, black laminated, fine-grained, some very fine-grained, little silt.	
moist	mod	loose		13	9	23	0.93			
moist	mod	loose		13	9	24			0.00'-0.92' SAND, tan, fine-grained, little very fine-grained, trace of medium-grained and silt.	
moist	mod	loose		13	9	25	0.92			
moist	mod	loose		14	27	26			0.00'-0.87' SAND, tan, fine-grained, some medium-grained, little very fine-grained.	
moist	mod	loose		14	27	27	0.87			
moist	mod	loose		15	2	28			0.00'-0.92' SAND, tan, fine-grained, some medium-grained, little very fine-grained.	
moist	mod	loose		15	2	29	0.92			
moist	mod	loose		16	30	30			0.00'-1.13' SAND, tan, fine and medium-grained, little very fine-grained.	
moist	mod	loose		16	30	31	1.13			
moist	mod	loose		17	9	32			0.00'-0.15' SAND, tan, fine and medium-grained, little very fine-grained.	
moist	mod	loose		17	9	33	1.12		0.15'-1.12' SAND, tan, medium-grained, some fine-grained, trace of coarse-grained.	
moist	mod	loose		18	19	34			0.00'-0.92' SAND, tan, medium and fine-grained, little very fine-grained.	
moist	mod	loose		18	19	35	0.92			
moist	mod	loose		19	4	36			0.00'-0.91' SAND, tan, medium-grained, some coarse-grained, trace of fine-grained.	
moist	mod	loose		19	4	37	0.91			
moist	mod	loose		20	30	38			0.00'-0.95' SAND, tan, medium-grained, some fine-grained, little coarse-grained.	
moist	mod	loose		20	30	39	0.95			
						40				

EXPLANATION

GROUT

BENTONITE

SAND

CASING

SCREEN

WATER LEVEL

SHELL OIL COMPANY

WELL NUMBER **WELL P-93**
DATE **3-11-91-3-22-91**
LOGGED BY **J. PAWLIK**
DRILLING METHOD **MUD ROTARY 7 7/8" TRI-CONE**
GRAVEL PACK **NONE**

LOCATION **1st STREET, NO. PROPERTY**
WEATHER **CLOUDY, WINDY**
TEMP **50'S**
DRILLED BY **MATHES**
SAMPLING METHOD **2.0' SPLIT-SPOON ON LARS**
SEAL **GROUT TO SURFACE**

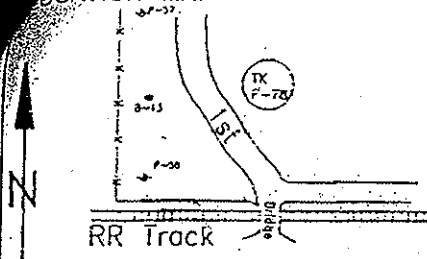
CASING ▶ TYPE SCHEDULE 40 PVC DIAMETER 8" LENGTH 60" HOLE DIA. 30" - 30.77/8"

SCREEN ▶ TYPE NA SLOT NA DIAMETER NA LENGTH NA TOTAL DEPTH 36'

MOISTURE CONTENT	SORTING	DENSITY	PLASTICITY	SAMPLE NUMBER	TIP READING (PPM)	DEPTH	SAMPLE RECOVERY	PENETRATION RESISTANCE	LITHOLOGY/REMARKS	WELL COMPLETION
moist	mod	loose		21	26	40			0.00' - 0.85' SAND, tan, medium and coarse-grained, little fine-grained, trace of fine-gravel.	
						41	0.85			
						42				
moist	mod	loose		22	19	43	0.72		0.00' - 0.72' SAND, tan, coarse-grained, some medium-grained, little fine-grained, trace of fine-gravel.	
						44				
moist	mod	loose		23	271	45	0.95		0.00' - 0.95' SAND, tan, coarse-grained, some medium-grained, little fine-grained, trace of fine and coarse-gravel.	
						46				
moist	mod	loose		24	538	47	0.83		0.00' - 0.83' SAND, tan, coarse-grained, some medium-grained, little fine-grained, trace of fine-gravel.	
						48				
moist	mod	loose		25	631	49	0.91		0.00' - 0.91' SAND, tan, coarse-grained, some medium-grained, little fine-grained.	
						50				
sat	mod	loose		26	1165	51	0.97		0.00' - 0.97' SAND, tan, coarse-grained, some medium-grained, little fine-grained, trace of fine-gravel.	
						52				
sat	mod	loose		27	398	53	0.85		0.00' - 0.85' SAND, tan, medium and coarse-grained, little fine-grained.	
						54				
sat	mod	loose		28	634	55	0.74		0.00' - 0.74' SAND, tan, medium and coarse-grained, little fine-grained.	
						56				
sat	mod	loose		29	315	57	0.76		0.00' - 0.76' SAND, tan, medium and coarse-grained, little fine-grained.	
						58				
sat	mod	loose		30	332	59	0.8		0.00' - 0.81' SAND, tan, coarse-grained, some medium-grained, little fine-grained, trace of silt.	
						60				

EXPLANATION: GROUT SAND SCREEN BENTONITE CASING WATER LEVEL

LOCATION MAP



SHELL OIL COMPANY

PAGE 1 OF 1

WELL NUMBER **WELL P-93** LOCATION **1st STREET, NO. PROPERTY**

DATE **11-91-3-22-91** WEATHER **CLOUDY, WINDY**
TEMP. **50'S**

LOGGED BY **J. PAWLIK** DRILLED BY **MATHES**

DRILLING METHOD **MUD ROTARY** SAMPLING METHOD **2.0' SPLIT-SP. TRI-CONE**

GRAVEL PACK **NONE** SEAL **GROUT TO SURFACE**

CASING TYPE **SCHEDULE 40 PVC** DIAMETER **8"** LENGTH **60'** HOLE DIA. **7.75"**

SCREEN TYPE **NA** SLOT NA DIAMETER NA LENGTH NA TOTAL DEPTH **35'**

MOISTURE CONTENT	SORTING	DENSITY	PLASTICITY	SAMPLE NUMBER	IF READING (PPM)	DEPTH	SAMPLE RECOVERY	PENETRATION RESISTANCE	LITHOLOGY/REMARKS	WELL COMPLETION
-	-	-	-	31	-	60	-	-	No sample, grout only.	
sat	mod	loose		32	7.1	61	-	-	0.00'-0.72' SAND, tan, medium-grained, some coarse-grained, little fine-grained.	
sat	mod	loose		33	53	62	-	-	0.00'-0.90' SAND, tan, coarse-grained, some medium-grained, little fine-grained, trace of coal.	
sat	mod	loose		34	15	63	-	-	0.00'-0.59' SAND, tan, medium-grained, some coarse-grained, little fine-grained.	
sat	mod	loose		35	15	64	-	-	0.00'-1.00' SAND, tan, medium-grained, some coarse-grained, little fine-grained.	
sat	mod	loose		36	707	65	-	-	0.00'-0.85' SAND, tan, medium-grained, some very fine-grained, scattered coal.	
sat	well	loose		37	42	66	-	-	0.00'-0.77' SAND, tan, fine-grained, some very fine-grained, trace of silt.	
sat	well	loose		38	78	67	-	-	0.00'-0.76' SAND, tan, fine-grained, some very fine-grained, trace of silt.	
sat	mod	loose		39	35	68	-	-	0.00'-0.90' SAND, tan, coarse-grained, some medium-grained, little fine-grained, gravel, chert.	
sat	mod	loose		40	2.2	69	-	-	0.00'-0.90' SAND, tan, coarse-grained, some medium-grained, little fine-grained and fine-gravel, chert.	
						70				
						71				
						72				
						73				
						74				
						75				
						76				
						77				
						78				
						79				
						80				

EXPLANATION GROUT SAND SCREEN
 BENTONITE CASING WATER LEVEL

WELL
NUMBER

WELL P-93

LOCATION

1st STREET, NO. PROPERTY

DATE

3-11-91-3-22-91

WEATHER

CLOUDY, WINDY
TEMP 50'SLOGGED
BY

J. PAWLIK

DRILLED
BY

MATHES

DRILLING
METHODMUD ROTARY
7 7/8" TRI-CONESAMPLING
METHOD2.3" SPLIT-
SPoon ON JARSGRAVEL
PACK

NONE

SEAL

GROUT TO
SURFACE

CASING

TYPE SCHEDULE 40 PVC

DIAMETER 8"

LENGTH 60'

HOLE: 12" TO 60"
DIA. 57-07/8"

SCREEN

TYPE NA

SLOT NA

DIAMETER NA

LENGTH NA

TOTAL
DEPTH 136'

MOISTURE CONTENT	SORTING	DENSITY	PLASTICITY	SAMPLE NUMBER	TIP READING (PPH)	DEPTH	SAMPLE RECOVERY	PENETRATION RESISTANCE	LITHOLOGY/REMARKS	WELL COMPLETION
sat	mod	loose		41	12	80			0.00'-0.91' SAND, tan, coarse-grained, little medium-grained, some fine-gravel (chert, quartz, rhyolite).	
wet	mod	soft	plastic	42	9.7	81	0.91		0.00'-0.28' CLAY, tan.	
sat	mod	loose		43	3.4	82			0.28'-0.97' SAND, tan, coarse-grained, little medium-grained, some fine- gravel (chert, quartz, rhyolite).	
sat	mod	loose		44	6.0	83	0.97		0.28'-0.76' SAND, tan, coarse-grained, little medium-grained, some fine- gravel (chert, quartz, rhyolite).	
sat	mod	loose		45	3.4	84			0.00'-0.98' SAND, tan, coarse-grained, little fine-gravel and medium- grained sand.	
sat	mod	loose		46	6.0	85	0.98		0.00'-0.81' SAND, tan, coarse-grained, little fine-gravel and medium- grained sand.	
sat	mod	loose		47	4.1	86			0.00'-0.83' SAND, tan, medium-grained, little fine-grained, trace of fine-gravel and very fine-grained sand.	
sat	well	loose		48	4.1	87	0.81		0.00'-1.02' SAND, tan, coarse-grained, little medium-grained, trace of fine-gravel (quartz and limestone).	
sat	mod	loose		49	4.3	88			0.00'-0.55' SAND, tan, coarse-grained, some medium-grained, little fine-grained, trace of fine- gravel.	
sat	mod	loose		50	5.3	89	0.55		0.00'-0.93' SAND, tan, coarse-grained, little medium-grained, trace of fine-grained and fine-grave.	
sat	mod	loose				90			0.00'-0.94' SAND, tan, coarse-grained, little medium-grained, trace of fine-grained and fine-grave.	
						91				
						92				
						93				
						94				
						95				
						96				
						97				
						98				
						99				
						100				

EXPLANATION

GROUT

SAND

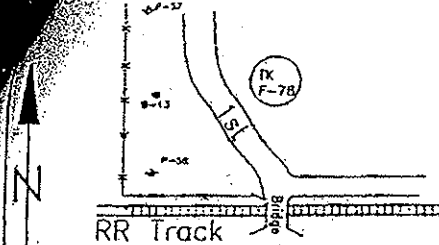
SCREEN

BENTONITE

CASING

WATER LEVEL

WATER LEVEL



WELL NUMBER ► **WELL P-93** LOCATION ► 1st STREET, NO. PROPERTY

DATE ► 3-11-91-3-22-91 WEATHER ► CLOUDY, WINDY
TEMP. 50'S

LOGGED BY ► **J. PAWLIK** DRILLED BY ► **MATHES**

DRILLING METHOD ► MUD ROTARY 7 7/8" TRI-CONE SAMPLING METHOD ► 2.0" SPLIT-SPHOON ON JARS

GRAVEL PACK ► NONE SEAL ► GROUT TO SURFACE

CASING ► TYPE SCHEDULE 40 PVC" DIAMETER 8" LENGTH 60' HOLE: 2" TO 60"
DIA. 50"-11 7/8"

SCREEN ► TYPE NA SLOT NA DIAMETER NA LENGTH NA TOTAL DEPTH 136'

MOISTURE CONTENT	SORTING	DENSITY	PLASTICITY	SAMPLE NUMBER	IP READING (PPH)	DEPTH	SAMPLE RECOVERY	PENETRATION RESISTANCE	LITHOLOGY/REMARKS	WELL COMPLETION
sat	mod	loose		51	14	100			0.00'-0.80' SAND, tan, coarse-grained, some medium-grained, little fine grained.	
sat	poor	loose		52	14	101-0.80			0.00'-0.87' SAND, tan, coarse-grained, little medium-grained, little fine-gravel, trace of coarse-gravel (chert, quartz, limestone).	
sat	poor	loose		53	9	102-0.87			0.00'-0.62' SAND, tan, coarse-grained, little medium-grained, little fine-gravel, trace of coarse-gravel (chert, quartz, limestone).	
sat	poor	loose		54	12	103-0.62			0.00'-0.83' SAND, tan, coarse-grained, little medium-grained, little fine-gravel, trace of coarse-gravel (chert, quartz, limestone).	
sat	poor	loose		55	8	104-0.83			0.00'-0.88' SAND, tan, coarse-grained, little medium-grained, little fine-gravel, trace of coarse-gravel (chert, quartz, limestone).	
sat	poor	loose		56	9.7	105-0.88			0.00'-0.83' SAND, tan, coarse-grained, little medium-grained, little fine-gravel, trace of coarse-gravel (chert, quartz, limestone).	
sat	poor	loose		57	7.2	106-0.83			0.00'-0.25' SAND, tan, coarse-grained, little medium-grained, little fine-gravel, trace of coarse-gravel (chert, quartz, limestone).	
sat	mod	loose		58	9.7	107-0.53			0.25'-0.63' SAND, tan, coarse-grained, some medium-grained, little fine-grained.	
sat	poor	loose		59	4.1	108-0.81			0.00'-0.81' SAND, tan, coarse-grained and fine-gravel, little medium-grained, trace of coarse-gravel.	
sat	mod	loose		60	6.6	109-0.83			0.00'-0.83' SAND, tan, coarse-grained, some medium-grained, trace of fine-gravel (quartz, chert, mafic igneous).	
sat	mod	loose				110			0.00'-0.90' SAND, tan, coarse-grained, some medium-grained, trace of fine-gravel (quartz, chert, mafic igneous).	
						111				
						112				
						113				
						114				
						115				
						116				
						117				
						118				
						119				
						120				

EXPLANATION

GROUT

BENTONITE

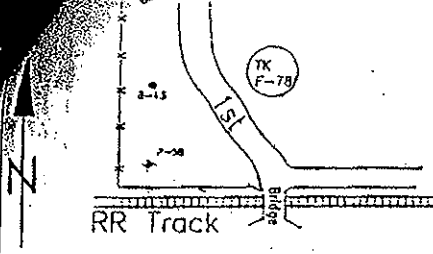
SAND

CASING

SCREEN

WATER LEVEL

LOCATION MAP



SHELL OIL COMPANY

PAGE 1 OF 1

WELL NUMBER	WELL P-93	LOCATION	1st STREET, NO. PROPERTY
DATE	11-91-3-22-91	WEATHER	CLOUDY, WINDY TEMP 50S
LOGGED BY	J. PAWLIK	DRILLED BY	MATHES
DRILLING METHOD	MUD ROTARY 7 7/8" TRI-CONE	SAMPLING METHOD	2.0' SPLIT- SPOON ON JAPS
GRAVEL PACK	NONE	SEAL	GROUT TO SURFACE

CASING	TYPE SCHEDULE 40 PVC	DIAMETER	8"	LENGTH	60'	HOLE DIA.	7.9350" 7.9178"
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SCREEN	TYPE NA	SLOT NA	DIAMETER NA	LENGTH NA	TOTAL DEPTH	136'
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MOISTURE CONTENT	SORTING	DENSITY	PLASTICITY	SAMPLE NUMBER	TIP READING (PPM)	DEPTH	SAMPLE RECOVERY	PENETRATION RESISTANCE	LITHOLOGY/REMARKS	WELL COMPLETION
sat	mod	loose				120			0.00'-0.05' SAND, tan, coarse-grained, some medium-grained, little fine-grained.	
wet		soft	pl	61	2.2	121	0.92		0.05'-0.18' CLAY, brown, little silt.	
sat	well	dense				122			0.18'-0.42' SAND, tan, fine-grained, some very fine-grained, little silt.	
sat	mod	loose				122			0.42'-0.92' SAND, tan, coarse-grained, little medium-grained and fine-gravel.	
sat	mod	loose		62	7.8	123	1.04		0.00'-1.04' SAND, tan, medium-grained, some coarse-grained, little fine-grained, trace of silt.	
sat	well	loose				124			0.00'-0.50' SAND, tan, medium-grained, little fine-grained and coarse-grained.	
				63	2.4	125	0.50			
						126				
damp		vp	pl			126			0.00'-0.25' CLAY, gray to dark gray, little very fine-grained sand.	
dry		hard	eh	64	1.5	127	1.15		0.25'-1.15' SHALE, gray, trace of silt.	
dry		hard	eh			128			*Hard drilling at 127.5'.	
				65	2.2	129	1.05		0.00'-1.05' SHALE, gray, trace of silt.	
						130			*Hard drilling from 130'-137.75', mud returns show gray to white limestone.	
				NS		131			Gray to blue clay from 134'.	
						132				
				NS		133				
dry		hard	eh			134				
				66	1.1	135	0.53		0.00'-0.55' SHALE, good fissility, gray to blue, very calcareous, trace of limestone.	
dry		hard	eh			136				
				67	0.8	137	0.45		0.00'-0.38' SHALE, good fissility, gray to blue, very calcareous, trace of limestone.	
dry		hard	eh			138			0.38'-0.45' LIMESTONE, brown.	
						139				
						140				

Final boring depth = 136'. last interval sampled = 136'-138'.

EXPLANATION	GROUT	SAND	SCREEN
BENTONITE	CASING	WATER LEVEL	

GROUNDWATER DEVELOPMENT DATA SHEET

PROJECT NAME: RAND AVENUE

PROJECT NUMBER: ~~21561294.00001~~ 21561979

DATE: 5/27/08

WEATHER: 70s, cloudy

FIELD PERSONNEL: Brian Williamson Billy S. Moore

MONITORING WELL ID: B-1

INITIAL DATA

Well Diameter: 1 in.

Total Depth of Well: 58.41 ft

Depth to Water: 48.23 ft

Height of Water Column: 10.18 ft

1 0.163 gallons/ft for 2 inch well, 0.653 gallons/ft for 4-inch well

Gallons/Lin.Ft: —

Vol. Of Water Column: 0.415

Min. Purge Volume: 2.67 gallons (3 volumes)

Depth to Top of Screen: 43.31 ft

Ambient PID/FID Reading: 0.0 ppm

Wellbore PID/FID Reading: 0.0 ppm

LNAPL / DNAPL NA ft

PURGE DATA

Purge Method: bail & check valve (Qwater)/bailer $10.18 \times 0.0408 \times 5 \text{ (well vols)} =$

Purge Volume (gals)	Time	Depth to Water (ft)	Color	Odor	pH	Temp (°C)	mS Cond. (µmhos/cm)	Turbidity (NTUs)	DO (mg/l)	ORP (mv)
2.0	1210	NA	lt brown	NA	6.24	20.47	1.811	1068	14.6	-8.1
2.4	1218		↓		6.53	19.83	1.749	368	19.4	-8.3
2.8	1224		tan	↓	6.59	19.54	1.765	446	2.50	-8.1
3.0	1236		lt clear	↓	6.50	19.54	1.787	296	1.67	-1.8
3.2	1241		↓	↓	6.39	19.20	1.718	282	2.42	-0.8
3.4	1247		↓	↓	6.61	19.23	1.712	221	2.12	2.8
3.5	1250		↓	↓	6.60	19.54	1.753	244	2.34	1.9

Start Time: 1132 0945

Average Purge Rate (gallons/min): 0.019

Purge Stop Time: 1250

Well Volumes Purged: 5

Elapsed Time: 185 min

Water Quality Meter ID: YSI 554

Total Volume Purged: 3.5 gallons

Calibrated on: 5/29/08

SAMPLING DATA

Sampling Method:

Sample Date: Sample Time: Analysis:

COMMENTS:

PROJECT NAME: Rte 111 Rand Ave vicinity

DATE: 5/29/08
WEATHER: 70s, Sunny
FIELD PERSONNEL: S. Moore
MONITORING WELL ID: B-2

Well Diameter: 1 in.
Total Depth of Well: 63.20 ft
Depth to Water: 49.71 ft
Height of Water Column: 13.49 ft
Depth to Top of Screen: 48.49 ft

Gallons/Lin.Ft':
Vol. Of Water Column: 0.195 0.55 gallons
Volume Of Water Introduced From Drilling: 10 gallons
Min. Purge Volume: 3.97 (13.97) gallons (5 volumes)

Ambient PID/FID Reading: 0.0
Wellbore PID/FID Reading: 0.0
LNAPL / DNAPL NA

Purge Method: barley

$$\frac{13.49}{19.19} \times 2.75 (12.75) \times 0.0408 \times 5 \text{ well vols} =$$
[illegible]

Start Time: 1330
Average Purge Rate (gallons/min): 0.03

Purge Stop Time: 1640
Well Volumes Purged: 5

Elapsed Time: 190 min
Water Quality Meter ID: VSI 554

Total Volume Purged: 5 galls
Calibrated on: 5/29/08

Sampling Method:

Sample Date: _____ Sample Time: _____ Analysis: _____

COMMENTS:

~~DTW = 49.70 cm~~
~~DTB =~~

PROJECT NAME: Rte 111 / Rand Ave Vicinity
DATE: 5/30/08
WEATHER: 70s, breezy
FIELD PERSONNEL: S. Moore
MONITORING WELL ID: B-3

PROJECT NUMBER: 21561979

Well Diameter: 1 in.
Total Depth of Well: 45.98
Depth to Water: 34.52
Height of Water Column: 11.46
Depth to Top of Screen: 31.07
1.063 gallons/ft for 2 inch well, 0.653 gallons/ft for 4-inch well

Gallons/Lin.Ft': 0.430.47^{16.5}
Vol. Of Water Column: 0.47 gallons
Volume Of Water Introduced From Drilling: 10 gallons
Min. Purge Volume: 2.34 gallons (5 volumes)

Ambient PID/FID Reading: 0.0
Wellbore PID/FID Reading: 0.0
LNAPL / DNAPL NA

Purge Method: barter

$$11.46 \times 0.0408 \times 5 =$$
[illegible]

Start Time: 0800
Average Purge Rate (gallons/min): 0.04

Purge Stop Time: 0949
Well Volumes Purged: 5

Elapsed Time: 109 min
Water Quality Meter ID: 451 556

Total Volume Purged: 4.0 gal
Calibrated on: 5-30-08

Sampling Method:

Sample Date: _____ Sample Time: _____ Analysis: _____

COMMENTS:

a

PROJECT NUMBER: 21561979

WEATHER: 70s Sunny

FIELD PERSONNEL: S. Moore

MONITORING WELL ID: B-4

Well Diameter: 1 in.

Total Depth of Well: 57.59

Depth to Water: 46.35

Height of Water Column: 11.3

Depth to Top of Screen: 4

1 0.163 gallons/ft for 2 inch well, 0.653 gallons/ft for 4-inch well

Gallons/Lin.Ft¹:

Vol. Of Water Column: 0.44

Volume Of Water Introduced From Drilling:

Min. Purge Volume: 2.31

1. 1.1

Ambient PID/FID Reading: 0.1

Wellbore PID/FID Reading: 0.0

LNAPL / DNAPL NA

ENAFLE / DNAFL 2A

PURGE DATA

Purge Method: *Wax Ter.*

$$11.34 \times 0.0408 \times 5 =$$
[illegible]

Start Time: 1023

Average Purge Rate (gallons/min): 0.025

Purge Stop Time: 1400

Well Volumes Purged: 5

Elapsed Time: 187

Water Quality Meter ID: VSI 557.

Total Volume Burned: 46

Total Volume Purged: 7.0 gallons
Calibrated on: 8-29-08

Sampling Method:

Sample Date:

Sample Time:

Analysis:

COMMENTS:

COMMENTS: allowed for recharge time

✓ *th*

DATE: 5/30/08

PROJECT NUMBER: 21561979

WEATHER: 80s, Sunny

FIELD PERSONNEL: S. Moore

MONITORING WELL ID: B-5

INITIAL DATA

Well Diameter: 1 in.

Total Depth of Well: 46.15

Depth to Water: 33.79

Height of Water Column: 12.31

Depth to Top of Screen: 31.20

1 0.163 gallons/ft for 2 inch well, 0.653 gallons/ft for 4-inch well

Gallons/Lin.Ft³:

Vol. Of Water Column: 0.50 gallons

Volume Of Water Introduced From Drilling: _____ gallons

Min. Purge Volume: 2.5 gallons (5 volumes)

Ambient PID/FID Reading: 0.0

Wellbore PID/FID Reading: 0.00

LNAPL / DNAPL NA

PURGE DATA

Purge Method: *blow*

[illegible]

Start Time: 1420
Average Purge Rate (gallons/min): 0.0375

Purge Stop Time: 1620
Well Volumes Purged: 5

Elapsed Time: 120
Water Quality Meter ID: 451 556

Total Volume Purged: 4.5 gallons
Calibrated on: 5-30-08

SAMPLING DATA

Sampling Method:

Sample Date: _____ Sample Time: _____ Analysis: _____

COMMENTS:

PROJECT NAME: Rte 111 / Rand Ave Vicinity
DATE: 10/2/08

DATE: 6/2/08

WEATHER: 70s, Sunny

FIELD PERSONNEL: S. Mabre

MONITORING WELL ID: B-6

PROJECT NUMBER: 21561979

Well Diameter: 1 in.

Well Diameter: 1 in.

Total Depth of Well: 46.90 ft

Depth to Water: 36.16 ft

Height of Water Column: 10.74 ft

Depth to Top of Screen: 35.00 ft

1 0.163 gallons/ft for 2 inch well, 0.653 gallons/ft for 4-inch well

Gallons/Lin.Ft¹:

Vol. Of Water Column: 0.43 gallons

Volume Of Water Introduced From Drilling: 20 gallons

Min. Purge Volume: 24 gallons (5 volumes)

Ambient PID/FID Reading: 0.0

Wellbore PID/FID Reading: 0.0

LNAPL / DNAPL NA

Purge Method: *bayler*

[illegible]

Start Time: 0810

Average Purge Rate (gallons/min): 0.028

Purge Stop Time: 1032

Well Volumes Purged: 5

Elapsed Time: 142 ~~82~~ min

Water Quality Meter ID: NS1 556

Total Volume Pumped: 11

Total Volume Purged: 4 gallons
Calibrated on: 10-2-28

Sampling Method:

Sample Date:

Sample Time:

Analysis:

COMMENTS:

bailey lost in well after last reading. Development Not complete.

bailer retrieval attempted.

FIELD PERSONNEL: W. Pennington & ~~S. Moore~~ R. Wernig

DATE: 6/12/08

WEATHER: 80s, sunny

MONITORING WELL ID: B-1

SAMPLE ID: B1-06/208

INITIAL DATA

Well Diameter: 1 in
Total Well Depth (btoc): 58.41 ft
Depth to Water (btoc): 47.69 ft
Depth to LNAPL/DNAPL (btoc): ~ ft
Depth to Top of Screen (btoc): 43.41 ft
Screen Length: 15 ft

Water Column Height (do not include LNAPL or DNAPL): 10.72 ft btoc
 If Depth to Top of Screen is > Depth to Water AND Screen Length is ≥ 4 feet,
 Place Pump at: Total Well Depth - 0.5 (Screen Length + DNAPL Column Height) = — ft btoc
 If Depth to Top of Screen is < Depth to Water AND Water Column Height and Screen Length are ≥ 4 ft,
 Place Pump at: Total Well Depth - (0.5 X Water Column Height + DNAPL Column Height) = 53.05 ft btoc
 If Screen Length and/or water column height is < 4 ft, Place Pump at: Total Well Depth - 2 ft = — ft btoc

Volume of Flow Through Cell): 1.150 mL
Minimum Purge Volume =
(3 x Flow Through Cell Volume): 3.450 mL
Ambient PID/FID Reading: 0.0 ppm
Wellbore PID/FID Reading: 27.3 ppm

PURGE DATA

Pump Type: Bladder Pump / Low Flow

HEADSPACE PID = 0.0 ppm

[illegible]

Start Time: 0912

Elapsed Time: 93 min

Water Quality Meter ID: YSI 6820

Stop Time: 1045

Average Purge Rate (mL/min): 100

Date Calibrated: 6/12/08

SAMPLING DATA

Sample Date: 6/12/08

Sample Time: 104.5

Lab Analysis: VOC 8260

Sample Method: Bladder Pump / Low Flow

Sample Flow Rate (mL/min): 1.00

QA/QC: ~~XXXXXXXXXXXXXXXXXXXX~~

COMMENTS:

~~Sulfate: _____ ppm~~
~~Ferrous Iron (filtered): _____ ppm~~

Total Purge Volume: 9300 mL

SAMPLE ID: B2-061208

Water Column Height (do not include LNAPL or DNAPL): 12.95 ft btoe
 If Depth to Top of Screen is > Depth to Water AND Screen Length is ≥ 4 feet,
 Place Pump at: Total Well Depth - 0.5 (Screen Length + DNAPL Column Height) = ft btoe
 If Depth to Top of Screen is < Depth to Water AND Water Column Height and Screen Length are ≥ 4 ft,
 Place Pump at: Total Well Depth - (0.5 X Water Column Height + DNAPL Column Height) = 55.72 ft btoe
 If Screen Length and/or water column height is < 4 ft, Place Pump at: Total Well Depth - 2 ft = ft btoe

Volume of Flow Through Cell): 1.150 mL
Minimum Purge Volume =
(3 x Flow Through Cell Volume): 3.450 mL
Ambient PID/FID Reading: 0.0 ppm
Wellbore PID/FID Reading: 675 ppm

Pump Type: Bladder Pump / Low Flow

Headspace PID = 108 ppm

[illegible]

Date Calibrated: 6/12/08

QA/QC: *DUP* (B2-061208D)

Total Purge Volume: 7500 ^{mmHg} mL
3000

LOW FLOW GROUNDWATER SAMPLING DATA SHEET

PROJECT NAME: Route 111 & Rand Vicinity
 DATE: 6/12/08
 MONITORING WELL ID: B-4

PROJECT NUMBER: 21561979
 WEATHER: 80s, mostly sunny, humid
 SAMPLE ID: BH-061208

FIELD PERSONNEL: W. Pennington & ~~S. Moore~~ R. Wernig

INITIAL DATA

Well Diameter: 1 in
 Total Well Depth (btoc): 57.03 ft
 Depth to Water (btoc): 45.90 ft
 Depth to LNAPL/DNAPL (btoc): - ft
 Depth to Top of Screen (btoc): 42.63 ft
 Screen Length: 15 ft

Water Column Height (do not include LNAPL or DNAPL): 1173 ft btoc
 If Depth to Top of Screen is > Depth to Water AND Screen Length is ≥ 4 feet,
 Place Pump at: Total Well Depth - 0.5 (Screen Length + DNAPL Column Height) = - ft btoc
 If Depth to Top of Screen is < Depth to Water AND Water Column Height and Screen Length are ≥ 4ft,
 Place Pump at: Total Well Depth - (0.5 X Water Column Height + DNAPL Column Height) = 51.77 ft btoc
 If Screen Length and/or water column height is < 4 ft, Place Pump at: Total Well Depth - 2 ft = - ft btoc

Volume of Flow Through Cell): 1,150 mL
 Minimum Purge Volume =
 (3 x Flow Through Cell Volume): 3,450 mL
 Ambient PID/FID Reading: 0.0 ppm
 Wellbore PID/FID Reading: 41.8 ppm

PURGE DATA

Pump Type: Bladder Pump / Low Flow

Headspace PID = 0.0

Purge Volume (mL)	Time	Depth to Water (ft)	Color	Odor	pH	Temp (°C)	Cond. (mS/cm)	Turbidity (NTUs)	DO (mg/L)	ORP (mV)
1200	1538	45.90	brn	none	5.68	26.44	1.787	1253.9	8.54	422.3
2400	1546	45.90			5.92	27.19	1.824	1197.0	2.38	99.2
3600	1554	45.90			6.02	27.18	1.830	884.3	2.41	77.5
4800	1602	45.90			6.15	27.25	1.825	556.9	2.31	63.5
6000	1610	45.90	clearing		6.11	27.28	1.821	156.7	2.37	60.2
7200	1618				6.06	27.10	1.833	114.6	2.37	62.4
8400	1626				5.95	27.05	1.830	115.4	2.35	70.3

Start Time: 1530

Elapsed Time: 60 min

Water Quality Meter ID: YSI 6820

Stop Time: 1630

Average Purge Rate (mL/min): 150

Date Calibrated: 6/12/08

SAMPLING DATA

Sample Date: 6/12/08

Sample Time: 1630

Lab Analysis: VOC 8260

Sample Method: Bladder Pump / Low Flow

Sample Flow Rate (mL/min): 150

QA/QC: _____

COMMENTS:

Water coming to the surface contained air bubbles so turbidity would not settle down completely.

Sulfate: _____ ppm
 Ferrous iron (filtered): _____ ppm

Total Purge Volume: 9000 mL

LOW FLOW GROUNDWATER SAMPLING DATA SHEET

PROJECT NAME: Route 111 & Rand Vicinity
 DATE: 6/13/08
 MONITORING WELL ID: B-5

PROJECT NUMBER: 21561979
 WEATHER: 70s, cloudy, slight rain
 SAMPLE ID: B5-061308

FIELD PERSONNEL: W. Pennington & S. Moore R. Wernig

INITIAL DATA

Well Diameter: 1 in
 Total Well Depth (btoc): 46.13 ft
 Depth to Water (btoc): 33.37 ft
 Depth to LNAPL/DNAPL (btoc): — ft
 Depth to Top of Screen (btoc): 31.13 ft
 Screen Length: 15 ft

Water Column Height (do not include LNAPL or DNAPL): 12.76 ft btoC
 If Depth to Top of Screen is > Depth to Water AND Screen Length is ≥ 4 feet,
 Place Pump at: Total Well Depth - 0.5 (Screen Length + DNAPL Column Height) = — ft btoC
 If Depth to Top of Screen is < Depth to Water AND Water Column Height and Screen Length are ≥ 4 ft,
 Place Pump at: Total Well Depth - (0.5 X Water Column Height + DNAPL Column Height) = 39.75 ft btoC
 If Screen Length and/or water column height is < 4 ft, Place Pump at: Total Well Depth - 2 ft = — ft btoC

Volume of Flow Through Cell): 1,150 mL
 Minimum Purge Volume =
 (3 x Flow Through Cell Volume): 3,450 mL
 Ambient PID/FID Reading: 0.0 ppm
 Wellbore PID/FID Reading: 85.9 ppm

PURGE DATA

Pump Type: Bladder Pump / Low Flow

headspace PID = 4.8 ppm

Purge Volume (mL)	Time	Depth to Water (ft)	Color	Odor	pH	Temp (°C)	Cond. (mS/cm)	Turbidity (NTUs)	DO (mg/L)	ORP (mV)
1100	0836	33.38	brn.	none	6.34	20.27	0.990	986.7	0.81	-93.8
2200	0847	33.38			6.30	19.82	0.988	813.4	0.75	-92.9
3300	0858	33.38			6.30	19.66	0.984	620.2	0.73	-92.4
4400	0909	33.38	lt. brn.		6.31	19.49	0.982	353.3	0.80	-92.7
5500	0920				6.32	19.55	0.978	185.3	0.74	-94.3
6600	0931				6.31	19.69	0.975	83.2	0.73	-95.9
7700	0942				6.30	19.70	0.973	48.0	0.72	-97.0
8800	0953				6.27	19.54	0.974	30.1	0.72	-97.0
9900	1004				6.30	19.62	0.976	10.0	0.71	-97.8

Start Time: 0825

Elapsed Time: 100 min

Water Quality Meter ID: YSI 6820

Stop Time: 1005

Average Purge Rate (mL/min): 100

Date Calibrated: 6/13/08

SAMPLING DATA

Sample Date: 6/13/08
 Sample Method: Bladder Pump / Low Flow

Sample Time: 1005
 Sample Flow Rate (mL/min): 100

Lab Analysis: VOC 8260
 QA/QC: —

COMMENTS:

Sulfate: — ppm
 Ferrous Iron (filtered): — ppm

Total Purge Volume: 10000 mL

4

FIELD PERSONNEL: W. Pennington & S. Moore *R. Wernig*

WEATHER: 70s overcast, intermittent rain

SAMPLE ID: B6-061308

Well Diameter: <u>1</u> in	Water Column Height (do not include LNAPL or DNAPL): <u>11.14</u> ft btoc	Volume of Flow Through Cell): <u>1.150</u> mL
Total Well Depth (btoc): <u>46.98</u> ft	If Depth to Top of Screen is > Depth to Water AND Screen Length is ≥ 4 feet,	Minimum Purge Volume =
Depth to Water (btoc): <u>35.81</u> ft	Place Pump at: Total Well Depth - 0.5 (Screen Length + DNAPL Column Height) = <u> </u> ft btoc	(3 x Flow Through Cell Volume): <u>3.450</u> mL
Depth to LNAPL/DNAPL (btoc): <u> </u> ft	If Depth to Top of Screen is < Depth to Water AND Water Column Height and Screen Length are ≥ 4 ft,	Ambient PID/FID Reading: <u>0.0</u> ppm
Depth to Top of Screen (btoc): <u>31.98</u> ft	Place Pump at: Total Well Depth - (0.5 X Water Column Height + DNAPL Column Height) = <u>41.40</u> ft btoc	Wellbore PID/FID Reading: <u>3.6</u> ppm
Screen Length: <u>15</u> ft	If Screen Length and/or water column height is < 4 ft, Place Pump at: Total Well Depth - 2 ft = <u> </u> ft btoc	

Pump Type: Bladder Pump / Low Flow

Headspace PID = 15.4 ppm

[illegible]

Water Quality Meter ID: YSI 6820

Date Calibrated: 6/13/08

Lab Analysis: VOC 8260

QA/QC: EB (B6-061308 EB)

Sulfate: ppm

Ferrous iron (filtered): ppm

Total Purge Volume: 6100 mL

Total Purge Volume: 11750 mL

Total Purge Volume: 8250 mL

LOW FLOW GROUNDWATER SAMPLING DATA SHEET

PROJECT NUMBER: 21561979

FIELD PERSONNEL: W. Pennington & ~~S. Moore~~ R. Werning

WEATHER: 80s, sunny

SAMPLE ID: P67 - 061108

INITIAL DATA

Water Column Height (do not include LNAPL or DNAPL): 13.46 ft btoe
 If Depth to Top of Screen is > Depth to Water AND Screen Length is ≥ 4 feet,
 Place Pump at: Total Well Depth - 0.5 (Screen Length + DNAPL Column Height) = ft btoe
 If Depth to Top of Screen is < Depth to Water AND Water Column Height and Screen Length are ≥ 4 ft,
 Place Pump at: Total Well Depth - (0.5 X Water Column Height + DNAPL Column Height) = 58.48 ft btoe
 If Screen Length and/or water column height is < 4 ft, Place Pump at: Total Well Depth - 2 ft = ft btoe

Volume of Flow Through Cell : 1,150 mL
Minimum Purge Volume =
(3 x Flow Through Cell Volume): 3,450 mL
Ambient PID/FID Reading: 0.2 ppm
Wellbore PID/FID Reading: 427 ppm

PURGE DATA

Headspace PID = 1946 ppm

[illegible]

Water Quality Meter ID: YSI 6820

Date Calibrated: 6/11/08

SAMPLING DATA

Lab Analysis: VOC 8260

QA/QC: XXXXXXXXXXXX

COMMENTS:

Sulfate: _____ ppm
Ferrous Iron (filtered): _____ ppm

Total Purge Volume: 8400 mL

PROJECT NAME: Route 111 & Rand Vicinity
DATE: 6/10/08 WEA
MONITORING WELL ID: P-73

FIELD PERSONNEL: W. Pennington & ~~S. Moore~~ R. Wernig

SAMPLE ID: P73-061008

Well Diameter: 4 in
Total Well Depth (btoc): 66.38 ft
Depth to Water (btoc): 49.78 ft
Depth to LNAPL/DNAPL (btoc): 49.87 ft
Depth to Top of Screen (btoc): 41.38 ft
Screen Length: 25 ft

Water Column Height (do not include LNAPL or DNAPL): 16.4 ft btoC
 If Depth to Top of Screen is > Depth to Water AND Screen Length is ≥ 4 feet, —
 Place Pump at: Total Well Depth - 0.5 (Screen Length + DNAPL Column Height) = — ft btoC
 If Depth to Top of Screen is < Depth to Water AND Water Column Height and Screen Length are ≥ 4 ft,
 Place Pump at: Total Well Depth - (0.5 X Water Column Height + DNAPL Column Height) = 58.07 ft btoC
 If Screen Length and/or water column height is < 4 ft, Place Pump at: Total Well Depth - 2 ft = — ft btoC

Volume of Flow Through Cell): 1.150 mL
Minimum Purge Volume =
(3 x Flow Through Cell Volume): 3.450 mL
Ambient PID/FID Reading: 0.0 ppm
Wellbore PID/FID Reading: 0.7 ppm

Pump Type: Monsoon Stainless Steel Submersible Pump

HEADSPACE PID = 216 ppm

[illegible]

Start Time: 0915

Elapsed Time: 28 min

Water Quality Meter ID: YSI 6820

Stop Time: 0943

Average Purge Rate (mL/min): 300

Date Calibrated: 6/10/08

Sample Date: 6/10/08
Sample Method: Monsoon / Low Flow

Sample Time: 0943
Sample Flow Rate (mL/min): 300

Lab Analysis: VOC 8260

QA/QC:

* Product tone given by interface probe suspected to be from sediment/debris on surface of writer. No residue on interface probe. Shown possible.

~~Sulfate: _____ ppm~~
~~Ferrous-Iron (filtered): _____ ppm~~

Total Purge Volume: 8400 mL

Total Purge Volume: 3050 mL

SOIL VAPOR SAMPLING - SUMMA CANISTER

URS CORPORATION
RAND AVENUE REMEDIATION SITE
170 EAST RAND AVENUE / HARTFORD, ILLINOIS 62048

MONITORING TEAM INFORMATION

Field Personnel: M. Miller / S. Moore Date: 6/3/08
Job Number: 21561974

FIELD CONDITIONS

Weather: Cloudy Temperature: _____ Low: _____ High: _____
Wind Direction: North Level of Protection: Level 1

SUMMA CANISTER SAMPLE INFORMATION

Sample ID	Canister ID Number	Flow Regulator ID Number	Canister Vacuum (inches of Mercury [Hg])		Sample Time (24 hours)		Additional Comments
			Initial	Final	Start	Finish	
GP-12-A-060308	13389	FC00580	29	8	0925	0955	No
GP-12-B-060308	33406	FC00244	29	8	0919	1003	No
GP-12-C-060308	31752	FC00496	29	7	0935	1007	No
GP-12-D-060308	36564	FC00216	30	8	0940	1014	No
GP-11-A-060308	n2186	FC00490	30	9	1345	1420	No
GP-11-B-060308	n2033	FC00610	29	10	1350	1428	No
GP-11-B-060308-DUP	n2170	FC00439	29	6.5	1350	1428	No
GP-11-C-060308	n2032	FC00857	30	9	1355	1432	No
GP-11-D-060308	36341	FC00505	30	9	1410	1420	No

Tedlar Bags

~~0.13~~ ~~0.20~~ ~~0.14~~

~~0.13~~ 21.6535 / CO / H₂S / LEL / O₂

FIELD DATA									
Sample ID	Sample Time (24 hrs)	Vacuum Reading (inches of H ₂ O)	Calculated Purge Volume (3 well volumes)	Actual Volume Purged	Purge Method	Tedlar Bag Collection Method	PID Reading	4-Gas Meter Reading	Additional Comments (Yes / No)
GP-12-A-060308	0915	0.06	130 mL	130 mL	Syringe	Peristaltic Pump	0.1	0/11.6	No
GP-12-B-060308	0916	0.00	217 mL	220 mL	Syringe	Peristaltic Pump	0.0	0/4.5	No
GP-12-C-060308	0917	0.00	303 mL	305 mL	Syringe	Peristaltic Pump	0.1	0/11.6	No
GP-12-D-060308	0918	0.00	390 mL	390 mL	Syringe	Peristaltic Pump	0.2	0/3.0	No
GP-11-A-060308	1332	0.00	130 mL	130 mL	Syringe	Peristaltic Pump	2.4	0/11.2	No
GP-11-B-060308	1333	0.00	260 mL	260 mL	Syringe	Peristaltic Pump	2.6	0/10.3	No
GP-11-C-060308	1334	0.01	303 mL	305 mL	Syringe	Peristaltic Pump	2.7	0/10.0	No
GP-11-D-060308	1335	0.00	390 mL	390 mL	Syringe	Peristaltic Pump	2.1	0/2.8	No
GP-11-B-060308-Dup	1333	0.00	260 mL	260 mL	Syringe	Peristaltic Pump	2.6	0/10.3	No
					Syringe	Peristaltic Pump			
					Syringe	Peristaltic Pump			
					Syringe	Peristaltic Pump			
					Syringe	Peristaltic Pump			
					Syringe	Peristaltic Pump			
					Syringe	Peristaltic Pump			
					Syringe	Peristaltic Pump			
					Syringe	Peristaltic Pump			
					Syringe	Peristaltic Pump			
					Syringe	Peristaltic Pump			
					Syringe	Peristaltic Pump			

NOTES: Abbreviations: L = liter; mL = milliliter; N/A = Not Applicable; N = No; Y = Yes

6/3/08

SOIL VAPOR SAMPLING - SUMMA CANISTER

URS CORPORATION
RAND AVENUE REMEDIATION SITE
170 EAST RAND AVENUE / HARTFORD, ILLINOIS 62048

MONITORING TEAM INFORMATION

Field Personnel: M. Miller / S. Moore Date: 6/14/08
Job Number: 21561979

FIELD CONDITIONS

Weather: _____ Temperature: _____ Low: _____ High: _____
Wind Direction: _____ Level of Protection: _____

SUMMA CANISTER SAMPLE INFORMATION

Sample ID	Canister ID Number	Flow Regulator ID Number	Canister Vacuum (inches of Mercury [Hg])		Sample Time (24 hours)		Additional Comments
			Initial	Final	Start	Finish	
GP-13-A-060408	(SC62)	FC00239	29	8.5	0850	0922	No
GP-13-B-060408	3367 (SC74)	FC 00955	30	9	0855	0930	No
GP-13-C-060408	3297 (SC64)	FC 00073	30	8	0900	0935	No
GP-13-D-060408	1423	FC00741	27	7	0905	0936	No
GP-9-A-060408	34153	FC00198	29	7	1045	1115	No
GP-9-B-060408	36519	FC00154	30	8.5	1050	1120	No
GP-9-C-060408	SC52	FC00381	30	9	1055	1125	No
GP-9-D-060408	SC66	FC00575	22.5	8.5	1055	1125	No
GP-9-E-060408	9358	FC00360	30	6	1145	1145	No

SOIL VAPOR SAMPLING - TEDLAR BAG

21.65315

URS CORPORATION
RAND AVENUE REMEDIATION SITE
170 EAST RAND AVENUE / HARTFORD, ILLINOIS 62048

MONITORING TEAM INFORMATION

Field Personnel: M. Miller S. Moore

Date: 6/14/08

Job Number: 21561979

FIELD CONDITIONS

Weather: _____ Temperature: _____ Low: _____ High: _____

Wind Direction: _____ Level of Protection: _____

EQUIPMENT & CALIBRATION INFORMATION

Meter Type: _____ Manufacturer: _____

Model No.: _____

CO/H₂S
LEL/O₂

FIELD DATA

Sample ID	Sample Time (24 hrs)	Vacuum Reading (inches of H ₂ O)	Calculated Purge Volume (3 well volumes)	Actual Volume Purged	Purge Method	Tedlar Bag Collection Method	PID Reading	4-Gas Meter Reading	Additional Comments (Yes / No)
GP-13-A-060408	0834	0.00	⁵ 152	155	Syringe	Peristaltic Pump	1.2	$\frac{0}{1} \frac{0}{7.0}$	No
GP-13-B-060408	0835	0.00	¹⁰ 260	260	Syringe	Peristaltic Pump	0.9	$\frac{0}{1} \frac{0}{2.1}$	No
GP-13-C-060408	0836	0.00	¹⁵ 368	370	Syringe	Peristaltic Pump	0.9	$\frac{0}{1} \frac{0}{2.4}$	No
GP-13-D-060408	0837	0.00	²⁰ 477	480	Syringe	Peristaltic Pump	1.2	$\frac{0}{1} \frac{0}{0.0}$	No
GP-9-A-060408	1027	0.00	⁵ 152	155	Syringe	Peristaltic Pump	1.8	$\frac{0}{1} \frac{0}{5.7}$	No
GP-9-B-060408	1028	0.05	¹⁰ 260	260	Syringe	Peristaltic Pump	1.2	$\frac{0}{1} \frac{0}{2.6}$	No
GP-9-C-060408	1029	-0.00	¹⁵ 368	370	Syringe	Peristaltic Pump	1.4	$\frac{0}{1} \frac{0}{2.8}$	No
GP-9-D-060408	1030	-0.00	²⁰ 477	480	Syringe	Peristaltic Pump	0.9	$\frac{0}{1} \frac{0}{3.8}$	No
GP-9-C-060408-DU?	1029	-0.00	368	370	Syringe	Peristaltic Pump	1.4	$\frac{0}{1} \frac{0}{2.8}$	No
					Syringe	Peristaltic Pump			

Analytical Report 305128

for

URS Corporation-St. Louis

Project Manager: Wendy Pennington

900 S. Central Avenue

Route 111 & Rand Avenue Vicinity / 21561979

18-JUN-08



E84880

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**Florida certification numbers:
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Norcross(Atlanta), GA E87429**

**South Carolina certification numbers:
Norcross(Atlanta), GA 98015**

**North Carolina certification numbers:
Norcross(Atlanta), GA 483**

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18-JUN-08

Project Manager: **Wendy Pennington**
URS Corporation-St. Louis
1001 Highlands Plaza Drive West, Suite 300
St. Louis, MO 63110

Reference: XENCO Report No: **305128**
900 S. Central Avenue
Project Address: Roxana, Illinois 62084

Wendy Pennington:

We are reporting to you the results of the analyses performed on the samples received under the project name referenced above and identified with the XENCO Report Number 305128. All results being reported under this Report Number apply to the samples analyzed and properly identified with a Laboratory ID number. Subcontracted analyses are identified in this report with either the NELAC certification number of the subcontract lab in the analyst ID field, or the complete subcontracted report attached to this report.

Unless otherwise noted in a Case Narrative, all data reported in this Analytical Report are in compliance with NELAC standards. Estimation of data uncertainty for this report is found in the quality control section of this report unless otherwise noted. Should insufficient sample be provided to the laboratory to meet the method and NELAC Matrix Duplicate and Matrix Spike requirements, then the data will be analyzed, evaluated and reported using all other available quality control measures.

The validity and integrity of this report will remain intact as long as it is accompanied by this letter and reproduced in full, unless written approval is granted by XENCO Laboratories. This report will be filed for at least 5 years in our archives after which time it will be destroyed without further notice, unless otherwise arranged with you. The samples received, and described as recorded in Report No. 305128 will be filed for 60 days, and after that time they will be properly disposed without further notice, unless otherwise arranged with you. We reserve the right to return to you any unused samples, extracts or solutions related to them if we consider so necessary (e.g., samples identified as hazardous waste, sample sizes exceeding analytical standard practices, controlled substances under regulated protocols, etc).

We thank you for selecting XENCO Laboratories to serve your analytical needs. If you have any questions concerning this report, please feel free to contact us at any time.

Respectfully,

Carlos Castro

Managing Director, Texas

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Certificate of Analysis Summary 305128

URS Corporation-St. Louis, St. Louis, MO



Project Name: 900 S. Central Avenue

Project Id: Route 111 & Rand Avenue Vicinity / 2156

Date Received in Lab: Jun-04-08 10:00 am

Contact: Wendy Pennington

Report Date: 18-JUN-08


Project Location: Roxana, Illinois 62084

Project Manager: Debbie Simmons

Analysis Requested	Lab Id:	305128-001	305128-002	305128-003	
	Field Id:	Rt 111/Rand Ave-IDW Soil	Rt 111/Rand Ave-IDW Water	Trip Blank	
	Depth:				
	Matrix:	SOIL	WATER	WATER	
	Sampled:	Jun-03-08 10:45	Jun-03-08 13:30	Jun-03-08 00:00	
BOD by SM5210B	Extracted:				
	Analyzed:		Jun-04-08 16:14		
	Units/RL:		mg/L RL		
			16.6 2.00		
Biochemical Oxygen Demand, 5 day					
BTEX-MTBE by SW 8260B	Extracted:		Jun-11-08 09:24	Jun-11-08 09:00	
	Analyzed:		Jun-11-08 13:33	Jun-11-08 09:57	
	Units/RL:		mg/L RL	mg/L RL	
			U 0.0050	U 0.0050	
MTBE					
Benzene					
Toluene					
Ethylbenzene					
m,p-Xylene					
o-Xylene					
Total Xylenes					
Total BTEX					
COD by EPA 410.4	Extracted:				
	Analyzed:		Jun-05-08 17:38		
	Units/RL:		mg/L RL		
			37.0 20.0		
COD - Chemical Oxygen Demand					
Inorganic Anions by EPA 300	Extracted:				
	Analyzed:		Jun-04-08 15:04		
	Units/RL:		mg/L RL		
			0.984 0.113		
Nitrate as N					
Oil and Grease by EPA 1664A	Extracted:				
	Analyzed:		Jun-12-08 16:08		
	Units/RL:		mg/L RL		
			3.33 J 5.00		
Oil & Grease, Total Recovered					
TCLP Herbicides by SW8151	Extracted:	Jun-09-08 10:12			
	Analyzed:	Jun-11-08 22:25			
	Units/RL:	ug/L RL			
		U 2.50			
2,4,5-Tp					
2,4-D					

This analytical report, and the entire data package it represents, has been made for your exclusive and confidential use. The interpretations and results expressed throughout this analytical report represent the best judgment of XENCO Laboratories. XENCO Laboratories assumes no responsibility and makes no warranty to the end use of the data hereby presented. Our liability is limited to the amount invoiced for this work order unless otherwise agreed to in writing.

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Carlos A. Castro, Ph.D., MBA
Managing Director, Texas



Certificate of Analysis Summary 305128

URS Corporation-St. Louis, St. Louis, MO



Project Name: 900 S. Central Avenue

Project Id: Route 111 & Rand Avenue Vicinity / 2156

Date Received in Lab: Jun-04-08 10:00 am

Contact: Wendy Pennington

Report Date: 18-JUN-08

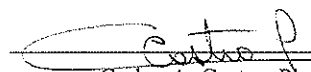
Project Location: Roxana, Illinois 62084

Project Manager: Debbie Simmons

Analysis Requested	Lab Id:	305128-001	305128-002	305128-003	
	Field Id:	Rt 111/Rand Ave-IDW Soil	Rt 111/Rand Ave-IDW Water	Trip Blank	
	Depth:				
	Matrix:	SOIL	WATER	WATER	
	Sampled:	Jun-03-08 10:45	Jun-03-08 13:30	Jun-03-08 00:00	
TCLP Metals by SW 6020A	Extracted:	Jun-09-08 10:05			
	Analyzed:	Jun-09-08 20:29			
	Units/RL:	mg/L RL			
Arsenic		U 0.010			
Barium		0.831 0.025			
Cadmium		U 0.005			
Chromium		0.009 J 0.015			
Lead		U 0.010			
Mercury		U 0.0020			
Selenium		U 0.015			
Silver		U 0.010			
TCLP Pesticides by SW8081A	Extracted:	Jun-09-08 10:15			
	Analyzed:	Jun-09-08 20:17			
	Units/RL:	ug/L RL			
Heptachlor Epoxide		U 0.250			
Chlordane		U 2.50			
Endrin		U 0.250			
Gamma-BHC (Lindane)		U 0.250			
Heptachlor		U 0.250			
Methoxychlor		U 0.250			
Toxaphene		U 2.50			
TCLP SVOCs by EPA 8270C	Extracted:	Jun-11-08 11:45			
	Analyzed:	Jun-12-08 18:08			
	Units/RL:	mg/L RL			
1,4-Dichlorobenzene		U 0.010			
2,4-Dinitrotoluene		U 0.010			
Hexachlorobenzene		U 0.010			
Hexachlorobutadiene		U 0.010			
Hexachloroethane		U 0.010			
2-methylphenol		U 0.010			
3&4-Methylphenol		U 0.010			
Nitrobenzene		U 0.010			
Pentachlorophenol		U 0.010			
Pyridine		U 0.010			
2,4,5-Trichlorophenol		U 0.010			
2,4,6-Trichlorophenol		U 0.010			

This analytical report, and the entire data package it represents, has been made for your exclusive and confidential use. The interpretations and results expressed throughout this analytical report represent the best judgment of XENCO Laboratories. XENCO Laboratories assumes no responsibility and makes no warranty to the end use of the data hereby presented. Our liability is limited to the amount invoiced for this work order unless otherwise agreed to in writing.

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Carlos A. Castro, Ph.D., MBA
Managing Director, Texas



Certificate of Analysis Summary 305128

URS Corporation-St. Louis, St. Louis, MO



Project Name: 900 S. Central Avenue

Project Id: Route 111 & Rand Avenue Vicinity / 2156

Date Received in Lab: Jun-04-08 10:00 am

Contact: Wendy Pennington

Report Date: 18-JUN-08

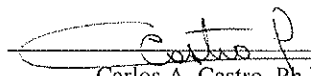
Project Location: Roxana, Illinois 62084

Project Manager: Debbie Simmons

<i>Analysis Requested</i>	<i>Lab Id:</i>	305128-001	305128-002	305128-003	
	<i>Field Id:</i>	Rt 111/Rand Ave-IDW Soil	Rt 111/Rand Ave-IDW Water	Trip Blank	
	<i>Depth:</i>				
	<i>Matrix:</i>	SOIL	WATER	WATER	
	<i>Sampled:</i>	Jun-03-08 10:45	Jun-03-08 13:30	Jun-03-08 00:00	
TCLP VOAs by EPA 8260B	<i>Extracted:</i>	Jun-12-08 14:34			
	<i>Analyzed:</i>	Jun-12-08 16:34			
	<i>Units/RL:</i>	mg/L RL			
Benzene		U 0.025			
2-Butanone		U 0.250			
Carbon Tetrachloride		U 0.025			
Chlorobenzene		U 0.025			
Chloroform		U 0.025			
1,2-Dichloroethane		U 0.025			
1,1-Dichloroethene		U 0.025			
Tetrachloroethylene		U 0.025			
Trichloroethene		U 0.025			
Vinyl Chloride		U 0.010			
TPH DRO by SW846-8015	<i>Extracted:</i>		Jun-06-08 12:04		
	<i>Analyzed:</i>		Jun-09-08 13:28		
	<i>Units/RL:</i>		mg/L RL		
TPH-DRO (Diesel Range Organics)			1.14 0.053		
TPH GRO by EPA 8015 Mod.	<i>Extracted:</i>		Jun-13-08 12:16		
	<i>Analyzed:</i>		Jun-14-08 04:31		
	<i>Units/RL:</i>		mg/L RL		
TPH-GRO (Gasoline Range Organics)			3.30 0.050		
TSS by SM2540D	<i>Extracted:</i>				
	<i>Analyzed:</i>		Jun-09-08 17:14		
	<i>Units/RL:</i>		mg/L RL		
TSS			3090 5.00		
Total Lead by EPA 200.8	<i>Extracted:</i>		Jun-09-08 10:05		
	<i>Analyzed:</i>		Jun-09-08 19:03		
	<i>Units/RL:</i>		mg/L RL		
Lead			0.006 0.002		
pH, Electrometric by EPA 150.2	<i>Extracted:</i>				
	<i>Analyzed:</i>		Jun-04-08 16:02		
	<i>Units/RL:</i>		SU RL		
pH			7.71		

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Carlos A. Castro, Ph.D., MBA
Managing Director, Texas



Certificate of Analysis Summary 305128

URS Corporation-St. Louis, St. Louis, MO



Project Name: 900 S. Central Avenue

Project Id: Route 111 & Rand Avenue Vicinity / 2156

Date Received in Lab: Jun-04-08 10:00 am

Contact: Wendy Pennington

Report Date: 18-JUN-08

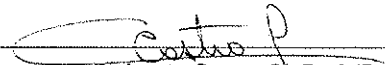
Project Location: Roxana, Illinois 62084

Project Manager: Debbie Simmons

Analysis Requested	Lab Id:	305128-001	305128-002	305128-003	
	Field Id:	Rt 111/Rand Ave-IDW Soil	Rt 111/Rand Ave-IDW Watc	Trip Blank	
	Depth:				
	Matrix:	SOIL	WATER	WATER	
	Sampled:	Jun-03-08 10:45	Jun-03-08 13:30	Jun-03-08 00:00	
Flash Point (CC) SW-846 1010	Extracted:				
	Analyzed:	Jun-12-08 12:45			
	Units/RL:	Deg F RL			
Flash Point		> 150 50.0			
Reactive Cyanide by EPA 9010B	Extracted:				
	Analyzed:	Jun-09-08 23:18			
	Units/RL:	mg/kg RL			
Cyanide		U 0.200			
Reactive Sulfide by EPA 9030B	Extracted:				
	Analyzed:	Jun-09-08 23:52			
	Units/RL:	mg/kg RL			
Reactive Sulfide		U 50.0			
Soil pH by EPA 9045C	Extracted:				
	Analyzed:	Jun-12-08 10:32			
	Units/RL:	SU RL			
pH		8.67			

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Carlos A. Castro, Ph.D., MBA
Managing Director, Texas



Flagging Criteria

- X** In our quality control review of the data a QC deficiency was observed and flagged as noted. MS/MSD recoveries were found to be outside of the laboratory control limits due to possible matrix /chemical interference, or a concentration of target analyte high enough to effect the recovery of the spike concentration. This condition could also effect the relative percent difference in the MS/MSD.
- B** A target analyte or common laboratory contaminant was identified in the method blank. Its presence indicates possible field or laboratory contamination.
- D** The sample(s) were diluted due to targets detected over the highest point of the calibration curve, or due to matrix interference. Dilution factors are included in the final results. The result is from a diluted sample.
- E** The data exceeds the upper calibration limit; therefore, the concentration is reported as estimated.
- F** RPD exceeded lab control limits.
- J** The target analyte was positively identified below the MQL(PQL) and above the SQL(MDL).
- U** Analyte was not detected.
- L** The LCS data for this analytical batch was reported below the laboratory control limits for this analyte. The department supervisor and QA Director reviewed data. The samples were either reanalyzed or flagged as estimated concentrations.
- H** The LCS data for this analytical batch was reported above the laboratory control limits. Supporting QC Data were reviewed by the Department Supervisor and QA Director. Data were determined to be valid for reporting.
- K** Sample analyzed outside of recommended hold time.

* Outside XENCO'S scope of NELAC Accreditation

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2505 N. Falkenburg Rd., Tampa, FL 33619
5757 NW 158th St, Miami Lakes, FL 33014
6017 Financial Dr., Norcross, GA 30071

Phone	Fax
(281) 589-0692	(281) 589-0695
(214) 902 0300	(214) 351-9139
(210) 509-3334	(210) 509-3335
(813) 620-2000	(813) 620-2033
(305) 823-8500	(305) 823-8555
(770) 449-8800	(770) 449-5477

LAB (LOCATION)

11331 Meadowglen Ln, Ste L, Houston, TX

XENCO (PH: 281-589-0592 FAX: 281-589-0595)

CALSCIENCE ()

TEST AMERICA ()

SPL ()

OTHER ()



Shell Oil Products Chain Of Custody Record

Please Check Appropriate Box:

☒ ENV. SERVICES☐ MOTIVA RETAIL☐ SHELL RETAIL☐ MOTIVA SD&CH☐ CONSULTANT☐ LUBES☐ SHELL PIPELINE☐ OTHER

Print Bill To Contact Name:

KEVIN DYER

INCIDENT # (ENV SERVICES)

9 7 2 1 6 6 4 0

☐ CHECK IF NO INCIDENT # APPLIES

DATE: 6/3/08

PAGE: 1 of 1

CONSULTANT COMPANY:

URS CORPORATION

URS CORPORATION - FIELD OFFICE

ADDRESS:

1001 HIGHLANDS PLAZA DRIVE WEST - SUITE 300

170 E. RAND AVENUE

CITY:

ST. LOUIS, MISSOURI 63110

HARTFORD, ILLINOIS 62048

TELEPHONE:

OFF: 314-743-4166

FAX:

OFF: 314-743-4166

E-MAIL:

wendy_pennington@urscorp.com

CELL: 314-452-8929

CELL: 314-452-8929

TURNAROUND TIME (CALENDAR DAYS):

☒ STANDARD (10 DAY)☐ 5 DAYS☐ 3 DAYS☐ 2 DAYS☐ 24 HOURS☐ RESULTS NEEDED

ON WEEKEND

DELIVERABLES:

☐ LEVEL 1☒ LEVEL 2☐ LEVEL 3☐ LEVEL 4☐ OTHER (SPECIFY)

TEMPERATURE ON RECEIPT C°

Cooler #1

2-0°C

Cooler #2

Cooler #3

SPECIAL INSTRUCTIONS OR NOTES:

Please provide "J" values in the Level 2 Report.

☒ SHELL CONTRACT RATE APPLIES

SOPUS SITE ADDRESS (Street, City and State):

900 S. CENTRAL AVENUE; ROXANA, ILLINOIS 62084

CONSULTANT PROJECT CONTACT (Report to):

WENDY PENNINGTON

CONSULTANT PROJECT NAME / NO.:

Route 111 & Rand Ave Vicinity / 21561979

SAMPLER NAME(S) (Print):

W. Pennington

LAB USE ONLY

305128-61

REQUESTED ANALYSIS

LAB USE ONLY	Field Sample Identification	SAMPLING		MATRIX	PRESERVATIVE						NO. OF CONT.	REQUESTED ANALYSIS															Container PID Readings or Laboratory Notes																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																				
		DATE	TIME		HCL	HNO3	H2SO4	NONE	OTHER	TCLP VOC		TCLP SVOC	TCLP Pesticide	TCLP Herbicide	TCLP Metal	Ignitability	Corrosivity	Reactivity	BTX/MTBE	pH	150.2	TSS	SM2540D	Nitrate	E300.0	Oil/Grease		1664 A	Lead	200.8	BOD	SM5210B	COD	410.4	DRO	Geo	8015	PID (ppm)																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																									
	Rt III/Rand Ave-IDW Soil-060308	6/3/08	1045	Soil				X		15	X	X	X	X	X	X	X	X																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																													

Relinquished by: (Signature)

Wendy Pennington

Received by: (Signature)

FED Ex

Date:

6/3/08

Time:

1730

Relinquished by: (Signature)

Received by: (Signature)

Date:

Time:

Relinquished by: (Signature)

FED Ex

Received by: (Signature)

Jim R. Lee

Date:

6/4/08

Time:

1000

05/2008 Revision

Page 50 of 51



Prelogin/Nonconformance Report- Sample Log-In

Client: URS
Date/ Time: 6/4/8
Lab ID #: 305128-17
Initials: g

Sample Receipt Checklist

#1	Temperature of container/ cooler?	<u>Yes</u>	No	N/A	<u>2-8°C</u>
#2	Shipping container in good condition?	<u>Yes</u>	No	None	
#3	Samples received on ice?	<u>Yes</u>	No	N/A	<u>Blue/White</u>
#4	Custody Seals intact on shipping container/ cooler?	<u>Yes</u>	No	N/A	
#5	Custody Seals intact on sample bottles/ container?	<u>Yes</u>	No	<u>N/A</u>	
#6	Chain of Custody present?	<u>Yes</u>	No		
#7	Sample instructions complete of Chain of Custody?	<u>Yes</u>	No		
#8	Any missing/extra samples?	<u>Yes</u>	<u>No</u>		
#9	Chain of Custody signed when relinquished/ received?	<u>Yes</u>	No		
#10	Chain of Custody agrees with sample label(s)?	<u>Yes</u>	No		
#11	Container label(s) legible and intact?	<u>Yes</u>	No		
#12	Sample matrix/ properties agree with Chain of Custody?	<u>Yes</u>	No		
#13	Samples in proper container/ bottle?	<u>Yes</u>	No		
#14	Samples properly preserved?	<u>Yes</u>	No	N/A	
#15	Sample container intact?	<u>Yes</u>	No		
#16	Sufficient sample amount for indicated test(s)?	<u>Yes</u>	No		
#17	All samples received within sufficient hold time?	<u>Yes</u>	No		
#18	Subcontract of sample(s)?	<u>Yes</u>	No	N/A	
#19	VOC samples have zero headspace?	<u>Yes</u>	No	N/A	

Nonconformance Documentation

Contact: _____ Contacted by: _____ Date/ Time: _____
Regarding: 7B not on COC 003

Corrective Action Taken:

Check all that Apply:

☐
☐

Client understands and would like to proceed with analysis
Cooling process had begun shortly after sampling event

SOIL SAMPLE RESULTS:**SDG 303978**

B-1-03
B-2-04
B-3-06
B-4-06
GP-12(II)-04
GP-7(II)-03
B-6-04
B-5-04.5
SDG 304173
B-6-23
GP-7(II)-19
GP-7(II)-19-Dup

SDG 304253

B-2-41
B-1-27
SDG 304421
B-3-33
B-5-27
SDG 304536
GP-12(II)-17
GP-12(II)-17-Dup
B-4-35

SOIL VAPOR SAMPLE RESULTS:**SDG 0806072**

GP-12-A-060308
GP-12-B-060308
GP-12-C-060308
GP-12-D-060308
GP-11-A-060308
GP-11-B-060308
GP-11-B-060308-DUP
GP-11-C-060308
GP-11-D-060308

SDG 0806099

GP-13-A-060408
GP-13-B-060408
GP-13-C-060408
GP-13-D-060408
GP-9-A-060408
GP-9-B-060408
GP-9-C-060408
GP-9-C-060408-DUP
GP-9-D-060408

GROUNDWATER SAMPLE RESULTS:**SDG 305672**

P58-060908
P58-060908D
P56-060908
P73-061008
P75-061008
P66-061008
P54-061008
P57-061108

SDG 305871

B1-061208
B2-061208
B2-061208D
B3-061208
B4-061208
B5-061308
B6-061308
SDG 308728
P54072508

Rand Avenue Data Review

Laboratory SDG: 303978

Reviewer: Tony Sedlacek

Date Reviewed: 7/22/2008

Guidance: National Functional Guidelines for Organic Data Review 1999.

Applicable Work Plan: Route 111/Rand Avenue Vicinity Investigation Work Plan.

Sample Identification #	Sample Identification #
B-1-03	B-2-04
B-3-06	B-4-06
GP-12(II)-04	GP-7(II)-03
B-6-04	B-5-04.5
TB051508	

1.0 Data Package Completeness

Were all items delivered as specified in the QAPP and COC?

Yes

2.0 Laboratory Case Narrative \ Cooler Receipt Form

Were problems noted in the laboratory case narrative or cooler receipt form?

No, although not indicated in the laboratory case narrative, VOCs were detected in the trip blank and method blank. The LCS recovery for methylene chloride and MS/MSD recoveries and MS/MSD RPDs were outside evaluation criteria. Samples were evaluated and qualified using professional judgment. These issues are addressed further in the appropriate sections below.

The cooler receipt form did not indicate any problems.

3.0 Holding Times

Were samples extracted/analyzed within QAPP limits?

Yes

Field ID	Parameter	Analyte	Qualification
N/A			

4.0 Blank Contamination

Were any analytes detected in the Method Blanks, Field Blanks or Trip Blanks?

Yes

Blank ID	Parameter	Analyte	Concentration	Units
TB051508	VOCs	Methylene chloride	5.83	µg/L
509839-1-BLK	VOCs	Acetone	21.4	µg/L
509839-1-BLK	VOCs	Bromomethane	1.09	µg/L
509839-1-BLK	VOCs	1,3-Dichlorobenzene	1.13	µg/L
509839-1-BLK	VOCs	1,4-Dichlorobenzene	1.12	µg/L
509839-1-BLK	VOCs	Methylene chloride	8.59	µg/L

Qualifications due to blank contamination are included in the table below. Analytical data that were reported nondetect or at concentrations greater than five times (5X) the associated blank concentration (10X for common laboratory contaminants) did not require qualification.

Field ID	Parameter	Analyte	New RL	Qualification
N/A				

5.0 Laboratory Control Sample

Were LCS recoveries within evaluation criteria?

No

LCS ID	Parameter	Analyte	LCS Recovery	RPD	LCS Criteria
509839-1-BKS	VOCs	Methylene chloride	160	N/A	75-125

Analytical data that required qualification based on LCS data are included in the table below. Analytical data which were reported as nondetect and associated with LCS recoveries above evaluation criteria, indicating a possible high bias, did not require qualification.

Field ID	Parameter	Analyte	Qualification
N/A			

6.0 Surrogate Recoveries

Were surrogate recoveries within evaluation criteria?

Yes

Field ID	Parameter	Surrogate	Recovery	Criteria
N/A				

Analytical data that required qualification based on surrogate data are included in the table below. Analytical data which were reported as nondetect and associated with surrogate recoveries above evaluation criteria, indicating a possible high bias, did not require qualification. Quality control data associated with surrogate recoveries outside evaluation criteria did not require evaluation or qualification.

Field ID	Parameter	Analyte	Qualification
N/A			

7.0 Matrix Spike and Matrix Spike Duplicate Recoveries

Were MS/MSD samples reported as part of this SDG?

Yes, sample B-1-03 was spiked and analyzed for VOCs.

Were MS/MSD recoveries within evaluation criteria?

No

MS/MSD ID	Parameter	Analyte	MS/MSD Recovery	RPD	MS/MSD/RPD Criteria
B-1-03	VOCs	Bromoform	143/140	2	75-125/20
B-1-03	VOCs	2-Butanone	91/59	43	50-150/20
B-1-03	VOCs	Methyl tert-butyl ether	108/87	22	75-125/20
B-1-03	VOCs	Chloroethane	105/85	21	65-135/20
B-1-03	VOCs	1,1-Dichloroethane	96/72	29	75-125/20
B-1-03	VOCs	trans-1,2-dichloroethene	97/78	22	75-125/20
B-1-03	VOCs	cis-1,2-dichloroethene	97/73	28	75-125/20
B-1-03	VOCs	2,2-dichloropropane	94/68	32	75-125/25

Analytical data that required qualification based on MS/MSD data are included in the table below. USEPA National Functional Guidelines for Organic Data Review indicates that organic data should not be qualified based on MS/MSD data alone and LCS recoveries were within evaluation criteria, therefore no qualification of the data was required.

Field ID	Parameter	Analyte	Qualification
N/A			

8.0 Laboratory Duplicate Results

Were laboratory duplicate samples collected as part of this SDG?

No

Were laboratory duplicate sample RPDs within criteria?

N/A

Field ID	Parameter	Analyte	RPD	Criteria
N/A				

Data qualified due to outlying laboratory duplicate recoveries are identified below:

Field ID	Parameter	Analyte	Qualification
N/A			

9.0 Field Duplicate Results

Were field duplicate samples collected as part of this SDG?

No

Field ID	Field Duplicate ID
N/A	

Were field duplicates within evaluation criteria?

N/A

Field ID	Field Duplicate ID	Parameter	Analyte	RPD	Qualification
N/A					

10.0 Sample Dilutions

For samples that were diluted and nondetect, were undiluted results also reported?

Samples did not require a dilution.

The following table identifies the analyses which were reported as nondetect, diluted, and an undiluted run *was not* reported:

Field ID	Parameter	Dilution Factor
N/A		

11.0 Additional Qualifications

Were additional qualifications applied?

Yes

Professional judgment was used to qualify the common laboratory contaminants acetone and 2-butanone reported at concentrations less than two times (2X) the RL.

Field ID	Analyte	New RL	Qualification	Comments
B-2-04	Acetone	-	U	Professional Judgment
B-2-04	2-Butanone	-	U	Professional Judgment
B-4-06	Acetone	-	U	Professional Judgment

Analytical Report 303978

for

URS Corporation-St. Louis

Project Manager: Wendy Pennington

900 S. Central Avenue

Route 111 & Rand Avenue Vicinity / 21561979

04-JUN-08



E84880

4143 Greenbriar Dr., Stafford, TX 77477 Ph:(281) 240-4200 Fax:(281) 240-4280

Texas certification numbers:

Houston, TX T104704215

Florida certification numbers:

Houston, TX E871002 - Miami, FL E86678 - Tampa, FL E86675

Norcross(Atlanta), GA E87429

South Carolina certification numbers:

Norcross(Atlanta), GA 98015

North Carolina certification numbers:

Norcross(Atlanta), GA 483

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Midland - Corpus Christi - Atlanta

Page 1 of 32



04-JUN-08

Project Manager: **Wendy Pennington**
URS Corporation-St. Louis
1001 Highlands Plaza Drive West, Suite 300
St. Louis, MO 63110

Reference: XENCO Report No: **303978**
900 S. Central Avenue
Project Address: Roxana, Illinois 62084

Wendy Pennington:

We are reporting to you the results of the analyses performed on the samples received under the project name referenced above and identified with the XENCO Report Number 303978. All results being reported under this Report Number apply to the samples analyzed and properly identified with a Laboratory ID number. Subcontracted analyses are identified in this report with either the NELAC certification number of the subcontract lab in the analyst ID field, or the complete subcontracted report attached to this report.

Unless otherwise noted in a Case Narrative, all data reported in this Analytical Report are in compliance with NELAC standards. Estimation of data uncertainty for this report is found in the quality control section of this report unless otherwise noted. Should insufficient sample be provided to the laboratory to meet the method and NELAC Matrix Duplicate and Matrix Spike requirements, then the data will be analyzed, evaluated and reported using all other available quality control measures.

The validity and integrity of this report will remain intact as long as it is accompanied by this letter and reproduced in full, unless written approval is granted by XENCO Laboratories. This report will be filed for at least 5 years in our archives after which time it will be destroyed without further notice, unless otherwise arranged with you. The samples received, and described as recorded in Report No. 303978 will be filed for 60 days, and after that time they will be properly disposed without further notice, unless otherwise arranged with you. We reserve the right to return to you any unused samples, extracts or solutions related to them if we consider so necessary (e.g., samples identified as hazardous waste, sample sizes exceeding analytical standard practices, controlled substances under regulated protocols, etc).

We thank you for selecting XENCO Laboratories to serve your analytical needs. If you have any questions concerning this report, please feel free to contact us at any time.

Respectfully,

Carlos Castro

Managing Director, Texas

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Certificate of Analysis Summary 303978

URS Corporation-St. Louis, St. Louis, MO



Project Name: 900 S. Central Avenue

Project Id: Route 111 & Rand Avenue Vicinity / 2156

Date Received in Lab: May-16-08 09:30 am

Contact: Wendy Pennington

Report Date: 04-JUN-08

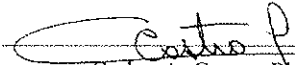
Project Location: Roxana, Illinois 62084

Project Manager: Debbie Simmons

<i>Analysis Requested</i>	<i>Lab Id:</i>	303978-001	303978-002	303978-003	303978-004
	<i>Field Id:</i>	B-1-03	B-2-04	B-3-06	B-4-06
	<i>Depth:</i>				
	<i>Matrix:</i>	SOIL	SOIL	SOIL	SOIL
	<i>Sampled:</i>	May-14-08 00:00	May-14-08 00:00	May-14-08 00:00	May-15-08 09:45
Percent Moisture	<i>Extracted:</i>				
	<i>Analyzed:</i>	May-22-08 08:03	May-22-08 08:04	May-22-08 08:05	May-22-08 08:06
	<i>Units/RL:</i>	% RL	% RL	% RL	% RL
Percent Moisture		13.6 1.00	9.41 1.00	12.3 1.00	19.8 1.00

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Carlos A. Castro, Ph.D., MBA
Managing Director, Texas



Certificate of Analysis Summary 303978

URS Corporation-St. Louis, St. Louis, MO



Project Name: 900 S. Central Avenue

Project Id: Route 111 & Rand Avenue Vicinity / 2156

Date Received in Lab: May-16-08 09:30 am

Contact: Wendy Pennington

Report Date: 04-JUN-08

Project Location: Roxana, Illinois 62084

Project Manager: Debbie Simmons

Analysis Requested	Lab Id:	303978-001	303978-002	303978-003	303978-004
	Field Id:	B-1-03	B-2-04	B-3-06	B-4-06
	Depth:				
	Matrix:	SOIL	SOIL	SOIL	SOIL
	Sampled:	May-14-08 00:00	May-14-08 00:00	May-14-08 00:00	May-15-08 09:45
VOAs by SW-846 8260B	Extracted:	May-19-08 11:35	May-19-08 11:43	May-19-08 14:14	May-19-08 11:47
	Analyzed:	May-19-08 12:41	May-19-08 14:02	May-19-08 18:36	May-19-08 14:42
	Units/RL:	ug/kg RL	ug/kg RL	ug/kg RL	ug/kg RL
Acetone		U 78.6	U 103	U 100	U 95.8
Benzene		U 3.94	U 5.17	U 5.00	U 4.79
Bromobenzene		U 3.94	U 5.17	U 5.00	U 4.79
Bromochloromethane		U 3.94	U 5.17	U 5.00	U 4.79
Bromodichloromethane		U 3.94	U 5.17	U 5.00	U 4.79
Bromoform		U 3.94	U 5.17	U 5.00	U 4.79
Bromomethane		U 3.94	U 5.17	U 5.00	U 4.79
2-Butanone		U 39.4	U 51.7	U 50.0	U 47.9
MTBE		U 3.94	U 5.17	U 5.00	U 4.79
tert-Butylbenzene		U 3.94	U 5.17	U 5.00	U 4.79
Sec-Butylbenzene		U 3.94	U 5.17	U 5.00	U 4.79
n-Butylbenzene		U 3.94	U 5.17	U 5.00	U 4.79
Carbon Disulfide		U 39.4	U 51.7	U 50.0	U 47.9
Carbon Tetrachloride		U 3.94	U 5.17	U 5.00	U 4.79
Chlorobenzene		U 3.94	U 5.17	U 5.00	U 4.79
Chloroethane		U 7.87	U 10.3	U 10.0	U 9.58
Chloroform		U 3.94	U 5.17	U 5.00	U 4.79
Chloromethane		U 7.87	U 10.3	U 10.0	U 9.58
2-Chlorotoluene		U 3.94	U 5.17	U 5.00	U 4.79
4-Chlorotoluene		U 3.94	U 5.17	U 5.00	U 4.79
p-Cymene (p-Isopropyltoluene)		U 3.94	U 5.17	U 5.00	U 4.79
1,2-Dibromo-3-Chloropropane		U 3.94	U 5.17	U 5.00	U 4.79
Dibromochloromethane		U 3.94	U 5.17	U 5.00	U 4.79
1,2-Dibromoethane		U 3.94	U 5.17	U 5.00	U 4.79
Dibromomethane		U 3.94	U 5.17	U 5.00	U 4.79
1,2-Dichlorobenzene		U 3.94	U 5.17	U 5.00	U 4.79
1,3-Dichlorobenzene		U 3.94	U 5.17	U 5.00	U 4.79
1,4-Dichlorobenzene		U 3.94	U 5.17	U 5.00	U 4.79
Dichlorodifluoromethane		U 3.94	U 5.17	U 5.00	U 4.79
1,2-Dichloroethane		U 3.94	U 5.17	U 5.00	U 4.79
1,1-Dichloroethane		U 3.94	U 5.17	U 5.00	U 4.79
trans-1,2-dichloroethene		U 3.94	U 5.17	U 5.00	U 4.79
cis-1,2-Dichloroethene		U 3.94	U 5.17	U 5.00	U 4.79
1,1-Dichloroethene		U 3.94	U 5.17	U 5.00	U 4.79

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Carlos A. Castro, Ph.D., MBA
Managing Director, Texas



Certificate of Analysis Summary 303978

URS Corporation-St. Louis, St. Louis, MO



Project Name: 900 S. Central Avenue

Project Id: Route 111 & Rand Avenue Vicinity / 2156

Date Received in Lab: May-16-08 09:30 am

Contact: Wendy Pennington

Report Date: 04-JUN-08

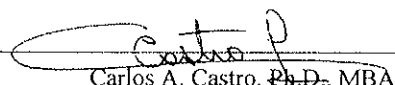
Project Location: Roxana, Illinois 62084

Project Manager: Debbie Simmons

Analysis Requested	Lab Id:	303978-001	303978-002	303978-003	303978-004
	Field Id:	B-1-03	B-2-04	B-3-06	B-4-06
	Depth:				
	Matrix:	SOIL	SOIL	SOIL	SOIL
	Sampled:	May-14-08 00:00	May-14-08 00:00	May-14-08 00:00	May-15-08 09:45
VOAs by SW-846 8260B	Extracted:	May-19-08 11:35	May-19-08 11:43	May-19-08 14:14	May-19-08 11:47
	Analyzed:	May-19-08 12:41	May-19-08 14:02	May-19-08 18:36	May-19-08 14:42
	Units/RL:	ug/kg RL	ug/kg RL	ug/kg RL	ug/kg RL
2,2-Dichloropropane		U 3.94	U 5.17	U 5.00	U 4.79
1,3-Dichloropropane		U 3.94	U 5.17	U 5.00	U 4.79
1,2-Dichloropropane		U 3.94	U 5.17	U 5.00	U 4.79
trans-1,3-dichloropropene		U 3.94	U 5.17	U 5.00	U 4.79
1,1-Dichloropropene		U 3.94	U 5.17	U 5.00	U 4.79
cis-1,3-Dichloropropene		U 3.94	U 5.17	U 5.00	U 4.79
Ethylbenzene		U 3.94	U 5.17	U 5.00	U 4.79
Hexachlorobutadiene		U 3.94	U 5.17	U 5.00	U 4.79
2-Hexanone		U 39.4	U 51.7	U 50.0	U 47.9
Naphthalene		U 7.87	U 10.3	U 10.0	U 9.58
isopropylbenzene		U 3.94	U 5.17	U 5.00	U 4.79
Methylene Chloride		U 15.7	U 20.7	U 20.0	U 19.2
Methyl-2-Pentanone		U 39.4	U 51.7	U 50.0	U 47.9
propylbenzene		U 3.94	U 5.17	U 5.00	U 4.79
Styrene		U 3.94	U 5.17	U 5.00	U 4.79
1,1,1,2-Tetrachloroethane		U 3.94	U 5.17	U 5.00	U 4.79
1,1,2,2-Tetrachloroethane		U 3.94	U 5.17	U 5.00	U 4.79
Tetrachloroethylene		U 3.94	U 5.17	U 5.00	U 4.79
Toluene		U 3.94	U 5.17	U 5.00	U 4.79
1,2,4-Trichlorobenzene		U 3.94	U 5.17	U 5.00	U 4.79
1,2,3-Trichlorobenzene		U 3.94	U 5.17	U 5.00	U 4.79
1,1,2-Trichloroethane		U 3.94	U 5.17	U 5.00	U 4.79
1,1,1-Trichloroethane		U 3.94	U 5.17	U 5.00	U 4.79
Trichloroethene		U 3.94	U 5.17	U 5.00	U 4.79
Trichlorofluoromethane		U 3.94	U 5.17	U 5.00	U 4.79
1,2,3-Trichloropropane		U 3.94	U 5.17	U 5.00	U 4.79
1,2,4-Trimethylbenzene		U 3.94	U 5.17	U 5.00	U 4.79
1,3,5-Trimethylbenzene		U 3.94	U 5.17	U 5.00	U 4.79
Vinyl Chloride		U 1.57	U 2.07	U 2.00	U 1.92
o-Xylene		U 3.94	U 5.17	U 5.00	U 4.79
m,p-Xylenes		U 7.87	U 10.3	U 10.0	U 9.58

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Managing Director, Texas



Certificate of Analysis Summary 303978

URS Corporation-St. Louis, St. Louis, MO



Project Name: 900 S. Central Avenue

Project Id: Route 111 & Rand Avenue Vicinity / 2156

Date Received in Lab: May-16-08 09:30 am

Contact: Wendy Pennington

Report Date: 04-JUN-08

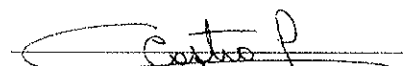
Project Location: Roxana, Illinois 62084

Project Manager: Debbie Simmons

<i>Analysis Requested</i>	<i>Lab Id:</i>	303978-005	303978-006	303978-007	303978-008
	<i>Field Id:</i>	GP-12(II)-04	GP-7(II)-03	B-6-04	B-5-04.5
	<i>Depth:</i>				
	<i>Matrix:</i>	SOIL	SOIL	SOIL	SOIL
	<i>Sampled:</i>	May-15-08 10:25	May-15-08 11:15	May-15-08 12:50	May-15-08 13:45
Percent Moisture	<i>Extracted:</i>				
	<i>Analyzed:</i>	May-22-08 08:07	May-22-08 08:08	May-22-08 08:09	May-22-08 08:10
	<i>Units/RL:</i>	% RL	% RL	% RL	% RL
Percent Moisture		24.7 1.00	5.04 1.00	18.3 1.00	20.9 1.00

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URS Corporation-St. Louis, St. Louis, MO



Project Name: 900 S. Central Avenue

Project Id: Route 111 & Rand Avenue Vicinity / 2156

Date Received in Lab: May-16-08 09:30 am

Contact: Wendy Pennington

Report Date: 04-JUN-08

Project Location: Roxana, Illinois 62084

Project Manager: Debbie Simmons

Analysis Requested	Lab Id:	303978-005	303978-006	303978-007	303978-008
	Field Id:	GP-12(II)-04	GP-7(II)-03	B-6-04	B-5-04.5
	Depth:				
	Matrix:	SOIL	SOIL	SOIL	SOIL
	Sampled:	May-15-08 10:25	May-15-08 11:15	May-15-08 12:50	May-15-08 13:45
VOAs by SW-846 8260B	Extracted:	May-19-08 14:18	May-19-08 14:20	May-19-08 11:55	May-19-08 14:24
	Analyzed:	May-19-08 19:17	May-19-08 19:38	May-19-08 16:03	May-19-08 20:19
	Units/RL:	ug/kg RL	ug/kg RL	ug/kg RL	ug/kg RL
Acetone		U 99.6	U 100	U 78.2	U 99.6
Benzene		U 4.98	U 5.01	U 3.91	U 4.98
Bromobenzene		U 4.98	U 5.01	U 3.91	U 4.98
Bromochloromethane		U 4.98	U 5.01	U 3.91	U 4.98
Bromodichloromethane		U 4.98	U 5.01	U 3.91	U 4.98
Bromoform		U 4.98	U 5.01	U 3.91	U 4.98
Bromomethane		U 4.98	U 5.01	U 3.91	U 4.98
2-Butanone		U 49.8	U 50.1	U 39.1	U 49.8
MTBE		U 4.98	U 5.01	U 3.91	U 4.98
tert-Butylbenzene		U 4.98	U 5.01	U 3.91	U 4.98
Sec-Butylbenzene		U 4.98	U 5.01	U 3.91	U 4.98
n-Butylbenzene		U 4.98	U 5.01	U 3.91	U 4.98
Carbon Disulfide		U 49.8	U 50.1	U 39.1	U 49.8
Carbon Tetrachloride		U 4.98	U 5.01	U 3.91	U 4.98
Chlorobenzene		U 4.98	U 5.01	U 3.91	U 4.98
Chloroethane		U 9.96	U 10.0	U 7.82	U 9.96
Chloroform		U 4.98	U 5.01	U 3.91	U 4.98
Chloromethane		U 9.96	U 10.0	U 7.82	U 9.96
2-Chlorotoluene		U 4.98	U 5.01	U 3.91	U 4.98
4-Chlorotoluene		U 4.98	U 5.01	U 3.91	U 4.98
p-Cymene (p-Isopropyltoluene)		U 4.98	U 5.01	U 3.91	U 4.98
1,2-Dibromo-3-Chloropropane		U 4.98	U 5.01	U 3.91	U 4.98
Dibromochloromethane		U 4.98	U 5.01	U 3.91	U 4.98
1,2-Dibromoethane		U 4.98	U 5.01	U 3.91	U 4.98
Dibromomethane		U 4.98	U 5.01	U 3.91	U 4.98
1,2-Dichlorobenzene		U 4.98	U 5.01	U 3.91	U 4.98
1,3-Dichlorobenzene		U 4.98	U 5.01	U 3.91	U 4.98
1,4-Dichlorobenzene		U 4.98	U 5.01	U 3.91	U 4.98
Dichlorodifluoromethane		U 4.98	U 5.01	U 3.91	U 4.98
1,2-Dichloroethane		U 4.98	U 5.01	U 3.91	U 4.98
1,1-Dichloroethane		U 4.98	U 5.01	U 3.91	U 4.98
trans-1,2-dichloroethene		U 4.98	U 5.01	U 3.91	U 4.98
cis-1,2-Dichloroethene		U 4.98	U 5.01	U 3.91	U 4.98
1,1-Dichloroethene		U 4.98	U 5.01	U 3.91	U 4.98

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Carlos A. Castro, Ph.D., MBA
Managing Director, Texas



Certificate of Analysis Summary 303978

URS Corporation-St. Louis, St. Louis, MO



Project Name: 900 S. Central Avenue

Project Id: Route 111 & Rand Avenue Vicinity / 2156

Date Received in Lab: May-16-08 09:30 am

Contact: Wendy Pennington

Report Date: 04-JUN-08

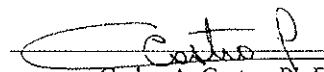
Project Location: Roxana, Illinois 62084

Project Manager: Debbie Simmons

Analysis Requested	Lab Id:	303978-005	303978-006	303978-007	303978-008
	Field Id:	GP-12(II)-04	GP-7(II)-03	B-6-04	B-5-04.5
	Depth:				
	Matrix:	SOIL	SOIL	SOIL	SOIL
	Sampled:	May-15-08 10:25	May-15-08 11:15	May-15-08 12:50	May-15-08 13:45
VOAs by SW-846 8260B	Extracted:	May-19-08 14:18	May-19-08 14:20	May-19-08 11:55	May-19-08 14:24
	Analyzed:	May-19-08 19:17	May-19-08 19:38	May-19-08 16:03	May-19-08 20:19
	Units/RL:	ug/kg RL	ug/kg RL	ug/kg RL	ug/kg RL
2,2-Dichloropropane		U 4.98	U 5.01	U 3.91	U 4.98
1,3-Dichloropropane		U 4.98	U 5.01	U 3.91	U 4.98
1,2-Dichloropropane		U 4.98	U 5.01	U 3.91	U 4.98
trans-1,3-dichloropropene		U 4.98	U 5.01	U 3.91	U 4.98
1,1-Dichloropropene		U 4.98	U 5.01	U 3.91	U 4.98
cis-1,3-Dichloropropene		U 4.98	U 5.01	U 3.91	U 4.98
Ethylbenzene		U 4.98	U 5.01	U 3.91	U 4.98
Hexachlorobutadiene		U 4.98	U 5.01	U 3.91	U 4.98
2-Hexanone		U 49.8	U 50.1	U 39.1	U 49.8
isopropylbenzene		U 4.98	U 5.01	U 3.91	U 4.98
Naphthalene		U 9.96	U 10.0	U 7.82	U 9.96
Methylene Chloride		U 19.9	U 20.0	U 15.6	U 19.9
4-Methyl-2-Pentanone		U 49.8	U 50.1	U 39.1	U 49.8
opylbenzene		U 4.98	U 5.01	U 3.91	U 4.98
Styrene		U 4.98	U 5.01	U 3.91	U 4.98
1,1,1,2-Tetrachloroethane		U 4.98	U 5.01	U 3.91	U 4.98
1,1,2,2-Tetrachloroethane		U 4.98	U 5.01	U 3.91	U 4.98
Tetrachloroethylene		U 4.98	U 5.01	U 3.91	U 4.98
Toluene		U 4.98	U 5.01	U 3.91	U 4.98
1,2,4-Trichlorobenzene		U 4.98	U 5.01	U 3.91	U 4.98
1,2,3-Trichlorobenzene		U 4.98	U 5.01	U 3.91	U 4.98
1,1,2-Trichloroethane		U 4.98	U 5.01	U 3.91	U 4.98
1,1,1-Trichloroethane		U 4.98	U 5.01	U 3.91	U 4.98
Trichloroethene		U 4.98	U 5.01	U 3.91	U 4.98
Trichlorofluoromethane		U 4.98	U 5.01	U 3.91	U 4.98
1,2,3-Trichloropropane		U 4.98	U 5.01	U 3.91	U 4.98
1,2,4-Trimethylbenzene		U 4.98	U 5.01	U 3.91	U 4.98
1,3,5-Trimethylbenzene		U 4.98	U 5.01	U 3.91	U 4.98
Vinyl Chloride		U 1.99	U 2.00	U 1.56	U 1.99
o-Xylene		U 4.98	U 5.01	U 3.91	U 4.98
m,p-Xylenes		U 9.96	U 10.0	U 7.82	U 9.96

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Managing Director, Texas



Certificate of Analysis Summary 303978

URS Corporation-St. Louis, St. Louis, MO



Project Name: 900 S. Central Avenue

Project Id: Route 111 & Rand Avenue Vicinity / 2156

Date Received in Lab: May-16-08 09:30 am

Contact: Wendy Pennington

Report Date: 04-JUN-08

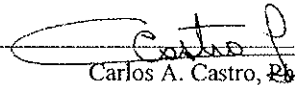
Project Location: Roxana, Illinois 62084

Project Manager: Debbie Simmons

Analysis Requested	Lab Id:	303978-009			
	Field Id:	TB051508			
	Depth:				
	Matrix:	WATER			
	Sampled:	May-15-08 00:00			
VOAs by SW-846 8260B	Extracted:	May-29-08 13:03			
	Analyzed:	May-29-08 14:40			
	Units/RL:	ug/L RL			
Acetone		U 100			
Benzene		U 5.00			
Bromobenzene		U 5.00			
Bromochloromethane		U 5.00			
Bromodichloromethane		U 5.00			
Bromoform		U 5.00			
Bromomethane		U 5.00			
2-Butanone		U 50.0			
MTBE		U 5.00			
n-Butylbenzene		U 5.00			
Sec-Butylbenzene		U 5.00			
tert-Butylbenzene		U 5.00			
Carbon Disulfide		U 50.0			
on Tetrachloride		U 5.00			
Chlorobenzene		U 5.00			
Chloroethane		U 10.0			
Chloroform		U 5.00			
Chloromethane		U 10.0			
2-Chlorotoluene		U 5.00			
4-Chlorotoluene		U 5.00			
p-Cymene (p-Isopropyltoluene)		U 5.00			
Dibromochloromethane		U 5.00			
1,2-Dibromo-3-Chloropropane		U 5.00			
1,2-Dibromoethane		U 5.00			
Dibromomethane		U 5.00			
1,2-Dichlorobenzene		U 5.00			
1,3-Dichlorobenzene		U 5.00			
1,4-Dichlorobenzene		U 5.00			
Dichlorodifluoromethane		U 5.00			
1,1-Dichloroethane		U 5.00			
1,2-Dichloroethane		U 5.00			
1,1-Dichloroethene		U 5.00			
cis-1,2-Dichloroethene		U 5.00			
trans-1,2-dichloroethene		U 5.00			

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Carlos A. Castro, Ph.D., MBA
Managing Director, Texas



Certificate of Analysis Summary 303978

URS Corporation-St. Louis, St. Louis, MO



Project Name: 900 S. Central Avenue

Project Id: Route 111 & Rand Avenue Vicinity / 2156

Date Received in Lab: May-16-08 09:30 am

Contact: Wendy Pennington

Report Date: 04-JUN-08

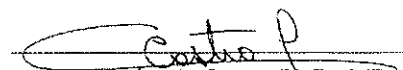
Project Location: Roxana, Illinois 62084

Project Manager: Debbie Simmons

Analysis Requested	Lab Id:	303978-009			
	Field Id:	TB051508			
	Depth:				
	Matrix:	WATER			
	Sampled:	May-15-08 00:00			
VOAs by SW-846 8260B	Extracted:	May-29-08 13:03			
	Analyzed:	May-29-08 14:40			
	Units/RL:	ug/L RL			
1,2-Dichloropropane		U 5.00			
1,3-Dichloropropane		U 5.00			
2,2-Dichloropropane		U 5.00			
1,1-Dichloropropene		U 5.00			
cis-1,3-Dichloropropene		U 5.00			
trans-1,3-dichloropropene		U 5.00			
Ethylbenzene		U 5.00			
Hexachlorobutadiene		U 5.00			
2-Hexanone		U 50.0			
isopropylbenzene		U 5.00			
Methylene Chloride		5.83 B 5.00			
4-Methyl-2-Pentanone		U 50.0			
Naphthalene		U 10.0			
o-pylbenzene		U 5.00			
Styrene		U 5.00			
1,1,1,2-Tetrachloroethane		U 5.00			
1,1,2,2-Tetrachloroethane		U 5.00			
Tetrachloroethylene		U 5.00			
Toluene		U 5.00			
1,2,3-Trichlorobenzene		U 5.00			
1,2,4-Trichlorobenzene		U 5.00			
1,1,1-Trichloroethane		U 5.00			
1,1,2-Trichloroethane		U 5.00			
Trichloroethene		U 5.00			
Trichlorofluoromethane		U 5.00			
1,2,3-Trichloropropane		U 5.00			
1,2,4-Trimethylbenzene		U 5.00			
1,3,5-Trimethylbenzene		U 5.00			
o-Xylene		U 5.00			
m,p-Xylenes		U 10.0			
Vinyl Chloride		U 2.00			

This analytical report, and the entire data package it represents, has been made for your exclusive and confidential use. The interpretations and results expressed throughout this analytical report represent the best judgment of XENCO Laboratories. XENCO Laboratories assumes no responsibility and makes no warranty to the end use of the data hereby presented. Our liability is limited to the amount invoiced for this work order unless otherwise agreed to in writing.

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Carlos A. Castro, Ph.D., MBA
Managing Director, Texas



Flagging Criteria

- X** In our quality control review of the data a QC deficiency was observed and flagged as noted. MS/MSD recoveries were found to be outside of the laboratory control limits due to possible matrix /chemical interference, or a concentration of target analyte high enough to effect the recovery of the spike concentration. This condition could also effect the relative percent difference in the MS/MSD.
 - B** A target analyte or common laboratory contaminant was identified in the method blank. Its presence indicates possible field or laboratory contamination.
 - D** The sample(s) were diluted due to targets detected over the highest point of the calibration curve, or due to matrix interference. Dilution factors are included in the final results. The result is from a diluted sample.
 - E** The data exceeds the upper calibration limit; therefore, the concentration is reported as estimated.
 - F** RPD exceeded lab control limits.
 - J** The target analyte was positively identified below the MQL(PQL) and above the SQL(MDL).
 - U** Analyte was not detected.
 - L** The LCS data for this analytical batch was reported below the laboratory control limits for this analyte. The department supervisor and QA Director reviewed data. The samples were either reanalyzed or flagged as estimated concentrations.
 - H** The LCS data for this analytical batch was reported above the laboratory control limits. Supporting QC Data were reviewed by the Department Supervisor and QA Director. Data were determined to be valid for reporting.
 - K** Sample analyzed outside of recommended hold time.
- * Outside XENCO'S scope of NELAC Accreditation

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5757 NW 158th St, Miami Lakes, FL 33014
6017 Financial Dr., Norcross, GA 30071

Phone	Fax
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(214) 902 0300	(214) 351-9139
(210) 509-3334	(210) 509-3335
(813) 620-2000	(813) 620-2033
(305) 823-8500	(305) 823-8555
(770) 449-8800	(770) 449-5477

LAB (LOCATION)		Please Check Appropriate Box		Print Bill To Contact Name		INCIDENT # (ENV SERVICES)		CHECK IF NO INCIDENT # APPLIES																																																																																																																																																																	
1381 Markovitch Ln, Ste L, Houston, TX PH: 281.525.0817 FAX: 281.550.0865		<input checked="" type="checkbox"/> ENV. SERVICES <input type="checkbox"/> MOTIVA RETAIL <input type="checkbox"/> MOTIVA BOSCH <input type="checkbox"/> SHELL PIPELINE <input type="checkbox"/> SHELL RETAIL <input type="checkbox"/> CONSULTANT <input type="checkbox"/> LUMES <input type="checkbox"/> OTHER		KEVIN DYER RD #		8 7 2 1 6 6 4 0 3 4 0 0 6 1		DATE: 5/15/08 PAGE: 1 of 1																																																																																																																																																																	
CONSIGNEE COMPANY: URS CORPORATION ADDRESS: 1001 HIGHLANDS PLAZA DRIVE WEST - SUITE 300 CITY: ST. LOUIS, MISSOURI 63110 TEL: OFF: 314-743-4188 CELL: 314-482-8928 FAX: OFF: 314-743-4188 CELL: 314-482-8928 E-MAIL: wendy.pennington@urscorp.com		URS CORPORATION - FIELD OFFICE ADDRESS: 170 E. RAND AVENUE CITY: HARTFORD, ILLINOIS 62048 E-MAIL:		SOPS SITE ADDRESS (Road, City and State): 800 S. CENTRAL AVENUE; ROXANA, ILLINOIS 62084 CONSULTANT PROJECT CONTACT (Print Name): WENDY PENNINGTON (SAMPLER NAME(S) ONLY): Wendy Pennington Brent Crafton		CONSULTANT PROJECT NUMBER: Route 111 & Rand Ave Vicinity / 21521978 LAB USE ONLY: 3039784																																																																																																																																																																			
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DELIVERABLES: <input type="checkbox"/> LEVEL 1 <input checked="" type="checkbox"/> LEVEL 2 <input type="checkbox"/> LEVEL 3 <input type="checkbox"/> LEVEL 4 <input checked="" type="checkbox"/> OTHER (SPECIFY) <u>EDP</u>																																																																																																																																																																									
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<table border="1"> <thead> <tr> <th rowspan="2">Field Sample Identification</th> <th colspan="2">SAMPLING</th> <th rowspan="2">MATERIAL</th> <th colspan="5">PRESERVATIVE</th> <th rowspan="2">NO. OF CONT.</th> <th rowspan="2">VOC #250B</th> <th rowspan="2">PID (ppm)</th> <th rowspan="2">Container PID Readings or Laboratory Notes</th> </tr> <tr> <th>DATE</th> <th>TIME</th> <th>HCL</th> <th>PHOS</th> <th>NISSOL</th> <th>NONE</th> <th>OTHER</th> </tr> </thead> <tbody> <tr> <td>B-1-03</td> <td>5/14/08</td> <td></td> <td>WATER</td> <td></td> <td></td> <td></td> <td></td> <td>1</td> <td>3</td> <td>4</td> <td>X</td> <td></td> <td></td> </tr> <tr> <td>B-2-04</td> <td></td> <td></td> <td>WATER</td> <td></td> <td></td> <td></td> <td></td> <td>1</td> <td>3</td> <td>4</td> <td>X</td> <td></td> <td></td> </tr> <tr> <td>B-3-06</td> <td></td> <td></td> <td>WATER</td> <td></td> <td></td> <td></td> <td></td> <td>1</td> <td>3</td> <td>4</td> <td>X</td> <td></td> <td></td> </tr> <tr> <td>B-4-06</td> <td>5/15/08</td> <td>0945</td> <td>WATER</td> <td></td> <td></td> <td></td> <td></td> <td>1</td> <td>3</td> <td>4</td> <td>X</td> <td></td> <td></td> </tr> <tr> <td>GP-12(II)-04</td> <td></td> <td>1025</td> <td>WATER</td> <td></td> <td></td> <td></td> <td></td> <td>1</td> <td>3</td> <td>4</td> <td>X</td> <td></td> <td></td> </tr> <tr> <td>GP-7(II)-03</td> <td></td> <td>1115</td> <td>WATER</td> <td></td> <td></td> <td></td> <td></td> <td>1</td> <td>3</td> <td>4</td> <td>X</td> <td></td> <td></td> </tr> <tr> <td>B-6-04</td> <td></td> <td>1250</td> <td>WATER</td> <td></td> <td></td> <td></td> <td></td> <td>1</td> <td>3</td> <td>4</td> <td>X</td> <td></td> <td></td> </tr> <tr> <td>B-5-04.5</td> <td></td> <td>1345</td> <td>WATER</td> <td></td> <td></td> <td></td> <td></td> <td>1</td> <td>3</td> <td>4</td> <td>X</td> <td></td> <td></td> </tr> <tr> <td>TB051508</td> <td></td> <td></td> <td>WATER</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td>X</td> <td></td> <td></td> </tr> <tr> <td></td> <td></td> <td></td> <td>WATER</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> </tbody> </table>		Field Sample Identification	SAMPLING		MATERIAL	PRESERVATIVE					NO. OF CONT.	VOC #250B	PID (ppm)	Container PID Readings or Laboratory Notes	DATE	TIME	HCL	PHOS	NISSOL	NONE	OTHER	B-1-03	5/14/08		WATER					1	3	4	X			B-2-04			WATER					1	3	4	X			B-3-06			WATER					1	3	4	X			B-4-06	5/15/08	0945	WATER					1	3	4	X			GP-12(II)-04		1025	WATER					1	3	4	X			GP-7(II)-03		1115	WATER					1	3	4	X			B-6-04		1250	WATER					1	3	4	X			B-5-04.5		1345	WATER					1	3	4	X			TB051508			WATER								X						WATER																		
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Requisitioned by: (Signature) Fed Ex		Received by: (Signature) J. L. Seay		Date: 5/16/08		Time: 0930																																																																																																																																																																			



Prelogin/Nonconformance Report- Sample Log-In

Client: URS
Date/ Time: 5/16/18
Lab ID #: 303978-A
Initials: [Signature]

Sample Receipt Checklist

#1 Temperature of container/ cooler?	<u>Yes</u>	No	N/A	<u>2-3°C</u>
#2 Shipping container in good condition?	<u>Yes</u>	No	None	
#3 Samples received on ice?	<u>Yes</u>	No	N/A	<u>Blue/White</u>
#4 Custody Seals intact on shipping container/ cooler?	<u>Yes</u>	No	<u>N/A</u>	
#5 Custody Seals intact on sample bottles/ container?	<u>Yes</u>	No	<u>N/A</u>	
#6 Chain of Custody present?	<u>Yes</u>	No		
#7 Sample instructions complete of Chain of Custody?	<u>Yes</u>	No		
#8 Any missing/extra samples?	<u>Yes</u>	<u>No</u>		
#9 Chain of Custody signed when relinquished/ received?	<u>Yes</u>	No		
#10 Chain of Custody agrees with sample label(s)?	<u>Yes</u>	No		
#11 Container label(s) legible and intact?	<u>Yes</u>	No		
#12 Sample matrix/ properties agree with Chain of Custody?	<u>Yes</u>	No		
#13 Samples in proper container/ bottle?	<u>Yes</u>	No		
#14 Samples properly preserved?	<u>Yes</u>	No	N/A	
#15 Sample container intact?	<u>Yes</u>	No		
#16 Sufficient sample amount for indicated test(s)?	<u>Yes</u>	No		
#17 All samples received within sufficient hold time?	<u>Yes</u>	No		
#18 Subcontract of sample(s)?	<u>Yes</u>	No	N/A	
#19 VOC samples have zero headspace?	<u>Yes</u>	No	N/A	

Nonconformance Documentation

Contact: _____ Contacted by: _____ Date/ Time: _____

Regarding: _____

Corrective Action Taken:

Check all that Apply: ☐ Client understands and would like to proceed with analysis
☐ Cooling process had begun shortly after sampling event

Rand Avenue Data Review

Laboratory SDG: 304173

Reviewer: Tony Sedlacek

Date Reviewed: 7/22/2008

Guidance: National Functional Guidelines for Organic Data Review 1999.

Applicable Work Plan: Route 111/Rand Avenue Vicinity Investigation Work Plan.

Sample Identification #	Sample Identification #
B-6-23	GP-7(II)-19
GP-7(II)-19 DUP	TB051408

1.0 Data Package Completeness

Were all items delivered as specified in the QAPP and COC?

Yes

2.0 Laboratory Case Narrative \ Cooler Receipt Form

Were problems noted in the laboratory case narrative or cooler receipt form?

Yes, the laboratory case narrative indicated that the benzene results in samples GP-7(II)-19 and GP-7(II)-19 DUP exceeded the calibration range of the instrument; therefore, professional judgment was used to qualify benzene in both samples. Although not indicated in the laboratory case narrative, VOCs were detected in the trip blank and method blank. LCS recoveries for 2,2-dichloropropane were outside evaluation criteria. These issues are addressed further in the appropriate sections below.

The cooler receipt form did not indicate any problems.

3.0 Holding Times

Were samples extracted/analyzed within QAPP limits?

Yes

Field ID	Parameter	Analyte	Qualification
N/A			

4.0 Blank Contamination

Were any analytes detected in the Method Blanks, Field Blanks or Trip Blanks?

Yes

Blank ID	Parameter	Analyte	Concentration	Units
TB051408	VOCs	Methylene chloride	2.34	µg/L
509456-1-BLK	VOCs	Methylene chloride	6.02	µg/L
509521-1-BLK	VOCs	Methylene chloride	4.42	µg/L
509526-1-BLK	VOCs	Methylene chloride	5.67	µg/L

Qualifications due to blank contamination are included in the table below. Analytical data that were reported nondetect or at concentrations greater than five times (5X) the associated blank concentration (10X for common laboratory contaminants) did not require qualification.

Field ID	Parameter	Analyte	New RL	Qualification
N/A				

5.0 Laboratory Control Sample

Were LCS recoveries within evaluation criteria?

No

LCS ID	Parameter	Analyte	LCS Recovery	RPD	LCS Criteria
509456-1-BKS	VOCs	2,2-Dichloropropane	70	N/A	75-125
509521-1-BKS	VOCs	2,2-Dichloropropane	72	N/A	75-125

Analytical data that required qualification based on LCS data are included in the table below. Analytical data which were reported as nondetect and associated with LCS recoveries above evaluation criteria, indicating a possible high bias, did not require qualification.

Field ID	Parameter	Analyte	Qualification
B-6-23	VOCs	2,2-Dichloropropane	UJ
GP-7(II)-19	VOCs	2,2-Dichloropropane	UJ
GP-7(II)-19 DUP	VOCs	2,2-Dichloropropane	UJ

6.0 Surrogate Recoveries

Were surrogate recoveries within evaluation criteria?

Yes

Field ID	Parameter	Surrogate	Recovery	Criteria
N/A				

Analytical data that required qualification based on surrogate data are included in the table below. Analytical data which were reported as nondetect and associated with surrogate recoveries above evaluation criteria, indicating a possible high bias, did not require qualification.

Field ID	Parameter	Analyte	Qualification
N/A			

7.0 Matrix Spike and Matrix Spike Duplicate Recoveries

Were MS/MSD samples reported as part of this SDG?

No

Were MS/MSD recoveries within evaluation criteria?

N/A

MS/MSD ID	Parameter	Analyte	MS/MSD Recovery	RPD	MS/MSD/RPD Criteria
N/A					

Analytical data that required qualification based on MS/MSD data are included in the table below.

Field ID	Parameter	Analyte	Qualification
N/A			

8.0 Laboratory Duplicate Results

Were laboratory duplicate samples collected as part of this SDG?

No

Were laboratory duplicate sample RPDs within criteria?

N/A

Field ID	Parameter	Analyte	RPD	Criteria
N/A				

Data qualified due to outlying laboratory duplicate recoveries are identified below:

Field ID	Parameter	Analyte	Qualification
N/A			

9.0 Field Duplicate Results

Were field duplicate samples collected as part of this SDG?

Yes

Field ID	Field Duplicate ID
GP-7(II)-19	GP-7(II)-19 DUP

Were field duplicates within evaluation criteria?

Yes

Field ID	Field Duplicate ID	Parameter	Analyte	RPD	Qualification
N/A					

10.0 Sample Dilutions

For samples that were diluted and nondetect, were undiluted results also reported?

Samples did not require a dilution.

The following table identifies the analyses which were reported as nondetect, diluted, and an undiluted run *was not* reported:

Field ID	Parameter	Dilution Factor
N/A		

11.0 Additional Qualifications

Were additional qualifications applied?

Yes

Professional judgment was used to qualify benzene in samples GP-7(II)-19 and GP-7(II)-19 DUP. Benzene exceeded the calibration range of the instrument in these samples. The benzene results will be reported as > 150 in both samples.

Field ID	Analyte	Qualification	Comments
GP-7(II)-19	Benzene	J	Professional Judgment
GP-7(II)-19 DUP	Benzene	J	Professional Judgment

Analytical Report 304173

for

URS Corporation-St. Louis

Project Manager: Wendy Pennington

900 S. Central Avenue

Route 111 & Rand Ave Vicinity / 21561979

05-JUN-08



E84880

4143 Greenbriar Dr., Stafford, TX 77477 Ph:(281) 240-4200 Fax:(281) 240-4280

Texas certification numbers:
Houston, TX T104704215

Florida certification numbers:
Houston, TX E871002 - Miami, FL E86678 - Tampa, FL E86675
Norcross(Atlanta), GA E87429

South Carolina certification numbers:
Norcross(Atlanta), GA 98015

North Carolina certification numbers:
Norcross(Atlanta), GA 483

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Midland - Corpus Christi - Atlanta



05-JUN-08

Project Manager: **Wendy Pennington**
URS Corporation-St. Louis
1001 Highlands Plaza Drive West, Suite 300
St. Louis, MO 63110

Reference: XENCO Report No: **304173**
900 S. Central Avenue
Project Address: Roxana, Illinois 62084

Wendy Pennington:

We are reporting to you the results of the analyses performed on the samples received under the project name referenced above and identified with the XENCO Report Number 304173. All results being reported under this Report Number apply to the samples analyzed and properly identified with a Laboratory ID number. Subcontracted analyses are identified in this report with either the NELAC certification number of the subcontract lab in the analyst ID field, or the complete subcontracted report attached to this report.

Unless otherwise noted in a Case Narrative, all data reported in this Analytical Report are in compliance with NELAC standards. Estimation of data uncertainty for this report is found in the quality control section of this report unless otherwise noted. Should insufficient sample be provided to the laboratory to meet the method and NELAC Matrix Duplicate and Matrix Spike requirements, then the data will be analyzed, evaluated and reported using all other available quality control measures.

The validity and integrity of this report will remain intact as long as it is accompanied by this letter and reproduced in full, unless written approval is granted by XENCO Laboratories. This report will be filed for at least 5 years in our archives after which time it will be destroyed without further notice, unless otherwise arranged with you. The samples received, and described as recorded in Report No. 304173 will be filed for 60 days, and after that time they will be properly disposed without further notice, unless otherwise arranged with you. We reserve the right to return to you any unused samples, extracts or solutions related to them if we consider so necessary (e.g., samples identified as hazardous waste, sample sizes exceeding analytical standard practices, controlled substances under regulated protocols, etc).

We thank you for selecting XENCO Laboratories to serve your analytical needs. If you have any questions concerning this report, please feel free to contact us at any time.

Respectfully,

Carlos Castro

Managing Director, Texas

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CASE NARRATIVE SUMMARY



Client Name: URS Corporation-St. Louis

Project Name: Rand Avenue Site

Project ID: Route 111 & Rand Ave Vic
Work Order Number: 304173

Report Date: 05-JUN-08
Date Received: 20-MAY-08

Benzene was found at high levels on samples 002 and 003. These samples were analyzed at 1x (no dilutions). Benzene has been reported with E-flags (estimated values) .

50x dilutions were run from both, the methanol vial and sample jar . These results were below calibration and could not be reported. Both samples were also re-analyzed at 1x with similar over-calibration results.

Carlos Castro
Managing Director, Texas



Certificate of Analysis Summary 304173

URS Corporation-St. Louis, St. Louis, MO



Project Name: 900 S. Central Avenue

Project Id: Route 111 & Rand Ave Vicinity / 2156197

Date Received in Lab: May-20-08 09:45 am

Contact: Wendy Pennington

Report Date: 05-JUN-08

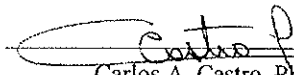
Project Location: Roxana, Illinois 62084

Project Manager: Debbie Simmons

<i>Analysis Requested</i>	<i>Lab Id:</i>	304173-001	304173-002	304173-003	304173-004
	<i>Field Id:</i>	B- 6- 23	GP-7 (II)-19	GP-7 (II) -9-Dup	TB051408
	<i>Depth:</i>				
	<i>Matrix:</i>	SOIL	SOIL	SOIL	WATER
	<i>Sampled:</i>	May-19-08 12:05	May-19-08 16:35	May-19-08 16:35	May-19-08 00:00
Percent Moisture	<i>Extracted:</i>				
	<i>Analyzed:</i>	May-22-08 08:27	May-22-08 08:38	May-22-08 08:29	
	<i>Units/RL:</i>	% RL	% RL	% RL	
Percent Moisture		8.63 1.00	3.55 1.00	3.37 1.00	

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Carlos A. Castro, Ph.D., MBA
Managing Director, Texas



Certificate of Analysis Summary 304173

URS Corporation-St. Louis, St. Louis, MO



Project Name: 900 S. Central Avenue

Project Id: Route 111 & Rand Ave Vicinity / 2156197

Date Received in Lab: May-20-08 09:45 am

Contact: Wendy Pennington

Report Date: 05-JUN-08

Project Location: Roxana, Illinois 62084

Project Manager: Debbie Simmons

Analysis Requested	Lab Id:	304173-001	304173-002	304173-003	304173-004
	Field Id:	B- 6- 23	GP-7 (II)-19	GP-7 (II)-9-Dap	TB051408
	Depth:				
	Matrix:	SOIL	SOIL	SOIL	WATER
	Sampled:	May-19-08 12:05	May-19-08 16:35	May-19-08 16:35	May-19-08 00:00
VOAs by SW-846 8260B	Extracted:	May-23-08 12:04	May-21-08 14:46	May-21-08 14:48	May-23-08 11:57
	Analyzed:	May-23-08 13:55	May-21-08 17:22	May-21-08 17:43	May-23-08 12:16
	Units/RL:	ug/kg RL	ug/kg RL	ug/kg RL	ug/L RL
Acetone		U 103	U 106	U 102	U 100
Benzene		U 5.13	2150-344E-5.29	2150-795E-5.10	U 5.00
Bromobenzene		U 5.13	U 5.29	U 5.10	U 5.00
Bromochloromethane		U 5.13	U 5.29	U 5.10	U 5.00
Bromodichloromethane		U 5.13	U 5.29	U 5.10	U 5.00
Bromoform		U 5.13	U 5.29	U 5.10	U 5.00
Bromomethane		U 5.13	U 5.29	U 5.10	U 5.00
2-Butanone		U 51.3	U 52.9	U 51.0	U 50.0
MTBE		U 5.13	U 5.29	U 5.10	U 5.00
tert-Butylbenzene		U 5.13	U 5.29	U 5.10	U 5.00
Sec-Butylbenzene		U 5.13	U 5.29	U 5.10	U 5.00
n-Butylbenzene		U 5.13	U 5.29	U 5.10	U 5.00
Carbon Disulfide		U 51.3	U 52.9	U 51.0	U 50.0
Carbon Tetrachloride		U 5.13	U 5.29	U 5.10	U 5.00
Chlorobenzene		U 5.13	U 5.29	U 5.10	U 5.00
Chloroethane		U 10.3	U 10.6	U 10.2	U 10.0
Chloroform		U 5.13	U 5.29	U 5.10	U 5.00
Chloromethane		U 10.3	U 10.6	U 10.2	U 10.0
2-Chlorotoluene		U 5.13	U 5.29	U 5.10	U 5.00
4-Chlorotoluene		U 5.13	U 5.29	U 5.10	U 5.00
p-Cymene (p-Isopropyltoluene)		U 5.13	U 5.29	U 5.10	U 5.00
1,2-Dibromo-3-Chloropropane		U 5.13	U 5.29	U 5.10	U 5.00
Dibromochloromethane		U 5.13	U 5.29	U 5.10	U 5.00
1,2-Dibromoethane		U 5.13	U 5.29	U 5.10	U 5.00
Dibromomethane		U 5.13	U 5.29	U 5.10	U 5.00
1,2-Dichlorobenzene		U 5.13	U 5.29	U 5.10	U 5.00
1,3-Dichlorobenzene		U 5.13	U 5.29	U 5.10	U 5.00
1,4-Dichlorobenzene		U 5.13	U 5.29	U 5.10	U 5.00
Dichlorodifluoromethane		U 5.13	U 5.29	U 5.10	U 5.00
1,2-Dichloroethane		U 5.13	U 5.29	U 5.10	U 5.00
1,1-Dichloroethane		U 5.13	U 5.29	U 5.10	U 5.00
trans-1,2-dichloroethene		U 5.13	U 5.29	U 5.10	U 5.00
cis-1,2-Dichloroethene		U 5.13	U 5.29	U 5.10	U 5.00
1,1-Dichloroethene		U 5.13	U 5.29	U 5.10	U 5.00

This analytical report, and the entire data package it represents, has been made for your exclusive and confidential use. The interpretations and results expressed throughout this analytical report represent the best judgment of XENCO Laboratories. XENCO Laboratories assumes no responsibility and makes no warranty to the end use of the data hereby presented. Our liability is limited to the amount invoiced for this work order unless otherwise agreed to in writing.

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Carlos A. Castro, Ph.D., MBA
Managing Director, Texas



Certificate of Analysis Summary 304173

URS Corporation-St. Louis, St. Louis, MO



Project Name: 900 S. Central Avenue

Project Id: Route 111 & Rand Ave Vicinity / 2156197

Date Received in Lab: May-20-08 09:45 am

Contact: Wendy Pennington

Report Date: 05-JUN-08

Project Location: Roxana, Illinois 62084

Project Manager: Debbie Simmons

Analysis Requested	Lab Id:	304173-001	304173-002	304173-003	304173-004
	Field Id:	B- 6- 23	GP-7 (II)-19	GP-7 (II) -9-Dup	TB051408
	Depth:				
	Matrix:	SOIL	SOIL	SOIL	WATER
	Sampled:	May-19-08 12:05	May-19-08 16:35	May-19-08 16:35	May-19-08 00:00
VOAs by SW-846 8260B	Extracted:	May-23-08 12:04	May-21-08 14:46	May-21-08 14:48	May-23-08 11:57
	Analyzed:	May-23-08 13:55	May-21-08 17:22	May-21-08 17:43	May-23-08 12:16
	Units/RL:	ug/kg RL	ug/kg RL	ug/kg RL	ug/L RL
2,2-Dichloropropane		5.13	5.29	5.10	U 5.00
1,3-Dichloropropane		U 5.13	U 5.29	U 5.10	U 5.00
1,2-Dichloropropane		U 5.13	U 5.29	U 5.10	U 5.00
trans-1,3-dichloropropene		U 5.13	U 5.29	U 5.10	U 5.00
1,1-Dichloropropene		U 5.13	U 5.29	U 5.10	U 5.00
cis-1,3-Dichloropropene		U 5.13	U 5.29	U 5.10	U 5.00
Ethylbenzene		U 5.13	U 5.29	U 5.10	U 5.00
Hexachlorobutadiene		U 5.13	U 5.29	U 5.10	U 5.00
2-Hexanone		U 51.3	U 52.9	U 51.0	U 50.0
Naphthalene		U 10.3	U 10.6	U 10.2	U 10.0
isopropylbenzene		U 5.13	U 5.29	U 5.10	U 5.00
Methylene Chloride		U 20.5	U 21.2	U 20.4	2.34 JB 5.00
4-Methyl-2-Pentanone		U 51.3	U 52.9	U 51.0	U 50.0
Propylbenzene		U 5.13	U 5.29	U 5.10	U 5.00
Styrene		U 5.13	U 5.29	U 5.10	U 5.00
1,1,1,2-Tetrachloroethane		U 5.13	U 5.29	U 5.10	U 5.00
1,1,2,2-Tetrachloroethane		U 5.13	U 5.29	U 5.10	U 5.00
Tetrachloroethylene		U 5.13	U 5.29	U 5.10	U 5.00
Toluene		U 5.13	1.15 J 5.29	1.09 J 5.10	U 5.00
1,2,4-Trichlorobenzene		U 5.13	U 5.29	U 5.10	U 5.00
1,2,3-Trichlorobenzene		U 5.13	U 5.29	U 5.10	U 5.00
1,1,2-Trichloroethane		U 5.13	U 5.29	U 5.10	U 5.00
1,1,1-Trichloroethane		U 5.13	U 5.29	U 5.10	U 5.00
Trichloroethene		U 5.13	U 5.29	U 5.10	U 5.00
Trichlorofluoromethane		U 5.13	U 5.29	U 5.10	U 5.00
1,2,3-Trichloropropane		U 5.13	U 5.29	U 5.10	U 5.00
1,2,4-Trimethylbenzene		U 5.13	U 5.29	U 5.10	U 5.00
1,3,5-Trimethylbenzene		U 5.13	U 5.29	U 5.10	U 5.00
Vinyl Chloride		U 2.05	U 2.12	U 2.04	U 2.00
o-Xylene		U 5.13	U 5.29	U 5.10	U 5.00
m,p-Xylenes		U 10.3	U 10.6	U 10.2	U 10.0

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Carlos A. Castro, Ph.D., MBA
Managing Director, Texas



Flagging Criteria

- X** In our quality control review of the data a QC deficiency was observed and flagged as noted. MS/MSD recoveries were found to be outside of the laboratory control limits due to possible matrix /chemical interference, or a concentration of target analyte high enough to effect the recovery of the spike concentration. This condition could also effect the relative percent difference in the MS/MSD.
 - B** A target analyte or common laboratory contaminant was identified in the method blank. Its presence indicates possible field or laboratory contamination.
 - D** The sample(s) were diluted due to targets detected over the highest point of the calibration curve, or due to matrix interference. Dilution factors are included in the final results. The result is from a diluted sample.
 - E** The data exceeds the upper calibration limit; therefore, the concentration is reported as estimated.
 - F** RPD exceeded lab control limits.
 - J** The target analyte was positively identified below the MQL(PQL) and above the SQL(MDL).
 - U** Analyte was not detected.
 - L** The LCS data for this analytical batch was reported below the laboratory control limits for this analyte. The department supervisor and QA Director reviewed data. The samples were either reanalyzed or flagged as estimated concentrations.
 - H** The LCS data for this analytical batch was reported above the laboratory control limits. Supporting QC Data were reviewed by the Department Supervisor and QA Director. Data were determined to be valid for reporting.
 - K** Sample analyzed outside of recommended hold time.
- * Outside XENCO'S scope of NELAC Accreditation

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(813) 620-2000	(813) 620-2033
(305) 823-8500	(305) 823-8555
(770) 449-8800	(770) 449-5477

LAB (L/L, O/N)

11381 Meadowglen Ln; Ste L; Houston, TX
PH: 281.686.0697; FAX: 281.588.0895

- ☒ XENCO ()
☐ CALSCIENCE ()
☐ TEST AMERICA ()
☐ SPL ()
☐ OTHER ()



Shell Oil Products Chain Of Custody Record

Please Check Appropriate Box:

- ☒ ENV. SERVICES ☐ MOTIVA RETAIL ☐ SHELL RETAIL
☐ MOTIVA SD&M ☐ CONSULTANT ☐ LUBES
☐ SHELL PIPELINE ☐ OTHER

Print Bill To Contact Name:

KEVIN DYER

INCIDENT # (ENV SERVICES)

9 7 2 1 6 6 4 0

☐ CHECK IF NO INCIDENT # APPLIES

DATE: 5/19/08

PO #

SAP #

PAGE: 1 of 1

CONSULTANT COMPANY:

URS CORPORATION

URS CORPORATION - FIELD OFFICE

ADDRESS:

1001 HIGHLANDS PLAZA DRIVE WEST - SUITE 300

170 E. RAND AVENUE

CITY:

ST. LOUIS, MISSOURI 63110

HARTFORD, ILLINOIS 62048

TELEPHONE:

OFF: 314-743-4166

FAX:

OFF: 314-743-4166

EMAIL:

wendy_pennington@urscorp.com

SOPUS SITE ADDRESS (Street, City and State):

900 S. CENTRAL AVENUE; ROXANA, ILLINOIS 62084

CONSULTANT PROJECT CONTACT (Report to):

WENDY PENNINGTON

CONSULTANT PROJECT NAME/NO.:

Route 111 & Rand Ave Vicinity / 21561979

SAMPLER NAME(S) (Print):

Michael Miller

LAB USE ONLY

304173-4

TURNAROUND TIME (CALENDAR DAYS):

☒ STANDARD (10 DAY)☐ 5 DAYS☐ 3 DAYS☐ 2 DAYS☐ 24 HOURS☐ RESULTS NEEDED

ON WEEKEND

DELIVERABLES:

☐ LEVEL 1☒ LEVEL 2☐ LEVEL 3☒ LEVEL 4☐ OTHER (SPECIFY)

TEMPERATURE ON RECEIPT C°

Cooler #1

2.0°C

Cooler #2

Cooler #3

SPECIAL INSTRUCTIONS OR NOTES:

☒ SHELL CONTRACT RATE APPLIES

REQUESTED ANALYSIS

LAB USE ONLY	Field Sample Identification	SAMPLING		MATRIX	PRESERVATIVE					NO. OF CONT.	VOC 8260B	PID (ppm)	Container PID Readings or Laboratory Notes	
		DATE	TIME		HCL	HNO3	H2SO4	NONE	OTHER					
	B-6-23	5/19/08	1205	Soil					1	3	4	X		P2D : 4.7
	GP-7(II)-19	↓	1635	Soil					1	3	4	X		P2D : 541
	GP-7(II)-19-DUP	↓	1635	Soil					1	3	4	X		P2D : 541
	TB051408			WATER	1							X		
				WATER										
				WATER										
				WATER										
				WATER										
				WATER										
				WATER										
				WATER										

Relinquished by: (Signature)	Received by: (Signature)	Date:	Time:
<i>[Signature]</i>	FedEx	5/19/08	1800
Relinquished by: (Signature)	Received by: (Signature)	Date:	Time:
FedEx	<i>[Signature]</i>	5/20/08	0945

05/06 Revision



Prelogin/Nonconformance Report- Sample Log-In

Client: URS
Date/ Time: 5/20/08
Lab ID #: 304173-H
Initials: [Signature]

Sample Receipt Checklist

#1	Temperature of container/ cooler?	Yes	No	N/A	2 - 0°C
#2	Shipping container in good condition?	Yes	No	None	
#3	Samples received on ice?	Yes	No	N/A	Blue Water
#4	Custody Seals intact on shipping container/ cooler?	Yes	No	N/A	
#5	Custody Seals intact on sample bottles/ container?	Yes	No	N/A	
#6	Chain of Custody present?	Yes	No		
#7	Sample Instructions complete of Chain of Custody?	Yes	No		
#8	Any missing/extra samples?	Yes	No		
#9	Chain of Custody signed when relinquished/ received?	Yes	No		
#10	Chain of Custody agrees with sample label(s)?	Yes	No		
	Container label(s) legible and intact?	Yes	No		
#12	Sample matrix/ properties agree with Chain of Custody?	Yes	No		
#13	Samples in proper container/ bottle?	Yes	No		
#14	Samples properly preserved?	Yes	No	N/A	
#15	Sample container intact?	Yes	No		
#16	Sufficient sample amount for indicated test(s)?	Yes	No		
#17	All samples received within sufficient hold time?	Yes	No		
#18	Subcontract of sample(s)?	Yes	No	N/A	
#19	VOC samples have zero headspace?	Yes	No	N/A	

Nonconformance Documentation

Contact: _____ Contacted by: _____ Date/ Time: _____

Regarding: _____

Corrective Action Taken:

Check all that Apply: ☐ Client understands and would like to proceed with analysis
☐ Cooling process had begun shortly after sampling event

Rand Avenue Data Review

Laboratory SDG: 304253

Reviewer: Tony Sedlacek

Date Reviewed: 7/22/2008

Guidance: National Functional Guidelines for Organic Data Review 1999.

Applicable Work Plan: Route 111/Rand Avenue Vicinity Investigation Work Plan.

Sample Identification #	Sample Identification #
B-2-41	B-1-27
TB052008	

1.0 Data Package Completeness

Were all items delivered as specified in the QAPP and COC?

No, sample B-1-27 was designated as an MS/MSD sample on the COC to be analyzed for VOCs. The VOC MS/MSD data was not received as part of the data package. The laboratory was contacted and the data was requested.

2.0 Laboratory Case Narrative \ Cooler Receipt Form

Were problems noted in the laboratory case narrative or cooler receipt form?

No, although not indicated in the laboratory case narrative, VOCs were detected in the trip blank and method blank. VOC LCS and surrogate recoveries for were outside evaluation criteria. Sample B-2-41 was analyzed at a dilution due to high levels of target analytes. These issues are addressed further in the appropriate sections below.

The cooler receipt form did not indicate any problems.

3.0 Holding Times

Were samples extracted/analyzed within QAPP limits?

Yes

Field ID	Parameter	Analyte	Qualification
N/A			

4.0 Blank Contamination

Were any analytes detected in the Method Blanks, Field Blanks or Trip Blanks?

Yes

Blank ID	Parameter	Analyte	Concentration	Units
TB052008	VOCs	Methylene chloride	3.03	µg/L
509521-1-BLK	VOCs	Methylene chloride	4.42	µg/L
509775-1-BLK	VOCs	Methylene chloride	30.4	µg/L
509839-1-BLK	VOCs	Acetone	21.4	µg/L
509839-1-BLK	VOCs	Bromomethane	1.09	µg/L
509839-1-BLK	VOCs	1,3-Dichlorobenzene	1.13	µg/L
509839-1-BLK	VOCs	1,4-Dichlorobenzene	1.12	µg/L
509839-1-BLK	VOCs	Methylene chloride	8.59	µg/L

Qualifications due to blank contamination are included in the table below. Analytical data that were reported nondetect or at concentrations greater than five times (5X) the associated blank concentration (10X for common laboratory contaminants) did not require qualification.

Field ID	Parameter	Analyte	New RL	Qualification
B-2-41	VOCs	Methylene chloride	-	U

5.0 Laboratory Control Sample

Were LCS recoveries within evaluation criteria?

No

LCS ID	Parameter	Analyte	LCS Recovery	RPD	LCS Criteria
509521-1-BKS	VOCs	2,2-Dichloropropane	72	N/A	75-125
509839-1-BKS	VOCs	Methylene chloride	160	N/A	75-125

Analytical data that required qualification based on LCS data are included in the table below. Analytical data which were reported as nondetect and associated with LCS recoveries above evaluation criteria, indicating a possible high bias, did not require qualification.

Field ID	Parameter	Analyte	Qualification
B-1-27	VOCs	2,2-Dichloropropane	UJ

6.0 Surrogate Recoveries

Were surrogate recoveries within evaluation criteria?

No

Field ID	Parameter	Surrogate	Recovery	Criteria
B-2-41	VOCs	4-Bromofluorobenzene	175	74-121
B-2-41	VOCs	1,2-Dichloroethane-d ₄	133	80-120
B-2-41	VOCs	Toluene-d ₈	171	81-117

Analytical data that required qualification based on surrogate data are included in the table below. Analytical data which were reported as nondetect and associated with surrogate recoveries above evaluation criteria, indicating a possible high bias, did not require qualification. Quality control data associated with surrogate recoveries outside evaluation criteria did not require evaluation or qualification.

Field ID	Parameter	Analyte	Qualification
B-2-41	VOCs	Benzene	J
B-2-41	VOCs	tert-Butylbenzene	J
B-2-41	VOCs	sec-Butylbenzene	J
B-2-41	VOCs	n-Butylbenzene	J
B-2-41	VOCs	p-Cymene	J
B-2-41	VOCs	Isopropylbenzene	J
B-2-41	VOCs	Naphthalene	J
B-2-41	VOCs	Toluene	J
B-2-41	VOCs	1,3,5-Trimethylbenzene	J
B-2-41	VOCs	o-Xylene	J

7.0 Matrix Spike and Matrix Spike Duplicate Recoveries

Were MS/MSD samples reported as part of this SDG?

No, sample B-1-27 was designated as an MS/MSD sample on the COC to be analyzed for VOCs. The VOC MS/MSD data was not received as part of the data package.

Were MS/MSD recoveries within evaluation criteria?

N/A

MS/MSD ID	Parameter	Analyte	MS/MSD Recovery	RPD	MS/MSD/RPD Criteria
N/A					

Analytical data that required qualification based on MS/MSD data are included in the table below.

Field ID	Parameter	Analyte	Qualification
N/A			

8.0 Laboratory Duplicate Results

Were laboratory duplicate samples collected as part of this SDG?

No

Were laboratory duplicate sample RPDs within criteria?

N/A

Field ID	Parameter	Analyte	RPD	Criteria
N/A				

Data qualified due to outlying laboratory duplicate recoveries are identified below:

Field ID	Parameter	Analyte	Qualification
N/A			

9.0 Field Duplicate Results

Were field duplicate samples collected as part of this SDG?

No

Field ID	Field Duplicate ID
N/A	

Were field duplicates within evaluation criteria?

N/A

Field ID	Field Duplicate ID	Parameter	Analyte	RPD	Qualification
N/A					

10.0 Sample Dilutions

For samples that were diluted and nondetect, were undiluted results also reported?

No

The following table identifies the analyses which were reported as nondetect, diluted, and an undiluted run ***was not*** reported:

Field ID	Parameter	Dilution Factor
B-2-41	VOCs	50

11.0 Additional Qualifications

Were additional qualifications applied?

No

Analytical Report 304253

for

URS Corporation-St. Louis

Project Manager: Wendy Pennington

900 S. Central Avenue

Route 111 & Rand Ave Vicinity / 21561979

05-JUN-08



E84880

4143 Greenbriar Dr., Stafford, TX 77477 Ph:(281) 240-4200 Fax:(281) 240-4280

**Texas certification numbers:
Houston, TX T104704215**

**Florida certification numbers:
Houston, TX E871002 - Miami, FL E86678 - Tampa, FL E86675
Norcross(Atlanta), GA E87429**

**South Carolina certification numbers:
Norcross(Atlanta), GA 98015**

**North Carolina certification numbers:
Norcross(Atlanta), GA 483**

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Midland - Corpus Christi - Atlanta**



05-JUN-08

Project Manager: **Wendy Pennington**
URS Corporation-St. Louis
1001 Highlands Plaza Drive West, Suite 300
St. Louis, MO 63110

Reference: XENCO Report No: **304253**
900 S. Central Avenue
Project Address: Roxana, Illinois 62084

Wendy Pennington:

We are reporting to you the results of the analyses performed on the samples received under the project name referenced above and identified with the XENCO Report Number 304253. All results being reported under this Report Number apply to the samples analyzed and properly identified with a Laboratory ID number. Subcontracted analyses are identified in this report with either the NELAC certification number of the subcontract lab in the analyst ID field, or the complete subcontracted report attached to this report.

Unless otherwise noted in a Case Narrative, all data reported in this Analytical Report are in compliance with NELAC standards. Estimation of data uncertainty for this report is found in the quality control section of this report unless otherwise noted. Should insufficient sample be provided to the laboratory to meet the method and NELAC Matrix Duplicate and Matrix Spike requirements, then the data will be analyzed, evaluated and reported using all other available quality control measures.

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We thank you for selecting XENCO Laboratories to serve your analytical needs. If you have any questions concerning this report, please feel free to contact us at any time.

Respectfully,

Carlos Castro

Managing Director, Texas

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URS Corporation-St. Louis, St. Louis, MO



Project Name: 900 S. Central Avenue

Project Id: Route 111 & Rand Ave Vicinity / 2156197

Date Received in Lab: May-21-08 10:00 am

Contact: Wendy Pennington

Report Date: 05-JUN-08

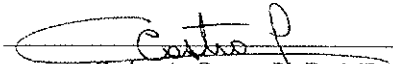
Project Location: Roxana, Illinois 62084

Project Manager: Debbie Simmons

<i>Analysis Requested</i>	<i>Lab Id:</i>	304253-001	304253-002	304253-003	
	<i>Field Id:</i>	B-2-41	B-1-27	TB052008	
	<i>Depth:</i>				
	<i>Matrix:</i>	SOIL	SOIL	WATER	
	<i>Sampled:</i>	May-20-08 10:00	May-20-08 14:45	May-20-08 00:00	
Percent Moisture	<i>Extracted:</i>				
	<i>Analyzed:</i>	May-22-08 08:48	May-22-08 08:49		
	<i>Units/RL:</i>	% RL	% RL		
Percent Moisture		6.89 1.00	2.96 1.00		

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Managing Director, Texas



Certificate of Analysis Summary 304253

URS Corporation-St. Louis, St. Louis, MO



Project Name: 900 S. Central Avenue

Project Id: Route 111 & Rand Ave Vicinity / 2156197

Date Received in Lab: May-21-08 10:00 am

Contact: Wendy Pennington

Report Date: 05-JUN-08

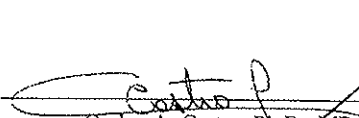
Project Location: Roxana, Illinois 62084

Project Manager: Debbie Simmons

Analysis Requested	Lab Id:	304253-001	304253-002	304253-003		
	Field Id:	B-2-41	B-1-27	TB052008		
	Depth:					
	Matrix:	SOIL	SOIL	WATER		
	Sampled:	May-20-08 10:00	May-20-08 14:45	May-20-08 00:00		
VOAs by SW-846 8260B	Extracted:	May-28-08 16:08	May-23-08 14:38	May-29-08 14:20		
	Analyzed:	May-28-08 18:46	May-23-08 16:30	May-29-08 15:20		
	Units/RL:	ug/kg RL	ug/kg RL	ug/L RL		
Acetone		U 125	U 115	U 100		
Benzene		92.7 ^{-J} 6.26	U 5.75	U 5.00		
Bromobenzene		U 6.26	U 5.75	U 5.00		
Bromochloromethane		U 6.26	U 5.75	U 5.00		
Bromodichloromethane		U 6.26	U 5.75	U 5.00		
Bromoform		U 6.26	U 5.75	U 5.00		
Bromomethane		U 6.26	U 5.75	U 5.00		
2-Butanone		U 62.6	U 57.5	U 50.0		
MTBE		U 6.26	U 5.75	U 5.00		
tert-Butylbenzene		13.6 ^{-J} 6.26	U 5.75	U 5.00		
Sec-Butylbenzene		41.3 ^{-J} 6.26	U 5.75	U 5.00		
n-Butylbenzene		91.3 ^{-J} 6.26	U 5.75	U 5.00		
Carbon Disulfide		U 62.6	U 57.5	U 50.0		
Carbon Tetrachloride		U 6.26	U 5.75	U 5.00		
Chlorobenzene		U 6.26	U 5.75	U 5.00		
Chloroethane		U 12.5	U 11.5	U 10.0		
Chloroform		U 6.26	U 5.75	U 5.00		
Chloromethane		U 12.5	U 11.5	U 10.0		
2-Chlorotoluene		U 6.26	U 5.75	U 5.00		
4-Chlorotoluene		U 6.26	U 5.75	U 5.00		
p-Cymene (p-Isopropyltoluene)		25.1 ^{-J} 6.26	U 5.75	U 5.00		
1,2-Dibromo-3-Chloropropane		U 6.26	U 5.75	U 5.00		
Dibromochloromethane		U 6.26	U 5.75	U 5.00		
1,2-Dibromoethane		U 6.26	U 5.75	U 5.00		
Dibromomethane		U 6.26	U 5.75	U 5.00		
1,2-Dichlorobenzene		U 6.26	U 5.75	U 5.00		
1,3-Dichlorobenzene		U 6.26	U 5.75	U 5.00		
1,4-Dichlorobenzene		U 6.26	U 5.75	U 5.00		
Dichlorodifluoromethane		U 6.26	U 5.75	U 5.00		
1,2-Dichloroethane		U 6.26	U 5.75	U 5.00		
1,1-Dichloroethane		U 6.26	U 5.75	U 5.00		
trans-1,2-dichloroethene		U 6.26	U 5.75	U 5.00		
cis-1,2-Dichloroethene		U 6.26	U 5.75	U 5.00		
1,1-Dichloroethene		U 6.26	U 5.75	U 5.00		

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Carlos A. Castro, Ph.D., MBA
Managing Director, Texas



Certificate of Analysis Summary 304253

URS Corporation-St. Louis, St. Louis, MO



Project Name: 900 S. Central Avenue

Project Id: Route 111 & Rand Ave Vicinity / 2156197

Date Received in Lab: May-21-08 10:00 am

Contact: Wendy Pennington

Report Date: 05-JUN-08

Project Location: Roxana, Illinois 62084

Project Manager: Debbie Simmons

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	Depth:				
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VOAs by SW-846 8260B	Extracted:	May-28-08 16:08	May-23-08 14:38	May-29-08 14:20	
	Analyzed:	May-28-08 18:46	May-23-08 16:30	May-29-08 15:20	
	Units/RL:	ug/kg RL	ug/kg RL	ug/L RL	
2,2-Dichloropropane		U 6.26	U 5.75	U 5.00	
1,3-Dichloropropane		U 6.26	U 5.75	U 5.00	
1,2-Dichloropropane		U 6.26	U 5.75	U 5.00	
trans-1,3-dichloropropene		U 6.26	U 5.75	U 5.00	
1,1-Dichloropropene		U 6.26	U 5.75	U 5.00	
cis-1,3-Dichloropropene		U 6.26	U 5.75	U 5.00	
Ethylbenzene		4390 D 328	2.08 J 5.75	U 5.00	
Hexachlorobutadiene		U 6.26	U 5.75	U 5.00	
2-Hexanone		U 62.6	U 57.5	U 50.0	
isopropylbenzene		115 "J" 6.26	U 5.75	U 5.00	
Naphthalene		40.6 "J" 12.5	U 11.5	U 10.0	
Methylene Chloride		0.0 12.5 "J" 12.5	U 23.0	3.03 JB 5.00	
4-Methyl-2-Pentanone		U 62.6	U 57.5	U 50.0	
Propylbenzene		1730 D 328	U 5.75	U 5.00	
styrene		U 6.26	U 5.75	U 5.00	
1,1,1,2-Tetrachloroethane		U 6.26	U 5.75	U 5.00	
1,1,2,2-Tetrachloroethane		U 6.26	U 5.75	U 5.00	
Tetrachloroethylene		U 6.26	U 5.75	U 5.00	
Toluene		13.6 "J" 6.26	2.04 J 5.75	U 5.00	
1,2,4-Trichlorobenzene		U 6.26	U 5.75	U 5.00	
1,2,3-Trichlorobenzene		U 6.26	U 5.75	U 5.00	
1,1,2-Trichloroethane		U 6.26	U 5.75	U 5.00	
1,1,1-Trichloroethane		U 6.26	U 5.75	U 5.00	
Trichloroethene		U 6.26	U 5.75	U 5.00	
Trichlorofluoromethane		U 6.26	U 5.75	U 5.00	
1,2,3-Trichloropropane		U 6.26	U 5.75	U 5.00	
1,2,4-Trimethylbenzene		5590 D 328	U 5.75	U 5.00	
1,3,5-Trimethylbenzene		184 "J" 6.26	U 5.75	U 5.00	
Vinyl Chloride		U 2.50	U 2.30	U 2.00	
o-Xylene		24.6 "J" 6.26	U 5.75	U 5.00	
m,p-Xylenes		2450 D 655	U 11.5	U 10.0	

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Carlos A. Castro, Ph.D., MBA
Managing Director, Texas



Flagging Criteria

- X** In our quality control review of the data a QC deficiency was observed and flagged as noted. MS/MSD recoveries were found to be outside of the laboratory control limits due to possible matrix /chemical interference, or a concentration of target analyte high enough to effect the recovery of the spike concentration. This condition could also effect the relative percent difference in the MS/MSD.
 - B** A target analyte or common laboratory contaminant was identified in the method blank. Its presence indicates possible field or laboratory contamination.
 - D** The sample(s) were diluted due to targets detected over the highest point of the calibration curve, or due to matrix interference. Dilution factors are included in the final results. The result is from a diluted sample.
 - E** The data exceeds the upper calibration limit; therefore, the concentration is reported as estimated.
 - F** RPD exceeded lab control limits.
 - J** The target analyte was positively identified below the MQL(PQL) and above the SQL(MDL).
 - U** Analyte was not detected.
 - L** The LCS data for this analytical batch was reported below the laboratory control limits for this analyte. The department supervisor and QA Director reviewed data. The samples were either reanalyzed or flagged as estimated concentrations.
 - H** The LCS data for this analytical batch was reported above the laboratory control limits. Supporting QC Data were reviewed by the Department Supervisor and QA Director. Data were determined to be valid for reporting.
 - K** Sample analyzed outside of recommended hold time.
- * Outside XENCO'S scope of NELAC Accreditation

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2505 N. Falkenburg Rd., Tampa, FL 33619
5757 NW 158th St, Miami Lakes, FL 33014
6017 Financial Dr., Norcross, GA 30071

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(281) 589-0692	(281) 589-0695
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(210) 509-3334	(210) 509-3335
(813) 620-2000	(813) 620-2033
(305) 823-8500	(305) 823-8555
(770) 449-8800	(770) 449-5477



Prelogin/Nonconformance Report- Sample Log-In

Client: URS
Date/ Time: 5/21/8
Lab ID #: 30 4253-17
Initials: 11

Sample Receipt Checklist

#1 Temperature of container/ cooler?	<u>Yes</u>	No	N/A	<u>2 ± 5 °C</u>
#2 Shipping container in good condition?	<u>Yes</u>	No	None	
#3 Samples received on ice?	<u>Yes</u>	No	N/A	<u>Blue/Water</u>
#4 Custody Seals intact on shipping container/ cooler?	<u>Yes</u>	No	N/A	
#5 Custody Seals intact on sample bottles/ container?	<u>Yes</u>	No	<u>N/A</u>	
#6 Chain of Custody present?	<u>Yes</u>	No		
#7 Sample instructions complete of Chain of Custody?	<u>Yes</u>	No		
#8 Any missing/extra samples?	<u>Yes</u>	<u>No</u>		
#9 Chain of Custody signed when relinquished/ received?	<u>Yes</u>	No		
#10 Chain of Custody agrees with sample label(s)?	<u>Yes</u>	No		
* Container label(s) legible and intact?	<u>Yes</u>	No		
* Sample matrix/ properties agree with Chain of Custody?	<u>Yes</u>	No		
#13 Samples in proper container/ bottle?	<u>Yes</u>	No		
#14 Samples properly preserved?	<u>Yes</u>	No	N/A	
#15 Sample container intact?	<u>Yes</u>	No		
#16 Sufficient sample amount for indicated test(s)?	<u>Yes</u>	No		
#17 All samples received within sufficient hold time?	<u>Yes</u>	No		
#18 Subcontract of sample(s)?	<u>Yes</u>	No	N/A	
#19 VOC samples have zero headspace?	<u>Yes</u>	No	N/A	

Nonconformance Documentation

Contact: _____ Contacted by: _____ Date/ Time: _____

Regarding: _____

Corrective Action Taken:

Check all that Apply: ☐ Client understands and would like to proceed with analysis
☐ Cooling process had begun shortly after sampling event

Rand Avenue Data Review

Laboratory SDG: 304421

Reviewer: Tony Sedlacek

Date Reviewed: 7/22/2008

Guidance: National Functional Guidelines for Organic Data Review 1999.

Applicable Work Plan: Route 111/Rand Avenue Vicinity Investigation Work Plan.

Sample Identification #	Sample Identification #
B-3-33	B-5-27
TB052108	

1.0 Data Package Completeness

Were all items delivered as specified in the QAPP and COC?

Yes

2.0 Laboratory Case Narrative \ Cooler Receipt Form

Were problems noted in the laboratory case narrative or cooler receipt form?

No, although not indicated in the laboratory case narrative, VOCs were detected in the trip blank and method blank. VOC LCS and MSD recoveries and the surrogate recovery for 4-Bromofluorobenzene were outside evaluation criteria. These issues are addressed further in the appropriate sections below.

The cooler receipt form did not indicate any problems.

3.0 Holding Times

Were samples extracted/analyzed within QAPP limits?

Yes

Field ID	Parameter	Analyte	Qualification
N/A			

4.0 Blank Contamination

Were any analytes detected in the Method Blanks, Field Blanks or Trip Blanks?

Yes

Blank ID	Parameter	Analyte	Concentration	Units
TB052108	VOCs	Methylene chloride	2.90	µg/L
509521-1-BLK	VOCs	Methylene chloride	4.42	µg/L
509775-1-BLK	VOCs	Methylene chloride	30.4	µg/L
509839-1-BLK	VOCs	Acetone	21.4	µg/L
509839-1-BLK	VOCs	Bromomethane	1.09	µg/L
509839-1-BLK	VOCs	1,3-Dichlorobenzene	1.13	µg/L
509839-1-BLK	VOCs	1,4-Dichlorobenzene	1.12	µg/L
509839-1-BLK	VOCs	Methylene chloride	8.59	µg/L

Qualifications due to blank contamination are included in the table below. Analytical data that were reported nondetect or at concentrations greater than five times (5X) the associated blank concentration (10X for common laboratory contaminants) did not require qualification.

Field ID	Parameter	Analyte	New RL	Qualification
B-3-33	VOCs	Methylene chloride	-	U

5.0 Laboratory Control Sample

Were LCS recoveries within evaluation criteria?

No

LCS ID	Parameter	Analyte	LCS Recovery	RPD	LCS Criteria
509521-1-BKS	VOCs	2,2-Dichloropropane	72	N/A	75-125
509839-1-BKS	VOCs	Methylene chloride	160	N/A	75-125

Analytical data that required qualification based on LCS data are included in the table below. Analytical data which were reported as nondetect and associated with LCS recoveries above evaluation criteria, indicating a possible high bias, did not require qualification.

Field ID	Parameter	Analyte	Qualification
B-5-27	VOCs	2,2-Dichloropropane	UJ

6.0 Surrogate Recoveries

Were surrogate recoveries within evaluation criteria?

No

Field ID	Parameter	Surrogate	Recovery	Criteria
B-3-33	VOCs	4-Bromofluorobenzene	126	74-121

Analytical data that required qualification based on surrogate data are included in the table below. Analytical data which were reported as nondetect and associated with surrogate recoveries above evaluation criteria, indicating a possible high bias, did not require qualification.

Field ID	Parameter	Analyte	Qualification
B-3-33	VOCs	Toluene	J

7.0 Matrix Spike and Matrix Spike Duplicate Recoveries

Were MS/MSD samples reported as part of this SDG?

Yes, sample B-3-33 was spiked and analyzed for VOCs.

Were MS/MSD recoveries within evaluation criteria?

No

MS/MSD ID	Parameter	Analyte	MS/MSD Recovery	RPD	MS/MSD/RPD Criteria
B-3-33	VOCs	Dichlorodifluoromethane	132/136	3	65-135/23
B-3-33	VOCs	1,2,4-Trichlorobenzene	83/73	13	75-135/25
B-3-33	VOCs	1,2,3-Trichlorobenzene	84/70	18	75-137/25

Analytical data that required qualification based on MS/MSD data are included in the table below. USEPA National Functional Guidelines for Organic Data Review indicates that organic data should not be qualified based on MS/MSD data alone and LCS recoveries were within evaluation criteria, therefore no qualification of the data was required.

Field ID	Parameter	Analyte	Qualification
N/A			

8.0 Laboratory Duplicate Results

Were laboratory duplicate samples collected as part of this SDG?

No

Were laboratory duplicate sample RPDs within criteria?

N/A

Field ID	Parameter	Analyte	RPD	Criteria
N/A				

Data qualified due to outlying laboratory duplicate recoveries are identified below:

Field ID	Parameter	Analyte	Qualification
N/A			

9.0 Field Duplicate Results

Were field duplicate samples collected as part of this SDG?

No

Field ID	Field Duplicate ID
N/A	

Were field duplicates within evaluation criteria?

N/A

Field ID	Field Duplicate ID	Parameter	Analyte	RPD	Qualification
N/A					

10.0 Sample Dilutions

For samples that were diluted and nondetect, were undiluted results also reported?

Samples did not require a dilution.

The following table identifies the analyses which were reported as nondetect, diluted, and an undiluted run *was not* reported:

Field ID	Parameter	Dilution Factor
N/A		

11.0 Additional Qualifications

Were additional qualifications applied?

No

Analytical Report 304421

for

URS Corporation-St. Louis

Project Manager: Wendy Pennington

900 S. Central Avenue

Route 111 & Rand Ave Vicinity / 21561979

04-JUN-08



E84880

4143 Greenbriar Dr., Stafford, TX 77477 Ph:(281) 240-4200 Fax:(281) 240-4280

Texas certification numbers:

Houston, TX T104704215

Florida certification numbers:

Houston, TX E871002 - Miami, FL E86678 - Tampa, FL E86675

Norcross(Atlanta), GA E87429

South Carolina certification numbers:

Norcross(Atlanta), GA 98015

North Carolina certification numbers:

Norcross(Atlanta), GA 483

Houston - Dallas - San Antonio - Austin - Tampa - Miami - Latin America

Midland - Corpus Christi - Atlanta



04-JUN-08

Project Manager: **Wendy Pennington**
URS Corporation-St. Louis
1001 Highlands Plaza Drive West, Suite 300
St. Louis, MO 63110

Reference: XENCO Report No: **304421**
900 S. Central Avenue
Project Address: Roxana, Illinois 62084

Wendy Pennington:

We are reporting to you the results of the analyses performed on the samples received under the project name referenced above and identified with the XENCO Report Number 304421. All results being reported under this Report Number apply to the samples analyzed and properly identified with a Laboratory ID number. Subcontracted analyses are identified in this report with either the NELAC certification number of the subcontract lab in the analyst ID field, or the complete subcontracted report attached to this report.

Unless otherwise noted in a Case Narrative, all data reported in this Analytical Report are in compliance with NELAC standards. Estimation of data uncertainty for this report is found in the quality control section of this report unless otherwise noted. Should insufficient sample be provided to the laboratory to meet the method and NELAC Matrix Duplicate and Matrix Spike requirements, then the data will be analyzed, evaluated and reported using all other available quality control measures.

The validity and integrity of this report will remain intact as long as it is accompanied by this letter and reproduced in full, unless written approval is granted by XENCO Laboratories. This report will be filed for at least 5 years in our archives after which time it will be destroyed without further notice, unless otherwise arranged with you. The samples received, and described as recorded in Report No. 304421 will be filed for 60 days, and after that time they will be properly disposed without further notice, unless otherwise arranged with you. We reserve the right to return to you any unused samples, extracts or solutions related to them if we consider so necessary (e.g., samples identified as hazardous waste, sample sizes exceeding analytical standard practices, controlled substances under regulated protocols, etc).

We thank you for selecting XENCO Laboratories to serve your analytical needs. If you have any questions concerning this report, please feel free to contact us at any time.

Respectfully,

Carlos Castro

Managing Director, Texas

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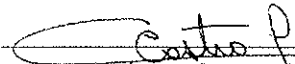
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	<i>Depth:</i>				
	<i>Matrix:</i>	SOIL	SOIL	WATER	
	<i>Sampled:</i>	May-21-08 11:00	May-21-08 14:00	May-21-08 00:00	
Percent Moisture	<i>Extracted:</i>				
	<i>Analyzed:</i>	May-27-08 16:01	May-27-08 16:02		
	<i>Units/RL:</i>	% RL	% RL		
Percent Moisture		2.68 1.00	7.72 1.00		

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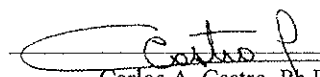
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Bromochloromethane		U 5.67	U 5.33	U 5.00	
Bromodichloromethane		U 5.67	U 5.33	U 5.00	
Bromoform		U 5.67	U 5.33	U 5.00	
Bromomethane		U 5.67	U 5.33	U 5.00	
2-Butanone		U 56.7	U 53.3	U 50.0	
MTBE		U 5.67	U 5.33	U 5.00	
tert-Butylbenzene		U 5.67	U 5.33	U 5.00	
Sec-Butylbenzene		U 5.67	U 5.33	U 5.00	
n-Butylbenzene		U 5.67	U 5.33	U 5.00	
Di-n-Propyl Disulfide		U 56.7	U 53.3	U 50.0	
Di-n-Propyl Tetrachloride		U 5.67	U 5.33	U 5.00	
Chlorobenzene		U 5.67	U 5.33	U 5.00	
Chloroethane		U 11.3	U 10.7	U 10.0	
Chloroform		U 5.67	U 5.33	U 5.00	
Chloromethane		U 11.3	U 10.7	U 10.0	
2-Chlorotoluene		U 5.67	U 5.33	U 5.00	
4-Chlorotoluene		U 5.67	U 5.33	U 5.00	
p-Cymene (p-Isopropyltoluene)		U 5.67	U 5.33	U 5.00	
1,2-Dibromo-3-Chloropropane		U 5.67	U 5.33	U 5.00	
Dibromochloromethane		U 5.67	U 5.33	U 5.00	
1,2-Dibromoethane		U 5.67	U 5.33	U 5.00	
Dibromomethane		U 5.67	U 5.33	U 5.00	
1,2-Dichlorobenzene		U 5.67	U 5.33	U 5.00	
1,3-Dichlorobenzene		U 5.67	U 5.33	U 5.00	
1,4-Dichlorobenzene		U 5.67	U 5.33	U 5.00	
Dichlorodifluoromethane		U 5.67	U 5.33	U 5.00	
1,2-Dichloroethane		U 5.67	U 5.33	U 5.00	
1,1-Dichloroethane		U 5.67	U 5.33	U 5.00	
trans-1,2-dichloroethene		U 5.67	U 5.33	U 5.00	
cis-1,2-Dichloroethene		U 5.67	U 5.33	U 5.00	
1,1-Dichloroethene		U 5.67	U 5.33	U 5.00	

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Carlos A. Castro, Ph.D., MBA
Managing Director, Texas



Certificate of Analysis Summary 304421

URS Corporation-St. Louis, St. Louis, MO



Project Name: 900 S. Central Avenue

Project Id: Route 111 & Rand Ave Vicinity / 2156197

Date Received in Lab: May-22-08 10:00 am

Contact: Wendy Pennington

Report Date: 04-JUN-08

Project Location: Roxana, Illinois 62084

Project Manager: Debbie Simmons

Analysis Requested	Lab Id:	304421-001	304421-002	304421-003		
	Field Id:	B-3-33	B-5-27	TB052108		
	Depth:					
	Matrix:	SOIL	SOIL	WATER		
	Sampled:	May-21-08 11:00	May-21-08 14:00	May-21-08 00:00		
VOAs by SW-846 8260B	Extracted:	May-28-08 15:47	May-23-08 14:46	May-29-08 14:22		
	Analyzed:	May-28-08 16:01	May-23-08 17:53	May-29-08 15:40		
	Units/RL:	ug/kg RL	ug/kg RL	ug/L RL		
2,2-Dichloropropane		U 5.67	U 5.33	U 5.00		
1,3-Dichloropropane		U 5.67	U 5.33	U 5.00		
1,2-Dichloropropane		U 5.67	U 5.33	U 5.00		
trans-1,3-dichloropropene		U 5.67	U 5.33	U 5.00		
1,1-Dichloropropene		U 5.67	U 5.33	U 5.00		
cis-1,3-Dichloropropene		U 5.67	U 5.33	U 5.00		
Ethylbenzene		U 5.67	U 5.33	U 5.00		
Hexachlorobutadiene		U 5.67	U 5.33	U 5.00		
2-Hexanone		U 56.7	U 53.3	U 50.0		
Naphthalene		U 11.3	U 10.7	U 10.0		
isopropylbenzene		U 5.67	U 5.33	U 5.00		
Methylene Chloride	NO 0.09-22-35	U 22.7	U 21.3	2.90 JB		
4-Methyl-2-Pentanone		U 56.7	U 53.3	U 50.0		
-Propylbenzene		U 5.67	U 5.33	U 5.00		
Styrene		U 5.67	U 5.33	U 5.00		
1,1,1,2-Tetrachloroethane		U 5.67	U 5.33	U 5.00		
1,1,2,2-Tetrachloroethane		U 5.67	U 5.33	U 5.00		
Tetrachloroethylene		U 5.67	U 5.33	U 5.00		
Toluene	1.37-1-1	U 5.67	U 5.33	U 5.00		
1,2,4-Trichlorobenzene		U 5.67	U 5.33	U 5.00		
1,2,3-Trichlorobenzene		U 5.67	U 5.33	U 5.00		
1,1,2-Trichloroethane		U 5.67	U 5.33	U 5.00		
1,1,1-Trichloroethane		U 5.67	U 5.33	U 5.00		
Trichloroethene		U 5.67	U 5.33	U 5.00		
Trichlorofluoromethane		U 5.67	U 5.33	U 5.00		
1,2,3-Trichloropropane		U 5.67	U 5.33	U 5.00		
1,2,4-Trimethylbenzene		U 5.67	U 5.33	U 5.00		
1,3,5-Trimethylbenzene		U 5.67	U 5.33	U 5.00		
Vinyl Chloride		U 2.27	U 2.13	U 2.00		
o-Xylene		U 5.67	U 5.33	U 5.00		
m,p-Xylenes		U 11.3	U 10.7	U 10.0		

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Managing Director, Texas



Flagging Criteria

- X** In our quality control review of the data a QC deficiency was observed and flagged as noted. MS/MSD recoveries were found to be outside of the laboratory control limits due to possible matrix /chemical interference, or a concentration of target analyte high enough to effect the recovery of the spike concentration. This condition could also effect the relative percent difference in the MS/MSD.
 - B** A target analyte or common laboratory contaminant was identified in the method blank. Its presence indicates possible field or laboratory contamination.
 - D** The sample(s) were diluted due to targets detected over the highest point of the calibration curve, or due to matrix interference. Dilution factors are included in the final results. The result is from a diluted sample.
 - E** The data exceeds the upper calibration limit; therefore, the concentration is reported as estimated.
 - F** RPD exceeded lab control limits.
 - J** The target analyte was positively identified below the MQL(PQL) and above the SQL(MDL).
 - U** Analyte was not detected.
 - L** The LCS data for this analytical batch was reported below the laboratory control limits for this analyte. The department supervisor and QA Director reviewed data. The samples were either reanalyzed or flagged as estimated concentrations.
 - H** The LCS data for this analytical batch was reported above the laboratory control limits. Supporting QC Data were reviewed by the Department Supervisor and QA Director. Data were determined to be valid for reporting.
 - K** Sample analyzed outside of recommended hold time.
- * Outside XENCO'S scope of NELAC Accreditation

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5757 NW 158th St, Miami Lakes, FL 33014
6017 Financial Dr., Norcross, GA 30071

Phone	Fax
(281) 589-0692	(281) 589-0695
(214) 902 0300	(214) 351-9139
(210) 509-3334	(210) 509-3335
(813) 620-2000	(813) 620-2033
(305) 823-8500	(305) 823-8555
(770) 449-8800	(770) 449-5477

LAB (LC ON)

11381 Meadowglen Ln, Ste L, Houston, TX
PH: 281.589.0892 FAX: 281.589.0895

- ☒ XENCO ()
☐ CALSCIENCE ()
☐ TEST AMERICA ()
☐ SPL ()
☐ OTHER ()



Shell Oil Products Chain Of Custody Record

Please Check Appropriate Box:

- ☒ ENV. SERVICES ☐ MOTIVA RETAIL ☐ SHELL RETAIL
☐ MOTIVA SD&CM ☐ CONSULTANT ☐ LUBES
☐ SHELL PIPELINE ☐ OTHER

Print Bill To Contact Name:

KEVIN DYER

INCIDENT # (ENV SERVICES)

9 7 2 1 6 6 4 0

☐ CHECK IF NO INCIDENT # APPLIES

DATE: 5/21/08

PO #

SAP #

PAGE: 1 of 1

CONSULTANT COMPANY:

URS CORPORATION

URS CORPORATION - FIELD OFFICE

ADDRESS:

1001 HIGHLANDS PLAZA DRIVE WEST - SUITE 300

170 E. RAND AVENUE

CITY:

ST. LOUIS, MISSOURI 63110

HARTFORD, ILLINOIS 62048

TELEPHONE:

OFF: 314-743-4166

FAX:

OFF: 314-743-4166

CELL: 314-452-8929

CELL: 314-452-8929

E-MAIL:

wendy.pennington@urscorp.com

SOPUS SITE ADDRESS (Street, City and State):

900 S. CENTRAL AVENUE, ROXANA, ILLINOIS 62084

CONSULTANT PROJECT CONTACT (Report to):

WENDY PENNINGTON

CONSULTANT PROJECT NAME / NO.:

Route 111 & Rand Ave Vicinity / 21561979

SAMPLER NAME(S) (Print):

LAB USE ONLY

304421-44

TURNAROUND TIME (CALENDAR DAYS):

- ☒ STANDARD (10 DAY) ☐ 5 DAYS ☐ 3 DAYS ☐ 2 DAYS ☐ 24 HOURS ☐ RESULTS NEEDED ON WEEKEND

DELIVERABLES: ☐ LEVEL 1 ☒ LEVEL 2 ☐ LEVEL 3 ☒ LEVEL 4 ☐ OTHER (SPECIFY)

TEMPERATURE ON RECEIPT C* Cooler #1 2-0°C Cooler #2 Cooler #3

SPECIAL INSTRUCTIONS OR NOTES:

☒ SHELL CONTRACT RATE APPLIES

REQUESTED ANALYSIS

LAB USE ONLY	Field Sample Identification	SAMPLING		MATRIX	PRESERVATIVE					NO. OF CONT.	VOC 8260	PID (ppm)	Container PID Readings or Laboratory Notes
		DATE	TIME		HCL	HNO3	H2SO4	NONE	OTHER				
	B-3-33	5/21/08	1100	SOIL WATER				1	3	4	X		
	B-5-27	5/21/08	1400	SOIL WATER				1	3	4	X		
	TB052108			WATER	1					1	X		
				WATER									
				WATER									
				WATER									
				WATER									
				WATER									
				WATER									
				WATER									
				WATER									

Relinquished by: (Signature)

Received by: (Signature)

Date:

Time:

Relinquished by: (Signature)

Received by: (Signature)

Date:

Time:

Relinquished by: (Signature)

Received by: (Signature)

Date:

Time:



Prelogin/Nonconformance Report- Sample Log-In

Client: URS
Date/ Time: 5/22/8
Lab ID #: 304421-H
Initials: [Signature]

Sample Receipt Checklist

#1	Temperature of container/ cooler?	<u>Yes</u>	No	N/A	<u>P.O.C</u>
#2	Shipping container in good condition?	<u>Yes</u>	No	None	
#3	Samples received on ice?	<u>Yes</u>	No	N/A	<u>Blue/Water</u>
#4	Custody Seals intact on shipping container/ cooler?	<u>Yes</u>	No	N/A	
#5	Custody Seals intact on sample bottles/ container?	<u>Yes</u>	No	<u>N/A</u>	
#6	Chain of Custody present?	<u>Yes</u>	No		
#7	Sample instructions complete of Chain of Custody?	<u>Yes</u>	No		
#8	Any missing/extra samples?	<u>Yes</u>	<u>No</u>		
#9	Chain of Custody signed when relinquished/ received?	<u>Yes</u>	No		
#10	Chain of Custody agrees with sample label(s)?	<u>Yes</u>	No		
	Container label(s) legible and intact?	<u>Yes</u>	No		
#12	Sample matrix/ properties agree with Chain of Custody?	<u>Yes</u>	No		
#13	Samples in proper container/ bottle?	<u>Yes</u>	No		
#14	Samples properly preserved?	<u>Yes</u>	No	N/A	
#15	Sample container intact?	<u>Yes</u>	No		
#16	Sufficient sample amount for indicated test(s)?	<u>Yes</u>	No		
#17	All samples received within sufficient hold time?	<u>Yes</u>	No		
#18	Subcontract of sample(s)?	<u>Yes</u>	No	N/A	
#19	VOC samples have zero headspace?	<u>Yes</u>	No	N/A	

Nonconformance Documentation

Contact: _____ Contacted by: _____ Date/ Time: _____

Regarding: _____

Corrective Action Taken:

Check all that Apply: ☐ Client understands and would like to proceed with analysis
☐ Cooling process had begun shortly after sampling event

Rand Avenue Data Review

Laboratory SDG: 304536

Reviewer: Tony Sedlacek

Date Reviewed: 7/22/2008

Guidance: National Functional Guidelines for Organic Data Review 1999.

Applicable Work Plan: Route 111/Rand Avenue Vicinity Investigation Work Plan.

Sample Identification #	Sample Identification #
B-4-35	GP-12(II)-17
GP-12(II)-17-DUP	TB052208

1.0 Data Package Completeness

Were all items delivered as specified in the QAPP and COC?

Yes

2.0 Laboratory Case Narrative \ Cooler Receipt Form

Were problems noted in the laboratory case narrative or cooler receipt form?

No, although not indicated in the laboratory case narrative, VOCs were detected in the trip blank and method blank. The LCS recovery for methylene chloride was outside evaluation criteria. Samples were evaluated and qualified using professional judgment. These issues are addressed further in the appropriate sections below.

The cooler receipt form did not indicate any problems.

3.0 Holding Times

Were samples extracted/analyzed within QAPP limits?

Yes

Field ID	Parameter	Analyte	Qualification
N/A			

4.0 Blank Contamination

Were any analytes detected in the Method Blanks, Field Blanks or Trip Blanks?

Yes

Blank ID	Parameter	Analyte	Concentration	Units
509775-1-BLK	VOCs	Methylene chloride	30.4	µg/L
509839-1-BLK	VOCs	Acetone	21.4	µg/L
509839-1-BLK	VOCs	Bromomethane	1.09	µg/L
509839-1-BLK	VOCs	1,3-Dichlorobenzene	1.13	µg/L
509839-1-BLK	VOCs	1,4-Dichlorobenzene	1.12	µg/L
509839-1-BLK	VOCs	Methylene chloride	8.59	µg/L
509898-1-BLK	VOCs	Methylene chloride	21.6	µg/L
TB052208	VOCs	Methylene chloride	2.36	µg/L

Qualifications due to blank contamination are included in the table below. Analytical data that were reported nondetect or at concentrations greater than five times (5X) the associated blank concentration (10X for common laboratory contaminants) did not require qualification.

Field ID	Parameter	Analyte	New RL	Qualification
B-4-35	VOCs	Methylene chloride	-	U
GP-12(II)-17	VOCs	Methylene chloride	-	U
GP-12(II)-17-DUP	VOCs	Methylene chloride	-	U

5.0 Laboratory Control Sample

Were LCS recoveries within evaluation criteria?

No

LCS ID	Parameter	Analyte	LCS/LCSD Recovery	RPD	LCS/LCSD/RPD Criteria
509839-1-BKS	VOCs	Methylene chloride	160	N/A	75-125

Analytical data that required qualification based on LCS data are included in the table below. Analytical data which were reported as nondetect and associated with LCS recoveries above evaluation criteria, indicating a possible high bias, did not require qualification.

Field ID	Parameter	Analyte	Qualification
N/A			

6.0 Surrogate Recoveries

Were surrogate recoveries within evaluation criteria?

Yes

Field ID	Parameter	Surrogate	Recovery	Criteria
N/A				

Analytical data that required qualification based on surrogate data are included in the table below. Analytical data which were reported as nondetect and associated with surrogate recoveries above evaluation criteria, indicating a possible high bias, did not require qualification.

Field ID	Parameter	Analyte	Qualification
N/A			

7.0 Matrix Spike and Matrix Spike Duplicate Recoveries

Were MS/MSD samples reported as part of this SDG?

No

Were MS/MSD recoveries within evaluation criteria?

N/A

MS/MSD ID	Parameter	Analyte	MS/MSD Recovery	RPD	MS/MSD/RPD Criteria
N/A					

Analytical data that required qualification based on MS/MSD data are included in the table below.

Field ID	Parameter	Analyte	Qualification
N/A			

8.0 Laboratory Duplicate Results

Were laboratory duplicate samples collected as part of this SDG?

No

Were laboratory duplicate sample RPDs within criteria?

N/A

Field ID	Parameter	Analyte	RPD	Criteria
N/A				

Data qualified due to outlying laboratory duplicate recoveries are identified below:

Field ID	Parameter	Analyte	Qualification
N/A			

9.0 Field Duplicate Results

Were field duplicate samples collected as part of this SDG?

Yes

Field ID	Field Duplicate ID
GP-12(II)-17	GP-12(II)-17-DUP

Were field duplicates within evaluation criteria?

Yes

Field ID	Field Duplicate ID	Parameter	Analyte	RPD	Qualification
N/A					

10.0 Sample Dilutions

For samples that were diluted and nondetect, were undiluted results also reported?

Samples did not require a dilution.

The following table identifies the analyses which were reported as nondetect, diluted, and an undiluted run *was not* reported:

Field ID	Parameter	Dilution Factor
N/A		

11.0 Additional Qualifications

Were additional qualifications applied?

Yes

Professional judgment was used to qualify the common laboratory contaminant acetone reported at concentrations less than two times (2X) the RL.

Field ID	Analyte	New RL	Qualification	Comments
GP-12(II)-17-DUP	Acetone	-	U	Professional Judgment

Analytical Report 304536

for

URS Corporation-St. Louis

Project Manager: Wendy Pennington

900 S. Central Avenue

Route 111 & Rand Ave Vicinity / 21561979

04-JUN-08



E84880

4143 Greenbriar Dr., Stafford, TX 77477 Ph:(281) 240-4200 Fax:(281) 240-4280

Texas certification numbers:
Houston, TX T104704215

Florida certification numbers:
Houston, TX E871002 - Miami, FL E86678 - Tampa, FL E86675
Norcross(Atlanta), GA E87429

South Carolina certification numbers:
Norcross(Atlanta), GA 98015

North Carolina certification numbers:
Norcross(Atlanta), GA 483

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Midland - Corpus Christi - Atlanta



04-JUN-08

Project Manager: **Wendy Pennington**
URS Corporation-St. Louis
1001 Highlands Plaza Drive West, Suite 300
St. Louis, MO 63110

Reference: XENCO Report No: **304536**
900 S. Central Avenue
Project Address: Roxana, Illinois 62084

Wendy Pennington:

We are reporting to you the results of the analyses performed on the samples received under the project name referenced above and identified with the XENCO Report Number 304536. All results being reported under this Report Number apply to the samples analyzed and properly identified with a Laboratory ID number. Subcontracted analyses are identified in this report with either the NELAC certification number of the subcontract lab in the analyst ID field, or the complete subcontracted report attached to this report.

Unless otherwise noted in a Case Narrative, all data reported in this Analytical Report are in compliance with NELAC standards. Estimation of data uncertainty for this report is found in the quality control section of this report unless otherwise noted. Should insufficient sample be provided to the laboratory to meet the method and NELAC Matrix Duplicate and Matrix Spike requirements, then the data will be analyzed, evaluated and reported using all other available quality control measures.

The validity and integrity of this report will remain intact as long as it is accompanied by this letter and reproduced in full, unless written approval is granted by XENCO Laboratories. This report will be filed for at least 5 years in our archives after which time it will be destroyed without further notice, unless otherwise arranged with you. The samples received, and described as recorded in Report No. 304536 will be filed for 60 days, and after that time they will be properly disposed without further notice, unless otherwise arranged with you. We reserve the right to return to you any unused samples, extracts or solutions related to them if we consider so necessary (e.g., samples identified as hazardous waste, sample sizes exceeding analytical standard practices, controlled substances under regulated protocols, etc).

We thank you for selecting XENCO Laboratories to serve your analytical needs. If you have any questions concerning this report, please feel free to contact us at any time.

Respectfully,

Carlos Castro

Managing Director, Texas

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Certificate of Analysis Summary 304536

URS Corporation-St. Louis, St. Louis, MO



Project Name: 900 S. Central Avenue

Project Id: Route 111 & Rand Ave Vicinity / 2156197

Date Received in Lab: May-23-08 09:30 am

Contact: Wendy Pennington

Report Date: 04-JUN-08

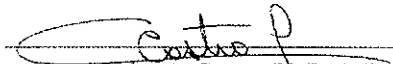
Project Location: Roxana, Illinois 62084

Project Manager: Debbie Simmons

<i>Analysis Requested</i>	<i>Lab Id:</i>	304536-001	304536-002	304536-003	304536-004
	<i>Field Id:</i>	B-4-35	GP-12(II)-17	GP-12(II)-17-Dup	TB052208
	<i>Depth:</i>				
	<i>Matrix:</i>	SOIL	SOIL	SOIL	WATER
	<i>Sampled:</i>	May-22-08 09:35	May-22-08 14:25	May-22-08 14:25	May-22-08 00:00
Percent Moisture	<i>Extracted:</i>				
	<i>Analyzed:</i>	May-29-08 13:04	May-29-08 13:05	May-29-08 13:06	
	<i>Units/RL:</i>	% RL	% RL	% RL	
Percent Moisture		7.27 1.00	1.85 1.00	3.52 1.00	

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Managing Director, Texas



Certificate of Analysis Summary 304536

URS Corporation-St. Louis, St. Louis, MO



Project Name: 900 S. Central Avenue

Project Id: Route 111 & Rand Ave Vicinity / 2156197

Date Received in Lab: May-23-08 09:30 am

Contact: Wendy Pennington

Report Date: 04-JUN-08

Project Location: Roxana, Illinois 62084

Project Manager: Debbie Simmons

Analysis Requested	Lab Id:	304536-001	304536-002	304536-003	304536-004
	Field Id:	B-4-35	GP-12(II)-17	GP-12(II)-17-Dup	TB052208
	Depth:				
	Matrix:	SOIL	SOIL	SOIL	WATER
	Sampled:	May-22-08 09:35	May-22-08 14:25	May-22-08 14:25	May-22-08 00:00
VOAs by SW-846 8260B	Extracted:	May-28-08 16:12	May-28-08 16:16	May-30-08 14:00	May-29-08 14:24
	Analyzed:	May-28-08 19:51	May-28-08 20:34	May-30-08 15:16	May-29-08 16:00
	Units/RL:	ug/kg RL	ug/kg RL	ug/kg RL	ug/L RL
Acetone		U 118	U 110	U 110	U 100
Benzene		U 5.91	U 5.49	U 5.50	U 5.00
Bromobenzene		U 5.91	U 5.49	U 5.50	U 5.00
Bromochloromethane		U 5.91	U 5.49	U 5.50	U 5.00
Bromodichloromethane		U 5.91	U 5.49	U 5.50	U 5.00
Bromoform		U 5.91	U 5.49	U 5.50	U 5.00
Bromomethane		U 5.91	U 5.49	U 5.50	U 5.00
2-Butanone		U 59.1	U 54.9	U 55.0	U 50.0
MTBE		U 5.91	U 5.49	U 5.50	U 5.00
tert-Butylbenzene		U 5.91	U 5.49	U 5.50	U 5.00
Sec-Butylbenzene		U 5.91	U 5.49	U 5.50	U 5.00
n-Butylbenzene		U 5.91	U 5.49	U 5.50	U 5.00
Carbon Disulfide		U 59.1	U 54.9	U 55.0	U 50.0
Carbon Tetrachloride		U 5.91	U 5.49	U 5.50	U 5.00
Chlorobenzene		U 5.91	U 5.49	U 5.50	U 5.00
Chloroethane		U 11.8	U 11.0	U 11.0	U 10.0
Chloroform		U 5.91	U 5.49	U 5.50	U 5.00
Chloromethane		U 11.8	U 11.0	U 11.0	U 10.0
2-Chlorotoluene		U 5.91	U 5.49	U 5.50	U 5.00
4-Chlorotoluene		U 5.91	U 5.49	U 5.50	U 5.00
p-Cymene (p-Isopropyltoluene)		U 5.91	U 5.49	U 5.50	U 5.00
1,2-Dibromo-3-Chloropropane		U 5.91	U 5.49	U 5.50	U 5.00
Dibromochloromethane		U 5.91	U 5.49	U 5.50	U 5.00
1,2-Dibromoethane		U 5.91	U 5.49	U 5.50	U 5.00
Dibromomethane		U 5.91	U 5.49	U 5.50	U 5.00
1,2-Dichlorobenzene		U 5.91	U 5.49	U 5.50	U 5.00
1,3-Dichlorobenzene		U 5.91	U 5.49	U 5.50	U 5.00
1,4-Dichlorobenzene		U 5.91	U 5.49	U 5.50	U 5.00
Dichlorodifluoromethane		U 5.91	U 5.49	U 5.50	U 5.00
1,2-Dichloroethane		U 5.91	U 5.49	U 5.50	U 5.00
1,1-Dichloroethane		U 5.91	U 5.49	U 5.50	U 5.00
trans-1,2-dichloroethene		U 5.91	U 5.49	U 5.50	U 5.00
cis-1,2-Dichloroethene		U 5.91	U 5.49	U 5.50	U 5.00
1,1-Dichloroethene		U 5.91	U 5.49	U 5.50	U 5.00

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Carlos A. Castro, Ph.D., MBA
Managing Director, Texas



Certificate of Analysis Summary 304536

URS Corporation-St. Louis, St. Louis, MO



Project Name: 900 S. Central Avenue

Project Id: Route 111 & Rand Ave Vicinity / 2156197

Date Received in Lab: May-23-08 09:30 am

Contact: Wendy Pennington

Report Date: 04-JUN-08

Project Location: Roxana, Illinois 62084

Project Manager: Debbie Simmons

Analysis Requested	Lab Id:	304536-001	304536-002	304536-003	304536-004
	Field Id:	B-4-35	GP-12(II)-17	GP-12(II)-17-Dup	TB052208
	Depth:				
	Matrix:	SOIL	SOIL	SOIL	WATER
	Sampled:	May-22-08 09:35	May-22-08 14:25	May-22-08 14:25	May-22-08 00:00
VOAs by SW-846 8260B	Extracted:	May-28-08 16:12	May-28-08 16:16	May-30-08 14:00	May-29-08 14:24
	Analyzed:	May-28-08 19:51	May-28-08 20:34	May-30-08 15:16	May-29-08 16:00
	Units/RL:	ug/kg RL	ug/kg RL	ug/kg RL	ug/L RL
2,2-Dichloropropane		U 5.91	U 5.49	U 5.50	U 5.00
1,3-Dichloropropane		U 5.91	U 5.49	U 5.50	U 5.00
1,2-Dichloropropane		U 5.91	U 5.49	U 5.50	U 5.00
trans-1,3-dichloropropene		U 5.91	U 5.49	U 5.50	U 5.00
1,1-Dichloropropene		U 5.91	U 5.49	U 5.50	U 5.00
cis-1,3-Dichloropropene		U 5.91	U 5.49	U 5.50	U 5.00
Ethylbenzene		U 5.91	1.32 J 5.49	U 5.50	U 5.00
Hexachlorobutadiene		U 5.91	U 5.49	U 5.50	U 5.00
2-Hexanone		U 59.1	U 54.9	U 55.0	U 50.0
Naphthalene		U 11.8	U 11.0	U 11.0	U 10.0
isopropylbenzene		U 5.91	U 5.49	U 5.50	U 5.00
Methylene Chloride		U 23.6	U 22.0	U 22.0	2.36 JB 5.00
4-Methyl-2-Pentanone		U 59.1	U 54.9	U 55.0	U 50.0
-Propylbenzene		U 5.91	U 5.49	U 5.50	U 5.00
Styrene		U 5.91	U 5.49	U 5.50	U 5.00
1,1,1,2-Tetrachloroethane		U 5.91	U 5.49	U 5.50	U 5.00
1,1,2,2-Tetrachloroethane		U 5.91	U 5.49	U 5.50	U 5.00
Tetrachloroethylene		U 5.91	U 5.49	U 5.50	U 5.00
Toluene		1.76 J 5.91	2.06 J 5.49	1.16 J 5.50	U 5.00
1,2,4-Trichlorobenzene		U 5.91	U 5.49	U 5.50	U 5.00
1,2,3-Trichlorobenzene		U 5.91	U 5.49	U 5.50	U 5.00
1,1,2-Trichloroethane		U 5.91	U 5.49	U 5.50	U 5.00
1,1,1-Trichloroethane		U 5.91	U 5.49	U 5.50	U 5.00
Trichloroethene		U 5.91	U 5.49	U 5.50	U 5.00
Trichlorofluoromethane		U 5.91	U 5.49	U 5.50	U 5.00
1,2,3-Trichloropropane		U 5.91	U 5.49	U 5.50	U 5.00
1,2,4-Trimethylbenzene		U 5.91	U 5.49	U 5.50	U 5.00
1,3,5-Trimethylbenzene		U 5.91	U 5.49	U 5.50	U 5.00
Vinyl Chloride		U 2.36	U 2.20	U 2.20	U 2.00
o-Xylene		U 5.91	U 5.49	U 5.50	U 5.00
m,p-Xylenes		U 11.8	U 11.0	U 11.0	U 10.0

This analytical report, and the entire data package it represents, has been made for your exclusive and confidential use. The interpretations and results expressed throughout this analytical report represent the best judgment of XENCO Laboratories. XENCO Laboratories assumes no responsibility and makes no warranty to the end use of the data hereby presented. Our liability is limited to the amount invoiced for this work order unless otherwise agreed to in writing.

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Carlos A. Castro, Ph.D., MBA
Managing Director, Texas



Flagging Criteria

- X** In our quality control review of the data a QC deficiency was observed and flagged as noted. MS/MSD recoveries were found to be outside of the laboratory control limits due to possible matrix /chemical interference, or a concentration of target analyte high enough to effect the recovery of the spike concentration. This condition could also effect the relative percent difference in the MS/MSD.
 - B** A target analyte or common laboratory contaminant was identified in the method blank. Its presence indicates possible field or laboratory contamination.
 - D** The sample(s) were diluted due to targets detected over the highest point of the calibration curve, or due to matrix interference. Dilution factors are included in the final results. The result is from a diluted sample.
 - E** The data exceeds the upper calibration limit; therefore, the concentration is reported as estimated.
 - F** RPD exceeded lab control limits.
 - J** The target analyte was positively identified below the MQL(PQL) and above the SQL(MDL).
 - U** Analyte was not detected.
 - L** The LCS data for this analytical batch was reported below the laboratory control limits for this analyte. The department supervisor and QA Director reviewed data. The samples were either reanalyzed or flagged as estimated concentrations.
 - H** The LCS data for this analytical batch was reported above the laboratory control limits. Supporting QC Data were reviewed by the Department Supervisor and QA Director. Data were determined to be valid for reporting.
 - K** Sample analyzed outside of recommended hold time.
- * Outside XENCO'S scope of NELAC Accreditation

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(210) 509-3334	(210) 509-3335
(813) 620-2000	(813) 620-2033
(305) 823-8500	(305) 823-8555
(770) 449-8800	(770) 449-5477

Shell Oil Products Chain Of Custody Record



LAB (L ION)
11381 Meadowglen Ln, Ste L, Houston, TX
PH: 281-589-0697 FAX: 281-589-0695

☒ XENCO
☐ CALSCIENCE
☐ TEST AMERICA
☐ SPL
☐ OTHER

Please Check Appropriate Box:

<input checked="" type="checkbox"/> ENV. SERVICES	<input type="checkbox"/> MOTIVA RETAIL	<input type="checkbox"/> SHELL RETAIL
<input type="checkbox"/> MOTIVA SDS/CM	<input type="checkbox"/> CONSULTANT	<input type="checkbox"/> LUBES
<input type="checkbox"/> SHELL PIPELINE	<input type="checkbox"/> OTHER	

Print Bill To Contact Name: KEVIN DYER

INCIDENT # (ENV SERVICES): 9 7 2 1 6 6 4 0

PO #

SAP #

3 4 0 0 6 1

CHECK IF NO INCIDENT # APPLIES

DATE: 05/22/08

PAGE: 1 of 1

CONSULTANT COMPANY: URS CORPORATION

ADDRESS: 1001 HIGHLANDS PLAZA DRIVE WEST - SUITE 300

CITY: ST. LOUIS, MISSOURI 63110

TELEPHONE: OFF: 314-743-4166 CELL: 314-452-8929

FAX: OFF: 314-743-4166 CELL: 314-452-8929

E-MAIL: wendy_pennington@urscorp.com

URS CORPORATION - FIELD OFFICE

170 E. RAND AVENUE

HARTFORD, ILLINOIS 62048

SOPUS SITE ADDRESS (Street, City and State): 900 S. CENTRAL AVENUE; ROXANA, ILLINOIS 62084

CONSULTANT PROJECT CONTACT (Report to): WENDY PENNINGTON

CONSULTANT PROJECT NAME / NO.: Route 111 & Rand Ave Vicinity / 21561979

SAMPLER NAME(S) (PID#):

LAB USE ONLY: 304536 H

TURNAROUND TIME (CALENDAR DAYS):

☒ STANDARD (10 DAY) ☐ 5 DAYS ☐ 3 DAYS ☐ 2 DAYS ☐ 24 HOURS

DELIVERABLES: ☐ LEVEL 1 ☒ LEVEL 2 ☐ LEVEL 3 ☒ LEVEL 4 ☐ OTHER (SPECIFY)

TEMPERATURE ON RECEIPT C: Cooler #1 2-05 Cooler #2 Cooler #3

SPECIAL INSTRUCTIONS OR NOTES:

☒ SHELL CONTRACT RATE APPLIES

REQUESTED ANALYSIS

LAB USE ONLY	Field Sample Identification	SAMPLING		MATRIX	PRESERVATIVE						NO. OF CONT.	VOC 8260B	PID (ppm)	Container PID Readings or Laboratory Notes
		DATE	TIME		HCL	HN03	H2SO4	NONE	OTHER					
	B-4-35	05/22/08	0955	Soil WATER				1	3	4	X			
	GP-12(II)-17	05/22/08	1425	Soil WATER				1	3	4	X			
	GP-12(II)-17-Dup	05/22/08	1425	Soil WATER				1	3	4	X			
	AB 052208			WATER	1						1	X		
				WATER										
				WATER										
				WATER										
				WATER										
				WATER										
				WATER										
				WATER										

Relinquished by: (Signature)	Received by: (Signature)	Date:	Time:
	FED EX	05/22/08	1800
Relinquished by: (Signature)	Received by: (Signature)	Date:	Time:
FED EX		5/23/08	0930



Prelogin/Nonconformance Report- Sample Log-In

Client: URS
Date/ Time: 5/23/8
Lab ID #: 304536-17
Initials: A

Sample Receipt Checklist

#1 Temperature of container/ cooler?	<u>Yes</u>	No	N/A	<u>20°C</u>
#2 Shipping container in good condition?	<u>Yes</u>	No	None	
#3 Samples received on ice?	<u>Yes</u>	No	N/A	<u>Blue/Water</u>
#4 Custody Seals intact on shipping container/ cooler?	<u>Yes</u>	No	N/A	
#5 Custody Seals intact on sample bottles/ container?	<u>Yes</u>	No	<u>N/A</u>	
#6 Chain of Custody present?	<u>Yes</u>	No		
#7 Sample instructions complete of Chain of Custody?	<u>Yes</u>	No		
#8 Any missing/extra samples?	<u>Yes</u>	<u>No</u>		
#9 Chain of Custody signed when relinquished/ received?	<u>Yes</u>	No		
#10 Chain of Custody agrees with sample label(s)?	<u>Yes</u>	No		
#11 Container label(s) legible and intact?	<u>Yes</u>	No		
Sample matrix/ properties agree with Chain of Custody?	<u>Yes</u>	No		
#13 Samples in proper container/ bottle?	<u>Yes</u>	No		
#14 Samples properly preserved?	<u>Yes</u>	No	N/A	
#15 Sample container intact?	<u>Yes</u>	No		
#16 Sufficient sample amount for indicated test(s)?	<u>Yes</u>	No		
#17 All samples received within sufficient hold time?	<u>Yes</u>	No		
#18 Subcontract of sample(s)?	<u>Yes</u>	No	N/A	
#19 VOC samples have zero headspace?	<u>Yes</u>	No	N/A	

Nonconformance Documentation

Contact: _____ Contacted by: _____ Date/ Time: _____

Regarding: _____

Corrective Action Taken:

Check all that Apply: ☐ Client understands and would like to proceed with analysis
☐ Cooling process had begun shortly after sampling event

Rand Avenue Data Review

Laboratory SDG: 0806072A

Reviewer: Tony Sedlacek

Date Reviewed: 7/22/2008

Guidance: National Functional Guidelines for Organic Data Review 1999.

Applicable Work Plan: Route 111/Rand Avenue Vicinity Investigation Work Plan.

Sample Identification #	Sample Identification #
GP-12-A-060308	GP-12-B-060308
GP-12-C-060308	GP-12-D-060308
GP-11-A-060308	GP-11-B-060308
GP-11-B-060308-DUP	GP-11-C-060308
GP-11-D-060308	

1.0 Data Package Completeness

Were all items delivered as specified in the QAPP and COC?

Yes

2.0 Laboratory Case Narrative \ Cooler Receipt Form

Were problems noted in the laboratory case narrative or cooler receipt form?

No, although not indicated in the laboratory case narrative, ethanol and 2-propanol results in several samples exceeded the calibration range of the instrument; therefore, professional judgment was used to qualify 2-propanol in these samples. Also, LCS recoveries were outside evaluation criteria. This issue is addressed further in the appropriate section below.

The cooler receipt form did not indicate any problems.

3.0 Holding Times

Were samples extracted/analyzed within QAPP limits?

Yes

Field ID	Parameter	Analyte	Qualification
N/A			

4.0 Blank Contamination

Were any analytes detected in the Method Blanks, Field Blanks or Trip Blanks?

No

Blank ID	Parameter	Analyte	Concentration	Units
N/A				

Qualifications due to blank contamination are included in the table below.

Field ID	Parameter	Analyte	New RL	Qualification
N/A				

5.0 Laboratory Control Sample

Were LCS recoveries within evaluation criteria?

No

LCS ID	Parameter	Analyte	LCS Recovery	RPD	LCS Criteria
0806072A-12A	TO-15	Chloromethane	134	N/A	70-130
0806072A-12A	TO-15	Hexachlorobutadiene	68	N/A	70-130

Analytical data that required qualification based on LCS data are included in the table below. Analytical data which were reported as nondetect and associated with LCS recoveries above evaluation criteria, indicating a possible high bias, did not require qualification.

Field ID	Parameter	Analyte	Qualification
GP-12-A-060308	TO-15	Hexachlorobutadiene	UJ
GP-12-B-060308	TO-15	Hexachlorobutadiene	UJ
GP-12-C-060308	TO-15	Hexachlorobutadiene	UJ
GP-12-D-060308	TO-15	Hexachlorobutadiene	UJ
GP-11-A-060308	TO-15	Hexachlorobutadiene	UJ
GP-11-B-060308	TO-15	Hexachlorobutadiene	UJ
GP-11-B-060308-DUP	TO-15	Hexachlorobutadiene	UJ
GP-11-C-060308	TO-15	Hexachlorobutadiene	UJ
GP-11-D-060308	TO-15	Hexachlorobutadiene	UJ

6.0 Surrogate Recoveries

Were surrogate recoveries within evaluation criteria?

Yes

Field ID	Parameter	Surrogate	Recovery	Criteria
N/A				

Analytical data that required qualification based on surrogate data are included in the table below.

Field ID	Parameter	Analyte	Qualification
N/A			

7.0 Matrix Spike and Matrix Spike Duplicate Recoveries

Were MS/MSD samples reported as part of this SDG?

MS/MSD samples are not applicable for air samples.

Were MS/MSD recoveries within evaluation criteria?

N/A

MS/MSD ID	Parameter	Analyte	MS/MSD Recovery	RPD	MS/MSD/RPD Criteria
N/A					

Analytical data that required qualification based on MS/MSD data are included in the table below.

Field ID	Parameter	Analyte	Qualification
N/A			

8.0 Laboratory Duplicate Results

Were laboratory duplicate samples collected as part of this SDG?

Yes, sample GP-11-B-060308-DUP was duplicated by the laboratory and analyzed for TO-15.

Were laboratory duplicate sample RPDs within criteria?

Yes

Field ID	Parameter	Analyte	RPD	Criteria
N/A				

Data qualified due to outlying laboratory duplicate recoveries are identified below:

Field ID	Parameter	Analyte	Qualification
N/A			

9.0 Field Duplicate Results

Were field duplicate samples collected as part of this SDG?

Yes

Field ID	Field Duplicate ID
GP-11-B-060308	GP-11-B-060308-DUP

Were field duplicates within evaluation criteria?

Yes

Field ID	Field Duplicate ID	Parameter	Analyte	RPD	Qualification
N/A					

10.0 Sample Dilutions

For samples that were diluted and nondetect, were undiluted results also reported?

Yes

The following table identifies the analyses which were reported as nondetect, diluted, and an undiluted run *was not* reported:

Field ID	Parameter	Dilution Factor
N/A		

11.0 Additional Qualifications

Were additional qualifications applied?

Yes

Professional judgment was used to qualify ethanol and 2-propanol in several samples listed in the table below. Ethanol and 2-Propanol exceeded the calibration range of the instrument in these samples. The ethanol and 2-propanol results will be reported as > 200 in both samples.

Field ID	Analyte	Qualification	Comments
GP-11-A-060308	Ethanol	J	Professional Judgment
GP-11-A-060308	2-Propanol	J	Professional Judgment
GP-11-B-060308-DUP	2-Propanol	J	Professional Judgment
GP-11-C-060308	2-Propanol	J	Professional Judgment
GP-11-D-060308	2-Propanol	J	Professional Judgment



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This electronic report includes the following:

- Work order Summary;
- Laboratory Narrative;
- Results; and
- Chain of Custody (copy).

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Hours 8:00 A.M to 6:00 P.M. Pacific



AN ENVIRONMENTAL ANALYTICAL LABORATORY

WORK ORDER #: 0806072A

Work Order Summary

CLIENT: Mr. Mike Miller
URS Corporation
1001 Highlands Plaza Dr. West
Suite 300
St. Louis, MO 63110

BILL TO: Accounts Payable OSP 2660 A
Equiva Services/Shell Oil Products
P.O. Box 4912
Houston, TX 77210-4720

PHONE: 314-566-3073

P.O. # 4700002383

FAX:

PROJECT # 21561979 Rte 111 & Rand Ave Vicinity

DATE RECEIVED: 06/04/2008

CONTACT: Brandon Dunmore

DATE COMPLETED: 06/17/2008

<u>FRACTION #</u>	<u>NAME</u>	<u>TEST</u>	<u>RECEIPT VAC./PRES.</u>	<u>FINAL PRESSURE</u>
01A	GP-12-A-060308	Modified TO-15	9.5 "Hg	15 psi
02A	GP-12-B-060308	Modified TO-15	8.0 "Hg	15 psi
03A	GP-12-C-060308	Modified TO-15	8.5 "Hg	15 psi
04A	GP-12-D-060308	Modified TO-15	7.5 "Hg	15 psi
05A	GP-11-A-060308	Modified TO-15	8.5 "Hg	15 psi
06A	GP-11-B-060308	Modified TO-15	10.0 "Hg	15 psi
07A	GP-11-B-060308-DUP	Modified TO-15	8.0 "Hg	15 psi
07AA	GP-11-B-060308-DUP Lab Duplicate	Modified TO-15	8.0 "Hg	15 psi
08A	GP-11-C-060308	Modified TO-15	8.5 "Hg	15 psi
09A	GP-11-D-060308	Modified TO-15	10.0 "Hg	15 psi
10A	Lab Blank	Modified TO-15	NA	NA
10B	Lab Blank	Modified TO-15	NA	NA
11A	CCV	Modified TO-15	NA	NA
11B	CCV	Modified TO-15	NA	NA
12A	LCS	Modified TO-15	NA	NA
12B	LCS	Modified TO-15	NA	NA

CERTIFIED BY:

Laboratory Director

DATE: 06/17/08

Certification 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: 07/01/07, Expiration date: 06/30/08

Air Toxics Ltd. certifies that the test results contained in this report meet all requirements of the NELAC standards

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LABORATORY NARRATIVE
Modified TO-15
URS Corporation
Workorder# 0806072A

Nine 1 Liter Summa Canister samples were received on June 04, 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.

<i>Requirement</i>	<i>TO-15</i>	<i>ATL Modifications</i>
Daily CCV	+/- 30% Difference	<= 30% Difference with two allowed out up to <=40%; flag and narrate outliers
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

All Quality Control Limit failures and affected sample results are noted by flags. Each flag is defined at the bottom of this Case Narrative and on each Sample Result Summary page. Target compound non-detects in the samples that are associated with high bias in QC analyses have not been flagged.

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 not 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

Client Sample ID: GP-12-A-060308

Lab ID#: 0806072A-01A

MODIFIED EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	7061515	Date of Collection:	6/3/08
Dil. Factor:	2.96	Date of Analysis:	6/15/08 07:46 PM

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (uG/m3)	Amount (uG/m3)
Freon 12	1.5	Not Detected	7.3	Not Detected
Freon 114	1.5	Not Detected	10	Not Detected
Chloromethane	5.9	Not Detected	12	Not Detected
Vinyl Chloride	1.5	Not Detected	3.8	Not Detected
1,3-Butadiene	1.5	Not Detected	3.3	Not Detected
Bromomethane	1.5	Not Detected	5.7	Not Detected
Chloroethane	1.5	Not Detected	3.9	Not Detected
Freon 11	1.5	Not Detected	8.3	Not Detected
Ethanol	5.9	37	11	70
Freon 113	1.5	Not Detected	11	Not Detected
1,1-Dichloroethene	1.5	Not Detected	5.9	Not Detected
Acetone	5.9	32	14	75
2-Propanol	5.9	10	14	26
Carbon Disulfide	1.5	Not Detected	4.6	Not Detected
3-Chloropropene	5.9	Not Detected	18	Not Detected
Methylene Chloride	1.5	Not Detected	5.1	Not Detected
Methyl tert-butyl ether	1.5	Not Detected	5.3	Not Detected
trans-1,2-Dichloroethene	1.5	Not Detected	5.9	Not Detected
Hexane	1.5	Not Detected	5.2	Not Detected
1,1-Dichloroethane	1.5	Not Detected	6.0	Not Detected
2-Butanone (Methyl Ethyl Ketone)	1.5	4.0	4.4	12
cis-1,2-Dichloroethene	1.5	1.5	5.9	6.0
Tetrahydrofuran	1.5	7.3	4.4	21
Chloroform	1.5	Not Detected	7.2	Not Detected
1,1,1-Trichloroethane	1.5	Not Detected	8.1	Not Detected
Cyclohexane	1.5	Not Detected	5.1	Not Detected
Carbon Tetrachloride	1.5	Not Detected	9.3	Not Detected
2,2,4-Trimethylpentane	1.5	Not Detected	6.9	Not Detected
Benzene	1.5	Not Detected	4.7	Not Detected
1,2-Dichloroethane	1.5	Not Detected	6.0	Not Detected
Heptane	1.5	Not Detected	6.1	Not Detected
Trichloroethene	1.5	16	8.0	84
1,2-Dichloropropane	1.5	Not Detected	6.8	Not Detected
1,4-Dioxane	5.9	Not Detected	21	Not Detected
Bromodichloromethane	1.5	Not Detected	9.9	Not Detected
cis-1,3-Dichloropropene	1.5	Not Detected	6.7	Not Detected
4-Methyl-2-pentanone	1.5	Not Detected	6.1	Not Detected
Toluene	1.5	2.5	5.6	9.4
trans-1,3-Dichloropropene	1.5	Not Detected	6.7	Not Detected



AN ENVIRONMENTAL ANALYTICAL LABORATORY

Client Sample ID: GP-12-A-060308

Lab ID#: 0806072A-01A

MODIFIED EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	7061515	Date of Collection:	6/3/08
Dil Factor:	2.96	Date of Analysis:	6/15/08 07:46 PM

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (uG/m3)	Amount (uG/m3)
1,1,2-Trichloroethane	1.5	Not Detected	8.1	Not Detected
Tetrachloroethene	1.5	Not Detected	10	Not Detected
2-Hexanone	5.9	Not Detected	24	Not Detected
Dibromochloromethane	1.5	Not Detected	13	Not Detected
1,2-Dibromoethane (EDB)	1.5	Not Detected	11	Not Detected
Chlorobenzene	1.5	Not Detected	6.8	Not Detected
Ethyl Benzene	1.5	Not Detected	6.4	Not Detected
m,p-Xylene	1.5	1.8	6.4	8.0
o-Xylene	1.5	Not Detected	6.4	Not Detected
Styrene	1.5	Not Detected	6.3	Not Detected
Bromoform	1.5	Not Detected	15	Not Detected
Cumene	1.5	Not Detected	7.3	Not Detected
1,1,2,2-Tetrachloroethane	1.5	Not Detected	10	Not Detected
Propylbenzene	1.5	Not Detected	7.3	Not Detected
4-Ethyltoluene	1.5	Not Detected	7.3	Not Detected
1,3,5-Trimethylbenzene	1.5	Not Detected	7.3	Not Detected
1,2,4-Trimethylbenzene	1.5	Not Detected	7.3	Not Detected
1,3-Dichlorobenzene	1.5	Not Detected	8.9	Not Detected
1,4-Dichlorobenzene	1.5	Not Detected	8.9	Not Detected
alpha-Chlorotoluene	1.5	Not Detected	7.7	Not Detected
1,2-Dichlorobenzene	1.5	Not Detected	8.9	Not Detected
1,2,4-Trichlorobenzene	5.9	Not Detected	44	Not Detected
Hexachlorobutadiene	5.9	Not Detected <i>UJ</i>	63	Not Detected U J

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

Container Type: 1 Liter Summa Canister

Surrogates	%Recovery	Method Limits
Toluene-d8	89	70-130
1,2-Dichloroethane-d4	116	70-130
4-Bromofluorobenzene	108	70-130



AN ENVIRONMENTAL ANALYTICAL LABORATORY

Client Sample ID: GP-12-B-060308

Lab ID#: 0806072A-02A

MODIFIED EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	7061516	Date of Collection:	6/3/08
Dil. Factor:	2.76	Date of Analysis:	6/15/08 08:25 PM

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (uG/m3)	Amount (uG/m3)
Freon 12	1.4	Not Detected	6.8	Not Detected
Freon 114	1.4	Not Detected	9.6	Not Detected
Chloromethane	5.5	Not Detected	11	Not Detected
Vinyl Chloride	1.4	Not Detected	3.5	Not Detected
1,3-Butadiene	1.4	Not Detected	3.0	Not Detected
Bromomethane	1.4	Not Detected	5.4	Not Detected
Chloroethane	1.4	Not Detected	3.6	Not Detected
Freon 11	1.4	Not Detected	7.8	Not Detected
Ethanol	5.5	57	10	110
Freon 113	1.4	Not Detected	10	Not Detected
1,1-Dichloroethene	1.4	Not Detected	5.5	Not Detected
Acetone	5.5	43	13	100
2-Propanol	5.5	14	14	34
Carbon Disulfide	1.4	Not Detected	4.3	Not Detected
3-Chloropropene	5.5	Not Detected	17	Not Detected
Methylene Chloride	1.4	Not Detected	4.8	Not Detected
Methyl tert-butyl ether	1.4	Not Detected	5.0	Not Detected
trans-1,2-Dichloroethene	1.4	Not Detected	5.5	Not Detected
Hexane	1.4	Not Detected	4.9	Not Detected
1,1-Dichloroethane	1.4	Not Detected	5.6	Not Detected
2-Butanone (Methyl Ethyl Ketone)	1.4	5.8	4.1	17
cis-1,2-Dichloroethene	1.4	Not Detected	5.5	Not Detected
Tetrahydrofuran	1.4	8.0	4.1	23
Chloroform	1.4	Not Detected	6.7	Not Detected
1,1,1-Trichloroethane	1.4	Not Detected	7.5	Not Detected
Cyclohexane	1.4	Not Detected	4.8	Not Detected
Carbon Tetrachloride	1.4	Not Detected	8.7	Not Detected
2,2,4-Trimethylpentane	1.4	Not Detected	6.4	Not Detected
Benzene	1.4	1.4	4.4	4.4
1,2-Dichloroethane	1.4	Not Detected	5.6	Not Detected
Heptane	1.4	Not Detected	5.6	Not Detected
Trichloroethene	1.4	Not Detected	7.4	Not Detected
1,2-Dichloropropane	1.4	Not Detected	6.4	Not Detected
1,4-Dioxane	5.5	Not Detected	20	Not Detected
Bromodichloromethane	1.4	Not Detected	9.2	Not Detected
cis-1,3-Dichloropropene	1.4	Not Detected	6.3	Not Detected
4-Methyl-2-pentanone	1.4	Not Detected	5.6	Not Detected
Toluene	1.4	2.7	5.2	10
trans-1,3-Dichloropropene	1.4	Not Detected	6.3	Not Detected



AN ENVIRONMENTAL ANALYTICAL LABORATORY

Client Sample ID: GP-12-B-060308

Lab ID#: 0806072A-02A

MODIFIED EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	7061516	Date of Collection:	6/3/08
Dil Factor:	1.276	Date of Analysis:	6/15/08 08:25 PM

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (uG/m3)	Amount (uG/m3)
1,1,2-Trichloroethane	1.4	Not Detected	7.5	Not Detected
Tetrachloroethene	1.4	Not Detected	9.4	Not Detected
2-Hexanone	5.5	Not Detected	23	Not Detected
Dibromochloromethane	1.4	Not Detected	12	Not Detected
1,2-Dibromoethane (EDB)	1.4	Not Detected	11	Not Detected
Chlorobenzene	1.4	Not Detected	6.4	Not Detected
Ethyl Benzene	1.4	Not Detected	6.0	Not Detected
m,p-Xylene	1.4	1.9	6.0	8.2
o-Xylene	1.4	Not Detected	6.0	Not Detected
Styrene	1.4	Not Detected	5.9	Not Detected
Bromoform	1.4	Not Detected	14	Not Detected
Cumene	1.4	Not Detected	6.8	Not Detected
1,1,2,2-Tetrachloroethane	1.4	Not Detected	9.5	Not Detected
Propylbenzene	1.4	Not Detected	6.8	Not Detected
4-Ethyltoluene	1.4	Not Detected	6.8	Not Detected
1,3,5-Trimethylbenzene	1.4	Not Detected	6.8	Not Detected
1,2,4-Trimethylbenzene	1.4	Not Detected	6.8	Not Detected
1,3-Dichlorobenzene	1.4	Not Detected	8.3	Not Detected
1,4-Dichlorobenzene	1.4	Not Detected	8.3	Not Detected
alpha-Chlorotoluene	1.4	Not Detected	7.1	Not Detected
1,2-Dichlorobenzene	1.4	Not Detected	8.3	Not Detected
1,2,4-Trichlorobenzene	5.5	Not Detected	41	Not Detected
Hexachlorobutadiene	5.5	Not Detected <i>UJ</i>	59	Not Detected <i>UJ</i>

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

Container Type: 1 Liter Summa Canister

Surrogates	%Recovery	Method Limits
Toluene-d8	88	70-130
1,2-Dichloroethane-d4	115	70-130
4-Bromofluorobenzene	100	70-130



AN ENVIRONMENTAL ANALYTICAL LABORATORY

Client Sample ID: GP-12-C-060308

Lab ID#: 0806072A-03A

MODIFIED EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	7061517	Date of Collection:	6/3/08
Dil. Factor:	2.82	Date of Analysis:	6/15/08 09:11 PM

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (uG/m3)	Amount (uG/m3)
Freon 12	1.4	Not Detected	7.0	Not Detected
Freon 114	1.4	Not Detected	9.8	Not Detected
Chloromethane	5.6	Not Detected - "uJ"	12	Not Detected
Vinyl Chloride	1.4	Not Detected	3.6	Not Detected
1,3-Butadiene	1.4	Not Detected	3.1	Not Detected
Bromomethane	1.4	Not Detected	5.5	Not Detected
Chloroethane	1.4	Not Detected	3.7	Not Detected
Freon 11	1.4	Not Detected	7.9	Not Detected
Ethanol	5.6	54	11	100
Freon 113	1.4	Not Detected	11	Not Detected
1,1-Dichloroethene	1.4	Not Detected	5.6	Not Detected
Acetone	5.6	40	13	94
2-Propanol	5.6	12	14	31
Carbon Disulfide	1.4	Not Detected	4.4	Not Detected
3-Chloropropene	5.6	Not Detected	18	Not Detected
Methylene Chloride	1.4	Not Detected	4.9	Not Detected
Methyl tert-butyl ether	1.4	Not Detected	5.1	Not Detected
trans-1,2-Dichloroethene	1.4	Not Detected	5.6	Not Detected
Hexane	1.4	2.1	5.0	7.5
1,1-Dichloroethane	1.4	Not Detected	5.7	Not Detected
2-Butanone (Methyl Ethyl Ketone)	1.4	4.5	4.2	13
cis-1,2-Dichloroethene	1.4	Not Detected	5.6	Not Detected
Tetrahydrofuran	1.4	7.8	4.2	23
Chloroform	1.4	Not Detected	6.9	Not Detected
1,1,1-Trichloroethane	1.4	Not Detected	7.7	Not Detected
Cyclohexane	1.4	Not Detected	4.8	Not Detected
Carbon Tetrachloride	1.4	Not Detected	8.9	Not Detected
2,2,4-Trimethylpentane	1.4	Not Detected	6.6	Not Detected
Benzene	1.4	Not Detected	4.5	Not Detected
1,2-Dichloroethane	1.4	Not Detected	5.7	Not Detected
Heptane	1.4	1.7	5.8	7.1
Trichloroethene	1.4	2.1	7.6	11
1,2-Dichloropropane	1.4	Not Detected	6.5	Not Detected
1,4-Dioxane	5.6	Not Detected	20	Not Detected
Bromodichloromethane	1.4	Not Detected	9.4	Not Detected
cis-1,3-Dichloropropene	1.4	Not Detected	6.4	Not Detected
4-Methyl-2-pentanone	1.4	Not Detected	5.8	Not Detected
Toluene	1.4	2.6	5.3	9.6
trans-1,3-Dichloropropene	1.4	Not Detected	6.4	Not Detected



AN ENVIRONMENTAL ANALYTICAL LABORATORY

Client Sample ID: GP-12-C-060308

Lab ID#: 0806072A-03A

MODIFIED EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	7061517	Date of Collection:	6/3/08
Dil Factor:	2.02	Date of Analysis:	6/15/08 09:41 PM

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (uG/m3)	Amount (uG/m3)
1,1,2-Trichloroethane	1.4	Not Detected	7.7	Not Detected
Tetrachloroethene	1.4	Not Detected	9.6	Not Detected
2-Hexanone	5.6	Not Detected	23	Not Detected
Dibromochloromethane	1.4	Not Detected	12	Not Detected
1,2-Dibromoethane (EDB)	1.4	Not Detected	11	Not Detected
Chlorobenzene	1.4	Not Detected	6.5	Not Detected
Ethyl Benzene	1.4	Not Detected	6.1	Not Detected
m,p-Xylene	1.4	1.8	6.1	8.0
o-Xylene	1.4	Not Detected	6.1	Not Detected
Styrene	1.4	Not Detected	6.0	Not Detected
Bromoform	1.4	Not Detected - "UJ"	14	Not Detected
Cumene	1.4	Not Detected	6.9	Not Detected
1,1,2,2-Tetrachloroethane	1.4	Not Detected	9.7	Not Detected
Propylbenzene	1.4	Not Detected	6.9	Not Detected
4-Ethyltoluene	1.4	Not Detected	6.9	Not Detected
1,3,5-Trimethylbenzene	1.4	Not Detected	6.9	Not Detected
1,2,4-Trimethylbenzene	1.4	Not Detected	6.9	Not Detected
1,3-Dichlorobenzene	1.4	Not Detected	8.5	Not Detected
1,4-Dichlorobenzene	1.4	Not Detected	8.5	Not Detected
alpha-Chlorotoluene	1.4	Not Detected	7.3	Not Detected
1,2-Dichlorobenzene	1.4	Not Detected	8.5	Not Detected
1,2,4-Trichlorobenzene	5.6	Not Detected	42	Not Detected
Hexachlorobutadiene	5.6	Not Detected - "UJ"	60	Not Detected U J

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

Container Type: 1 Liter Summa Canister

Surrogates	%Recovery	Method Limits
Toluene-d8	88	70-130
1,2-Dichloroethane-d4	120	70-130
4-Bromofluorobenzene	100	70-130



AN ENVIRONMENTAL ANALYTICAL LABORATORY

Client Sample ID: GP-12-D-060308

Lab ID#: 0806072A-04A

MODIFIED EPA METHOD TO-15 GC/MS FULL SCAN

File Name	7061518	Date of Collection	6/3/08
Dil Factor	2.691	Date of Analysis	6/15/08 10:04 PM

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (uG/m3)	Amount (uG/m3)
Freon 12	1.3	Not Detected	6.6	Not Detected
Freon 114	1.3	Not Detected	9.4	Not Detected
Chloromethane	5.4	Not Detected	11	Not Detected
Vinyl Chloride	1.3	Not Detected	3.4	Not Detected
1,3-Butadiene	1.3	Not Detected	3.0	Not Detected
Bromomethane	1.3	Not Detected	5.2	Not Detected
Chloroethane	1.3	Not Detected	3.5	Not Detected
Freon 11	1.3	Not Detected	7.6	Not Detected
Ethanol	5.4	49	10	93
Freon 113	1.3	Not Detected	10	Not Detected
1,1-Dichloroethene	1.3	Not Detected	5.3	Not Detected
Acetone	5.4	54	13	130
2-Propanol	5.4	12	13	29
Carbon Disulfide	1.3	Not Detected	4.2	Not Detected
3-Chloropropene	5.4	Not Detected	17	Not Detected
Methylene Chloride	1.3	Not Detected	4.7	Not Detected
Methyl tert-butyl ether	1.3	Not Detected	4.8	Not Detected
trans-1,2-Dichloroethene	1.3	Not Detected	5.3	Not Detected
Hexane	1.3	3.5	4.7	12
1,1-Dichloroethane	1.3	Not Detected	5.4	Not Detected
2-Butanone (Methyl Ethyl Ketone)	1.3	12	4.0	34
cis-1,2-Dichloroethene	1.3	Not Detected	5.3	Not Detected
Tetrahydrofuran	1.3	7.9	4.0	23
Chloroform	1.3	Not Detected	6.6	Not Detected
1,1,1-Trichloroethane	1.3	Not Detected	7.3	Not Detected
Cyclohexane	1.3	27	4.6	93
Carbon Tetrachloride	1.3	Not Detected	8.5	Not Detected
2,2,4-Trimethylpentane	1.3	Not Detected	6.3	Not Detected
Benzene	1.3	37	4.3	120
1,2-Dichloroethane	1.3	Not Detected	5.4	Not Detected
Heptane	1.3	Not Detected	5.5	Not Detected
Trichloroethene	1.3	Not Detected	7.2	Not Detected
1,2-Dichloropropane	1.3	Not Detected	6.2	Not Detected
1,4-Dioxane	5.4	Not Detected	19	Not Detected
Bromodichloromethane	1.3	Not Detected	9.0	Not Detected
cis-1,3-Dichloropropene	1.3	Not Detected	6.1	Not Detected
4-Methyl-2-pentanone	1.3	Not Detected	5.5	Not Detected
Toluene	1.3	2.6	5.1	9.8
trans-1,3-Dichloropropene	1.3	Not Detected	6.1	Not Detected



AN ENVIRONMENTAL ANALYTICAL LABORATORY

Client Sample ID: GP-12-D-060308

Lab ID#: 0806072A-04A

MODIFIED EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	7061518	Date of Collection:	6/3/08
Dil Factor:	2.69	Date of Analysis:	6/15/08 10:04 PM

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (uG/m3)	Amount (uG/m3)
1,1,2-Trichloroethane	1.3	Not Detected	7.3	Not Detected
Tetrachloroethene	1.3	Not Detected	9.1	Not Detected
2-Hexanone	5.4	Not Detected	22	Not Detected
Dibromochloromethane	1.3	Not Detected	11	Not Detected
1,2-Dibromoethane (EDB)	1.3	Not Detected	10	Not Detected
Chlorobenzene	1.3	Not Detected	6.2	Not Detected
Ethyl Benzene	1.3	Not Detected	5.8	Not Detected
m,p-Xylene	1.3	2.0	5.8	8.9
o-Xylene	1.3	Not Detected	5.8	Not Detected
Styrene	1.3	Not Detected	5.7	Not Detected
Bromoform	1.3	Not Detected	14	Not Detected
Cumene	1.3	Not Detected	6.6	Not Detected
1,1,2,2-Tetrachloroethane	1.3	Not Detected	9.2	Not Detected
Propylbenzene	1.3	Not Detected	6.6	Not Detected
4-Ethyltoluene	1.3	Not Detected	6.6	Not Detected
1,3,5-Trimethylbenzene	1.3	Not Detected	6.6	Not Detected
1,2,4-Trimethylbenzene	1.3	Not Detected	6.6	Not Detected
1,3-Dichlorobenzene	1.3	Not Detected	8.1	Not Detected
1,4-Dichlorobenzene	1.3	Not Detected	8.1	Not Detected
alpha-Chlorotoluene	1.3	Not Detected	7.0	Not Detected
1,2-Dichlorobenzene	1.3	Not Detected	8.1	Not Detected
1,2,4-Trichlorobenzene	5.4	Not Detected	40	Not Detected
Hexachlorobutadiene	5.4	Not Detected	57	Not Detected U J

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

Container Type: 1 Liter Summa Canister

Surrogates	%Recovery	Method Limits
Toluene-d8	90	70-130
1,2-Dichloroethane-d4	113	70-130
4-Bromofluorobenzene	97	70-130



AN ENVIRONMENTAL ANALYTICAL LABORATORY

Client Sample ID: GP-11-A-060308

Lab ID#: 0806072A-05A

MODIFIED EPA METHOD TO-15 GC/MS FULL SCAN

File Name	7061612		Date of Collection: 6/3/08	
Dir Factor	22.0		Date of Analysis: 6/16/08 05:22 PM	
Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (uG/m3)	Amount (uG/m3)
Freon 12	11	Not Detected	56	Not Detected
Freon 114	11	Not Detected	79	Not Detected
Chloromethane	45	Not Detected	93	Not Detected
Vinyl Chloride	11	Not Detected	29	Not Detected
1,3-Butadiene	11	Not Detected	25	Not Detected
Bromomethane	11	Not Detected	44	Not Detected
Chloroethane	11	Not Detected	30	Not Detected
Freon 11	11	Not Detected	63	Not Detected
Ethanol	45	> 200 7800 E "J"	85	15000 E
Freon 113	11	Not Detected	87	Not Detected
1,1-Dichloroethene	11	Not Detected	45	Not Detected
Acetone	45	130	110	310
2-Propanol	45	> 200 24000 E "J"	110	51000 E
Carbon Disulfide	11	Not Detected	35	Not Detected
3-Chloropropene	45	Not Detected	140	Not Detected
Methylene Chloride	11	Not Detected	39	Not Detected
Methyl tert-butyl ether	11	Not Detected	41	Not Detected
trans-1,2-Dichloroethene	11	Not Detected	45	Not Detected
Hexane	11	Not Detected	40	Not Detected
1,1-Dichloroethane	11	Not Detected	46	Not Detected
2-Butanone (Methyl Ethyl Ketone)	11	Not Detected	33	Not Detected
cis-1,2-Dichloroethene	11	Not Detected	45	Not Detected
Tetrahydrofuran	11	Not Detected	33	Not Detected
Chloroform	11	Not Detected	55	Not Detected
1,1,1-Trichloroethane	11	Not Detected	62	Not Detected
Cyclohexane	11	Not Detected	39	Not Detected
Carbon Tetrachloride	11	Not Detected	71	Not Detected
2,2,4-Trimethylpentane	11	Not Detected	53	Not Detected
Benzene	11	Not Detected	36	Not Detected
1,2-Dichloroethane	11	Not Detected	46	Not Detected
Heptane	11	Not Detected	46	Not Detected
Trichloroethene	11	Not Detected	61	Not Detected
1,2-Dichloropropane	11	Not Detected	52	Not Detected
1,4-Dioxane	45	Not Detected	160	Not Detected
Bromodichloromethane	11	Not Detected	76	Not Detected
cis-1,3-Dichloropropene	11	Not Detected	51	Not Detected
4-Methyl-2-pentanone	11	Not Detected	46	Not Detected
Toluene	11	24	42	92
trans-1,3-Dichloropropene	11	Not Detected	51	Not Detected



AN ENVIRONMENTAL ANALYTICAL LABORATORY

Client Sample ID: GP-11-A-060308

Lab ID#: 0806072A-05A

MODIFIED EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	7061612	Date of Collection:	6/3/08
Dil Factor:	22.0	Date of Analysis:	6/16/08 05:22 PM

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (uG/m3)	Amount (uG/m3)
1,1,2-Trichloroethane	11	Not Detected	62	Not Detected
Tetrachloroethene	11	Not Detected	77	Not Detected
2-Hexanone	45	Not Detected	180	Not Detected
Dibromochloromethane	11	Not Detected	96	Not Detected
1,2-Dibromoethane (EDB)	11	Not Detected	87	Not Detected
Chlorobenzene	11	Not Detected	52	Not Detected
Ethyl Benzene	11	Not Detected	49	Not Detected
m,p-Xylene	11	Not Detected	49	Not Detected
o-Xylene	11	Not Detected	49	Not Detected
Styrene	11	Not Detected	48	Not Detected
Bromoform	11	Not Detected	120	Not Detected
Cumene	11	Not Detected	56	Not Detected
1,1,1,2-Tetrachloroethane	11	Not Detected	78	Not Detected
Propylbenzene	11	Not Detected	56	Not Detected
4-Ethyltoluene	11	Not Detected	56	Not Detected
1,3,5-Trimethylbenzene	11	Not Detected	56	Not Detected
1,2,4-Trimethylbenzene	11	Not Detected	56	Not Detected
1,3-Dichlorobenzene	11	18	68	110
1,4-Dichlorobenzene	11	Not Detected	68	Not Detected
alpha-Chlorotoluene	11	Not Detected	58	Not Detected
1,2-Dichlorobenzene	11	Not Detected	68	Not Detected
1,2,4-Trichlorobenzene	45	Not Detected	340	Not Detected
Hexachlorobutadiene	45	Not Detected ~ "uG"	480	Not Detected

E = Exceeds instrument calibration range.

Container Type: 1 Liter Summa Canister

Surrogates	%Recovery	Method Limits
Toluene-d8	89	70-130
1,2-Dichloroethane-d4	119	70-130
4-Bromofluorobenzene	102	70-130



AN ENVIRONMENTAL ANALYTICAL LABORATORY

Client Sample ID: GP-11-B-060308

Lab ID#: 0806072A-06A

MODIFIED EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	7061521	Date of Collection:	6/3/08
Dil. Factor:	121	Date of Analysis:	6/16/08 01:09 AM

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (uG/m3)	Amount (uG/m3)
Freon 12	60	Not Detected	300	Not Detected
Freon 114	60	Not Detected	420	Not Detected
Chloromethane	240	Not Detected	500	Not Detected
Vinyl Chloride	60	Not Detected	150	Not Detected
1,3-Butadiene	60	Not Detected	130	Not Detected
Bromomethane	60	Not Detected	230	Not Detected
Chloroethane	60	Not Detected	160	Not Detected
Freon 11	60	Not Detected	340	Not Detected
Ethanol	240	1800	460	3400
Freon 113	60	Not Detected	460	Not Detected
1,1-Dichloroethene	60	Not Detected	240	Not Detected
Acetone	240	Not Detected	570	Not Detected
2-Propanol	240	20000	590	50000
Carbon Disulfide	60	Not Detected	190	Not Detected
3-Chloropropene	240	Not Detected	760	Not Detected
Methylene Chloride	60	Not Detected	210	Not Detected
Methyl tert-butyl ether	60	Not Detected	220	Not Detected
trans-1,2-Dichloroethene	60	Not Detected	240	Not Detected
Hexane	60	Not Detected	210	Not Detected
1,1-Dichloroethane	60	Not Detected	240	Not Detected
2-Butanone (Methyl Ethyl Ketone)	60	Not Detected	180	Not Detected
cis-1,2-Dichloroethene	60	Not Detected	240	Not Detected
Tetrahydrofuran	60	Not Detected	180	Not Detected
Chloroform	60	Not Detected	300	Not Detected
1,1,1-Trichloroethane	60	Not Detected	330	Not Detected
Cyclohexane	60	Not Detected	210	Not Detected
Carbon Tetrachloride	60	Not Detected	380	Not Detected
2,2,4-Trimethylpentane	60	Not Detected	280	Not Detected
Benzene	60	Not Detected	190	Not Detected
1,2-Dichloroethane	60	Not Detected	240	Not Detected
Heptane	60	Not Detected	250	Not Detected
Trichloroethene	60	Not Detected	320	Not Detected
1,2-Dichloropropane	60	Not Detected	280	Not Detected
1,4-Dioxane	240	Not Detected	870	Not Detected
Bromodichloromethane	60	Not Detected	400	Not Detected
cis-1,3-Dichloropropene	60	Not Detected	270	Not Detected
4-Methyl-2-pentanone	60	Not Detected	250	Not Detected
Toluene	60	Not Detected	230	Not Detected
trans-1,3-Dichloropropene	60	Not Detected	270	Not Detected



AN ENVIRONMENTAL ANALYTICAL LABORATORY

Client Sample ID: GP-11-B-060308

Lab ID#: 0806072A-06A

MODIFIED EPA METHOD TO-15 GC/MS FULL SCAN

File Name	7061524	Date of Collection	6/3/08
Dil Factor	121	Date of Analysis	6/16/08 01:09 AM

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (uG/m3)	Amount (uG/m3)
1,1,2-Trichloroethane	60	Not Detected	330	Not Detected
Tetrachloroethene	60	Not Detected	410	Not Detected
2-Hexanone	240	Not Detected	990	Not Detected
Dibromochloromethane	60	Not Detected	520	Not Detected
1,2-Dibromoethane (EDB)	60	Not Detected	460	Not Detected
Chlorobenzene	60	Not Detected	280	Not Detected
Ethyl Benzene	60	Not Detected	260	Not Detected
m,p-Xylene	60	Not Detected	260	Not Detected
o-Xylene	60	Not Detected	260	Not Detected
Styrene	60	Not Detected	260	Not Detected
Bromoform	60	Not Detected	620	Not Detected
Cumene	60	Not Detected	300	Not Detected
1,1,2,2-Tetrachloroethane	60	Not Detected	420	Not Detected
Propylbenzene	60	Not Detected	300	Not Detected
4-Ethyltoluene	60	Not Detected	300	Not Detected
1,3,5-Trimethylbenzene	60	Not Detected	300	Not Detected
1,2,4-Trimethylbenzene	60	Not Detected	300	Not Detected
1,3-Dichlorobenzene	60	Not Detected	360	Not Detected
1,4-Dichlorobenzene	60	Not Detected	360	Not Detected
alpha-Chlorotoluene	60	Not Detected	310	Not Detected
1,2-Dichlorobenzene	60	Not Detected	360	Not Detected
1,2,4-Trichlorobenzene	240	Not Detected	1800	Not Detected
Hexachlorobutadiene	240	Not Detected UJ	2600	Not Detected UJ

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

Container Type: 1 Liter Summa Canister

Surrogates	%Recovery	Method Limits
Toluene-d8	87	70-130
1,2-Dichloroethane-d4	120	70-130
4-Bromofluorobenzene	100	70-130



AN ENVIRONMENTAL ANALYTICAL LABORATORY

Client Sample ID: GP-11-B-060308-DUP

Lab ID#: 0806072A-07A

MODIFIED EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	7061522	Date of Collection:	6/3/08
Dil. Factor:	22.1	Date of Analysis:	6/6/08 01:57 AM

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (uG/m3)	Amount (uG/m3)
Freon 12	11	Not Detected	55	Not Detected
Freon 114	11	Not Detected	77	Not Detected
Chloromethane	44	Not Detected	91	Not Detected
Vinyl Chloride	11	Not Detected	28	Not Detected
1,3-Butadiene	11	Not Detected	24	Not Detected
Bromomethane	11	Not Detected	43	Not Detected
Chloroethane	11	Not Detected	29	Not Detected
Freon 11	11	Not Detected	62	Not Detected
Ethanol	44	2500	83	4700
Freon 113	11	Not Detected	85	Not Detected
1,1-Dichloroethene	11	Not Detected	44	Not Detected
Acetone	44	83	100	200
2-Propanol	44	>200 20000 E "J"	110	48000 E
Carbon Disulfide	11	Not Detected	34	Not Detected
3-Chloropropene	44	Not Detected	140	Not Detected
Methylene Chloride	11	Not Detected	38	Not Detected
Methyl tert-butyl ether	11	Not Detected	40	Not Detected
trans-1,2-Dichloroethene	11	Not Detected	44	Not Detected
Hexane	11	Not Detected	39	Not Detected
1,1-Dichloroethane	11	Not Detected	45	Not Detected
2-Butanone (Methyl Ethyl Ketone)	11	Not Detected	32	Not Detected
cis-1,2-Dichloroethene	11	Not Detected	44	Not Detected
Tetrahydrofuran	11	Not Detected	32	Not Detected
Chloroform	11	Not Detected	54	Not Detected
1,1,1-Trichloroethane	11	Not Detected	60	Not Detected
Cyclohexane	11	Not Detected	38	Not Detected
Carbon Tetrachloride	11	Not Detected	70	Not Detected
2,2,4-Trimethylpentane	11	Not Detected	52	Not Detected
Benzene	11	Not Detected	35	Not Detected
1,2-Dichloroethane	11	Not Detected	45	Not Detected
Heptane	11	Not Detected	45	Not Detected
Trichloroethene	11	Not Detected	59	Not Detected
1,2-Dichloropropane	11	Not Detected	51	Not Detected
1,4-Dioxane	44	Not Detected	160	Not Detected
Bromodichloromethane	11	Not Detected	74	Not Detected
cis-1,3-Dichloropropene	11	Not Detected	50	Not Detected
4-Methyl-2-pentanone	11	Not Detected	45	Not Detected
Toluene	11	13	42	50
trans-1,3-Dichloropropene	11	Not Detected	50	Not Detected



AN ENVIRONMENTAL ANALYTICAL LABORATORY

Client Sample ID: GP-11-B-060308-DUP

Lab ID#: 0806072A-07A

MODIFIED EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	7061522	Date of Collection:	6/9/08
Director:	7241	Date of Analysis:	6/16/08 01:57 AM

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (uG/m3)	Amount (uG/m3)
1,1,2-Trichloroethane	11	Not Detected	60	Not Detected
Tetrachloroethene	11	Not Detected	75	Not Detected
2-Hexanone	44	Not Detected	180	Not Detected
Dibromochloromethane	11	Not Detected	94	Not Detected
1,2-Dibromoethane (EDB)	11	Not Detected	85	Not Detected
Chlorobenzene	11	Not Detected	51	Not Detected
Ethyl Benzene	11	Not Detected	48	Not Detected
m,p-Xylene	11	Not Detected	48	Not Detected
o-Xylene	11	Not Detected	48	Not Detected
Styrene	11	Not Detected	47	Not Detected
Bromoform	11	Not Detected	110	Not Detected
Cumene	11	Not Detected	54	Not Detected
1,1,2,2-Tetrachloroethane	11	Not Detected	76	Not Detected
Propylbenzene	11	Not Detected	54	Not Detected
4-Ethyltoluene	11	Not Detected	54	Not Detected
1,3,5-Trimethylbenzene	11	Not Detected	54	Not Detected
1,2,4-Trimethylbenzene	11	Not Detected	54	Not Detected
1,3-Dichlorobenzene	11	18	66	100
1,4-Dichlorobenzene	11	Not Detected	66	Not Detected
alpha-Chlorotoluene	11	Not Detected	57	Not Detected
1,2-Dichlorobenzene	11	Not Detected	66	Not Detected
1,2,4-Trichlorobenzene	44	Not Detected	330	Not Detected
Hexachlorobutadiene	44	Not Detected UJ	470	Not Detected UJ

E = Exceeds instrument calibration range.

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

Container Type: 1 Liter Summa Canister

Surrogates	%Recovery	Method Limits
Toluene-d8	88	70-130
1,2-Dichloroethane-d4	118	70-130
4-Bromofluorobenzene	98	70-130



AN ENVIRONMENTAL ANALYTICAL LABORATORY

Client Sample ID: GP-11-B-060308-DUP Lab Duplicate

Lab ID#: 0806072A-07AA

MODIFIED EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	7061523	Date of Collection:	6/3/08
Dil. Factor:	22.1	Date of Analysis:	6/16/08 02:42 AM

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (uG/m3)	Amount (uG/m3)
Freon 12	11	Not Detected	55	Not Detected
Freon 114	11	Not Detected	77	Not Detected
Chloromethane	44	Not Detected	91	Not Detected
Vinyl Chloride	11	Not Detected	28	Not Detected
1,3-Butadiene	11	Not Detected	24	Not Detected
Bromomethane	11	Not Detected	43	Not Detected
Chloroethane	11	Not Detected	29	Not Detected
Freon 11	11	Not Detected	62	Not Detected
Ethanol	44	2500	83	4800
Freon 113	11	Not Detected	85	Not Detected
1,1-Dichloroethene	11	Not Detected	44	Not Detected
Acetone	44	79	100	190
2-Propanol	44	20000 E	110	50000 E
Carbon Disulfide	11	Not Detected	34	Not Detected
3-Chloropropene	44	Not Detected	140	Not Detected
Methylene Chloride	11	Not Detected	38	Not Detected
Methyl tert-butyl ether	11	Not Detected	40	Not Detected
trans-1,2-Dichloroethene	11	Not Detected	44	Not Detected
Hexane	11	Not Detected	39	Not Detected
1,1-Dichloroethane	11	Not Detected	45	Not Detected
2-Butanone (Methyl Ethyl Ketone)	11	Not Detected	32	Not Detected
cis-1,2-Dichloroethene	11	Not Detected	44	Not Detected
Tetrahydrofuran	11	Not Detected	32	Not Detected
Chloroform	11	Not Detected	54	Not Detected
1,1,1-Trichloroethane	11	Not Detected	60	Not Detected
Cyclohexane	11	Not Detected	38	Not Detected
Carbon Tetrachloride	11	Not Detected	70	Not Detected
2,2,4-Trimethylpentane	11	Not Detected	52	Not Detected
Benzene	11	Not Detected	35	Not Detected
1,2-Dichloroethane	11	Not Detected	45	Not Detected
Heptane	11	Not Detected	45	Not Detected
Trichloroethene	11	Not Detected	59	Not Detected
1,2-Dichloropropane	11	Not Detected	51	Not Detected
1,4-Dioxane	44	Not Detected	160	Not Detected
Bromodichloromethane	11	Not Detected	74	Not Detected
cis-1,3-Dichloropropene	11	Not Detected	50	Not Detected
4-Methyl-2-pentanone	11	Not Detected	45	Not Detected
Toluene	11	14	42	53
trans-1,3-Dichloropropene	11	Not Detected	50	Not Detected



AN ENVIRONMENTAL ANALYTICAL LABORATORY

Client Sample ID: GP-11-B-060308-DUP Lab Duplicate

Lab ID#: 0806072A-07AA

MODIFIED EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	7061523	Date of Collection:	6/3/08
Dil. Factor:	22.1	Date of Analysis:	6/16/08 02:42 AM

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (uG/m3)	Amount (uG/m3)
1,1,2-Trichloroethane	11	Not Detected	60	Not Detected
Tetrachloroethene	11	Not Detected	75	Not Detected
2-Hexanone	44	Not Detected	180	Not Detected
Dibromochloromethane	11	Not Detected	94	Not Detected
1,2-Dibromoethane (EDB)	11	Not Detected	85	Not Detected
Chlorobenzene	11	Not Detected	51	Not Detected
Ethyl Benzene	11	Not Detected	48	Not Detected
m,p-Xylene	11	Not Detected	48	Not Detected
o-Xylene	11	Not Detected	48	Not Detected
Styrene	11	Not Detected	47	Not Detected
Bromoform	11	Not Detected	110	Not Detected
Cumene	11	Not Detected	54	Not Detected
1,1,2,2-Tetrachloroethane	11	Not Detected	76	Not Detected
Propylbenzene	11	Not Detected	54	Not Detected
4-Ethyltoluene	11	Not Detected	54	Not Detected
1,3,5-Trimethylbenzene	11	Not Detected	54	Not Detected
1,2,4-Trimethylbenzene	11	Not Detected	54	Not Detected
1,3-Dichlorobenzene	11	16	66	100
1,4-Dichlorobenzene	11	Not Detected	66	Not Detected
alpha-Chlorotoluene	11	Not Detected	57	Not Detected
1,2-Dichlorobenzene	11	Not Detected	66	Not Detected
1,2,4-Trichlorobenzene	44	Not Detected	330	Not Detected
Hexachlorobutadiene	44	Not Detected U J	470	Not Detected U J

E = Exceeds instrument calibration range.

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

Container Type: 1 Liter Summa Canister

Surrogates	%Recovery	Method Limits
Toluene-d8	89	70-130
1,2-Dichloroethane-d4	122	70-130
4-Bromofluorobenzene	96	70-130



AN ENVIRONMENTAL ANALYTICAL LABORATORY

Client Sample ID: GP-11-C-060308

Lab ID#: 0806072A-08A

MODIFIED EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	70615241	Date of Collection:	6/3/08
File Factor:	22.6	Date of Analysis:	6/16/08 03:24 AM

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (uG/m3)	Amount (uG/m3)
Freon 12	11	Not Detected	56	Not Detected
Freon 114	11	Not Detected	79	Not Detected
Chloromethane	45	Not Detected	93	Not Detected
Vinyl Chloride	11	Not Detected	29	Not Detected
1,3-Butadiene	11	Not Detected	25	Not Detected
Bromomethane	11	Not Detected	44	Not Detected
Chloroethane	11	Not Detected	30	Not Detected
Freon 11	11	Not Detected	63	Not Detected
Ethanol	45	4400	85	8300
Freon 113	11	Not Detected	87	Not Detected
1,1-Dichloroethene	11	Not Detected	45	Not Detected
Acetone	45	89	110	210
2-Propanol	45	7250	110	41000 E
Carbon Disulfide	11	Not Detected	35	Not Detected
3-Chloropropene	45	Not Detected	140	Not Detected
Methylene Chloride	11	Not Detected	39	Not Detected
Methyl tert-butyl ether	11	Not Detected	41	Not Detected
trans-1,2-Dichloroethene	11	Not Detected	45	Not Detected
Hexane	11	Not Detected	40	Not Detected
1,1-Dichloroethane	11	Not Detected	46	Not Detected
2-Butanone (Methyl Ethyl Ketone)	11	Not Detected	33	Not Detected
cis-1,2-Dichloroethene	11	Not Detected	45	Not Detected
Tetrahydrofuran	11	Not Detected	33	Not Detected
Chloroform	11	Not Detected	55	Not Detected
1,1,1-Trichloroethane	11	Not Detected	62	Not Detected
Cyclohexane	11	Not Detected	39	Not Detected
Carbon Tetrachloride	11	Not Detected	71	Not Detected
2,2,4-Trimethylpentane	11	Not Detected	53	Not Detected
Benzene	11	Not Detected	36	Not Detected
1,2-Dichloroethane	11	Not Detected	46	Not Detected
Heptane	11	Not Detected	46	Not Detected
Trichloroethene	11	Not Detected	61	Not Detected
1,2-Dichloropropane	11	Not Detected	52	Not Detected
1,4-Dioxane	45	Not Detected	160	Not Detected
Bromodichloromethane	11	Not Detected	76	Not Detected
cis-1,3-Dichloropropene	11	Not Detected	51	Not Detected
4-Methyl-2-pentanone	11	Not Detected	46	Not Detected
Toluene	11	18	42	66
trans-1,3-Dichloropropene	11	Not Detected	51	Not Detected



AN ENVIRONMENTAL ANALYTICAL LABORATORY

Client Sample ID: GP-11-C-060308

Lab ID#: 0806072A-08A

MODIFIED EPA METHOD TO-15 GC/MS FULL SCAN

File Name	7061524	Date of Collection	6/3/08
Dilution Factor	22.5	Date of Analysis	6/16/08 09:24 AM

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (uG/m3)	Amount (uG/m3)
1,1,2-Trichloroethane	11	Not Detected	62	Not Detected
Tetrachloroethene	11	Not Detected	77	Not Detected
2-Hexanone	45	Not Detected	180	Not Detected
Dibromochloromethane	11	Not Detected	96	Not Detected
1,2-Dibromoethane (EDB)	11	Not Detected	87	Not Detected
Chlorobenzene	11	Not Detected	52	Not Detected
Ethyl Benzene	11	Not Detected	49	Not Detected
m,p-Xylene	11	Not Detected	49	Not Detected
o-Xylene	11	Not Detected	49	Not Detected
Styrene	11	Not Detected	48	Not Detected
Bromoform	11	Not Detected	120	Not Detected
Cumene	11	Not Detected	56	Not Detected
1,1,2,2-Tetrachloroethane	11	Not Detected	78	Not Detected
Propylbenzene	11	Not Detected	56	Not Detected
4-Ethyltoluene	11	Not Detected	56	Not Detected
1,3,5-Trimethylbenzene	11	Not Detected	56	Not Detected
1,2,4-Trimethylbenzene	11	Not Detected	56	Not Detected
1,3-Dichlorobenzene	11	16	68	94
1,4-Dichlorobenzene	11	Not Detected	68	Not Detected
alpha-Chlorotoluene	11	Not Detected	58	Not Detected
1,2-Dichlorobenzene	11	Not Detected	68	Not Detected
1,2,4-Trichlorobenzene	45	Not Detected	340	Not Detected
Hexachlorobutadiene	45	Not Detected ^{UJ}	480	Not Detected U J

E = Exceeds instrument calibration range.

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

Container Type: 1 Liter Summa Canister

Surrogates	%Recovery	Method Limits
Toluene-d8	88	70-130
1,2-Dichloroethane-d4	116	70-130
4-Bromofluorobenzene	98	70-130



AN ENVIRONMENTAL ANALYTICAL LABORATORY

Client Sample ID: GP-11-D-060308

Lab ID#: 0806072A-09A

MODIFIED EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	7061525	Date of Collection:	6/3/08
Dil Factor:	606	Date of Analysis:	6/16/08 04:14 AM

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (uG/m3)	Amount (uG/m3)
Freon 12	300	Not Detected	1500	Not Detected
Freon 114	300	Not Detected	2100	Not Detected
Chloromethane	1200	Not Detected	2500	Not Detected
Vinyl Chloride	300	Not Detected	770	Not Detected
1,3-Butadiene	300	Not Detected	670	Not Detected
Bromomethane	300	Not Detected	1200	Not Detected
Chloroethane	300	Not Detected	800	Not Detected
Freon 11	300	Not Detected	1700	Not Detected
Ethanol	1200	2100	2300	3900
Freon 113	300	Not Detected	2300	Not Detected
1,1-Dichloroethene	300	Not Detected	1200	Not Detected
Acetone	1200	Not Detected	2900	Not Detected
2-Propanol	1200	7200	3000	910000 E
Carbon Disulfide	300	Not Detected	940	Not Detected
3-Chloropropene	1200	Not Detected	3800	Not Detected
Methylene Chloride	300	Not Detected	1000	Not Detected
Methyl tert-butyl ether	300	Not Detected	1100	Not Detected
trans-1,2-Dichloroethene	300	Not Detected	1200	Not Detected
Hexane	300	Not Detected	1100	Not Detected
1,1-Dichloroethane	300	Not Detected	1200	Not Detected
2-Butanone (Methyl Ethyl Ketone)	300	Not Detected	890	Not Detected
cis-1,2-Dichloroethene	300	Not Detected	1200	Not Detected
Tetrahydrofuran	300	Not Detected	890	Not Detected
Chloroform	300	Not Detected	1500	Not Detected
1,1,1-Trichloroethane	300	Not Detected	1600	Not Detected
Cyclohexane	300	Not Detected	1000	Not Detected
Carbon Tetrachloride	300	Not Detected	1900	Not Detected
2,2,4-Trimethylpentane	300	Not Detected	1400	Not Detected
Benzene	300	Not Detected	970	Not Detected
1,2-Dichloroethane	300	Not Detected	1200	Not Detected
Heptane	300	Not Detected	1200	Not Detected
Trichloroethene	300	Not Detected	1600	Not Detected
1,2-Dichloropropane	300	Not Detected	1400	Not Detected
1,4-Dioxane	1200	Not Detected	4400	Not Detected
Bromodichloromethane	300	Not Detected	2000	Not Detected
cis-1,3-Dichloropropene	300	Not Detected	1400	Not Detected
4-Methyl-2-pentanone	300	Not Detected	1200	Not Detected
Toluene	300	Not Detected	1100	Not Detected
trans-1,3-Dichloropropene	300	Not Detected	1400	Not Detected



AN ENVIRONMENTAL ANALYTICAL LABORATORY

Client Sample ID: GP-11-D-060308

Lab ID#: 0806072A-09A

MODIFIED EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	7061525	Date of Collection:	6/3/08
Dil Factor:	606	Date of Analysis:	6/16/08 04:14 AM

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (uG/m3)	Amount (uG/m3)
1,1,2-Trichloroethane	300	Not Detected	1600	Not Detected
Tetrachloroethene	300	Not Detected	2000	Not Detected
2-Hexanone	1200	Not Detected	5000	Not Detected
Dibromochloromethane	300	Not Detected	2600	Not Detected
1,2-Dibromoethane (EDB)	300	Not Detected	2300	Not Detected
Chlorobenzene	300	Not Detected	1400	Not Detected
Ethyl Benzene	300	Not Detected	1300	Not Detected
m,p-Xylene	300	Not Detected	1300	Not Detected
o-Xylene	300	Not Detected	1300	Not Detected
Styrene	300	Not Detected	1300	Not Detected
Bromoform	300	Not Detected	3100	Not Detected
Cumene	300	Not Detected	1500	Not Detected
1,1,2,2-Tetrachloroethane	300	Not Detected	2100	Not Detected
Propylbenzene	300	Not Detected	1500	Not Detected
4-Ethyltoluene	300	Not Detected	1500	Not Detected
1,3,5-Trimethylbenzene	300	Not Detected	1500	Not Detected
1,2,4-Trimethylbenzene	300	Not Detected	1500	Not Detected
1,3-Dichlorobenzene	300	Not Detected	1800	Not Detected
1,4-Dichlorobenzene	300	Not Detected	1800	Not Detected
alpha-Chlorotoluene	300	Not Detected	1600	Not Detected
1,2-Dichlorobenzene	300	Not Detected	1800	Not Detected
1,2,4-Trichlorobenzene	1200	Not Detected	9000	Not Detected
Hexachlorobutadiene	1200	Not Detected	13000	Not Detected U J

E = Exceeds instrument calibration range.

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

Container Type: 1 Liter Summa Canister

Surrogates	%Recovery	Method Limits
Toluene-d8	84	70-130
1,2-Dichloroethane-d4	121	70-130
4-Bromofluorobenzene	99	70-130

Rand Avenue Data Review

Laboratory SDG: 0806072B

Reviewer: Tony Sedlacek

Date Reviewed: 7/22/2008

Guidance: National Functional Guidelines for Organic Data Review 1999.

Applicable Work Plan: Route 111/Rand Avenue Vicinity Investigation Work Plan.

Sample Identification #	Sample Identification #
GP-12-A-060308	GP-12-B-060308
GP-12-C-060308	GP-12-D-060308
GP-11-A-060308	GP-11-B-060308
GP-11-B-060308-DUP	GP-11-C-060308
GP-11-D-060308	

1.0 Data Package Completeness

Were all items delivered as specified in the QAPP and COC?

Yes

2.0 Laboratory Case Narrative \ Cooler Receipt Form

Were problems noted in the laboratory case narrative or cooler receipt form?

The laboratory case narrative and cooler receipt form did not indicate any problems.

3.0 Holding Times

Were samples extracted/analyzed within QAPP limits?

Yes

Field ID	Parameter	Analyte	Qualification
N/A			

4.0 Blank Contamination

Were any analytes detected in the Method Blanks, Field Blanks or Trip Blanks?

No

Blank ID	Parameter	Analyte	Concentration	Units
N/A				

Qualifications due to blank contamination are included in the table below.

Field ID	Parameter	Analyte	New RL	Qualification
N/A				

5.0 Laboratory Control Sample

Were LCS recoveries within evaluation criteria?

Yes

LCS ID	Parameter	Analyte	LCS/LCSD Recovery	RPD	LCS/LCSD/RPD Criteria
N/A					

Analytical data that required qualification based on LCS data are included in the table below. Analytical data which were reported as nondetect and associated with LCS recoveries above evaluation criteria, indicating a possible high bias, did not require qualification.

Field ID	Parameter	Analyte	Qualification
N/A			

6.0 Surrogate Recoveries

Were surrogate recoveries within evaluation criteria?

Surrogates are not applicable for Method Modified ASTM D-1946.

Field ID	Parameter	Surrogate	Recovery	Criteria
N/A				

Analytical data that required qualification based on surrogate data are included in the table below. Analytical data which were reported as nondetect and associated with surrogate recoveries above evaluation criteria, indicating a possible high bias, did not require qualification.

Field ID	Parameter	Analyte	Qualification
N/A			

7.0 Matrix Spike and Matrix Spike Duplicate Recoveries

Were MS/MSD samples reported as part of this SDG?

MS/MSD samples are not applicable for air samples.

Were MS/MSD recoveries within evaluation criteria?

N/A

MS/MSD ID	Parameter	Analyte	MS/MSD Recovery	RPD	MS/MSD/RPD Criteria
N/A					

Analytical data that required qualification based on MS/MSD data are included in the table below.

Field ID	Parameter	Analyte	Qualification
N/A			

8.0 Laboratory Duplicate Results

Were laboratory duplicate samples collected as part of this SDG?

Yes, sample GP-11-B-060308-DUP was duplicated by the laboratory and analyzed for Modified ASTM D-1946.

Were laboratory duplicate sample RPDs within criteria?

N/A

Field ID	Parameter	Analyte	RPD	Criteria
N/A				

Data qualified due to outlying laboratory duplicate recoveries are identified below:

Field ID	Parameter	Analyte	Qualification
N/A			

9.0 Field Duplicate Results

Were field duplicate samples collected as part of this SDG?

Yes

Field ID	Field Duplicate ID
GP-11-B-060308	GP-11-B-060308-DUP

Were field duplicates within evaluation criteria?

Yes

Field ID	Field Duplicate ID	Parameter	Analyte	RPD	Qualification
N/A					

10.0 Sample Dilutions

For samples that were diluted and nondetect, were undiluted results also reported?

Yes

The following table identifies the analyses which were reported as nondetect, diluted, and an undiluted run **was not** reported:

Field ID	Parameter	Dilution Factor
N/A		

11.0 Additional Qualifications

Were additional qualifications applied?

No



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This electronic report includes the following:

- Work order Summary;
- Laboratory Narrative;
- Results; and
- Chain of Custody (copy).

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Hours 8:00 A.M to 6:00 P.M. Pacific**



AN ENVIRONMENTAL ANALYTICAL LABORATORY

WORK ORDER #: 0806072B

Work Order Summary

CLIENT: Mr. Mike Miller
URS Corporation
1001 Highlands Plaza Dr. West
Suite 300
St. Louis, MO 63110

BILL TO: Accounts Payable OSP 2660 A
Equiva Services/Shell Oil Products
P.O. Box 4912
Houston, TX 77210-4720

PHONE: 314-566-3073

P.O. # 4700002383

FAX:

PROJECT # 21561979 Rte 111 & Rand Ave Vicinity

DATE RECEIVED: 06/04/2008

CONTACT: Brandon Dunmore

DATE COMPLETED: 06/17/2008

<u>FRACTION #</u>	<u>NAME</u>	<u>TEST</u>	<u>RECEIPT VAC./PRES.</u>	<u>FINAL PRESSURE</u>
01A	GP-12-A-060308	Modified ASTM D-1946	9.5 "Hg	15 psi
02A	GP-12-B-060308	Modified ASTM D-1946	8.0 "Hg	15 psi
03A	GP-12-C-060308	Modified ASTM D-1946	8.5 "Hg	15 psi
04A	GP-12-D-060308	Modified ASTM D-1946	7.5 "Hg	15 psi
04AA	GP-12-D-060308 Lab Duplicate	Modified ASTM D-1946	7.5 "Hg	15 psi
05A	GP-11-A-060308	Modified ASTM D-1946	8.5 "Hg	15 psi
06A	GP-11-B-060308	Modified ASTM D-1946	10.0 "Hg	15 psi
07A	GP-11-B-060308-DUP	Modified ASTM D-1946	8.0 "Hg	15 psi
08A	GP-11-C-060308	Modified ASTM D-1946	8.5 "Hg	15 psi
09A	GP-11-D-060308	Modified ASTM D-1946	10.0 "Hg	15 psi
10A	Lab Blank	Modified ASTM D-1946	NA	NA
11A	LCS	Modified ASTM D-1946	NA	NA

CERTIFIED BY:

Laboratory Director

DATE: 06/17/08

Certification 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: 07/01/07, Expiration date: 06/30/08

Air Toxics Ltd. certifies that the test results contained in this report meet all requirements of the NELAP standards

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AN ENVIRONMENTAL ANALYTICAL LABORATORY

LABORATORY NARRATIVE
Modified ASTM D-1946
URS Corporation
Workorder# 0806072B

TABLE 1 Data Submittal Canister samples were received on June 04, 2008. The laboratory performed analysis via Modified ASTM Method D-1946 for Methane and fixed gases in air using GC/FID or GC/TCD. The method involves direct injection of 1.0 mL of sample.

On the analytical column employed for this analysis, Oxygen coelutes with Argon. The corresponding peak is quantitated as Oxygen.

Since Nitrogen is used to pressurize samples, the reported Nitrogen values are calculated by adding all the sample components and subtracting from 100%.

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

<i>Requirement</i>	<i>ASTM D-1946</i>	<i>ATL Modifications</i>
Calibration	A single point calibration is performed using a reference standard closely matching the composition of the unknown.	A 3-point calibration curve is performed. Quantitation is based on a daily calibration standard which may or may not resemble the composition of the associated samples.
Reference Standard	The composition of any reference standard must be known to within 0.01 mol % for any component.	The standards used by ATL are blended to a $\geq 95\%$ accuracy.
Sample Injection Volume	Components whose concentrations are in excess of 5 % should not be analyzed by using sample volumes greater than 0.5 mL.	The sample container is connected directly to a fixed volume sample loop of 1.0 mL on the GC. Linear range is defined by the calibration curve. Bags are loaded by vacuum.
Normalization	Normalize the mole percent values by multiplying each value by 100 and dividing by the sum of the original values. The sum of the original values should not differ from 100% by more than 1.0%.	Results are not normalized. The sum of the reported values can differ from 100% by as much as 15%, either due to analytical variability or an unusual sample matrix.
Precision	Precision requirements established at each concentration level.	Duplicates should agree within 25% RPD for detections $> 5 \times$ the RL.

Receiving Notes

There were no receiving discrepancies.

Analytical Notes

There were no analytical discrepancies.

Definition of Data Qualifying Flags

Seven qualifiers may have been used on the data analysis sheets and indicate as follows:

- D - Compound present in laboratory blank greater than reporting limit.
- 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 detection limit.
- M - Reported value may be biased due to apparent matrix interferences.

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

Client Sample ID: GP-12-A-060308

Lab ID#: 0806072B-01A

NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1946

File Name:	9060705	Date of Collection: 6/3/08
Dil. Factor:	2.96	Date of Analysis: 6/7/08 09:36 AM

Compound	Rpt. Limit (%)	Amount (%)
Oxygen	0.30	7.0
Nitrogen	0.30	81
Carbon Monoxide	0.030	Not Detected
Methane	0.00030	Not Detected
Carbon Dioxide	0.030	12
Ethane	0.0030	Not Detected
Ethene	0.0030	Not Detected

Container Type: 1 Liter Summa Canister



AN ENVIRONMENTAL ANALYTICAL LABORATORY

Client Sample ID: GP-12-B-060308

Lab ID#: 0806072B-02A

NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1946

File Name:	9060706	Date of Collection: 8/3/08
Dil. Factor:	2.76	Date of Analysis: 6/7/08 09:58 AM

Compound	Rpt. Limit (%)	Amount (%)
Oxygen	0.28	4.7
Nitrogen	0.28	80
Carbon Monoxide	0.028	Not Detected
Methane	0.00028	Not Detected
Carbon Dioxide	0.028	15
Ethane	0.0028	Not Detected
Ethene	0.0028	Not Detected

Container Type: 1 Liter Summa Canister



AN ENVIRONMENTAL ANALYTICAL LABORATORY

Client Sample ID: GP-12-C-060308

Lab ID#: 0806072B-03A

NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1946

File Name:	9060707	Date of Collection: 6/3/08
Dil. Factor:	2.82	Date of Analysis: 6/7/08 10:20 AM

Compound	Rpt. Limit (%)	Amount (%)
Oxygen	0.28	3.4
Nitrogen	0.28	80
Carbon Monoxide	0.028	Not Detected
Methane	0.00028	0.00047
Carbon Dioxide	0.028	16
Ethane	0.0028	Not Detected
Ethene	0.0028	Not Detected

Container Type: 1 Liter Summa Canister



AN ENVIRONMENTAL ANALYTICAL LABORATORY

Client Sample ID: GP-12-D-060308

Lab ID#: 0806072B-04A

NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1946

File Name:	9060708	Date of Collection: 6/3/08
Dil. Factor:	2.69	Date of Analysis: 6/7/08 10:43 AM

Compound	Rpt. Limit (%)	Amount (%)
Oxygen	0.27	2.9
Nitrogen	0.27	80
Carbon Monoxide	0.027	Not Detected
Methane	0.00027	0.0014
Carbon Dioxide	0.027	17
Ethane	0.0027	Not Detected
Ethene	0.0027	Not Detected

Container Type: 1 Liter Summa Canister



AN ENVIRONMENTAL ANALYTICAL LABORATORY

Client Sample ID: GP-12-D-060308 Lab Duplicate

Lab ID#: 0806072B-04AA

NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1946

File Name:	9060714	Date of Collection: 6/3/08
Dil. Factor:	2.69	Date of Analysis: 6/7/08 12:59 PM

Compound	Rpt. Limit (%)	Amount (%)
Oxygen	0.27	2.9
Nitrogen	0.27	80
Carbon Monoxide	0.027	Not Detected
Methane	0.00027	0.0014
Carbon Dioxide	0.027	17
Ethane	0.0027	Not Detected
Ethene	0.0027	Not Detected

Container Type: 1 Liter Summa Canister



AN ENVIRONMENTAL ANALYTICAL LABORATORY

Client Sample ID: GP-11-A-060308

Lab ID#: 0806072B-05A

NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1946

File Name:	9060709	Date of Collection: 6/3/08
Dil. Factor:	2.82	Date of Analysis: 6/7/08 11:05 AM

Compound	Rpt. Limit (%)	Amount (%)
Oxygen	0.28	14
Nitrogen	0.28	80
Carbon Monoxide	0.028	Not Detected
Methane	0.00028	Not Detected
Carbon Dioxide	0.028	6.1
Ethane	0.0028	Not Detected
Ethene	0.0028	Not Detected

Container Type: 1 Liter Summa Canister



AN ENVIRONMENTAL ANALYTICAL LABORATORY

Client Sample ID: GP-11-B-060308

Lab ID#: 0806072B-06A

NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1946

File Name:	9060710	Date of Collection: 6/3/08
Dil. Factor:	3.03	Date of Analysis: 6/7/08 11:27 AM

Compound	Rpt. Limit (%)	Amount (%)
Oxygen	0.30	13
Nitrogen	0.30	80
Carbon Monoxide	0.030	Not Detected
Methane	0.00030	Not Detected
Carbon Dioxide	0.030	6.9
Ethane	0.0030	Not Detected
Ethene	0.0030	Not Detected

Container Type: 1 Liter Summa Canister



AN ENVIRONMENTAL ANALYTICAL LABORATORY

Client Sample ID: GP-11-B-060308-DUP

Lab ID#: 0806072B-07A

NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1946

File Name:	9060711	Date of Collection: 6/3/08
Dil. Factor:	2.76	Date of Analysis: 6/7/08 11:53 AM

Compound	Rpt. Limit (%)	Amount (%)
Oxygen	0.28	13
Nitrogen	0.28	80
Carbon Monoxide	0.028	Not Detected
Methane	0.00028	Not Detected
Carbon Dioxide	0.028	7.0
Ethane	0.0028	Not Detected
Ethene	0.0028	Not Detected

Container Type: 1 Liter Summa Canister



AN ENVIRONMENTAL ANALYTICAL LABORATORY

Client Sample ID: GP-11-C-060308

Lab ID#: 0806072B-08A

NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1946

File Name:	9060712	Date of Collection:	6/3/08
Dil. Factor:	2.82	Date of Analysis:	6/7/08 12:15 PM

Compound	Rpt. Limit (%)	Amount (%)
Oxygen	0.28	12
Nitrogen	0.28	80
Carbon Monoxide	0.028	Not Detected
Methane	0.00028	Not Detected
Carbon Dioxide	0.028	7.8
Ethane	0.0028	Not Detected
Ethene	0.0028	Not Detected

Container Type: 1 Liter Summa Canister



AN ENVIRONMENTAL ANALYTICAL LABORATORY

Client Sample ID: GP-11-D-060308

Lab ID#: 0806072B-09A

NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1946

File Name:	9060713	Date of Collection: 6/3/08
Dil. Factor:	3.03	Date of Analysis: 6/7/08 12:37 PM

Compound	Rpt. Limit (%)	Amount (%)
Oxygen	0.30	8.5
Nitrogen	0.30	82
Carbon Monoxide	0.030	Not Detected
Methane	0.00030	Not Detected
Carbon Dioxide	0.030	10
Ethane	0.0030	Not Detected
Ethene	0.0030	Not Detected

Container Type: 1 Liter Summa Canister



CHAIN-OF-CUSTODY RECORD

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Page 1 of 1

Project Manager Jeff Adams (415) 429-0100
Collected by: (Print and Sign) Michael Miller
Company URS Corporation Email michael.miller@urscorp.com
Address 1001 Highlands Plaza Dr City San Jose State CA Zip 95128
Phone 314 429-0100 Fax 314 429-0100

Project Info:

P.O. #

Project # 21061979

Project Name Rte 111 & Rte 101 Viaduct

Turn Around Time:

☒ Normal

☐ Rush

specify

Lab Use Only

Pressurized by:

Date:

Pressurization Gas:

N₂ 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	GP-12A-060308	13389	06-03-08	0925	TO-15 & ASTM D-1946	29	8		
02A	GP-12B-060308	33906	06-03-08	0929	TO-15 & ASTM D-1946	29	8		
03A	GP-12C-060308	31752	06-03-08	0935	TO-15 & ASTM D-1946	29	7		
04A	GP-12D-060308	36564	06-03-08	0940	TO-15 & ASTM D-1946	30	8		
05A	GP-11A-060308	42186	06-03-08	1345	TO-15 & ASTM D-1946	30	9		
06A	GP-11B-060308	42033	06-03-08	1350	TO-15 & ASTM D-1946	29	10		
07A	GP-11B-060308-DUP	42120	06-03-08	1350	TO-15 & ASTM D-1946	29	6.5		
08A	GP-11C-060308	42032	06-03-08	1355	TO-15 & ASTM D-1946	30	9		
09A	GP-11D-060308	36391	06-03-08	1410	TO-15 & ASTM D-1946	30	9		

Relinquished by: (signature) Date/Time

[Signature] 06/03/08 1700

Received by: (signature) Date/Time

FedEx

Notes:

Relinquished by: (signature) Date/Time

[Signature]

Received by: (signature) Date/Time

Monica Groen AM 6/4/08 1000

Relinquished by: (signature) Date/Time

[Signature]

Received by: (signature) Date/Time

[Signature]

Lab Use Only	Shipper Name	Alt Bill #	Temp (°C)	Condition	Custody Seals Intact?	Work Order #
	<u>FedEx</u>	<u>8640 3796 9501</u>	<u>MA</u>	<u>Good</u>	<input checked="" type="radio"/> Yes <input type="radio"/> No <input type="radio"/> None	<u>0806072</u>

Rand Avenue Data Review

Laboratory SDG: 0806099A

Reviewer: Tony Sedlacek

Date Reviewed: 7/22/2008

Guidance: National Functional Guidelines for Organic Data Review 1999.

Applicable Work Plan: Route 111/Rand Avenue Vicinity Investigation Work Plan.

Sample Identification #	Sample Identification #
GP-13-A-060408	GP-13-B-060408
GP-13-C-060408	GP-13-D-060408
GP-9-A-060408	GP-9-B-060408
GP-9-C-060408	GP-9-C-060408-DUP
GP-9-D-060408	

1.0 Data Package Completeness

Were all items delivered as specified in the QAPP and COC?

Yes

2.0 Laboratory Case Narrative \ Cooler Receipt Form

Were problems noted in the laboratory case narrative or cooler receipt form?

No, although not indicated in the laboratory case narrative, 2-propanol results in several samples exceeded the calibration range of the instrument; therefore, professional judgment was used to qualify 2-propanol in these samples. This issue is addressed further in the appropriate section below.

The cooler receipt form did not indicate any problems.

3.0 Holding Times

Were samples extracted/analyzed within QAPP limits?

Yes

Field ID	Parameter	Analyte	Qualification
N/A			

4.0 Blank Contamination

Were any analytes detected in the Method Blanks, Field Blanks or Trip Blanks?

No

Blank ID	Parameter	Analyte	Concentration	Units
N/A				

Qualifications due to blank contamination are included in the table below.

Field ID	Parameter	Analyte	New RL	Qualification
N/A				

5.0 Laboratory Control Sample

Were LCS recoveries within evaluation criteria?

Yes

LCS ID	Parameter	Analyte	LCS/LCSD Recovery	RPD	LCS/LCSD/RPD Criteria
N/A					

Analytical data that required qualification based on LCS data are included in the table below.

Field ID	Parameter	Analyte	Qualification
N/A			

6.0 Surrogate Recoveries

Were surrogate recoveries within evaluation criteria?

Yes

Field ID	Parameter	Surrogate	Recovery	Criteria
N/A				

Analytical data that required qualification based on surrogate data are included in the table below.

Field ID	Parameter	Analyte	Qualification
N/A			

7.0 Matrix Spike and Matrix Spike Duplicate Recoveries

Were MS/MSD samples reported as part of this SDG?

MS/MSD samples are not applicable for air samples.

Were MS/MSD recoveries within evaluation criteria?

N/A

MS/MSD ID	Parameter	Analyte	MS/MSD Recovery	RPD	MS/MSD/RPD Criteria
N/A					

Analytical data that required qualification based on MS/MSD data are included in the table below.

Field ID	Parameter	Analyte	Qualification
N/A			

8.0 Laboratory Duplicate Results

Were laboratory duplicate samples collected as part of this SDG?

No

Were laboratory duplicate sample RPDs within criteria?

N/A

Field ID	Parameter	Analyte	RPD	Criteria
N/A				

Data qualified due to outlying laboratory duplicate recoveries are identified below:

Field ID	Parameter	Analyte	Qualification
N/A			

9.0 Field Duplicate Results

Were field duplicate samples collected as part of this SDG?

Yes

Field ID	Field Duplicate ID
GP-9-C-060408	GP-9-C-060408-DUP

Were field duplicates within evaluation criteria?

Yes

Field ID	Field Duplicate ID	Parameter	Analyte	RPD	Qualification
N/A					

10.0 Sample Dilutions

For samples that were diluted and nondetect, were undiluted results also reported?

Yes

The following table identifies the analyses which were reported as nondetect, diluted, and an undiluted run **was not** reported:

Field ID	Parameter	Dilution Factor
N/A		

11.0 Additional Qualifications

Were additional qualifications applied?

Yes

Professional judgment was used to qualify 2-propanol in several samples listed in the table below. The compound 2-propanol exceeded the calibration range of the instrument in these samples. The 2-propanol results will be reported as > 200 in both samples.

Field ID	Analyte	Qualification	Comments
GP-13-A-060408	2-propanol	J	Professional Judgment
GP-13-C-060408	2-propanol	J	Professional Judgment
GP-9-A-060408	2-propanol	J	Professional Judgment
GP-9-B-060408	2-propanol	J	Professional Judgment
GP-9-C-060408	2-propanol	J	Professional Judgment
GP-9-C-060408-DUP	2-propanol	J	Professional Judgment
GP-9-D-060408	2-propanol	J	Professional Judgment



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- Work order Summary;
- Laboratory Narrative;
- Results; and
- Chain of Custody (copy).

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AN ENVIRONMENTAL ANALYTICAL LABORATORY

WORK ORDER #: 0806099A

Work Order Summary

CLIENT: Mr. Mike Miller
URS Corporation
1001 Highlands Plaza Dr. West
Suite 300
St. Louis, MO 63110

BILL TO: Accounts Payable OSP 2660 A
Equiva Services/Shell Oil Products
P.O. Box 4912
Houston, TX 77210-4720

PHONE: 314-566-3073

P.O. # 4700002383

FAX:

PROJECT # 21561979 Rte 111 & Rand Ave Vicinity

DATE RECEIVED: 06/05/2008

CONTACT: Brandon Dunmore

DATE COMPLETED: 06/18/2008

<u>FRACTION #</u>	<u>NAME</u>	<u>TEST</u>	<u>RECEIPT VAC./PRES.</u>	<u>FINAL PRESSURE</u>
01A	GP-13-A-060408	Modified TO-15	10.0 "Hg	15 psi
02A	GP-13-B-060408	Modified TO-15	9.0 "Hg	15 psi
03A	GP-13-C-060408	Modified TO-15	7.5 "Hg	15 psi
04A	GP-13-D-060408	Modified TO-15	9.0 "Hg	15 psi
05A	GP-9-A-060408	Modified TO-15	8.5 "Hg	15 psi
06A	GP-9-B-060408	Modified TO-15	9.0 "Hg	15 psi
07A	GP-9-C-060408	Modified TO-15	9.0 "Hg	15 psi
08A	GP-9-C-060408-DUP	Modified TO-15	8.5 "Hg	15 psi
09A	GP-9-D-060408	Modified TO-15	7.5 "Hg	15 psi
10A	Lab Blank	Modified TO-15	NA	NA
10B	Lab Blank	Modified TO-15	NA	NA
11A	CCV	Modified TO-15	NA	NA
11B	CCV	Modified TO-15	NA	NA
12A	LCS	Modified TO-15	NA	NA
12B	LCS	Modified TO-15	NA	NA

CERTIFIED BY:

Laboratory Director

DATE: 06/18/08

Certification 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: 07/01/07, Expiration date: 06/30/08

Air Toxics Ltd. certifies that the test results contained in this report meet all requirements of the NELAC standards

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LABORATORY NARRATIVE
Modified TO-15
URS Corporation
Workorder# 0806099A

Nine 1 Liter Summa Canister samples were received on June 05, 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.

<i>Requirement</i>	<i>TO-15</i>	<i>ATL Modifications</i>
Daily CCV	+/- 30% Difference	<= 30% Difference with two allowed out up to <=40%; flag and narrate outliers
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

There were no analytical discrepancies.

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 not 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

Client Sample ID: GP-13-A-060408

Lab ID#: 0806099A-01A

MODIFIED EPA METHOD TO-15 GC/MS FULL SCAN

File Name	15061713	Date of Collection	6/4/08
Dil Factor	303	Date of Analysis	6/17/08 07:03 PM

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (uG/m3)	Amount (uG/m3)
Freon 12	150	Not Detected	750	Not Detected
Freon 114	150	Not Detected	1000	Not Detected
Chloromethane	610	Not Detected	1200	Not Detected
Vinyl Chloride	150	Not Detected	390	Not Detected
1,3-Butadiene	150	Not Detected	340	Not Detected
Bromomethane	150	Not Detected	590	Not Detected
Chloroethane	150	Not Detected	400	Not Detected
Freon 11	150	Not Detected	850	Not Detected
Ethanol	610	Not Detected	1100	Not Detected
Freon 113	150	Not Detected	1200	Not Detected
1,1-Dichloroethene	150	Not Detected	600	Not Detected
Acetone	610	2700	1400	6300
2-Propanol	610	>250 -220000 E "J"	1500	540000 E
Carbon Disulfide	150	Not Detected	470	Not Detected
3-Chloropropene	610	Not Detected	1900	Not Detected
Methylene Chloride	150	Not Detected	530	Not Detected
Methyl tert-butyl ether	150	Not Detected	550	Not Detected
trans-1,2-Dichloroethene	150	Not Detected	600	Not Detected
Hexane	150	Not Detected	530	Not Detected
1,1-Dichloroethane	150	Not Detected	610	Not Detected
2-Butanone (Methyl Ethyl Ketone)	150	Not Detected	450	Not Detected
cis-1,2-Dichloroethene	150	Not Detected	600	Not Detected
Tetrahydrofuran	150	Not Detected	450	Not Detected
Chloroform	150	Not Detected	740	Not Detected
1,1,1-Trichloroethane	150	Not Detected	830	Not Detected
Cyclohexane	150	Not Detected	520	Not Detected
Carbon Tetrachloride	150	Not Detected	950	Not Detected
2,2,4-Trimethylpentane	150	Not Detected	710	Not Detected
Benzene	150	Not Detected	480	Not Detected
1,2-Dichloroethane	150	Not Detected	610	Not Detected
Heptane	150	Not Detected	620	Not Detected
Trichloroethene	150	Not Detected	810	Not Detected
1,2-Dichloropropane	150	Not Detected	700	Not Detected
1,4-Dioxane	610	Not Detected	2200	Not Detected
Bromodichloromethane	150	Not Detected	1000	Not Detected
cis-1,3-Dichloropropene	150	Not Detected	690	Not Detected
4-Methyl-2-pentanone	150	Not Detected	620	Not Detected
Toluene	150	Not Detected	570	Not Detected
trans-1,3-Dichloropropene	150	Not Detected	690	Not Detected



AN ENVIRONMENTAL ANALYTICAL LABORATORY

Client Sample ID: GP-13-A-060408

Lab ID#: 0806099A-01A

MODIFIED EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	b061713	Date of Collection:	6/4/08
Dil. Factor:	303	Date of Analysis:	6/17/08 07:03 PM

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (uG/m3)	Amount (uG/m3)
1,1,2-Trichloroethane	150	Not Detected	830	Not Detected
Tetrachloroethene	150	Not Detected	1000	Not Detected
2-Hexanone	610	Not Detected	2500	Not Detected
Dibromochloromethane	150	Not Detected	1300	Not Detected
1,2-Dibromoethane (EDB)	150	Not Detected	1200	Not Detected
Chlorobenzene	150	Not Detected	700	Not Detected
Ethyl Benzene	150	Not Detected	660	Not Detected
m,p-Xylene	150	Not Detected	660	Not Detected
o-Xylene	150	Not Detected	660	Not Detected
Styrene	150	Not Detected	640	Not Detected
Bromoform	150	Not Detected	1600	Not Detected
Cumene	150	Not Detected	740	Not Detected
1,1,2,2-Tetrachloroethane	150	Not Detected	1000	Not Detected
Propylbenzene	150	Not Detected	740	Not Detected
4-Ethyltoluene	150	Not Detected	740	Not Detected
1,3,5-Trimethylbenzene	150	Not Detected	740	Not Detected
1,2,4-Trimethylbenzene	150	Not Detected	740	Not Detected
1,3-Dichlorobenzene	150	Not Detected	910	Not Detected
1,4-Dichlorobenzene	150	Not Detected	910	Not Detected
alpha-Chlorotoluene	150	Not Detected	780	Not Detected
1,2-Dichlorobenzene	150	Not Detected	910	Not Detected
1,2,4-Trichlorobenzene	610	Not Detected	4500	Not Detected
Hexachlorobutadiene	610	Not Detected	6500	Not Detected

E = Exceeds instrument calibration range.

Container Type: 1 Liter Summa Canister

Surrogates	%Recovery	Method Limits
Toluene-d8	100	70-130
1,2-Dichloroethane-d4	115	70-130
4-Bromofluorobenzene	99	70-130



AN ENVIRONMENTAL ANALYTICAL LABORATORY

Client Sample ID: GP-13-B-060408

Lab ID#: 0806099A-02A

MODIFIED EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	b061709	Date of Collection:	6/4/08
Dil. Factor:	289	Date of Analysis:	6/17/08 02:56 PM

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (uG/m3)	Amount (uG/m3)
Freon 12	140	Not Detected	710	Not Detected
Freon 114	140	Not Detected	1000	Not Detected
Chloromethane	580	Not Detected	1200	Not Detected
Vinyl Chloride	140	Not Detected	370	Not Detected
1,3-Butadiene	140	Not Detected	320	Not Detected
Bromomethane	140	Not Detected	560	Not Detected
Chloroethane	140	Not Detected	380	Not Detected
Freon 11	140	Not Detected	810	Not Detected
Ethanol	580	1100	1100	2000
Freon 113	140	Not Detected	1100	Not Detected
1,1-Dichloroethene	140	Not Detected	570	Not Detected
Acetone	580	Not Detected	1400	Not Detected
2-Propanol	580	32000	1400	79000
Carbon Disulfide	140	Not Detected	450	Not Detected
3-Chloropropene	580	Not Detected	1800	Not Detected
Methylene Chloride	140	Not Detected	500	Not Detected
Methyl tert-butyl ether	140	Not Detected	520	Not Detected
trans-1,2-Dichloroethene	140	Not Detected	570	Not Detected
Hexane	140	Not Detected	510	Not Detected
1,1-Dichloroethane	140	Not Detected	580	Not Detected
2-Butanone (Methyl Ethyl Ketone)	140	Not Detected	430	Not Detected
cis-1,2-Dichloroethene	140	Not Detected	570	Not Detected
Tetrahydrofuran	140	Not Detected	430	Not Detected
Chloroform	140	Not Detected	700	Not Detected
1,1,1-Trichloroethane	140	Not Detected	790	Not Detected
Cyclohexane	140	Not Detected	500	Not Detected
Carbon Tetrachloride	140	Not Detected	910	Not Detected
2,2,4-Trimethylpentane	140	Not Detected	680	Not Detected
Benzene	140	Not Detected	460	Not Detected
1,2-Dichloroethane	140	Not Detected	580	Not Detected
Heptane	140	Not Detected	590	Not Detected
Trichloroethene	140	Not Detected	780	Not Detected
1,2-Dichloropropane	140	Not Detected	670	Not Detected
1,4-Dioxane	580	Not Detected	2100	Not Detected
Bromodichloromethane	140	Not Detected	970	Not Detected
cis-1,3-Dichloropropene	140	Not Detected	660	Not Detected
4-Methyl-2-pentanone	140	Not Detected	590	Not Detected
Toluene	140	Not Detected	540	Not Detected
trans-1,3-Dichloropropene	140	Not Detected	660	Not Detected



AN ENVIRONMENTAL ANALYTICAL LABORATORY

Client Sample ID: GP-13-B-060408

Lab ID#: 0806099A-02A

MODIFIED EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	b061709	Date of Collection:	6/4/08
Dil. Factor:	289	Date of Analysis:	6/17/08 02:56 PM

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (uG/m3)	Amount (uG/m3)
1,1,2-Trichloroethane	140	Not Detected	790	Not Detected
Tetrachloroethene	140	Not Detected	980	Not Detected
2-Hexanone	580	Not Detected	2400	Not Detected
Dibromochloromethane	140	Not Detected	1200	Not Detected
1,2-Dibromoethane (EDB)	140	Not Detected	1100	Not Detected
Chlorobenzene	140	Not Detected	660	Not Detected
Ethyl Benzene	140	Not Detected	630	Not Detected
m,p-Xylene	140	250	630	1100
o-Xylene	140	Not Detected	630	Not Detected
Styrene	140	Not Detected	620	Not Detected
Bromoform	140	Not Detected	1500	Not Detected
Cumene	140	Not Detected	710	Not Detected
1,1,2,2-Tetrachloroethane	140	Not Detected	990	Not Detected
Propylbenzene	140	Not Detected	710	Not Detected
4-Ethyltoluene	140	140	710	710
1,3,5-Trimethylbenzene	140	Not Detected	710	Not Detected
1,2,4-Trimethylbenzene	140	150	710	730
1,3-Dichlorobenzene	140	Not Detected	870	Not Detected
1,4-Dichlorobenzene	140	Not Detected	870	Not Detected
alpha-Chlorotoluene	140	Not Detected	750	Not Detected
1,2-Dichlorobenzene	140	Not Detected	870	Not Detected
1,2,4-Trichlorobenzene	580	Not Detected	4300	Not Detected
Hexachlorobutadiene	580	Not Detected	6200	Not Detected

Container Type: 1 Liter Summa Canister

Surrogates	%Recovery	Method Limits
Toluene-d8	100	70-130
1,2-Dichloroethane-d4	112	70-130
4-Bromofluorobenzene	98	70-130



AN ENVIRONMENTAL ANALYTICAL LABORATORY

Client Sample ID: GP-13-C-060408

Lab ID#: 0806099A-03A

MODIFIED EPA METHOD TO-15 GC/MS FULL SCAN

File Name	6061714	Date of Collection	6/4/08
Dis Factor	269	Date of Analysis	6/17/08 07:51 PM

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (uG/m3)	Amount (uG/m3)
Freon 12	130	Not Detected	660	Not Detected
Freon 114	130	Not Detected	940	Not Detected
Chloromethane	540	Not Detected	1100	Not Detected
Vinyl Chloride	130	Not Detected	340	Not Detected
1,3-Butadiene	130	Not Detected	300	Not Detected
Bromomethane	130	Not Detected	520	Not Detected
Chloroethane	130	Not Detected	350	Not Detected
Freon 11	130	Not Detected	760	Not Detected
Ethanol	540	Not Detected	1000	Not Detected
Freon 113	130	Not Detected	1000	Not Detected
1,1-Dichloroethene	130	Not Detected	530	Not Detected
Acetone	540	2800	1300	6700
2-Propanol	540	> 200 280000 E "J"	1300	700000 E
Carbon Disulfide	130	Not Detected	420	Not Detected
3-Chloropropene	540	Not Detected	1700	Not Detected
Methylene Chloride	130	Not Detected	470	Not Detected
Methyl tert-butyl ether	130	Not Detected	480	Not Detected
trans-1,2-Dichloroethene	130	Not Detected	530	Not Detected
Hexane	130	Not Detected	470	Not Detected
1,1-Dichloroethane	130	Not Detected	540	Not Detected
2-Butanone (Methyl Ethyl Ketone)	130	Not Detected	400	Not Detected
cis-1,2-Dichloroethene	130	Not Detected	530	Not Detected
Tetrahydrofuran	130	Not Detected	400	Not Detected
Chloroform	130	Not Detected	660	Not Detected
1,1,1-Trichloroethane	130	Not Detected	730	Not Detected
Cyclohexane	130	Not Detected	460	Not Detected
Carbon Tetrachloride	130	Not Detected	850	Not Detected
2,2,4-Trimethylpentane	130	Not Detected	630	Not Detected
Benzene	130	Not Detected	430	Not Detected
1,2-Dichloroethane	130	Not Detected	540	Not Detected
Heptane	130	Not Detected	550	Not Detected
Trichloroethene	130	Not Detected	720	Not Detected
1,2-Dichloropropane	130	Not Detected	620	Not Detected
1,4-Dioxane	540	Not Detected	1900	Not Detected
Bromodichloromethane	130	Not Detected	900	Not Detected
cis-1,3-Dichloropropene	130	Not Detected	610	Not Detected
4-Methyl-2-pentanone	130	Not Detected	550	Not Detected
Toluene	130	Not Detected	510	Not Detected
trans-1,3-Dichloropropene	130	Not Detected	610	Not Detected



AN ENVIRONMENTAL ANALYTICAL LABORATORY

Client Sample ID: GP-13-C-060408

Lab ID#: 0806099A-03A

MODIFIED EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	b061714	Date of Collection:	6/4/08
Dil. Factor:	269	Date of Analysis:	6/17/08 07:51 PM

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (uG/m3)	Amount (uG/m3)
1,1,2-Trichloroethane	130	Not Detected	730	Not Detected
Tetrachloroethene	130	Not Detected	910	Not Detected
2-Hexanone	540	Not Detected	2200	Not Detected
Dibromochloromethane	130	Not Detected	1100	Not Detected
1,2-Dibromoethane (EDB)	130	Not Detected	1000	Not Detected
Chlorobenzene	130	Not Detected	620	Not Detected
Ethyl Benzene	130	Not Detected	580	Not Detected
m,p-Xylene	130	Not Detected	580	Not Detected
o-Xylene	130	Not Detected	580	Not Detected
Styrene	130	Not Detected	570	Not Detected
Bromoform	130	Not Detected	1400	Not Detected
Cumene	130	Not Detected	660	Not Detected
1,1,2,2-Tetrachloroethane	130	Not Detected	920	Not Detected
Propylbenzene	130	Not Detected	660	Not Detected
4-Ethyltoluene	130	Not Detected	660	Not Detected
1,3,5-Trimethylbenzene	130	Not Detected	660	Not Detected
1,2,4-Trimethylbenzene	130	Not Detected	660	Not Detected
1,3-Dichlorobenzene	130	Not Detected	810	Not Detected
1,4-Dichlorobenzene	130	Not Detected	810	Not Detected
alpha-Chlorotoluene	130	Not Detected	700	Not Detected
1,2-Dichlorobenzene	130	Not Detected	810	Not Detected
1,2,4-Trichlorobenzene	540	Not Detected	4000	Not Detected
Hexachlorobutadiene	540	Not Detected	5700	Not Detected

E = Exceeds instrument calibration range.

Container Type: 1 Liter Summa Canister

Surrogates	%Recovery	Method Limits
Toluene-d8	99	70-130
1,2-Dichloroethane-d4	115	70-130
4-Bromofluorobenzene	100	70-130



AN ENVIRONMENTAL ANALYTICAL LABORATORY

Client Sample ID: GP-13-D-060408

Lab ID#: 0806099A-04A

MODIFIED EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	b061710	Date of Collection:	6/4/08
Dil. Factor:	289	Date of Analysis:	6/17/08 04:27 PM

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (uG/m3)	Amount (uG/m3)
Freon 12	140	Not Detected	710	Not Detected
Freon 114	140	Not Detected	1000	Not Detected
Chloromethane	580	Not Detected	1200	Not Detected
Vinyl Chloride	140	Not Detected	370	Not Detected
1,3-Butadiene	140	Not Detected	320	Not Detected
Bromomethane	140	Not Detected	560	Not Detected
Chloroethane	140	Not Detected	380	Not Detected
Freon 11	140	Not Detected	810	Not Detected
Ethanol	580	Not Detected	1100	Not Detected
Freon 113	140	Not Detected	1100	Not Detected
1,1-Dichloroethene	140	Not Detected	570	Not Detected
Acetone	580	Not Detected	1400	Not Detected
2-Propanol	580	38000	1400	94000
Carbon Disulfide	140	Not Detected	450	Not Detected
3-Chloropropene	580	Not Detected	1800	Not Detected
Methylene Chloride	140	Not Detected	500	Not Detected
Methyl tert-butyl ether	140	Not Detected	520	Not Detected
trans-1,2-Dichloroethene	140	Not Detected	570	Not Detected
Hexane	140	Not Detected	510	Not Detected
1,1-Dichloroethane	140	Not Detected	580	Not Detected
2-Butanone (Methyl Ethyl Ketone)	140	Not Detected	430	Not Detected
cis-1,2-Dichloroethene	140	Not Detected	570	Not Detected
Tetrahydrofuran	140	200	430	590
Chloroform	140	Not Detected	700	Not Detected
1,1,1-Trichloroethane	140	Not Detected	790	Not Detected
Cyclohexane	140	Not Detected	500	Not Detected
Carbon Tetrachloride	140	Not Detected	910	Not Detected
2,2,4-Trimethylpentane	140	Not Detected	680	Not Detected
Benzene	140	Not Detected	460	Not Detected
1,2-Dichloroethane	140	Not Detected	580	Not Detected
Heptane	140	Not Detected	590	Not Detected
Trichloroethene	140	Not Detected	780	Not Detected
1,2-Dichloropropane	140	Not Detected	670	Not Detected
1,4-Dioxane	580	Not Detected	2100	Not Detected
Bromodichloromethane	140	Not Detected	970	Not Detected
cis-1,3-Dichloropropene	140	Not Detected	660	Not Detected
4-Methyl-2-pentanone	140	Not Detected	590	Not Detected
Toluene	140	Not Detected	540	Not Detected
trans-1,3-Dichloropropene	140	Not Detected	660	Not Detected



AN ENVIRONMENTAL ANALYTICAL LABORATORY

Client Sample ID: GP-13-D-060408

Lab ID#: 0806099A-04A

MODIFIED EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	b061710	Date of Collection:	6/4/08
Dil. Factor:	289	Date of Analysis:	6/17/08 04:27 PM

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (uG/m3)	Amount (uG/m3)
1,1,2-Trichloroethane	140	Not Detected	790	Not Detected
Tetrachloroethene	140	Not Detected	980	Not Detected
2-Hexanone	580	Not Detected	2400	Not Detected
Dibromochloromethane	140	Not Detected	1200	Not Detected
1,2-Dibromoethane (EDB)	140	Not Detected	1100	Not Detected
Chlorobenzene	140	Not Detected	660	Not Detected
Ethyl Benzene	140	Not Detected	630	Not Detected
m,p-Xylene	140	Not Detected	630	Not Detected
o-Xylene	140	Not Detected	630	Not Detected
Styrene	140	Not Detected	620	Not Detected
Bromoform	140	Not Detected	1500	Not Detected
Cumene	140	Not Detected	710	Not Detected
1,1,2,2-Tetrachloroethane	140	Not Detected	990	Not Detected
Propylbenzene	140	Not Detected	710	Not Detected
4-Ethyltoluene	140	Not Detected	710	Not Detected
1,3,5-Trimethylbenzene	140	Not Detected	710	Not Detected
1,2,4-Trimethylbenzene	140	Not Detected	710	Not Detected
1,3-Dichlorobenzene	140	Not Detected	870	Not Detected
1,4-Dichlorobenzene	140	Not Detected	870	Not Detected
alpha-Chlorotoluene	140	Not Detected	750	Not Detected
1,2-Dichlorobenzene	140	Not Detected	870	Not Detected
1,2,4-Trichlorobenzene	580	Not Detected	4300	Not Detected
Hexachlorobutadiene	580	Not Detected	6200	Not Detected

Container Type: 1 Liter Summa Canister

Surrogates	%Recovery	Method Limits
Toluene-d8	101	70-130
1,2-Dichloroethane-d4	115	70-130
4-Bromofluorobenzene	99	70-130



AN ENVIRONMENTAL ANALYTICAL LABORATORY

Client Sample ID: GP-9-A-060408

Lab ID#: 0806099A-05A

MODIFIED EPA METHOD TO-15 GC/MS FULL SCAN

File Name	6061625	Date of Collection	6/4/08
Dil Factor	113	Date of Analysis	6/17/08 05:38 AM

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (uG/m3)	Amount (uG/m3)
Freon 12	5.6	Not Detected	28	Not Detected
Freon 114	5.6	Not Detected	39	Not Detected
Chloromethane	23	Not Detected	47	Not Detected
Vinyl Chloride	5.6	Not Detected	14	Not Detected
1,3-Butadiene	5.6	Not Detected	12	Not Detected
Bromomethane	5.6	Not Detected	22	Not Detected
Chloroethane	5.6	Not Detected	15	Not Detected
Freon 11	5.6	Not Detected	32	Not Detected
Ethanol	23	610	42	1200
Freon 113	5.6	Not Detected	43	Not Detected
1,1-Dichloroethene	5.6	Not Detected	22	Not Detected
Acetone	23	71	54	170
2-Propanol	23	> 200 - 2000 E "J"	56	7000 E
Carbon Disulfide	5.6	Not Detected	18	Not Detected
3-Chloropropene	23	Not Detected	71	Not Detected
Methylene Chloride	5.6	Not Detected	20	Not Detected
Methyl tert-butyl ether	5.6	Not Detected	20	Not Detected
trans-1,2-Dichloroethene	5.6	Not Detected	22	Not Detected
Hexane	5.6	Not Detected	20	Not Detected
1,1-Dichloroethane	5.6	Not Detected	23	Not Detected
2-Butanone (Methyl Ethyl Ketone)	5.6	Not Detected	17	Not Detected
cis-1,2-Dichloroethene	5.6	Not Detected	22	Not Detected
Tetrahydrofuran	5.6	6.2	17	18
Chloroform	5.6	Not Detected	28	Not Detected
1,1,1-Trichloroethane	5.6	Not Detected	31	Not Detected
Cyclohexane	5.6	Not Detected	19	Not Detected
Carbon Tetrachloride	5.6	Not Detected	36	Not Detected
2,2,4-Trimethylpentane	5.6	Not Detected	26	Not Detected
Benzene	5.6	Not Detected	18	Not Detected
1,2-Dichloroethane	5.6	Not Detected	23	Not Detected
Heptane	5.6	Not Detected	23	Not Detected
Trichloroethene	5.6	Not Detected	30	Not Detected
1,2-Dichloropropane	5.6	Not Detected	26	Not Detected
1,4-Dioxane	23	Not Detected	81	Not Detected
Bromodichloromethane	5.6	Not Detected	38	Not Detected
cis-1,3-Dichloropropene	5.6	Not Detected	26	Not Detected
4-Methyl-2-pentanone	5.6	Not Detected	23	Not Detected
Toluene	5.6	12	21	46
trans-1,3-Dichloropropene	5.6	Not Detected	26	Not Detected



AN ENVIRONMENTAL ANALYTICAL LABORATORY

Client Sample ID: GP-9-A-060408

Lab ID#: 0806099A-05A

MODIFIED EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	b061625	Date of Collection:	6/4/08
Dil. Factor:	11.3	Date of Analysis:	6/17/08 05:38 AM

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (uG/m3)	Amount (uG/m3)
1,1,2-Trichloroethane	5.6	Not Detected	31	Not Detected
Tetrachloroethene	5.6	Not Detected	38	Not Detected
2-Hexanone	23	Not Detected	92	Not Detected
Dibromochloromethane	5.6	Not Detected	48	Not Detected
1,2-Dibromoethane (EDB)	5.6	Not Detected	43	Not Detected
Chlorobenzene	5.6	Not Detected	26	Not Detected
Ethyl Benzene	5.6	Not Detected	24	Not Detected
m,p-Xylene	5.6	Not Detected	24	Not Detected
o-Xylene	5.6	Not Detected	24	Not Detected
Styrene	5.6	Not Detected	24	Not Detected
Bromoform	5.6	Not Detected	58	Not Detected
Cumene	5.6	Not Detected	28	Not Detected
1,1,2,2-Tetrachloroethane	5.6	Not Detected	39	Not Detected
Propylbenzene	5.6	Not Detected	28	Not Detected
4-Ethyltoluene	5.6	Not Detected	28	Not Detected
1,3,5-Trimethylbenzene	5.6	Not Detected	28	Not Detected
1,2,4-Trimethylbenzene	5.6	Not Detected	28	Not Detected
1,3-Dichlorobenzene	5.6	12	34	73
1,4-Dichlorobenzene	5.6	Not Detected	34	Not Detected
alpha-Chlorotoluene	5.6	Not Detected	29	Not Detected
1,2-Dichlorobenzene	5.6	Not Detected	34	Not Detected
1,2,4-Trichlorobenzene	23	Not Detected	170	Not Detected
Hexachlorobutadiene	23	Not Detected	240	Not Detected

E = Exceeds instrument calibration range.

Container Type: 1 Liter Summa Canister

Surrogates	%Recovery	Method Limits
Toluene-d8	100	70-130
1,2-Dichloroethane-d4	108	70-130
4-Bromofluorobenzene	96	70-130



AN ENVIRONMENTAL ANALYTICAL LABORATORY

Client Sample ID: GP-9-B-060408

Lab ID#: 0806099A-06A

MODIFIED EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	8061626	Date of Collection:	6/4/08
Dil Factor:	5.731	Date of Analysis:	6/17/08 06:16 AM

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (uG/m3)	Amount (uG/m3)
Freon 12	2.9	Not Detected	14	Not Detected
Freon 114	2.9	Not Detected	20	Not Detected
Chloromethane	12	Not Detected	24	Not Detected
Vinyl Chloride	2.9	Not Detected	7.4	Not Detected
1,3-Butadiene	2.9	Not Detected	6.4	Not Detected
Bromomethane	2.9	Not Detected	11	Not Detected
Chloroethane	2.9	Not Detected	7.6	Not Detected
Freon 11	2.9	Not Detected	16	Not Detected
Ethanol	12	550	22	1000
Freon 113	2.9	Not Detected	22	Not Detected
1,1-Dichloroethene	2.9	Not Detected	11	Not Detected
Acetone	12	180	27	440
2-Propanol	12	>200 - 1000 E "J"	28	4000 E
Carbon Disulfide	2.9	Not Detected	9.0	Not Detected
3-Chloropropene	12	Not Detected	36	Not Detected
Methylene Chloride	2.9	Not Detected	10	Not Detected
Methyl tert-butyl ether	2.9	Not Detected	10	Not Detected
trans-1,2-Dichloroethene	2.9	Not Detected	11	Not Detected
Hexane	2.9	Not Detected	10	Not Detected
1,1-Dichloroethane	2.9	Not Detected	12	Not Detected
2-Butanone (Methyl Ethyl Ketone)	2.9	17	8.5	51
cis-1,2-Dichloroethene	2.9	Not Detected	11	Not Detected
Tetrahydrofuran	2.9	3.6	8.5	11
Chloroform	2.9	Not Detected	14	Not Detected
1,1,1-Trichloroethane	2.9	Not Detected	16	Not Detected
Cyclohexane	2.9	Not Detected	9.9	Not Detected
Carbon Tetrachloride	2.9	Not Detected	18	Not Detected
2,2,4-Trimethylpentane	2.9	Not Detected	14	Not Detected
Benzene	2.9	Not Detected	9.2	Not Detected
1,2-Dichloroethane	2.9	Not Detected	12	Not Detected
Heptane	2.9	Not Detected	12	Not Detected
Trichloroethene	2.9	Not Detected	16	Not Detected
1,2-Dichloropropane	2.9	Not Detected	13	Not Detected
1,4-Dioxane	12	Not Detected	42	Not Detected
Bromodichloromethane	2.9	Not Detected	19	Not Detected
cis-1,3-Dichloropropene	2.9	Not Detected	13	Not Detected
4-Methyl-2-pentanone	2.9	Not Detected	12	Not Detected
Toluene	2.9	9.9	11	37
trans-1,3-Dichloropropene	2.9	Not Detected	13	Not Detected



AN ENVIRONMENTAL ANALYTICAL LABORATORY

Client Sample ID: GP-9-B-060408

Lab ID#: 0806099A-06A

MODIFIED EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	b061626	Date of Collection:	6/4/08
Dil. Factor:	5.78	Date of Analysis:	6/17/08 06:16 AM

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (uG/m3)	Amount (uG/m3)
1,1,2-Trichloroethane	2.9	Not Detected	16	Not Detected
Tetrachloroethene	2.9	Not Detected	20	Not Detected
2-Hexanone	12	Not Detected	47	Not Detected
Dibromochloromethane	2.9	Not Detected	25	Not Detected
1,2-Dibromoethane (EDB)	2.9	Not Detected	22	Not Detected
Chlorobenzene	2.9	Not Detected	13	Not Detected
Ethyl Benzene	2.9	Not Detected	12	Not Detected
m,p-Xylene	2.9	Not Detected	12	Not Detected
o-Xylene	2.9	Not Detected	12	Not Detected
Styrene	2.9	Not Detected	12	Not Detected
Bromoform	2.9	Not Detected	30	Not Detected
Cumene	2.9	Not Detected	14	Not Detected
1,1,2,2-Tetrachloroethane	2.9	Not Detected	20	Not Detected
Propylbenzene	2.9	Not Detected	14	Not Detected
4-Ethyltoluene	2.9	Not Detected	14	Not Detected
1,3,5-Trimethylbenzene	2.9	Not Detected	14	Not Detected
1,2,4-Trimethylbenzene	2.9	Not Detected	14	Not Detected
1,3-Dichlorobenzene	2.9	11	17	69
1,4-Dichlorobenzene	2.9	Not Detected	17	Not Detected
alpha-Chlorotoluene	2.9	Not Detected	15	Not Detected
1,2-Dichlorobenzene	2.9	Not Detected	17	Not Detected
1,2,4-Trichlorobenzene	12	Not Detected	86	Not Detected
Hexachlorobutadiene	12	Not Detected	120	Not Detected

E = Exceeds instrument calibration range.

Container Type: 1 Liter Summa Canister

Surrogates	%Recovery	Method Limits
Toluene-d8	100	70-130
1,2-Dichloroethane-d4	108	70-130
4-Bromofluorobenzene	97	70-130



AN ENVIRONMENTAL ANALYTICAL LABORATORY

Client Sample ID: GP-9-C-060408

Lab ID#: 0806099A-07A

MODIFIED EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	6061712	Date of Collection:	6/4/08
Dil Factor:	289	Date of Analysis:	6/17/08 06:24 PM

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (uG/m3)	Amount (uG/m3)
Freon 12	140	Not Detected	710	Not Detected
Freon 114	140	Not Detected	1000	Not Detected
Chloromethane	580	Not Detected	1200	Not Detected
Vinyl Chloride	140	Not Detected	370	Not Detected
1,3-Butadiene	140	Not Detected	320	Not Detected
Bromomethane	140	Not Detected	560	Not Detected
Chloroethane	140	Not Detected	380	Not Detected
Freon 11	140	Not Detected	810	Not Detected
Ethanol	580	Not Detected	1100	Not Detected
Freon 113	140	Not Detected	1100	Not Detected
1,1-Dichloroethene	140	Not Detected	570	Not Detected
Acetone	580	1000	1400	2500
2-Propanol	580	>200 120000 E "J"	1400	280000 E
Carbon Disulfide	140	Not Detected	450	Not Detected
3-Chloropropene	580	Not Detected	1800	Not Detected
Methylene Chloride	140	Not Detected	500	Not Detected
Methyl tert-butyl ether	140	Not Detected	520	Not Detected
trans-1,2-Dichloroethene	140	Not Detected	570	Not Detected
Hexane	140	Not Detected	510	Not Detected
1,1-Dichloroethane	140	Not Detected	580	Not Detected
2-Butanone (Methyl Ethyl Ketone)	140	Not Detected	430	Not Detected
cis-1,2-Dichloroethene	140	Not Detected	570	Not Detected
Tetrahydrofuran	140	Not Detected	430	Not Detected
Chloroform	140	Not Detected	700	Not Detected
1,1,1-Trichloroethane	140	Not Detected	790	Not Detected
Cyclohexane	140	Not Detected	500	Not Detected
Carbon Tetrachloride	140	Not Detected	910	Not Detected
2,2,4-Trimethylpentane	140	Not Detected	680	Not Detected
Benzene	140	Not Detected	460	Not Detected
1,2-Dichloroethane	140	Not Detected	580	Not Detected
Heptane	140	Not Detected	590	Not Detected
Trichloroethene	140	Not Detected	780	Not Detected
1,2-Dichloropropane	140	Not Detected	670	Not Detected
1,4-Dioxane	580	Not Detected	2100	Not Detected
Bromodichloromethane	140	Not Detected	970	Not Detected
cis-1,3-Dichloropropene	140	Not Detected	660	Not Detected
4-Methyl-2-pentanone	140	Not Detected	590	Not Detected
Toluene	140	Not Detected	540	Not Detected
trans-1,3-Dichloropropene	140	Not Detected	660	Not Detected



AN ENVIRONMENTAL ANALYTICAL LABORATORY

Client Sample ID: GP-9-C-060408

Lab ID#: 0806099A-07A

MODIFIED EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	b061712	Date of Collection:	6/4/08
Dil. Factor:	289	Date of Analysis:	6/17/08 06:24 PM

Compound	Rot. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (uG/m3)	Amount (uG/m3)
1,1,2-Trichloroethane	140	Not Detected	790	Not Detected
Tetrachloroethene	140	Not Detected	980	Not Detected
2-Hexanone	580	Not Detected	2400	Not Detected
Dibromochloromethane	140	Not Detected	1200	Not Detected
1,2-Dibromoethane (EDB)	140	Not Detected	1100	Not Detected
Chlorobenzene	140	Not Detected	660	Not Detected
Ethyl Benzene	140	Not Detected	630	Not Detected
m,p-Xylene	140	Not Detected	630	Not Detected
o-Xylene	140	Not Detected	630	Not Detected
Styrene	140	Not Detected	620	Not Detected
Bromoform	140	Not Detected	1500	Not Detected
Cumene	140	Not Detected	710	Not Detected
1,1,2,2-Tetrachloroethane	140	Not Detected	990	Not Detected
Propylbenzene	140	Not Detected	710	Not Detected
4-Ethyltoluene	140	Not Detected	710	Not Detected
1,3,5-Trimethylbenzene	140	Not Detected	710	Not Detected
1,2,4-Trimethylbenzene	140	Not Detected	710	Not Detected
1,3-Dichlorobenzene	140	Not Detected	870	Not Detected
1,4-Dichlorobenzene	140	Not Detected	870	Not Detected
alpha-Chlorotoluene	140	Not Detected	750	Not Detected
1,2-Dichlorobenzene	140	Not Detected	870	Not Detected
1,2,4-Trichlorobenzene	580	Not Detected	4300	Not Detected
Hexachlorobutadiene	580	Not Detected	6200	Not Detected

E = Exceeds instrument calibration range.

Container Type: 1 Liter Summa Canister

Surrogates	%Recovery	Method Limits
Toluene-d8	100	70-130
1,2-Dichloroethane-d4	112	70-130
4-Bromofluorobenzene	100	70-130



AN ENVIRONMENTAL ANALYTICAL LABORATORY

Client Sample ID: GP-9-C-060408-DUP

Lab ID#: 0806099A-08A

MODIFIED EPA METHOD TO-15 GC/MS FULL SCAN

File Name	5061714	Date of Collection	6/4/08
Dil Factor	282	Date of Analysis	6/17/08 05:33 PM

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (uG/m3)	Amount (uG/m3)
Freon 12	140	Not Detected	700	Not Detected
Freon 114	140	Not Detected	980	Not Detected
Chloromethane	560	Not Detected	1200	Not Detected
Vinyl Chloride	140	Not Detected	360	Not Detected
1,3-Butadiene	140	Not Detected	310	Not Detected
Bromomethane	140	Not Detected	550	Not Detected
Chloroethane	140	Not Detected	370	Not Detected
Freon 11	140	Not Detected	790	Not Detected
Ethanol	560	Not Detected	1100	Not Detected
Freon 113	140	Not Detected	1100	Not Detected
1,1-Dichloroethene	140	Not Detected	560	Not Detected
Acetone	560	1300	1300	3000
2-Propanol	560	>200 - 94000 E "J"	1400	230000 E
Carbon Disulfide	140	Not Detected	440	Not Detected
3-Chloropropene	560	Not Detected	1800	Not Detected
Methylene Chloride	140	Not Detected	490	Not Detected
Methyl tert-butyl ether	140	Not Detected	510	Not Detected
trans-1,2-Dichloroethene	140	Not Detected	560	Not Detected
Hexane	140	Not Detected	500	Not Detected
1,1-Dichloroethane	140	Not Detected	570	Not Detected
2-Butanone (Methyl Ethyl Ketone)	140	Not Detected	420	Not Detected
cis-1,2-Dichloroethene	140	Not Detected	560	Not Detected
Tetrahydrofuran	140	140	420	420
Chloroform	140	Not Detected	690	Not Detected
1,1,1-Trichloroethane	140	Not Detected	770	Not Detected
Cyclohexane	140	Not Detected	480	Not Detected
Carbon Tetrachloride	140	Not Detected	890	Not Detected
2,2,4-Trimethylpentane	140	Not Detected	660	Not Detected
Benzene	140	Not Detected	450	Not Detected
1,2-Dichloroethane	140	Not Detected	570	Not Detected
Heptane	140	Not Detected	580	Not Detected
Trichloroethene	140	Not Detected	760	Not Detected
1,2-Dichloropropane	140	Not Detected	650	Not Detected
1,4-Dioxane	560	Not Detected	2000	Not Detected
Bromodichloromethane	140	Not Detected	940	Not Detected
cis-1,3-Dichloropropene	140	Not Detected	640	Not Detected
4-Methyl-2-pentanone	140	Not Detected	580	Not Detected
Toluene	140	Not Detected	530	Not Detected
trans-1,3-Dichloropropene	140	Not Detected	640	Not Detected



AN ENVIRONMENTAL ANALYTICAL LABORATORY

Client Sample ID: GP-9-C-060408-DUP

Lab ID#: 0806099A-08A

MODIFIED EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	b061711	Date of Collection:	6/4/08
Dil. Factor:	282	Date of Analysis:	6/17/08 05:33 PM

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (uG/m3)	Amount (uG/m3)
1,1,2-Trichloroethane	140	Not Detected	770	Not Detected
Tetrachloroethene	140	Not Detected	960	Not Detected
2-Hexanone	560	Not Detected	2300	Not Detected
Dibromochloromethane	140	Not Detected	1200	Not Detected
1,2-Dibromoethane (EDB)	140	Not Detected	1100	Not Detected
Chlorobenzene	140	Not Detected	650	Not Detected
Ethyl Benzene	140	Not Detected	610	Not Detected
m,p-Xylene	140	Not Detected	610	Not Detected
o-Xylene	140	Not Detected	610	Not Detected
Styrene	140	Not Detected	600	Not Detected
Bromoform	140	Not Detected	1400	Not Detected
Cumene	140	Not Detected	690	Not Detected
1,1,2,2-Tetrachloroethane	140	Not Detected	970	Not Detected
Propylbenzene	140	Not Detected	690	Not Detected
4-Ethyltoluene	140	Not Detected	690	Not Detected
1,3,5-Trimethylbenzene	140	Not Detected	690	Not Detected
1,2,4-Trimethylbenzene	140	Not Detected	690	Not Detected
1,3-Dichlorobenzene	140	Not Detected	850	Not Detected
1,4-Dichlorobenzene	140	Not Detected	850	Not Detected
alpha-Chlorotoluene	140	Not Detected	730	Not Detected
1,2-Dichlorobenzene	140	Not Detected	850	Not Detected
1,2,4-Trichlorobenzene	560	Not Detected	4200	Not Detected
Hexachlorobutadiene	560	Not Detected	6000	Not Detected

E = Exceeds instrument calibration range.

Container Type: 1 Liter Summa Canister

Surrogates	%Recovery	Method Limits
Toluene-d8	98	70-130
1,2-Dichloroethane-d4	114	70-130
4-Bromofluorobenzene	99	70-130



AN ENVIRONMENTAL ANALYTICAL LABORATORY

Client Sample ID: GP-9-D-060408

Lab ID#: 0806099A-09A

MODIFIED EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	6061708	Date of Collection:	6/4/08
Dil Factor:	2.69	Date of Analysis:	6/17/08 01:58 PM

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (uG/m3)	Amount (uG/m3)
Freon 12	1.3	Not Detected	6.6	Not Detected
Freon 114	1.3	Not Detected	9.4	Not Detected
Chloromethane	5.4	Not Detected	11	Not Detected
Vinyl Chloride	1.3	Not Detected	3.4	Not Detected
1,3-Butadiene	1.3	Not Detected	3.0	Not Detected
Bromomethane	1.3	Not Detected	5.2	Not Detected
Chloroethane	1.3	Not Detected	3.5	Not Detected
Freon 11	1.3	Not Detected	7.6	Not Detected
Ethanol	5.4	690 E	10	1300 E
Freon 113	1.3	Not Detected	10	Not Detected
1,1-Dichloroethene	1.3	Not Detected	5.3	Not Detected
Acetone	5.4	83	13	200
2-Propanol	5.4	7200 1900 E J	13	4600 E
Carbon Disulfide	1.3	Not Detected	4.2	Not Detected
3-Chloropropene	5.4	Not Detected	17	Not Detected
Methylene Chloride	1.3	Not Detected	4.7	Not Detected
Methyl tert-butyl ether	1.3	Not Detected	4.8	Not Detected
trans-1,2-Dichloroethene	1.3	Not Detected	5.3	Not Detected
Hexane	1.3	Not Detected	4.7	Not Detected
1,1-Dichloroethane	1.3	Not Detected	5.4	Not Detected
2-Butanone (Methyl Ethyl Ketone)	1.3	4.6	4.0	14
cis-1,2-Dichloroethene	1.3	Not Detected	5.3	Not Detected
Tetrahydrofuran	1.3	3.7	4.0	11
Chloroform	1.3	Not Detected	6.6	Not Detected
1,1,1-Trichloroethane	1.3	Not Detected	7.3	Not Detected
Cyclohexane	1.3	Not Detected	4.6	Not Detected
Carbon Tetrachloride	1.3	Not Detected	8.5	Not Detected
2,2,4-Trimethylpentane	1.3	Not Detected	6.3	Not Detected
Benzene	1.3	Not Detected	4.3	Not Detected
1,2-Dichloroethane	1.3	Not Detected	5.4	Not Detected
Heptane	1.3	Not Detected	5.5	Not Detected
Trichloroethene	1.3	Not Detected	7.2	Not Detected
1,2-Dichloropropane	1.3	Not Detected	6.2	Not Detected
1,4-Dioxane	5.4	Not Detected	19	Not Detected
Bromodichloromethane	1.3	Not Detected	9.0	Not Detected
cis-1,3-Dichloropropene	1.3	Not Detected	6.1	Not Detected
4-Methyl-2-pentanone	1.3	Not Detected	5.5	Not Detected
Toluene	1.3	10	5.1	39
trans-1,3-Dichloropropene	1.3	Not Detected	6.1	Not Detected



AN ENVIRONMENTAL ANALYTICAL LABORATORY

Client Sample ID: GP-9-D-060408

Lab ID#: 0806099A-09A

MODIFIED EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	b061708	Date of Collection:	6/4/08
Dil. Factor:	2.69	Date of Analysis:	6/17/08 01:58 PM

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (uG/m3)	Amount (uG/m3)
1,1,2-Trichloroethane	1.3	Not Detected	7.3	Not Detected
Tetrachloroethene	1.3	Not Detected	9.1	Not Detected
2-Hexanone	5.4	Not Detected	22	Not Detected
Dibromochloromethane	1.3	Not Detected	11	Not Detected
1,2-Dibromoethane (EDB)	1.3	Not Detected	10	Not Detected
Chlorobenzene	1.3	Not Detected	6.2	Not Detected
Ethyl Benzene	1.3	Not Detected	5.8	Not Detected
m,p-Xylene	1.3	2.2	5.8	9.4
o-Xylene	1.3	Not Detected	5.8	Not Detected
Styrene	1.3	Not Detected	5.7	Not Detected
Bromoform	1.3	Not Detected	14	Not Detected
Cumene	1.3	Not Detected	6.6	Not Detected
1,1,2,2-Tetrachloroethane	1.3	Not Detected	9.2	Not Detected
Propylbenzene	1.3	Not Detected	6.6	Not Detected
4-Ethyltoluene	1.3	Not Detected	6.6	Not Detected
1,3,5-Trimethylbenzene	1.3	Not Detected	6.6	Not Detected
1,2,4-Trimethylbenzene	1.3	Not Detected	6.6	Not Detected
1,3-Dichlorobenzene	1.3	14	8.1	83
1,4-Dichlorobenzene	1.3	Not Detected	8.1	Not Detected
alpha-Chlorotoluene	1.3	Not Detected	7.0	Not Detected
1,2-Dichlorobenzene	1.3	Not Detected	8.1	Not Detected
1,2,4-Trichlorobenzene	5.4	Not Detected	40	Not Detected
Hexachlorobutadiene	5.4	Not Detected	57	Not Detected

E = Exceeds instrument calibration range.

Container Type: 1 Liter Summa Canister

Surrogates	%Recovery	Method Limits
Toluene-d8	99	70-130
1,2-Dichloroethane-d4	110	70-130
4-Bromofluorobenzene	98	70-130

Rand Avenue Data Review

Laboratory SDG: 0806099B

Reviewer: Tony Sedlacek

Date Reviewed: 7/22/2008

Guidance: National Functional Guidelines for Organic Data Review 1999.

Applicable Work Plan: Route 111/Rand Avenue Vicinity Investigation Work Plan.

Sample Identification #	Sample Identification #
GP-13-A-060408	GP-13-B-060408
GP-13-C-060408	GP-13-D-060408
GP-9-A-060408	GP-9-B-060408
GP-9-C-060408	GP-9-C-060408-DUP
GP-9-D-060408	

1.0 Data Package Completeness

Were all items delivered as specified in the QAPP and COC?

Yes

2.0 Laboratory Case Narrative \ Cooler Receipt Form

Were problems noted in the laboratory case narrative or cooler receipt form?

The laboratory case narrative and cooler receipt form did not indicate any problems.

3.0 Holding Times

Were samples extracted/analyzed within QAPP limits?

Yes

Field ID	Parameter	Analyte	Qualification
N/A			

4.0 Blank Contamination

Were any analytes detected in the Method Blanks, Field Blanks or Trip Blanks?

No

Blank ID	Parameter	Analyte	Concentration	Units
N/A				

Qualifications due to blank contamination are included in the table below.

Field ID	Parameter	Analyte	New RL	Qualification
N/A				

5.0 Laboratory Control Sample

Were LCS recoveries within evaluation criteria?

Yes

LCS ID	Parameter	Analyte	LCS/LCSD Recovery	RPD	LCS/LCSD/RPD Criteria
N/A					

Analytical data that required qualification based on LCS data are included in the table below.

Field ID	Parameter	Analyte	Qualification
N/A			

6.0 Surrogate Recoveries

Were surrogate recoveries within evaluation criteria?

Surrogates are not applicable for Method Modified ASTM D-1946.

Field ID	Parameter	Surrogate	Recovery	Criteria
N/A				

Analytical data that required qualification based on surrogate data are included in the table below.

Field ID	Parameter	Analyte	Qualification
N/A			

7.0 Matrix Spike and Matrix Spike Duplicate Recoveries

Were MS/MSD samples reported as part of this SDG?

MS/MSD samples are not applicable for air samples.

Were MS/MSD recoveries within evaluation criteria?

N/A

MS/MSD ID	Parameter	Analyte	MS/MSD Recovery	RPD	MS/MSD/RPD Criteria
N/A					

Analytical data that required qualification based on MS/MSD data are included in the table below.

Field ID	Parameter	Analyte	Qualification
N/A			

8.0 Laboratory Duplicate Results

Were laboratory duplicate samples collected as part of this SDG?

No

Were laboratory duplicate sample RPDs within criteria?

N/A

Field ID	Parameter	Analyte	RPD	Criteria
N/A				

Data qualified due to outlying laboratory duplicate recoveries are identified below:

Field ID	Parameter	Analyte	Qualification
N/A			

9.0 Field Duplicate Results

Were field duplicate samples collected as part of this SDG?

Yes

Field ID	Field Duplicate ID
GP-9-C-060408	GP-9-C-060408-DUP

Were field duplicates within evaluation criteria?

Yes

Field ID	Field Duplicate ID	Parameter	Analyte	RPD	Qualification
N/A					

10.0 Sample Dilutions

For samples that were diluted and nondetect, were undiluted results also reported?

Yes

The following table identifies the analyses which were reported as nondetect, diluted, and an undiluted run ***was not*** reported:

Field ID	Parameter	Dilution Factor
N/A		

11.0 Additional Qualifications

Were additional qualifications applied?

No



AN ENVIRONMENTAL ANALYTICAL LABORATORY

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Thank you for choosing Air Toxics Ltd. To better serve our customers, we are providing your report by e-mail. This document is provided in Portable Document Format which can be viewed with Acrobat Reader by Adobe.

This electronic report includes the following:

- Work order Summary;
- Laboratory Narrative;
- Results; and
- Chain of Custody (copy).

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**(916) 985-1000 .FAX (916) 985-1020
Hours 8:00 A.M to 6:00 P.M. Pacific**



AN ENVIRONMENTAL ANALYTICAL LABORATORY

WORK ORDER #: 0806099B

Work Order Summary

CLIENT: Mr. Mike Miller
URS Corporation
1001 Highlands Plaza Dr. West
Suite 300
St. Louis, MO 63110

BILL TO: Accounts Payable OSP 2660 A
Equiva Services/Shell Oil Products
P.O. Box 4912
Houston, TX 77210-4720

PHONE: 314-566-3073

P.O. # 4700002383

FAX:

PROJECT # 21561979 Rte 111 & Rand Ave Vicinity

DATE RECEIVED: 06/05/2008

CONTACT: Brandon Dunmore

DATE COMPLETED: 06/17/2008

<u>FRACTION #</u>	<u>NAME</u>	<u>TEST</u>	<u>RECEIPT VAC./PRES.</u>	<u>FINAL PRESSURE</u>
01A	GP-13-A-060408	Modified ASTM D-1946	10.0 "Hg	15 psi
02A	GP-13-B-060408	Modified ASTM D-1946	9.0 "Hg	15 psi
03A	GP-13-C-060408	Modified ASTM D-1946	7.5 "Hg	15 psi
04A	GP-13-D-060408	Modified ASTM D-1946	9.0 "Hg	15 psi
05A	GP-9-A-060408	Modified ASTM D-1946	8.5 "Hg	15 psi
06A	GP-9-B-060408	Modified ASTM D-1946	9.0 "Hg	15 psi
07A	GP-9-C-060408	Modified ASTM D-1946	9.0 "Hg	15 psi
08A	GP-9-C-060408-DUP	Modified ASTM D-1946	8.5 "Hg	15 psi
09A	GP-9-D-060408	Modified ASTM D-1946	7.5 "Hg	15 psi
10A	Lab Blank	Modified ASTM D-1946	NA	NA
11A	LCS	Modified ASTM D-1946	NA	NA

CERTIFIED BY:

Laboratory Director

DATE: 06/17/08

Certification 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: 07/01/07, Expiration date: 06/30/08

Air Toxics Ltd. certifies that the test results contained in this report meet all requirements of the NELAC standards

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LABORATORY NARRATIVE
Modified ASTM D-1946
URS Corporation
Workorder# 0806099B

Nine 1 Liter Summa Canister samples were received on June 05, 2008. The laboratory performed analysis via Modified ASTM Method D-1946 for Methane and fixed gases in air using GC/FID or GC/TCD. The method involves direct injection of 1.0 mL of sample.

On the analytical column employed for this analysis, Oxygen coelutes with Argon. The corresponding peak is quantitated as Oxygen.

Since Nitrogen is used to pressurize samples, the reported Nitrogen values are calculated by adding all the sample components and subtracting from 100%.

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

<i>Requirement</i>	<i>ASTM D-1946</i>	<i>ATL Modifications</i>
Calibration	A single point calibration is performed using a reference standard closely matching the composition of the unknown.	A 3-point calibration curve is performed. Quantitation is based on a daily calibration standard which may or may not resemble the composition of the associated samples.
Reference Standard	The composition of any reference standard must be known to within 0.01 mol % for any component.	The standards used by ATL are blended to a $\geq 95\%$ accuracy.
Sample Injection Volume	Components whose concentrations are in excess of 5 % should not be analyzed by using sample volumes greater than 0.5 mL.	The sample container is connected directly to a fixed volume sample loop of 1.0 mL on the GC. Linear range is defined by the calibration curve. Bags are loaded by vacuum.
Normalization	Normalize the mole percent values by multiplying each value by 100 and dividing by the sum of the original values. The sum of the original values should not differ from 100% by more than 1.0%.	Results are not normalized. The sum of the reported values can differ from 100% by as much as 15%, either due to analytical variability or an unusual sample matrix.
Precision	Precision requirements established at each concentration level.	Duplicates should agree within 25% RPD for detections $> 5 \times$ the RL.

Receiving Notes

There were no receiving discrepancies.

Analytical Notes

There were no analytical discrepancies.

Definition of Data Qualifying Flags

Seven qualifiers may have been used on the data analysis sheets and indicate as follows:

B - Compound present in laboratory blank greater than reporting limit.

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 detection limit.

M - Reported value may be biased due to apparent matrix interferences.

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

Client Sample ID: GP-13-A-060408

Lab ID#: 0806099B-01A

NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1946

File Name:	9060715	Date of Collection:	6/4/08
Dil. Factor:	3.03	Date of Analysis:	6/7/08 01:21 PM

Compound	Rpt. Limit (%)	Amount (%)
Oxygen	0.30	9.3
Nitrogen	0.30	81
Carbon Monoxide	0.030	Not Detected
Methane	0.00030	0.00039
Carbon Dioxide	0.030	10
Ethane	0.0030	Not Detected
Ethene	0.0030	Not Detected

Container Type: 1 Liter Summa Canister



AN ENVIRONMENTAL ANALYTICAL LABORATORY

Client Sample ID: GP-13-B-060408

Lab ID#: 0806099B-02A

NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1946

File Name:	9060716	Date of Collection:	6/4/08
Dil. Factor:	2.89	Date of Analysis:	6/7/08 01:48 PM

Compound	Rpt. Limit (%)	Amount (%)
Oxygen	0.29	6.5
Nitrogen	0.29	81
Carbon Monoxide	0.029	Not Detected
Methane	0.00029	0.0026
Carbon Dioxide	0.029	12
Ethane	0.0029	Not Detected
Ethene	0.0029	Not Detected

Container Type: 1 Liter Summa Canister



AN ENVIRONMENTAL ANALYTICAL LABORATORY

Client Sample ID: GP-13-C-060408

Lab ID#: 0806099B-03A

NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1946

File Name:	9060717	Date of Collection:	6/4/08
Dil. Factor:	2.69	Date of Analysis:	6/7/08 02:10 PM

Compound	Rpt. Limit (%)	Amount (%)
Oxygen	0.27	4.9
Nitrogen	0.27	81
Carbon Monoxide	0.027	Not Detected
Methane	0.00027	0.00084
Carbon Dioxide	0.027	14
Ethane	0.0027	Not Detected
Ethene	0.0027	Not Detected

Container Type: 1 Liter Summa Canister



AN ENVIRONMENTAL ANALYTICAL LABORATORY

Client Sample ID: GP-13-D-060408

Lab ID#: 0806099B-04A

NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1946

File Name:	9060718	Date of Collection:	6/4/08
Dil. Factor:	2.89	Date of Analysis:	6/7/08 02:34 PM

Compound	Rpt. Limit (%)	Amount (%)
Oxygen	0.29	3.2
Nitrogen	0.29	81
Carbon Monoxide	0.029	Not Detected
Methane	0.00029	0.0030
Carbon Dioxide	0.029	16
Ethane	0.0029	Not Detected
Ethene	0.0029	Not Detected

Container Type: 1 Liter Summa Canister



AN ENVIRONMENTAL ANALYTICAL LABORATORY

Client Sample ID: GP-9-A-060408

Lab ID#: 0806099B-05A

NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1946

File Name:	9060719	Date of Collection:	6/4/08
Dil. Factor:	2.82	Date of Analysis:	6/7/08 02:57 PM

Compound	Rpt. Limit (%)	Amount (%)
Oxygen	0.28	8.9
Nitrogen	0.28	83
Carbon Monoxide	0.028	Not Detected
Methane	0.00028	Not Detected
Carbon Dioxide	0.028	8.5
Ethane	0.0028	Not Detected
Ethene	0.0028	Not Detected

Container Type: 1 Liter Summa Canister



AN ENVIRONMENTAL ANALYTICAL LABORATORY

Client Sample ID: GP-9-B-060408

Lab ID#: 0806099B-06A

NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1946

File Name:	9060720	Date of Collection:	6/4/08
Dil. Factor:	2.89	Date of Analysis:	6/7/08 03:24 PM

Compound	Rpt. Limit (%)	Amount (%)
Oxygen	0.29	7.5
Nitrogen	0.29	83
Carbon Monoxide	0.029	Not Detected
Methane	0.00029	Not Detected
Carbon Dioxide	0.029	9.2
Ethane	0.0029	Not Detected
Ethene	0.0029	Not Detected

Container Type: 1 Liter Summa Canister



AN ENVIRONMENTAL ANALYTICAL LABORATORY

Client Sample ID: GP-9-C-060408

Lab ID#: 0806099B-07A

NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1946

File Name:	9060721	Date of Collection:	6/4/08
Dil. Factor:	2.89	Date of Analysis:	6/7/08 03:46 PM

Compound	Rpt. Limit (%)	Amount (%)
Oxygen	0.29	7.0
Nitrogen	0.29	84
Carbon Monoxide	0.029	Not Detected
Methane	0.00029	Not Detected
Carbon Dioxide	0.029	9.5
Ethane	0.0029	Not Detected
Ethene	0.0029	Not Detected

Container Type: 1 Liter Summa Canister



AN ENVIRONMENTAL ANALYTICAL LABORATORY

Client Sample ID: GP-9-C-060408-DUP

Lab ID#: 0806099B-08A

NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1946

File Name:	9060722	Date of Collection:	6/4/08
Dil. Factor:	2.82	Date of Analysis:	6/7/08 04:08 PM

Compound	Rpt. Limit (%)	Amount (%)
Oxygen	0.28	7.2
Nitrogen	0.28	83
Carbon Monoxide	0.028	Not Detected
Methane	0.00028	Not Detected
Carbon Dioxide	0.028	9.4
Ethane	0.0028	Not Detected
Ethene	0.0028	Not Detected

Container Type: 1 Liter Summa Canister



AN ENVIRONMENTAL ANALYTICAL LABORATORY

Client Sample ID: GP-9-D-060408

Lab ID#: 0806099B-09A

NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1946

File Name:	9060723	Date of Collection:	6/4/08
Dil. Factor:	2.69	Date of Analysis:	6/7/08 04:31 PM

Compound	Rpt. Limit (%)	Amount (%)
Oxygen	0.27	5.6
Nitrogen	0.27	84
Carbon Monoxide	0.027	Not Detected
Methane	0.00027	Not Detected
Carbon Dioxide	0.027	10
Ethane	0.0027	Not Detected
Ethene	0.0027	Not Detected

Container Type: 1 Liter Summa Canister



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Page 1 of 1

Phone 314 429-0100 Fax 314 429-0462

Project Name Dr M B Red Ave. Vasa

உதாரணம்

$$\text{N}_2 \quad \text{He}$$

Lab Use Only	Shipper Name	Air Bill #	Temp (°C)	Condition	Custody Seals intact?	Work Order #
	Felix	8640 3796 9512	NA	good	Yes No None	0806099

Rand Avenue Data Review

Laboratory SDG: 305672

Reviewer: Tony Sedlacek

Date Reviewed: 7/22/2008

Guidance: National Functional Guidelines for Organic Data Review 1999.

Applicable Work Plan: Route 111/Rand Avenue Vicinity Investigation Work Plan.

Sample Identification #	Sample Identification #
P58-060908	P58-060908D
P56-060908	P73-061008
P75-061008	P75-061008EB
P66-061008	P54-061008
P57-061108	TB061108

1.0 Data Package Completeness

Were all items delivered as specified in the QAPP and COC?

Yes

2.0 Laboratory Case Narrative \ Cooler Receipt Form

Were problems noted in the laboratory case narrative or cooler receipt form?

No, although not indicated in the laboratory case narrative, VOCs were detected in the trip blank, equipment blank and method blank. VOC LCS, surrogate and MS/MSD recoveries and MS/MSD RPDs were outside evaluation criteria. Samples were diluted due to high levels of target analytes. These issues are addressed further in the appropriate sections below.

The cooler receipt form did not indicate any problems.

3.0 Holding Times

Were samples extracted/analyzed within QAPP limits?

Yes

Field ID	Parameter	Analyte	Qualification
N/A			

4.0 Blank Contamination

Were any analytes detected in the Method Blanks, Field Blanks or Trip Blanks?

Yes

Blank ID	Parameter	Analyte	Concentration	Units
P75-061008EB	VOCs	Benzene	12.5	µg/L
P75-061008EB	VOCs	n-Butylbenzene	1.17	µg/L
P75-061008EB	VOCs	Ethylbenzene	3.79	µg/L
P75-061008EB	VOCs	Isopropylbenzene	1.1	µg/L
P75-061008EB	VOCs	Methylene chloride	1.64	µg/L
P75-061008EB	VOCs	Naphthalene	4.82	µg/L
P75-061008EB	VOCs	n-Propylbenzene	2.04	µg/L
P75-061008EB	VOCs	1,2,4-Trimethylbenzene	17	µg/L
P75-061008EB	VOCs	1,3,5-Trimethylbenzene	4.54	µg/L
P75-061008EB	VOCs	<i>o</i> -Xylene	1.96	µg/L
P75-061008EB	VOCs	<i>m,p</i> -Xylene	10.9	µg/L
TB061108	VOCs	Methylene chloride	2.39	µg/L
510737-1-BLK	VOCs	Methylene chloride	7.25	µg/L
511007-1-BLK	VOCs	Methylene chloride	2.92	µg/L

Qualifications due to blank contamination are included in the table below. Analytical data that were reported nondetect or at concentrations greater than five times (5X) the associated blank concentration (10X for common laboratory contaminants) did not require qualification.

Field ID	Parameter	Analyte	New RL	Qualification
P54-061008	VOCs	Benzene	6.29	U
P54-061008	VOCs	Ethylbenzene	-	U
P54-061008	VOCs	Methylene chloride	-	U
P75-061008	VOCs	1,2,4-Trimethylbenzene	38.2	U
P54-061008	VOCs	1,2,4-Trimethylbenzene	-	U
P75-061008	VOCs	1,3,5-Trimethylbenzene	10.8	U
P66-061008	VOCs	1,3,5-Trimethylbenzene	5.69	U
P75-061008	VOCs	<i>o</i> -Xylene	-	U
P75-061008	VOCs	<i>m,p</i> -Xylene	34.5	U
P66-061008	VOCs	<i>m,p</i> -Xylene	-	U

5.0 Laboratory Control Sample

Were LCS recoveries within evaluation criteria?

No

LCS ID	Parameter	Analyte	LCS/LCSD Recovery	RPD	LCS/LCSD/RPD Criteria
510949-BKS	VOCs	Dichlorodifluoromethane	131	N/A	70-130

Analytical data that required qualification based on LCS data are included in the table below. Analytical data which were reported as nondetect and associated with LCS recoveries above evaluation criteria, indicating a possible high bias, did not require qualification.

Field ID	Parameter	Analyte	Qualification
P58-060908	VOCs	Dichlorodifluoromethane	J
P58-060908D	VOCs	Dichlorodifluoromethane	J
P57-061108	VOCs	Dichlorodifluoromethane	J

6.0 Surrogate Recoveries

Were surrogate recoveries within evaluation criteria?

No

Field ID	Parameter	Surrogate	Recovery	Criteria
P58-060908	VOCs	1,2-Dichloroethane-D4	61	80-120
P58-060908D	VOCs	1,2-Dichloroethane-D4	58	80-120

Analytical data that required qualification based on surrogate data are included in the table below. Analytical data which were reported as nondetect and associated with surrogate recoveries above evaluation criteria, indicating a possible high bias, did not require qualification. The compound benzene was reported from the diluted analysis for samples P58-060908 and P58-060908D and all diluted analysis surrogate recoveries were within evaluation criteria; therefore, benzene was not qualified.

Field ID	Parameter	Analyte	Qualification
P58-060908	VOCs	All VOC detects/nondetects	J/UJ
P58-060908D	VOCs	All VOC detects/nondetects	J/UJ

7.0 Matrix Spike and Matrix Spike Duplicate Recoveries

Were MS/MSD samples reported as part of this SDG?

Yes, samples P66-061008 and P54-061008 were spiked and analyzed for VOCs.

Were MS/MSD recoveries within evaluation criteria?

No

MS/MSD ID	Parameter	Analyte	MS/MSD Recovery	RPD	MS/MSD/RPD Criteria
P54-061008	VOCs	Dichlorodifluoromethane	131/121	8	70-130/23
P54-061008	VOCs	1,1-Dichloropropene	68/70	3	75-125/20
P54-061008	VOCs	Methylene chloride	73/73	0	75-125/35
P66-061008	VOCs	Benzene	124/190	42	66-142/21
P66-061008	VOCs	Bromomethane	61/74	19	70-130/20
P66-061008	VOCs	Methyl tert-butyl ether	252/276	9	75-125/20
P66-061008	VOCs	Chloroethane	67/84	23	70-130/20
P66-061008	VOCs	2,2-Dichloropropane	74/90	20	75-125/20
P66-061008	VOCs	Ethylbenzene	108/156	36	75-125/20
P66-061008	VOCs	Isopropylbenzene	85/129	41	75-125/20
P66-061008	VOCs	Naphthalene	89/123	32	75-125/20
P66-061008	VOCs	Vinyl chloride	73/85	15	75-125/20

Analytical data that required qualification based on MS/MSD data are included in the table below. USEPA National Functional Guidelines for Organic Data Review indicates that organic data should not be qualified based on MS/MSD data alone and LCS recoveries were within evaluation criteria, therefore no qualification of the data was required.

Field ID	Parameter	Analyte	Qualification
N/A			

8.0 Laboratory Duplicate Results

Were laboratory duplicate samples collected as part of this SDG?

No

Were laboratory duplicate sample RPDs within criteria?

N/A

Field ID	Parameter	Analyte	RPD	Criteria
N/A				

Data qualified due to outlying laboratory duplicate recoveries are identified below:

Field ID	Parameter	Analyte	Qualification
N/A			

9.0 Field Duplicate Results

Were field duplicate samples collected as part of this SDG?

Yes

Field ID	Field Duplicate ID
P58-060908	P58-060908D

Were field duplicates within evaluation criteria?

Yes

Field ID	Field Duplicate ID	Parameter	Analyte	RPD	Qualification
N/A					

10.0 Sample Dilutions

For samples that were diluted and nondetect, were undiluted results also reported?

No

The following table identifies the analyses which were reported as nondetect, diluted, and an undiluted run *was not* reported:

Field ID	Parameter	Dilution Factor
P58-060908	VOCs	10000
P58-060908D	VOCs	10000
P56-060908	VOCs	5
P73-061008	VOCs	100
P75-061008	VOCs	50
P66-061008	VOCs	10
P57-061108	VOCs	10000

11.0 Additional Qualifications

Were additional qualifications applied?

No

Analytical Report 305672

for

URS Corporation-St. Louis

Project Manager: Wendy Pennington

900 S. Central Avenue

Route 111 & Rand Ave Vicinity / 21561979

24-JUN-08



E84880

4143 Greenbriar Dr., Stafford, TX 77477 Ph:(281) 240-4200 Fax:(281) 240-4280

Texas certification numbers:

Houston, TX T104704215

Florida certification numbers:

Houston, TX E871002 - Miami, FL E86678 - Tampa, FL E86675

Norcross(Atlanta), GA E87429

South Carolina certification numbers:

Norcross(Atlanta), GA 98015

North Carolina certification numbers:

Norcross(Atlanta), GA 483

**Houston - Dallas - San Antonio - Austin - Tampa - Miami - Latin America
Midland - Corpus Christi - Atlanta**



24-JUN-08

Project Manager: **Wendy Pennington**
URS Corporation-St. Louis
1001 Highlands Plaza Drive West, Suite 300
St. Louis, MO 63110

Reference: XENCO Report No: **305672**
900 S. Central Avenue
Project Address: Roxana, Illinois 62084

Wendy Pennington:

We are reporting to you the results of the analyses performed on the samples received under the project name referenced above and identified with the XENCO Report Number 305672. All results being reported under this Report Number apply to the samples analyzed and properly identified with a Laboratory ID number. Subcontracted analyses are identified in this report with either the NELAC certification number of the subcontract lab in the analyst ID field, or the complete subcontracted report attached to this report.

Unless otherwise noted in a Case Narrative, all data reported in this Analytical Report are in compliance with NELAC standards. Estimation of data uncertainty for this report is found in the quality control section of this report unless otherwise noted. Should insufficient sample be provided to the laboratory to meet the method and NELAC Matrix Duplicate and Matrix Spike requirements, then the data will be analyzed, evaluated and reported using all other available quality control measures.

The validity and integrity of this report will remain intact as long as it is accompanied by this letter and reproduced in full, unless written approval is granted by XENCO Laboratories. This report will be filed for at least 5 years in our archives after which time it will be destroyed without further notice, unless otherwise arranged with you. The samples received, and described as recorded in Report No. 305672 will be filed for 60 days, and after that time they will be properly disposed without further notice, unless otherwise arranged with you. We reserve the right to return to you any unused samples, extracts or solutions related to them if we consider so necessary (e.g., samples identified as hazardous waste, sample sizes exceeding analytical standard practices, controlled substances under regulated protocols, etc).

We thank you for selecting XENCO Laboratories to serve your analytical needs. If you have any questions concerning this report, please feel free to contact us at any time.

Respectfully,

Carlos Castro

Managing Director, Texas

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Sample Cross Reference 305672



URS Corporation-St. Louis, St. Louis, MO
900 S. Central Avenue

Sample Id	Matrix	Date Collected	Sample Depth	Lab Sample Id
P58-060908	W	Jun-09-08 14:25		305672-001
P58-060908D	W	Jun-09-08 14:25		305672-002
P56-060908	W	Jun-09-08 16:15		305672-003
P73-061008	W	Jun-10-08 09:43		305672-004
P75-061008	W	Jun-10-08 10:40		305672-005
P75-061008EB	W	Jun-10-08 11:25		305672-006
P66-061008	W	Jun-10-08 13:40		305672-007
P54-061008	W	Jun-10-08 16:12		305672-008
P57-061108	W	Jun-11-08 13:10		305672-009
TB061108	W	Jun-11-08 00:00		305672-010



Certificate of Analysis Summary 305672

URS Corporation-St. Louis, St. Louis, MO



Project Name: 900 S. Central Avenue

Project Id: Route 111 & Rand Ave Vicinity / 2156197

Date Received in Lab: Jun-12-08 09:50 am

Contact: Wendy Pennington

Report Date: 24-JUN-08

Project Location: Roxana, Illinois 62084

Project Manager: Debbie Simmons

Analysis Requested	Lab Id:	305672-001	305672-002	305672-003	305672-004
	Field Id:	P58-060908	P58-060908D	P56-060908	P73-061008
	Depth:				
	Matrix:	WATER	WATER	WATER	WATER
	Sampled:	Jun-09-08 14:25	Jun-09-08 14:25	Jun-09-08 16:15	Jun-10-08 09:43
VOAs by SW-846 8260B	Extracted:	Jun-18-08 16:16	Jun-18-08 16:18	Jun-17-08 16:49	Jun-18-08 13:05
	Analyzed:	Jun-18-08 18:38	Jun-18-08 19:00	Jun-17-08 17:33	Jun-18-08 14:03
	Units/RL:	ug/L RL	ug/L RL	ug/L RL	ug/L RL
Acetone		U 1000	U 1000	U 100	U 100
Benzene		349000 D 50000	348000 D 50000	383 D 25.0	4000 D 500
Bromobenzene		U 50.0	U 50.0	U 5.00	U 5.00
Bromochloromethane		U 50.0	U 50.0	U 5.00	U 5.00
Bromodichloromethane		U 50.0	U 50.0	U 5.00	U 5.00
Bromoform		U 50.0	U 50.0	U 5.00	U 5.00
Bromomethane		U 50.0	U 50.0	U 5.00	U 5.00
2-Butanone		U 500	U 500	U 50.0	U 50.0
MTBE		U 50.0	U 50.0	U 5.00	U 5.00
n-Butylbenzene		18.9 U 50.0	21.2 U 50.0	9.40 5.00	25.5 5.00
Sec-Butylbenzene		U 50.0	U 50.0	U 5.00	19.9 5.00
tert-Butylbenzene		37.1 U 50.0	42.5 U 50.0	U 5.00	47.8 5.00
Carbon Disulfide		U 500	U 500	U 50.0	U 50.0
Carbon Tetrachloride		U 50.0	U 50.0	U 5.00	U 5.00
Chlorobenzene		U 50.0	U 50.0	U 5.00	3.12 J 5.00
Chloroethane		U 100	U 100	U 10.0	U 10.0
Chloroform		U 50.0	U 50.0	U 5.00	U 5.00
Chloromethane		U 100	U 100	U 10.0	U 10.0
2-Chlorotoluene		U 50.0	U 50.0	U 5.00	U 5.00
4-Chlorotoluene		U 50.0	U 50.0	U 5.00	U 5.00
p-Cymene (p-Isopropyltoluene)		U 50.0	11.8 U 50.0	4.15 J 5.00	12.4 5.00
Dibromochloromethane		U 50.0	U 50.0	U 5.00	U 5.00
1,2-Dibromo-3-Chloropropane		U 50.0	U 50.0	U 5.00	U 5.00
1,2-Dibromoethane		U 50.0	U 50.0	U 5.00	U 5.00
Dibromomethane		U 50.0	U 50.0	U 5.00	U 5.00
1,2-Dichlorobenzene		U 50.0	U 50.0	U 5.00	U 5.00
1,3-Dichlorobenzene		U 50.0	U 50.0	U 5.00	U 5.00
1,4-Dichlorobenzene		U 50.0	U 50.0	U 5.00	U 5.00
Dichlorodifluoromethane		115 U 50.0	122 U 50.0	U 5.00	U 5.00
1,1-Dichloroethane		U 50.0	U 50.0	U 5.00	U 5.00
1,2-Dichloroethane		U 50.0	U 50.0	U 5.00	U 5.00
1,1-Dichloroethene		U 50.0	U 50.0	U 5.00	U 5.00
cis-1,2-Dichloroethene		U 50.0	U 50.0	U 5.00	U 5.00
trans-1,2-dichloroethene		U 50.0	U 50.0	U 5.00	U 5.00

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Carlos A. Castro, Ph.D., MBA
Managing Director, Texas



Certificate of Analysis Summary 305672

URS Corporation-St. Louis, St. Louis, MO



Project Name: 900 S. Central Avenue

Project Id: Route 111 & Rand Ave Vicinity / 2156197

Date Received in Lab: Jun-12-08 09:50 am

Contact: Wendy Pennington

Report Date: 24-JUN-08

Project Location: Roxana, Illinois 62084

Project Manager: Debbie Simmons

Analysis Requested	Lab Id:	305672-001	305672-002	305672-003	305672-004
	Field Id:	P58-060908	P58-060908D	P56-060908	P73-061008
	Depth:				
	Matrix:	WATER	WATER	WATER	WATER
	Sampled:	Jun-09-08 14:25	Jun-09-08 14:25	Jun-09-08 16:15	Jun-10-08 09:43
VOAs by SW-846 8260B	Extracted:	Jun-18-08 16:16	Jun-18-08 16:18	Jun-17-08 16:49	Jun-18-08 13:05
	Analyzed:	Jun-18-08 18:38	Jun-18-08 19:00	Jun-17-08 17:33	Jun-18-08 14:03
	Units/RL:	ug/L RL	ug/L RL	ug/L RL	ug/L RL
1,2-Dichloropropane		U 50.0	U 50.0	U 5.00	U 5.00
1,3-Dichloropropane		U 50.0	U 50.0	U 5.00	U 5.00
2,2-Dichloropropane		U 50.0	U 50.0	U 5.00	U 5.00
1,1-Dichloropropane		U 50.0	U 50.0	U 5.00	U 5.00
cis-1,3-Dichloropropene		U 50.0	U 50.0	U 5.00	U 5.00
trans-1,3-dichloropropene		U 50.0	U 50.0	U 5.00	U 5.00
Ethylbenzene		870 "J" 50.0	914 "J" 50.0	1670 D 100	890 D 50.0
Hexachlorobutadiene		U 50.0	U 50.0	U 5.00	U 5.00
2-Hexanone		U 50.0	U 50.0	U 50.0	U 50.0
isopropylbenzene		76.6 "J" 50.0	86.8 "J" 50.0	61.1 5.00	49.7 5.00
Methylene Chloride		U 50.0	U 50.0	U 5.00	U 5.00
4-Methyl-2-Pentanone		U 50.0	U 50.0	U 50.0	U 50.0
Naphthalene		179 "J" 100	202 "J" 100	180 D 50.0	145 10.0
Propylbenzene		109 "J" 50.0	124 "J" 50.0	86.9 5.00	80.9 5.00
styrene		U 50.0	U 50.0	U 5.00	U 5.00
1,1,1,2-Tetrachloroethane		U 50.0	U 50.0	U 5.00	U 5.00
1,1,2,2-Tetrachloroethane		U 50.0	U 50.0	U 5.00	U 5.00
Tetrachloroethylene		U 50.0	U 50.0	U 5.00	U 5.00
Toluene		148 "J" 50.0	155 "J" 50.0	490 D 25.0	1370 D 50.0
1,2,3-Trichlorobenzene		U 50.0	U 50.0	U 5.00	U 5.00
1,2,4-Trichlorobenzene		U 50.0	U 50.0	U 5.00	U 5.00
1,1,1-Trichloroethane		U 50.0	U 50.0	U 5.00	U 5.00
1,1,2-Trichloroethane		U 50.0	U 50.0	U 5.00	U 5.00
Trichloroethene		U 50.0	U 50.0	U 5.00	U 5.00
Trichlorofluoromethane		U 50.0	U 50.0	U 5.00	U 5.00
1,2,3-Trichloropropane		U 50.0	U 50.0	U 5.00	U 5.00
1,2,4-Trimethylbenzene		734 "J" 50.0	820 "J" 50.0	388 D 25.0	596 D 50.0
1,3,5-Trimethylbenzene		116 "J" 50.0	129 "J" 50.0	93.7 5.00	137 5.00
o-Xylene		157 "J" 50.0	168 "J" 50.0	233 D 25.0	520 D 50.0
m,p-Xylenes		769 "J" 100	805 "J" 100	2220 D 200	1760 D 100
Vinyl Chloride		U 20.0	U 20.0	U 2.00	U 2.00

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Carlos A. Castro, Ph.D., MBA
Managing Director, Texas



Certificate of Analysis Summary 305672

URS Corporation-St. Louis, St. Louis, MO



Project Name: 900 S. Central Avenue

Project Id: Route 111 & Rand Ave Vicinity / 2156197

Date Received in Lab: Jun-12-08 09:50 am

Contact: Wendy Pennington

Report Date: 24-JUN-08

Project Location: Roxana, Illinois 62084

Project Manager: Debbie Simmons

Analysis Requested	Lab Id:	305672-005	305672-006	305672-007	305672-008
	Field Id:	P75-061008	P75-061008EB	P66-061008	P54-061008
	Depth:				
	Matrix:	WATER	WATER	WATER	WATER
	Sampled:	Jun-10-08 10:40	Jun-10-08 11:25	Jun-10-08 13:40	Jun-10-08 16:12
VOAs by SW-846 8260B	Extracted:	Jun-18-08 14:34	Jun-16-08 13:20	Jun-18-08 11:03	Jun-16-08 12:27
	Analyzed:	Jun-18-08 15:08	Jun-16-08 14:14	Jun-18-08 12:37	Jun-16-08 12:47
	Units/RL:	ug/L RL	ug/L RL	ug/L RL	ug/L RL
Acetone		U 200	U 100	U 100	U 100
Benzene		3620 D 250	12.5 5.00	659 D 50.0	400.0 5.00 26.29
Bromobenzene		U 10.0	U 5.00	U 5.00	U 5.00
Bromochloromethane		U 10.0	U 5.00	U 5.00	U 5.00
Bromodichloromethane		U 10.0	U 5.00	U 5.00	U 5.00
Bromoform		U 10.0	U 5.00	U 5.00	U 5.00
Bromomethane		U 10.0	U 5.00	U 5.00	U 5.00
2-Butanone		U 100	U 50.0	U 50.0	U 50.0
MTBE		125 10.0	U 5.00	U 5.00	U 5.00
n-Butylbenzene		26.8 10.0	1.17 J 5.00	17.5 5.00	U 5.00
Sec-Butylbenzene		24.1 10.0	U 5.00	19.6 5.00	U 5.00
tert-Butylbenzene		4.96 J 10.0	U 5.00	5.96 5.00	U 5.00
Carbon Disulfide		U 100	U 50.0	U 50.0	U 50.0
Carbon Tetrachloride		U 10.0	U 5.00	U 5.00	U 5.00
Chlorobenzene		U 10.0	U 5.00	U 5.00	U 5.00
Chloroethane		U 20.0	U 10.0	U 10.0	U 10.0
Chloroform		U 10.0	U 5.00	U 5.00	U 5.00
Chloromethane		U 20.0	U 10.0	U 10.0	U 10.0
2-Chlorotoluene		U 10.0	U 5.00	U 5.00	U 5.00
4-Chlorotoluene		U 10.0	U 5.00	U 5.00	U 5.00
p-Cymene (p-Isopropyltoluene)		3.98 J 10.0	U 5.00	4.45 J 5.00	U 5.00
Dibromochloromethane		U 10.0	U 5.00	U 5.00	U 5.00
1,2-Dibromo-3-Chloropropane		U 10.0	U 5.00	U 5.00	U 5.00
1,2-Dibromoethane		U 10.0	U 5.00	U 5.00	U 5.00
Dibromomethane		U 10.0	U 5.00	U 5.00	U 5.00
1,2-Dichlorobenzene		U 10.0	U 5.00	U 5.00	U 5.00
1,3-Dichlorobenzene		U 10.0	U 5.00	U 5.00	U 5.00
1,4-Dichlorobenzene		U 10.0	U 5.00	U 5.00	U 5.00
Dichlorodifluoromethane		U 10.0	U 5.00	U 5.00	U 5.00
1,1-Dichloroethane		U 10.0	U 5.00	U 5.00	U 5.00
1,2-Dichloroethane		U 10.0	U 5.00	U 5.00	U 5.00
1,1-Dichloroethene		U 10.0	U 5.00	U 5.00	U 5.00
cis-1,2-Dichloroethene		U 10.0	U 5.00	U 5.00	U 5.00
trans-1,2-dichloroethene		U 10.0	U 5.00	U 5.00	U 5.00

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Carlos A. Castro, Ph.D., MBA
Managing Director, Texas



Certificate of Analysis Summary 305672

URS Corporation-St. Louis, St. Louis, MO



Project Name: 900 S. Central Avenue

Project Id: Route 111 & Rand Ave Vicinity / 2156197

Date Received in Lab: Jun-12-08 09:50 am

Contact: Wendy Pennington

Report Date: 24-JUN-08

Project Location: Roxana, Illinois 62084

Project Manager: Debbie Simmons

Analysis Requested	Lab Id:	305672-005	305672-006	305672-007	305672-008
	Field Id:	P75-061008	P75-061008EB	P66-061008	P54-061008
	Depth:				
	Matrix:	WATER	WATER	WATER	WATER
	Sampled:	Jun-10-08 10:40	Jun-10-08 11:25	Jun-10-08 13:40	Jun-10-08 16:12
VOAs by SW-846 8260B	Extracted:	Jun-18-08 14:34	Jun-16-08 13:20	Jun-18-08 11:03	Jun-16-08 12:27
	Analyzed:	Jun-18-08 15:08	Jun-16-08 14:14	Jun-18-08 12:37	Jun-16-08 12:47
	Units/RL:	ug/L RL	ug/L RL	ug/L RL	ug/L RL
1,2-Dichloropropane		U 10.0	U 5.00	U 5.00	U 5.00
1,3-Dichloropropane		U 10.0	U 5.00	U 5.00	U 5.00
2,2-Dichloropropane		U 10.0	U 5.00	U 5.00	U 5.00
1,1-Dichloropropene		U 10.0	U 5.00	U 5.00	U 5.00
cis-1,3-Dichloropropene		U 10.0	U 5.00	U 5.00	U 5.00
trans-1,3-dichloropropene		U 10.0	U 5.00	U 5.00	U 5.00
Ethylbenzene		83.6 10.0	3.79 J 5.00	288 D 50.0	ND 0.0-0.1 J "U" 5.00
Hexachlorobutadiene		U 10.0	U 5.00	U 5.00	U 5.00
2-Hexanone		U 100	U 50.0	U 50.0	U 50.0
isopropylbenzene		126 10.0	1.10 J 5.00	91.5 5.00	U 5.00
Methylene Chloride		U 10.0	1.64 JB 5.00	U 5.00	ND 0.0-0.1 J "U" 5.00
4-Methyl-2-Pentanone		U 100	U 50.0	U 50.0	U 50.0
Naphthalene		162 20.0	4.82 J 10.0	75.5 10.0	U 10.0
-Propylbenzene		60.7 10.0	2.04 J 5.00	114 5.00	U 5.00
yrene		U 10.0	U 5.00	U 5.00	U 5.00
1,1,1,2-Tetrachloroethane		U 10.0	U 5.00	U 5.00	U 5.00
1,1,2,2-Tetrachloroethane		U 10.0	U 5.00	U 5.00	U 5.00
Tetrachloroethylene		U 10.0	U 5.00	U 5.00	U 5.00
Toluene		46.4 10.0	U 5.00	1.67 J 5.00	U 5.00
1,2,3-Trichlorobenzene		U 10.0	U 5.00	U 5.00	U 5.00
1,2,4-Trichlorobenzene		U 10.0	U 5.00	U 5.00	U 5.00
1,1,1-Trichloroethane		U 10.0	U 5.00	U 5.00	U 5.00
1,1,2-Trichloroethane		U 10.0	U 5.00	U 5.00	U 5.00
Trichloroethene		U 10.0	U 5.00	U 5.00	U 5.00
Trichlorofluoromethane		U 10.0	U 5.00	U 5.00	U 5.00
1,2,3-Trichloropropane		U 10.0	U 5.00	U 5.00	U 5.00
1,2,4-Trimethylbenzene		ND 0.0-0.2 J "U" 10.0	38.2 17.0 5.00	90.3 5.00	ND 0.0-0.1 J "U" 5.00
1,3,5-Trimethylbenzene		ND 0.0-0.8 J "U" 10.0	4.54 J 5.00	ND 0.0-0.5 J "U" 5.00	U 5.00
o-Xylene		ND 0.0-6.7 J "U" 10.0	1.96 J 5.00	U 5.00	U 5.00
m,p-Xylenes		ND 0.0-3.4 J "U" 10.0	10.9 10.0	ND 0.0-3.8 J "U" 10.0	U 10.0
Vinyl Chloride		U 4.00	U 2.00	U 2.00	U 2.00

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Carlos A. Castro, Ph.D., MBA
Managing Director, Texas



Certificate of Analysis Summary 305672

URS Corporation-St. Louis, St. Louis, MO



Project Name: 900 S. Central Avenue

Project Id: Route 111 & Rand Ave Vicinity / 2156197

Date Received in Lab: Jun-12-08 09:50 am

Contact: Wendy Pennington

Report Date: 24-JUN-08

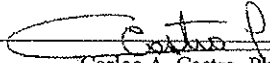
Project Location: Roxana, Illinois 62084

Project Manager: Debbie Simmons

Analysis Requested	Lab Id:	305672-009	305672-010		
	Field Id:	PS7-061108	TB061108		
	Depth:				
	Matrix:	WATER	WATER		
	Sampled:	Jun-11-08 13:10	Jun-11-08 00:00		
VOAs by SW-846 8260B	Extracted:	Jun-18-08 16:14	Jun-16-08 13:22		
	Analyzed:	Jun-18-08 18:16	Jun-16-08 14:35		
	Units/RL:	ug/L	ug/L		
		RL	RL		
Acetone		U	1000	U	100
Benzene		257000 D	50000	U	5.00
Bromobenzene		U	50.0	U	5.00
Bromochloromethane		U	50.0	U	5.00
Bromodichloromethane		U	50.0	U	5.00
Bromoform		U	50.0	U	5.00
Bromomethane		U	50.0	U	5.00
2-Butanone		U	500	U	50.0
MTBE		U	50.0	U	5.00
n-Butylbenzene		U	50.0	U	5.00
Sec-Butylbenzene		U	50.0	U	5.00
tert-Butylbenzene		U	50.0	U	5.00
Carbon Disulfide		U	500	U	50.0
Carbon Tetrachloride		U	50.0	U	5.00
Chlorobenzene		U	50.0	U	5.00
Chloroethane		U	100	U	10.0
Chloroform		U	50.0	U	5.00
Chloromethane		U	100	U	10.0
2-Chlorotoluene		U	50.0	U	5.00
4-Chlorotoluene		U	50.0	U	5.00
p-Cymene (p-Isopropyltoluene)		U	50.0	U	5.00
Dibromochloromethane		U	50.0	U	5.00
1,2-Dibromo-3-Chloropropane		U	50.0	U	5.00
1,2-Dibromoethane		U	50.0	U	5.00
Dibromomethane		U	50.0	U	5.00
1,2-Dichlorobenzene		U	50.0	U	5.00
1,3-Dichlorobenzene		U	50.0	U	5.00
1,4-Dichlorobenzene		U	50.0	U	5.00
Dichlorodifluoromethane		127 "3"	50.0	U	5.00
1,1-Dichloroethane		U	50.0	U	5.00
1,2-Dichloroethane		U	50.0	U	5.00
1,1-Dichloroethene		U	50.0	U	5.00
cis-1,2-Dichloroethene		U	50.0	U	5.00
trans-1,2-dichloroethene		U	50.0	U	5.00

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Managing Director, Texas

Certificate of Analysis Summary 305672

URS Corporation-St. Louis, St. Louis, MO

Project Name: 900 S. Central Avenue

Project Id: Route 111 & Rand Ave Vicinity / 2156197

Date Received in Lab: Jun-12-08 09:50 am

Contact: Wendy Pennington

Report Date: 24-JUN-08

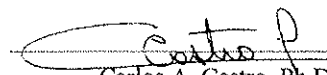
Project Location: Roxana, Illinois 62084

Project Manager: Debbie Simmons

<i>Analysis Requested</i>	<i>Lab Id:</i>	305672-009	305672-010		
	<i>Field Id:</i>	P57-061108	TB061108		
	<i>Depth:</i>				
	<i>Matrix:</i>	WATER	WATER		
	<i>Sampled:</i>	Jun-11-08 13:10	Jun-11-08 00:00		
VOAs by SW-846 8260B	<i>Extracted:</i>	Jun-18-08 16:14	Jun-16-08 13:22		
	<i>Analyzed:</i>	Jun-18-08 18:16	Jun-16-08 14:35		
	<i>Units/RL:</i>	ug/L	ug/L		
		RL	RL		
1,2-Dichloropropane		U	50.0	U	5.00
1,3-Dichloropropane		U	50.0	U	5.00
2,2-Dichloropropane		U	50.0	U	5.00
1,1-Dichloropropene		U	50.0	U	5.00
cis-1,3-Dichloropropene		U	50.0	U	5.00
trans-1,3-dichloropropene		U	50.0	U	5.00
Ethylbenzene		624	50.0	U	5.00
Hexachlorobutadiene		U	50.0	U	5.00
2-Hexanone		U	500	U	50.0
isopropylbenzene		18.3 J	50.0	U	5.00
Methylene Chloride		U	50.0	2.39 JB	5.00
4-Methyl-2-Pentanone		U	500	U	50.0
Naphthalene		65.0 J	100	U	10.0
opylbenzene		17.1 J	50.0	U	5.00
ylene		U	50.0	U	5.00
1,1,1,2-Tetrachloroethane		U	50.0	U	5.00
1,1,2,2-Tetrachloroethane		U	50.0	U	5.00
Tetrachloroethylene		U	50.0	U	5.00
Toluene		133	50.0	U	5.00
1,2,3-Trichlorobenzene		U	50.0	U	5.00
1,2,4-Trichlorobenzene		U	50.0	U	5.00
1,1,1-Trichloroethane		U	50.0	U	5.00
1,1,2-Trichloroethane		U	50.0	U	5.00
Trichloroethene		U	50.0	U	5.00
Trichlorofluoromethane		U	50.0	U	5.00
1,2,3-Trichloropropane		U	50.0	U	5.00
1,2,4-Trimethylbenzene		106	50.0	U	5.00
1,3,5-Trimethylbenzene		28.5 J	50.0	U	5.00
o-Xylene		117	50.0	U	5.00
m,p-Xylenes		760	100	U	10.0
Vinyl Chloride		U	20.0	U	2.00

This analytical report, and the entire data package it represents, has been made for your exclusive and confidential use. The interpretations and results expressed throughout this analytical report represent the best judgment of XENCO Laboratories. XENCO Laboratories assumes no responsibility and makes no warranty to the end use of the data hereby presented. Our liability is limited to the amount invoiced for this work order unless otherwise agreed to in writing.

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 Carlos A. Castro, Ph.D., MBA
 Managing Director, Texas



Flagging Criteria

- X** In our quality control review of the data a QC deficiency was observed and flagged as noted. MS/MSD recoveries were found to be outside of the laboratory control limits due to possible matrix /chemical interference, or a concentration of target analyte high enough to effect the recovery of the spike concentration. This condition could also effect the relative percent difference in the MS/MSD.
 - B** A target analyte or common laboratory contaminant was identified in the method blank. Its presence indicates possible field or laboratory contamination.
 - D** The sample(s) were diluted due to targets detected over the highest point of the calibration curve, or due to matrix interference. Dilution factors are included in the final results. The result is from a diluted sample.
 - E** The data exceeds the upper calibration limit; therefore, the concentration is reported as estimated.
 - F** RPD exceeded lab control limits.
 - J** The target analyte was positively identified below the MQL(PQL) and above the SQL(MDL).
 - U** Analyte was not detected.
 - L** The LCS data for this analytical batch was reported below the laboratory control limits for this analyte. The department supervisor and QA Director reviewed data. The samples were either reanalyzed or flagged as estimated concentrations.
 - H** The LCS data for this analytical batch was reported above the laboratory control limits. Supporting QC Data were reviewed by the Department Supervisor and QA Director. Data were determined to be valid for reporting.
 - K** Sample analyzed outside of recommended hold time.
- * Outside XENCO'S scope of NELAC Accreditation

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5757 NW 158th St, Miami Lakes, FL 33014
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(210) 509-3334	(210) 509-3335
(813) 620-2000	(813) 620-2033
(305) 823-8500	(305) 823-8555
(770) 449-8800	(770) 449-5477

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 PH: 281-240-4200 FAX: 281-240-4280
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☐ CALSCIENCE
☐ TEST AMERICA
☐ SPL
☐ OTHER



Shell Oil Products Chain Of Custody Record

Please Check Appropriate Box:

<input checked="" type="checkbox"/> ENV. SERVICES	<input type="checkbox"/> MOTIVA RETAIL	<input type="checkbox"/> SHELL RETAIL
<input type="checkbox"/> MOTIVA SO&CM	<input type="checkbox"/> CONSULTANT	<input type="checkbox"/> LUBES
<input type="checkbox"/> SHELL PIPELINE	<input type="checkbox"/> OTHER	

Print Bill To Contact Name: KEVIN DYER
 INCIDENT # (ENV SERVICES): 9 7 2 1 6 6 4 0
 PO # SAP #
 3 4 0 0 6 1
 DATE: 6/11/08
 PAGE: 1 of 2

CONSULTANT COMPANY: URS CORPORATION - FIELD OFFICE
 ADDRESS: 1001 HIGHLANDS PLAZA DRIVE WEST - SUITE 300
 CITY: ST. LOUIS, MISSOURI 63110
 OFF: 314-743-4166 FAX: 314-743-4166
 CELL: 314-462-8920
 E-MAIL: wendy.pennington@urscorp.com

SOPUS SITE ADDRESS (Street, City and State): 900 S. CENTRAL AVENUE, ROXANA, ILLINOIS 62084
 CONSULTANT PROJECT CONTACT (Report to): WENDY PENNINGTON
 CONSULTANT PROJECT NAME / NO.: Route 111 & Rand Ave Vicinity / 21561979
 SAMPLER NAME(S) (PID#): W. Pennington & R. Wernig
 LAB USE ONLY: 305672-1

TURNAROUND TIME (CALENDAR DAYS):
☒ STANDARD (10 DAY) ☐ 5 DAYS ☐ 3 DAYS ☐ 2 DAYS ☐ 24 HOURS ☐ RESULTS NEEDED ON WEEKEND
 DELIVERABLES: ☐ LEVEL 1 ☒ LEVEL 2 ☐ LEVEL 3 ☒ LEVEL 4 ☐ OTHER (SPECIFY) EDD
 TEMPERATURE ON RECEIPT C° Cooler #1 2.5°C Cooler #2 Cooler #3
 SPECIAL INSTRUCTIONS OR NOTES:
 Please include "J" values on Level 2 Reports ☒ SHELL CONTRACT RATE APPLIES

REQUESTED ANALYSIS

LAB USE ONLY	Field Sample Identification	SAMPLING		MATRIX	PRESERVATIVE					NO. OF CONT.	VOC 8260B																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																								
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Relinquished by (Signature): Wendy Pennington	Received by (Signature):	Date: 6/11/08	Time: 1800
Relinquished by (Signature): FED EX	Received by (Signature): J. L. Stry	Date: 6/12/08	Time: 0950

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☐ SPL
☐ OTHER



Shell Oil Products Chain Of Custody Record

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<input type="checkbox"/> MOTIVA SD&CH	<input type="checkbox"/> CONSULTANT	<input type="checkbox"/> LUBES
<input type="checkbox"/> SHELL PIPELINE	<input type="checkbox"/> OTHER	

Print Bill To Contact Name: KEVIN DYER
INCIDENT # (ENV SERVICES) 9 7 2 1 6 6 4 0
PO # SAP #
3 4 0 0 6 1
DATE: 6/11/08
PAGE: 2 of 2

CONSULTANT COMPANY: URS CORPORATION
ADDRESS: 1001 HIGHLANDS PLAZA DRIVE WEST - SUITE 300
CITY: ST. LOUIS, MISSOURI 63110
TELEPHONE: OFF: 314-743-4156 CELL: 314-452-8929
FAX: OFF: 314-743-4156 CELL: 314-452-8929
E-MAIL: wendy.pennington@urscorp.com
HARTFORD, ILLINOIS 62048

SOPUS SITE ADDRESS (Street, City and State):
900 S. CENTRAL AVENUE, ROXANA, ILLINOIS 62084
CONSULTANT PROJECT CONTACT (Report to): WENDY PENNINGTON
CONSULTANT PROJECT NAME / NO: Route 111 & Rand Ave Vicinity / 21561979
SAMPLER NAME(S) (Print): W. Pennington & R. Wernig
LAB USE ONLY: 305672-H

TURNAROUND TIME (CALENDAR DAYS):
☒ STANDARD (10 DAY) ☐ 5 DAYS ☐ 3 DAYS ☐ 2 DAYS ☐ 24 HOURS ☐ RESULTS NEEDED ON WEEKEND
DELIVERABLES: ☐ LEVEL 1 ☒ LEVEL 2 ☐ LEVEL 3 ☒ LEVEL 4 ☐ OTHER (SPECIFY) EDD
TEMPERATURE ON RECEIPT C* Cooler #1 Cooler #2 Cooler #3

SPECIAL INSTRUCTIONS OR NOTES:
Please include "J" values on Level 2 Reports
☒ SHELL CONTRACT RATE APPLIES

REQUESTED ANALYSIS

LAB USE ONLY	Field Sample Identification	SAMPLING		MATRIX	PRESERVATIVE					NO. OF CONT.	VOC 8260B											PID (ppm)	Container PID Readings or Laboratory Notes																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
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Relinquished by: (Signature) Received by: (Signature) Date: 6/12/08 Time: 0950
FED EX
Relinquished by: (Signature) Received by: (Signature) Date: Time:
Relinquished by: (Signature) Received by: (Signature) Date: Time:



Prelogin/Nonconformance Report- Sample Log-In

Client: URS
Date/ Time: 6/12/8
Lab ID #: 305672-1-f
Initials: JS

Sample Receipt Checklist

#1	Temperature of container/ cooler?	Yes	No	N/A	2-5 °C
#2	Shipping container in good condition?	Yes	No	None	
#3	Samples received on ice?	Yes	No	N/A	Blue/Water
#4	Custody Seals intact on shipping container/ cooler?	Yes	No	N/A	
#5	Custody Seals intact on sample bottles/ container?	Yes	No	N/A	
#6	Chain of Custody present?	Yes	No		
#7	Sample instructions complete of Chain of Custody?	Yes	No		
#8	Any missing/extra samples?	Yes	No		
#9	Chain of Custody signed when relinquished/ received?	Yes	No		
#10	Chain of Custody agrees with sample label(s)?	Yes	No		
#11	Container label(s) legible and intact?	Yes	No		
	Sample matrix/ properties agree with Chain of Custody?	Yes	No		
#13	Samples in proper container/ bottle?	Yes	No		
#14	Samples properly preserved?	Yes	No	N/A	
#15	Sample container intact?	Yes	No		
#16	Sufficient sample amount for indicated test(s)?	Yes	No		
#17	All samples received within sufficient hold time?	Yes	No		
#18	Subcontract of sample(s)?	Yes	No	N/A	
#19	VOC samples have zero headspace?	Yes	No	N/A	

Nonconformance Documentation

Contact: _____ Contacted by: _____ Date/ Time: _____

Regarding: _____

Corrective Action Taken:

Check all that Apply: ☐ Client understands and would like to proceed with analysis
☐ Cooling process had begun shortly after sampling event

Rand Avenue Data Review

Laboratory SDG: 305871

Reviewer: Tony Sedlacek

Date Reviewed: 7/22/2008

Guidance: National Functional Guidelines for Organic Data Review 1999.

Applicable Work Plan: Route 111/Rand Avenue Vicinity Investigation Work Plan.

Sample Identification #	Sample Identification #
B1-061208	B2-061208
B2-061208D	B3-061208
B4-061208	B5-061308
B6-061308	B6-061308EB
TB061308	

1.0 Data Package Completeness

Were all items delivered as specified in the QAPP and COC?

Yes

2.0 Laboratory Case Narrative \ Cooler Receipt Form

Were problems noted in the laboratory case narrative or cooler receipt form?

No, although not indicated in the laboratory case narrative, VOCs were detected in the trip blank, equipment blank and method blank. VOC MS/MSD recoveries and MS/MSD RPDs were outside evaluation criteria. Samples were diluted due to high levels of target analytes. In addition, samples were evaluated and qualified using professional judgment. These issues are addressed further in the appropriate sections below.

The cooler receipt form did not indicate any problems.

3.0 Holding Times

Were samples extracted/analyzed within QAPP limits?

Yes

Field ID	Parameter	Analyte	Qualification
N/A			

4.0 Blank Contamination

Were any analytes detected in the Method Blanks, Field Blanks or Trip Blanks?

Yes

Blank ID	Parameter	Analyte	Concentration	Units
511007-1-BLK	VOCs	Methylene chloride	2.92	µg/L
511068-1-BLK	VOCs	Methylene chloride	2.48	µg/L
511068-1-BLK	VOCs	Toluene	1.46	µg/L
B6-061308EB	VOCs	Methylene chloride	1.67	µg/L
TB061308	VOCs	Methylene chloride	5.77	µg/L

Qualifications due to blank contamination are included in the table below. Analytical data that were reported nondetect or at concentrations greater than five times (5X) the associated blank concentration (10X for common laboratory contaminants) did not require qualification.

Field ID	Parameter	Analyte	New RL	Qualification
B1-061208	VOCs	Methylene chloride	-	U
B4-061208	VOCs	Methylene chloride	-	U
B5-061308	VOCs	Methylene chloride	5.18	U
B6-061308	VOCs	Methylene chloride	-	U

5.0 Laboratory Control Sample

Were LCS recoveries within evaluation criteria?

Yes

LCS ID	Parameter	Analyte	LCS/LCSD Recovery	RPD	LCS/LCSD/RPD Criteria
N/A					

Analytical data that required qualification based on LCS data are included in the table below. Analytical data which were reported as nondetect and associated with LCS recoveries above evaluation criteria, indicating a possible high bias, did not require qualification.

Field ID	Parameter	Analyte	Qualification
N/A			

6.0 Surrogate Recoveries

Were surrogate recoveries within evaluation criteria?

Yes

Field ID	Parameter	Surrogate	Recovery	Criteria
N/A				

Analytical data that required qualification based on surrogate data are included in the table below. Analytical data which were reported as nondetect and associated with surrogate recoveries above evaluation criteria, indicating a possible high bias, did not require qualification.

Field ID	Parameter	Analyte	Qualification
N/A			

7.0 Matrix Spike and Matrix Spike Duplicate Recoveries

Were MS/MSD samples reported as part of this SDG?

Yes, samples B1-061208 and B3-061208 were spiked and analyzed for VOCs.

Were MS/MSD recoveries within evaluation criteria?

No

MS/MSD ID	Parameter	Analyte	MS/MSD Recovery	RPD	MS/MSD/RPD Criteria
B1-061208	VOCs	Bromomethane	63/46	31	70-130/20
B1-061208	VOCs	2-Butanone	74/6	170	60-140/20
B1-061208	VOCs	Chloroethane	69/53	26	70-130/20
B1-061208	VOCs	Chloromethane	63/58	8	70-130/20
B1-061208	VOCs	Vinyl Chloride	65/57	13	75-125/20
B3-061208	VOCs	Acetone	36/40	11	40-160/21
B3-061208	VOCs	Bromomethane	66/75	13	70-130/20
B3-061208	VOCs	2-Butanone	56/61	9	60-140/20
B3-061208	VOCs	Vinyl Chloride	70/68	3	75-125/20

Analytical data that required qualification based on MS/MSD data are included in the table below. USEPA National Functional Guidelines for Organic Data Review indicates that organic data should not be qualified based on MS/MSD data alone and LCS recoveries were within evaluation criteria, therefore no qualification of the data was required.

Field ID	Parameter	Analyte	Qualification
N/A			

8.0 Laboratory Duplicate Results

Were laboratory duplicate samples collected as part of this SDG?

No

Were laboratory duplicate sample RPDs within criteria?

N/A

Field ID	Parameter	Analyte	RPD	Criteria
N/A				

Data qualified due to outlying laboratory duplicate recoveries are identified below:

Field ID	Parameter	Analyte	Qualification
N/A			

9.0 Field Duplicate Results

Were field duplicate samples collected as part of this SDG?

Yes

Field ID	Field Duplicate ID
B2-061208	B2-061208D

Were field duplicates within evaluation criteria?

Yes

Field ID	Field Duplicate ID	Parameter	Analyte	RPD	Qualification
N/A					

10.0 Sample Dilutions

For samples that were diluted and nondetect, were undiluted results also reported?

No

The following table identifies the analyses which were reported as nondetect, diluted, and an undiluted run ***was not*** reported:

Field ID	Parameter	Dilution Factor
B2-061208	VOCs	50
B2-061208D	VOCs	50

11.0 Additional Qualifications

Were additional qualifications applied?

Yes

Professional judgment was used to qualify the common laboratory contaminant methylene chloride reported at concentrations less than two times (2X) the RL.

Field ID	Analyte	New RL	Qualification	Comments
B2-061208	Methylene chloride	42.2	U	Professional Judgment
B2-061208D	Methylene chloride	47.2	U	Professional Judgment

Analytical Report 305871

for

URS Corporation-St. Louis

Project Manager: Wendy Pennington

900 S. Central Avenue

Route 111 & Rand Ave Vicinity / 21561979

26-JUN-08



E84880

4143 Greenbriar Dr., Stafford, TX 77477 Ph:(281) 240-4200 Fax:(281) 240-4280

Texas certification numbers:

Houston, TX T104704215

Florida certification numbers:

Houston, TX E871002 - Miami, FL E86678 - Tampa, FL E86675

Norcross(Atlanta), GA E87429

South Carolina certification numbers:

Norcross(Atlanta), GA 98015

North Carolina certification numbers:

Norcross(Atlanta), GA 483

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Midland - Corpus Christi - Atlanta**



26-JUN-08

Project Manager: **Wendy Pennington**
URS Corporation-St. Louis
1001 Highlands Plaza Drive West, Suite 300
St. Louis, MO 63110

Reference: XENCO Report No: **305871**
900 S. Central Avenue
Project Address: Roxana, Illinois 62084

Wendy Pennington:

We are reporting to you the results of the analyses performed on the samples received under the project name referenced above and identified with the XENCO Report Number 305871. All results being reported under this Report Number apply to the samples analyzed and properly identified with a Laboratory ID number. Subcontracted analyses are identified in this report with either the NELAC certification number of the subcontract lab in the analyst ID field, or the complete subcontracted report attached to this report.

Unless otherwise noted in a Case Narrative, all data reported in this Analytical Report are in compliance with NELAC standards. Estimation of data uncertainty for this report is found in the quality control section of this report unless otherwise noted. Should insufficient sample be provided to the laboratory to meet the method and NELAC Matrix Duplicate and Matrix Spike requirements, then the data will be analyzed, evaluated and reported using all other available quality control measures.

The validity and integrity of this report will remain intact as long as it is accompanied by this letter and reproduced in full, unless written approval is granted by XENCO Laboratories. This report will be filed for at least 5 years in our archives after which time it will be destroyed without further notice, unless otherwise arranged with you. The samples received, and described as recorded in Report No. 305871 will be filed for 60 days, and after that time they will be properly disposed without further notice, unless otherwise arranged with you. We reserve the right to return to you any unused samples, extracts or solutions related to them if we consider so necessary (e.g., samples identified as hazardous waste, sample sizes exceeding analytical standard practices, controlled substances under regulated protocols, etc).

We thank you for selecting XENCO Laboratories to serve your analytical needs. If you have any questions concerning this report, please feel free to contact us at any time.

Respectfully,

Carlos Castro

Managing Director, Texas

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Sample Cross Reference 305871



URS Corporation-St. Louis, St. Louis, MO
900 S. Central Avenue

Sample Id	Matrix	Date Collected	Sample Depth	Lab Sample Id
B1-061208	W	Jun-12-08 10:45		305871-001
B2-061208	W	Jun-12-08 12:45		305871-002
B2-061208D	W	Jun-12-08 12:45		305871-003
B3-061208	W	Jun-12-08 15:00		305871-004
B4-061208	W	Jun-12-08 16:30		305871-005
B5-061308	W	Jun-13-08 10:05		305871-006
B6-061308	W	Jun-13-08 12:00		305871-007
B6-061308EB	W	Jun-13-08 13:30		305871-008
TB061308	W	Jun-13-08 00:00		305871-009



Certificate of Analysis Summary 305871

URS Corporation-St. Louis, St. Louis, MO



Project Name: 900 S. Central Avenue

Project Id: Route 111 & Rand Ave Vicinity / 2156197

Date Received in Lab: Jun-14-08 09:51 am

Contact: Wendy Pennington

Report Date: 26-JUN-08

Project Location: Roxana, Illinois 62084

Project Manager: Debbie Simmons

Analysis Requested	Lab Id:	305871-001	305871-002	305871-003	305871-004
	Field Id:	B1-061208	B2-061208	B2-061208D	B3-061208
	Depth:	WATER	WATER	WATER	WATER
	Matrix:	WATER	WATER	WATER	WATER
	Sampled:	Jun-12-08 10:45	Jun-12-08 12:45	Jun-12-08 12:45	Jun-12-08 15:00
VOAs by SW-846 8260B	Extracted:	Jun-17-08 11:56	Jun-19-08 14:22	Jun-19-08 14:28	Jun-20-08 11:30
	Analyzed:	Jun-17-08 12:11	Jun-19-08 14:54	Jun-19-08 15:59	Jun-20-08 12:04
	Units/RL:	ug/L RL	ug/L RL	ug/L RL	ug/L RL
Acetone		U 100	U 500	U 500	U 100
Benzene		1.01 J 5.00	1100 D 250	1120 D 250	1.59 J 5.00
Bromobenzene		U 5.00	U 25.0	U 25.0	U 5.00
Bromochloromethane		U 5.00	U 25.0	U 25.0	U 5.00
Bromodichloromethane		U 5.00	U 25.0	U 25.0	U 5.00
Bromoform		U 5.00	U 25.0	U 25.0	U 5.00
Bromomethane		U 5.00	U 25.0	U 25.0	U 5.00
2-Butanone		U 50.0	U 250	U 250	U 50.0
MTBE		4.38 J 5.00	U 25.0	U 25.0	U 5.00
n-Butylbenzene		U 5.00	U 25.0	U 25.0	2.69 J 5.00
Sec-Butylbenzene		U 5.00	U 25.0	U 25.0	2.29 J 5.00
tert-Butylbenzene		U 5.00	U 25.0	U 25.0	2.16 J 5.00
Carbon Disulfide		U 50.0	U 250	U 250	U 50.0
Carbon Tetrachloride		U 5.00	U 25.0	U 25.0	U 5.00
Chlorobenzene		U 5.00	U 25.0	U 25.0	U 5.00
Chloroethane		U 10.0	U 50.0	U 50.0	U 10.0
Chloroform		U 5.00	U 25.0	U 25.0	U 5.00
Chloromethane		U 10.0	U 50.0	U 50.0	U 10.0
2-Chlorotoluene		U 5.00	U 25.0	U 25.0	U 5.00
4-Chlorotoluene		U 5.00	U 25.0	U 25.0	U 5.00
p-Cymene (p-Isopropyltoluene)		U 5.00	U 25.0	U 25.0	U 5.00
Dibromochloromethane		U 5.00	U 25.0	U 25.0	U 5.00
1,2-Dibromo-3-Chloropropane		U 5.00	U 25.0	U 25.0	U 5.00
1,2-Dibromoethane		U 5.00	U 25.0	U 25.0	U 5.00
Dibromomethane		U 5.00	U 25.0	U 25.0	U 5.00
1,2-Dichlorobenzene		U 5.00	U 25.0	U 25.0	U 5.00
1,3-Dichlorobenzene		U 5.00	U 25.0	U 25.0	U 5.00
1,4-Dichlorobenzene		U 5.00	U 25.0	U 25.0	U 5.00
Dichlorodifluoromethane		8.05 U 5.00	8.05 U 25.0	U 25.0	U 5.00
1,1-Dichloroethane		U 5.00	U 25.0	U 25.0	U 5.00
1,2-Dichloroethane		U 5.00	U 25.0	U 25.0	U 5.00
1,1-Dichloroethene		U 5.00	U 25.0	U 25.0	U 5.00
cis-1,2-Dichloroethene		U 5.00	U 25.0	U 25.0	U 5.00
trans-1,2-dichloroethene		U 5.00	U 25.0	U 25.0	U 5.00

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Carlos A. Castro
Carlos A. Castro, Ph.D., MBA
Managing Director, Texas



Certificate of Analysis Summary 305871

URS Corporation-St. Louis, St. Louis, MO



Project Name: 900 S. Central Avenue

Project Id: Route 111 & Rand Ave Vicinity / 2156197

Date Received in Lab: Jun-14-08 09:51 am

Contact: Wendy Pennington

Report Date: 26-JUN-08

Project Location: Roxana, Illinois 62084

Project Manager: Debbie Simmons

Analysis Requested	Lab Id:	305871-001	305871-002	305871-003	305871-004
	Field Id:	B1-061208	B2-061208	B2-061208D	B3-061208
	Depth:				
	Matrix:	WATER	WATER	WATER	WATER
	Sampled:	Jun-12-08 10:45	Jun-12-08 12:45	Jun-12-08 12:45	Jun-12-08 15:00
VOAs by SW-846 8260B	Extracted:	Jun-17-08 11:56	Jun-19-08 14:22	Jun-19-08 14:28	Jun-20-08 11:30
	Analyzed:	Jun-17-08 12:11	Jun-19-08 14:54	Jun-19-08 15:59	Jun-20-08 12:04
	Units/RL:	ug/L RL	ug/L RL	ug/L RL	ug/L RL
1,2-Dichloropropane		U 5.00	U 25.0	U 25.0	U 5.00
1,3-Dichloropropane		U 5.00	U 25.0	U 25.0	U 5.00
2,2-Dichloropropane		U 5.00	U 25.0	U 25.0	U 5.00
1,1-Dichloropropene		U 5.00	U 25.0	U 25.0	U 5.00
cis-1,3-Dichloropropene		U 5.00	U 25.0	U 25.0	U 5.00
trans-1,3-dichloropropene		U 5.00	U 25.0	U 25.0	U 5.00
Ethylbenzene		U 5.00	1620 D 250	1530 D 250	7.97 5.00
Hexachlorobutadiene		U 5.00	U 25.0	U 25.0	U 5.00
2-Hexanone		U 50.0	U 250	U 250	U 50.0
isopropylbenzene		U 5.00	53.9 25.0	54.6 25.0	29.5 5.00
Methylene Chloride		U 5.00	U 25.0	U 25.0	U 5.00
4-Methyl-2-Pentanone		U 50.0	U 250	U 250	U 50.0
Naphthalene		U 10.0	129 50.0	145 50.0	U 10.0
n-Propylbenzene		U 5.00	117 25.0	124 25.0	54.9 5.00
styrene		U 5.00	U 25.0	U 25.0	U 5.00
1,1,1,2-Tetrachloroethane		U 5.00	U 25.0	U 25.0	U 5.00
1,1,2,2-Tetrachloroethane		U 5.00	U 25.0	U 25.0	U 5.00
Tetrachloroethylene		U 5.00	U 25.0	U 25.0	U 5.00
Toluene		U 5.00	3000 D 250	3030 D 250	50.1 5.00
1,2,3-Trichlorobenzene		U 5.00	U 25.0	U 25.0	U 5.00
1,2,4-Trichlorobenzene		U 5.00	U 25.0	U 25.0	U 5.00
1,1,1-Trichloroethane		U 5.00	U 25.0	U 25.0	U 5.00
1,1,2-Trichloroethane		U 5.00	U 25.0	U 25.0	U 5.00
Trichloroethene		U 5.00	U 25.0	U 25.0	U 5.00
Trichlorofluoromethane		U 5.00	U 25.0	U 25.0	U 5.00
1,2,3-Trichloropropane		U 5.00	U 25.0	U 25.0	U 5.00
1,2,4-Trimethylbenzene		U 5.00	718 25.0	689 D 250	U 5.00
1,3,5-Trimethylbenzene		U 5.00	188 25.0	202 25.0	U 5.00
o-Xylene		U 5.00	933 D 250	867 D 250	7.00 5.00
m,p-Xylenes		U 10.0	3130 D 500	3000 D 500	89.4 10.0
Vinyl Chloride		U 2.00	U 10.0	U 10.0	U 2.00

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Carlos A. Castro, Ph.D., MBA
Managing Director, Texas



Certificate of Analysis Summary 305871

URS Corporation-St. Louis, St. Louis, MO



Project Name: 900 S. Central Avenue

Project Id: Route 111 & Rand Ave Vicinity / 2156197

Date Received in Lab: Jun-14-08 09:51 am

Contact: Wendy Pennington

Report Date: 26-JUN-08

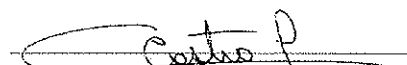
Project Location: Roxana, Illinois 62084

Project Manager: Debbie Simmons

Analysis Requested	Lab Id:	305871-005	305871-006	305871-007	305871-008
	Field Id:	B4-061208	B5-061308	B6-061308	B6-061308EB
	Depth:				
	Matrix:	WATER	WATER	WATER	WATER
	Sampled:	Jun-12-08 16:30	Jun-13-08 10:05	Jun-13-08 12:00	Jun-13-08 13:30
VOAs by SW-846 8260B	Extracted:	Jun-17-08 12:06	Jun-17-08 12:08	Jun-17-08 14:28	Jun-17-08 14:30
	Analyzed:	Jun-17-08 14:20	Jun-17-08 14:42	Jun-17-08 15:03	Jun-17-08 15:25
	Units/RL:	ug/L RL	ug/L RL	ug/L RL	ug/L RL
Acetone		U 100	U 100	U 100	U 100
Benzene		U 5.00	33.8 5.00	U 5.00	U 5.00
Bromobenzene		U 5.00	U 5.00	U 5.00	U 5.00
Bromochloromethane		U 5.00	U 5.00	U 5.00	U 5.00
Bromodichloromethane		U 5.00	U 5.00	U 5.00	U 5.00
Bromoforn		U 5.00	U 5.00	U 5.00	U 5.00
Bromomethane		U 5.00	U 5.00	U 5.00	U 5.00
2-Butanone		U 50.0	U 50.0	U 50.0	U 50.0
MTBE		U 5.00	U 5.00	1.04 J 5.00	U 5.00
n-Butylbenzene		U 5.00	U 5.00	U 5.00	U 5.00
Sec-Butylbenzene		U 5.00	U 5.00	U 5.00	U 5.00
tert-Butylbenzene		U 5.00	1.72 J 5.00	U 5.00	U 5.00
Carbon Disulfide		U 50.0	U 50.0	U 50.0	U 50.0
Carbon Tetrachloride		U 5.00	U 5.00	U 5.00	U 5.00
Chlorobenzene		U 5.00	U 5.00	U 5.00	U 5.00
Chloroethane		U 10.0	U 10.0	U 10.0	U 10.0
Chloroform		U 5.00	U 5.00	U 5.00	U 5.00
Chloromethane		U 10.0	U 10.0	U 10.0	U 10.0
2-Chlorotoluene		U 5.00	U 5.00	U 5.00	U 5.00
4-Chlorotoluene		U 5.00	U 5.00	U 5.00	U 5.00
p-Cymene (p-Isopropyltoluene)		U 5.00	U 5.00	U 5.00	U 5.00
Dibromochloromethane		U 5.00	U 5.00	U 5.00	U 5.00
1,2-Dibromo-3-Chloropropane		U 5.00	U 5.00	U 5.00	U 5.00
1,2-Dibromoethane		U 5.00	U 5.00	U 5.00	U 5.00
Dibromomethane		U 5.00	U 5.00	U 5.00	U 5.00
1,2-Dichlorobenzene		U 5.00	U 5.00	U 5.00	U 5.00
1,3-Dichlorobenzene		U 5.00	U 5.00	U 5.00	U 5.00
1,4-Dichlorobenzene		U 5.00	U 5.00	U 5.00	U 5.00
Dichlorodifluoromethane		U 5.00	U 5.00	U 5.00	U 5.00
1,1-Dichloroethane		U 5.00	U 5.00	U 5.00	U 5.00
1,2-Dichloroethane		U 5.00	U 5.00	U 5.00	U 5.00
1,1-Dichloroethene		U 5.00	U 5.00	U 5.00	U 5.00
cis-1,2-Dichloroethene		U 5.00	U 5.00	U 5.00	U 5.00
trans-1,2-dichloroethene		U 5.00	U 5.00	U 5.00	U 5.00

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Carlos A. Castro, Ph.D., MBA
Managing Director, Texas



Certificate of Analysis Summary 305871

URS Corporation-St. Louis, St. Louis, MO



Project Name: 900 S. Central Avenue

Project Id: Route 111 & Rand Ave Vicinity / 2156197

Date Received in Lab: Jun-14-08 09:51 am

Contact: Wendy Pennington

Report Date: 26-JUN-08

Project Location: Roxana, Illinois 62084

Project Manager: Debbie Simmons

Analysis Requested	Lab Id:	305871-005	305871-006	305871-007	305871-008
	Field Id:	B4-061208	B5-061308	B6-061308	B6-061308EB
	Depth:				
	Matrix:	WATER	WATER	WATER	WATER
	Sampled:	Jun-12-08 16:30	Jun-13-08 10:05	Jun-13-08 12:00	Jun-13-08 13:30
VOAs by SW-846 8260B	Extracted:	Jun-17-08 12:06	Jun-17-08 12:08	Jun-17-08 14:28	Jun-17-08 14:30
	Analyzed:	Jun-17-08 14:20	Jun-17-08 14:42	Jun-17-08 15:03	Jun-17-08 15:25
	Units/RL:	ug/L RL	ug/L RL	ug/L RL	ug/L RL
1,2-Dichloropropane		U 5.00	U 5.00	U 5.00	U 5.00
1,3-Dichloropropane		U 5.00	U 5.00	U 5.00	U 5.00
2,2-Dichloropropane		U 5.00	U 5.00	U 5.00	U 5.00
1,1-Dichloropropene		U 5.00	U 5.00	U 5.00	U 5.00
cis-1,3-Dichloropropene		U 5.00	U 5.00	U 5.00	U 5.00
trans-1,3-dichloropropene		U 5.00	U 5.00	U 5.00	U 5.00
Ethylbenzene		U 5.00	3.00 J 5.00	U 5.00	U 5.00
Hexachlorobutadiene		U 5.00	U 5.00	U 5.00	U 5.00
2-Hexanone		U 50.0	U 50.0	U 50.0	U 50.0
Isopropylbenzene		U 5.00	1.93 J 5.00	U 5.00	U 5.00
Methylene Chloride		ND 0.04 5.00	ND 0.0 5.00	ND 0.0 5.00	1.67 J 5.00
4-Methyl-2-Pentanone		U 50.0	U 50.0	U 50.0	U 50.0
Naphthalene		U 10.0	U 10.0	U 10.0	U 10.0
Propylbenzene		U 5.00	2.57 J 5.00	U 5.00	U 5.00
Yrene		U 5.00	U 5.00	U 5.00	U 5.00
1,1,1,2-Tetrachloroethane		U 5.00	U 5.00	U 5.00	U 5.00
1,1,2,2-Tetrachloroethane		U 5.00	U 5.00	U 5.00	U 5.00
Tetrachloroethylene		U 5.00	U 5.00	U 5.00	U 5.00
Toluene		U 5.00	6.17 5.00	U 5.00	U 5.00
1,2,3-Trichlorobenzene		U 5.00	U 5.00	U 5.00	U 5.00
1,2,4-Trichlorobenzene		U 5.00	U 5.00	U 5.00	U 5.00
1,1,1-Trichloroethane		U 5.00	U 5.00	U 5.00	U 5.00
1,1,2-Trichloroethane		U 5.00	U 5.00	U 5.00	U 5.00
Trichloroethene		U 5.00	U 5.00	U 5.00	U 5.00
Trichlorofluoromethane		U 5.00	U 5.00	U 5.00	U 5.00
1,2,3-Trichloropropane		U 5.00	U 5.00	U 5.00	U 5.00
1,2,4-Trimethylbenzene		U 5.00	U 5.00	U 5.00	U 5.00
1,3,5-Trimethylbenzene		U 5.00	U 5.00	U 5.00	U 5.00
o-Xylene		U 5.00	U 5.00	U 5.00	U 5.00
m,p-Xylenes		U 10.0	7.99 J 10.0	U 10.0	U 10.0
Vinyl Chloride		U 2.00	U 2.00	U 2.00	U 2.00

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Carlos A. Castro, Ph.D., MBA
Managing Director, Texas



Certificate of Analysis Summary 305871

URS Corporation-St. Louis, St. Louis, MO



Project Name: 900 S. Central Avenue

Project Id: Route 111 & Rand Ave Vicinity / 2156197

Date Received in Lab: Jun-14-08 09:51 am

Contact: Wendy Pennington

Report Date: 26-JUN-08

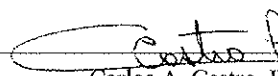
Project Location: Roxana, Illinois 62084

Project Manager: Debbie Simmons

Analysis Requested	Lab Id:	305871-009			
	Field Id:	TB061308			
	Depth:				
	Matrix:	WATER			
	Sampled:	Jun-13-08 00:00			
VOAs by SW-846 8260B	Extracted:	Jun-17-08 12:04			
	Analyzed:	Jun-17-08 13:59			
	Units/RL:	ug/L RL			
Acetone		U 100			
Benzene		U 5.00			
Bromobenzene		U 5.00			
Bromochloromethane		U 5.00			
Bromodichloromethane		U 5.00			
Bromoform		U 5.00			
Bromomethane		U 5.00			
2-Butanone		U 50.0			
MTBE		U 5.00			
n-Butylbenzene		U 5.00			
Sec-Butylbenzene		U 5.00			
tert-Butylbenzene		U 5.00			
Carbon Disulfide		U 50.0			
Carbon Tetrachloride		U 5.00			
Chlorobenzene		U 5.00			
Chloroethane		U 10.0			
Chloroform		U 5.00			
Chloromethane		U 10.0			
2-Chlorotoluene		U 5.00			
4-Chlorotoluene		U 5.00			
p-Cymene (p-Isopropyltoluene)		U 5.00			
Dibromochloromethane		U 5.00			
1,2-Dibromo-3-Chloropropane		U 5.00			
1,2-Dibromoethane		U 5.00			
Dibromomethane		U 5.00			
1,2-Dichlorobenzene		U 5.00			
1,3-Dichlorobenzene		U 5.00			
1,4-Dichlorobenzene		U 5.00			
Dichlorodifluoromethane		U 5.00			
1,1-Dichloroethane		U 5.00			
1,2-Dichloroethane		U 5.00			
1,1-Dichloroethene		U 5.00			
cis-1,2-Dichloroethene		U 5.00			
trans-1,2-dichloroethene		U 5.00			

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Managing Director, Texas



Certificate of Analysis Summary 305871

URS Corporation-St. Louis, St. Louis, MO



Project Name: 900 S. Central Avenue

Project Id: Route 111 & Rand Ave Vicinity / 2156197

Date Received in Lab: Jun-14-08 09:51 am

Contact: Wendy Pennington

Report Date: 26-JUN-08

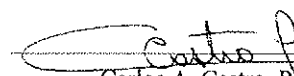
Project Location: Roxana, Illinois 62084

Project Manager: Debbie Simmons

Analysis Requested	Lab Id:	305871-009			
	Field Id:	TB061308			
	Depth:				
	Matrix:	WATER			
	Sampled:	Jun-13-08 00:00			
VOAs by SW-846 8260B	Extracted:	Jun-17-08 12:04			
	Analyzed:	Jun-17-08 13:59			
	Units/RL:	ug/L RL			
1,2-Dichloropropane		U 5.00			
1,3-Dichloropropane		U 5.00			
2,2-Dichloropropane		U 5.00			
1,1-Dichloropropene		U 5.00			
cis-1,3-Dichloropropene		U 5.00			
trans-1,3-dichloropropene		U 5.00			
Ethylbenzene		U 5.00			
Hexachlorobutadiene		U 5.00			
2-Hexanone		U 50.0			
isopropylbenzene		U 5.00			
Methylene Chloride		5.77 5.00			
4-Methyl-2-Pentanone		U 50.0			
Naphthalene		U 10.0			
propylbenzene		U 5.00			
styrene		U 5.00			
1,1,1,2-Tetrachloroethane		U 5.00			
1,1,2,2-Tetrachloroethane		U 5.00			
Tetrachloroethylene		U 5.00			
Toluene		U 5.00			
1,2,3-Trichlorobenzene		U 5.00			
1,2,4-Trichlorobenzene		U 5.00			
1,1,1-Trichloroethane		U 5.00			
1,1,2-Trichloroethane		U 5.00			
Trichloroethene		U 5.00			
Trichlorofluoromethane		U 5.00			
1,2,3-Trichloropropane		U 5.00			
1,2,4-Trimethylbenzene		U 5.00			
1,3,5-Trimethylbenzene		U 5.00			
o-Xylene		U 5.00			
m,p-Xylenes		U 10.0			
Vinyl Chloride		U 2.00			

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Carlos A. Castro, Ph.D., MBA
Managing Director, Texas



Flagging Criteria

- X** In our quality control review of the data a QC deficiency was observed and flagged as noted. MS/MSD recoveries were found to be outside of the laboratory control limits due to possible matrix /chemical interference, or a concentration of target analyte high enough to effect the recovery of the spike concentration. This condition could also effect the relative percent difference in the MS/MSD.
 - B** A target analyte or common laboratory contaminant was identified in the method blank. Its presence indicates possible field or laboratory contamination.
 - D** The sample(s) were diluted due to targets detected over the highest point of the calibration curve, or due to matrix interference. Dilution factors are included in the final results. The result is from a diluted sample.
 - E** The data exceeds the upper calibration limit; therefore, the concentration is reported as estimated.
 - F** RPD exceeded lab control limits.
 - J** The target analyte was positively identified below the MQL(PQL) and above the SQL(MDL).
 - U** Analyte was not detected.
 - L** The LCS data for this analytical batch was reported below the laboratory control limits for this analyte. The department supervisor and QA Director reviewed data. The samples were either reanalyzed or flagged as estimated concentrations.
 - H** The LCS data for this analytical batch was reported above the laboratory control limits. Supporting QC Data were reviewed by the Department Supervisor and QA Director. Data were determined to be valid for reporting.
 - K** Sample analyzed outside of recommended hold time.
- * Outside XENCO'S scope of NELAC Accreditation

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LAB (L ION)

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KEVIN DYER

INCIDENT # (ENV. SERVICES):

9 7 2 1 6 6 4 0

☐ CHECK IF NO INCIDENT # APPLIES

DATE: 6/13/08

PO #

SAP #

PAGE: 1 of 1

SOPUS SITE ADDRESS (Street, City and State):

900 S. CENTRAL AVENUE: ROXANA, ILLINOIS 62084

CONSULTANT PROJECT CONTACT (Report to):

WENDY PENNINGTON

CONSULTANT PROJECT NAME / NO.:

Route 111 & Rand Ave Vicinity / 21561979

SAMPLER NAME(S) (Print):

W. Pennington & R. Wernig

LAB USE ONLY

305871-H

REQUESTED ANALYSIS

Field Sample Identification	DATE	TIME	MATRIX	HCL	HNO3	H2SO4	NONE	OTHER	NO. OF CONT.	VOC 8260B	PID (ppm)	Container PID Readings or Laboratory Notes
B1-061208	6/12/08	1045	WATER	X					3	X	0.0	
B2-061208		1245	WATER	X					3	X	108	
B2-061208D		1245	WATER	X					3	X	108	
B3-061208		1500	WATER	X					3	X	10.7	
B4-061208		1630	WATER	X					3	X	0.0	
B5-061308	6/13/08	1005	WATER	X					3	X	4.8	
B6-061308		1200	WATER	X					3	X	15.4	
B6-061308EB		1330	WATER	X					3	X		
TB061308			WATER						1	X		
			WATER									

Relinquished by: (Signature)

Wendy Pennington

Received by: (Signature)

FED EX

Date:

6/13/08

Time:

1630

Relinquished by: (Signature)

Received by: (Signature)

Date:

Time:

Relinquished by: (Signature)

Fed Ex

Received by: (Signature)

Date:

6/14/08

Time:

9:51

05/2/08 Revision

Page 36 of 37

305871-H



Prelogin/Nonconformance Report- Sample Log-In

Client: URS Corporation
Date/ Time: 6/14/08
Lab ID #: 305871-H
Initials: [Signature]

Sample Receipt Checklist

#1 Temperature of container/ cooler?	Yes	No	N/A	2.3 °C
#2 Shipping container in good condition?	Yes	No	None	
#3 Samples received on ice?	Yes	No	N/A	Blue/Water
#4 Custody Seals intact on shipping container/ cooler?	Yes	No	N/A	
#5 Custody Seals intact on sample bottles/ container?	Yes	No	N/A	
#6 Chain of Custody present?	Yes	No		
#7 Sample Instructions complete of Chain of Custody?	Yes	No		
#8 Any missing/extra samples?	Yes	No		
#9 Chain of Custody signed when relinquished/ received?	Yes	No		
#10 Chain of Custody agrees with sample label(s)?	Yes	No		
#11 Container label(s) legible and intact?	Yes	No		
Sample matrix/ properties agree with Chain of Custody?	Yes	No		
#13 Samples in proper container/ bottle?	Yes	No		
#14 Samples properly preserved?	Yes	No	N/A	
#15 Sample container intact?	Yes	No		
#16 Sufficient sample amount for indicated test(s)?	Yes	No		
#17 All samples received within sufficient hold time?	Yes	No		
#18 Subcontract of sample(s)?	Yes	No	N/A	
#19 VOC samples have zero headspace?	Yes	No	N/A	

Nonconformance Documentation

Contact: _____ Contacted by: _____ Date/ Time: _____

Regarding: _____

Corrective Action Taken:

Check all that Apply: ☐ Client understands and would like to proceed with analysis
☐ Cooling process had begun shortly after sampling event

Rand Avenue Data Review

Laboratory SDG: 308728

Reviewer: Tony Sedlacek

Date Reviewed: 8/04/2008

Guidance: National Functional Guidelines for Organic Data Review 1999.

Applicable Work Plan: Route 111/Rand Avenue Vicinity Investigation Work Plan.

Sample Identification #
P54072508

1.0 Data Package Completeness

Were all items delivered as specified in the QAPP and COC?

Yes

2.0 Laboratory Case Narrative \ Cooler Receipt Form

Were problems noted in the laboratory case narrative or cooler receipt form?

Although not indicated in the laboratory case narrative the MS recovery for acetone and the LCS recovery for chloroethane were outside evaluation criteria. Also, the sample was evaluated and qualified using professional judgment. These issues are addressed further in the appropriate sections below.

The cooler receipt form did not indicate any problems.

3.0 Holding Times

Were samples extracted/analyzed within QAPP limits?

Yes

Field ID	Parameter	Analyte	Qualification
N/A			

4.0 Blank Contamination

Were any analytes detected in the Method Blanks, Field Blanks or Trip Blanks?

No

Blank ID	Parameter	Analyte	Concentration	Units
N/A				

Qualifications due to blank contamination are included in the table below. Analytical data that were reported nondetect or at concentrations greater than five times (5X) the associated blank concentration (10X for common laboratory contaminants) did not require qualification.

Field ID	Parameter	Analyte	New RL	Qualification
N/A				

5.0 Laboratory Control Sample

Were LCS recoveries within evaluation criteria?

No

LCS ID	Parameter	Analyte	LCS Recovery	RPD	LCS Criteria
512967-1-BKS	VOCs	Chloroethane	139	N/A	70-130

Analytical data that required qualification based on LCS data are included in the table below. Analytical data which were reported as nondetect and associated with LCS recoveries above evaluation criteria, indicating a possible high bias, did not require qualification.

Field ID	Parameter	Analyte	Qualification
N/A			

6.0 Surrogate Recoveries

Were surrogate recoveries within evaluation criteria?

Yes

Field ID	Parameter	Surrogate	Recovery	Criteria
N/A				

Analytical data that required qualification based on surrogate data are included in the table below. Analytical data which were reported as nondetect and associated with surrogate recoveries above evaluation criteria, indicating a possible high bias, did not require qualification.

Field ID	Parameter	Analyte	Qualification
N/A			

7.0 Matrix Spike and Matrix Spike Duplicate Recoveries

Were MS/MSD samples reported as part of this SDG?

Yes, sample P54072508 was spiked and analyzed for VOCs.

Were MS/MSD recoveries within evaluation criteria?

No

MS/MSD ID	Parameter	Analyte	MS/MSD Recovery	RPD	MS/MSD/RPD Criteria
P54072508	VOCs	Acetone	39/43	10	40-160/21

Analytical data that required qualification based on MS/MSD data are included in the table below. USEPA National Functional Guidelines for Organic Data Review indicates that organic data should not be qualified based on MS/MSD data alone and LCS recoveries were within evaluation criteria, therefore no qualification of the data was required.

Field ID	Parameter	Analyte	Qualification
N/A			

8.0 Laboratory Duplicate Results

Were laboratory duplicate samples collected as part of this SDG?

No

Were laboratory duplicate sample RPDs within criteria?

N/A

Field ID	Parameter	Analyte	RPD	Criteria
N/A				

Data qualified due to outlying laboratory duplicate recoveries are identified below:

Field ID	Parameter	Analyte	Qualification
N/A			

9.0 Field Duplicate Results

Were field duplicate samples collected as part of this SDG?

No

Field ID	Field Duplicate ID
N/A	

Were field duplicates within evaluation criteria?

N/A

Field ID	Field Duplicate ID	Parameter	Analyte	RPD	Qualification
N/A					

10.0 Sample Dilutions

For samples that were diluted and nondetect, were undiluted results also reported?

The sample did not require a dilution.

The following table identifies the analyses which were reported as nondetect, diluted, and an undiluted run *was not* reported:

Field ID	Parameter	Dilution Factor
N/A		

11.0 Additional Qualifications

Were additional qualifications applied?

Yes

Professional judgment was used to qualify the common laboratory contaminant methylene chloride reported at concentrations less than two times (2X) the RL.

Field ID	Analyte	New RL	Qualification	Comments
P54072508	Methylene chloride	-	U	Professional Judgment

Analytical Report 308728

for

URS Corporation-St. Louis

Project Manager: Wendy Pennington

900 S. Central Avenue

Route 111 & Rand Ave Vicinity / 21561979

30-JUL-08



E84880

4143 Greenbriar Dr., Stafford, TX 77477 Ph:(281) 240-4200 Fax:(281) 240-4280

**Texas certification numbers:
Houston, TX T104704215**

**Florida certification numbers:
Houston, TX E871002 - Miami, FL E86678 - Tampa, FL E86675
Norcross(Atlanta), GA E87429**

**South Carolina certification numbers:
Norcross(Atlanta), GA 98015**

**North Carolina certification numbers:
Norcross(Atlanta), GA 483**

**Houston - Dallas - San Antonio - Austin - Tampa - Miami - Latin America
Midland - Corpus Christi - Atlanta**



30-JUL-08

Project Manager: **Wendy Pennington**
URS Corporation-St. Louis
1001 Highlands Plaza Drive West, Suite 300
St. Louis, MO 63110

Reference: XENCO Report No: **308728**
900 S. Central Avenue
Project Address: Roxana, Illinois 62084

Wendy Pennington:

We are reporting to you the results of the analyses performed on the samples received under the project name referenced above and identified with the XENCO Report Number 308728. All results being reported under this Report Number apply to the samples analyzed and properly identified with a Laboratory ID number. Subcontracted analyses are identified in this report with either the NELAC certification number of the subcontract lab in the analyst ID field, or the complete subcontracted report attached to this report.

Unless otherwise noted in a Case Narrative, all data reported in this Analytical Report are in compliance with NELAC standards. Estimation of data uncertainty for this report is found in the quality control section of this report unless otherwise noted. Should insufficient sample be provided to the laboratory to meet the method and NELAC Matrix Duplicate and Matrix Spike requirements, then the data will be analyzed, evaluated and reported using all other available quality control measures.

The validity and integrity of this report will remain intact as long as it is accompanied by this letter and reproduced in full, unless written approval is granted by XENCO Laboratories. This report will be filed for at least 5 years in our archives after which time it will be destroyed without further notice, unless otherwise arranged with you. The samples received, and described as recorded in Report No. 308728 will be filed for 60 days, and after that time they will be properly disposed without further notice, unless otherwise arranged with you. We reserve the right to return to you any unused samples, extracts or solutions related to them if we consider so necessary (e.g., samples identified as hazardous waste, sample sizes exceeding analytical standard practices, controlled substances under regulated protocols, etc).

We thank you for selecting XENCO Laboratories to serve your analytical needs. If you have any questions concerning this report, please feel free to contact us at any time.

Respectfully,

Carlos Castro

Managing Director, Texas

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Sample Cross Reference 308728



URS Corporation-St. Louis, St. Louis, MO
900 S. Central Avenue

Sample Id	Matrix	Date Collected	Sample Depth	Lab Sample Id
P54072508	W	Jul-25-08 14:30		308728-001



Certificate of Analysis Summary 308728

URS Corporation-St. Louis, St. Louis, MO



Project Name: 900 S. Central Avenue

Project Id: Route 111 & Rand Ave Vicinity / 2156197

Date Received in Lab: Jul-26-08 09:00 am

Contact: Wendy Pennington

Report Date: 30-JUL-08

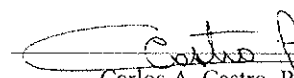
Project Location: Roxana, Illinois 62084

Project Manager: Debbie Simmons

Analysis Requested	Lab Id:	308728-001			
	Field Id:	P54072508			
	Depth:				
	Matrix:	WATER			
	Sampled:	Jul-25-08 14:30			
VOAs by SW-846 8260B	Extracted:	Jul-29-08 12:57			
	Analyzed:	Jul-29-08 12:57			
	Units/RL:	ug/L RL			
Acetone		U 100			
Benzene		U 5.00			
Bromobenzene		U 5.00			
Bromochloromethane		U 5.00			
Bromodichloromethane		U 5.00			
Bromoform		U 5.00			
Bromomethane		U 5.00			
2-Butanone		U 50.0			
MTBE		U 5.00			
n-Butylbenzene		U 5.00			
Sec-Butylbenzene		U 5.00			
tert-Butylbenzene		U 5.00			
Carbon Disulfide		U 50.0			
Carbon Tetrachloride		U 5.00			
Chlorobenzene		U 5.00			
Chloroethane		U 10.0			
Chloroform		U 5.00			
Chloromethane		U 10.0			
2-Chlorotoluene		U 5.00			
4-Chlorotoluene		U 5.00			
p-Cymene (p-Isopropyltoluene)		U 5.00			
Dibromochloromethane		U 5.00			
1,2-Dibromo-3-Chloropropane		U 5.00			
1,2-Dibromoethane		U 5.00			
Dibromomethane		U 5.00			
1,2-Dichlorobenzene		U 5.00			
1,3-Dichlorobenzene		U 5.00			
1,4-Dichlorobenzene		U 5.00			
Dichlorodifluoromethane		U 5.00			
1,1-Dichloroethane		U 5.00			
1,2-Dichloroethane		U 5.00			
1,1-Dichloroethene		U 5.00			
cis-1,2-Dichloroethene		U 5.00			
trans-1,2-dichloroethene		U 5.00			

This analytical report, and the entire data package it represents, has been made for your exclusive and confidential use. The interpretations and results expressed throughout this analytical report represent the best judgment of XENCO Laboratories. XENCO Laboratories assumes no responsibility and makes no warranty to the end use of the data hereby presented. Our liability is limited to the amount invoiced for this work order unless otherwise agreed to in writing.

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Carlos A. Castro, Ph.D., MBA
Managing Director, Texas



Certificate of Analysis Summary 308728

URS Corporation-St. Louis, St. Louis, MO



Project Name: 900 S. Central Avenue

Project Id: Route 111 & Rand Ave Vicinity / 2156197

Date Received in Lab: Jul-26-08 09:00 am

Contact: Wendy Pennington

Report Date: 30-JUL-08

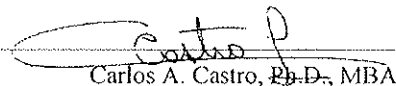
Project Location: Roxana, Illinois 62084

Project Manager: Debbie Simmons

Analysis Requested	Lab Id:	308728-001			
	Field Id:	P54072508			
	Depth:				
	Matrix:	WATER			
	Sampled:	Jul-25-08 14:30			
VOAs by SW-846 8260B	Extracted:	Jul-29-08 12:57			
	Analyzed:	Jul-29-08 12:57			
	Units/RL:	ug/L RL			
1,2-Dichloropropane		U 5.00			
1,3-Dichloropropane		U 5.00			
2,2-Dichloropropane		U 5.00			
1,1-Dichloropropene		U 5.00			
cis-1,3-Dichloropropene		U 5.00			
trans-1,3-dichloropropene		U 5.00			
Ethylbenzene		U 5.00			
Hexachlorobutadiene		U 5.00			
2-Hexanone		U 50.0			
isopropylbenzene		U 5.00			
Methylene Chloride		3.84 J 5.00			
4-Methyl-2-Pentanone		U 50.0			
Naphthalene		U 10.0			
opylbenzene		U 5.00			
,rene		U 5.00			
1,1,1,2-Tetrachloroethane		U 5.00			
1,1,2,2-Tetrachloroethane		U 5.00			
Tetrachloroethylene		U 5.00			
Toluene		U 5.00			
1,2,3-Trichlorobenzene		U 5.00			
1,2,4-Trichlorobenzene		U 5.00			
1,1,1-Trichloroethane		U 5.00			
1,1,2-Trichloroethane		U 5.00			
Trichloroethene		U 5.00			
Trichlorofluoromethane		U 5.00			
1,2,3-Trichloropropane		U 5.00			
1,2,4-Trimethylbenzene		U 5.00			
1,3,5-Trimethylbenzene		U 5.00			
o-Xylene		U 5.00			
m,p-Xylenes		U 10.0			
Vinyl Chloride		U 2.00			

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Carlos A. Castro, Ph.D., MBA
Managing Director, Texas



Flagging Criteria

- X** In our quality control review of the data a QC deficiency was observed and flagged as noted. MS/MSD recoveries were found to be outside of the laboratory control limits due to possible matrix /chemical interference, or a concentration of target analyte high enough to effect the recovery of the spike concentration. This condition could also effect the relative percent difference in the MS/MSD.
 - B** A target analyte or common laboratory contaminant was identified in the method blank. Its presence indicates possible field or laboratory contamination.
 - D** The sample(s) were diluted due to targets detected over the highest point of the calibration curve, or due to matrix interference. Dilution factors are included in the final results. The result is from a diluted sample.
 - E** The data exceeds the upper calibration limit; therefore, the concentration is reported as estimated.
 - F** RPD exceeded lab control limits.
 - J** The target analyte was positively identified below the MQL(PQL) and above the SQL(MDL).
 - U** Analyte was not detected.
 - L** The LCS data for this analytical batch was reported below the laboratory control limits for this analyte. The department supervisor and QA Director reviewed data. The samples were either reanalyzed or flagged as estimated concentrations.
 - H** The LCS data for this analytical batch was reported above the laboratory control limits. Supporting QC Data were reviewed by the Department Supervisor and QA Director. Data were determined to be valid for reporting.
 - K** Sample analyzed outside of recommended hold time.
- * Outside XENCO'S scope of NELAC Accreditation

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5332 Blackberry Drive, Suite 104, San Antonio, TX 78238
2505 N. Falkenburg Rd., Tampa, FL 33619
5757 NW 158th St, Miami Lakes, FL 33014
6017 Financial Dr., Norcross, GA 30071

Phone	Fax
(281) 589-0692	(281) 589-0695
(214) 902 0300	(214) 351-9139
(210) 509-3334	(210) 509-3335
(813) 620-2000	(813) 620-2033
(305) 823-8500	(305) 823-8555
(770) 449-8800	(770) 449-5477



Shell Oil Products Chain Of Custody Record

LAB () (ION)
 111. adowglen Ln, Ste L, Houston, TX
☒ XENCO () PH. 281.589.0692 FAX. 281.589.0695
☐ CALSCIENCE ()
☐ TEST AMERICA ()
☐ SPL ()
☐ OTHER ()

Please Check Appropriate Box:

<input checked="" type="checkbox"/> ENV. SERVICES	<input type="checkbox"/> MOTIVA RETAIL	<input type="checkbox"/> SHELL RETAIL
<input type="checkbox"/> MOTIVA SD&CH	<input type="checkbox"/> CONSULTANT	<input type="checkbox"/> LUBES
<input type="checkbox"/> SHELL PIPELINE	<input type="checkbox"/> OTHER	

Print Bill To Contact Name: KEVIN DYER
 PO #
 INCIDENT # (ENV SERVICES) 9 7 2 1 6 6 4 0
 SAP #
 3 4 0 0 6 1
 CHECK IF NO INCIDENT # APPLIES
 DATE: 7/25/08
 PAGE: 1 of 1

CONSULTANT COMPANY
 URS CORPORATION
 ADDRESS
 1001 HIGHLANDS PLAZA DRIVE WEST - SUITE 300
 CITY
 ST. LOUIS, MISSOURI 63110
 TELEPHONE OFF: 314-743-4166 FAX OFF: 314-743-4166
 CELL: 314-452-8928
 E-MAIL
 wendy_pennington@urscorp.com
 TURNAROUND TIME (CALENDAR DAYS):
☐ STANDARD (10 DAY) ☐ 5 DAYS ☒ 3 DAYS ☐ 2 DAYS ☐ 24 HOURS ☐ RESULTS NEEDED ON WEEKEND
 DELIVERABLES: ☐ LEVEL 1 ☒ LEVEL 2 ☐ LEVEL 3 ☐ LEVEL 4 ☒ OTHER (SPECIFY) EDD
 TEMPERATURE ON RECEIPT C° Cooler #1 20C Cooler #2 Cooler #3
 SPECIAL INSTRUCTIONS OR NOTES:
☒ SHELL CONTRACT RATE APPLIES

SOPUS SITE ADDRESS (Street, City and State):
 900 S. CENTRAL AVENUE; ROXANA, ILLINOIS 62084
 CONSULTANT PROJECT CONTACT (Report to):
 WENDY PENNINGTON
 CONSULTANT PROJECT NAME / NO:
 Route 111 & Rand Ave Vicinity / 21561979
 SAMPLER NAME(S) (PID#):
 W. Pennington & S. Moore
 LAB USE ONLY
 30878-H

LAB USE ONLY	Field Sample Identification		SAMPLING		MATRIX	PRESERVATIVE					NO. OF CONT.	VOC 8260B	PID (ppm)	Container PID Readings or Laboratory Notes
	DATE	TIME	DATE	TIME		HCL	HNO3	H2SO4	NONE	OTHER				
	PS4072508	7/25/08	1430		WATER	X					3	X		
					WATER									
					WATER									
					WATER									
					WATER									
					WATER									
					WATER									
					WATER									
					WATER									

Relinquished by (Signature): Wendy Pennington
 Received by (Signature):
 Date: 7/25/08 Time: 1600
 Relinquished by (Signature): F-9DEX
 Received by (Signature):
 Date: 7/26/08 Time: 0900
 05/2008 Revision



Prelogin/Nonconformance Report- Sample Log-In

Client: URS
Date/ Time: 7/26/18
Lab ID #: 308728-4
Initials: 11

Sample Receipt Checklist

#1	Temperature of container/ cooler?	<u>Yes</u>	No	N/A	<u>2-0° c</u>
#2	Shipping container in good condition?	<u>Yes</u>	No	None	
#3	Samples received on ice?	<u>Yes</u>	No	N/A	<u>Blue/Water</u>
#4	Custody Seals intact on shipping container/ cooler?	<u>Yes</u>	No	N/A	
#5	Custody Seals intact on sample bottles/ container?	<u>Yes</u>	<u>No</u>	N/A	
#6	Chain of Custody present?	<u>Yes</u>	No		
#7	Sample instructions complete of Chain of Custody?	<u>Yes</u>	No		
#8	Any missing/extra samples?	<u>Yes</u>	<u>No</u>		
#9	Chain of Custody signed when relinquished/ received?	<u>Yes</u>	No		
#10	Chain of Custody agrees with sample label(s)?	<u>Yes</u>	No		
#11	Container label(s) legible and intact?	<u>Yes</u>	No		
#12	Sample matrix/ properties agree with Chain of Custody?	<u>Yes</u>	No		
#13	Samples in proper container/ bottle?	<u>Yes</u>	No		
#14	Samples properly preserved?	<u>Yes</u>	No	N/A	
#15	Sample container intact?	<u>Yes</u>	No		
#16	Sufficient sample amount for indicated test(s)?	<u>Yes</u>	No		
#17	All samples received within sufficient hold time?	<u>Yes</u>	No		
#18	Subcontract of sample(s)?	<u>Yes</u>	No	N/A	
#19	VOC samples have zero headspace?	<u>Yes</u>	No	N/A	

Nonconformance Documentation

Contact: _____ Contacted by: _____ Date/ Time: _____

Regarding: _____

Corrective Action Taken: _____

Check all that Apply: ☐ Client understands and would like to proceed with analysis
☐ Cooling process had begun shortly after sampling event

REFERENCE: ATC Associates Inc., 2007; *Subsurface Investigation Report on #1 and #4 Dock Lines Report*; Prepared for ConocoPhillips – Wood River Refinery; dated April 24, 2007.



ConocoPhillips – Wood River Refinery
Subsurface Investigation Report
On #1 and #4 Dock Lines
Illinois Route 111 and Rand Avenue
Roxana, Illinois
ATC Project Number 30.75233.0710 T-1

Prepared for:

Mr. Eric Petersen
ConocoPhillips Company
P.O. Box 76
Roxana, Illinois 62084

April 24, 2007

TABLE 1
SOIL ANALYTICAL RESULTS (ug/Kg)
CONOCOPHILLIPS
WOOD RIVER REFINERY
ILLINOIS ROUTE 111 AND RAND AVENUE
ROXANA, ILLINOIS

Sample Name	Date Sampled	Depth Interval (ft)	EPA Method 8260B (ug/Kg)					EPA Method 8270 (ug/Kg)															
			Benzene	Ethylbenzene	MTBE	Toluene	Total Xylene	Acenaphthene	Acenaphthylene	Anthracene	Benzo(a)anthracene	Benzo(a)pyrene	Benzo(b)fluoranthene	Benzo(g,h,i)perylene	Benzo(k)fluoranthene	Chrysene	Dibenzo(a,h)anthracene	Fluoranthene	Fluorene	Indeno(1,2,3-cd)pyrene	Naphthalene	Phenanthrene	Pyrene
B-1	03/07/07	12'-14'	1.7	<6.3	<2.5	<6.3	<6.3	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
		22'-24'	<1.1	<5.4	<2.1	<5.4	<5.4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4
B-3	03/01/07	14'-16'	287	548	<56.4	<141	<141	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	9	<4	<4
		22'-24'	21,900	8,220	<389	<972	7,890	87	19	21	<4	<4	<4	<4	<4	<4	<4	4	74	<4	173	166	12
		34'-36'	3,710	<138	<55.2	<138	420	7	<3	7	8	<3	4	<3	<3	11	<3	13	11	<3	28	40	19
B-5	02/28/07	14'-16'	1.0	<5.0	<2.0	<5.0	<5.0	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4
		38'-40'	165,000	1,500	<64.7	1,260	4,170	735	10	44	31	13	20	4	8	27	<4	202	317	5	11,000	400	122
B-6	03/01/07	12'-14'	16.8	<4.9	<2.0	<4.9	<4.9	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4
		34'-36'	1,220	<138	<55.2	<138	154	17	4	17	28	27	32	19	17	31	11	54	26	16	49	71	56
B-6 (D)	03/01/07	34'-36'	1,400	821	<51.0	481	4,370	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Industrial/ Commercial	Inhalation (ug/Kg)	1,500	400,000	2.0 x 10 ⁵	4.1 x 10 ⁴	1.0 x 10 ⁹	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	70,000	NS	NS
	Ingestion (ug/Kg)	100,000	2.0 x 10 ⁸	2.0 x 10 ⁷	4.1 x 10 ⁸	1.0 x 10 ⁹	1.2 x 10 ⁸	6.1 x 10 ⁷	6.1 x 10 ⁸	8,000	800	8,000	6.1 x 10 ⁷	78,000	780,000	800	8.2 x 10 ⁷	8.2 x 10 ⁷	8,000	4.1 x 10 ⁷	6.1 x 10 ⁷	6.1 x 10 ⁷
Construction Worker	Inhalation (ug/Kg)	2,200	5.8 x 10 ⁴	1.4 x 10 ⁵	4.2 x 10 ⁴	3.2 x 10 ⁵	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	1.8 x 10 ³	NS	NS
	Ingestion (ug/Kg)	2.3 x 10 ⁶	2.0 x 10 ⁷	2.0 x 10 ⁶	4.1 x 10 ⁸	4.1 x 10 ⁸	1.2 x 10 ⁸	6.1 x 10 ⁷	6.1 x 10 ⁸	1.7 x 10 ⁵	1.7 x 10 ⁴	1.7 x 10 ⁵	6.1 x 10 ⁷	1.7 x 10 ⁶	1.7 x 10 ⁷	1.7 x 10 ⁴	8.2 x 10 ⁷	8.2 x 10 ⁷	1.7 x 10 ⁵	4.1 x 10 ⁶	6.1 x 10 ⁷	6.1 x 10 ⁷
Soil component of the Groundwater Ingestion Exposure Route	Class I (ug/Kg)	30	13,000	320	12,000	150,000	570,000	24,000	1.2 x 10 ⁷	2,000	8,000	5,000	3.2 x 10 ⁷	49,000	160,000	2,000	4.3 x 10 ⁶	560,000	14,000	12,000	220,000	4.2 x 10 ⁶
	Class II (ug/Kg)	170	19,000	320	29,000	150,000	2.9 x 10 ⁶	120,000	5.9 x 10 ⁷	8,000	82,000	25,000	1.6 x 10 ⁸	250,000	800,000	7,600	2.1 x 10 ⁷	2.8 x 10 ⁶	69,000	18,000	1.1 x 10 ⁶	2.1 x 10 ⁷

Notes:
Results reported in ug/Kg
<: Analyte was not detected at or above the reporting limit, as shown.
NS: No standard; soil remediation objective not defined for listed compound.
NA: Not analyzed for this parameter; insufficient volume of sample recovered to collect moisture or PNA jar of duplicate sample.
Shaded values indicate exceedance of TACO Tier 1 soil remediation objective (SRO) for the inhalation pathway for the industrial/commercial worker on industrial/commercial property.

TABLE 2
GROUNDWATER ANALYTICAL RESULTS
CONOCOPHILLIPS (ug/L)
WOOD RIVER REFINERY
ILLINOIS ROUTE 111 AND RAND AVENUE
ROXANA, ILLINOIS

Well ID:	Collection Date:	VOLATILES -8260B (ug/L)					PNAs - 8270 (ug/L)															
		Benzene	Ethylbenzene	Methyl t-butyl ether (MTBE)	Toluene	Xylenes, Total	Acenaphthene	Acenaphthylene	Anthracene	Benzo(a)anthracene	Benzo(a)pyrene	Benzo(b)fluoranthene	Benzo(g,h,i)perylene	Benzo(k)fluoranthene	Chrysene	Dibenzo(a,h)anthracene	Fluoranthene	Fluorene	Indeno(1,2,3-cd)pyrene	Naphthalene	Phenanthrene	Pyrene
B-1	03/07/07	0.040	<250	<100	<250	<250	0.29	<0.26	<0.26	<0.26	<0.26	<0.26	<0.26	<0.26	<0.26	<0.26	<0.26	<0.26	<0.26	0.34	<0.26	<0.26
B-3	03/02/07	65300	<5,000	<2,000	<5,000	8,100	1.76	0.32	0.17	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	1.59	<0.10	402	0.92	<0.10
B-3 (D) ¹	03/02/07	NA	NA	NA	NA	NA	2.15	0.44	0.23	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	1.78	<0.10	475	1.33	<0.10
B-5	03/01/07	27300	<1,000	<400	<1,000	<1,000	26.8	0.6	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	3.12	<0.10	18910	0.2	<0.10
B-5 (D) ¹	03/01/07	23200	<1,000	<400	<1,000	<1,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
TACO Tier 1 GROs	Class I	5	700	70	1,000	10,000	420	210	2,100	0.13	0.2	0.18	210	0.17	1.5	0.3	280	280	0.43	140	210	210
	Class II	25	1,000	70	2,500	10,000	2,100	1,050	10,500	0.65	2	0.9	1,050	0.85	7.5	1.5	1,400	1,400	2.15	220	1,050	1,050

Notes:
Results reported in ug/L.
<: Analyte was not detected at or above the reporting limit, as shown.
NA: Not analyzed for this parameter.
Shaded values indicate exceedance of TACO Tier 1 groundwater remediation objective (GRO) for Class I.
¹ B-5 duplicate PNA bottle broke in transit to laboratory. Therefore, Volatiles (8260B) duplicate was collected from B-5, while PNA (8270) duplicate was collected from B-3.

APPENDIX H-1
SUMMARY OF 2006 GROUNDWATER ANALYTICAL DETECTIONS AND SCREENING

EXCEEDANCES HIGHLIGHTED IN YELLOW

Analyte (Results in mg/L)			Benzene	Ethylbenzene	Toluene	Xylenes (total)	1,2,4-Trimethylbenzene	1,3,5-Trimethylbenzene	Acetone	Bromomethane	Carbon disulfide
Ingestion Screening Values (mg/L)			0.005	0.7	1.0	10	0.35*	0.35*	0.7	130**	0.7
Location	Sample ID	Date									
COP WELLS											
P-57	P5703030601	3/3/2006	177	1.12	<1.0	<3.0	<1.0	<1.0	<50.0	<1.0	<1.0
P-58	P5803020601	3/2/2006	409 RL5	<5.0	<5.0	<15.0	<5.0	<5.0	<250	<5.0	<5.0
	P5803020602	3/2/2006	464 RL5	<5.0	<5.0	<15.0	<5.0	<5.0	<250	<5.0	<5.0
P-66	P6603020601	3/2/2006	0.0116 U	<0.001	0.00199	<0.003	0.00125	<0.001	<0.050	<0.001	<0.001
P-73	P7303020601	3/2/2006	22.4	1.74	8.5	4.53	0.928	0.155	<0.050	<0.001	<0.001
P-75	P7503030601	3/3/2006	2.78	0.0296	0.0169	0.0393	0.0664	0.0146	<0.050	<0.001	<0.001
P-93A	P93A03030601	3/3/2006	506	<5.0	<5.0	<15.0	<5.0	<5.0	<250	<5.0	<5.0
P-93B	P93B03030601	3/3/2006	370	<5.0	<5.0	<15.0	<5.0	<5.0	<250	<5.0	<5.0
GROUNDWATER PROFILE SAMPLING											
P-93-02	P9302GWP43	4/5/2006	1,310 RL1	6.2 RL1,J	29.5 RL1	26.4 RL1,J	9.8 RL1,J	<10.0	<500	<10.0	<10.0
	P9302GWP59	4/5/2006	264 RL1	10.9 RL1	56.5 RL1	48.9 RL1	16.6 RL1	4.6 RL1,J	<500	<10.0	<10.0
P-93-03	P9303GWP40	4/6/2006	348	0.534	0.123 J	1.61	0.129 J	<0.001	<0.050	<0.001	<0.001
	P9303GWP59	4/7/2006	3.65	0.153	0.00463	0.262	0.167	0.0482	<0.050	<0.001	0.00108
P-93-05	P9305GWP45	4/7/2006	1,460	0.0058 J	0.0147 J	0.0147 J	0.00537 J	0.00352 J	<0.050	<0.001	<0.001
	P9305GWP58	4/7/2006	52.2	0.203	0.233	0.488 J	0.103 J	0.0408 J	<0.050	<0.001	<0.001
P-93-06	P9306GWP50	4/7/2006	1,310	<1.0	<1.0	<3.0	0.00431 J	0.00305 J	<0.050	<0.001	<0.001
	P9306GWP62.5	4/10/2006	827	0.401 E J	491 E	0.791 E J	0.164 J	0.0563 J	0.325 J	0.00432 J	<0.001
P-93-09	P9309GWP52	4/11/2006	250	1.26	0.0685	2.34	1.77	0.485	<0.50	<0.010	<0.010
	P9309GWP66	4/11/2006	629 E1	0.74	0.156 J	0.502 J	0.137 J	0.035 J	<0.050	<0.001	<0.001
P-93-11	P9309GWP66D	4/11/2006	569	0.698	0.13	0.548	0.131	0.0342	<0.50	<0.010	<0.010
	P9311GWP41	4/5/2006	1,060 RL1	<10.0	17.5 RL1	16.5 RL1,J	6.4 RL1,J	<10.0	<500	<10.0	<10.0
	P9311GWP59	4/6/2006	11.8	0.0926	0.182	0.295	0.0526	0.0172	<0.050	<0.001	<0.001
	P9311GWP59D	4/6/2006	13.1	0.0876	0.183	0.278	0.0507	0.0169	<0.050	<0.001	<0.001

Analyte (Results in mg/L)			Dibromomethane	Isopropyl benzene	Methyl tert-Butyl Ether	Naphthalene	n-Butylbenzene	n-Propylbenzene	p-Isopropyltoluene	sec-Butylbenzene	tert-Butylbenzene
Ingestion Screening Values (mg/L)			0.07*	5,200**	0.07	0.14	0.24***	0.24***		0.24***	0.24***
Location	Sample ID	Date									
COP WELLS											
P-57	P5703030601	3/3/2006	<1.0	<1.0	<1.0	<5.0	<1.0	<1.0	<1.0	<1.0	<1.0
P-58	P5803020601	3/2/2006	<5.0	<5.0	<5.0	<25.0	<5.0	<5.0	<5.0	<5.0	<5.0
	P5803020602	3/2/2006	<5.0	<5.0	<5.0	<25.0	<5.0	<5.0	<5.0	<5.0	<5.0
P-66	P6603020601	3/2/2006	<0.001	0.125	0.107	<0.005	0.0131	0.142	<0.001	0.0181	<0.001
P-73	P7303020601	3/2/2006	<0.001	0.088	0.04	0.25	<0.001	0.149	0.0131	0.0237	0.056
P-75	P7503030601	3/3/2006	<0.001	0.103	0.191	0.0286	0.03	0.156	<0.001	<0.020	<0.020
P-93A	P93A03030601	3/3/2006	<5.0	<5.0	<5.0	<25.0	<5.0	<5.0	<5.0	<5.0	<5.0
P-93B	P93B03030601	3/3/2006	<5.0	<5.0	<5.0	<25.0	<5.0	<5.0	<5.0	<5.0	<5.0
GROUNDWATER PROFILE SAMPLING											
P-93-02	P9302GWP43	4/5/2006	<10.0	<10.0	<10.0	<50.0	<10.0	<10.0	<10.0	<10.0	<10.0
	P9302GWP59	4/5/2006	<10.0	<10.0	<10.0	<50.0	<10.0	<10.0	<10.0	<10.0	<10.0
P-93-03	P9303GWP40	4/6/2006	<0.001	0.0154 J	0.036 J	0.0702 J	<0.001	0.0261 J	<0.001	<0.001	<0.001
	P9303GWP59	4/7/2006	<0.001	0.016	<0.001	0.0214	<0.001	0.0406	<0.001	<0.001	0.00621
P-93-05	P9305GWP45	4/7/2006	<0.001	0.00376 J	R	0.00489 J	<0.001	0.00271 J	<0.001	<0.001	<0.001
	P9305GWP58	4/7/2006	<0.001	0.026 J	<0.001	0.0242 J	<0.001	0.0596 J	<0.001	0.00587 J	0.00632 J
P-93-06	P9306GWP50	4/7/2006	0.00143 J	<0.001	R	0.00343 J	<0.001	<0.001	<0.001	<0.001	<0.001
	P9306GWP62.5	4/10/2006	<0.001	0.0454 J	18.6	0.104 J	0.00405 J	0.118 J	<0.001	<0.001	<0.001
P-93-09	P9309GWP52	4/11/2006	<0.010	0.123	10.1	0.215	<0.010	0.31	0.0696	0.117	0.0328
	P9309GWP66	4/11/2006	<0.001	0.0154 J	8.57	0.0531 J	<0.001	0.0262 J	0.00439 J	0.00454 J	0.00059 J
P-93-11	P9309GWP66D	4/11/2006	<0.010	<0.010	8.73	0.0362	<0.010	0.0213	<0.010	0.0052	<0.010
	P9311GWP41	4/5/2006	<10.0	<10.0	<10.0	<50.0	<10.0	<10.0	<10.0	<10.0	<10.0
	P9311GWP59	4/6/2006	<0.001	0.00618	0.00449	0.0208	<0.001	0.0116	<0.001	<0.001	0.00418
	P9311GWP59D	4/6/2006	<0.001	0.00608	0.00464	0.0214	<0.001	0.0112	<0.001	<0.001	0.0042

NOTES:

- 1) Screening values shown above are the Tier 1 Groundwater Remediation Objectives for the Groundwater Component of the Ingestion Route.
- 2) <#.## Denotes the result was not detected below the indicated reporting limit.
- 3) **BOLD** indicates the analytical detection of the analyte.
- 4) Well sample ID explanation --> PXXDDDDDD --> PXX is the well location at which the sample was collected; DDDDDD is the sample date.
- 5) Profile sample ID explanation --> P93XXGWPZZZ --> P93XX is the profile location at which the sample was collected; GWP stands for groundwater profiling; ZZZ is the depth at which the sample was collected.

REFERENCES

Illinois Environmental Protection Agency (IEPA); Tiered Approach to Corrective Action Objectives (TACO); Title 35 of the Illinois Administrative Code, Part 742, Appendix B, Table E.

* IEPA; Tiered Approach to Corrective Action Objectives (TACO); Groundwater Remediation Objectives for Chemicals not listed in TACO; May 1, 2007.

** U.S. Environmental Protection Agency (USEPA); Region 6 Human Health Medium-Specific Screening Levels; December 2007.

*** U.S. Environmental Protection Agency (USEPA); Region 9; Preliminary Remediation Goals (PRGs) Table; October 2004.

LAB QUALIFIERS

B = A target analyte or common laboratory contaminant was identified in the method blank. Its presence indicates possible field or laboratory contamination.

D = The sample(s) were diluted due to targets detected over the highest point of the calibration curve, or due to matrix interference. Dilution factors are included in the final results. The result is from a diluted sample.

E = Concentration exceeds the calibration range and therefore result is semi-quantitative.

E1 = Concentration estimated. Analyte exceeded calibration range. Reanalysis not possible due to insufficient sample.

J = The target analyte was positively identified below the RL and above the MDL.

RL1 = Reporting limit raised due to sample matrix effects.

RL5 = Reporting limit raised due to high single peak analyte.

URS QUALIFIERS

J = The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.

R = Data rejected during validation efforts.