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Vernon Hills, IL 60061-1450
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Received 06/15/05

13 June 2005

Mr. Russell D. Hart
Remedial Project Manager (SR-6J)
U.S. Environmental Protection Agency
Region V
77 West Jackson Boulevard
Chicago, IL 60604

RFW Work Order No. 02687.007.007
KMC Work Order No. 40-50-01-AKW-V

Re: 1st Quarter 2005 Groundwater Monitoring Report
Moss-American Site, Milwaukee, WI

Dear Mr. Hart:

Enclosed is the groundwater monitoring report for the 1st quarter of 2005. Should you have any questions or comments, please contact me at (847) 918-4142 or Keith Watson at (405) 270-3747.

Very truly yours,

WESTON SOLUTIONS, INC.

Thomas P. Graan

Thomas P. Graan, Ph.D.
Principal Project Manager

TPG:ld

cc: B. Amungwafor, (WDNR)
K. Watson, (Kerr-McGee)
T. Wentland, (WDNR)

I:WO\MOSSAMER\35096LTR.DOC

QUARTERLY GROUNDWATER TREATMENT PERFORMANCE MONITORING REPORT Q1 2005 MOSS-AMERICAN SITE MILWAUKEE, WISCONSIN

Prepared for

KERR-MCGEE CHEMICAL, LLC
Kerr-McGee Center
123 Robert S. Kerr Avenue
Oklahoma City, OK 73102

Prepared by

WESTON SOLUTIONS, INC.
Suite 500
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May 2005

W. O. No. 02687.007.007.0001

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SECTION 1
INTRODUCTION

In accordance with paragraph 4a of the Remedial Design/Remedial Action Statement of Work (RD/RA SOW), Kerr-McGee Chemical, LLC (KMC) is required to implement a groundwater monitoring program capable of detecting changes in chemical concentrations in the groundwater. KMC has directed Weston Solutions, Inc. (WESTON®) to perform this work. As previously agreed, the monitoring network currently includes seven shallow groundwater monitoring wells (MW-5S, MW-6S, MW-7S, MW-9S, MW-27S, MW-28S, and MW-29S). Additionally, the quarterly groundwater monitoring program includes sampling of the eight containment performance monitoring wells (MW-30S, MW-31S, MW-32S, MW-33S, MW-34S, MW-35S, MW-36S and MW-37S), which are screened in the shallow groundwater-bearing unit underlying the site. Nine piezometer wells (PZ-01, PZ-02, PZ-03, PZ-04, PZ-05, PZ-06, PZ-07, PZ-09, and PZ-10) and one staff gauge (SG-01) were installed in December 2002 to monitor groundwater movement. The locations of piezometers, the staff gauge, and the groundwater-monitoring wells that are included in the quarterly sampling program are indicated on Figure 1-1.

In addition to the on-site groundwater monitoring wells, four shallow groundwater monitoring wells (MW-A, MW-B, MW-C and MW-D) were installed in September 2003 to monitor groundwater conditions between old and new river channels in the Reach 1. These four wells are sampled annually (during Q3 sampling events) in accordance with the annual groundwater monitoring program for the Reach 1 area.

In December 2004, seven additional shallow groundwater monitoring wells (MW-E, MW-F, MW-G, MW-H, MW-I, MW-J and MW-K) were installed to monitor groundwater conditions between old and new river channels in the Reaches 2 and 3. These seven wells will be sampled annually (during Q3 sampling events) in accordance with the annual groundwater monitoring program for the Reaches 2 and 3.

Some wells that were previously part of the groundwater-monitoring network have been removed to facilitate soil remediation activities. TW-09, MW-8S, and MW-8I were removed during excavation activities and installation of the funnel-and-gate groundwater treatment system in 1999. Wells MW-4S and MW-4I were removed during early Q3 2001, and well TW-05 was removed in early Q4 2001 during the "hot spot" soil excavation and treatment process. Wells MW-20S and MW-20I were removed during Q3 2002 when the Little Menomonee River (LMR) diversion work took place.

As discussed in the Q2 2002 Quarterly Groundwater Treatment Performance Monitoring Report, some modifications were made to the sampling program. The first modification was the reduction of performance monitoring well sampling frequency. The treatment performance monitoring wells were originally sampled on a monthly basis, but sample data showed that minimal changes in site conditions were found on a monthly basis. Therefore a change in sampling frequency from monthly to quarterly was recommended. This recommendation was approved by the Wisconsin Department of Natural Resources (WDNR) and the United States Environmental Protection Agency (collectively "Agencies") and the monthly sampling program was discontinued after the October 2002 sampling event. The second modification was the reduction of the groundwater monitoring program scope. It was proposed that some shallow monitoring wells (MW-3S, MW-10S, MW-13S, MW-25S, MW-26S, and MW-20S) and intermediate monitoring wells (MW-3I, MW-7I, MW-9I, and MW-20I) be removed from the groundwater monitoring program due to zero or few sample detections in these wells. The Agencies approved this recommendation, and the sampling of these wells was discontinued after the September (Q3) 2002 sampling event; however, per the Agencies' request, these wells were not abandoned, with the exception of MW-20S and MW-20I abandoned during LMR diversion. Instead these wells are utilized to collect water level measurements for the production of more accurate quarterly groundwater potentiometric maps.

The Quality Assurance Project Plan for Installation of Groundwater Remedial System (QAPP) (WESTON, October 1999) requires KMC to implement a groundwater monitoring program capable of indicating groundwater chemistry before, during, and after treatment. In addition, the hydraulic gradient is calculated at each treatment gate and is used to estimate groundwater flow

velocity through the treatment gate remediation system. The monitoring network includes six groundwater treatment gates (TG1 through TG6) with three treatment performance monitoring wells located at each groundwater treatment gate. The treatment performance monitoring wells include TG1-1, TG1-2, TG1-3, TG2-1, TG2-2, TG2-3, TG3-1, TG3-2, TG3-3, TG4-1, TG4-2, TG4-3, TG5-1, TG5-2, TG5-3, TG6-1, TG6-2, and TG6-3, and the locations are indicated on Figure 1-1.

In accordance with paragraph 4a (i) of the RD/RA SOW, the quarterly field measurement and analysis of groundwater samples collected from the shallow and containment performance groundwater monitoring wells include groundwater elevation, pH, temperature, turbidity, specific conductance, oxidation-reduction (redox) potential, and dissolved oxygen (DO). Required laboratory analyses include benzene, toluene, ethylbenzene, and xylene (BTEX collectively) and the following polynuclear aromatic hydrocarbon (PAH) compounds: acenaphthylene, acenaphthene, anthracene, benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, benzo(g,h,i)perylene, benzo(k)fluoranthene, chrysene, dibenzo(a,h)anthracene, fluorene, fluoranthene, indeno(1,2,3-cd)pyrene, naphthalene, phenanthrene, and pyrene.

In accordance with Addendum No. 1 to the QAPP (WESTON, May 2001), the quarterly field measurements for samples collected from the treatment performance monitoring wells include groundwater elevation, pH, temperature, turbidity, specific conductance, redox potential, and DO. Quarterly laboratory analyses required for the treatment performance wells include microbial enumeration, nitrate-nitrogen (NO_3-N), nitrite-nitrogen (NO_2-N), total Kjeldahl nitrogen (TKN), ammonia-nitrogen (NH_3-N), total phosphate-phosphorous (PO_4-P), orthophosphate (ORP), biochemical oxygen demand (BOD), chemical oxygen demand (COD), total organic carbon (TOC), BTEX, and the PAHs indicated in the above paragraph.

LEGEND

- CABLE FENCE
- CATCH BASIN
- HYDRANT
- SIGN
- FREE PRODUCT COLLECTION SUMP
- UTILITY POLE
- SAMPLING MANHOLE
- MONITORING WELL
- INJECTION WELL
- CURRENT RIVER CHANNEL
- FORMER RIVER CHANNEL
- PIEZOMETER

N
0
100'
SCALE

N:678.210
E:1134.580
ELEV = 720.37
CP-4

N:-44.630
E:753.830
ELEV = 735.22
CP-3

N:-80.570
E:1177.070
ELEV = 737.17
CP-6

N:211.070
E:1932.560
ELEV = 723.49
CP-5

Existing Building
Pad Elev. 721.6

Little Menomonee River

SILO ENCLOSURE

DRAINAGE SWALE

EXISTING SHEET PILE (TYP.)

DECON. PAD

ASPHALT PAD

ASPHALT (TYP.)

GRAVEL (TYP.)

CONSTRUCTION TRAILERS

DRUM STORAGE AREA

TREATED SOIL AND SEDIMENT FILL AREA

WOODS

MW-3S, MW-5S, MW-7S, MW-9S, MW-10S, MW-13S, MW-25S, MW-26S, MW-27S, MW-28S, MW-29S, MW-30S, MW-31S, MW-32S, MW-33S, MW-34S, MW-35S, MW-36S, MW-37S, MW-69

PZ-01, PZ-02, PZ-03, PZ-04, PZ-05, PZ-06, PZ-07, PZ-09, PZ-10

GATE 1 (TG1-1, TG1-2, TG1-3)
GATE 2 (TG2-1, TG2-2, TG2-3)
GATE 3 (TG3-1, TG3-2, TG3)
GATE 4 (TG4-1, TG4-2, TG4-3)
GATE 5 (TG5-1, TG5-2, TG5-3)
GATE 6 (TG6-1, TG6-2, TG6-3)

FIGURE 1-1

WESTON SOLUTIONS

750 E. Bunker Ct.
Suite 500
Vernon Hills, Illinois
60061

MONITORING WELL LOCATIONS
KERR McGEE CORPORATION
MOSS-AMERICAN SITE
Milwaukee, Wisconsin

SECTION 2

ON-SITE GROUNDWATER MONITORING RESULTS

The Q1 2005 groundwater-monitoring event at the Moss-American site was completed between 14 and 17 March 2005. Tasks completed during the field effort for this event included the collection of groundwater elevation and DO data from the shallow groundwater monitoring, containment performance monitoring, and treatment performance monitoring wells referenced in Section 1. Following groundwater elevation and DO measurements, groundwater samples were collected from all the shallow, containment performance, and treatment performance groundwater monitoring wells. During the Q1 2005, the following wells were not accessible for sampling/water level measurements due to frozen conditions: TG2-2, TG2-3, TG3-2, TG3-3, TG4-1, TG4-2, TG4-3, TG5-2, TG5-3, MW-13S, MW-25S, MW-26S, MW-31S, PZ-01, PZ-03, PZ-04, PZ-07, and MW-A. Therefore, samples and/or water level measurements were not collected from these wells during the Q1 2005 sampling event. The results of the Q1 2005 groundwater sampling event are described in the following subsections.

2.1 GROUNDWATER ELEVATION MEASUREMENTS

The depth to water was measured in each of the unfrozen shallow groundwater monitoring, containment performance monitoring, treatment performance monitoring wells, and piezometers on 14 March 2005, and prior to the commencement of groundwater sampling. These measurements were used to determine the elevation of the potentiometric surface within the shallow groundwater-bearing zone underlying the site. The water level measurements for the shallow groundwater monitoring and containment performance monitoring wells and calculated elevations are presented in Table 2-1. The groundwater level measurements and corresponding groundwater elevations, calculated hydraulic gradients across the treatment gates, and estimated groundwater flow velocities through the treatment gates are presented in Table 2-2. The groundwater levels for the piezometers and staff gauge are presented in Table 2-3. Figure 2-1 presents a potentiometric surface map of the shallow groundwater-bearing zone, based on the 14 March 2005 data. Figure 2-2 presents the groundwater potentiometric surface elevations during Q4 2004. An evaluation of the Q1 2005 potentiometric surface map is presented below.

As shown in Figure 2-1, the groundwater within the shallow groundwater-bearing zone generally flows northeastward toward the LMR. In the topographically higher (western) portion of the site, the horizontal hydraulic gradient is relatively steep, at approximately 0.023 feet per foot (ft/ft) to the northeast, as measured from the vicinity of MW-30S to MW-5S. The topography of the site levels out near the river, as does the potentiometric surface with a northerly hydraulic gradient of approximately 0.016 ft/ft, as measured from the vicinity of PZ-05 to MW-9S. The estimated hydraulic gradients within the treatment gates ranged from 0.0003 to 0.0031 ft/ft (Table 2-2). The hydraulic gradient is relatively flat within the treatment gate area with an overall hydraulic gradient from TG1 to TG5 of approximately 0.0037 ft/ft in an easterly direction.

The average velocity of groundwater flow within the shallow water-bearing zone can be calculated using the following equation:

$$v = Ki/n$$

where:

v = groundwater velocity

K = hydraulic conductivity (also referred to as the coefficient of permeability)

i = hydraulic gradient

n = porosity

Based on slug tests performed on wells installed during the remedial investigation (RI), the hydraulic conductivity of the deposits located on the topographically higher, western portion of the site were in the range of 1×10^{-5} to 1×10^{-6} centimeters per second (cm/s) (0.03 to 0.003 feet per day [ft/day]). Based on laboratory-performed hydraulic conductivity analyses conducted on material used to backfill areas of the site located along the LMR, the hydraulic conductivity of soils located in the topographically lower portion of the site within the funnel-and-gate remedial system is approximately 1×10^{-3} cm/s (3 ft/day). Using a hydraulic gradient of 0.023 ft/ft, an assumed effective porosity of 0.3, and a hydraulic conductivity of 0.03 ft/day, the groundwater flow velocity in the western portion of the site is calculated to be approximately 0.0023 ft/day. Near the river, using a hydraulic gradient of 0.016 ft/ft, a porosity of 0.3, and a hydraulic conductivity of 3 ft/day, the velocity of groundwater flow is calculated to be approximately 0.16

ft/day. The groundwater flow velocities within the treatment gates are estimated to range from 0.0028 ft/day to 0.0293 ft/day. The groundwater flow velocity through each treatment gate is presented in Table 2-2.

2.2 GROUNDWATER SAMPLE ANALYTICAL RESULTS

Groundwater samples were collected from a total of 23 shallow monitoring wells screened within the shallow groundwater-bearing unit. The shallow wells sampled include seven shallow groundwater monitoring wells (MW-5S, MW-6S, MW-7S, MW-9S, MW-27S, MW-28S, and MW-29S); seven containment performance monitoring wells (MW-30S, MW-32S, MW-33S, MW-34S, MW-35S, MW-36S and MW-37S); and nine treatment performance monitoring wells (TG1-1, TG1-2, TG1-3, TG2-1, TG3-1, TG5-1, TG6-1, TG6-2, and TG6-3). Due to frozen conditions, samples from 10 wells that are part of the monitoring well network could not be collected.

In addition to the investigative groundwater samples collected, three field sample duplicate, two matrix spike/matrix spike duplicate (MS/MSD), and three field blank (identified by an FB prefix) samples were collected for quality assurance/quality control (QA/QC) purposes. Trip blanks accompanied each cooler of sample containers from the laboratory to the site and were shipped back to the laboratory within each cooler containing volatile organic compound (VOC) samples.

All groundwater samples were field screened and laboratory analyzed for the parameters indicated in Section 1.

2.2.1 Field-Measured Parameters

The groundwater samples were measured in the field for pH, specific conductance, temperature, redox potential, DO, and turbidity. The field parameters were collected using a YSI 556 portable water quality meter and a HS Scientific DRT-15CE turbidimeter. Downhole DO readings were collected from monitoring wells TG6-1, TG6-2, TG6-3, MW-7S, and MW-34S prior to purging the well for groundwater sample collection. However, due to a problem with the water quality

meter, downhole DO readings were collected from the remaining wells on 17 March 2005 after sample collection was completed. The wells measured for DO on 17 March 2005 were allowed to recharge at least overnight prior to collection of DO measurements. The groundwater pH, redox potential, specific conductance, temperature, and turbidity were monitored during well purging prior to sampling. The final (stabilized) values for these measurements prior to sample collection are presented in Table 2-4. Water quality parameter measurements were not collected from well TG1-1 and MW-34S due to the presence of sheen on the purge water during Q1 2005.

2.2.1.1 pH

The pH of the groundwater samples collected during Q1 2005 ranged from 6.56 to 7.42 pH standard units (S.U.). pH is an important factor in determining the feasibility of bioremediation of contaminants in the site groundwater because biological systems typically function only in narrow pH ranges (typically 6.5 to 8.5 S.U.), and because microbial growth rates are pH dependent.

2.2.1.2 Redox Potential

The redox potentials of the groundwater samples collected at the site during Q1 2005 ranged from -129.5 to 142.3 millivolts (mV). Redox potential indicates the capability of the groundwater to promote chemical oxidation-reduction processes that consume organic matter and ultimately oxidize organic compounds. Microorganisms typically act as catalysts in oxidation reactions, and as such, the redox potential indicates the potential for the groundwater to oxidize the contaminants present.

Since environmental systems are typically not in equilibrium, the redox potential is used as a gross indicator of the state of oxidation-reduction in the system. Oxidation-reduction rates in the system are greater as the redox potential increases in magnitude. A positive redox potential typically indicates conditions where oxidized ionic species (i.e., NO_3^-, SO_4^{2-}, and Fe^{3+}) predominate in comparison to their reduced counterparts (NH_4^+, S^{2-}, and Fe^{2+}, respectively). Once DO is removed from water (i.e., via biodegradation of organics), oxidized ionic species

Once DO is removed from water (i.e., via biodegradation of organics), oxidized ionic species become electron acceptors in redox processes. As the processes continue under anaerobic conditions, the reduced ionic species concentration increases, resulting in an overall decrease of the water's oxidation potential.

2.2.1.3 Dissolved Oxygen

DO levels for the groundwater samples collected during Q1 2005 ranged from 0.05 to 2.28 milligrams per liter (mg/L). Overall, the DO readings indicate the presence of low levels of oxygen in the water, and the system as a whole is considered to be generally under suboxic conditions. DO promotes the growth of aerobic and facultative bacteria and the production of readily assimilated nutrients. All of these factors are required to facilitate the oxidation reaction responsible for removing the contaminants from the groundwater under aerobic conditions.

2.2.1.4 Specific Conductance

The specific conductance, or conductivity, of the groundwater samples collected during Q1 2005 ranged from 0.72 to 2.451 millimhos per centimeter (mmho/cm). Conductivity of water is a measure of the ability of the solution to carry an electrical current that is transported by ions in the solution; therefore, conductivity is used as an indicator of the total dissolved solids (TDS) present in a water sample. As the dissolved solids content of a solution increases, the capacity for the water to transmit electrical current increases. Although conductivity is a measure of the aggregate dissolved solids in the water it may be correlated to the readily available nutrient levels in the water, since TDS includes nitrate, nitrite, ammonium, and phosphate ions.

2.2.1.5 Temperature

Groundwater temperatures ranged from 3.94 to 8.26 degrees Celsius (°C) during Q1 2005. Temperature is an extremely important factor in bioremediation because microbial growth rates are greatly dependent upon temperature.

2.2.1.6 Turbidity

Turbidity ranged from 0.42 to 700 nephelometric turbidity units (NTU) during Q1 2005. Turbidity is a measure of the clarity of water and is used as an indicator of the solids present in a water sample and overall water quality.

2.2.2 Laboratory Analyses

The results of the laboratory analyses performed on the groundwater samples collected during March 2005 are provided in Appendix A. A discussion of the results of the laboratory analyses performed on the groundwater samples are presented in the following subsections.

2.2.2.1 Laboratory Analyses for BTEX and PAH

Each groundwater sample collected during the March 2005 sampling event was analyzed for BTEX and PAH compounds. The results of these analyses are presented and compared to WDNR Preventive Action Limits (PALs) and Enforcement Standards (ESs) in Table 2-5. Table 2-5 identifies parameters detected at concentrations exceeding their respective PALs (shown as bolded values). Parameters with concentrations exceeding both PALs and ESs are presented as shaded and bolded values in Table 2-5. Exceedences are summarized in the following paragraphs.

Groundwater Sample Results

As shown in Table 2-5, anthracene, benzene, benzo(a)pyrene, benzo(b)fluoranthene, chrysene, fluoranthene, fluorene, naphthalene, and pyrene were detected at concentrations exceeding their respective PALs and/or ESs in the groundwater samples collected from the shallow monitoring well network. The results are as follows:

WDNR PAL Exceedences

- Anthracene was detected at concentrations exceeding the PAL of 600 micrograms per liter (µg/L) in the groundwater samples collected from well TG1-1.
- Benzene was detected at concentrations exceeding the PAL of 0.5 micrograms per liter (µg/L) in the groundwater samples collected from wells MW-7S and MW-34S.
- Benzo(a)pyrene was detected at concentrations exceeding the PAL of 0.02 µg/L in the groundwater samples collected from wells MW-34S, TG1-1, and TG1-2.
- Benzo(b)fluoranthene was detected at concentrations exceeding the PAL of 0.02 µg/L in the groundwater samples collected from wells MW-34S, and TG1-1.
- Chrysene was detected at concentrations exceeding the PAL of 0.02 µg/L in the groundwater samples collected from wells MW-34S, TG1-1, and TG1-2.
- Fluoranthene was detected at a concentration exceeding the PAL of 80 µg/L in the groundwater sample collected from wells MW-34S and TG1-1.
- Fluorene was detected at concentrations exceeding the PAL of 80 µg/L in the groundwater samples collected from wells MW-34S and TG1-1.
- Naphthalene was detected at concentrations exceeding the PAL of 8 µg/L in the groundwater samples from wells MW-7S, MW-33S, MW-34S, TG1-1 and TG1-2.
- Pyrene was detected at a concentration exceeding the PAL of 50 µg/L in the groundwater sample collected from wells MW-34S and TG1-1.

WDNR ES Exceedences

- Benzene was detected at concentrations exceeding the ES of 5 µg/L in the groundwater samples collected from well MW-34S.
- Benzo(a)pyrene was detected at concentrations exceeding the ES of 0.2 µg/L in the groundwater samples collected from wells MW-34S and TG1-1.
- Benzo(b)fluoranthene was detected at concentrations exceeding the ES of 0.2 µg/L in the groundwater samples collected from wells MW-34S and TG1-1.
- Chrysene was detected at concentrations exceeding the ES of 0.2 µg/L in the groundwater samples collected from wells MW-34S and TG1-1.

- Fluoranthene was detected at a concentration exceeding the ES of 400 µg/L in the groundwater sample collected from well TG1-1.
- Fluorene was detected at a concentration exceeding the ES of 400 µg/L in the groundwater sample collected from well TG1-1.
- Naphthalene was detected at concentrations exceeding the ES of 40 µg/L in the groundwater samples collected from wells MW-7S, MW-33S, MW-34S, and TG1-1.
- Pyrene was detected at a concentration exceeding the ES of 250 µg/L in the groundwater sample collected from wells MW-34S and TG1-1.

The plume boundary is primarily in an area encompassing five shallow monitoring wells (MW-7S, MW-33S, MW-34S, TG1-1, and TG1-2). The majority of PAL and ES exceedences are associated with wells MW-34S and TG1-1 in which free product has historically been observed. In general, PAH concentrations measured in groundwater samples collected from the rest of the site were at relatively low levels with a few PAL/ES exceedences. Based on these detected concentrations, the contaminant plume generally demonstrates a northeasterly trend, as indicated in Figure 2-1, similar to the previous 25 quarterly groundwater sampling events.

A summary of the concentration of contaminants at wells that have regularly exceeded PALs and/or ESs during the last 12 quarters (3 years) is presented in Table 2-6. Levels of benzene, naphthalene, fluorene, and benzo(a)pyrene fluctuate over wide ranges in some of these wells. However, several constituents have shown an overall decreasing trend in monitoring wells MW-32S, MW-33S and MW-35S. Benzene, fluorene, benzo(a)pyrene, and naphthalene concentrations have remained relatively constant in MW-7S. Well MW-34S has shown overall fluctuating levels in benzene, naphthalene, fluorene, and benzo(a)pyrene. During Q1 2005, approximately 4 inches of free product was measured in well MW-34S. Varying levels of free product have been found in MW-34S in the recent past. This correlates with the elevated levels of constituents found in MW-34S. Well TG1-1 has shown fluctuating naphthalene, fluorene, and benzo(a)pyrene concentrations since it was first sampled in Q3 2000. This fluctuating concentration could be due to the presence of free product which has historically been observed in well TG1-1.

2.2.2.2 Laboratory Analyses for Treatment Performance Monitoring

The groundwater samples collected from the treatment performance monitoring wells were analyzed for microbial enumeration, NO_3-N, NO_2-N, TKN, NH_3-N, PO_4-P, ORP, BOD, COD, TOC, BTEX, and PAHs. The analytical results for microbial enumeration, NO_3-N, NO_2-N, TKN, NH_3-N, PO_4-P, ORP, BOD, COD, and TOC are presented in Table 2-7. The analytical results for the treatment performance monitoring well groundwater samples are summarized below. The laboratory reports of nutrient and microbial analyses are also included in Appendix A.

Nitrogen and Phosphorous Compounds

Neither nitrate nor nitrite was detected at or above the detection limits in any of the treatment performance monitoring well samples. TKN results include non-detect results and detections with concentrations ranging from 0.54 to 2.3 mg/L. Ammonia results include non-detect results and detections with concentrations ranging from 0.15 to 1.4 mg/L. Overall, nitrogen compound concentrations are at relatively low levels; however, previous sample results have indicated that NH_3-N concentrations are typically an order of magnitude greater than NO_3-N concentrations and approximately two orders or magnitude greater than NO_2-N.

PO_4-P was not detected in any of the treatment performance wells during Q1 2005. ORP was detected in only one sample (TG1-3) at a concentration of 0.026 mg/L. From the ratio between carbon, nitrogen and phosphorous, a beneficial level of PO_4-P or ORP was not found in any of the treatment gates during Q1 2005.

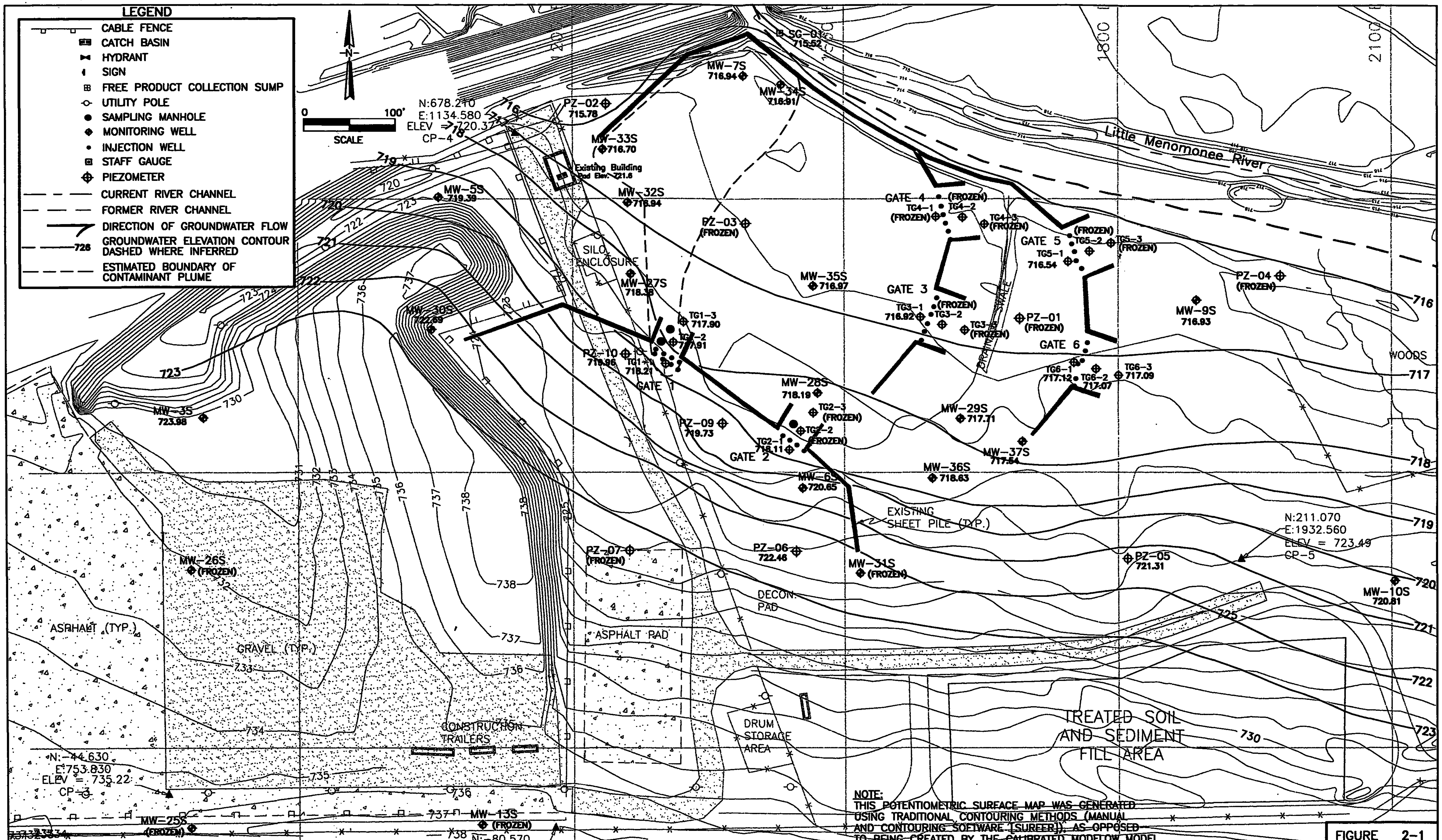
BOD, COD, and TOC

BOD concentrations for the samples collected throughout the treatment system ranged from non-detect to 8.4 mg/L. COD concentrations for the samples collected throughout the treatment system ranged from 5.8 to 83.1 mg/L. TOC concentrations for the samples collected throughout the treatment system ranged from 2.1 to 14.2 mg/L. As expected, the treatment gate wells indicate less BOD compared to COD. COD indicates the presence of constituents that exert an oxygen demand, including carbon compounds such as the site contaminants in the groundwater, and other constituents such as ammonia, sulfurous compounds; and biological material such as humic acids and detritus. A significant portion of oxygen demand exerted by the constituents measured in the COD test may not be readily biodegradable and would typically exert the oxygen demand over an extended time period. The oxygen demand exerted by the constituents the COD analysis detected is catalyzed chemically and thermally. The low BOD indicates low concentrations of material that is readily biodegradable and/or quickly oxidized.

Microbial Enumeration

The total microbial populations for TG1 and TG2 ranged from 3.4×10^2 to 3.8×10^4 colony forming units per milliliter (CFU/mL) during Q1 2005. The total microbial population for TG3-1 (the only well that was not frozen among TG3 and TG4 wells during Q1 2005) was 1.3×10^3 CFU/mL during Q1 2005. The total microbial populations for TG5 and TG6 ranged from 2.3×10^2 to 6.9×10^3 CFU/mL during Q1 2005.

The result of degrader microbial population analysis for TG1 and TG2 ranged from non-detect to 7.8×10^2 CFU/mL during Q1 2005. The degrader microbial population for TG3-1 was non-detect during Q1 2005. The degrader microbial populations for TG5 and TG6 were all non-detect during Q1 2005.


LEGEND
CABLE FENCE
CATCH BASIN
HYDRANT
SIGN
FREE PRODUCT COLLECTION SUMP
UTILITY POLE
SAMPLING MANHOLE
MONITORING WELL
INJECTION WELL
STAFF GAUGE
PIEZOMETER
CURRENT RIVER CHANNEL
FORMER RIVER CHANNEL
DIRECTION OF GROUNDWATER FLOW
GROUNDWATER ELEVATION CONTOUR DASHED WHERE INFERRED
ESTIMATED BOUNDARY OF CONTAMINANT PLUME
N
0 100'
SCALE
Little Menomonee River
N:678.210
E:1134.580
ELEV = 720.37
CP-4
SG-01 715.52
MW-7S 716.94
MW-34S 718.91
PZ-02 715.78
MW-33S 716.70
Existing Building Pad Elev: 721.6
MW-32S 718.94
MW-5S 719.39
PZ-03 (FROZEN)
SILO ENCLOSURE
MW-27S 718.39
MW-30S 722.69
MW-35S 716.97
GATE 4 (FROZEN)
TG4-1 (FROZEN)
TG4-2
TG4-3 (FROZEN)
GATE 5 (FROZEN)
TG5-1 716.54
TG5-2
TG5-3 (FROZEN)
GATE 3 (FROZEN)
TG3-1 716.92
TG3-2
TG3-3 (FROZEN)
PZ-01 (FROZEN)
GATE 6
TG6-1 717.12
TG6-2 717.07
TG6-3 717.09
PZ-04 (FROZEN)
MW-9S 716.93
WOODS
DRAINAGE SWALE
TG1-3 717.90
TG1-2 717.91
TG1-1 718.21
GATE 1
PZ-10 719.96
MW-3S 723.98
MW-28S 718.19
TG2-3 (FROZEN)
TG2-2 (FROZEN)
TG2-1 718.11
GATE 2
PZ-09 719.73
MW-29S 717.71
MW-37S 717.54
MW-36S 718.63
MW-6S 720.65
EXISTING SHEET PILE (TYP.)
N:211.070
E:1932.560
ELEV = 723.49
CP-5
PZ-07 (FROZEN)
PZ-06 722.46
MW-31S (FROZEN)
PZ-05 721.31
MW-10S 720.81
MW-26S (FROZEN)
DECON. PAD
ASPHALT PAD
ASPHALT (TYP.)
GRAVEL (TYP.)
CONSTRUCTION TRAILERS
DRUM STORAGE AREA
TREATED SOIL AND SEDIMENT FILL AREA
N:-44.630
E:753.830
ELEV = 735.22
CP-3
MW-25S (FROZEN)
MW-13S (FROZEN)
N:-80.570
E:1177.070
ELEV = 737.17
CP-6
1800
2100
716
717
718
719
720
721
722
723
725
730
731
732
733
734
735
736
737
738
745

NOTE:
THIS POTENTIOMETRIC SURFACE MAP WAS GENERATED USING TRADITIONAL CONTOURING METHODS (MANUAL AND CONTOURING SOFTWARE [SURFER]), AS OPPOSED TO BEING CREATED BY THE CALIBRATED MODFLOW MODEL.

FIGURE 2-1

WESTON SOLUTIONS

750 E. Bunker Ct.
Suite 500
Vernon Hills, Illinois
60061

GROUNDWATER ELEVATION CONTOUR MAP-1ST QUARTER 2005
KERR McGEE CORPORATION
MOSS-AMERICAN SITE
Milwaukee, Wisconsin

LEGEND

- CABLE FENCE
- CATCH BASIN
- HYDRANT
- SIGN
- FREE PRODUCT COLLECTION SUMP
- UTILITY POLE
- SAMPLING MANHOLE
- MONITORING WELL
- INJECTION WELL
- STAFF GAUGE
- PIEZOMETER
- CURRENT RIVER CHANNEL
- FORMER RIVER CHANNEL
- DIRECTION OF GROUNDWATER FLOW
- 728 GROUNDWATER ELEVATION CONTOUR DASHED WHERE INFERRED
- ESTIMATED BOUNDARY OF CONTAMINANT PLUME

N

0 100' SCALE

N:698.210
E:1134.580
ELEV = 720.37
CP-4

MW-7S 716.83
MW-34S 716.73
PZ-02 715.82
MW-33S 716.72
Existing Building Foot Elev. 721.6
MW-5S 719.49
MW-32S 717.47
PZ-03 716.99
SILO ENCLOSURE
MW-27S 718.49
MW-30S 724.14
TG1-3 718.01
TG1-2 718.12
PZ-10 719.89
TG1-1 718.13
GATE 1
MW-28S 717.97
TG2-3 717.87
PZ-09 720.24
TG2-2 718.02
TG2-1 718.39
GATE 2
MW-3S 724.55
MW-26S 727.81
MW-25S 735.32
N:-44.630
E:753.830
ELEV = 735.22
CP-3
MW-13S 734.41
N:-80.570
E:1177.070
ELEV = 737.17
CP-6
PZ-07 724.41
PZ-06 723.18
MW-31S 721.47
MW-6S 721.82
MW-36S 719.10
MW-37S 717.74
MW-29S 717.63
GATE 3
TG3-1 717.14
TG3-2
TG3 717.18
GATE 4
TG4-1 717.06
TG4-2
TG4-3 717.05
GATE 5
TG5-1 716.77
TG5-2
TG5-3 716.85
716.80
PZ-01 718.89
GATE 6
TG6-1 717.18
TG6-2 717.17
TG6-3 717.19
MW-9S 716.61
PZ-04 716.28
PZ-05 719.80
MW-10S 720.14
N:211.070
E:1932.560
ELEV = 723.49
CP-5
Little Menomonee River
WOODS
EXISTING SHEET PILE (TYP.)
DECON. PAD
ASPHALT PAD
ASPHALT (TYP.)
GRAVEL (TYP.)
CONSTRUCTION TRAILERS
DRUM STORAGE AREA
TREATED SOIL AND SEDIMENT FILL AREA
DRAINAGE SWALE

NOTE:
THIS POTENTIOMETRIC SURFACE MAP WAS GENERATED USING TRADITIONAL CONTOURING METHODS (MANUAL AND CONTOURING SOFTWARE [SURFER]), AS OPPOSED TO BEING CREATED BY THE CALIBRATED MODFLOW MODEL.

FIGURE 2-2

WESTON SOLUTIONS
750 E. Bunker Ct.
Suite 500
Vernon Hills, Illinois
60061

GROUNDWATER ELEVATION CONTOUR MAP-4TH QUARTER 2004
KERR McGEE CORPORATION
MOSS-AMERICAN SITE
Milwaukee, Wisconsin

Table 2-1

Groundwater Elevation Measurements
Shallow and Containment Performance Monitoring Wells
Moss-American Site
Milwaukee, Wisconsin
First Quarter 2005

Well ID	Ground Elevation	TOC Elevation	Depth to Water	GW Elevation	Product Thickness
MW-3S	729.71	731.45	7.47	723.98	None Detected
MW-5S	723.41	724.63	5.24	719.39	
MW-6S	723.11	725.24	4.59	720.65	
MW-7S	719.47	721.59	4.65	716.94	
MW-9S	719.15	721.66	4.73	716.93	
MW-10S	723.95	726.76	5.95	720.81	
MW-13S	737.73	738.58	NM	NC	NM
MW-25S	736.95	739.19	NM	NC	NM
MW-26S	732.31	731.87	NM	NC	NM
MW-27S	720.57	723.10	4.72	718.38	None Detected
MW-28S	719.64	722.13	3.94	718.19	
MW-29S	719.51	722.17	4.46	717.71	
MW-30S	725.35	727.34	4.65	722.69	
MW-31S	725.29	725.31	NM	NC	NM
MW-32S	719.68	722.79	5.85	716.94	None Detected
MW-33S	719.25	721.81	5.11	716.70	
MW-34S	718.97	721.52	4.61	716.91	Trace
MW-35S	718.14	721.75	4.78	716.97	None Detected
MW-36S	720.41	723.21	4.58	718.63	
MW-37S	721.33	723.30	5.76	717.54	

Notes:

All values in feet.

All elevation measurements are with respect to Mean Sea Level (MSL).

TOC = Top of well casing.

GW = Groundwater.

Depth to groundwater was measured on 14 March 2005

NM= Not measured due to frozen conditions

NC= Could not be calculated due to insufficient data

Table 2-2

Groundwater Elevation Measurements
Treatment Performance Monitoring Wells
Moss-American Site
Milwaukee, Wisconsin
First Quarter 2005

Well ID	Ground Elevation	TOC Elevation	Depth to Water	GW Elevation	Hydraulic Gradient (ft/ft)	Groundwater Velocity (ft/day)	Product Thickness
TG1-1	719.77	723.32	5.11	718.21	0.0031	0.0293	Trace
TG1-2	720.06	722.81	4.90	717.91			None Detected
TG1-3	719.56	722.53	4.63	717.90			
TG2-1	720.67	723.80	5.69	718.11	NC	NC	None Detected
TG2-2	720.62	723.05	NM	NC			NM
TG2-3	720.06	722.61	NM	NC			NM
TG3-1	719.14	721.05	4.13	716.92	NC	NC	None Detected
TG3-2	718.87	720.92	NM	NC			NM
TG3-3	718.35	720.60	NM	NC			NM
TG4-1	718.06	721.14	NM	NC	NC	NC	NM
TG4-2	718.26	720.75	NM	NC			NM
TG4-3	718.01	720.04	NM	NC			NM
TG5-1	717.60	721.12	4.58	716.54	NC	NC	None Detected
TG5-2	718.18	720.63	NM	NC			NM
TG5-3	718.17	719.99	NM	NC			NM
TG6-1	719.47	721.96	4.84	717.12	0.0003	0.0028	None Detected
TG6-2	719.70	722.05	4.98	717.07			
TG6-3	719.58	722.47	5.38	717.09			

Notes:

All values in feet.
All elevation measurements are with respect to Mean Sea Level (MSL).
Porosity of soil is assumed to be 0.3.
Hydraulic conductivity of treatment gate material is assumed to be 1E-3 cm/s = 3.0 ft/day.
TOC = Top of the casing.
GW = Groundwater.
ft/day = feet per day.
ft/ft = feet per foot.
NM= Not measured due to frozen conditions
NC= Could not be calculated due to insufficient data

A negative value in the groundwater velocity column indicates that the groundwater flow was opposite to the general direction of groundwater flow at the site.
Depth to groundwater was measured on 14 March 2005

Table 2-3

Groundwater Elevation Measurements
Piezometer and Staff Guage
Moss-American Site
Milwaukee, Wisconsin
First Quarter 2005

Well ID	Ground Elevation	TOC Elevation	Depth to Water	Water Elevation	Product Thickness
Groundwater					
PZ-01	718.04	721.05	NM	NC	None Detected
PZ-02	718.89	721.84	6.06	715.78	
PZ-03	719.00	722.09	NM	NC	
PZ-04	717.30	720.22	NM	NC	
PZ-05	724.34	727.43	6.12	721.31	
PZ-06	724.62	727.79	5.33	722.46	
PZ-07	725.78	728.72	NM	NC	
PZ-09	721.12	724.08	4.35	719.73	
PZ-10	722.04	725.05	5.09	719.96	Trace
Surface Water					
ID	**Top of Staff Gauge Elevation**		**Depth to Water**	**Water Elevation**	
SG-01	716.22		0.70	715.52	

Notes:

All values in feet.

All elevation measurements are with respect to Mean Sea Level (MSL).

TOC = Top of well casing.

GW = Groundwater.

NM= Not measured due to frozen conditions

NC= Could not be calculated due to insufficient data

Depth to groundwater was measured on 14 March 2005

Table 2-4

Field-Measured Parameters
Shallow Groundwater and Containment Performance Monitoring Wells
Moss-American Site
Milwaukee, Wisconsin
First Quarter 2005

Well ID	pH (Standard Units)	Specific Conductance (mmho/cm)	Temperature (Deg C)	Redox Potential (mV)	Dissolved Oxygen (mg/L)	Turbidity (NTU)
MW-5S	7.14	0.973	8.26	-20.6	0.46	2.75
MW-6S	7.42	0.771	6.79	85.9	1.21	700
MW-7S	6.80	0.923	7.05	-98	0.42	13.6
MW-9S	6.90	1.009	6.49	-9.6	0.08	2.63
MW-27S	6.76	0.883	6.12	33.1	0.05	1.22
MW-28S	6.75	0.974	4.27	81.4	0.06	1.78
MW-29S	7.11	0.869	4.82	63.8	0.09	10.4
MW-30S	6.85	2.451	7.33	0.3	0.09	1.49
MW-32S	6.85	0.946	7.49	-46.2	0.31	1.30
MW-33S	6.56	1.004	6.55	-6.0	0.1	1.35
MW-34S	NM	NM	NM	NM	NM	NM
MW-35S	6.95	1.269	4.51	37	0.56	8.52
MW-36S	7.36	0.720	5.14	142.3	2.28	12.9
MW-37S	6.86	1.016	5.71	57.4	0.09	0.42

Table 2-4 (Continued)

Field-Measured Parameters
Treatment Performance Monitoring Wells
Moss-American Site
Milwaukee, Wisconsin
First Quarter 2005

Well ID	pH (Standard Units)	Specific Conductance (mmho/cm)	Temperature (Deg C)	Redox Potential (mV)	Dissolved Oxygen (mg/L)	Turbidity (NTU)
TG1-1	NM	NM	NM	NM	NM	NM
TG1-2	7.22	1.12	5.42	-129.5	NM	5
TG1-3	7.22	1.218	5.12	-121.3	0.09	4.63
TG2-1	6.88	0.999	5.21	55	0.06	5.12
TG2-2	NM	NM	NM	NM	NM	NM
TG2-3	NM	NM	NM	NM	NM	NM
TG3-1	7.06	1.386	4.26	59.5	2.07	1.3
TG3-2	NM	NM	NM	NM	NM	NM
TG3-3	NM	NM	NM	NM	NM	NM
TG4-1	NM	NM	NM	NM	NM	NM
TG4-2	NM	NM	NM	NM	NM	NM
TG4-3	NM	NM	NM	NM	NM	NM
TG5-1	7.24	0.876	4.02	39.5	1.7	7.77
TG5-2	NM	NM	NM	NM	NM	NM
TG5-3	NM	NM	NM	NM	NM	NM
TG6-1	7.13	1.192	3.94	-89.6	0.36	7.23
TG6-2	6.80	1.434	4.23	5.9	0.29	9.4
TG6-3	6.83	1.463	4.24	-36.8	0.15	14.1

Notes:
S - Shallow well.
TG - Treatment gate performance monitoring well.
NA - Not applicable; monitoring well is only sampled for DO and depth to groundwater.
NM - Not measured due to frozen conditions or free product in well.
uohm/cm - microhms per centimeter
Deg C - Degrees Celcius
mV - millivolt
mg/L - milligram per liter
NTU - Nephelometric Turbidity unit

Table 2-5

Groundwater Sample Analytical Results
Shallow Monitoring Well Samples
Moss-American Site
Milwaukee, Wisconsin
First Quarter 2005

Sample ID	MA3-MW5S-031605-11	MA3-MW5S-031605-11DUP	MA3-MW6S-031605-2	MA3-MW7S-031705-1	MA3-MW9S-031505-4	WDNR PAL (ug/L)	WDNR ES (ug/L)
Well ID	MW-5S	MW-5S	MW-6S	MW-7S	MW-9S		
Sample Matrix	Groundwater	Groundwater	Groundwater	Groundwater	Groundwater		
Sample Date	3/16/2005	3/16/2005	3/16/2005	3/17/2005	3/15/2005		
Units of measure	ug/l	ug/l	ug/l	ug/l	ug/l		
VOCS							
Benzene	0.2 U	0.2 U	0.2 U	2.9 J	0.2 U	0.5	5
Ethylbenzene	0.2 U	0.2 U	0.2 U	15	0.2 U	140	700
Toluene	0.2 U	0.2 U	0.2 U	2 U	0.2 U	68.6	343
Total Xylenes	0.6 U	0.6 U	0.6 U	24 J	0.6 U	124	650
PAHS							
Acenaphthene	1.5 U	1.7 U	1.6 U	36	1.6 U	NA	NA
Acenaphthylene	1.5 U	1.7 U	1.6 U	34 U	1.6 U	NA	NA
Anthracene	0.039 U	0.042 U	0.04 U	0.04 U	0.04 U	600	3000
Benzo(a)anthracene	0.019 U	0.021 U	0.02 U	0.02 U	0.02 U	NA	NA
Benzo(a)pyrene	0.019 U	0.021 U	0.02 U	0.02 U	0.02 U	0.02	0.2
Benzo(b)fluoranthene	0.039 U	0.042 U	0.04 U	0.04 U	0.04 U	0.02	0.2
Benzo(g,h,i)perylene	0.096 U	0.11 U	0.099 U	0.099 U	0.1 U	NA	NA
Benzo(k)fluoranthene	0.019 U	0.021 U	0.02 U	0.02 U	0.02 U	NA	NA
Chrysene	0.077 U	0.085 U	0.079 U	0.079 U	0.08 U	0.02	0.2
Dibenz(a,h)anthracene	0.039 U	0.042 U	0.04 U	0.04 U	0.04 U	NA	NA
Fluoranthene	0.039 U	0.042 U	0.04 U	0.04 U	0.04 U	80	400
Fluorene	0.17 U	0.19 U	0.18 U	6.5	0.18 U	80	400
Indeno(1,2,3-cd)pyrene	0.077 U	0.085 U	0.079 U	0.079 U	0.08 U	NA	NA
Naphthalene	1.5 U	1.7 U	1.6 U	[redacted] 1,600	1.6 U	8	40
Phenanthrene	0.077 U	0.085 U	0.079 U	0.092 J	0.08 U	NA	NA
Pyrene	0.17 U	0.19 U	0.18 U	0.18 U	0.18 U	50	250

Table 2-5 (Continued)

Groundwater Sample Analytical Results
Shallow Monitoring Well Samples
Moss-American Site
Milwaukee, Wisconsin
First Quarter 2005

Sample ID	MA3-MW27S-031605-8	MA3-MW28S-031605-4	MA3-MW29S-031505-6	MA3-MW29S-031505-6DUP	MA3-MW30S-031605-12	WDNR PAL (ug/L)	WDNR ES (ug/L)
Well ID	MW-27S	MW-28S	MW-29S	MW-29S	MW-30S		
Sample Matrix	Groundwater	Groundwater	Groundwater	Groundwater	Groundwater		
Sample Date	3/16/2005	3/16/2005	3/15/2005	3/15/2005	3/16/2005		
Units of measure	ug/l	ug/l	ug/l	ug/l	ug/l		
VOCS							
Benzene	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.5	5
Ethylbenzene	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	140	700
Toluene	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	68.6	343
Total Xylenes	0.6 U	0.6 U	0.6 U	0.6 U	0.6 U	124	650
PAHS							
Acenaphthene	1.6 U	1.8 U	1.7 U	1.6 U	1.6 U	NA	NA
Acenaphthylene	1.6 U	1.8 U	1.7 U	1.6 U	1.6 U	NA	NA
Anthracene	0.041 U	0.044 U	0.042 U	0.041 U	0.04 U	600	3,000
Benzo(a)anthracene	0.02 U	0.022 U	0.021 U	0.02 U	0.02 U	NA	NA
Benzo(a)pyrene	0.02 U	0.022 U	0.021 U	0.02 U	0.02 U	0.02	0.2
Benzo(b)fluoranthene	0.041 U	0.044 U	0.042 U	0.041 U	0.04 U	0.02	0.2
Benzo(g,h,i)perylene	0.1 U	0.11 U	0.1 U	0.1 U	0.099 U	NA	NA
Benzo(k)fluoranthene	0.02 U	0.022 U	0.021 U	0.02 U	0.02 U	NA	NA
Chrysene	0.081 U	0.089 U	0.084 U	0.081 U	0.08 U	0.02	0.2
Dibenz(a,h)anthracene	0.041 U	0.044 U	0.042 U	0.041 U	0.04 U	NA	NA
Fluoranthene	0.041 U	0.044 U	0.042 U	0.041 U	0.04 U	80	400
Fluorene	0.24 J	0.2 U	0.19 U	0.18 U	0.18 U	80	400
Indeno(1,2,3-cd)pyrene	0.081 U	0.089 U	0.084 U	0.081 U	0.08 U	NA	NA
Naphthalene	1.6 U	1.8 U	1.7 U	1.6 U	1.6 U	8	40
Phenanthrene	0.081 U	0.089 U	0.084 U	0.081 U	0.08 U	NA	NA
Pyrene	0.18 U	0.2 U	0.19 U	0.18 U	0.18 U	50	250

Table 2-5 (Continued)

Groundwater Sample Analytical Results
Containment Monitoring Well Samples
Moss-American Site
Milwaukee, Wisconsin
First Quarter 2005

Sample ID	MA3-MW32S-031605-9	MA3-MW33S-031605-10	MA3-MW34S-031705-2	WDNR PAL (ug/L)	WDNR ES (ug/L)
Well ID	MW-32S	MW-33S	MW-34S		
Sample Matrix	Groundwater	Groundwater	Groundwater		
Sample Date	3/16/2005	3/16/2005	3/17/2005		
Units of measure	ug/l	ug/l	ug/l		
VOCS					
Benzene	0.2 U	0.2 U	62 J	0.5	5
Ethylbenzene	0.2 U	2.4	26	140	700
Toluene	0.2 U	0.2 U	4 U	68.6	343
Total Xylenes	0.6 U	2.4 J	68	124	650
PAHS					
Acenaphthene	1.6 U	29	480	NA	NA
Acenaphthylene	1.6 U	6 U	81 U	NA	NA
Anthracene	0.039 U	0.042 J	89	600	3,000
Benzo(a)anthracene	0.02 U	0.019 U	55	NA	NA
Benzo(a)pyrene	0.02 U	0.019 U	21	0.02	0.2
Benzo(b)fluoranthene	0.039 U	0.039 U	20	0.02	0.2
Benzo(g,h,i)perylene	0.098 U	0.097 U	7.9 J	NA	NA
Benzo(k)fluoranthene	0.02 U	0.019 U	11	NA	NA
Chrysene	0.078 U	0.078 U	57	0.02	0.2
Dibenz(a,h)anthracene	0.039 U	0.039 U	6 U	NA	NA
Fluoranthene	0.039 U	0.039 U	340	80	400
Fluorene	0.18 U	9.1	370	80	400
Indeno(1,2,3-cd)pyrene	0.078 U	0.078 U	6.4 J	NA	NA
Naphthalene	1.6 U	170	6,000	8	40
Phenanthrene	0.078 U	1.1	840	NA	NA
Pyrene	0.18 U	0.18 U	270	50	250

Table 2-5 (Continued)

Groundwater Sample Analytical Results
Containment Monitoring Well Samples
Moss-American Site
Milwaukee, Wisconsin
First Quarter 2005

Sample ID	MA3-MW35S-031505-10	MA3-MW36S-031505-7	MA3-MW37S-031505-8	WDNR PAL (ug/L)	WDNR ES (ug/L)
Well ID	MW-35S	MW-36S	MW-37S		
Sample Matrix	Groundwater	Groundwater	Groundwater		
Sample Date	3/15/2005	3/15/2005	3/15/2005		
Units of measure	ug/l	ug/l	ug/l		
VOCS					
Benzene	0.2 U	0.2 U	0.2 U	0.5	5
Ethylbenzene	0.2 U	0.2 U	0.2 U	140	700
Toluene	0.2 U	0.2 U	0.2 U	68.6	343
Total Xylenes	0.6 U	0.6 U	0.6 U	124	650
PAHS					
Acenaphthene	1.6 U	1.6 U	1.6 U	NA	NA
Acenaphthylene	1.6 U	1.6 U	1.6 U	NA	NA
Anthracene	0.04 U	0.04 U	0.04 U	600	3,000
Benzo(a)anthracene	0.031 J	0.02 U	0.02 U	NA	NA
Benzo(a)pyrene	0.02 U	0.02 U	0.02 U	0.02	0.2
Benzo(b)fluoranthene	0.04 U	0.04 U	0.04 U	0.02	0.2
Benzo(g,h,i)perylene	0.1 U	0.1 U	0.099 U	NA	NA
Benzo(k)fluoranthene	0.02 U	0.02 U	0.02 U	NA	NA
Chrysene	0.081 U	0.081 U	0.08 U	0.02	0.2
Dibenz(a,h)anthracene	0.04 U	0.04 U	0.04 U	NA	NA
Fluoranthene	0.55	0.04 U	0.04 U	80	400
Fluorene	0.18 U	0.18 U	0.18 U	80	400
Indeno(1,2,3-cd)pyrene	0.081 U	0.081 U	0.08 U	NA	NA
Naphthalene	1.6 U	1.6 U	1.6 U	8	40
Phenanthrene	0.081 U	0.081 U	0.08 U	NA	NA
Pyrene	0.35 J	0.18 U	0.18 U	50	250

Table 2-5 (Continued)

Groundwater Sample Analytical Results
Treatment Performance Monitoring Well Samples
Moss-American Site
Milwaukee, Wisconsin
First Quarter 2005

Sample ID	MA3-TG1-1-031605-5	MA3-TG1-2-031605-6	MA3-TG1-3-031605-7	MA3-TG2-1-031605-3	MA3-TG2-1-031605-3DUP	WDNR PAL (ug/L)	WDNR ES (ug/L)
Well ID	TG1-1	TG1-2	TG1-3	TG2-1	TG2-1		
Sample Matrix	Groundwater	Groundwater	Groundwater	Groundwater	Groundwater		
Sample Date	3/16/2005	3/16/2005	3/16/2005	3/16/2005	3/16/2005		
Units of measure	ug/l	ug/l	ug/l	ug/l	ug/l		
VOCS							
Benzene	1 U	0.2 U	0.2 U	0.2 U	0.2 U	0.5	5
Ethylbenzene	19	0.2 U	0.2 U	0.2 U	0.2 U	140	700
Toluene	1 U	0.2 U	0.2 U	0.2 U	0.2 U	68.6	343
Total Xylenes	28	0.6 U	0.6 U	0.6 U	0.6 U	124	650
PAHS							
Acenaphthene	3,200	28	1.7 U	1.6 U	1.6 U	NA	NA
Acenaphthylene	210	1.6 U	1.7 U	1.6 U	1.6 U	NA	NA
Anthracene	690	0.78	0.042 U	0.04 U	0.04 U	600	3,000
Benzo(a)anthracene	490	0.059 J	0.021 U	0.02 U	0.02 U	NA	NA
Benzo(a)pyrene	200	0.04 J	0.021 U	0.02 U	0.02 U	0.02	0.2
Benzo(b)fluoranthene	190	0.04 U	0.042 U	0.04 U	0.04 U	0.02	0.2
Benzo(g,h,i)perylene	56	0.1 U	0.1 U	0.1 U	0.1 U	NA	NA
Benzo(k)fluoranthene	110	0.02 U	0.021 U	0.02 U	0.02 U	NA	NA
Chrysene	480	0.12 J	0.084 U	0.081 U	0.081 U	0.02	0.2
Dibenz(a,h)anthracene	60 U	0.04 U	0.042 U	0.04 U	0.04 U	NA	NA
Fluoranthene	2,900	1.5	0.12 J	0.04 U	0.04 U	80	400
Fluorene	2,500	13	0.46 J	0.18 U	0.18 U	80	400
Indeno(1,2,3-cd)pyrene	55	0.08 U	0.084 U	0.081 U	0.081 U	NA	NA
Naphthalene	5,400	20	1.7 U	1.6 U	1.6 U	8	40
Phenanthrene	6,200	4.8	0.084 U	0.081 U	0.081 U	NA	NA
Pyrene	2,300	1.1	0.19 U	0.18 U	0.18 U	50	250

Table 2-5 (Continued)

Groundwater Sample Analytical Results
Treatment Performance Monitoring Well Samples
Moss-American Site
Milwaukee, Wisconsin
First Quarter 2005

Sample ID	MA3-TG3-1-031505-9	MA3-TG5-1-031505-5	MA3-TG6-1-031505-1	MA3-TG6-2-031505-2	MA3-TG6-3-031505-3	WDNR PAL (ug/L)	WDNR ES (ug/L)
Well ID	TG3-1	TG5-1	TG6-1	TG6-2	TG6-3		
Sample Matrix	Groundwater	Groundwater	Groundwater	Groundwater	Groundwater		
Sample Date	3/15/2005	3/15/2005	3/15/2005	3/15/2005	3/15/2005		
Units of measure	ug/l	ug/l	ug/l	ug/l	ug/l		
VOCS							
Benzene	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.5	5
Ethylbenzene	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	140	700
Toluene	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	68.6	343
Total Xylenes	0.6 U	0.6 U	0.6 U	0.6 U	0.6 U	124	650
PAHS							
Acenaphthene	1.6 U	1.6 U	1.5 U	1.5 U	1.6 U	NA	NA
Acenaphthylene	1.6 U	1.6 U	1.5 U	1.5 U	1.6 U	NA	NA
Anthracene	0.041 U	0.041 U	0.039 U	0.038 U	0.041 U	600	3,000
Benzo(a)anthracene	0.02 U	0.02 U	0.019 U	0.019 U	0.02 U	NA	NA
Benzo(a)pyrene	0.02 U	0.02 U	0.019 U	0.019 U	0.02 U	0.02	0.2
Benzo(b)fluoranthene	0.041 U	0.041 U	0.039 U	0.038 U	0.041 U	0.02	0.2
Benzo(g,h,i)perylene	0.1 U	0.1 U	0.096 U	0.096 U	0.1 U	NA	NA
Benzo(k)fluoranthene	0.02 U	0.02 U	0.019 U	0.019 U	0.02 U	NA	NA
Chrysene	0.081 U	0.082 U	0.077 U	0.077 U	0.082 U	0.02	0.2
Dibenz(a,h)anthracene	0.041 U	0.041 U	0.039 U	0.038 U	0.041 U	NA	NA
Fluoranthene	0.041 U	0.041 U	0.039 U	0.07 J	0.041 U	80	400
Fluorene	0.18 U	0.18 U	0.17 U	0.17 U	0.18 U	80	400
Indeno(1,2,3-cd)pyrene	0.081 U	0.082 U	0.077 U	0.077 U	0.082 U	NA	NA
Naphthalene	1.6 U	1.6 U	1.5 U	1.5 U	1.6 U	8	40
Phenanthrene	0.081 U	0.082 U	0.077 U	0.077 U	0.082 U	NA	NA
Pyrene	0.18 U	0.18 U	0.17 U	0.17 U	0.18 U	50	250

Table 2-5 (Continued)

Groundwater Sample Analytical Results
Treatment Performance Monitoring Well Samples
Moss-American Site
Milwaukee, Wisconsin
First Quarter 2005

Sample ID	MA3-FB-031505-12	MA3-FB-031605-1	MA3-FB-031605-13	WDNR PAL (ug/L)	WDNR ES (ug/L)
Well ID	Field Blank	Field Blank	Field Blank		
Sample Matrix	Groundwater	Groundwater	Groundwater		
Sample Date	3/15/2005	3/16/2005	3/16/2005		
Units of measure	ug/l	ug/l	ug/l		
VOCS					
Benzene	0.2 U	0.2 U	0.2 U	0.5	5
Ethylbenzene	0.2 U	0.2 U	0.2 U	140	700
Toluene	0.2 U	0.2 U	0.2 U	68.6	343
Total Xylenes	0.6 U	0.6 U	0.6 U	124	650
PAHS					
Acenaphthene	1.6 U	1.6 U	1.6 U	NA	NA
Acenaphthylene	1.6 U	1.6 U	1.6 U	NA	NA
Anthracene	0.04 U	0.041 U	0.041 U	600	3,000
Benzo(a)anthracene	0.02 U	0.021 U	0.02 U	NA	NA
Benzo(a)pyrene	0.02 U	0.021 U	0.02 U	0.02	0.2
Benzo(b)fluoranthene	0.04 U	0.041 U	0.041 U	0.02	0.2
Benzo(g,h,i)perylene	0.099 U	0.1 U	0.1 U	NA	NA
Benzo(k)fluoranthene	0.02 U	0.021 U	0.02 U	NA	NA
Chrysene	0.079 U	0.082 U	0.081 U	0.02	0.2
Dibenz(a,h)anthracene	0.04 U	0.041 U	0.041 U	NA	NA
Fluoranthene	0.04 U	0.041 U	0.041 U	80	400
Fluorene	0.18 U	0.18 U	0.18 U	80	400
Indeno(1,2,3-cd)pyrene	0.079 U	0.082 U	0.081 U	NA	NA
Naphthalene	1.6 U	1.6 U	1.6 U	8	40
Phenanthrene	0.079 U	0.082 U	0.081 U	NA	NA
Pyrene	0.18 U	0.18 U	0.18 U	50	250

Table 2-5 (Continued)

Groundwater Sample Analytical Results
Trip Blank Samples and Table Notes
Moss-American Site
Milwaukee, Wisconsin
First Quarter 2005

Sample ID	MA3-TB-031505-11		MA3-TB-031605-1		MA3-TB-031705-1		WDNR PAL (ug/L)	WDNR ES (ug/L)
Well ID	Trip Blank		Trip Blank		Trip Blank			
Sample Matrix	Groundwater		Groundwater		Groundwater			
Sample Date	3/15/2005		3/16/2005		3/17/2005			
Units of measure	ug/l		ug/l		ug/l			
VOCS								
Benzene	0.2	U	0.2	U	0.2	U	0.5	5
Ethylbenzene	0.2	U	0.2	U	0.2	U	140	700
Toluene	0.2	U	0.2	U	0.2	U	68.6	343
Total Xylenes	0.6	U	0.6	U	0.6	U	124	650

U-Constituent not detected. Detection limit indicated.
J-Estimated concentration.
VOC-Volatile Organic Compound.
PAH-Polynuclear Aromatic Hydrocarbon.
PAL-Wisconsin Department of Natural Resources (WDNR) Preventative Action Limit.
ES-Enforcement Standard (WDNR).
NA-Not Applicable. PAL or ES not available for this parameter.
NS-Not sampled due to frozen conditions.
Bolded values indicate concentration exceeding PAL.
Shaded and bolded values indicate concentration exceeding PAL and ES.

Table 2-6

Concentration Trends in Groundwater Monitoring Wells
Second Quarter 2002 through First Quarter 2005
Moss-American Site
Milwaukee, Wisconsin

	MW-7S	MW-32S	MW-33S	MW-34S	MW-35S	TG1-1
Benzene (ug/L)						
Second Quarter (June '02)	0.43 J	0.20 U	2 J	12	0.20 U	3.2 J
Third Quarter (September '02)	5 U	0.20 U	4 UJ	10 UJ	0.20 U	1.3
Fourth Quarter (December '02)	4 U	0.20 U	2 U	5.6 J	0.20 U	4.9 J
First Quarter (March '03)	2.9 J	0.20 U	1.0 U	6.4 J	0.20 U	2.7 J
Second Quarter (June '03)	2.4 J	0.2 U	2 U	15 J	0.2 U	1.4 J
Third Quarter (September '03)	10 U	0.2 U	0.3 J	10 U	0.2 U	2 U
Fourth Quarter (December '03)	2.3 J	0.2 U	0.2 U	6.6	0.2 U	1 U
First Quarter (March '04)	4 U	0.2 U	4 J	5.7 J	0.2 U	1.5
Second Quarter (June '04)	2 U	0.2 U	1 U	7.8 J	0.2 U	1 U
Third Quarter (September '04)	2.2 J	0.2 U	1 U	7.1 J	0.2 U	2 U
Fourth Quarter (December '04)	8.6	0.2 U	0.2 U	7.2 J	0.2 U	0.5 J
First Quarter (March '05)	2.9 J	0.2 U	0.2 U	6.2 J	0.2 U	1 U
Naphthalene (ug/L)						
Second Quarter (June '02)	3,000	1.00 U	2,900	6,100	0.90 U	1,500
Third Quarter (September '02)	4,000	1.00 U	2,700	7,000	1.00 U	1,200
Fourth Quarter (December '02)	2,800	1.0 U	2,100	5,300	1.00 U	8,900
First Quarter (March '03)	2,800	1.0 U	2,300	6,100	1.00 U	1,900
Second Quarter (June '03)	3,400	1.2 U	2,500	6,100	1.2 U	1,300 J
Third Quarter (September '03)	3,800	1.3 U	2,600	5,000	1.2 U	5,800
Fourth Quarter (December '03)	3,000	1.4 U	58 J	6,500 J	1.3 U	1,500
First Quarter (March '04)	2,500	1.4 UJ	660 J	7,400	1.4 U	2,200
Second Quarter (June '04)	2,700	1.6 U	600	6,800	1.5 U	1,500
Third Quarter (September '04)	2,700	1.6 U	970	11,000 J	1.7 U	3,200
Fourth Quarter (December '04)	1,600	1.5 U	140	5,700	1.5 U	1,600
First Quarter (March '05)	1,600	1.6 U	170	6,000	1.6 U	5,400

Table 2-6 (Continued)

Concentration Trends in Groundwater Monitoring Wells
Second Quarter 2002 through First Quarter 2005
Moss-American Site
Milwaukee, Wisconsin

	MW-7S	MW-32S	MW-33S	MW-34S	MW-35S	TG1-1
Fluorene (ug/L)						
Second Quarter (June '02)	7	0.20 U	50	120	0.20 U	70
Third Quarter (September '02)	11	0.20 U	60	130	0.20 U	330
Fourth Quarter (December '02)	11	0.20 UJ	59.0 J	170 J	0.20 UJ	3,400J
First Quarter (March '03)	9.5	1.9	62	150	0.20 U	230
Second Quarter (June '03)	8	0.17 U	72	84	0.18 U	170 J
Third Quarter (September '03)	11	0.19 U	88	86	0.18 U	2,400
Fourth Quarter (December '03)	8	0.18 U	0.84 J	180 J	0.17 U	150
First Quarter (March '04)	7	0.18 UJ	13	470	0.21 J	160
Second Quarter (June '04)	6.9	0.17 U	19	280	0.19 J	150
Third Quarter (September '04)	7.8	0.18 U	59	2100 J	1.3	800
Fourth Quarter (December '04)	7.5	0.17 U	6.9	99	0.39 J	420
First Quarter (March '05)	6.5	0.18	9.1	370	0.18 U	2,500
Benzo(a) pyrene (ug/L)						
Second Quarter (June '02)	0.02 J	0.02 U	0.02 U	4	0.02 U	0.05 J
Third Quarter (September '02)	0.20 U	0.02 U	0.02 U	0.78	0.02 U	25
Fourth Quarter (December '02)	0.20 U	0.02 UJ	0.02 UJ	5.6 J	0.02 UJ	290J
First Quarter (March '03)	0.20 U	0.02 U	0.02 U	3.2	0.02 U	15
Second Quarter (June '03)	0.02 U	0.02 U	0.02 U	0.18	0.02 U	7.9 J
Third Quarter (September '03)	0.022 U	0.29 J	0.021 U	0.047 J	0.02 U	190
Fourth Quarter (December '03)	0.019 U	0.02 U	0.02 U	5.9 J	0.028 J	5.9
First Quarter (March '04)	0.019 U	0.02 UJ	0.02 UJ	29	0.02 U	6.2
Second Quarter (June '04)	0.019 U	0.019 U	0.019 U	17	0.022 J	5.1
Third Quarter (September '04)	0.02 U	0.02 U	0.021 U	140 J	0.021 U	56
Fourth Quarter (December '04)	0.019 U	0.019 U	0.02 U	0.15	0.019 U	33
First Quarter (March '05)	0.02 U	0.02 U	0.019 U	21	0.02 U	200

U - Constituent not detected; method detection limit (MDL) of the analysis reported.
J - Estimated concentration.
ug/L - Micrograms per liter.

Table 2-7

Groundwater Sample Analytical Results
Treatment Performance Monitoring Wells- Nutrient and Biological Parameters
Moss-American Site
Milwaukee, Wisconsin
First Quarter 2005

Parameter (mg/L)	Sample Identification					
	TG1-1	TG1-2	TG1-3	TG2-1	TG2-2	TG2-3
Kjeldahl nitrogen	2.1	1.1	1.6	0.5 U	NC	NC
Nitrite	0.015 U	0.015 U	0.015 U	0.015 U	NC	NC
Nitrate (as N)	0.04 U	0.04 U	0.04 U	0.04 U	NC	NC
Ammonia Nitrogen	1.2	1.3	1.3	0.29 J	NC	NC
Ortho-Phosphate as P	0.01 U	0.01 U	0.026 J	0.01 U	NC	NC
Biochemical oxygen demand	8.4	4.3 U	5.7 U	1.4 U	NC	NC
Total Organic Carbon	14.2	11	9.9	2.1	NC	NC
Total Phosphorus as PO4 water	0.25 U	0.25 U	0.25 U	0.25 U	NC	NC
Chemical oxygen demand	83.1	30.4	28.8	5.8 J	NC	NC
Total Microbial Population (mean) (cfu/mL)	2.0E+04	3.3E+03	3.8E+04	3.4E+02	NC	NC
Degrader Microbial Population (mean) (cfu/mL)	7.8E+02	100 U	6.1E+02	100 U	NC	NC

Parameter (mg/L)	Sample Identification					
	TG3-1	TG3-2	TG3-3	TG4-1	TG4-2	TG4-3
Kjeldahl nitrogen	0.54 J	NC	NC	NC	NC	NC
Nitrite	0.015 U	NC	NC	NC	NC	NC
Nitrate (as N)	0.04 U	NC	NC	NC	NC	NC
Ammonia Nitrogen	0.41 J	NC	NC	NC	NC	NC
Ortho-Phosphate as P	0.01 U	NC	NC	NC	NC	NC
Biochemical oxygen demand	2.2 U	NC	NC	NC	NC	NC
Total Organic Carbon	5.5	NC	NC	NC	NC	NC
Total Phosphorus as PO4 water	0.25 U	NC	NC	NC	NC	NC
Chemical oxygen demand	17.3	NC	NC	NC	NC	NC
Total Microbial Population (mean) (cfu/mL)	1.3E+03	NC	NC	NC	NC	NC
Degrader Microbial Population (mean) (cfu/mL)	100 U	NC	NC	NC	NC	NC

Parameter (mg/L)	Sample Identification					
	TG5-1	TG5-2	TG5-3	TG6-1	TG6-2	TG6-3
Kjeldahl nitrogen	0.5 U	NC	NC	2.3	1	1.1
Nitrite	0.015 U	NC	NC	0.015 U	0.015 U	0.015 U
Nitrate (as N)	0.04 U	NC	NC	0.04 U	0.04 U	0.04 U
Ammonia Nitrogen	0.15 J	NC	NC	1.4	0.23 J	1
Ortho-Phosphate as P	0.01 U	NC	NC	0.01 U	0.01 U	0.01 U
Biochemical oxygen demand	1.7 U	NC	NC	3.2 U	2.1 U	1.9 U
Total Organic Carbon	2.8	NC	NC	9.1	5.6	5.9
Total Phosphorus as PO4 water	0.25 U	NC	NC	0.25 U	0.25 U	0.25 U
Chemical oxygen demand	6.2 J	NC	NC	28.1	16.9	18.8
Total Microbial Population (mean) (cfu/mL)	3.0E+02	NC	NC	4.3E+03	2.3E+02	6.9E+03
Degrader Microbial Population (mean) (cfu/mL)	100 U	NC	NC	100 U	100 U	100 U

U-Constituent not detected. Detection limit indicated.
J-Estimated concentration.
NC- Sample was not collected due to frozen conditions

SECTION 3
EVALUATION OF PILOT SCALE OPERATIONS

Augmentation of the groundwater treatment system was initiated in October 2000 by injecting air at the treatment gates. In late June 2001, nutrient addition was initiated at TG1 using a solution containing potassium nitrate (KNO_3) and potassium phosphate ($KHPO_4$). System modifications were proposed in the Q2 2002 Quarterly Groundwater Treatment Performance Monitoring Report and are discussed in this section. Information regarding system performance is also presented.

3.1 DISSOLVED OXYGEN

During Q1 2005, the DO concentrations in many of the wells remained below 1.0 mg/L. The concentrations of DO exceeded 1.0 mg/L in wells MW-6S, MW-36S, TG3-1, and TG5-1 during Q1 2005. The aquifer conditions appear to have returned to normal from anomalously oxic conditions observed in Q4 2004.

$N\text{-}NO_3$ and $N\text{-}NO_2$ were not detected in any of the treatment performance wells sampled in Q1 2005. This indicates that nitrogen is primarily present in its reduced state, and a reducing environment exists in the wells. Nitrogen data were not collected for the shallow monitoring wells.

Well packers were installed in the TG5 injection wells in June 2000; however, no discernable change in the DO levels were observed in the TG5 wells until Q1 and Q2 2003. KMC/WESTON attempted to install inflatable bladder packers in TG1 and TG2 injection wells in August 2001. However, the packers could not be properly installed due to the injection well configuration.

KMC/WESTON will continue to evaluate alternatives for air introduction into the treatment gates.

3.2 NUTRIENTS AND pH

Nutrient injection was discontinued at gate area TG1 as a part of the site modifications recommended in the Q2 2002 Monitoring Report. This took place at the end of October 2002, after the Agencies granted approval. However, nutrient and contaminant levels will continue to be monitored.

Recommended guidelines for bioremediation of contaminants in site groundwater include a pH range of 6.5 to 8.5 S.U. and a minimum carbon-nitrogen-phosphorous (C:N:P) ratio of 100:14:1. The range of pH values measured in the treatment performance monitoring wells (6.80 to 7.24 S.U.) is sufficient to facilitate biological activity.

Table 3-1 contains calculated C:N:P ratios for each of the treatment performance monitoring wells. During Q1 2005, the treatment performance monitoring wells did not exhibit the desired C:N:P ratio of 100:14:1. Nitrogen and phosphorous appear to be the limiting nutrients at the site.

3.3 BACTERIAL POPULATIONS

Both total and degrader bacterial counts in the performance monitoring wells remained relatively steady in most wells during Q1 2005 when compared to Q4 2004 counts.

Figure 3-1 compares the degrader populations in TG1 and TG2 since Q1 2001. As indicated in Figure 3-1, there has been a trend of general decrease in the degrader bacterial population levels in TG1 and TG2 since Q1 2001. It is uncertain what the cause of this bacterial decrease is at the site. However, this decrease in degrader bacterial population needs to be closely monitored so that actions to augment the degrader population can be implemented as necessary.

3.4 HYDROGEOLOGY

KMC/WESTON identified a potential concern associated with the site hydrogeology in the Q2 2001 Monitoring Report. This concern is primarily based on the premise that low flow conditions may cause anoxic conditions and may inhibit KMC/WESTON's ability to introduce nutrients and other additives at an optimum level due to poor dispersion from the injection point. Low flow conditions are apparent based on the hydraulic gradient and flow velocities derived. A low flow velocity may be indirectly beneficial as a longer residence time in the treatment gate may allow for more effective biodegradation. No significant change was observed in relation to site hydrogeology during Q1 2005.

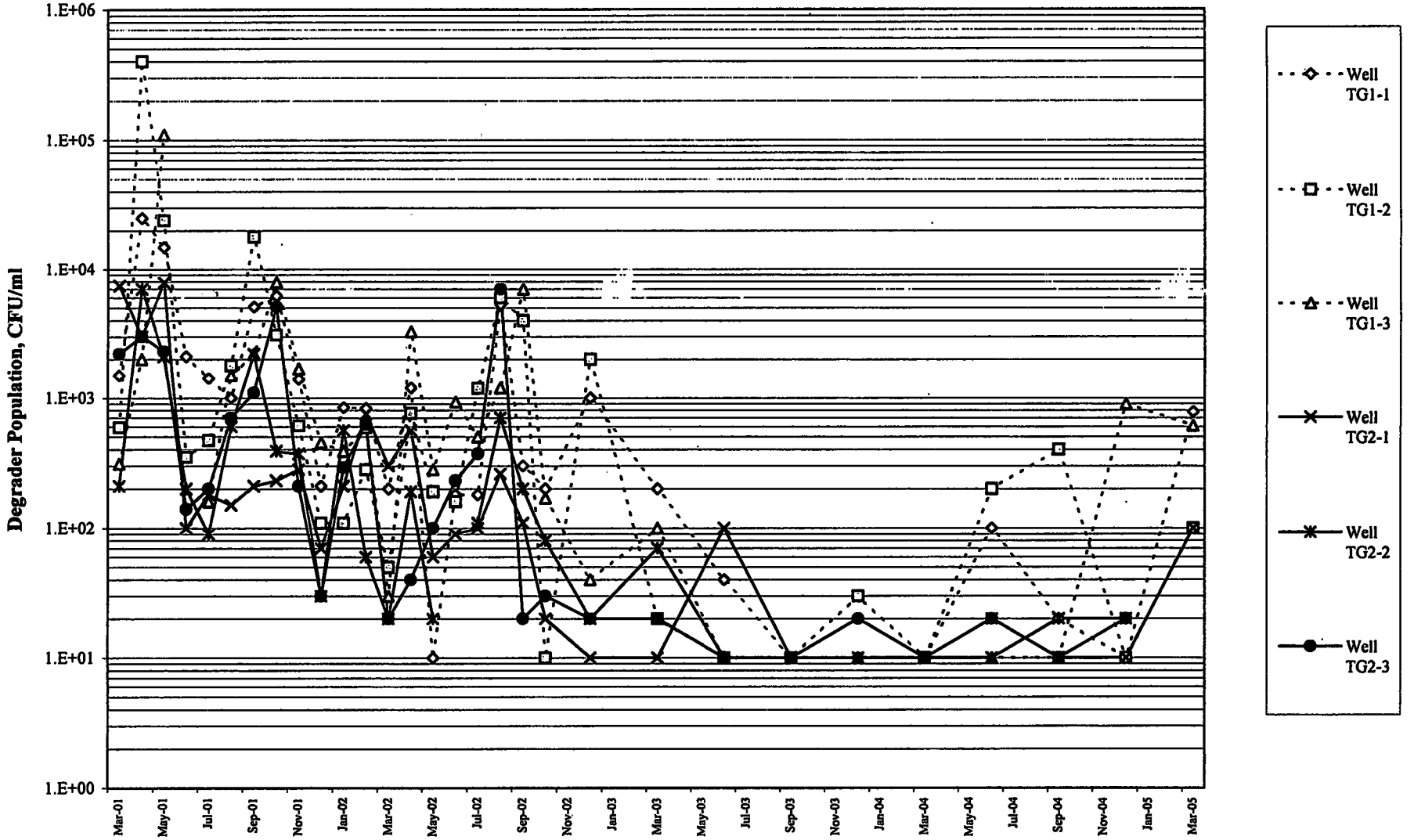
3.5 SITE MODIFICATIONS

Per the Q2 2002 Monitoring Report recommendations, modifications have been made to the system at the site. In October 2002, the performance monitoring well sampling frequency and scope reductions went into effect following the Agencies' approval. Groundwater sampling was revised to a quarterly sampling regime instead of a monthly sampling regime. In addition, shallow monitoring wells MW-3S, MW-10S, MW-13S, MW-25S, MW-26S, and MW-20S and intermediate wells MW-3I, MW-7I, MW-9I, and MW-20I were removed from the groundwater monitoring program. However, these wells were not abandoned, per WDNR's request, with the exception of MW-20S and MW-20I abandoned during LMR diversion. Water levels will continue to be gathered from these wells on a quarterly basis to assist with the production of the groundwater elevation contour map. Discontinuation of nutrient injection at gate TG1 was also approved and was implemented in October 2002.

The hydrogeologic investigation proposed in the Q2 2002 Monitoring Report took place in December 2002. This work included the installation of nine piezometers (PZ-01 thru PZ-07, PZ-09, and PZ-10) as well as a staff gauge (SG-1). Records were updated with this information, and used to prepare the groundwater elevation contour map for this quarter.

Figure 3-1

Comparison of Degrader Populations in Treament Gates 1 and 2 since Q2 2001
Moss-American Site
Milwaukee, Wisconsin



Note: Laboratory detection limit is shown where degrader population was not detected at or above the detection limit.

Table 3-1

Calculation of Carbon:Nitrogen:Phosphorous Ratios
Treatment Performance Monitoring Wells
Moss-American Site
Milwaukee, Wisconsin
First Quarter 2005

Well	Carbon[1], mg/L	Total Nitrogen[2], mg/L	Phosphorous[3], mg/L	C-N-P Ratio (100-14-1 desired)		
TG1-1	14.2	1.2	ND	100	8.45	0
TG1-2	11	1.3	ND	100	11.82	0
TG1-3	9.9	1.3	0.026	100	13.13	2
TG2-1	2.1	0.29	ND	100	13.81	0
TG2-2	NC	NC	NC	---	---	---
TG2-3	NC	NC	NC	---	---	---
TG3-1	5.5	0.41	ND	100	7.45	0
TG3-2	NC	NC	NC	---	---	---
TG3-3	NC	NC	NC	---	---	---
TG4-1	NC	NC	NC	---	---	---
TG4-2	NC	NC	NC	---	---	---
TG4-3	NC	NC	NC	---	---	---
TG5-1	2.80	0.15	ND	100	5.36	0
TG5-2	NC	NC	NC	---	---	---
TG5-3	NC	NC	NC	---	---	---
TG6-1	9.10	1.40	ND	100	15.38	0
TG6-2	5.6	0.23	ND	100	4.11	0
TG6-3	5.9	1	ND	100	16.95	0
Site Average	7.34	0.60	0.01	100	8.17	0.18

1 - Carbon measured as Total Organic Carbon (non-purgable).
2 - Nitrogen measured as NH_3-N, NO_2-N, and NO_3-N.
3 - Phosphorous measured as phosphate (PO_4-P).
ND - Constituent not detected.
NC- Sample was not collected due to frozen conditions
--- Not available
Shaded values indicate values at or above desired quantity.

SECTION 4

REFERENCES

Weston Solutions, Inc. (WESTON). 1999. *Quality Assurance Project Plan for Installation of Groundwater Remedial System.* October 1999.

WESTON. 2001. *Quality Assurance Project Plan for Installation of Groundwater Remedial System Addendum No.1.* May 2001.

APPENDIX A

MARCH 2005 GROUNDWATER SAMPLE ANALYTICAL RESULTS

Kerr-McGee
Moss American site
Milwaukee, Wisconsin
SDG# KMA64

water samples – BTEX

1. Holding Times:

Lab ID	Client ID MA3-	Sample Date	Analysis Date
4883069	FB-12	3/15/05	3/17/05
4883070	MW29S	3/15/05	3/17/05
4883071	MW29S-DP	3/15/05	3/17/05
4883072	MW35S	3/15/05	3/17/05
4883073	MW36S	3/15/05	3/17/05
4883074	MW37S	3/15/05	3/17/05
4883075	MW9S	3/15/05	3/17/05
4883076	MW9S-MS	3/15/05	3/17/05
4883077	MW9S-MSD	3/15/05	3/17/05
4883078	TB	3/15/05	3/17/05
4883079	TG3	3/15/05	3/17/05
4883080	TG5-1	3/15/05	3/17/05
4883081	TG6-1	3/15/05	3/17/05
4883082	TG6-2	3/15/05	3/17/05
4883083	TG6-3	3/15/05	3/17/05
4883992	TG1-1	3/15/05	3/17/05
4883993	TG1-2	3/16/05	3/21/05
4883994	TG1-3	3/16/05	3/21/05
4883995	TG2-1	3/16/05	3/21/05
4883996	TG2-1DP	3/16/05	3/21/05

All samples were analyzed and extracted within the required holding times.

2. Method Blank:

Two method blanks were associated with the BTEX samples (BLK5672 and 5674). Both blanks were free of contamination.

3. Initial and Continuing Calibration:

For the BTEX samples, all initial and continuing calibration criteria appears to have been achieved. No deficiencies were noted in the laboratory narrative.

4. Surrogate Recovery-:

The surrogate recoveries for the BTEX surrogate (TFT) were all within required QC limits.

5. Matrix Spike/Matrix Spike Duplicate (MS/MSD):

Sample MW9S was the MS/MSD. All recoveries were acceptable.

6. Laboratory Control Sample:

All laboratory control sample results were acceptable.

7. Trip Blanks:

One trip blank was associated with the samples. All trip blank results were non-detect. All results are acceptable.

8. Field Blanks:

One field blank was associated with the samples.. All BTEX results were non-detect. All results are acceptable.

9. Field Duplicates:

Samples MW29SDP/MS29S and TG2-1/TG2-1DP are field duplicates. All results were non-detect.

10. Other

Sample TG1-1 required dilutions.

Water Samples – Polynuclear Aromatic Hydrocarbons (PAHs by HPLC)

1. Holding Times:

Lab ID	Client ID	Sample Date	Extraction Date	Analysis Date
4883069	FB-12	3/15/05	3/18/05	3/19/05
4883070	MW29S	3/15/05	3/18/05	3/19/05
4883071	MW29S-DP	3/15/05	3/18/05	3/19/05
4883072	MW35S	3/15/05	3/18/05	3/19/05
4883073	MW36S	3/15/05	3/18/05	3/19/05
4883074	MW37S	3/15/05	3/18/05	3/19/05
4883075	MW9S	3/15/05	3/18/05	3/19/05
4883076	MW9S-MS	3/15/05	3/18/05	3/19/05
4883077	MW9S-MSD	3/15/05	3/18/05	3/19/05
4883078	TB	3/15/05	3/18/05	3/19/05
4883079	TG3	3/15/05	3/18/05	3/19/05

4883080	TG5-1	3/15/05	3/18/05	3/19/05
4883081	TG6-1	3/15/05	3/18/05	3/20/05
4883082	TG6-2	3/15/05	3/18/05	3/19/05
4883083	TG6-3	3/15/05	3/18/05	3/19/05
4883992	TG1-1	3/15/05	3/18/05	3/19/05
4883993	TG1-2	3/16/05	3/18/05	3/20, 3/22/05
4883994	TG1-3	3/16/05	3/18/05	3/20/05
4883995	TG2-1	3/16/05	3/18/05	3/20/05
4883996	TG2-1DP	3/16/05	3/18/05	3/20/05

All samples were analyzed and extracted within the required holding times.

2. Method Blank:

Two method blanks were associated with the samples (SBLKWB0762 and 0772). The method blanks were free of contamination.

3. Initial and Continuing Calibration:

Calibration results were acceptable.

4. Surrogate Recovery:

Two surrogates were used for two different detector columns All surrogate recoveries for NBZ 2 were outside control limits. However all results on the NBZ 1 were acceptable. No qualifications are required.

5. Matrix Spike/Matrix Spike Duplicate:

Sample MW9S was run as a MS/MSD and associated with the remaining samples. All recoveries were acceptable..

6. Laboratory Control Sample:

Two LCS were associated with the samples. All LCS recoveries were within required control limits.

7. Field Blanks:

One field blank was associated with the samples. The field blank results were non-detect.

8. Field Duplicates:

Samples MW29S-DP/MW29S and T2-1/TG2-1DP are field duplicates. All results were non-detect.

9. Other

Sample TG1-1 (20 and 400X) required a dilutions. The laboratory narrative states due the presence of an interferent near the retention time of dibenz(a,h)anthracene, the reporting limit for this compound was not met in TG-1. The lab adjusted the reporting limit accordingly.

Data reviewed by: T. Balla Date: 4/22/05

7802 935484 4483069-83

COC ID: 031505-03

Chain of Custody Record

Page 1 of 1

Client: Kerr McGee

Site Name: Moss American | Contact Name: Tom Graan

W. O.: 02687.007.008.0001 | Contact Phone No.: 847-918-4142

Lab: LANCASTER LABS | Lab Contact: C. SWEIGART

TAT | Lab Phone: 717-656-2308 X1527

Lab ID	Sample ID	Matrix	PID	MS/MSD	Date-Time Collected	EPA 353.2-NO2	EPA 353.2-NO3	EPA 415.1-TOC	SW846 8021B-BTEX						
						Filtered									
						Container	40 ml Vials	40 ml Vials	250 ml Glass	40 ml Vials					
						Preservative	N/A	H2SO4	N/A	HCl					
	MA3-FB-031505-12	G		N	3/15/2005 15:10				3						
	MA3-MW29S-031505-6-DP	G		N	3/15/2005 14:40				3						
	MA3-MW35S-031505-10	G		N	3/15/2005 16:05				3						
	MA3-MW36S-031505-7	G		N	3/15/2005 14:55				3						
	MA3-MW37S-031505-8	G		N	3/15/2005 14:45				3						
	MA3-MW99-031505-4-MSD	G		N	3/15/2005 11:50				3						
	MA3-TB-031505-11	G		N	3/15/2005 07:58				3						
	MA3-TG2-1-031505-9	G		N	3/15/2005 16:10	1	1	1	3						
	MA3-TG5-1-031505-5	G		N	3/15/2005 11:45	1	1	1	3						
	MA3-TG6-1-031505-1	G		N	3/15/2005 09:25	1	1	1	3						
	MA3-TG6-2-031505-2	G		N	3/15/2005 09:35	1	1	1	3						
	MA3-TG6-3-031505-3	G		N	3/15/2005 09:30	1	1	1	3						

Remarks/Comments

Lab Use Only

Temp of Cooler when Received, C: 1 1.2 2 2.2 3 4 5

COC Tape was present on outer package (Y) N

COC Tape was unbroken on outer package (Y) N

COC Tape was present on sample Y (N)

COC Tape was unbroken on sample Y (N)

Received in good condition (Y) N

Labels indicate Properly Preserved (Y) N

Received within Holding Time (Y) N

Relinquished By	Date / Time	Received By	Date / Time	Relinquished By	Date / Time	Received By	Date / Time

Sampled By

7802 935484 4483069-83

COC ID: 031505-01

Chain of Custody Record

WESTON

Client: Kerr McGee

Site Name: Moss American | Contact Name: Tom Graan

W. O.: 02687.007.008.0001 | Contact Phone No.: 847-918-4142

Lab: LANCASTER LABS | Lab Contact: C. SWEIGART

TAT | Lab Phone: 717-656-2308 X1527

Lab ID	Sample ID	Matrix	PID	MS/MSD	Date-Time Collected	SW846 8310-PAHS								
						Filtered								
						Container	I-L Amber							
						Preservative	N/A							
	MA3-MW29S-031505-6-DP	G		N	3/15/2005 14:40	4								
	MA3-MW35S-031505-10	G		N	3/15/2005 16:05	2								
	MA3-MW36S-031505-9	G		N	3/15/2005 14:55	2								
	MA3-MW37S-031505-8	G		N	3/15/2005 14:45	2								

Remarks/Comments

295 has both Investigative & Dup

Sampled By

Lab Use Only

Temp of Cooler when Received, C: 1 1.2 | 2 2.2 | 3 | 4 | 5

COC Tape was present on outer package Y N

COC Tape was unbroken on outer package Y N

COC Tape was present on sample Y N

COC Tape was unbroken on sample Y N

Received in good condition Y N

Labels indicate Properly Preserved Y N

Received within Holding Time Y N

Relinquished By	Date / Time	Received By	Date / Time	Relinquished By	Date / Time	Received By	Date / Time
	3/15/05 1800						3/16/05 0905

7802 935484 4483069-83

COC ID: 031505-04

Chain of Custody Record

WESTON

Client: Kerr McGee

Site Name: Moss American | Contact Name: Tom Gman

W. O.: 02687.007.006.0001 | Contact Phone No.: 847-918-4142

Lab: LANCASTER LABS | Lab Contact: C. SWEIGART

TAT | Lab Phone: 717-656-2300 X1527

Lab ID	Sample ID	Matrix	PID	MS/MSD	Date-Time Collected	EPA 365.3-ORTHO P, EPA 405.1-BOD								
						Filtered								
						Container	500-ml Poly							
						Preservative	N/A							
	MA3-TG3-1-031505-9	G		N	3/15/2005 16:10	1								
	MA3-TG5-1-031505-5	G		N	3/15/2005 11:45	1								
	MA3-TG6-1-031505-1	G		N	3/15/2005 09:25	1								
	MA3-TG6-2-031505-2	G		N	3/15/2005 09:35	1								
	MA3-TG6-3-031505-3	G		N	3/15/2005 09:30	1								

Remarks/Comments

Lab Use Only

Temp of Cooler when Received, C: 1 1.2 | 2 2.2 | 3 | 4 | 5

COC Tape was present on outer package Y N

COC Tape was unbroken on outer package Y N

COC Tape was present on sample Y N

COC Tape was unbroken on sample Y N

Received in good condition Y N

Labels indicate Properly Preserved Y N

Received within Holding Time Y N

Relinquished By	Date / Time	Received By	Date / Time	Relinquished By	Date / Time	Received By	Date / Time
	3/15/05 1100						
							3/16/05 0705

Sampled By

7802 935484 4483069-83

COC ID: 031605-05

Chain of Custody Record

WESTON

Client: Kerr McGee

Site Name: Moss American | Contact Name: Tom Graan

W. O.: 02687.007.006.0001 | Contact Phone No.: 847-918-4142

Lab: LANCASTER LABS | Lab Contact: C. SWEIGART

TAT | Lab Phone: 717-656-2308 X1527

Lab ID	Sample ID	Matrix	PID	MS/MSD	Date-Time Collected	SW846 8310 PAHS									
						Filtered									
						Container	1-L Amber								
						Preservative	N/A								
	MA3-MW92-031505-4-MSD	G		Y	3/15/2005 11:50										
	MA3-TG3-1-031505-9	G		N	3/15/2005 16:10										
	MA3-TG3-1-031505-5	G		N	3/15/2005 11:45										

Remarks/Comments

Lab Use Only

Temp of Cooler when Received, C: 1 1.2 2 2.2 3 4 5

COC Tape was present on outer package: Y N

COC Tape was unbroken on outer package: Y N

COC Tape was present on sample: Y N

COC Tape was unbroken on sample: Y N

Received in good condition: Y N

Labels indicate Properly Preserved: Y N

Received within Holding Time: Y N

Relinquished By	Date / Time	Received By	Date / Time	Relinquished By	Date / Time	Received By	Date / Time
	3/16/05	FED					3/16/05 0905

Sampled By

7807 935484 4483069-83

COC ID: 031505-08

Chain of Custody Record

WESTON SOLUTIONS

Client: Kerr McGee

Site Name: Moss American | Contact Name: Tom Green

W.O.: 02687.007.006.0001 | Contact Phone No.: 847-918-4142

Lab: LANCASTER LABS | Lab Contact: C. SWEIGART

TAT | Lab Phone: 717-656-2308 X1527

Lab ID	Sample ID	Matrix	PID	MS/MSD	Date-Time Collected	EPA 350.2-NH3	SW846 8310-PAHS	TKN, T.P. POC,COD						
						Filtered								
						Container	1-L Glas	1-L Amber	1-L Glas					
						Preservative	N/A	N/A	N/A					
	MA3-FB-031505-12	G		N	3/15/2005 15:10		2							
	MA3-TG6-1-031505-1	G		Y	3/15/2005 09:25		4							
	MA3-TG6-2-031505-2	G		Y	3/15/2005 09:35		4							
	MA3-TG6-3-031505-3	G		N	3/15/2005 09:30	1	4	1						
	MA3-TG6-3-031505-3	G		Y	3/15/2005 09:30	1	4	1						

Remarks/Comments

Sampled By

Lab Use Only

Temp of Cooler when Received, C: 1 1.2 | 2 2.2 | 3 | 4 | 5

COC Tape was present on outer package Y N

COC Tape was unbroken on outer package Y N

COC Tape was present on sample Y N

COC Tape was unbroken on sample Y N

Received in good condition Y N

Labels indicate Properly Preserved Y N

Received within Holding Time Y N

Relinquished By	Date / Time	Received By	Date / Time	Relinquished By	Date / Time	Received By	Date / Time
	3/16						3/16/05 0905

7802 935484 4483069-83

COC ID: 031505-07

Chain of Custody Record

WESTON

Client: Kerr McGee

Site Name: Moss American | Contact Name: Tom Gnaan

W. O.: 02687.007.006.0001 | Contact Phone No.: 847-918-4142

Lab: LANCASTER LABS | Lab Contact: C. SWEIGART

TAT | Lab Phone: 717-656-2308 X1527

Lab ID	Sample ID	Matrix	PID	MS/MSD	Date-Time Collected	EPA 350.2-NH3	TKN, TP PO4,COD							
						Filtered								
						Container	1-L Glas	1-L Glas						
						Preservative	N/A	N/A						
	MA3-TG3-1-031505-9	G		N	3/15/2005 16:10	1	1							
	MA3-TG5-1-031505-5	G		N	3/15/2005 11:45	1	1							
	MA3-TG6-1-031505-1	G		N	3/15/2005 09:25	1	1							
	MA3-TG6-2-031505-2	G		N	3/15/2005 09:35	1	1							

Remarks/Comments

Sampled By: [signature]

8082

Lab Use Only

Temp of Cooler when Received, C: 1 1.2 2 2.2 3 4 5

COC Tape was present on outer package: Y N

COC Tape was unbroken on outer package: Y N

COC Tape was present on sample: Y N

COC Tape was unbroken on sample: Y N

Received in good condition: Y N

Labeb indicates Properly Preserved: Y N

Received within Holding Time: Y N

Relinquished By	Date / Time	Received By	Date / Time	Relinquished By	Date / Time	Received By	Date / Time
[signature]	3/16/05 10:00						
						[signature]	3/16/05 0905

Lancaster Laboratories
2425 New Holland Pike • Lancaster, PA 17601

Environmental Sample Administration
Receipt Documentation Log

Client/Project: Weston Sol. Inc (TL) / Kerr McGee
Shipping Container Sealed: (Y) / N

Date of Receipt: 3/16/05
Custody Seal Present: (Y) N

Time of Receipt: 0905
Custody Seal Intact: (Y) / N / NA

Source Code: 50-1
Package: (Chilled) / Not Chilled

Unpacker Emp. No.: MF23

Temperature of Shipping Containers	
#1	**#2**
Thermometer ID: 0429982	Thermometer ID: 0429982
Temp.: 2.2°C	Temp.: 1.3°C
(Temp. Bottle) / Surface Temp.	(Temp. Bottle) / Surface Temp.
(Wet Ice) / Dry Ice / Ice Packs	(Wet Ice) / Dry Ice / Ice Packs
Ice Present? (Y) N Loose / (Bagged)	Ice Present? (Y) N Loose / (Bagged)
#3	**#4**
Thermometer ID: 0429982	Thermometer ID: 0429982
Temp.: 1.2°C	Temp.: 1.5°C
(Temp. Bottle) / Surface Temp.	(Temp. Bottle) / Surface Temp.
(Wet Ice) / Dry Ice / Ice Packs	(Wet Ice) / Dry Ice / Ice Packs
Ice Present? (Y) N Loose / (Bagged)	Ice Present? (Y) N Loose / (Bagged)

Paperwork Discrepancy/Unpacking Problems: ~~Only Received (1) TB~~ Only Received 2 Amber for MA3TG619:25, 2 for MA3TG629:30, 2 for MA3TG-39:30 ~~+ 2 MA3-TG6-3~~ 3/16/05

Sample Administration Internal Chain of Custody			
Name	Date	Time	Reason for Transfer
Nadine Fef...	3/16/05	1030	Unpacking
Anneliese Hutchison	3/16/05	1100	Place in Storage or (Entry)
			Remove from Storage
			Place in Storage or Entry
			Entry

5869

2174.01

Lancaster Laboratories
2425 New Holland Pike • Lancaster, PA 17601

Environmental Sample Administration
Receipt Documentation Log

Client/Project: Weston Sol. Inc (IL) / Ice Force

Date of Receipt: 3/16/05

Time of Receipt: 0905

Source Code: 60-1

Shipping Container Sealed: Y / N

Custody Seal Present: Y / N

Custody Seal Intact: Y / N / NA

Package: Chilled / Not Chilled

Unpacker Emp. No.: MP203

Temperature of Shipping Containers	
#1 5°	#2 6
Thermometer ID: 042982	Thermometer ID: 042982
Temp.: 1.3°C	Temp.: 2.2° C
Temp. Bottle / Surface Temp.	Temp. Bottle / Surface Temp.
Wet Ice / Dry Ice / Ice Packs	Wet Ice / Dry Ice / Ice Packs
Ice Present? Y / N Loose / Bagged	Ice Present? Y / N Loose / Bagged
#3	#4
Thermometer ID:	Thermometer ID:
Temp.:	Temp.:
Temp. Bottle / Surface Temp.	Temp. Bottle / Surface Temp.
Wet Ice / Dry Ice / Ice Packs	Wet Ice / Dry Ice / Ice Packs
Ice Present? Y / N Loose / Bagged	Ice Present? Y / N Loose / Bagged

Paperwork Discrepancy/Unpacking Problems:

Sample Administration Internal Chain of Custody			
Name	Date	Time	Reason for Transfer
Madeline Feaf	3/16/05	1030	Unpacking
Annelise Hutchens	3/16/05	1100	Place in Storage or Entry
			Remove from Storage
			Place in Storage or Entry
			Entry

2174.01

7802 935692 4483992-96

COC ID: 031605-2

Chain of Custody Record

WESTON

Client: Kerr McGee

Site Name: Moss American

W. O.: 02687.007.006.0001

Lab: LANCASTER LABS

TAT:

Contact Name: Tom Green

Contact Phone No.: 847-918-4142

Lab Contact: C. SWEIGART

Lab Phone: 717-656-2300 X1527

Lab ID	Sample ID	Matrix	PID	MS/MSD	Date-Time Collected	SW846 8310-PAHS									
						Filtered									
						Container	1-L Amber								
						Preservative	N/A								
	MA3-MW65-031605-2	G		N	3/16/2005 09:10	2									
	MA3-TG1-1-031605-5	G		N	3/16/2005 11:15	2									
	MA3-TG1-2-031605-6	G		N	3/16/2005 11:20	2									
	MA3-TG1-3-031605-7	G		N	3/16/2005 11:25	2									
	MA3-TG2-1-031605-3	G		N	3/16/2005 09:15	2									

Remarks/Comments

Sampled By

Lab Use Only

Temp of Cooler when Received, C: 1 | 2 | 3 | 4 | 5

COC Tape was present on outer package Y N

COC Tape was unbroken on outer package Y N

COC Tape was present on sample Y N

COC Tape was unbroken on sample Y N

Received in good condition Y N

Labels indicate Properly Preserved Y N

Received within Holding Time Y N

Relinquished By	Date / Time	Received By	Date / Time	Relinquished By	Date / Time	Received By	Date / Time
	03/16/05 1700						
						Denise Black	3/17/05 0900

CAS/390 4-7-05

7802 935692 4483992-96

COC ID: 031605-3

Chain of Custody Record

WESTON

Client: Kerr McGee
Site Name: Moss American
W. O.: 02687.007.006.0001
Lab: LANCASTER LABS
TAT:

Contact Name: Tom Green
Contact Phone No.: 847-918-4142
Lab Contact: C. SWEIGART
Lab Phone: 717-656-2308 X1527

Lab ID	Sample ID	Matrix	PID	MS/MSD	Date-Time Collected	EPA 353.2-NO2	EPA 353.2-NO3	EPA 365.3-ORTHO P, EPA 405.1-BOD	EPA 415.1-TOC	SW846 8021B-BTEX					
						Filtered									
						Container	40 ml Vials	40 ml Vials	500-ml Poly	250 ml Glass	40 ml Vials				
						Preservative	N/A	H2SO4	N/A	N/A	HCl				
	MA3-FB-031605-1	G		N	3/16/2005 07:45					3					
	MA3-FB-031605-13	G		N	3/16/2005 16:00					3					
	MA3-MW27S-031605-8	G		N	3/16/2005 14:45					3					
	MA3-MW28S-031605-4	G		N	3/16/2005 09:20					3					
	MA3-MW28S-031605-4-MSD	G		Y	3/16/2005 09:20					6					
	MA3-MW30S-031605-12	G		N	3/16/2005 15:55					3					
	MA3-MW32S-031605-9	G		N	3/16/2005 14:50					3					
	MA3-MW33S-031605-10	G		N	3/16/2005 14:55					3					
	MA3-MW5S-031605-11	G		N	3/16/2005 15:50					3					
	MA3-MW5S-031605-11-DP	G		N	3/16/2005 15:50					3					
	MA3-MW6S-031605-2	G		N	3/16/2005 09:10					3					
	MA3-TB-031605-1	G		N	3/16/2005 07:25					3					
	MA3-TG1-1-031605-5	G		N	3/16/2005 11:15	1	1	1	1	3					
	MA3-TG1-2-031605-6	G		N	3/16/2005 11:20	1	1	1	1	3					
	MA3-TG1-3-031605-7	G		N	3/16/2005 11:25	1	1	1	1	3					
	MA3-TG2-1-031605-3	G		N	3/16/2005 09:15	1	1	1	1	3					
	MA3-TG2-1-031605-3-DP	G		N	3/16/2005 09:15					3					

Remarks/Comments

Lab Use Only

Temp of Cooler when Received, C: 1 2.1 2 4.4 3 3.1 4 4.5 5 5.2 2.7

COC Tape was present on outer package: (Y) N
COC Tape was unbroken on outer package: (Y) N
COC Tape was present on sample: (Y) N
COC Tape was unbroken on sample: Y N

Received in good condition: (Y) N
Labels Indicate Properly Preserved: (Y) N
Received within Holding Time: (Y) N

Relinquished By	Date / Time	Received By	Date / Time	Relinquished By	Date / Time	Received By	Date / Time
[signature]	03/18/05 1730						
						[signature]	3/17/05 0900

Sampled By: [signature]

7802 935692 4483992-96

COC ID: 031605-4

Chain of Custody Record

WESTON

Client: Kerr McGee
Site Name: Moss American
W. O.: 02887.007.006.0001
Lab: LANCASTER LABS
TAT:

Contact Name: Tom Green
Contact Phone No.: 847-918-4142
Lab Contact: C. SWEIGART
Lab Phone: 717-656-2308 X1527

Lab ID	Sample ID	Matrix	PID	MS/MSD	Date-Time Collected	SW846 8310-PAHS
					Filtered	
					Container	1-L Amber
					Preservative	N/A
	MA3-FB-031605-1	G		N	3/16/2005 07:45	2
	MA3-MW28S-031605-4	G		N	3/16/2005 09:20	2
	MA3-MW28S-031605-4-MSD	G		Y	3/16/2005 09:20	4
	MA3-TG2-1-031605-3-DP	G		N	3/16/2005 09:15	2

Remarks/Comments

Sampled By: [signature]

8812

Lab Use Only

Temp of Cooler when Received, C

1	2	3	4	5

COC Tape was present on outer package Y N
COC Tape was unbroken on outer package Y N
COC Tape was present on sample Y N
COC Tape was unbroken on sample Y N

Received in good condition Y N
Labels indicate Properly Preserved Y N
Received within Holding Time Y N

Relinquished By	Date / Time	Received By	Date / Time	Relinquished By	Date / Time	Received By	Date / Time
[signature]	03/16/05 1740						
						Denise Black	3/17/05 0900

Corr/350 4-7-05

7802 935692 4483 992-96

COC ID: 031605-6

Chain of Custody Record

WESTON

Client: Kerr McGee
Site Name: Moss American
W. O.: 02687.007.006.0001
Lab: LANCASTER LABS
TAT:

Contact Name: Tom Grean
Contact Phone No.: 847-818-4142
Lab Contact: C. SWEIGART
Lab Phone: 717-656-2300 X1527

Lab ID	Sample ID	Matrix	PID	MS/MSD	Date-Time Collected	EPA 350.2-NH3	TKN, TP PO4,COD								
						Filtered									
						Container	1-L Glas	1-L Glas							
						Preservative	N/A	N/A							
	MA3-TG1-1-031605-5	G		N	3/16/2005 11:15	1	1								
	MA3-TG1-2-031605-6	G		N	3/16/2005 11:20	1	1								
	MA3-TG1-3-031605-7	G		N	3/16/2005 11:25	1	1								

Remarks/Comments

Sampled By

Lab Use Only

Temp of Cooler when Received, C: 1 | 2 | 3 | 4 | 5

COC Tape was present on outer package Y N
COC Tape was unbroken on outer package Y N
COC Tape was present on sample Y N
COC Tape was unbroken on sample Y N

Received in good condition Y N
Labels indicate Properly Preserved Y N
Received within Holding Time Y N

Relinquished By	Date / Time	Received By	Date / Time	Relinquished By	Date / Time	Received By	Date / Time
	3/16/05 1200						
						Denise Black	3/17/05 0900

8453/390 4-7-05

7802 935692 4483992-96

COC ID: 031605-7

Chain of Custody Record

WESTON

Client: Kerr McGee
Site Name: Moss American
W. O.: 02687.007.008.0001
Lab: LANCASTER LABS
TAT:

Contact Name: Tom Gman
Contact Phone No.: 847-918-4142
Lab Contact: C. SWEIGART
Lab Phone: 717-656-2308 X1627

Lab ID	Sample ID	Matrix	PID	MS/MSD	Date-Time Collected	EPA 350.2-NH3	SW846 8310-PAHS	TKN, TP PO4,COD							
						Filtered									
						Container	1-L Glas	1-L Amber	1-L Glas						
						Preservative	N/A	N/A	N/A						
	MA3-MW58-031605-11	G		N	3/16/2005 15:50		2								
	MA3-MW58-031605-11-DP	G		N	3/16/2005 15:50		2								
	MA3-TG2-1-031605-3	G		N	3/16/2005 09:15	1		1							

Remarks/Comments

Lab Use Only

Temp of Cooler when Received, C: 1 | 2 | 3 | 4 | 5

COC Tape was present on outer package Y N
COC Tape was unbroken on outer package Y N
COC Tape was present on sample Y N
COC Tape was unbroken on sample Y N

Received in good condition Y N
Labels indicate Properly Preserved Y N
Received within Holding Time Y N

Relinquished By	Date / Time	Received By	Date / Time	Relinquished By	Date / Time	Received By	Date / Time
	3/16/05 1800						
						Denise Black	3/17/05 0900

Sampled By

GB4

GB/350 4-7-05

Lancaster Laboratories
2425 New Holland Pike • Lancaster, PA 17601

Environmental Sample Administration
Receipt Documentation Log

Client/Project: Ferrmcgee (mass America) **Shipping Container Sealed:** (Y) / N

Date of Receipt: 3/17/05 **Custody Seal Present:** (Y) / N

Time of Receipt: 0900 **Custody Seal Intact:** (Y) / N / NA

Source Code: 50-1 **Package:** (Chilled) / Not Chilled

Unpacker Emp. No.: 1075

Temperature of Shipping Containers	
#1 S	#2 6
Thermometer ID: 8917	Thermometer ID: 8917
Temp.: 5.2	Temp.: 2.7°C
(Temp. Bottle) / Surface Temp.	(Temp. Bottle) / Surface Temp.
(Wet Ice) / Dry Ice / Ice Packs	(Wet Ice) / Dry Ice / Ice Packs
Ice Present? (Y) / N Loose / (Bagged)	Ice Present? (Y) / N Loose / (Bagged)
#3	#4
Thermometer ID:	Thermometer ID:
Temp.:	Temp.:
Temp. Bottle / Surface Temp.	Temp. Bottle / Surface Temp.
Wet Ice / Dry Ice / Ice Packs	Wet Ice / Dry Ice / Ice Packs
Ice Present? Y / N Loose / Bagged	Ice Present? Y / N Loose / Bagged

Paperwork Discrepancy/Unpacking Problems:

Sample Administration Internal Chain of Custody			
Name	Date	Time	Reason for Transfer
[signature]	3/17/05	1120	Unpacking
[signature]	3/17/05	1140	Place in Storage or (Entry)
			Remove from Storage
			Place in Storage or Entry
			Entry

0015

Lancaster Laboratories
2425 New Holland Pike • Lancaster, PA 17601

Environmental Sample Administration
Receipt Documentation Log

Client/Project: Kerr McGee Crossroads **Shipping Container Sealed:** (Y) / N

Date of Receipt: 3/17/05 **Custody Seal Present:** (Y) / N

Time of Receipt: 0900 **Custody Seal Intact:** (Y) / N / NA

Source Code: So-1 **Package:** (Chilled) / Not Chilled

Unpacker Emp. No.: 1075

Temperature of Shipping Containers	
(#1) trials	(#2) trials
Thermometer ID: 8917	Thermometer ID: 8917
Temp.: 2.1°C	Temp.: 4.4°C
(Temp. Bottle) / Surface Temp.	(Temp. Bottle) / Surface Temp.
(Wet Ice) / Dry Ice / Ice Packs	(Wet Ice) / Dry Ice / Ice Packs
Ice Present? (Y) / N Loose (Bagged)	Ice Present? (Y) / N Loose (Bagged)
(#3)	(#4)
Thermometer ID: 8917	Thermometer ID: 8917
Temp.: 3.1°C	Temp.: 4.5°C
(Temp. Bottle) / Surface Temp.	(Temp. Bottle) / Surface Temp.
(Wet Ice) / Dry Ice / Ice Packs	(Wet Ice) / Dry Ice / Ice Packs
Ice Present? (Y) / N Loose (Bagged)	Ice Present? (Y) / N Loose (Bagged)

Paperwork Discrepancy/Unpacking Problems: missing 1 Amber MA3-MW305-031605-12
+ 1 extra Amber MA3-MW305-031605-1
label for MA3-TG2-1-031605-3 is TG-2-1-031605-3DP

3/17/05 1075 1125

Sample Administration Internal Chain of Custody			
Name	Date	Time	Reason for Transfer
[signature]	3/17/05	1120	Unpacking
[signature]	3/17/05	1140	Place in Storage or (Entry)
			Remove from Storage
			Place in Storage or Entry
			Entry

0816

Case Narrative
Client: Kerr-McGee Corporation
SDG: KMA64

LANCASTER LABORATORIES
PAH by HPLC

SAMPLE NUMBER(S) :

LL #'s	Sample Code	Matrix Water	Comments
4483069	MA3FB	X	
4483070	MW29S	X	
4483071	MW29D	X	
4483072	MW35S	X	
4483073	MW36S	X	
4483074	MW37S	X	
4483075	MW09S	X	Unspiked
4483076	MW09SMS	X	Matrix Spike
4483077	MW09SMSD	X	Matrix Spike Dup
4483079	TG3-1	X	
4483080	TG5-1	X	
4483081	TG6-1	X	
4483082	TG6-2	X	
4483083	TG6-3	X	
4483992	TG1-1	X	20X Dilution
4483992DL	TG1-1DL	X	400X Dilution
4483993	TG1-2	X	
4483994	TG1-3	X	
4483995	TG2-1	X	
4483996	TG21D	X	

LABORATORY SUBMITTED QC:

SBLKWB076	SBLKWB0762	X	Method Blank
SBLKWB077	SBLKWB0772	X	Method Blank
4484129	MW28S	X	Unspiked
4484130	MW28SMS	X	Matrix Spike
4484131	MW28SMSD	X	Matrix Spike Dup
076WBLCS	076WBLCS2	X	Lab Control Sample
077WBLCS	077WBLCS2	X	Lab Control Sample

8867

Case Narrative (continued)
SDG#: KMA64

SAMPLE PREPARATION:

Due to the nature of the sample matrices, various samples were extracted at reduced aliquots. See the organic extraction batchlogs.

No other problems were encountered during the extraction of these samples.

ANALYSIS:

The method used for analysis was SW-846 8310.

TG1-1 was analyzed at an initial dilution due to the nature of the sample matrix.

No problems were encountered during the analysis of these samples.

QUALITY CONTROL AND NONCONFORMANCE SUMMARY:

In MW36S and MW09SMSD, the surrogate recovery of triphenylene was outside QC limits.

All other QC was within specifications.

DATA INTERPRETATION:

Only non-conformances for client requested compounds are addressed in this case narrative.

Due to incorrect integrations during the initial processing, manual integrations were performed for the following compounds.

Sample Code	Compound
TG1-1	dibenz(a,h)anthracene, triphenylene
TG1-1DL	acenaphthylene, dibenz(a,h)anthracene, benzo(g,h,i)perylene, indeno(1,2,3-cd)pyrene, triphenylene

0868

Case Narrative (continued)
SDG#: KMA64

Due to the presence of an interferent near the retention time of dibenz(a,h)anthracene, the reporting limit for this compound was not met in TG1-1. The reporting limit was adjusted accordingly.

No further interpretation is necessary for the data submitted.

Case Narrative Reviewed and Approved by:

Christi M. Ratchyk for CJN Date: 4-5-05
Charles J. Neslund
Group Leader, GC/MS Semivolatiles

8869

Lancaster Laboratories
Data Deliverables

Sample Reference List for SDG Number KMA64
with a Data Package Type of I

07802 - Kerr-McGee Corporation
Moss American

Lab Sample Number	Lab Sample Code	Client Sample Description
4483069	MA3FB	MA3-FB-031505-12 Groundwater 031503-03,06 02687.007.006.0001
4483070	MW29S	MA3-MW29S-031505-6 Groundwater 031503-01,03 02687.007.006.0001
4483071	MW29D	MA3-MW29S-031505-6-DP Groundwater 031503-01,03 02687.007.006.0001
4483072	MW35S	MA3-MW35S-031505-10 Groundwater 031503-01,03 02687.007.006.0001
4483073	MW36S	MA3-MW36S-031505-7 Groundwater 031503-01,03 02687.007.006.0001
4483074	MW37S	MA3-MW37S-031505-8 Groundwater 031503-01,03 02687.007.006.0001
4483075	MW09S	MA3-MW9S-031505-4 Groundwater 031503-03,05 02687.007.006.0001
4483076	MW09S	MA3-MW9S-031505-4-MS Groundwater 031503-03,05 02687.007.006.0001
4483077	MW09S	MA3-MW9S-031505-4-MSD Groundwater 031503-03,05 02687.007.006.0001
4483078	MA-TB	MA3-TB-031505-11 Groundwater 031503-03 02687.007.006.0001
4483079	TG3-1	MA3-TG3-1-031505-9 Groundwater 031503-03,04,05,07 02687.007.006.0001
4483080	TG5-1	MA3-TG5-1-031505-5 Groundwater 031503-03,04,05,07 02687.007.006.0001
4483081	TG6-1	MA3-TG6-1-031505-1 Groundwater 031503-03,04,06,07 02687.007.006.0001
4483082	TG6-2	MA3-TG6-2-031505-2 Groundwater 031503-03,04,06,07 02687.007.006.0001
4483083	TG6-3	MA3-TG6-3-031505-3 Groundwater 031503-03,04,06 02687.007.006.0001
4483992	TG1-1	MA3-TG1-1-031605-5 Groundwater 031605-2,3,6 02687.007.006.0001
4483993	TG1-2	MA3-TG1-2-031605-6 Groundwater 031605-2,3,6 02687.007.006.0001
4483994	TG1-3	MA3-TG1-3-031605-7 Groundwater 031605-2,3,6 02687.007.006.0001
4483995	TG2-1	MA3-TG2-1-031605-3 Groundwater 031605-2,3,7 02687.007.006.0001
4483996	TG21D	MA3-TG2-1-031605-3-DP Groundwater 031605-3,4 02687.007.006.0001

Lancaster Laboratories

REVISED

ANALYTICAL RESULTS

Prepared for:

Kerr-McGee Corporation
PO Box 3048
Livonia MI 48150

734-367-7900

Prepared by:

Lancaster Laboratories
2425 New Holland Pike
Lancaster, PA 17605-2425

SAMPLE GROUP

The sample group for this submittal is 935484. Samples arrived at the laboratory on Wednesday, March 16, 2005. The PO# for this group is ZAKW1KEOK0A90089.

Client Description		Lancaster Labs Number
MA3-FB-031505-12	Groundwater	4483069
MA3-MW29S-031505-6	Groundwater	4483070
MA3-MW29S-031505-6-DP	Groundwater	4483071
MA3-MW35S-031505-10	Groundwater	4483072
MA3-MW36S-031505-7	Groundwater	4483073
MA3-MW37S-031505-8	Groundwater	4483074
MA3-MW9S-031505-4	Groundwater	4483075
MA3-MW9S-031505-4-MS	Groundwater	4483076
MA3-MW9S-031505-4-MSD	Groundwater	4483077
MA3-TB-031505-11	Groundwater	4483078
MA3-TG3-1-031505-9	Groundwater	4483079
MA3-TG5-1-031505-5	Groundwater	4483080
MA3-TG6-1-031505-1	Groundwater	4483081
MA3-TG6-2-031505-2	Groundwater	4483082
MA3-TG6-3-031505-3	Groundwater	4483083

METHODOLOGY

The specific methodologies used in obtaining the enclosed analytical results are indicated on the laboratory chronicles.

1 COPY TO	Weston Solutions, Inc.	Attn: Tom Graan
1 COPY TO	Kerr-McGee Corporation	Attn: Roy Widmann
1 COPY TO	Data Package Group	

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Lancaster Laboratories

REVISED

Questions? Contact your Client Services Representative
Carrie A Fleming at (717) 656-2300.

Respectfully Submitted,

Dana M Kauffman

Dana M. Kauffman
Group Leader

6823

MEMBER ACIL
Lancaster Laboratories, Inc.
2425 New Holland Pike
PO Box 12425
Lancaster, PA 17605-2425

Analysis Report

Lancaster Laboratories

REVISED

Lancaster Laboratories Sample No. WW 4483069

MA3-FB-031505-12 Groundwater
031503-03,06 02687.007.006.0001
Moss American
Collected:03/15/2005 15:10 by YH

Account Number: 07802

Submitted: 03/16/2005 09:05
Reported: 04/14/2005 at 12:46
Discard: 06/14/2005

Kerr-McGee Corporation
PO Box 3048
Livonia MI 48150

MA3FB SDG#: KMA64-01

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
08213	BTEX (8021)					
00776	Benzene	71-43-2	N.D.	0.2	ug/l	1
00777	Toluene	108-88-3	N.D.	0.2	ug/l	1
00778	Ethylbenzene	100-41-4	N.D.	0.2	ug/l	1
00779	Total Xylenes	1330-20-7	N.D.	0.6	ug/l	1
00774	PAH's in Water by HPLC					
00775	Naphthalene	91-20-3	N.D.	1.6	ug/l	1
00782	Acenaphthylene	208-96-8	N.D.	1.6	ug/l	1
00783	Acenaphthene	83-32-9	N.D.	1.6	ug/l	1
00784	Fluorene	86-73-7	N.D.	0.18	ug/l	1
00785	Phenanthrene	85-01-8	N.D.	0.079	ug/l	1
00789	Anthracene	120-12-7	N.D.	0.040	ug/l	1
00807	Fluoranthene	206-44-0	N.D.	0.040	ug/l	1
00811	Pyrene	129-00-0	N.D.	0.18	ug/l	1
00812	Benzo(a)anthracene	56-55-3	N.D.	0.020	ug/l	1
00818	Benzo(b)fluoranthene	205-99-2	N.D.	0.040	ug/l	1
00823	Benzo(a)pyrene	50-32-8	N.D.	0.020	ug/l	1
00895	Dibenz(a,h)anthracene	53-70-3	N.D.	0.040	ug/l	1
00898	Indeno(1,2,3-cd)pyrene	193-39-5	N.D.	0.079	ug/l	1
00907	Benzo(g,h,i)perylene	191-24-2	N.D.	0.099	ug/l	1
07409	Chrysene	218-01-9	N.D.	0.079	ug/l	1
07410	Benzo(k)fluoranthene	207-08-9	N.D.	0.020	ug/l	1

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
08213	BTEX (8021)	SW-846 8021B	1	03/17/2005 06:56	Linda C Pape	1
00774	PAH's in Water by HPLC	SW-846 8310	1	03/19/2005 18:25	Mark A Clark 0824	1
01146	GC VOA Water Prep	SW-846 5030B	1	03/17/2005 06:56	Linda C Pape	1
03337	PAH Water Extraction	SW-846 3510C	1	03/18/2005 07:30	Joseph S Feister	1

Lancaster Laboratories

Lancaster Laboratories Sample No. WW 4483069

MA3-FB-031505-12 Groundwater
031503-03,06 02687.007.006.0001
Moss American
Collected:03/15/2005 15:10 by YH

Account Number: 07802

Submitted: 03/16/2005 09:05
Reported: 04/14/2005 at 12:46
Discard: 06/14/2005

Kerr-McGee Corporation
PO Box 3048
Livonia MI 48150

MA3FB SDG#: KMA64-01

6825

MEMBER ACIL
Lancaster Laboratories, Inc.
2425 New Holland Pike
PO Box 12425
Lancaster, PA 17605-2425
717-656-2300 Fax: 717-656-2681

Lancaster Laboratories

REVISED

Lancaster Laboratories Sample No. WW 4483070

MA3-MW29S-031505-6 Groundwater
031503-01,03 02687.007.006.0001
Moss American
Collected:03/15/2005 14:40 by YH

Account Number: 07802

Submitted: 03/16/2005 09:05
Reported: 04/14/2005 at 12:46
Discard: 06/14/2005

Kerr-McGee Corporation
PO Box 3048
Livonia MI 48150

MW29S SDG#: KMA64-02

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
08213	BTEX (8021)					
00776	Benzene	71-43-2	N.D.	0.2	ug/l	1
00777	Toluene	108-88-3	N.D.	0.2	ug/l	1
00778	Ethylbenzene	100-41-4	N.D.	0.2	ug/l	1
00779	Total Xylenes	1330-20-7	N.D.	0.6	ug/l	1
00774	PAH's in Water by HPLC					
00775	Naphthalene	91-20-3	N.D.	1.7	ug/l	1
00782	Acenaphthylene	208-96-8	N.D.	1.7	ug/l	1
00783	Acenaphthene	83-32-9	N.D.	1.7	ug/l	1
00784	Fluorene	86-73-7	N.D.	0.19	ug/l	1
00785	Phenanthrene	85-01-8	N.D.	0.084	ug/l	1
00789	Anthracene	120-12-7	N.D.	0.042	ug/l	1
00807	Fluoranthene	206-44-0	N.D.	0.042	ug/l	1
00811	Pyrene	129-00-0	N.D.	0.19	ug/l	1
00812	Benzo(a)anthracene	56-55-3	N.D.	0.021	ug/l	1
00818	Benzo(b)fluoranthene	205-99-2	N.D.	0.042	ug/l	1
00823	Benzo(a)pyrene	50-32-8	N.D.	0.021	ug/l	1
00895	Dibenz(a,h)anthracene	53-70-3	N.D.	0.042	ug/l	1
00898	Indeno(1,2,3-cd)pyrene	193-39-5	N.D.	0.084	ug/l	1
00907	Benzo(g,h,i)perylene	191-24-2	N.D.	0.10	ug/l	1
07409	Chrysene	218-01-9	N.D.	0.084	ug/l	1
07410	Benzo(k)fluoranthene	207-08-9	N.D.	0.021	ug/l	1

Due to the nature of the sample matrix, a reduced aliquot was used for analysis. The reporting limits were raised accordingly.

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
08213	BTEX (8021)	SW-846 8021B	1	03/17/2005 07:29	Linda C Pape 0826	1

MEMBER ACIL
Lancaster Laboratories, Inc.
2425 New Holland Pike
PO Box 12425
Lancaster, PA 17605-2425
717-656-2300 Fax: 717-656-2681

Lancaster Laboratories

Lancaster Laboratories Sample No. WW 4483070

MA3-MW29S-031505-6 Groundwater
031503-01,03 02687.007.006.0001
Moss American
Collected:03/15/2005 14:40 by YH

Account Number: 07802

Submitted: 03/16/2005 09:05
Reported: 04/14/2005 at 12:46
Discard: 06/14/2005

Kerr-McGee Corporation
PO Box 3048
Livonia MI 48150

MW29S SDG#: KMA64-02

00774	PAH's in Water by HPLC	SW-846 8310	1	03/19/2005 19:04	Mark A Clark	1
01146	GC VOA Water Prep	SW-846 5030B	1	03/17/2005 07:29	Linda C Pape	1
03337	PAH Water Extraction	SW-846 3510C	1	03/18/2005 07:30	Joseph S Feister	1

6827

MEMBER ACIL
Lancaster Laboratories, Inc.
2425 New Holland Pike
PO Box 12425
Lancaster, PA 17605-2425
717-656-2300 Fax: 717-656-2681

Lancaster Laboratories

Lancaster Laboratories Sample No. WW 4483071

MA3-MW29S-031505-6-DP Groundwater
031503-01,03 02687.007.006.0001
Moss American
Collected:03/15/2005 14:40 by YH

Account Number: 07802

Submitted: 03/16/2005 09:05
Reported: 04/14/2005 at 12:46
Discard: 06/14/2005

Kerr-McGee Corporation
PO Box 3048
Livonia MI 48150

MW29D SDG#: KMA64-03FD

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
08213	BTEX (8021)					
00776	Benzene	71-43-2	N.D.	0.2	ug/l	1
00777	Toluene	108-88-3	N.D.	0.2	ug/l	1
00778	Ethylbenzene	100-41-4	N.D.	0.2	ug/l	1
00779	Total Xylenes	1330-20-7	N.D.	0.6	ug/l	1
00774	PAH's in Water by HPLC					
00775	Naphthalene	91-20-3	N.D.	1.6	ug/l	1
00782	Acenaphthylene	208-96-8	N.D.	1.6	ug/l	1
00783	Acenaphthene	83-32-9	N.D.	1.6	ug/l	1
00784	Fluorene	86-73-7	N.D.	0.18	ug/l	1
00785	Phenanthrene	85-01-8	N.D.	0.081	ug/l	1
00789	Anthracene	120-12-7	N.D.	0.041	ug/l	1
00807	Fluoranthene	206-44-0	N.D.	0.041	ug/l	1
00811	Pyrene	129-00-0	N.D.	0.18	ug/l	1
00812	Benzo(a)anthracene	56-55-3	N.D.	0.020	ug/l	1
00818	Benzo(b)fluoranthene	205-99-2	N.D.	0.041	ug/l	1
00823	Benzo(a)pyrene	50-32-8	N.D.	0.020	ug/l	1
00895	Dibenz(a,h)anthracene	53-70-3	N.D.	0.041	ug/l	1
00898	Indeno(1,2,3-cd)pyrene	193-39-5	N.D.	0.081	ug/l	1
00907	Benzo(g,h,i)perylene	191-24-2	N.D.	0.10	ug/l	1
07409	Chrysene	218-01-9	N.D.	0.081	ug/l	1
07410	Benzo(k)fluoranthene	207-08-9	N.D.	0.020	ug/l	1

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
08213	BTEX (8021)	SW-846 8021B	1	03/17/2005 08:02	Linda C Pape	1
00774	PAH's in Water by HPLC	SW-846 8310	1	03/19/2005 19:42	Mark A Clark	1
01146	GC VOA Water Prep	SW-846 5030B	1	03/17/2005 08:02	Linda C Pape	1
03337	PAH Water Extraction	SW-846 3510C	1	03/18/2005 07:30	Joseph S Feister	1

Lancaster Laboratories

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Lancaster Laboratories Sample No. WW 4483071

MA3-MW29S-031505-6-DP Groundwater
031503-01,03 02687.007.006.0001
Moss American
Collected:03/15/2005 14:40 by YH

Account Number: 07802

Submitted: 03/16/2005 09:05
Reported: 04/14/2005 at 12:46
Discard: 06/14/2005

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MW29D SDG#: KMA64-03FD

8629

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Lancaster Laboratories Sample No. WW 4483072

MA3-MW35S-031505-10 Groundwater
031503-01,03 02687.007.006.0001
Moss American
Collected:03/15/2005 16:05 by YH

Account Number: 07802

Submitted: 03/16/2005 09:05
Reported: 04/14/2005 at 12:46
Discard: 06/14/2005

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MW35S SDG#: KMA64-04

CAT No.	Analysis Name	CAS Number	As Received Result		As Received Method Detection Limit	Units	Dilution Factor
08213	BTEX (8021)						
00776	Benzene	71-43-2	N.D.		0.2	ug/l	1
00777	Toluene	108-88-3	N.D.		0.2	ug/l	1
00778	Ethylbenzene	100-41-4	N.D.		0.2	ug/l	1
00779	Total Xylenes	1330-20-7	N.D.		0.6	ug/l	1
00774	PAH's in Water by HPLC						
00775	Naphthalene	91-20-3	N.D.		1.6	ug/l	1
00782	Acenaphthylene	208-96-8	N.D.		1.6	ug/l	1
00783	Acenaphthene	83-32-9	N.D.		1.6	ug/l	1
00784	Fluorene	86-73-7	N.D.		0.18	ug/l	1
00785	Phenanthrene	85-01-8	N.D.		0.081	ug/l	1
00789	Anthracene	120-12-7	N.D.		0.040	ug/l	1
00807	Fluoranthene	206-44-0	0.55		0.040	ug/l	1
00811	Pyrene	129-00-0	0.35	J	0.18	ug/l	1
00812	Benzo(a)anthracene	56-55-3	0.031	J	0.020	ug/l	1
00818	Benzo(b)fluoranthene	205-99-2	N.D.		0.040	ug/l	1
00823	Benzo(a)pyrene	50-32-8	N.D.		0.020	ug/l	1
00895	Dibenz(a,h)anthracene	53-70-3	N.D.		0.040	ug/l	1
00898	Indeno(1,2,3-cd)pyrene	193-39-5	N.D.		0.081	ug/l	1
00907	Benzo(g,h,i)perylene	191-24-2	N.D.		0.10	ug/l	1
07409	Chrysene	218-01-9	N.D.		0.081	ug/l	1
07410	Benzo(k)fluoranthene	207-08-9	N.D.		0.020	ug/l	1

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
08213	BTEX (8021)	SW-846 8021B	1	03/17/2005 08:35	Linda C Pape	1
00774	PAH's in Water by HPLC	SW-846 8310	1	03/19/2005 20:21	Mark A Clark	1
01146	GC VOA Water Prep	SW-846 5030B	1	03/17/2005 08:35	Linda C Pape	1
03337	PAH Water Extraction	SW-846 3510C	1	03/18/2005 07:30	Joseph S Feister	1

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Lancaster Laboratories Sample No. WW 4483072

MA3-MW35S-031505-10 Groundwater
031503-01,03 02687.007.006.0001
Moss American
Collected:03/15/2005 16:05 by YH

Account Number: 07802

Submitted: 03/16/2005 09:05
Reported: 04/14/2005 at 12:46
Discard: 06/14/2005

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MW35S SDG#: KMA64-04

8831

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Lancaster Laboratories Sample No. WW 4483073

MA3-MW36S-031505-7 Groundwater
031503-01,03 02687.007.006.0001
Moss American
Collected:03/15/2005 14:55 by YH

Account Number: 07802

Submitted: 03/16/2005 09:05
Reported: 04/14/2005 at 12:46
Discard: 06/14/2005

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MW36S SDG#: KMA64-05

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
08213	BTEX (8021)					
00776	Benzene	71-43-2	N.D.	0.2	ug/l	1
00777	Toluene	108-88-3	N.D.	0.2	ug/l	1
00778	Ethylbenzene	100-41-4	N.D.	0.2	ug/l	1
00779	Total Xylenes	1330-20-7	N.D.	0.6	ug/l	1
00774	PAH's in Water by HPLC					
00775	Naphthalene	91-20-3	N.D.	1.6	ug/l	1
00782	Acenaphthylene	208-96-8	N.D.	1.6	ug/l	1
00783	Acenaphthene	83-32-9	N.D.	1.6	ug/l	1
00784	Fluorene	86-73-7	N.D.	0.18	ug/l	1
00785	Phenanthrene	85-01-8	N.D.	0.081	ug/l	1
00789	Anthracene	120-12-7	N.D.	0.040	ug/l	1
00807	Fluoranthene	206-44-0	N.D.	0.040	ug/l	1
00811	Pyrene	129-00-0	N.D.	0.18	ug/l	1
00812	Benzo(a)anthracene	56-55-3	N.D.	0.020	ug/l	1
00818	Benzo(b)fluoranthene	205-99-2	N.D.	0.040	ug/l	1
00823	Benzo(a)pyrene	50-32-8	N.D.	0.020	ug/l	1
00895	Dibenz(a,h)anthracene	53-70-3	N.D.	0.040	ug/l	1
00898	Indeno(1,2,3-cd)pyrene	193-39-5	N.D.	0.081	ug/l	1
00907	Benzo(g,h,i)perylene	191-24-2	N.D.	0.10	ug/l	1
07409	Chrysene	218-01-9	N.D.	0.081	ug/l	1
07410	Benzo(k)fluoranthene	207-08-9	N.D.	0.020	ug/l	1

The surrogate data is outside the QC limits due to unresolvable matrix problems evident in the sample chromatogram.

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
08213	BTEX (8021)	SW-846 8021B	1	03/17/2005 09:07	Linda C Pape 0032	1

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Lancaster Laboratories Sample No. WW 4483073

MA3-MW36S-031505-7 Groundwater
031503-01,03 02687.007.006.0001
Moss American
Collected:03/15/2005 14:55 by YH

Account Number: 07802

Submitted: 03/16/2005 09:05
Reported: 04/14/2005 at 12:46
Discard: 06/14/2005

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MW36S SDG#: KMA64-05

00774	PAH's in Water by HPLC	SW-846 8310	1	03/19/2005 20:59	Mark A Clark	1
01146	GC VOA Water Prep	SW-846 5030B	1	03/17/2005 09:07	Linda C Pape	1
03337	PAH Water Extraction	SW-846 3510C	1	03/18/2005 07:30	Joseph S Feister	1

0033

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Lancaster Laboratories Sample No. WW 4483074

MA3-MW37S-031505-8 Groundwater
031503-01,03 02687.007.006.0001
Moss American
Collected:03/15/2005 14:45 by YH

Account Number: 07802

Submitted: 03/16/2005 09:05
Reported: 04/14/2005 at 12:46
Discard: 06/14/2005

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MW37S SDG#: KMA64-06

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
08213	BTEX (8021)					
00776	Benzene	71-43-2	N.D.	0.2	ug/l	1
00777	Toluene	108-88-3	N.D.	0.2	ug/l	1
00778	Ethylbenzene	100-41-4	N.D.	0.2	ug/l	1
00779	Total Xylenes	1330-20-7	N.D.	0.6	ug/l	1
00774	PAH's in Water by HPLC					
00775	Naphthalene	91-20-3	N.D.	1.6	ug/l	1
00782	Acenaphthylene	208-96-8	N.D.	1.6	ug/l	1
00783	Acenaphthene	83-32-9	N.D.	1.6	ug/l	1
00784	Fluorene	86-73-7	N.D.	0.18	ug/l	1
00785	Phenanthrene	85-01-8	N.D.	0.080	ug/l	1
00789	Anthracene	120-12-7	N.D.	0.040	ug/l	1
00807	Fluoranthene	206-44-0	N.D.	0.040	ug/l	1
00811	Pyrene	129-00-0	N.D.	0.18	ug/l	1
00812	Benzo(a)anthracene	56-55-3	N.D.	0.020	ug/l	1
00818	Benzo(b)fluoranthene	205-99-2	N.D.	0.040	ug/l	1
00823	Benzo(a)pyrene	50-32-8	N.D.	0.020	ug/l	1
00895	Dibenz(a,h)anthracene	53-70-3	N.D.	0.040	ug/l	1
00898	Indeno(1,2,3-cd)pyrene	193-39-5	N.D.	0.080	ug/l	1
00907	Benzo(g,h,i)perylene	191-24-2	N.D.	0.099	ug/l	1
07409	Chrysene	218-01-9	N.D.	0.080	ug/l	1
07410	Benzo(k)fluoranthene	207-08-9	N.D.	0.020	ug/l	1

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
08213	BTEX (8021)	SW-846 8021B	1	03/17/2005 12:25	Linda C Pape	1
00774	PAH's in Water by HPLC	SW-846 8310	1	03/19/2005 22:17	Mark A Clark	1
01146	GC VOA Water Prep	SW-846 5030B	1	03/17/2005 12:25	Linda C Pape	1
03337	PAH Water Extraction	SW-846 3510C	1	03/18/2005 07:30	Joseph S Feister	1

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Lancaster Laboratories Sample No. WW 4483074

MA3-MW37S-031505-8 Groundwater
031503-01,03 02687.007.006.0001
Moss American
Collected:03/15/2005 14:45 by YH

Account Number: 07802

Submitted: 03/16/2005 09:05
Reported: 04/14/2005 at 12:46
Discard: 06/14/2005

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MW37S SDG#: KMA64-06

8835

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Analysis Report

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Lancaster Laboratories Sample No. WW 4483075

MA3-MW9S-031505-4 Groundwater
031503-03,05 02687.007.006.0001
Moss American
Collected:03/15/2005 11:50 by YH

Account Number: 07802

Submitted: 03/16/2005 09:05
Reported: 04/14/2005 at 12:46
Discard: 06/14/2005

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MW09S SDG#: KMA64-07BKG

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
08213	BTEX (8021)					
00776	Benzene	71-43-2	N.D.	0.2	ug/l	1
00777	Toluene	108-88-3	N.D.	0.2	ug/l	1
00778	Ethylbenzene	100-41-4	N.D.	0.2	ug/l	1
00779	Total Xylenes	1330-20-7	N.D.	0.6	ug/l	1
00774	PAH's in Water by HPLC					
00775	Naphthalene	91-20-3	N.D.	1.6	ug/l	1
00782	Acenaphthylene	208-96-8	N.D.	1.6	ug/l	1
00783	Acenaphthene	83-32-9	N.D.	1.6	ug/l	1
00784	Fluorene	86-73-7	N.D.	0.18	ug/l	1
00785	Phenanthrene	85-01-8	N.D.	0.080	ug/l	1
00789	Anthracene	120-12-7	N.D.	0.040	ug/l	1
00807	Fluoranthene	206-44-0	N.D.	0.040	ug/l	1
00811	Pyrene	129-00-0	N.D.	0.18	ug/l	1
00812	Benzo(a)anthracene	56-55-3	N.D.	0.020	ug/l	1
00818	Benzo(b)fluoranthene	205-99-2	N.D.	0.040	ug/l	1
00823	Benzo(a)pyrene	50-32-8	N.D.	0.020	ug/l	1
00895	Dibenz(a,h)anthracene	53-70-3	N.D.	0.040	ug/l	1
00898	Indeno(1,2,3-cd)pyrene	193-39-5	N.D.	0.080	ug/l	1
00907	Benzo(g,h,i)perylene	191-24-2	N.D.	0.10	ug/l	1
07409	Chrysene	218-01-9	N.D.	0.080	ug/l	1
07410	Benzo(k)fluoranthene	207-08-9	N.D.	0.020	ug/l	1

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
08213	BTEX (8021)	SW-846 8021B	1	03/17/2005 09:40	Linda C Pape	1
00774	PAH's in Water by HPLC	SW-846 8310	1	03/19/2005 16:29	Mark A Clark	1
01146	GC VOA Water Prep	SW-846 5030B	1	03/17/2005 09:40	Linda C Pape	1
03337	PAH Water Extraction	SW-846 3510C	1	03/18/2005 07:30	Joseph S Feister	1

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Lancaster Laboratories Sample No. WW 4483075

MA3-MW9S-031505-4 Groundwater
031503-03,05 02687.007.006.0001
Moss American
Collected:03/15/2005 11:50 by YH

Account Number: 07802

Submitted: 03/16/2005 09:05
Reported: 04/14/2005 at 12:46
Discard: 06/14/2005

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MW09S SDG#: KMA64-07BKG

8637

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Lancaster Laboratories Sample No. WW 4483076

MA3-MW9S-031505-4-MS Groundwater
031503-03,05 02687.007.006.0001
Moss American
Collected:03/15/2005 11:50 by YH

Account Number: 07802

Submitted: 03/16/2005 09:05
Reported: 04/14/2005 at 12:46
Discard: 06/14/2005

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MW09S SDG#: KMA64-07MS

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
08213	BTEX (8021)					
00776	Benzene	71-43-2	21.	0.2	ug/l	1
00777	Toluene	108-88-3	21.	0.2	ug/l	1
00778	Ethylbenzene	100-41-4	21.	0.2	ug/l	1
00779	Total Xylenes	1330-20-7	63.	0.6	ug/l	1
00774	PAH's in Water by HPLC					
00775	Naphthalene	91-20-3	170.	1.6	ug/l	1
00782	Acenaphthylene	208-96-8	180.	1.6	ug/l	1
00783	Acenaphthene	83-32-9	180.	1.6	ug/l	1
00784	Fluorene	86-73-7	19.	0.18	ug/l	1
00785	Phenanthrene	85-01-8	5.7	0.080	ug/l	1
00789	Anthracene	120-12-7	2.8	0.040	ug/l	1
00807	Fluoranthene	206-44-0	2.8	0.040	ug/l	1
00811	Pyrene	129-00-0	19.	0.18	ug/l	1
00812	Benzo(a)anthracene	56-55-3	1.4	0.020	ug/l	1
00818	Benzo(b)fluoranthene	205-99-2	1.2	0.040	ug/l	1
00823	Benzo(a)pyrene	50-32-8	1.5	0.020	ug/l	1
00895	Dibenz(a,h)anthracene	53-70-3	2.7	0.040	ug/l	1
00898	Indeno(1,2,3-cd)pyrene	193-39-5	5.8	0.080	ug/l	1
00907	Benzo(g,h,i)perylene	191-24-2	9.9	0.10	ug/l	1
07409	Chrysene	218-01-9	5.6	0.080	ug/l	1
07410	Benzo(k)fluoranthene	207-08-9	1.2	0.020	ug/l	1

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
08213	BTEX (8021)	SW-846 8021B	1	03/17/2005 10:13	Linda C Pape	1
00774	PAH's in Water by HPLC	SW-846 8310	1	03/19/2005 17:08	Mark A Clark	1
01146	GC VOA Water Prep	SW-846 5030B	1	03/17/2005 10:13	Linda C Pape	1
03337	PAH Water Extraction	SW-846 3510C	1	03/18/2005 07:30	Joseph S Feister	1

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Lancaster Laboratories Sample No. WW 4483076

MA3-MW9S-031505-4-MS Groundwater
031503-03,05 02687.007.006.0001
Moss American
Collected:03/15/2005 11:50 by YH

Account Number: 07802

Submitted: 03/16/2005 09:05
Reported: 04/14/2005 at 12:46
Discard: 06/14/2005

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MW09S SDG#: KMA64-07MS

8839

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Lancaster Laboratories Sample No. WW 4483077

MA3-MW9S-031505-4-MSD Groundwater
031503-03,05 02687.007.006.0001
Moss American
Collected:03/15/2005 11:50 by YH

Account Number: 07802

Submitted: 03/16/2005 09:05
Reported: 04/14/2005 at 12:46
Discard: 06/14/2005

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Livonia MI 48150

MW09S SDG#: KMA64-07MSD

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
08213	BTEX (8021)					
00776	Benzene	71-43-2	21.	0.2	ug/l	1
00777	Toluene	108-88-3	21.	0.2	ug/l	1
00778	Ethylbenzene	100-41-4	21.	0.2	ug/l	1
00779	Total Xylenes	1330-20-7	63.	0.6	ug/l	1
00774	PAH's in Water by HPLC					
00775	Naphthalene	91-20-3	170.	1.6	ug/l	1
00782	Acenaphthylene	208-96-8	180.	1.6	ug/l	1
00783	Acenaphthene	83-32-9	180.	1.6	ug/l	1
00784	Fluorene	86-73-7	19.	0.18	ug/l	1
00785	Phenanthrene	85-01-8	5.9	0.080	ug/l	1
00789	Anthracene	120-12-7	2.9	0.040	ug/l	1
00807	Fluoranthene	206-44-0	2.9	0.040	ug/l	1
00811	Pyrene	129-00-0	19.	0.18	ug/l	1
00812	Benzo(a)anthracene	56-55-3	1.5	0.020	ug/l	1
00818	Benzo(b)fluoranthene	205-99-2	1.2	0.040	ug/l	1
00823	Benzo(a)pyrene	50-32-8	1.5	0.020	ug/l	1
00895	Dibenz(a,h)anthracene	53-70-3	2.8	0.040	ug/l	1
00898	Indeno(1,2,3-cd)pyrene	193-39-5	5.8	0.080	ug/l	1
00907	Benzo(g,h,i)perylene	191-24-2	10.	0.10	ug/l	1
07409	Chrysene	218-01-9	5.7	0.080	ug/l	1
07410	Benzo(k)fluoranthene	207-08-9	1.2	0.020	ug/l	1

The surrogate data is outside the QC limits due to unresolvable matrix problems evident in the sample chromatogram.

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
08213	BTEX (8021)	SW-846 8021B	1	03/17/2005 10:46	Linda C Pape	1

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Lancaster Laboratories Sample No. WW 4483077

MA3-MW9S-031505-4-MSD Groundwater
031503-03,05 02687.007.006.0001
Moss American
Collected:03/15/2005 11:50 by YH

Account Number: 07802

Submitted: 03/16/2005 09:05
Reported: 04/14/2005 at 12:46
Discard: 06/14/2005

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MW09S SDG#: KMA64-07MSD

00774	PAH's in Water by HPLC	SW-846 8310	1	03/19/2005 17:47	Mark A Clark	1
01146	GC VOA Water Prep	SW-846 5030B	1	03/17/2005 10:46	Linda C Pape	1
03337	PAH Water Extraction	SW-846 3510C	1	03/18/2005 07:30	Joseph S Feister	1

5641

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Analysis Report

Lancaster Laboratories

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Lancaster Laboratories Sample No. WW 4483078

MA3-TB-031505-11 Groundwater
031503-03 02687.007.006.0001
Moss American
Collected:03/15/2005 07:58 Account Number: 07802

Submitted: 03/16/2005 09:05 Kerr-McGee Corporation
Reported: 04/14/2005 at 12:46 PO Box 3048
Discard: 06/14/2005 Livonia MI 48150

MA-TB SDG#: KMA64-08TB

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
08213	BTEX (8021)					
00776	Benzene	71-43-2	N.D.	0.2	ug/l	1
00777	Toluene	108-88-3	N.D.	0.2	ug/l	1
00778	Ethylbenzene	100-41-4	N.D.	0.2	ug/l	1
00779	Total Xylenes	1330-20-7	N.D.	0.6	ug/l	1

Laboratory Chronicle

CAT No.	Analysis Name	Method	Analysis Trial#	Analysis Date and Time	Analyst	Dilution Factor
08213	BTEX (8021)	SW-846 8021B	1	03/17/2005 06:23	Linda C Pape	1
01146	GC VOA Water Prep	SW-846 5030B	1	03/17/2005 06:23	Linda C Pape	1

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Lancaster Laboratories

Lancaster Laboratories Sample No. WW 4483079

MA3-TG3-1-031505-9 Groundwater
031503-03,04,05,07 02687.007.006.0001
Moss American
Collected:03/15/2005 16:10 by YH

Account Number: 07802

Submitted: 03/16/2005 09:05
Reported: 04/14/2005 at 12:46
Discard: 06/14/2005

Kerr-McGee Corporation
PO Box 3048
Livonia MI 48150

TG3-1 SDG#: KMA64-09

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
00217	Kjeldahl Nitrogen	7727-37-9	0.54 J	0.50	mg/l	1
00219	Nitrite Nitrogen	14797-65-0	N.D.	0.015	mg/l	1
00220	Nitrate Nitrogen	14797-55-8	N.D.	0.040	mg/l	1
00221	Ammonia Nitrogen	7664-41-7	0.41 J	0.11	mg/l	1
00226	Ortho-Phosphate as P	14265-44-2	N.D.	0.010	mg/l	1
00235	Biochemical Oxygen Demand	n.a.	N.D.	2.2	mg/l	1
00273	Total Organic Carbon	n.a.	5.5	0.50	mg/l	1
00345	Total Phosphorus as PO4 water	14265-44-2	N.D.	0.25	mg/l	1
01553	Chemical Oxygen Demand	n.a.	17.3	2.1	mg/l	1
08213	BTEX (8021)					
00776	Benzene	71-43-2	N.D.	0.2	ug/l	1
00777	Toluene	108-88-3	N.D.	0.2	ug/l	1
00778	Ethylbenzene	100-41-4	N.D.	0.2	ug/l	1
00779	Total Xylenes	1330-20-7	N.D.	0.6	ug/l	1
00774	PAH's in Water by HPLC					
00775	Naphthalene	91-20-3	N.D.	1.6	ug/l	1
00782	Acenaphthylene	208-96-8	N.D.	1.6	ug/l	1
00783	Acenaphthene	83-32-9	N.D.	1.6	ug/l	1
00784	Fluorene	86-73-7	N.D.	0.18	ug/l	1
00785	Phenanthrene	85-01-8	N.D.	0.081	ug/l	1
00789	Anthracene	120-12-7	N.D.	0.041	ug/l	1
00807	Fluoranthene	206-44-0	N.D.	0.041	ug/l	1
00811	Pyrene	129-00-0	N.D.	0.18	ug/l	1
00812	Benzo(a)anthracene	56-55-3	N.D.	0.020	ug/l	1
00818	Benzo(b)fluoranthene	205-99-2	N.D.	0.041	ug/l	1
00823	Benzo(a)pyrene	50-32-8	N.D.	0.020	ug/l	1
00895	Dibenz(a,h)anthracene	53-70-3	N.D.	0.041	ug/l	1
00898	Indeno(1,2,3-cd)pyrene	193-39-5	N.D.	0.081	ug/l	1
00907	Benzo(g,h,i)perylene	191-24-2	N.D.	0.10	ug/l	1
07409	Chrysene	218-01-9	N.D.	0.081	ug/l	1
07410	Benzo(k)fluoranthene	207-08-9	N.D.	0.020	ug/l	1

0043

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Lancaster Laboratories Sample No. WW 4483079

MA3-TG3-1-031505-9 Groundwater
031503-03,04,05,07 02687.007.006.0001
Moss American
Collected:03/15/2005 16:10 by YH

Account Number: 07802

Submitted: 03/16/2005 09:05
Reported: 04/14/2005 at 12:46
Discard: 06/14/2005

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Livonia MI 48150

TG3-1 SDG#: KMA64-09

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
00217	Kjeldahl Nitrogen	EPA 351.2	1	03/16/2005 18:47	Venia B McFadden	1
00219	Nitrite Nitrogen	EPA 353.2	1	03/16/2005 13:06	William L Hamaker Jr	1
00220	Nitrate Nitrogen	EPA 353.2	1	03/17/2005 20:27	Venia B McFadden	1
00221	Ammonia Nitrogen	EPA 350.2	1	03/16/2005 16:20	Luz M Groff	1
00226	Ortho-Phosphate as P	EPA 365.3	1	03/16/2005 22:30	Daniel S Smith	1
00235	Biochemical Oxygen Demand	EPA 405.1	1	03/16/2005 22:48	Nicole R Rohrer	1
00273	Total Organic Carbon	EPA 415.1	1	03/23/2005 15:53	Kyle W Eckenroad	1
00345	Total Phosphorus as PO4 water	EPA 365.1	1	03/18/2005 11:42	William L Hamaker Jr	1
01553	Chemical Oxygen Demand	EPA 410.2	1	03/22/2005 07:30	Susan A Engle	1
08213	BTEX (8021)	SW-846 8021B	1	03/17/2005 13:24	Linda C Pape	1
00774	PAH's in Water by HPLC	SW-846 8310	1	03/19/2005 22:55	Mark A Clark	1
01146	GC VOA Water Prep	SW-846 5030B	1	03/17/2005 13:24	Linda C Pape	1
01460	Total Kjeldahl Nitrogen Digest	EPA 351.2	1	03/16/2005 13:50	Nancy J Shoop	1
03337	PAH Water Extraction	SW-846 3510C	1	03/18/2005 07:30	Joseph S Feister	1
08264	Total Phos as PO4 Prep (water)	EPA 365.1	1	03/17/2005 13:10	Choon Y Tian	1

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Analysis Report

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Lancaster Laboratories Sample No. WW 4483080

MA3-TG5-1-031505-5 Groundwater
031503-03,04,05,07 02687.007.006.0001
Moss American
Collected:03/15/2005 11:45 by YH

Account Number: 07802

Submitted: 03/16/2005 09:05
Reported: 04/14/2005 at 12:46
Discard: 06/14/2005

Kerr-McGee Corporation
PO Box 3048
Livonia MI 48150

TG5-1 SDG#: KMA64-10

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
00217	Kjeldahl Nitrogen	7727-37-9	N.D.	0.50	mg/l	1
00219	Nitrite Nitrogen	14797-65-0	N.D.	0.015	mg/l	1
00220	Nitrate Nitrogen	14797-55-8	N.D.	0.040	mg/l	1
00221	Ammonia Nitrogen	7664-41-7	0.15 J	0.11	mg/l	1
00226	Ortho-Phosphate as P	14265-44-2	N.D.	0.010	mg/l	1
00235	Biochemical Oxygen Demand	n.a.	N.D.	1.7	mg/l	1
00273	Total Organic Carbon	n.a.	2.8	0.50	mg/l	1
00345	Total Phosphorus as PO4 water	14265-44-2	N.D.	0.25	mg/l	1
01553	Chemical Oxygen Demand	n.a.	6.2 J	2.1	mg/l	1
08213	BTEX (8021)					
00776	Benzene	71-43-2	N.D.	0.2	ug/l	1
00777	Toluene	108-88-3	N.D.	0.2	ug/l	1
00778	Ethylbenzene	100-41-4	N.D.	0.2	ug/l	1
00779	Total Xylenes	1330-20-7	N.D.	0.6	ug/l	1
00774	PAH's in Water by HPLC					
00775	Naphthalene	91-20-3	N.D.	1.6	ug/l	1
00782	Acenaphthylene	208-96-8	N.D.	1.6	ug/l	1
00783	Acenaphthene	83-32-9	N.D.	1.6	ug/l	1
00784	Fluorene	86-73-7	N.D.	0.18	ug/l	1
00785	Phenanthrene	85-01-8	N.D.	0.082	ug/l	1
00789	Anthracene	120-12-7	N.D.	0.041	ug/l	1
00807	Fluoranthene	206-44-0	N.D.	0.041	ug/l	1
00811	Pyrene	129-00-0	N.D.	0.18	ug/l	1
00812	Benzo(a)anthracene	56-55-3	N.D.	0.020	ug/l	1
00818	Benzo(b)fluoranthene	205-99-2	N.D.	0.041	ug/l	1
00823	Benzo(a)pyrene	50-32-8	N.D.	0.020	ug/l	1
00895	Dibenz(a,h)anthracene	53-70-3	N.D.	0.041	ug/l	1
00898	Indeno(1,2,3-cd)pyrene	193-39-5	N.D.	0.082	ug/l	1
00907	Benzo(g,h,i)perylene	191-24-2	N.D.	0.10	ug/l	1
07409	Chrysene	218-01-9	N.D.	0.082	ug/l	1
07410	Benzo(k)fluoranthene	207-08-9	N.D.	0.020	ug/l	1

0845

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Lancaster Laboratories

Lancaster Laboratories Sample No. WW 4483080

MA3-TG5-1-031505-5 Groundwater
031503-03,04,05,07 02687.007.006.0001
Moss American
Collected:03/15/2005 11:45 by YH

Account Number: 07802

Submitted: 03/16/2005 09:05
Reported: 04/14/2005 at 12:46
Discard: 06/14/2005

Kerr-McGee Corporation
PO Box 3048
Livonia MI 48150

TG5-1 SDG#: KMA64-10

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
00217	Kjeldahl Nitrogen	EPA 351.2	1	03/16/2005 18:47	Venia B McFadden	1
00219	Nitrite Nitrogen	EPA 353.2	1	03/16/2005 13:09	William L Hamaker Jr	1
00220	Nitrate Nitrogen	EPA 353.2	1	03/17/2005 20:41	Venia B McFadden	1
00221	Ammonia Nitrogen	EPA 350.2	1	03/16/2005 16:20	Luz M Groff	1
00226	Ortho-Phosphate as P	EPA 365.3	1	03/16/2005 22:30	Daniel S Smith	1
00235	Biochemical Oxygen Demand	EPA 405.1	1	03/16/2005 22:48	Nicole R Rohrer	1
00273	Total Organic Carbon	EPA 415.1	1	03/23/2005 16:05	Kyle W Eckenroad	1
00345	Total Phosphorus as PO4 water	EPA 365.1	1	03/18/2005 11:44	William L Hamaker Jr	1
01553	Chemical Oxygen Demand	EPA 410.2	1	03/22/2005 07:30	Susan A Engle	1
08213	BTEX (8021)	SW-846 8021B	1	03/17/2005 13:57	Linda C Pape	1
00774	PAH's in Water by HPLC	SW-846 8310	1	03/19/2005 23:34	Mark A Clark	1
01146	GC VOA Water Prep	SW-846 5030B	1	03/17/2005 13:57	Linda C Pape	1
01460	Total Kjeldahl Nitrogen Digest	EPA 351.2	1	03/16/2005 13:50	Nancy J Shoop	1
03337	PAH Water Extraction	SW-846 3510C	1	03/18/2005 07:30	Joseph S Feister	1
08264	Total Phos as PO4 Prep (water)	EPA 365.1	1	03/17/2005 13:10	Choon Y Tian	1

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Lancaster Laboratories Sample No. WW 4483081

MA3-TG6-1-031505-1 Groundwater
031503-03,04,06,07 02687.007.006.0001
Moss American
Collected:03/15/2005 09:25 by YH

Account Number: 07802

Submitted: 03/16/2005 09:05
Reported: 04/14/2005 at 12:46
Discard: 06/14/2005

Kerr-McGee Corporation
PO Box 3048
Livonia MI 48150

TG6-1 SDG#: KMA64-11

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
00217	Kjeldahl Nitrogen	7727-37-9	2.3	0.50	mg/l	1
00219	Nitrite Nitrogen	14797-65-0	N.D.	0.015	mg/l	1
00220	Nitrate Nitrogen	14797-55-8	N.D.	0.040	mg/l	1
00221	Ammonia Nitrogen	7664-41-7	1.4	0.11	mg/l	1
00226	Ortho-Phosphate as P	14265-44-2	N.D.	0.010	mg/l	1
00235	Biochemical Oxygen Demand	n.a.	N.D.	3.2	mg/l	1
00273	Total Organic Carbon	n.a.	9.1	0.50	mg/l	1
00345	Total Phosphorus as PO4 water	14265-44-2	N.D.	0.25	mg/l	1
01553	Chemical Oxygen Demand	n.a.	28.1	2.1	mg/l	1
08213	BTEX (8021)					
00776	Benzene	71-43-2	N.D.	0.2	ug/l	1
00777	Toluene	108-88-3	N.D.	0.2	ug/l	1
00778	Ethylbenzene	100-41-4	N.D.	0.2	ug/l	1
00779	Total Xylenes	1330-20-7	N.D.	0.6	ug/l	1
00774	PAH's in Water by HPLC					
00775	Naphthalene	91-20-3	N.D.	1.5	ug/l	1
00782	Acenaphthylene	208-96-8	N.D.	1.5	ug/l	1
00783	Acenaphthene	83-32-9	N.D.	1.5	ug/l	1
00784	Fluorene	86-73-7	N.D.	0.17	ug/l	1
00785	Phenanthrene	85-01-8	N.D.	0.077	ug/l	1
00789	Anthracene	120-12-7	N.D.	0.039	ug/l	1
00807	Fluoranthene	206-44-0	N.D.	0.039	ug/l	1
00811	Pyrene	129-00-0	N.D.	0.17	ug/l	1
00812	Benzo(a)anthracene	56-55-3	N.D.	0.019	ug/l	1
00818	Benzo(b)fluoranthene	205-99-2	N.D.	0.039	ug/l	1
00823	Benzo(a)pyrene	50-32-8	N.D.	0.019	ug/l	1
00895	Dibenz(a,h)anthracene	53-70-3	N.D.	0.039	ug/l	1
00898	Indeno(1,2,3-cd)pyrene	193-39-5	N.D.	0.077	ug/l	1
00907	Benzo(g,h,i)perylene	191-24-2	N.D.	0.096	ug/l	1
07409	Chrysene	218-01-9	N.D.	0.077	ug/l	1
07410	Benzo(k)fluoranthene	207-08-9	N.D.	0.019	ug/l	1

0847

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Lancaster Laboratories

Lancaster Laboratories Sample No. WW 4483081

MA3-TG6-1-031505-1 Groundwater
031503-03,04,06,07 02687.007.006.0001
Moss American
Collected:03/15/2005 09:25 by YH

Account Number: 07802

Submitted: 03/16/2005 09:05
Reported: 04/14/2005 at 12:46
Discard: 06/14/2005

Kerr-McGee Corporation
PO Box 3048
Livonia MI 48150

TG6-1 SDG#: KMA64-11

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
00217	Kjeldahl Nitrogen	EPA 351.2	1	03/21/2005 10:39	Tonya M Beck	1
00219	Nitrite Nitrogen	EPA 353.2	1	03/16/2005 13:11	William L Hamaker Jr	1
00220	Nitrate Nitrogen	EPA 353.2	1	03/17/2005 20:42	Venia B McFadden	1
00221	Ammonia Nitrogen	EPA 350.2	1	03/16/2005 16:20	Luz M Groff	1
00226	Ortho-Phosphate as P	EPA 365.3	1	03/16/2005 22:30	Daniel S Smith	1
00235	Biochemical Oxygen Demand	EPA 405.1	1	03/16/2005 22:48	Nicole R Rohrer	1
00273	Total Organic Carbon	EPA 415.1	1	03/23/2005 16:16	Kyle W Eckenroad	1
00345	Total Phosphorus as PO4 water	EPA 365.1	1	03/18/2005 11:45	William L Hamaker Jr	1
01553	Chemical Oxygen Demand	EPA 410.2	1	03/22/2005 07:30	Susan A Engle	1
08213	BTEX (8021)	SW-846 8021B	1	03/17/2005 14:30	Linda C Pape	1
00774	PAH's in Water by HPLC	SW-846 8310	1	03/20/2005 00:12	Mark A Clark	1
01146	GC VOA Water Prep	SW-846 5030B	1	03/17/2005 14:30	Linda C Pape	1
01460	Total Kjeldahl Nitrogen Digest	EPA 351.2	1	03/18/2005 08:45	Choon Y Tian	1
03337	PAH Water Extraction	SW-846 3510C	1	03/18/2005 07:30	Joseph S Feister	1
08264	Total Phos as PO4 Prep (water)	EPA 365.1	1	03/17/2005 13:10	Choon Y Tian	1

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Analysis Report

Lancaster Laboratories

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Lancaster Laboratories Sample No. WW 4483082

MA3-TG6-2-031505-2 Groundwater
031503-03,04,06,07 02687.007.006.0001
Moss American
Collected:03/15/2005 09:35 by YH

Account Number: 07802

Submitted: 03/16/2005 09:05
Reported: 04/14/2005 at 12:46
Discard: 06/14/2005

Kerr-McGee Corporation
PO Box 3048
Livonia MI 48150

TG6-2 SDG#: KMA64-12

CAT No.	Analysis Name	CAS Number	As Received Result		As Received Method Detection Limit	Units	Dilution Factor
00217	Kjeldahl Nitrogen	7727-37-9	1.0		0.50	mg/l	1
00219	Nitrite Nitrogen	14797-65-0	N.D.		0.015	mg/l	1
00220	Nitrate Nitrogen	14797-55-8	N.D.		0.040	mg/l	1
00221	Ammonia Nitrogen	7664-41-7	0.23	J	0.11	mg/l	1
00226	Ortho-Phosphate as P	14265-44-2	N.D.		0.010	mg/l	1
00235	Biochemical Oxygen Demand	n.a.	N.D.		2.1	mg/l	1
00273	Total Organic Carbon	n.a.	5.6		0.50	mg/l	1
00345	Total Phosphorus as PO4 water	14265-44-2	N.D.		0.25	mg/l	1
01553	Chemical Oxygen Demand	n.a.	16.9		2.1	mg/l	1
08213	BTEX (8021)						
00776	Benzene	71-43-2	N.D.		0.2	ug/l	1
00777	Toluene	108-88-3	N.D.		0.2	ug/l	1
00778	Ethylbenzene	100-41-4	N.D.		0.2	ug/l	1
00779	Total Xylenes	1330-20-7	N.D.		0.6	ug/l	1
00774	PAH's in Water by HPLC						
00775	Naphthalene	91-20-3	N.D.		1.5	ug/l	1
00782	Acenaphthylene	208-96-8	N.D.		1.5	ug/l	1
00783	Acenaphthene	83-32-9	N.D.		1.5	ug/l	1
00784	Fluorene	86-73-7	N.D.		0.17	ug/l	1
00785	Phenanthrene	85-01-8	N.D.		0.077	ug/l	1
00789	Anthracene	120-12-7	N.D.		0.038	ug/l	1
00807	Fluoranthene	206-44-0	0.070	J	0.038	ug/l	1
00811	Pyrene	129-00-0	N.D.		0.17	ug/l	1
00812	Benzo(a)anthracene	56-55-3	N.D.		0.019	ug/l	1
00818	Benzo(b)fluoranthene	205-99-2	N.D.		0.038	ug/l	1
00823	Benzo(a)pyrene	50-32-8	N.D.		0.019	ug/l	1
00895	Dibenz(a,h)anthracene	53-70-3	N.D.		0.038	ug/l	1
00898	Indeno(1,2,3-cd)pyrene	193-39-5	N.D.		0.077	ug/l	1
00907	Benzo(g,h,i)perylene	191-24-2	N.D.		0.096	ug/l	1
07409	Chrysene	218-01-9	N.D.		0.077	ug/l	1
07410	Benzo(k)fluoranthene	207-08-9	N.D.		0.019	ug/l	1

8849

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Lancaster Laboratories

Lancaster Laboratories Sample No. WW 4483082

MA3-TG6-2-031505-2 Groundwater
031503-03,04,06,07 02687.007.006.0001
Moss American
Collected:03/15/2005 09:35 by YH

Account Number: 07802

Submitted: 03/16/2005 09:05
Reported: 04/14/2005 at 12:46
Discard: 06/14/2005

Kerr-McGee Corporation
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Livonia MI 48150

TG6-2 SDG#: KMA64-12

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
00217	Kjeldahl Nitrogen	EPA 351.2	1	03/21/2005 10:40	Tonya M Beck	1
00219	Nitrite Nitrogen	EPA 353.2	1	03/16/2005 13:12	William L Hamaker Jr	1
00220	Nitrate Nitrogen	EPA 353.2	1	03/17/2005 20:43	Venia B McFadden	1
00221	Ammonia Nitrogen	EPA 350.2	1	03/16/2005 16:20	Luz M Groff	1
00226	Ortho-Phosphate as P	EPA 365.3	1	03/16/2005 22:30	Daniel S Smith	1
00235	Biochemical Oxygen Demand	EPA 405.1	1	03/16/2005 22:48	Nicole R Rohrer	1
00273	Total Organic Carbon	EPA 415.1	1	03/23/2005 16:28	Kyle W Eckenroad	1
00345	Total Phosphorus as PO4 water	EPA 365.1	1	03/18/2005 11:46	William L Hamaker Jr	1
01553	Chemical Oxygen Demand	EPA 410.2	1	03/22/2005 07:30	Susan A Engle	1
08213	BTEX (8021)	SW-846 8021B	1	03/17/2005 15:03	Linda C Pape	1
00774	PAH's in Water by HPLC	SW-846 8310	1	03/20/2005 00:51	Mark A Clark	1
01146	GC VOA Water Prep	SW-846 5030B	1	03/17/2005 15:03	Linda C Pape	1
01460	Total Kjeldahl Nitrogen Digest	EPA 351.2	1	03/18/2005 08:45	Choon Y Tian	1
03337	PAH Water Extraction	SW-846 3510C	1	03/18/2005 07:30	Joseph S Feister	1
08264	Total Phos as PO4 Prep (water)	EPA 365.1	1	03/17/2005 13:10	Choon Y Tian	1

0050

Lancaster Laboratories

Lancaster Laboratories Sample No. WW 4483083

MA3-TG6-3-031505-3 Groundwater
031503-03,04,06 02687.007.006.0001
Moss American
Collected:03/15/2005 09:30 by YH

Account Number: 07802

Submitted: 03/16/2005 09:05
Reported: 04/14/2005 at 12:47
Discard: 06/14/2005

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Livonia MI 48150

TG6-3 SDG#: KMA64-13

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
00217	Kjeldahl Nitrogen	7727-37-9	1.1	0.50	mg/l	1
00219	Nitrite Nitrogen	14797-65-0	N.D.	0.015	mg/l	1
00220	Nitrate Nitrogen	14797-55-8	N.D.	0.040	mg/l	1
00221	Ammonia Nitrogen	7664-41-7	1.0	0.11	mg/l	1
00226	Ortho-Phosphate as P	14265-44-2	N.D.	0.010	mg/l	1
00235	Biochemical Oxygen Demand	n.a.	N.D.	1.9	mg/l	1
00273	Total Organic Carbon	n.a.	5.9	0.50	mg/l	1
00345	Total Phosphorus as PO4 water	14265-44-2	N.D.	0.25	mg/l	1
01553	Chemical Oxygen Demand	n.a.	18.8	2.1	mg/l	1
08213	BTEX (8021)					
00776	Benzene	71-43-2	N.D.	0.2	ug/l	1
00777	Toluene	108-88-3	N.D.	0.2	ug/l	1
00778	Ethylbenzene	100-41-4	N.D.	0.2	ug/l	1
00779	Total Xylenes	1330-20-7	N.D.	0.6	ug/l	1
00774	PAH's in Water by HPLC					
00775	Naphthalene	91-20-3	N.D.	1.6	ug/l	1
00782	Acenaphthylene	208-96-8	N.D.	1.6	ug/l	1
00783	Acenaphthene	83-32-9	N.D.	1.6	ug/l	1
00784	Fluorene	86-73-7	N.D.	0.18	ug/l	1
00785	Phenanthrene	85-01-8	N.D.	0.082	ug/l	1
00789	Anthracene	120-12-7	N.D.	0.041	ug/l	1
00807	Fluoranthene	206-44-0	N.D.	0.041	ug/l	1
00811	Pyrene	129-00-0	N.D.	0.18	ug/l	1
00812	Benzo(a)anthracene	56-55-3	N.D.	0.020	ug/l	1
00818	Benzo(b)fluoranthene	205-99-2	N.D.	0.041	ug/l	1
00823	Benzo(a)pyrene	50-32-8	N.D.	0.020	ug/l	1
00895	Dibenz(a,h)anthracene	53-70-3	N.D.	0.041	ug/l	1
00898	Indeno(1,2,3-cd)pyrene	193-39-5	N.D.	0.082	ug/l	1
00907	Benzo(g,h,i)perylene	191-24-2	N.D.	0.10	ug/l	1
07409	Chrysene	218-01-9	N.D.	0.082	ug/l	1
07410	Benzo(k)fluoranthene	207-08-9	N.D.	0.020	ug/l	1

8851

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Lancaster Laboratories Sample No. WW 4483083

MA3-TG6-3-031505-3 Groundwater
031503-03,04,06 02687.007.006.0001
Moss American
Collected:03/15/2005 09:30 by YH

Account Number: 07802

Submitted: 03/16/2005 09:05
Reported: 04/14/2005 at 12:47
Discard: 06/14/2005

Kerr-McGee Corporation
PO Box 3048
Livonia MI 48150

TG6-3 SDG#: KMA64-13

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
00217	Kjeldahl Nitrogen	EPA 351.2	1	03/21/2005 10:41	Tonya M Beck	1
00219	Nitrite Nitrogen	EPA 353.2	1	03/16/2005 13:13	William L Hamaker Jr	1
00220	Nitrate Nitrogen	EPA 353.2	1	03/17/2005 20:44	Venia B McFadden	1
00221	Ammonia Nitrogen	EPA 350.2	1	03/16/2005 16:20	Luz M Groff	1
00226	Ortho-Phosphate as P	EPA 365.3	1	03/16/2005 22:30	Daniel S Smith	1
00235	Biochemical Oxygen Demand	EPA 405.1	1	03/16/2005 22:48	Nicole R Rohrer	1
00273	Total Organic Carbon	EPA 415.1	1	03/23/2005 16:40	Kyle W Eckenroad	1
00345	Total Phosphorus as PO4 water	EPA 365.1	1	03/18/2005 11:49	William L Hamaker Jr	1
01553	Chemical Oxygen Demand	EPA 410.2	1	03/22/2005 07:30	Susan A Engle	1
08213	BTEX (8021)	SW-846 8021B	1	03/17/2005 15:48	Linda C Pape	1
00774	PAH's in Water by HPLC	SW-846 8310	1	03/20/2005 01:29	Mark A Clark	1
01146	GC VOA Water Prep	SW-846 5030B	1	03/17/2005 15:48	Linda C Pape	1
01460	Total Kjeldahl Nitrogen Digest	EPA 351.2	1	03/18/2005 08:45	Choon Y Tian	1
03337	PAH Water Extraction	SW-846 3510C	1	03/18/2005 07:30	Joseph S Feister	1
08264	Total Phos as PO4 Prep (water)	EPA 365.1	1	03/17/2005 13:10	Choon Y Tian	1

0852

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ANALYTICAL RESULTS

Prepared for:

Kerr-McGee Corporation
PO Box 3048
Livonia MI 48150

734-367-7900

Prepared by:

Lancaster Laboratories
2425 New Holland Pike
Lancaster, PA 17605-2425

SAMPLE GROUP

The sample group for this submittal is 935692. Samples arrived at the laboratory on Thursday, March 17, 2005. The PO# for this group is ZAKW1KEOK0A90089.

Client Description		Lancaster Labs Number
MA3-TG1-1-031605-5	Groundwater	4483992
MA3-TG1-2-031605-6	Groundwater	4483993
MA3-TG1-3-031605-7	Groundwater	4483994
MA3-TG2-1-031605-3	Groundwater	4483995
MA3-TG2-1-031605-3-DP	Groundwater	4483996

METHODOLOGY

The specific methodologies used in obtaining the enclosed analytical results are indicated on the laboratory chronicles.

1 COPY TO	Weston Solutions, Inc.	Attn: Tom Graan
1 COPY TO	Kerr-McGee Corporation	Attn: Roy Widmann
1 COPY TO	Data Package Group	

0053

Lancaster Laboratories

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Questions? Contact your Client Services Representative
Carrie A Fleming at (717) 656-2300.

Respectfully Submitted,

Dana M Kauffman

Dana M. Kauffman
Group Leader

0854

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Lancaster Laboratories

Lancaster Laboratories Sample No. WW 4483992

MA3-TG1-1-031605-5 Groundwater
031605-2,3,6 02687.007.006.0001
Moss American
Collected:03/16/2005 11:15 by YH

Account Number: 07802

Submitted: 03/17/2005 09:00
Reported: 04/14/2005 at 12:46
Discard: 06/14/2005

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TG1-1 SDG#: KMA64-14

CAT No.	Analysis Name	CAS Number	As Received Result		As Received Method Detection Limit	Units	Dilution Factor
00217	Kjeldahl Nitrogen	7727-37-9	2.1		0.50	mg/l	1
00219	Nitrite Nitrogen	14797-65-0	N.D.		0.015	mg/l	1
00220	Nitrate Nitrogen	14797-55-8	N.D.		0.040	mg/l	1
00221	Ammonia Nitrogen	7664-41-7	1.2		0.11	mg/l	1
00226	Ortho-Phosphate as P	14265-44-2	N.D.		0.010	mg/l	1
00235	Biochemical Oxygen Demand	n.a.	8.4		0.80	mg/l	1
00273	Total Organic Carbon	n.a.	14.2		0.50	mg/l	1
00345	Total Phosphorus as PO4 water	14265-44-2	N.D.		0.25	mg/l	1
01553	Chemical Oxygen Demand	n.a.	83.1		2.1	mg/l	1
08213	BTEX (8021)						
00776	Benzene	71-43-2	N.D.		1.0	ug/l	5
00777	Toluene	108-88-3	N.D.		1.0	ug/l	5
00778	Ethylbenzene	100-41-4	19.		1.0	ug/l	5
00779	Total Xylenes	1330-20-7	28.		3.0	ug/l	5
	Due to dilution of the sample made necessary by the high level of non-targets, normal reporting limits were not attained.						
00774	PAH's in Water by HPLC						
00775	Naphthalene	91-20-3	5,400.		32.	ug/l	20
00782	Acenaphthylene	208-96-8	210.	J	32.	ug/l	20
00783	Acenaphthene	83-32-9	3,200.		32.	ug/l	20
00784	Fluorene	86-73-7	2,500.		72.	ug/l	400
00785	Phenanthrene	85-01-8	6,200.		32.	ug/l	400
00789	Anthracene	120-12-7	690.		16.	ug/l	400
00807	Fluoranthene	206-44-0	2,900.		16.	ug/l	400
00811	Pyrene	129-00-0	2,300.		72.	ug/l	400
00812	Benzo(a)anthracene	56-55-3	490.		8.0	ug/l	400
00818	Benzo(b)fluoranthene	205-99-2	190.		16.	ug/l	400
00823	Benzo(a)pyrene	50-32-8	200.		8.0	ug/l	400
00895	Dibenz(a,h)anthracene	53-70-3	N.D.		60.	ug/l	20
00898	Indeno(1,2,3-cd)pyrene	193-39-5	55.		1.6	ug/l	20
00907	Benzo(g,h,i)perylene	191-24-2	56.		2.0	ug/l	20
07409	Chrysene	218-01-9	480.		32.	ug/l	400
07410	Benzo(k)fluoranthene	207-08-9	110.		8.0	ug/l	400
	Due to the sample matrix an initial dilution was necessary to perform the						

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Lancaster Laboratories Sample No. WW 4483992

MA3-TG1-1-031605-5 Groundwater
031605-2,3,6 02687.007.006.0001
Moss American
Collected:03/16/2005 11:15 by YH Account Number: 07802

Submitted: 03/17/2005 09:00 Kerr-McGee Corporation
Reported: 04/14/2005 at 12:46 PO Box 3048
Discard: 06/14/2005 Livonia MI 48150

TG1-1 SDG#: KMA64-14

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor

analysis. Therefore, the reporting limits for the PAH by HPLC compounds were raised.

The surrogate data is outside the QC limits due to unresolvable matrix problems evident in the sample chromatogram.

Due to the presence of an interferent near its retention time, the normal reporting limit was not attained for dibenz(a,h)anthracene. The reporting limit for this compound was raised accordingly.

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
00217	Kjeldahl Nitrogen	EPA 351.2	1	03/30/2005 12:18	Tonya M Beck	1
00219	Nitrite Nitrogen	EPA 353.2	1	03/17/2005 12:24	Nicole M Kepley	1
00220	Nitrate Nitrogen	EPA 353.2	1	03/24/2005 10:07	Nicole M Kepley	1
00221	Ammonia Nitrogen	EPA 350.2	1	03/23/2005 17:30	Luz M Groff	1
00226	Ortho-Phosphate as P	EPA 365.3	1	03/17/2005 21:00	Daniel S Smith	1
00235	Biochemical Oxygen Demand	EPA 405.1	1	03/17/2005 22:30	Nicole R Rohrer	1
00273	Total Organic Carbon	EPA 415.1	1	03/23/2005 23:01	Kyle W Eckenroad	1
00345	Total Phosphorus as PO4 water	EPA 365.1	2	03/22/2005 14:05	Tonya M Beck	1
01553	Chemical Oxygen Demand	EPA 410.2	1	03/22/2005 07:30	Susan A Engle	1
08213	BTEX (8021)	SW-846 8021B	1	03/21/2005 12:15	Linda C Pape	5
00774	PAH's in Water by HPLC	SW-846 8310	1	03/20/2005 06:42	Mark A Clark	20
00774	PAH's in Water by HPLC	SW-846 8310	1	03/22/2005 06:12	Mark A Clark	400
01146	GC VOA Water Prep	SW-846 5030B	1	03/21/2005 12:15	Linda C Pape	5
01460	Total Kjeldahl Nitrogen Digest	EPA 351.2	1	03/23/2005 13:40	Nancy J Shoop	1
03337	PAH Water Extraction	SW-846 3510C	1	03/18/2005 17:25	JoElla L Rice	1
08264	Total Phos as PO4 Prep (water)	EPA 365.1	1	03/17/2005 13:10	Choon Y Tian	1

8056

Lancaster Laboratories

Lancaster Laboratories Sample No. WW 4483993

MA3-TG1-2-031605-6 Groundwater
031605-2,3,6 02687.007.006.0001
Moss American
Collected:03/16/2005 11:20 by YH

Account Number: 07802

Submitted: 03/17/2005 09:00
Reported: 04/14/2005 at 12:46
Discard: 06/14/2005

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Livonia MI 48150

TG1-2 SDG#: KMA64-15

CAT No.	Analysis Name	CAS Number	As Received Result		As Received Method Detection Limit	Units	Dilution Factor
00217	Kjeldahl Nitrogen	7727-37-9	1.1		0.50	mg/l	1
00219	Nitrite Nitrogen	14797-65-0	N.D.		0.015	mg/l	1
00220	Nitrate Nitrogen	14797-55-8	N.D.		0.040	mg/l	1
00221	Ammonia Nitrogen	7664-41-7	1.3		0.11	mg/l	1
00226	Ortho-Phosphate as P	14265-44-2	N.D.		0.010	mg/l	1
00235	Biochemical Oxygen Demand	n.a.	N.D.		4.3	mg/l	1
00273	Total Organic Carbon	n.a.	11.0		0.50	mg/l	1
00345	Total Phosphorus as PO4 water	14265-44-2	N.D.		0.25	mg/l	1
01553	Chemical Oxygen Demand	n.a.	30.4		2.1	mg/l	1
08213	BTEX (8021)						
00776	Benzene	71-43-2	N.D.		0.2	ug/l	1
00777	Toluene	108-88-3	N.D.		0.2	ug/l	1
00778	Ethylbenzene	100-41-4	N.D.		0.2	ug/l	1
00779	Total Xylenes	1330-20-7	N.D.		0.6	ug/l	1
00774	PAH's in Water by HPLC						
00775	Naphthalene	91-20-3	20.		1.6	ug/l	1
00782	Acenaphthylene	208-96-8	N.D.		1.6	ug/l	1
00783	Acenaphthene	83-32-9	28.		1.6	ug/l	1
00784	Fluorene	86-73-7	13.		0.18	ug/l	1
00785	Phenanthrene	85-01-8	4.8		0.080	ug/l	1
00789	Anthracene	120-12-7	0.78		0.040	ug/l	1
00807	Fluoranthene	206-44-0	1.5		0.040	ug/l	1
00811	Pyrene	129-00-0	1.1		0.18	ug/l	1
00812	Benzo(a)anthracene	56-55-3	0.059	J	0.020	ug/l	1
00818	Benzo(b)fluoranthene	205-99-2	N.D.		0.040	ug/l	1
00823	Benzo(a)pyrene	50-32-8	0.040	J	0.020	ug/l	1
00895	Dibenz(a,h)anthracene	53-70-3	N.D.		0.040	ug/l	1
00898	Indeno(1,2,3-cd)pyrene	193-39-5	N.D.		0.080	ug/l	1
00907	Benzo(g,h,i)perylene	191-24-2	N.D.		0.10	ug/l	1
07409	Chrysene	218-01-9	0.12	J	0.080	ug/l	1
07410	Benzo(k)fluoranthene	207-08-9	N.D.		0.020	ug/l	1

0057

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Lancaster Laboratories Sample No. WW 4483993

MA3-TG1-2-031605-6 Groundwater
031605-2,3,6 02687.007.006.0001
Moss American
Collected:03/16/2005 11:20 by YH

Account Number: 07802

Submitted: 03/17/2005 09:00
Reported: 04/14/2005 at 12:46
Discard: 06/14/2005

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Livonia MI 48150

TG1-2 SDG#: KMA64-15

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
00217	Kjeldahl Nitrogen	EPA 351.2	1	03/21/2005 10:47	Tonya M Beck	1
00219	Nitrite Nitrogen	EPA 353.2	1	03/17/2005 12:25	Nicole M Kepley	1
00220	Nitrate Nitrogen	EPA 353.2	1	03/24/2005 10:08	Nicole M Kepley	1
00221	Ammonia Nitrogen	EPA 350.2	1	03/23/2005 17:30	Luz M Groff	1
00226	Ortho-Phosphate as P	EPA 365.3	1	03/17/2005 21:00	Daniel S Smith	1
00235	Biochemical Oxygen Demand	EPA 405.1	1	03/17/2005 22:30	Nicole R Rohrer	1
00273	Total Organic Carbon	EPA 415.1	1	03/23/2005 23:12	Kyle W Eckenroad	1
00345	Total Phosphorus as PO4 water	EPA 365.1	1	03/18/2005 13:13	William L Hamaker Jr	1
01553	Chemical Oxygen Demand	EPA 410.2	1	03/22/2005 07:30	Susan A Engle	1
08213	BTEX (8021)	SW-846 8021B	1	03/21/2005 12:48	Linda C Pape	1
00774	PAH's in Water by HPLC	SW-846 8310	1	03/20/2005 07:20	Mark A Clark	1
01146	GC VOA Water Prep	SW-846 5030B	1	03/21/2005 12:48	Linda C Pape	1
01460	Total Kjeldahl Nitrogen Digest	EPA 351.2	1	03/18/2005 08:45	Choon Y Tian	1
03337	PAH Water Extraction	SW-846 3510C	1	03/18/2005 17:25	JoElla L Rice	1
08264	Total Phos as PO4 Prep (water)	EPA 365.1	1	03/17/2005 13:10	Choon Y Tian	1

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Lancaster Laboratories Sample No. WW 4483994

MA3-TG1-3-031605-7 Groundwater
031605-2,3,6 02687.007.006.0001
Moss American
Collected:03/16/2005 11:25 by YH

Account Number: 07802

Submitted: 03/17/2005 09:00
Reported: 04/14/2005 at 12:46
Discard: 06/14/2005

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Livonia MI 48150

TG1-3 SDG#: KMA64-16

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
00217	Kjeldahl Nitrogen	7727-37-9	1.6	0.50	mg/l	1
00219	Nitrite Nitrogen	14797-65-0	N.D.	0.015	mg/l	1
00220	Nitrate Nitrogen	14797-55-8	N.D.	0.040	mg/l	1
00221	Ammonia Nitrogen	7664-41-7	1.3	0.11	mg/l	1
00226	Ortho-Phosphate as P	14265-44-2	0.026 J	0.010	mg/l	1
00235	Biochemical Oxygen Demand	n.a.	N.D.	5.7	mg/l	1
00273	Total Organic Carbon	n.a.	9.9	0.50	mg/l	1
00345	Total Phosphorus as PO4 water	14265-44-2	N.D.	0.25	mg/l	1
01553	Chemical Oxygen Demand	n.a.	28.8	2.1	mg/l	1
08213	BTEX (8021)					
00776	Benzene	71-43-2	N.D.	0.2	ug/l	1
00777	Toluene	108-88-3	N.D.	0.2	ug/l	1
00778	Ethylbenzene	100-41-4	N.D.	0.2	ug/l	1
00779	Total Xylenes	1330-20-7	N.D.	0.6	ug/l	1
00774	PAH's in Water by HPLC					
00775	Naphthalene	91-20-3	N.D.	1.7	ug/l	1
00782	Acenaphthylene	208-96-8	N.D.	1.7	ug/l	1
00783	Acenaphthene	83-32-9	N.D.	1.7	ug/l	1
00784	Fluorene	86-73-7	0.46 J	0.19	ug/l	1
00785	Phenanthrene	85-01-8	N.D.	0.084	ug/l	1
00789	Anthracene	120-12-7	N.D.	0.042	ug/l	1
00807	Fluoranthene	206-44-0	0.12 J	0.042	ug/l	1
00811	Pyrene	129-00-0	N.D.	0.19	ug/l	1
00812	Benzo(a)anthracene	56-55-3	N.D.	0.021	ug/l	1
00818	Benzo(b)fluoranthene	205-99-2	N.D.	0.042	ug/l	1
00823	Benzo(a)pyrene	50-32-8	N.D.	0.021	ug/l	1
00895	Dibenz(a,h)anthracene	53-70-3	N.D.	0.042	ug/l	1
00898	Indeno(1,2,3-cd)pyrene	193-39-5	N.D.	0.084	ug/l	1
00907	Benzo(g,h,i)perylene	191-24-2	N.D.	0.10	ug/l	1
07409	Chrysene	218-01-9	N.D.	0.084	ug/l	1
07410	Benzo(k)fluoranthene	207-08-9	N.D.	0.021	ug/l	1

Due to the nature of the sample matrix, a reduced aliquot was used for analysis. The reporting limits were raised accordingly.

8859

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Lancaster Laboratories Sample No. WW 4483994

MA3-TG1-3-031605-7 Groundwater
031605-2,3,6 02687.007.006.0001
Moss American
Collected:03/16/2005 11:25 by YH

Account Number: 07802

Submitted: 03/17/2005 09:00
Reported: 04/14/2005 at 12:46
Discard: 06/14/2005

Kerr-McGee Corporation
PO Box 3048
Livonia MI 48150

TG1-3 SDG#: KMA64-16

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
00217	Kjeldahl Nitrogen	EPA 351.2	1	03/21/2005 10:49	Tonya M Beck	1
00219	Nitrite Nitrogen	EPA 353.2	1	03/17/2005 12:27	Nicole M Kepley	1
00220	Nitrate Nitrogen	EPA 353.2	1	03/24/2005 10:09	Nicole M Kepley	1
00221	Ammonia Nitrogen	EPA 350.2	1	03/23/2005 17:30	Luz M Groff	1
00226	Ortho-Phosphate as P	EPA 365.3	1	03/17/2005 21:00	Daniel S Smith	1
00235	Biochemical Oxygen Demand	EPA 405.1	1	03/17/2005 22:30	Nicole R Rohrer	1
00273	Total Organic Carbon	EPA 415.1	1	03/23/2005 23:47	Kyle W Eckenroad	1
00345	Total Phosphorus as PO4 water	EPA 365.1	1	03/18/2005 13:16	William L Hamaker Jr	1
01553	Chemical Oxygen Demand	EPA 410.2	1	03/22/2005 07:30	Susan A Engle	1
08213	BTEX (8021)	SW-846 8021B	1	03/21/2005 13:21	Linda C Pape	1
00774	PAH's in Water by HPLC	SW-846 8310	1	03/20/2005 07:59	Mark A Clark	1
01146	GC VOA Water Prep	SW-846 5030B	1	03/21/2005 13:21	Linda C Pape	1
01460	Total Kjeldahl Nitrogen Digest	EPA 351.2	1	03/18/2005 08:45	Choon Y Tian	1
03337	PAH Water Extraction	SW-846 3510C	1	03/18/2005 17:25	JoElla L Rice	1
08264	Total Phos as PO4 Prep (water)	EPA 365.1	1	03/17/2005 13:10	Choon Y Tian	1

0065

Lancaster Laboratories

Lancaster Laboratories Sample No. WW 4483995

MA3-TG2-1-031605-3 Groundwater
031605-2,3,7 02687.007.006.0001
Moss American
Collected:03/16/2005 09:15 by YH

Account Number: 07802

Submitted: 03/17/2005 09:00
Reported: 04/14/2005 at 12:46
Discard: 06/14/2005

Kerr-McGee Corporation
PO Box 3048
Livonia MI 48150

TG2-1 SDG#: KMA64-17

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
00217	Kjeldahl Nitrogen	7727-37-9	N.D.	0.50	mg/l	1
00219	Nitrite Nitrogen	14797-65-0	N.D.	0.015	mg/l	1
00220	Nitrate Nitrogen	14797-55-8	N.D.	0.040	mg/l	1
00221	Ammonia Nitrogen	7664-41-7	0.29 J	0.11	mg/l	1
00226	Ortho-Phosphate as P	14265-44-2	N.D.	0.010	mg/l	1
00235	Biochemical Oxygen Demand	n.a.	N.D.	1.4	mg/l	1
00273	Total Organic Carbon	n.a.	2.1	0.50	mg/l	1
00345	Total Phosphorus as PO4 water	14265-44-2	N.D.	0.25	mg/l	1
01553	Chemical Oxygen Demand	n.a.	5.8 J	2.1	mg/l	1
08213	BTEX (8021)					
00776	Benzene	71-43-2	N.D.	0.2	ug/l	1
00777	Toluene	108-88-3	N.D.	0.2	ug/l	1
00778	Ethylbenzene	100-41-4	N.D.	0.2	ug/l	1
00779	Total Xylenes	1330-20-7	N.D.	0.6	ug/l	1
00774	PAH's in Water by HPLC					
00775	Naphthalene	91-20-3	N.D.	1.6	ug/l	1
00782	Acenaphthylene	208-96-8	N.D.	1.6	ug/l	1
00783	Acenaphthene	83-32-9	N.D.	1.6	ug/l	1
00784	Fluorene	86-73-7	N.D.	0.18	ug/l	1
00785	Phenanthrene	85-01-8	N.D.	0.081	ug/l	1
00789	Anthracene	120-12-7	N.D.	0.040	ug/l	1
00807	Fluoranthene	206-44-0	N.D.	0.040	ug/l	1
00811	Pyrene	129-00-0	N.D.	0.18	ug/l	1
00812	Benzo(a)anthracene	56-55-3	N.D.	0.020	ug/l	1
00818	Benzo(b)fluoranthene	205-99-2	N.D.	0.040	ug/l	1
00823	Benzo(a)pyrene	50-32-8	N.D.	0.020	ug/l	1
00895	Dibenz(a,h)anthracene	53-70-3	N.D.	0.040	ug/l	1
00898	Indeno(1,2,3-cd)pyrene	193-39-5	N.D.	0.081	ug/l	1
00907	Benzo(g,h,i)perylene	191-24-2	N.D.	0.10	ug/l	1
07409	Chrysene	218-01-9	N.D.	0.081	ug/l	1
07410	Benzo(k)fluoranthene	207-08-9	N.D.	0.020	ug/l	1

0061

MEMBER ACIL
Lancaster Laboratories, Inc.
2425 New Holland Pike
PO Box 12425
Lancaster, PA 17605-2425
717-656-2300 Fax: 717-656-2681

Lancaster Laboratories

Lancaster Laboratories Sample No. WW 4483995

MA3-TG2-1-031605-3 Groundwater
031605-2,3,7 02687.007.006.0001
Moss American
Collected:03/16/2005 09:15 by YH

Account Number: 07802

Submitted: 03/17/2005 09:00
Reported: 04/14/2005 at 12:46
Discard: 06/14/2005

Kerr-McGee Corporation
PO Box 3048
Livonia MI 48150

TG2-1 SDG#: KMA64-17

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
00217	Kjeldahl Nitrogen	EPA 351.2	1	03/21/2005 10:50	Tonya M Beck	1
00219	Nitrite Nitrogen	EPA 353.2	1	03/17/2005 12:28	Nicole M Kepley	1
00220	Nitrate Nitrogen	EPA 353.2	1	03/24/2005 10:11	Nicole M Kepley	1
00221	Ammonia Nitrogen	EPA 350.2	1	03/23/2005 17:30	Luz M Groff	1
00226	Ortho-Phosphate as P	EPA 365.3	1	03/17/2005 21:00	Daniel S Smith	1
00235	Biochemical Oxygen Demand	EPA 405.1	1	03/17/2005 22:30	Nicole R Rohrer	1
00273	Total Organic Carbon	EPA 415.1	1	03/23/2005 23:59	Kyle W Eckenroad	1
00345	Total Phosphorus as PO4 water	EPA 365.1	1	03/18/2005 13:17	William L Hamaker Jr	1
01553	Chemical Oxygen Demand	EPA 410.2	1	03/22/2005 07:30	Susan A Engle	1
08213	BTEX (8021)	SW-846 8021B	1	03/21/2005 13:54	Linda C Pape	1
00774	PAH's in Water by HPLC	SW-846 8310	1	03/20/2005 08:38	Mark A Clark	1
01146	GC VOA Water Prep	SW-846 5030B	1	03/21/2005 13:54	Linda C Pape	1
01460	Total Kjeldahl Nitrogen Digest	EPA 351.2	1	03/18/2005 08:45	Choon Y Tian	1
03337	PAH Water Extraction	SW-846 3510C	1	03/18/2005 17:25	JoElla L Rice	1
08264	Total Phos as PO4 Prep (water)	EPA 365.1	1	03/17/2005 13:10	Choon Y Tian	1

0662

MEMBER ACIL
Lancaster Laboratories, Inc.
2425 New Holland Pike
PO Box 12425
Lancaster, PA 17605-2425
717-656-2300 Fax: 717-656-2681

Lancaster Laboratories

Lancaster Laboratories Sample No. WW 4483996

MA3-TG2-1-031605-3-DP Groundwater
031605-3,4 02687.007.006.0001
Moss American
Collected:03/16/2005 09:15 by YH

Account Number: 07802

Submitted: 03/17/2005 09:00
Reported: 04/14/2005 at 12:47
Discard: 06/14/2005

Kerr-McGee Corporation
PO Box 3048
Livonia MI 48150

TG21D SDG#: KMA64-18FD*

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
08213	BTEX (8021)					
00776	Benzene	71-43-2	N.D.	0.2	ug/l	1
00777	Toluene	108-88-3	N.D.	0.2	ug/l	1
00778	Ethylbenzene	100-41-4	N.D.	0.2	ug/l	1
00779	Total Xylenes	1330-20-7	N.D.	0.6	ug/l	1
00774	PAH's in Water by HPLC					
00775	Naphthalene	91-20-3	N.D.	1.6	ug/l	1
00782	Acenaphthylene	208-96-8	N.D.	1.6	ug/l	1
00783	Acenaphthene	83-32-9	N.D.	1.6	ug/l	1
00784	Fluorene	86-73-7	N.D.	0.18	ug/l	1
00785	Phenanthrene	85-01-8	N.D.	0.081	ug/l	1
00789	Anthracene	120-12-7	N.D.	0.040	ug/l	1
00807	Fluoranthene	206-44-0	N.D.	0.040	ug/l	1
00811	Pyrene	129-00-0	N.D.	0.18	ug/l	1
00812	Benzo(a)anthracene	56-55-3	N.D.	0.020	ug/l	1
00818	Benzo(b)fluoranthene	205-99-2	N.D.	0.040	ug/l	1
00823	Benzo(a)pyrene	50-32-8	N.D.	0.020	ug/l	1
00895	Dibenz(a,h)anthracene	53-70-3	N.D.	0.040	ug/l	1
00898	Indeno(1,2,3-cd)pyrene	193-39-5	N.D.	0.081	ug/l	1
00907	Benzo(g,h,i)perylene	191-24-2	N.D.	0.10	ug/l	1
07409	Chrysene	218-01-9	N.D.	0.081	ug/l	1
07410	Benzo(k)fluoranthene	207-08-9	N.D.	0.020	ug/l	1

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
)8213	BTEX (8021)	SW-846 8021B	1	03/21/2005 14:26	Linda C Pape	1
)0774	PAH's in Water by HPLC	SW-846 8310	1	03/20/2005 09:16	Mark A Clark	1
01146	GC VOA Water Prep	SW-846 5030B	1	03/21/2005 14:26	Linda C Pape	1
03337	PAH Water Extraction	SW-846 3510C	1	03/18/2005 17:25	JoElla L Rice	1

0063

MEMBER ACIL
Lancaster Laboratories, Inc.
2425 New Holland Pike
PO Box 12425
Lancaster, PA 17605-2425
717-656-2300 Fax: 717-656-2681

Lancaster Laboratories

Lancaster Laboratories Sample No. WW 4483996

MA3-TG2-1-031605-3-DP Groundwater
031605-3,4 02687.007.006.0001
Moss American
Collected:03/16/2005 09:15 by YH

Account Number: 07802

Submitted: 03/17/2005 09:00
Reported: 04/14/2005 at 12:47
Discard: 06/14/2005

Kerr-McGee Corporation
PO Box 3048
Livonia MI 48150

TG21D SDG#: KMA64-18FD*

8664

MEMBER ACIL
Lancaster Laboratories, Inc.
2425 New Holland Pike
PO Box 12425
Lancaster, PA 17605-2425
717-656-2300 Fax: 717-656-2681

Kerr-McGee
Moss American site
Milwaukee, Wisconsin
SDG# KMA65

water samples – BTEX

1. Holding Times:

Lab ID	Client ID	Sample Date	Analysis Date
	MA3-		
4884126	FB-1	3/16/05	3/18/05
4884127	FB-13	3/16/05	3/18/05
4884128	MW27S	3/16/05	3/18/05
4884129	MW28S	3/16/05	3/18/05
4884130	MW28S-MS	3/16/05	3/18/05
4884131	MW28S-MSD	3/16/05	3/18/05
4884132	MW30S	3/16/05	3/18/05
4884133	MW32S	3/16/05	3/18/05
4884134	MW33S	3/16/05	3/18/05
4884135	MWS5S	3/16/05	3/18/05
4884136	MW5S-DP	3/16/05	3/18/05
4884137	MS6S	3/16/05	3/18/05
4884138	TB-3-16	3/16/05	3/18/05
4885275	MW34S	3/17/05	3/22/05
4885276	MW7S	3/17/05	3/22/05
4885277	TB-3/17	3/17/05	3/22/05

All samples were analyzed and extracted within the required holding times.

2. Method Blank:

Two method blanks were associated with the BTEX samples (BLK5525 and 5526). Both blanks were free of contamination.

3. Initial and Continuing Calibration:

For the BTEX samples, all initial and continuing calibration criteria appears to have been achieved. No deficiencies were noted in the laboratory narrative.

4. Surrogate Recovery-:

The surrogate recoveries for the BTEX surrogate (TFT) were all within required QC limits.

5. Matrix Spike/Matrix Spike Duplicate (MS/MSD):

Sample MW28S was the MS/MSD. All recoveries were acceptable.

6. Laboratory Control Sample:

All laboratory control sample results were acceptable.

7. Trip Blanks:

Two trip blanks were associated with the samples. All trip blank results were non-detect. All results are acceptable.

8. Field Blanks:

Two field blanks were associated with the samples.. All BTEX results were non-detect. All results are acceptable.

9. Field Duplicates:

Samples MW5SDP/MS5S are field duplicates. All results were non-detect.

10. Other

Samples MW34 and MW07 required dilutions.

Water Samples – Polynuclear Aromatic Hydrocarbons (PAHs by HPLC)

1. Holding Times:

Lab ID	Client ID	Sample Date	Extraction Date	Analysis Date
4884126	FB-1	3/16/05	3/18/05	3/20/05
4884127	FB-13	3/16/05	3/18/05	3/20/05
4884128	MW27S	3/16/05	3/18/05	3/20/05
4884129	MW28S	3/16/05	3/18/05	3/20/05
4884130	MW28S-MS	3/16/05	3/18/05	3/20/05
4884131	MW28S-MSD	3/16/05	3/18/05	3/20/05
4884132	MW30S	3/16/05	3/18/05	3/20/05
4884133	MW32S	3/16/05	3/18/05	3/20/05
4884134	MW33S	3/16/05	3/18/05	3/20/05
4884135	MWS5S	3/16/05	3/18/05	3/20/05
4884136	MW5S-DP	3/16/05	3/18/05	3/20/05
4884137	MS6S	3/16/05	3/18/05	3/20/05
4885275	MW34S	3/17/05	3/21/05	3/23/05
4885276	MW7S	3/17/05	3/21/05	3/23/05

All samples were analyzed and extracted within the required holding times.

2. Method Blank:

Two method blanks were associated with the samples (SBLKWB0772 and 0802). The method blanks were free of contamination.

3. Initial and Continuing Calibration:

Calibration results were acceptable.

4. Surrogate Recovery:

Two surrogates were used for two different detector columns All surrogate recoveries for NBZ 2 were outside control limits. However all results on the NBZ 1 were acceptable. No qualifications are required.

5. Matrix Spike/Matrix Spike Duplicate:

No matrix QC was associated samples MW34 or MW07 due to insufficient sample volume. A LCS was associated with those samples. Sample MW28S was run as a MS/MSD and associated with the remaining samples. All recoveries were acceptable..

6. Laboratory Control Sample:

One LCS was associated with the samples. All LCS recoveries were within required control limits. The RPD was high outside control limits for benzo(g,h,i)perylene. Based on acceptable MS/MSD and LCS/LCSD recoveries, no qualifications are required.

7. Field Blanks:

Two field blanks were associated with the samples. The field blank results were non-detect.

8. Field Duplicates:

Samples MW5S-DP/MW5S are field duplicates. All results were non-detect.

9. Other

Samples MW34 (20, 200) and MW07 (10) required dilutions. The laboratory narrative states that due to insufficient sample, reduced volumes were used in the extraction of a number of samples. The narrative states that due to the presence of interferents near the retention times, a number of compound reporting limits were not met. In addition, there was a greater than 40% disparity between the primary and confirmatory analysis for fluorine in sample MW27S. The laboratory reported the lower result in the sample. Due to this precision issue, the fluorene result in sample MW27S is flagged J for a positive result and UJ for a non-detect.

Data reviewed by: T. Balla Date: 4/21/05

7802 9357.16 44841.26-38

COC ID: 031605-3

Chain of Custody Record

WESTON

Client: Keir McGee

Site Name: Moss American | Contact Name: Tom Green

W. O.: 02687.007.006.0001 | Contact Phone No.: 847-918-4142

Lab: LANCASTER LABS | Lab Contact: C. SWEIGART

TAT | Lab Phone: 717-656-2308 X1527

Lab ID	Sample ID	Matrix	PID	MS/MSD	Date-Time Collected	EPA 353.2-NO2	EPA 353.2-NO3	EPA 365.3-ORTHO P, EPA 400.1-BOD	EPA 415.1-TOC	SW846 8021B-BTEX					
						Filtered									
						Container	40 ml Vials	40 ml Vials	500-ml Poly	250 ml Glass	40 ml Vials				
						Preservative	N/A	H2SO4	N/A	N/A	HCl				
	MA3-FB-031605-1	G		N	3/16/2005 07:45					3					
	MA3-FB-031605-13	G		N	3/16/2005 16:00					3					
	MA3-MW27S-031605-8	G		N	3/16/2005 14:45					3					
	MA3-MW28S-031605-4	G		N	3/16/2005 09:20					3					
	MA3-MW28S-031605-4-MSD	G		Y	3/16/2005 09:20					6					
	MA3-MW30S-031605-12	G		N	3/16/2005 15:55					3					
	MA3-MW32S-031605-9	G		N	3/16/2005 14:50					3					
	MA3-MW33S-031605-10	G		N	3/16/2005 14:55					3					
	MA3-MW35S-031605-11	G		N	3/16/2005 15:50					3					
	MA3-MW35S-031605-11-DP	G		N	3/16/2005 15:50					3					
	MA3-MW6S-031605-2	G		N	3/16/2005 09:10					3					
	MA3-TB-031605-1	G		N	3/16/2005 07:25					3					
	MA3-TG1-1-031605-5	G		N	3/16/2005 11:15	1	1	1	1	3					
	MA3-TG1-2-031605-6	G		N	3/16/2005 11:20	1	1	1	1	3					
	MA3-TG1-3-031605-7	G		N	3/16/2005 11:25	1	1	1	1	3					
	MA3-TG2-1-031605-3	G		N	3/16/2005 09:15	1	1	1	1	3					
	MA3-TG2-1-031605-3-DP	G		N	3/16/2005 09:15					3					

Remarks/Comments

Lab Use Only

Temp of Cooler when Received, C: 1 2.1 | 2 4.4 | 3 3.1 | 4 4.5 | 5 5.2 | 2.7

COC Tape was present on outer package Y N

COC Tape was unbroken on outer package Y N

COC Tape was present on sample Y N

COC Tape was unbroken on sample Y N

Received in good condition Y N

Labels Indicate Properly Preserved Y N

Received within Holding Time Y N

Relinquished By	Date / Time	Received By	Date / Time	Relinquished By	Date / Time	Received By	Date / Time
	05116 105 1730						
							31705 0900

Sampled By

8002

7802 935716 4484126-38

COC ID: 031605-4

Chain of Custody Record

WESTON SOLUTIONS

Client: Kerr McGee
Site Name: Moss American
W. O.: 02687.007.008.0001
Lab: LANCASTER LABS
TAT:

Contact Name: Tom Graan
Contact Phone No.: 847-918-4142
Lab Contact: C. SWEIGART
Lab Phone: 717-656-2308 X1527

Lab ID	Sample ID	Matrix	PID	MS/MSD	Date-Time Collected	SW846 8310-PAHS									
						Filtered									
						Container	1-L Amber								
						Preservative	N/A								
	MA3-FB-031605-1	G		N	3/16/2005 07:45		2								
	MA3-MW28S-031605-4	G		N	3/16/2005 09:20		2								
	MA3-MW28S-031605-4-MSD	G		Y	3/16/2005 09:20		4								
	MA3-TG2-1-031605-3-DP	G		N	3/16/2005 09:15		2								

Remarks/Comments

Lab Use Only

Temp of Cooler when Received, C: 1 2.7 | 2 4.4 | 3 3.1 | 4 4.5 | 5 5.2 | C 2.7

COC Tape was present on outer package: Y N
COC Tape was unbroken on outer package: Y N
COC Tape was present on sample: Y N
COC Tape was unbroken on sample: Y N

Received in good condition: Y N
Labels indicate Properly Preserved: Y N
Received within Holding Time: Y N

Sampled By

Relinquished By	Date / Time	Received By	Date / Time	Relinquished By	Date / Time	Received By	Date / Time
	03/16/05 1740						
							3/17/05 0900

7802 935716 4484126-38

COC ID: 031605-2

Chain of Custody Record

WESTON

Client: Kerr McGee
Site Name: Mesa American
W. O.: 02687.007.006.0001
Lab: LANCASTER LABS
TAT:

Contact Name: Tom Green
Contact Phone No.: 847-918-4142
Lab Contact: C. SWEIGART
Lab Phone: 717-656-2308 X1527

Lab ID	Sample ID	Matrix	PID	MS/MSD	Date-Time Collected	SW846 8310-PAHS								
						Filtered								
						Container	1-L Amber							
						Preservative	N/A							
	MAJ-MWS-031605-2	G		N	3/16/2005 09:10	2								
	MAJ-TG1-1-031605-3	G		N	3/16/2005 11:15	2								
	MAJ-TG1-2-031605-6	G		N	3/16/2005 11:20	2								
	MAJ-TG1-3-031605-7	G		N	3/16/2005 11:25	2								
	MAJ-TG2-1-031605-3	G		N	3/16/2005 09:15	2								

Remarks/Comments

Lab Use Only

Temp of Cooler when Received, C: 1 2.1 | 2 4.4 | 3 3.1 | 4 4.5 | 5 5.2 | 2.7

COC Tape was present on outer package: Y N
COC Tape was unbroken on outer package: Y N
COC Tape was present on sample: Y N
COC Tape was unbroken on sample: Y N

Received in good condition: Y N
Labels indicate Properly Preserved: Y N
Received within Holding Time: Y N

Relinquished By	Date / Time	Received By	Date / Time	Relinquished By	Date / Time	Received By	Date / Time
[signature]	03/16/05 1700						
						[signature]	3/17/05 0900

Sampled By: [signature]

7802 935716 4484126-38

COC ID: 031605-5

Chain of Custody Record

WESTON

Client: Kerr McGee

Site Name: Moss American | Contact Name: Tom Grean

W. O.: 02687.007.008.0001 | Contact Phone No.: 847-918-4142

Lab: LANCASTER LABS | Lab Contact: C. SWEIGART

TAT | Lab Phone: 717-656-2308 X1627

Lab ID	Sample ID	Matrix	PID	MS/MSD	Date-Time Collected	SW846 8310-PAHS								
						Filtered								
						Container	1-L Amber							
						Preservative	N/A							
	MA3-FB-031605-13	G		N	3/16/2005 16:00	2								
	MA3-MW27S-031605-8	G		N	3/16/2005 14:45	2								
	MA3-MW30S-031605-12	G		N	3/16/2005 15:55	2								
	MA3-MW32S-031605-9	G		N	3/16/2005 14:50	2								
	MA3-MW33S-031605-10	G		N	3/16/2005 14:55	2								

Remarks/Comments

Sampled By

Lab Use Only

Temp of Cooler when Received, C: 1 | 2 | 3 | 4 | 5

COC Tape was present on outer package: Y N

COC Tape was unbroken on outer package: Y N

COC Tape on presers on sample: Y N

COC Tape was unbroken on sample: Y N

Received in good condition: Y N

Labels Indicate Properly Preserved: Y N

Received within Holding Time: Y N

Relinquished By	Date / Time	Received By	Date / Time	Relinquished By	Date / Time	Received By	Date / Time
	031605 1800						3/17/05 0930

7802 935716 4484126-38

COC ID: 031605-7

Chain of Custody Record

WESTON

Client: Kerr McGee

Site Name: Mosa American | Contact Name: Tom Gman

W. O.: 02687.007.008.0001 | Contact Phone No.: 847-918-4142

Lab: LANCASTER LABS | Lab Contact: C. SWEIGART

TAT | Lab Phone: 717-656-2308 X1527

Lab ID	Sample ID	Matrix	PID	MS/MSD	Date-Time Collected	EPA 350.2-NH3	SW846 8310-PAHS	TKN, TP POC,COD							
						Filtered									
						Container	1-L Glass	1-L Amber	1-L Glass						
						Preservative	N/A	N/A	N/A						
	MA3-MW3S-031605-11	G		N	3/16/2005 15:50		2								
	MA3-MW3S-031605-11-DP	G		N	3/16/2005 15:50		2								
	MA3-TP2-1-031605-3	G		N	3/16/2005 09:15	1		1							

Remarks/Comments

Sampled By [signature] 03/16/05

Lab Use Only

Temp of Cooler when Received, C: 1 2.1 2 4.4 3 3.1 4 4.5 5 5.2 2.7

COC Tape was present on outer package (Y) N

COC Tape was unbroken on outer package (Y) N

COC Tape was present on sample (Y) N

COC Tape was unbroken on sample Y N

Received in good condition (Y) N

Labels indicate Property Preserved (Y) N

Received within Holding Time (Y) N

Relinquished By	Date / Time	Received By	Date / Time	Relinquished By	Date / Time	Received By	Date / Time
[signature]	03/16/05 1800					[signature]	3/17/05 0900

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Environmental Sample Administration
Receipt Documentation Log

Client/Project: Kerr McGee Cross Timbers

Date of Receipt: 3/17/05

Time of Receipt: 0900

Source Code: So-1

Shipping Container Sealed: (Y) / N

Custody Seal Present: (Y) / N

Custody Seal Intact: (Y) / N / NA

Package: (Chilled) / Not Chilled

Unpacker Emp. No.: 1075

Temperature of Shipping Containers	
(#1) trip 15	(#2) trip 15
Thermometer ID: 8917	Thermometer ID: 8917
Temp.: 2.1°C	Temp.: 4.4°C
(Temp. Bottle) / Surface Temp.	(Temp. Bottle) / Surface Temp.
(Wet Ice) / Dry Ice / Ice Packs	(Wet Ice) / Dry Ice / Ice Packs
Ice Present? (Y) / N Loose (Bagged)	Ice Present? (Y) / N Loose / (Bagged)
(#3)	(#4)
Thermometer ID: 8917	Thermometer ID: 8917
Temp.: 3.1°C	Temp.: 4.5°C
(Temp. Bottle) / Surface Temp.	(Temp. Bottle) / Surface Temp.
(Wet Ice) / Dry Ice / Ice Packs	(Wet Ice) / Dry Ice / Ice Packs
Ice Present? (Y) / N Loose (Bagged)	Ice Present? (Y) / N Loose (Bagged)

Paperwork Discrepancy/Unpacking Problems: missing 1 Amber MA3-MW305-031605-12
+ 1 extra Amber MA3-MW305-031605-13
label for MA3-TG2-1-031605-3 is TG-2-1-031605-3DP

1075 3/17/05

Sample Administration Internal Chain of Custody			
Name	Date	Time	Reason for Transfer
[signature]	3/17/05	1120	Unpacking
[signature]	3/17/05	1140	Place in Storage or (Entry)
			Remove from Storage
			Place in Storage or Entry
			Entry

2174.01

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Environmental Sample Administration
Receipt Documentation Log

Client/Project: Kerr McGee (Cross America) **Shipping Container Sealed:** (Y) / N

Date of Receipt: 3/17/05 **Custody Seal Present:** (Y) / N

Time of Receipt: 0900 **Custody Seal Intact:** (Y) / N / NA

Source Code: 50-1 **Package:** (Chilled) / Not Chilled

Unpacker Emp. No.: 1075

Temperature of Shipping Containers	
#1 S	#2 6
Thermometer ID: 8917	Thermometer ID: 8917
Temp.: 5.2	Temp.: 2.7
(Temp. Bottle) / Surface Temp.	(Temp. Bottle) / Surface Temp.
(Wet Ice) / Dry Ice / Ice Packs	(Wet Ice) / Dry Ice / Ice Packs
Ice Present? (Y) / N Loose / (Bagged)	Ice Present? (Y) / N Loose / (Bagged)
#3	#4
Thermometer ID:	Thermometer ID:
Temp.:	Temp.:
Temp. Bottle / Surface Temp.	Temp. Bottle / Surface Temp.
Wet Ice / Dry Ice / Ice Packs	Wet Ice / Dry Ice / Ice Packs
Ice Present? Y / N Loose / Bagged	Ice Present? Y / N Loose / Bagged

Paperwork Discrepancy/Unpacking Problems:

Sample Administration Internal Chain of Custody			
Name	Date	Time	Reason for Transfer
[signature]	3/17/05	1120	Unpacking
[signature]	3/17/05	1140	Place in Storage or (Entry)
			Remove from Storage
			Place in Storage or Entry
			Entry

7802 935937 4485275.77

COC ID: 031705

Chain of Custody Record

WESTON

Client: Kerr McGee

Site Name: Moss American | Contact Name: Tom Graan

W. O.: 02687.007.006.0001 | Contact Phone No.: 847-918-4142

Lab: LANCASTER LABS | Lab Contact: C. SWEIGART

TAT | Lab Phone: 717-656-2308 X1527

Lab ID	Sample ID	Matrix	PID	MS/MSD	Date-Time Collected	SW846 8021B-BTEX Filtered	SW846 8310-PAHS Filtered								
						Container	40 ml Vials	1-L Amber							
						Preservative	HCl	N/A							
	MA3-MW34S-031705-2	G		N	3/17/2005 09:50		3	2							
	MA3-MW7B-031705-1	G		N	3/17/2005 09:45		3	2							
	MA3-TB-031705-1	G		N	3/17/2005 08:05		3								

Remarks/Comments

Lab Use Only

Temp of Cooler when Received, C: 4.2° | 2 | 3 | 4 | 5

COC Tape was present on outer package (Y) N

COC Tape was unbroken on outer package (Y) N

COC Tape was present on sample Y N

COC Tape was unbroken on sample Y N

Received in good condition (Y) N

Labels indicate Properly Preserved Y N

Received within Holding Time Y N

Relinquished By	Date / Time	Received By	Date / Time	Relinquished By	Date / Time	Received By	Date / Time
[signature]	03/17/05 1300						
						[signature]	3-18-05 0900

Sampled By [signature]

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Environmental Sample Administration
Receipt Documentation Log

(Kerr McGee)

Client/Project: Weston Solutions Inc (IL)

Date of Receipt: 3-18-05

Time of Receipt: 0900

Source Code: 501

Shipping Container Sealed: Y / N

Custody Seal Present: Y / N

Custody Seal Intact: Y N / NA

Package: Chilled / Not Chilled

Unpacker Emp. No.: 1255

Temperature of Shipping Containers	
#1	#2
Thermometer ID: 895b	Thermometer ID:
Temp.: 4.2°	Temp.:
Temp. Bottle / Surface Temp.	Temp. Bottle / Surface Temp.
Wet Ice / Dry Ice / Ice Packs	Wet Ice / Dry Ice / Ice Packs
Ice Present? Y / N Loose / Bagged	Ice Present? Y / N Loose / Bagged
#3	#4
Thermometer ID:	Thermometer ID:
Temp.:	Temp.:
Temp. Bottle / Surface Temp.	Temp. Bottle / Surface Temp.
Wet Ice / Dry Ice / Ice Packs	Wet Ice / Dry Ice / Ice Packs
Ice Present? Y / N Loose / Bagged	Ice Present? Y / N Loose / Bagged

Paperwork Discrepancy/Unpacking Problems:

Sample Administration Internal Chain of Custody			
Name	Date	Time	Reason for Transfer
Kathy Brickley	3-18-05	1140	Unpacking
Annalisa Hatchison	3/18/05	1200	Place in Storage or Entry
			Remove from Storage
			Place in Storage or Entry
			Entry

Case Narrative
Client: Kerr-McGee Corporation
SDG: KMA65

LANCASTER LABORATORIES
PAH by HPLC

SAMPLE NUMBER(S) :

LL #'s	Sample Code	Matrix Water	Comments
4484126	MAFB1	X	Client Blank
4484127	MFB13	X	Client Blank
4484128	MW27S	X	
4484129	MW28S	X	Unspiked
4484130	MW28SMS	X	Matrix Spike
4484131	MW28SMSD	X	Matrix Spike Dup
4484132	MW30S	X	
4484133	MW32S	X	
4484134	MW33S	X	
4484135	MW05S	X	
4484136	MW5SD	X	
4484137	MW06S	X	
4485275	MW34S	X	20X Dilution
4485275DL	MW34SDL	X	200X Dilution
4485276	MW07S	X	
4485276DL	MW07SDL	X	10X Dilution
LABORATORY SUBMITTED QC:			
SBLKWB077	SBLKWB0772	X	Method Blank
SBLKWB080	SBLKWB0802	X	Method Blank
077WBLCS	077WBLCS2	X	Lab Control Sample
080WBLCS	080WBLCS2	X	Lab Control Sample
080WBLCSD	080WBLCSD2	X	Lab Control Sample Dup

8849

Case Narrative (continued)
SDG#: KMA65

SAMPLE PREPARATION:

Due to insufficient sample, reduced volumes were used in the extraction of a number of samples on organic extraction batch 05077WAB026. Refer to the organic extraction batchlog for the specific samples and volumes.

ANALYSIS:

The method used for analysis was SW-846 8310.

Sufficient sample volume was not available to perform a MS/MSD for the analysis of MW34S and MW07S. Therefore, a LCS/LCSD was performed to demonstrate precision and accuracy at a batch level.

MW34S was analyzed at an initial 20X dilution due to the nature of the sample matrix.

QUALITY CONTROL AND NONCONFORMANCE SUMMARY:

The relative percent difference (RPD) for benzo(g,h,i)perylene between 080WBLCS2 and 080WBLCSD2 was greater than 30 percent.

All other QC was within specifications.

DATA INTERPRETATION:

Only non-conformances for client requested compounds are addressed in this case narrative.

Due to incorrect integrations during the initial processing, manual integrations were performed for the following compounds.

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Phone: 717-656-2300 • Fax: 717-656-2300 • http:// www.LancasterLabs.com

Case Narrative (continued)
SDG#: KMA65

Sample Code	Compound
MW33S	acenaphthylene
MW34S	acenaphthylene, triphenylene, dibenz(a,h)anthracene
MW34SDL	acenaphthylene, triphenylene, dibenz(a,h)anthracene
MW07S	acenaphthylene
MW07SDL	acenaphthylene

Due to the presence of interferents near their retention times, a number of compound reporting limits were not met. Refer to the sample datalogs for the specific samples and compounds. The reporting limits were adjusted accordingly.

A disparity of >40% between the primary and confirmatory analysis occurred for fluorene in MW27S. Due to suspected interference, the lower result was reported in each sample.

No further interpretation is necessary for the data submitted.

Case Narrative Reviewed and Approved by:

Christi M. Ratchyk for CJN Date: 4-5-05
Charles J. Neslund
Group Leader, GC/MS Semivolatiles

0858

Sample Reference List for SDG Number KMA65 with a Data Package Type of I

07802 - Kerr-McGee Corporation
Moss American

Lab Sample Number	Lab Sample Code	Client Sample Description		
4484126	MAFB1	MA3-FB-031605-1	Groundwater 031605-3,4	02687.007.006.0001
4484127	MFB13	MA3-FB-031605-13	Groundwater 031605-3,5	02687.007.006.0001
4484128	MW27S	MA3-MW27S-031605-8	Groundwater 031605-3,5	02687.007.006.0001
4484129	MW28S	MA3-MW28S-031605-4	Groundwater 031605-3,4	02687.007.006.0001
4484130	MW28S	MA3-MW28S-031605-4-MS	Groundwater 031605-3,4	02687.007.006.0001
4484131	MW28S	MA3-MW28S-031605-4-MSD	Groundwater 031605-3,4	02687.007.006.0001
4484132	MW30S	MA3-MW30S-031605-12	Groundwater 031605-3,5	02687.007.006.0001
4484133	MW32S	MA3-MW32S-031605-9	Groundwater 031605-3,5	02687.007.006.0001
4484134	MW33S	MA3-MW33S-031605-10	Groundwater 031605-3,5	02687.007.006.0001
4484135	MW05S	MA3-MW5S-031605-11	Groundwater 031605-3,7	02687.007.006.0001
4484136	MW5SD	MA3-MW5S-031605-11-DP	Groundwater 031605-3,7	02687.007.006.0001
4484137	MW06S	MA3-MW6S-031605-2	Groundwater 031605-2,3	02687.007.006.0001
4484138	MWTB1	MA3-TB-031605-1	Groundwater 031605-3	02687.007.006.0001
4485275	MW34S	MA3-MW34S-031705-2	Groundwater 031705	02687.007.006.0001
4485276	MW07S	MA3-MW7S-031705-1	Groundwater 031705	02687.007.006.0001
4485277	MA1TB	MA3-TB-031705-1	Groundwater 031705	02687.007.006.0001

Lancaster Laboratories

REVISED

ANALYTICAL RESULTS

Prepared for:

Kerr-McGee Corporation
PO Box 3048
Livonia MI 48150

734-367-7900

Prepared by:

Lancaster Laboratories
2425 New Holland Pike
Lancaster, PA 17605-2425

SAMPLE GROUP

The sample group for this submittal is 935716. Samples arrived at the laboratory on Thursday, March 17, 2005. The PO# for this group is ZAKW1KEOK0A90089.

Client Description		Lancaster Labs Number
MA3-FB-031605-1	Groundwater	4484126
MA3-FB-031605-13	Groundwater	4484127
MA3-MW27S-031605-8	Groundwater	4484128
MA3-MW28S-031605-4	Groundwater	4484129
MA3-MW28S-031605-4-MS	Groundwater	4484130
MA3-MW28S-031605-4-MSD	Groundwater	4484131
MA3-MW30S-031605-12	Groundwater	4484132
MA3-MW32S-031605-9	Groundwater	4484133
MA3-MW33S-031605-10	Groundwater	4484134
MA3-MW5S-031605-11	Groundwater	4484135
MA3-MW5S-031605-11-DP	Groundwater	4484136
MA3-MW6S-031605-2	Groundwater	4484137
MA3-TB-031605-1	Groundwater	4484138

METHODOLOGY

The specific methodologies used in obtaining the enclosed analytical results are indicated on the laboratory chronicles.

1 COPY TO	Weston Solutions, Inc.	Attn: Tom Graan
1 COPY TO	Kerr-McGee Corporation	Attn: Roy Widmann
1 COPY TO	Data Package Group	

0012

Lancaster Laboratories

REVISED

Questions? Contact your Client Services Representative
Carrie A Fleming at (717) 656-2300.

Respectfully Submitted,

Dana M Kauffman

Dana M. Kauffman
Group Leader

0613

MEMBER ACIL
Lancaster Laboratories, Inc.
2425 New Holland Pike
PO Box 12425
Lancaster, PA 17605-2425
717-656-2300 Fax: 717-656-2681

Lancaster Laboratories

Lancaster Laboratories Sample No. WW 4484126

MA3-FB-031605-1 Groundwater
031605-3,4 02687.007.006.0001
Moss American
Collected:03/16/2005 07:45 by YH Account Number: 07802

Submitted: 03/17/2005 09:00
Reported: 04/14/2005 at 12:49
Discard: 06/14/2005

Kerr-McGee Corporation
PO Box 3048
Livonia MI 48150

MAFB1 SDG#: KMA65-01FB

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
08213	BTEX (8021)					
00776	Benzene	71-43-2	N.D.	0.2	ug/l	1
00777	Toluene	108-88-3	N.D.	0.2	ug/l	1
00778	Ethylbenzene	100-41-4	N.D.	0.2	ug/l	1
00779	Total Xylenes	1330-20-7	N.D.	0.6	ug/l	1
00774	PAH's in Water by HPLC					
00775	Naphthalene	91-20-3	N.D.	1.6	ug/l	1
00782	Acenaphthylene	208-96-8	N.D.	1.6	ug/l	1
00783	Acenaphthene	83-32-9	N.D.	1.6	ug/l	1
00784	Fluorene	86-73-7	N.D.	0.18	ug/l	1
00785	Phenanthrene	85-01-8	N.D.	0.082	ug/l	1
00789	Anthracene	120-12-7	N.D.	0.041	ug/l	1
00807	Fluoranthene	206-44-0	N.D.	0.041	ug/l	1
00811	Pyrene	129-00-0	N.D.	0.18	ug/l	1
00812	Benzo(a)anthracene	56-55-3	N.D.	0.021	ug/l	1
00818	Benzo(b)fluoranthene	205-99-2	N.D.	0.041	ug/l	1
00823	Benzo(a)pyrene	50-32-8	N.D.	0.021	ug/l	1
00895	Dibenz(a,h)anthracene	53-70-3	N.D.	0.041	ug/l	1
00898	Indeno(1,2,3-cd)pyrene	193-39-5	N.D.	0.082	ug/l	1
00907	Benzo(g,h,i)perylene	191-24-2	N.D.	0.10	ug/l	1
07409	Chrysene	218-01-9	N.D.	0.082	ug/l	1
07410	Benzo(k)fluoranthene	207-08-9	N.D.	0.021	ug/l	1

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
08213	BTEX (8021)	SW-846 8021B	1	03/18/2005 13:05	Linda C Pape	1
00774	PAH's in Water by HPLC	SW-846 8310	1	03/20/2005 09:55	Mark A Clark PGL4	1
01146	GC VOA Water Prep	SW-846 5030B	1	03/18/2005 13:05	Linda C Pape	1
03337	PAH Water Extraction	SW-846 3510C	1	03/18/2005 17:25	JoElla L Rice	1

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2425 New Holland Pike
PO Box 12425
Lancaster, PA 17605-2425
717-656-2300 Fax: 717-656-2681

Lancaster Laboratories

Lancaster Laboratories Sample No. WW 4484126

MA3-FB-031605-1 Groundwater
031605-3,4 02687.007.006.0001
Moss American
Collected:03/16/2005 07:45 by YH

Account Number: 07802

Submitted: 03/17/2005 09:00
Reported: 04/14/2005 at 12:49
Discard: 06/14/2005

Kerr-McGee Corporation
PO Box 3048
Livonia MI 48150

MAFB1 SDG#: KMA65-01FB

0015

MEMBER ACIL
Lancaster Laboratories, Inc.
2425 New Holland Pike
PO Box 12425
Lancaster, PA 17605-2425
717-656-2300 Fax: 717-656-2681

Lancaster Laboratories

Lancaster Laboratories Sample No. WW 4484127

MA3-FB-031605-13 Groundwater
031605-3,5 02687.007.006.0001
Moss American
Collected:03/16/2005 16:00 by YH

Account Number: 07802

Submitted: 03/17/2005 09:00
Reported: 04/14/2005 at 12:49
Discard: 06/14/2005

Kerr-McGee Corporation
PO Box 3048
Livonia MI 48150

MFB13 SDG#: KMA65-02FB

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
08213	BTEX (8021)					
00776	Benzene	71-43-2	N.D.	0.2	ug/l	1
00777	Toluene	108-88-3	N.D.	0.2	ug/l	1
00778	Ethylbenzene	100-41-4	N.D.	0.2	ug/l	1
00779	Total Xylenes	1330-20-7	N.D.	0.6	ug/l	1
00774	PAH's in Water by HPLC					
00775	Naphthalene	91-20-3	N.D.	1.6	ug/l	1
00782	Acenaphthylene	208-96-8	N.D.	1.6	ug/l	1
00783	Acenaphthene	83-32-9	N.D.	1.6	ug/l	1
00784	Fluorene	86-73-7	N.D.	0.18	ug/l	1
00785	Phenanthrene	85-01-8	N.D.	0.081	ug/l	1
00789	Anthracene	120-12-7	N.D.	0.041	ug/l	1
00807	Fluoranthene	206-44-0	N.D.	0.041	ug/l	1
00811	Pyrene	129-00-0	N.D.	0.18	ug/l	1
00812	Benzo(a)anthracene	56-55-3	N.D.	0.020	ug/l	1
00818	Benzo(b)fluoranthene	205-99-2	N.D.	0.041	ug/l	1
00823	Benzo(a)pyrene	50-32-8	N.D.	0.020	ug/l	1
00895	Dibenz(a,h)anthracene	53-70-3	N.D.	0.041	ug/l	1
00898	Indeno(1,2,3-cd)pyrene	193-39-5	N.D.	0.081	ug/l	1
00907	Benzo(g,h,i)perylene	191-24-2	N.D.	0.10	ug/l	1
07409	Chrysene	218-01-9	N.D.	0.081	ug/l	1
07410	Benzo(k)fluoranthene	207-08-9	N.D.	0.020	ug/l	1

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
08213	BTEX (8021)	SW-846 8021B	1	03/18/2005 13:38	Linda C Pape	1
00774	PAH's in Water by HPLC	SW-846 8310	1	03/20/2005 10:33	Mark A Clark	1
01146	GC VOA Water Prep	SW-846 5030B	1	03/18/2005 13:38	Linda C Pape	1
03337	PAH Water Extraction	SW-846 3510C	1	03/18/2005 17:25	JoElla L Rice	1

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PO Box 12425
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Lancaster Laboratories

Lancaster Laboratories Sample No. WW 4484127

MA3-FB-031605-13 Groundwater
031605-3,5 02687.007.006.0001
Moss American
Collected:03/16/2005 16:00 by YH

Account Number: 07802

Submitted: 03/17/2005 09:00
Reported: 04/14/2005 at 12:49
Discard: 06/14/2005

Kerr-McGee Corporation
PO Box 3048
Livonia MI 48150

MFB13 SDG#: KMA65-02FB

0017

MEMBER ACIL
Lancaster Laboratories, Inc.
2425 New Holland Pike
PO Box 12425
Lancaster, PA 17605-2425
717-656-2300 Fax: 717-656-2681

Lancaster Laboratories

Lancaster Laboratories Sample No. WW 4484128

MA3-MW27S-031605-8 Groundwater
031605-3,5 02687.007.006.0001
Moss American
Collected:03/16/2005 14:45 by YH

Account Number: 07802

Submitted: 03/17/2005 09:00
Reported: 04/14/2005 at 12:49
Discard: 06/14/2005

Kerr-McGee Corporation
PO Box 3048
Livonia MI 48150

MW27S SDG#: KMA65-03

CAT No.	Analysis Name	CAS Number	As Received Result		As Received Method Detection Limit	Units	Dilution Factor
08213	BTEX (8021)						
00776	Benzene	71-43-2	N.D.		0.2	ug/l	1
00777	Toluene	108-88-3	N.D.		0.2	ug/l	1
00778	Ethylbenzene	100-41-4	N.D.		0.2	ug/l	1
00779	Total Xylenes	1330-20-7	N.D.		0.6	ug/l	1
00774	PAH's in Water by HPLC						
00775	Naphthalene	91-20-3	N.D.		1.6	ug/l	1
00782	Acenaphthylene	208-96-8	N.D.		1.6	ug/l	1
00783	Acenaphthene	83-32-9	N.D.		1.6	ug/l	1
00784	Fluorene	86-73-7	0.24	J	0.18	ug/l	1
00785	Phenanthrene	85-01-8	N.D.		0.081	ug/l	1
00789	Anthracene	120-12-7	N.D.		0.041	ug/l	1
00807	Fluoranthene	206-44-0	N.D.		0.041	ug/l	1
00811	Pyrene	129-00-0	N.D.		0.18	ug/l	1
00812	Benzo(a)anthracene	56-55-3	N.D.		0.020	ug/l	1
00818	Benzo(b)fluoranthene	205-99-2	N.D.		0.041	ug/l	1
00823	Benzo(a)pyrene	50-32-8	N.D.		0.020	ug/l	1
00895	Dibenz(a,h)anthracene	53-70-3	N.D.		0.041	ug/l	1
00898	Indeno(1,2,3-cd)pyrene	193-39-5	N.D.		0.081	ug/l	1
00907	Benzo(g,h,i)perylene	191-24-2	N.D.		0.10	ug/l	1
07409	Chrysene	218-01-9	N.D.		0.081	ug/l	1
07410	Benzo(k)fluoranthene	207-08-9	N.D.		0.020	ug/l	1

A disparity of >40% between the primary and confirmatory analysis occurred.
Due to suspected interference, the lower result was reported for fluorene.

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst		Dilution Factor
08213	BTEX (8021)	SW-846 8021B	1	03/18/2005 21:26	Linda C Pape	0818	1

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Lancaster Laboratories Sample No. WW 4484128

MA3-MW27S-031605-8 Groundwater
031605-3,5 02687.007.006.0001
Moss American
Collected:03/16/2005 14:45 by YH

Account Number: 07802

Submitted: 03/17/2005 09:00
Reported: 04/14/2005 at 12:49
Discard: 06/14/2005

Kerr-McGee Corporation
PO Box 3048
Livonia MI 48150

MW27S SDG#: KMA65-03

00774	PAH's in Water by HPLC	SW-846 8310	1	03/20/2005 11:12	Mark A Clark	1
01146	GC VOA Water Prep	SW-846 5030B	1	03/18/2005 21:26	Linda C Pape	1
03337	PAH Water Extraction	SW-846 3510C	1	03/18/2005 17:25	JoElla L Rice	1

0019

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Lancaster Laboratories

Lancaster Laboratories Sample No. WW 4484129

MA3-MW28S-031605-4 Groundwater
031605-3,4 02687.007.006.0001
Moss American
Collected:03/16/2005 09:20 by YH

Account Number: 07802

Submitted: 03/17/2005 09:00
Reported: 04/14/2005 at 12:49
Discard: 06/14/2005

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MW28S SDG#: KMA65-04BKG

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
08213	BTEX (8021)					
00776	Benzene	71-43-2	N.D.	0.2	ug/l	1
00777	Toluene	108-88-3	N.D.	0.2	ug/l	1
00778	Ethylbenzene	100-41-4	N.D.	0.2	ug/l	1
00779	Total Xylenes	1330-20-7	N.D.	0.6	ug/l	1
00774	PAH's in Water by HPLC					
00775	Naphthalene	91-20-3	N.D.	1.8	ug/l	1
00782	Acenaphthylene	208-96-8	N.D.	1.8	ug/l	1
00783	Acenaphthene	83-32-9	N.D.	1.8	ug/l	1
00784	Fluorene	86-73-7	N.D.	0.20	ug/l	1
00785	Phenanthrene	85-01-8	N.D.	0.089	ug/l	1
00789	Anthracene	120-12-7	N.D.	0.044	ug/l	1
00807	Fluoranthene	206-44-0	N.D.	0.044	ug/l	1
00811	Pyrene	129-00-0	N.D.	0.20	ug/l	1
00812	Benzo(a)anthracene	56-55-3	N.D.	0.022	ug/l	1
00818	Benzo(b)fluoranthene	205-99-2	N.D.	0.044	ug/l	1
00823	Benzo(a)pyrene	50-32-8	N.D.	0.022	ug/l	1
00895	Dibenz(a,h)anthracene	53-70-3	N.D.	0.044	ug/l	1
00898	Indeno(1,2,3-cd)pyrene	193-39-5	N.D.	0.089	ug/l	1
00907	Benzo(g,h,i)perylene	191-24-2	N.D.	0.11	ug/l	1
07409	Chrysene	218-01-9	N.D.	0.089	ug/l	1
07410	Benzo(k)fluoranthene	207-08-9	N.D.	0.022	ug/l	1

Due to the nature of the sample matrix, a reduced aliquot was used for analysis. The reporting limits were raised accordingly.

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
08213	BTEX (8021)	SW-846 8021B	1	03/18/2005 18:38	Linda C Pape 5828	1

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Lancaster Laboratories Sample No. WW 4484129

MA3-MW28S-031605-4 Groundwater
031605-3,4 02687.007.006.0001
Moss American
Collected:03/16/2005 09:20 by YH

Account Number: 07802

Submitted: 03/17/2005 09:00
Reported: 04/14/2005 at 12:49
Discard: 06/14/2005

Kerr-McGee Corporation
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Livonia MI 48150

MW28S SDG#: KMA65-04BKG

00774	PAH's in Water by HPLC	SW-846 8310	1	03/20/2005 04:04	Mark A Clark	1
01146	GC VOA Water Prep	SW-846 5030B	1	03/18/2005 18:38	Linda C Pape	1
03337	PAH Water Extraction	SW-846 3510C	1	03/18/2005 17:25	JoElla L Rice	1

6821

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Lancaster Laboratories Sample No. WW 4484130

MA3-MW28S-031605-4-MS Groundwater
031605-3,4 02687.007.006.0001
Moss American
Collected:03/16/2005 09:20 by YH

Account Number: 07802

Submitted: 03/17/2005 09:00
Reported: 04/14/2005 at 12:49
Discard: 06/14/2005

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MW28S SDG#: KMA65-04MS

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
08213	BTEX (8021)					
00776	Benzene	71-43-2	21.	0.2	ug/l	1
00777	Toluene	108-88-3	21.	0.2	ug/l	1
00778	Ethylbenzene	100-41-4	21.	0.2	ug/l	1
00779	Total Xylenes	1330-20-7	65.	0.6	ug/l	1
00774	PAH's in Water by HPLC					
00775	Naphthalene	91-20-3	190.	1.8	ug/l	1
00782	Acenaphthylene	208-96-8	200.	1.8	ug/l	1
00783	Acenaphthene	83-32-9	200.	1.8	ug/l	1
00784	Fluorene	86-73-7	21.	0.20	ug/l	1
00785	Phenanthrene	85-01-8	6.3	0.089	ug/l	1
00789	Anthracene	120-12-7	3.1	0.044	ug/l	1
00807	Fluoranthene	206-44-0	3.1	0.044	ug/l	1
00811	Pyrene	129-00-0	20.	0.20	ug/l	1
00812	Benzo(a)anthracene	56-55-3	1.5	0.022	ug/l	1
00818	Benzo(b)fluoranthene	205-99-2	1.3	0.044	ug/l	1
00823	Benzo(a)pyrene	50-32-8	1.5	0.022	ug/l	1
00895	Dibenz(a,h)anthracene	53-70-3	3.1	0.044	ug/l	1
00898	Indeno(1,2,3-cd)pyrene	193-39-5	6.1	0.089	ug/l	1
00907	Benzo(g,h,i)perylene	191-24-2	12.	0.11	ug/l	1
07409	Chrysene	218-01-9	6.0	0.089	ug/l	1
07410	Benzo(k)fluoranthene	207-08-9	1.3	0.022	ug/l	1

Due to the nature of the sample matrix, a reduced aliquot was used for analysis. The reporting limits were raised accordingly.

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst		Dilution Factor
08213	BTEX (8021)	SW-846 8021B	1	03/18/2005 19:11	Linda C Pape	0822	1

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Lancaster Laboratories Sample No. WW 4484130

MA3-MW28S-031605-4-MS Groundwater
031605-3,4 02687.007.006.0001
Moss American
Collected:03/16/2005 09:20 by YH

Account Number: 07802

Submitted: 03/17/2005 09:00
Reported: 04/14/2005 at 12:49
Discard: 06/14/2005

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MW28S SDG#: KMA65-04MS

00774	PAH's in Water by HPLC	SW-846 8310	1	03/20/2005 05:21	Mark A Clark	1
01146	GC VOA Water Prep	SW-846 5030B	1	03/18/2005 19:11	Linda C Pape	1
03337	PAH Water Extraction	SW-846 3510C	1	03/18/2005 17:25	JoElla L Rice	1

0023

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Lancaster Laboratories Sample No. WW 4484131

MA3-MW28S-031605-4-MSD Groundwater
031605-3,4 02687.007.006.0001
Moss American
Collected:03/16/2005 09:20 by YH

Account Number: 07802

Submitted: 03/17/2005 09:00
Reported: 04/14/2005 at 12:49
Discard: 06/14/2005

Kerr-McGee Corporation
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MW28S SDG#: KMA65-04MSD

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
08213	BTEX (8021)					
00776	Benzene	71-43-2	22.	0.2	ug/l	1
00777	Toluene	108-88-3	21.	0.2	ug/l	1
00778	Ethylbenzene	100-41-4	21.	0.2	ug/l	1
00779	Total Xylenes	1330-20-7	63.	0.6	ug/l	1
00774	PAH's in Water by HPLC					
00775	Naphthalene	91-20-3	190.	1.8	ug/l	1
00782	Acenaphthylene	208-96-8	190.	1.8	ug/l	1
00783	Acenaphthene	83-32-9	190.	1.8	ug/l	1
00784	Fluorene	86-73-7	21.	0.20	ug/l	1
00785	Phenanthrene	85-01-8	6.3	0.089	ug/l	1
00789	Anthracene	120-12-7	3.0	0.044	ug/l	1
00807	Fluoranthene	206-44-0	3.0	0.044	ug/l	1
00811	Pyrene	129-00-0	19.	0.20	ug/l	1
00812	Benzo(a)anthracene	56-55-3	1.5	0.022	ug/l	1
00818	Benzo(b)fluoranthene	205-99-2	1.2	0.044	ug/l	1
00823	Benzo(a)pyrene	50-32-8	1.4	0.022	ug/l	1
00895	Dibenz(a,h)anthracene	53-70-3	2.9	0.044	ug/l	1
00898	Indeno(1,2,3-cd)pyrene	193-39-5	5.9	0.089	ug/l	1
00907	Benzo(g,h,i)perylene	191-24-2	12.	0.11	ug/l	1
07409	Chrysene	218-01-9	5.8	0.089	ug/l	1
07410	Benzo(k)fluoranthene	207-08-9	1.2	0.022	ug/l	1

Due to the nature of the sample matrix, a reduced aliquot was used for analysis. The reporting limits were raised accordingly.

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
08213	BTEX (8021)	SW-846 8021B	1	03/18/2005 19:45	Linda C Pape 6824	1

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Lancaster Laboratories Sample No. WW 4484131

MA3-MW28S-031605-4-MSD Groundwater
031605-3,4 02687.007.006.0001
Moss American
Collected:03/16/2005 09:20 by YH

Account Number: 07802

Submitted: 03/17/2005 09:00
Reported: 04/14/2005 at 12:49
Discard: 06/14/2005

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MW28S SDG#: KMA65-04MSD

00774	PAH's in Water by HPLC	SW-846 8310	1	03/20/2005 05:59	Mark A Clark	1
01146	GC VOA Water Prep	SW-846 5030B	1	03/18/2005 19:45	Linda C Pape	1
03337	PAH Water Extraction	SW-846 3510C	1	03/18/2005 17:25	JoElla L Rice	1

0825

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Lancaster Laboratories Sample No. WW 4484132

MA3-MW30S-031605-12 Groundwater
031605-3,5 02687.007.006.0001
Moss American
Collected:03/16/2005 15:55 by YH

Account Number: 07802

Submitted: 03/17/2005 09:00
Reported: 04/14/2005 at 12:49
Discard: 06/14/2005

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MW30S SDG#: KMA65-05

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
08213	BTEX (8021)					
00776	Benzene	71-43-2	N.D.	0.2	ug/l	1
00777	Toluene	108-88-3	N.D.	0.2	ug/l	1
00778	Ethylbenzene	100-41-4	N.D.	0.2	ug/l	1
00779	Total Xylenes	1330-20-7	N.D.	0.6	ug/l	1
00774	PAH's in Water by HPLC					
00775	Naphthalene	91-20-3	N.D.	1.6	ug/l	1
00782	Acenaphthylene	208-96-8	N.D.	1.6	ug/l	1
00783	Acenaphthene	83-32-9	N.D.	1.6	ug/l	1
00784	Fluorene	86-73-7	N.D.	0.18	ug/l	1
00785	Phenanthrene	85-01-8	N.D.	0.080	ug/l	1
00789	Anthracene	120-12-7	N.D.	0.040	ug/l	1
00807	Fluoranthene	206-44-0	N.D.	0.040	ug/l	1
00811	Pyrene	129-00-0	N.D.	0.18	ug/l	1
00812	Benzo(a)anthracene	56-55-3	N.D.	0.020	ug/l	1
00818	Benzo(b)fluoranthene	205-99-2	N.D.	0.040	ug/l	1
00823	Benzo(a)pyrene	50-32-8	N.D.	0.020	ug/l	1
00895	Dibenz(a,h)anthracene	53-70-3	N.D.	0.040	ug/l	1
00898	Indeno(1,2,3-cd)pyrene	193-39-5	N.D.	0.080	ug/l	1
00907	Benzo(g,h,i)perylene	191-24-2	N.D.	0.099	ug/l	1
07409	Chrysene	218-01-9	N.D.	0.080	ug/l	1
07410	Benzo(k)fluoranthene	207-08-9	N.D.	0.020	ug/l	1

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
08213	BTEX (8021)	SW-846 8021B	1	03/18/2005 14:59	Linda C Pape	1
00774	PAH's in Water by HPLC	SW-846 8310	1	03/20/2005 12:29	Mark A Glark	1
01146	GC VOA Water Prep	SW-846 5030B	1	03/18/2005 14:59	Linda C Pape	1
03337	PAH Water Extraction	SW-846 3510C	1	03/18/2005 17:25	JoElla L Rice	1

0026

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Lancaster Laboratories Sample No. WW 4484132

MA3-MW30S-031605-12 Groundwater
031605-3,5 02687.007.006.0001
Moss American
Collected:03/16/2005 15:55 by YH

Account Number: 07802

Submitted: 03/17/2005 09:00
Reported: 04/14/2005 at 12:49
Discard: 06/14/2005

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MW30S SDG#: KMA65-05

0027

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Lancaster Laboratories Sample No. WW 4484133

MA3-MW32S-031605-9 Groundwater
031605-3,5 02687.007.006.0001
Moss American
Collected:03/16/2005 14:50 by YH

Account Number: 07802

Submitted: 03/17/2005 09:00
Reported: 04/14/2005 at 12:49
Discard: 06/14/2005

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MW32S SDG#: KMA65-06

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
08213	BTEX (8021)					
00776	Benzene	71-43-2	N.D.	0.2	ug/l	1
00777	Toluene	108-88-3	N.D.	0.2	ug/l	1
00778	Ethylbenzene	100-41-4	N.D.	0.2	ug/l	1
00779	Total Xylenes	1330-20-7	N.D.	0.6	ug/l	1
00774	PAH's in Water by HPLC					
00775	Naphthalene	91-20-3	N.D.	1.6	ug/l	1
00782	Acenaphthylene	208-96-8	N.D.	1.6	ug/l	1
00783	Acenaphthene	83-32-9	N.D.	1.6	ug/l	1
00784	Fluorene	86-73-7	N.D.	0.18	ug/l	1
00785	Phenanthrene	85-01-8	N.D.	0.078	ug/l	1
00789	Anthracene	120-12-7	N.D.	0.039	ug/l	1
00807	Fluoranthene	206-44-0	N.D.	0.039	ug/l	1
00811	Pyrene	129-00-0	N.D.	0.18	ug/l	1
00812	Benzo(a)anthracene	56-55-3	N.D.	0.020	ug/l	1
00818	Benzo(b)fluoranthene	205-99-2	N.D.	0.039	ug/l	1
00823	Benzo(a)pyrene	50-32-8	N.D.	0.020	ug/l	1
00895	Dibenz(a,h)anthracene	53-70-3	N.D.	0.039	ug/l	1
00898	Indeno(1,2,3-cd)pyrene	193-39-5	N.D.	0.078	ug/l	1
00907	Benzo(g,h,i)perylene	191-24-2	N.D.	0.098	ug/l	1
07409	Chrysene	218-01-9	N.D.	0.078	ug/l	1
07410	Benzo(k)fluoranthene	207-08-9	N.D.	0.020	ug/l	1

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
08213	BTEX (8021)	SW-846 8021B	1	03/18/2005 15:32	Linda C Pape	1
00774	PAH's in Water by HPLC	SW-846 8310	1	03/20/2005 13:08	Mark A Clark 0020	1
01146	GC VOA Water Prep	SW-846 5030B	1	03/18/2005 15:32	Linda C Pape	1
03337	PAH Water Extraction	SW-846 3510C	1	03/18/2005 17:25	JoElla L Rice	1

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Lancaster Laboratories Sample No. WW 4484133

MA3-MW32S-031605-9 Groundwater
031605-3,5 02687.007.006.0001
Moss American
Collected:03/16/2005 14:50 by YH

Account Number: 07802

Submitted: 03/17/2005 09:00
Reported: 04/14/2005 at 12:49
Discard: 06/14/2005

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MW32S SDG#: KMA65-06

0029

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Lancaster Laboratories

Lancaster Laboratories Sample No. WW 4484134

MA3-MW33S-031605-10 Groundwater
031605-3,5 02687.007.006.0001
Moss American
Collected:03/16/2005 14:55 by YH

Account Number: 07802

Submitted: 03/17/2005 09:00
Reported: 04/14/2005 at 12:49
Discard: 06/14/2005

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MW33S SDG#: KMA65-07

CAT No.	Analysis Name	CAS Number	As Received Result		As Received Method Detection Limit	Units	Dilution Factor
08213	BTEX (8021)						
00776	Benzene	71-43-2	N.D.		0.2	ug/l	1
00777	Toluene	108-88-3	N.D.		0.2	ug/l	1
00778	Ethylbenzene	100-41-4	2.4		0.2	ug/l	1
00779	Total Xylenes	1330-20-7	2.4	J	0.6	ug/l	1
00774	PAH's in Water by HPLC						
00775	Naphthalene	91-20-3	170.		1.6	ug/l	1
00782	Acenaphthylene	208-96-8	N.D.		6.0	ug/l	1
00783	Acenaphthene	83-32-9	29.		1.6	ug/l	1
00784	Fluorene	86-73-7	9.1		0.18	ug/l	1
00785	Phenanthrene	85-01-8	1.1		0.078	ug/l	1
00789	Anthracene	120-12-7	0.042	J	0.039	ug/l	1
00807	Fluoranthene	206-44-0	N.D.		0.039	ug/l	1
00811	Pyrene	129-00-0	N.D.		0.18	ug/l	1
00812	Benzo(a)anthracene	56-55-3	N.D.		0.019	ug/l	1
00818	Benzo(b)fluoranthene	205-99-2	N.D.		0.039	ug/l	1
00823	Benzo(a)pyrene	50-32-8	N.D.		0.019	ug/l	1
00895	Dibenz(a,h)anthracene	53-70-3	N.D.		0.039	ug/l	1
00898	Indeno(1,2,3-cd)pyrene	193-39-5	N.D.		0.078	ug/l	1
00907	Benzo(g,h,i)perylene	191-24-2	N.D.		0.097	ug/l	1
07409	Chrysene	218-01-9	N.D.		0.078	ug/l	1
07410	Benzo(k)fluoranthene	207-08-9	N.D.		0.019	ug/l	1

Due to the presence of an interferent near its retention time, the normal reporting limit was not attained for acenaphthylene. The reporting limit for this compound was raised accordingly.

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor

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717-656-2300 Fax: 717-656-2681

Lancaster Laboratories

Lancaster Laboratories Sample No. WW 4484134

MA3-MW33S-031605-10 Groundwater
031605-3,5 02687.007.006.0001
Moss American
Collected:03/16/2005 14:55 by YH

Account Number: 07802

Submitted: 03/17/2005 09:00
Reported: 04/14/2005 at 12:49
Discard: 06/14/2005

Kerr-McGee Corporation
PO Box 3048
Livonia MI 48150

MW33S SDG#: KMA65-07

08213	BTEX (8021)	SW-846 8021B	1	03/18/2005 17:31	Linda C Pape	1
00774	PAH's in Water by HPLC	SW-846 8310	1	03/20/2005 13:46	Mark A Clark	1
01146	GC VOA Water Prep	SW-846 5030B	1	03/18/2005 17:31	Linda C Pape	1
03337	PAH Water Extraction	SW-846 3510C	1	03/18/2005 17:25	JoElla L Rice	1

0031

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PO Box 12425
Lancaster, PA 17605-2425
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Lancaster Laboratories

Lancaster Laboratories Sample No. WW 4484135

MA3-MW5S-031605-11 Groundwater
031605-3,7 02687.007.006.0001
Moss American
Collected:03/16/2005 15:50 by YH Account Number: 07802

Submitted: 03/17/2005 09:00 Kerr-McGee Corporation
Reported: 04/14/2005 at 12:50 PO Box 3048
Discard: 06/14/2005 Livonia MI 48150

MW05S SDG#: KMA65-08

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
08213	BTEX (8021)					
00776	Benzene	71-43-2	N.D.	0.2	ug/l	1
00777	Toluene	108-88-3	N.D.	0.2	ug/l	1
00778	Ethylbenzene	100-41-4	N.D.	0.2	ug/l	1
00779	Total Xylenes	1330-20-7	N.D.	0.6	ug/l	1
00774	PAH's in Water by HPLC					
00775	Naphthalene	91-20-3	N.D.	1.5	ug/l	1
00782	Acenaphthylene	208-96-8	N.D.	1.5	ug/l	1
00783	Acenaphthene	83-32-9	N.D.	1.5	ug/l	1
00784	Fluorene	86-73-7	N.D.	0.17	ug/l	1
00785	Phenanthrene	85-01-8	N.D.	0.077	ug/l	1
00789	Anthracene	120-12-7	N.D.	0.039	ug/l	1
00807	Fluoranthene	206-44-0	N.D.	0.039	ug/l	1
00811	Pyrene	129-00-0	N.D.	0.17	ug/l	1
00812	Benzo(a)anthracene	56-55-3	N.D.	0.019	ug/l	1
00818	Benzo(b)fluoranthene	205-99-2	N.D.	0.039	ug/l	1
00823	Benzo(a)pyrene	50-32-8	N.D.	0.019	ug/l	1
00895	Dibenz(a,h)anthracene	53-70-3	N.D.	0.039	ug/l	1
00898	Indeno(1,2,3-cd)pyrene	193-39-5	N.D.	0.077	ug/l	1
00907	Benzo(g,h,i)perylene	191-24-2	N.D.	0.096	ug/l	1
07409	Chrysene	218-01-9	N.D.	0.077	ug/l	1
07410	Benzo(k)fluoranthene	207-08-9	N.D.	0.019	ug/l	1

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
08213	BTEX (8021)	SW-846 8021B	1	03/18/2005 18:04	Linda C Pape	1
00774	PAH's in Water by HPLC	SW-846 8310	1	03/20/2005 14:25	Mark A Clark 0832	1
01146	GC VOA Water Prep	SW-846 5030B	1	03/18/2005 18:04	Linda C Pape	1
03337	PAH Water Extraction	SW-846 3510C	1	03/18/2005 17:25	JoElla L Rice	1

Lancaster Laboratories

Lancaster Laboratories Sample No. WW 4484135

MA3-MW5S-031605-11 Groundwater
031605-3,7 02687.007.006.0001
Moss American
Collected:03/16/2005 15:50 by YH

Account Number: 07802

Submitted: 03/17/2005 09:00
Reported: 04/14/2005 at 12:50
Discard: 06/14/2005

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MW05S SDG#: KMA65-08

0033

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Lancaster Laboratories

Lancaster Laboratories Sample No. WW 4484136

MA3-MW5S-031605-11-DP Groundwater
031605-3,7 02687.007.006.0001
Moss American
Collected:03/16/2005 15:50 by YH

Account Number: 07802

Submitted: 03/17/2005 09:00
Reported: 04/14/2005 at 12:50
Discard: 06/14/2005

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MW5SD SDG#: KMA65-09FD

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
08213	BTEX (8021)					
00776	Benzene	71-43-2	N.D.	0.2	ug/l	1
00777	Toluene	108-88-3	N.D.	0.2	ug/l	1
00778	Ethylbenzene	100-41-4	N.D.	0.2	ug/l	1
00779	Total Xylenes	1330-20-7	N.D.	0.6	ug/l	1
00774	PAH's in Water by HPLC					
00775	Naphthalene	91-20-3	N.D.	1.7	ug/l	1
00782	Acenaphthylene	208-96-8	N.D.	1.7	ug/l	1
00783	Acenaphthene	83-32-9	N.D.	1.7	ug/l	1
00784	Fluorene	86-73-7	N.D.	0.19	ug/l	1
00785	Phenanthrene	85-01-8	N.D.	0.085	ug/l	1
00789	Anthracene	120-12-7	N.D.	0.042	ug/l	1
00807	Fluoranthene	206-44-0	N.D.	0.042	ug/l	1
00811	Pyrene	129-00-0	N.D.	0.19	ug/l	1
00812	Benzo(a)anthracene	56-55-3	N.D.	0.021	ug/l	1
00818	Benzo(b)fluoranthene	205-99-2	N.D.	0.042	ug/l	1
00823	Benzo(a)pyrene	50-32-8	N.D.	0.021	ug/l	1
00895	Dibenz(a,h)anthracene	53-70-3	N.D.	0.042	ug/l	1
00898	Indeno(1,2,3-cd)pyrene	193-39-5	N.D.	0.085	ug/l	1
00907	Benzo(g,h,i)perylene	191-24-2	N.D.	0.11	ug/l	1
07409	Chrysene	218-01-9	N.D.	0.085	ug/l	1
07410	Benzo(k)fluoranthene	207-08-9	N.D.	0.021	ug/l	1

Due to the nature of the sample matrix, a reduced aliquot was used for analysis. The reporting limits were raised accordingly.

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
08213	BTEX (8021)	SW-846 8021B	1	03/18/2005 22:00	Linda C Pape	1

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Lancaster Laboratories Sample No. WW 4484136

MA3-MW5S-031605-11-DP Groundwater
031605-3,7 02687.007.006.0001
Moss American
Collected:03/16/2005 15:50 by YH

Account Number: 07802

Submitted: 03/17/2005 09:00
Reported: 04/14/2005 at 12:50
Discard: 06/14/2005

Kerr-McGee Corporation
PO Box 3048
Livonia MI 48150

MW5SD SDG#: KMA65-09FD

00774	PAH's in Water by HPLC	SW-846 8310	1	03/20/2005 15:03	Mark A Clark	1
01146	GC VOA Water Prep	SW-846 5030B	1	03/18/2005 22:00	Linda C Pape	1
03337	PAH Water Extraction	SW-846 3510C	1	03/18/2005 17:25	JoElla L Rice	1

0035

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Lancaster, PA 17605-2425
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Lancaster Laboratories Sample No. WW 4484137

MA3-MW6S-031605-2 Groundwater
031605-2,3 02687.007.006.0001
Moss American
Collected:03/16/2005 09:10 by YH

Account Number: 07802

Submitted: 03/17/2005 09:00
Reported: 04/14/2005 at 12:50
Discard: 06/14/2005

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PO Box 3048
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MW06S SDG#: KMA65-10

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
08213	BTEX (8021)					
00776	Benzene	71-43-2	N.D.	0.2	ug/l	1
00777	Toluene	108-88-3	N.D.	0.2	ug/l	1
00778	Ethylbenzene	100-41-4	N.D.	0.2	ug/l	1
00779	Total Xylenes	1330-20-7	N.D.	0.6	ug/l	1
00774	PAH's in Water by HPLC					
00775	Naphthalene	91-20-3	N.D.	1.6	ug/l	1
00782	Acenaphthylene	208-96-8	N.D.	1.6	ug/l	1
00783	Acenaphthene	83-32-9	N.D.	1.6	ug/l	1
00784	Fluorene	86-73-7	N.D.	0.18	ug/l	1
00785	Phenanthrene	85-01-8	N.D.	0.079	ug/l	1
00789	Anthracene	120-12-7	N.D.	0.040	ug/l	1
00807	Fluoranthene	206-44-0	N.D.	0.040	ug/l	1
00811	Pyrene	129-00-0	N.D.	0.18	ug/l	1
00812	Benzo(a)anthracene	56-55-3	N.D.	0.020	ug/l	1
00818	Benzo(b)fluoranthene	205-99-2	N.D.	0.040	ug/l	1
00823	Benzo(a)pyrene	50-32-8	N.D.	0.020	ug/l	1
00895	Dibenz(a,h)anthracene	53-70-3	N.D.	0.040	ug/l	1
00898	Indeno(1,2,3-cd)pyrene	193-39-5	N.D.	0.079	ug/l	1
00907	Benzo(g,h,i)perylene	191-24-2	N.D.	0.099	ug/l	1
07409	Chrysene	218-01-9	N.D.	0.079	ug/l	1
07410	Benzo(k)fluoranthene	207-08-9	N.D.	0.020	ug/l	1

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
08213	BTEX (8021)	SW-846 8021B	1	03/18/2005 22:34	Linda C Pape	1
00774	PAH's in Water by HPLC	SW-846 8310	1	03/20/2005 15:42	Mark A Clark 0036	1
01146	GC VOA Water Prep	SW-846 5030B	1	03/18/2005 22:34	Linda C Pape	1
03337	PAH Water Extraction	SW-846 3510C	1	03/18/2005 17:25	JoElla L Rice	1

Lancaster Laboratories

Lancaster Laboratories Sample No. WW 4484137

MA3-MW6S-031605-2 Groundwater
031605-2,3 02687.007.006.0001
Moss American
Collected:03/16/2005 09:10 by YH

Account Number: 07802

Submitted: 03/17/2005 09:00
Reported: 04/14/2005 at 12:50
Discard: 06/14/2005

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PO Box 3048
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MW06S SDG#: KMA65-10

8837

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Lancaster, PA 17605-2425
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Lancaster Laboratories

Lancaster Laboratories Sample No. WW 4484138

MA3-TB-031605-1 Groundwater
031605-3 02687.007.006.0001
Moss American
Collected:03/16/2005 07:25 by YH

Account Number: 07802

Submitted: 03/17/2005 09:00
Reported: 04/14/2005 at 12:50
Discard: 06/14/2005

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Livonia MI 48150

MWTB1 SDG#: KMA65-11TB

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
08213	BTEX (8021)					
00776	Benzene	71-43-2	N.D.	0.2	ug/l	1
00777	Toluene	108-88-3	N.D.	0.2	ug/l	1
00778	Ethylbenzene	100-41-4	N.D.	0.2	ug/l	1
00779	Total Xylenes	1330-20-7	N.D.	0.6	ug/l	1

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
08213	BTEX (8021)	SW-846 8021B	1	03/18/2005 14:12	Linda C Pape	1
01146	GC VOA Water Prep	SW-846 5030B	1	03/18/2005 14:12	Linda C Pape	1

0438

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ANALYTICAL RESULTS

Prepared for:

Kerr-McGee Corporation
PO Box 3048
Livonia MI 48150

734-367-7900

Prepared by:

Lancaster Laboratories
2425 New Holland Pike
Lancaster, PA 17605-2425

SAMPLE GROUP

The sample group for this submittal is 935937. Samples arrived at the laboratory on Friday, March 18, 2005. The PO# for this group is ZAKW1KEOK0A90089.

Client Description		Lancaster Labs Number
MA3-MW34S-031705-2	Groundwater	4485275
MA3-MW7S-031705-1	Groundwater	4485276
MA3-TB-031705-1	Groundwater	4485277

METHODOLOGY

The specific methodologies used in obtaining the enclosed analytical results are indicated on the laboratory chronicles.

1 COPY TO	Weston Solutions, Inc.	Attn: Tom Graan
1 COPY TO	Kerr-McGee Corporation	Attn: Roy Widmann
1 COPY TO	Data Package Group	

8839

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REVISED

Questions? Contact your Client Services Representative
Carrie A Fleming at (717) 656-2300.

Respectfully Submitted,

Dana M Kauffman

Dana M. Kauffman
Group Leader

8848

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Lancaster Laboratories

Lancaster Laboratories Sample No. WW 4485275

MA3-MW34S-031705-2 Groundwater
031705 02687.007.006.0001
Moss American
Collected:03/17/2005 09:50 by YH Account Number: 07802

Submitted: 03/18/2005 09:00 Kerr-McGee Corporation
Reported: 04/14/2005 at 12:49 PO Box 3048
Discard: 06/14/2005 Livonia MI 48150

MW34S SDG#: KMA65-12

CAT No.	Analysis Name	CAS Number	As Received Result		As Received Method Detection Limit	Units	Dilution Factor
08213	BTEX (8021)						
00776	Benzene	71-43-2	6.2	J	4.0	ug/l	20
00777	Toluene	108-88-3	N.D.		4.0	ug/l	20
00778	Ethylbenzene	100-41-4	26.		4.0	ug/l	20
00779	Total Xylenes	1330-20-7	68.		12.	ug/l	20
	Due to dilution of the sample made necessary by the high level of non-target compounds, normal reporting limits were not attained.						
00774	PAH's in Water by HPLC						
00775	Naphthalene	91-20-3	6,000.		32.	ug/l	20
00782	Acenaphthylene	208-96-8	N.D.		81.	ug/l	20
00783	Acenaphthene	83-32-9	480.		32.	ug/l	20
00784	Fluorene	86-73-7	370.		3.6	ug/l	20
00785	Phenanthrene	85-01-8	840.		16.	ug/l	200
00789	Anthracene	120-12-7	89.		0.79	ug/l	20
00807	Fluoranthene	206-44-0	340.		7.9	ug/l	200
00811	Pyrene	129-00-0	270.		3.6	ug/l	20
00812	Benzo(a)anthracene	56-55-3	55.		0.39	ug/l	20
00818	Benzo(b)fluoranthene	205-99-2	20.		0.79	ug/l	20
00823	Benzo(a)pyrene	50-32-8	21.		0.39	ug/l	20
00895	Dibenz(a,h)anthracene	53-70-3	N.D.		6.0	ug/l	20
00898	Indeno(1,2,3-cd)pyrene	193-39-5	6.4	J	1.6	ug/l	20
00907	Benzo(g,h,i)perylene	191-24-2	7.9	J	2.0	ug/l	20
07409	Chrysene	218-01-9	57.		1.6	ug/l	20
07410	Benzo(k)fluoranthene	207-08-9	11.		0.39	ug/l	20

The surrogate data is outside the QC limits due to unresolvable matrix problems evident in the sample chromatogram.

Due to the sample matrix an initial dilution was necessary to perform the analysis. Therefore, the reporting limits for the PAH by HPLC compounds were raised.

Due to the presence of interferents near their retention times, normal reporting limits were not attained for several target compounds. The

0041

Lancaster Laboratories

Lancaster Laboratories Sample No. WW 4485275

MA3-MW34S-031705-2 Groundwater
031705 02687.007.006.0001
Moss American
Collected:03/17/2005 09:50 by YH Account Number: 07802

Submitted: 03/18/2005 09:00 Kerr-McGee Corporation
Reported: 04/14/2005 at 12:49 PO Box 3048
Discard: 06/14/2005 Livonia MI 48150

MW34S SDG#: KMA65-12

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor

reporting limits for these compounds were raised accordingly.

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
08213	BTEX (8021)	SW-846 8021B	1	03/22/2005 00:34	Linda C Pape	20
00774	PAH's in Water by HPLC	SW-846 8310	1	03/22/2005 12:07	Mark A Clark	20
00774	PAH's in Water by HPLC	SW-846 8310	1	03/23/2005 07:25	Mark A Clark	200
01146	GC VOA Water Prep	SW-846 5030B	1	03/22/2005 00:34	Linda C Pape	20
03337	PAH Water Extraction	SW-846 3510C	1	03/21/2005 17:30	Olivia I Santiago	1

8842

Lancaster Laboratories

Lancaster Laboratories Sample No. WW 4485276

MA3-MW7S-031705-1 Groundwater
031705 02687.007.006.0001
Moss American
Collected:03/17/2005 09:45 by YH Account Number: 07802

Submitted: 03/18/2005 09:00 Kerr-McGee Corporation
Reported: 04/14/2005 at 12:49 PO Box 3048
Discard: 06/14/2005 Livonia MI 48150

MW07S SDG#: KMA65-13

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
08213	BTEX (8021)					
00776	Benzene	71-43-2	2.9 J	2.0	ug/l	10
00777	Toluene	108-88-3	N.D.	2.0	ug/l	10
00778	Ethylbenzene	100-41-4	15.	2.0	ug/l	10
00779	Total Xylenes	1330-20-7	24. J	6.0	ug/l	10
	Due to dilution of the sample made necessary by the high level of non-target compounds, normal reporting limits were not attained.					
00774	PAH's in Water by HPLC					
00775	Naphthalene	91-20-3	1,600.	16.	ug/l	10
00782	Acenaphthylene	208-96-8	N.D.	34.	ug/l	1
00783	Acenaphthene	83-32-9	36.	1.6	ug/l	1
00784	Fluorene	86-73-7	6.5	0.18	ug/l	1
00785	Phenanthrene	85-01-8	0.092 J	0.079	ug/l	1
00789	Anthracene	120-12-7	N.D.	0.040	ug/l	1
00807	Fluoranthene	206-44-0	N.D.	0.040	ug/l	1
00811	Pyrene	129-00-0	N.D.	0.18	ug/l	1
00812	Benzo(a)anthracene	56-55-3	N.D.	0.020	ug/l	1
00818	Benzo(b)fluoranthene	205-99-2	N.D.	0.040	ug/l	1
00823	Benzo(a)pyrene	50-32-8	N.D.	0.020	ug/l	1
00895	Dibenz(a,h)anthracene	53-70-3	N.D.	0.040	ug/l	1
00898	Indeno(1,2,3-cd)pyrene	193-39-5	N.D.	0.079	ug/l	1
00907	Benzo(g,h,i)perylene	191-24-2	N.D.	0.099	ug/l	1
07409	Chrysene	218-01-9	N.D.	0.079	ug/l	1
07410	Benzo(k)fluoranthene	207-08-9	N.D.	0.020	ug/l	1
	Due to the presence of an interferent near its retention time, the normal reporting limit was not attained for acenaphthylene. The reporting limit for this compound was raised accordingly.					

0043

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Lancaster, PA 17605-2425
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Lancaster Laboratories

Lancaster Laboratories Sample No. WW 4485276

MA3-MW7S-031705-1 Groundwater
031705 02687.007.006.0001
Moss American
Collected:03/17/2005 09:45 by YH Account Number: 07802

Submitted: 03/18/2005 09:00 Kerr-McGee Corporation
Reported: 04/14/2005 at 12:49 PO Box 3048
Discard: 06/14/2005 Livonia MI 48150

MW07S SDG#: KMA65-13

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
08213	BTEX (8021)	SW-846 8021B	1	03/22/2005 02:07	Linda C Pape	10
00774	PAH's in Water by HPLC	SW-846 8310	1	03/22/2005 11:25	Mark A Clark	1
00774	PAH's in Water by HPLC	SW-846 8310	1	03/23/2005 06:43	Mark A Clark	10
01146	GC VOA Water Prep	SW-846 5030B	1	03/22/2005 02:07	Linda C Pape	10
03337	PAH Water Extraction	SW-846 3510C	1	03/21/2005 17:30	Olivia I Santiago	1

0044

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2425 New Holland Pike
PO Box 12425
Lancaster, PA 17605-2425
717-656-2300 Fax: 717-656-2681

Analysis Report

Lancaster Laboratories

REVISED

Lancaster Laboratories Sample No. WW 4485277

MA3-TB-031705-1 Groundwater
031705 02687.007.006.0001
Moss American
Collected:03/17/2005 08:05 Account Number: 07802

Submitted: 03/18/2005 09:00 Kerr-McGee Corporation
Reported: 04/14/2005 at 12:49 PO Box 3048
Discard: 06/14/2005 Livonia MI 48150

MA1TB SDG#: KMA65-14TB

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
08213	BTEX (8021)					
00776	Benzene	71-43-2	N.D.	0.2	ug/l	1
00777	Toluene	108-88-3	N.D.	0.2	ug/l	1
00778	Ethylbenzene	100-41-4	N.D.	0.2	ug/l	1
00779	Total Xylenes	1330-20-7	N.D.	0.6	ug/l	1

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
08213	BTEX (8021)	SW-846 8021B	1	03/22/2005 00:00	Linda C Pape	1
01146	GC VOA Water Prep	SW-846 5030B	1	03/22/2005 00:00	Linda C Pape	1

8845

MEMBER ACIL
Lancaster Laboratories, Inc.
2425 New Holland Pike
PO Box 12425
Lancaster, PA 17605-2425
717-656-2300 Fax: 717-656-2681

Microbac

April 11, 2005

Tom Graan
Weston Solutions, Inc.
750 East Bunker Court
Suite 500
Vernon Hills, IL 60061-1450

Work Order No.: ME0503528

RE: Moss American

Dear Tom Graan:

Microbac Laboratories, Inc. received 4 samples on 3/16/2005 11:15:00 AM for the analyses presented in the following report.

The enclosed results were obtained from and are applicable to the sample(s) as received at the laboratory. All sample results are reported on an "as received" basis unless otherwise noted. This report includes the numbered pages as well as the Cooler Inspection Report and Chain of Custody form(s).

All data included in this report have been reviewed and meet the applicable project specific and certification specific requirements, unless otherwise noted. A qualifications page is included in this report and lists the programs under which Microbac maintains certification.

We appreciate the opportunity to service your analytical needs. If you have any questions, please feel free to contact us.

Sincerely,
Microbac Laboratories, Inc.

Lisa M. Torres For:
Project Manager

Enclosures

Microbac

Work Order Sample Summary

Date: *Monday, April 11, 2005*

CLIENT: Weston Solutions, Inc.
Project: Moss American
Lab Order: ME0503528

Lab Sample ID	Client Sample ID	Tag Number	Collection Date	Date Received
ME0503528-01A	MA3-TG1-1-031605-5		3/16/2005 11:15:00 AM	3/16/2005
ME0503528-02A	MA3-TG1-2-031605-6		3/16/2005 11:20:00 AM	3/16/2005
ME0503528-03A	MA3-TG1-3-031605-7		3/16/2005 11:25:00 AM	3/16/2005
ME0503528-04A	MA3-TG2-1-031605-3		3/16/2005 9:15:00 AM	3/16/2005

Microbac

ANALYTICAL RESULTS

Date: *Monday, April 11, 2005*

Client:	Weston Solutions, Inc.		
Client Project:	Moss American		
Client Sample ID:	MA3-TG1-1-031605-5	***Work Order / ID:***	ME0503528-01
Sample Description:		***Collection Date:***	03/16/05 11:15
Sample Matrix:	Aqueous	***Date Received:***	03/16/05 11:15

COMPARATIVE ENUMERATION ASSA Method: **9215B MOD** Prep Date/Time: **03/17/05 14:47** Analyst: **NM**

Analyses	ST	Result	RL	Qual	Units	DF	Analyzed
Total Aerobic Bacteria	A	***20000***	100		cfu/ml	1	03/17/05 00:00
Total Aerobic Degrader Bacteria	A	***780***	100		cfu/ml	1	03/17/05 00:00

Microbac

ANALYTICAL RESULTS

Date: *Monday, April 11, 2005*

Client:	Weston Solutions, Inc.		
Client Project:	Moss American		
Client Sample ID:	MA3-TG1-2-031605-6	***Work Order / ID:***	ME0503528-02
Sample Description:		***Collection Date:***	03/16/05 11:20
Sample Matrix:	Aqueous	***Date Received:***	03/16/05 11:15

COMPARATIVE ENUMERATION ASSA Method: **9215B MOD** Prep Date/Time: **03/17/05 14:47** Analyst: **NM**

Analyses	ST	Result	RL	Qual	Units	DF	Analyzed
Total Aerobic Bacteria	A	***3300***	100		cfu/ml	1	03/17/05 00:00
Total Aerobic Degrader Bacteria	A	***ND***	100		cfu/ml	1	03/17/05 00:00

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Microbac

ANALYTICAL RESULTS

Date: *Monday, April 11, 2005*

Client:	Weston Solutions, Inc.		
Client Project:	Moss American		
Client Sample ID:	MA3-TG1-3-031605-7	***Work Order / ID:***	ME0503528-03
Sample Description:		***Collection Date:***	03/16/05 11:25
Sample Matrix:	Aqueous	***Date Received:***	03/16/05 11:15

COMPARATIVE ENUMERATION ASSA Method: **9215B MOD** Prep Date/Time: **03/17/05 14:47** Analyst: **NM**

Analyses	ST	Result	RL	Qual	Units	DF	Analyzed
Total Aerobic Bacteria	A	***38000***	100		cfu/ml	1	03/17/05 00:00
Total Aerobic Degrader Bacteria	A	***610***	100		cfu/ml	1	03/17/05 00:00

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Microbac

ANALYTICAL RESULTS

Date: *Monday, April 11, 2005*

Client:	Weston Solutions, Inc.		
Client Project:	Moss American		
Client Sample ID:	MA3-TG2-1-031605-3	***Work Order / ID:***	ME0503528-04
Sample Description:		***Collection Date:***	03/16/05 09:15
Sample Matrix:	Aqueous	***Date Received:***	03/16/05 11:15

COMPARATIVE ENUMERATION ASSA Method: **9215B MOD** Prep Date/Time: **03/17/05 14:47** Analyst: **NM**

Analyses	ST	Result	RL	Qual	Units	DF	Analyzed
Total Aerobic Bacteria	A	***340***	100		cfu/ml	1	03/17/05 00:00
Total Aerobic Degrader Bacteria	A	***ND***	100		cfu/ml	1	03/17/05 00:00

Microbac

FLAGS, FOOTNOTES AND ABBREVIATIONS (as needed)

NA	=	Not Analyzed	N/A	=	Not Applicable			
ug/L	=	Micrograms per Liter (ppb)	mg/L	=	Milligrams per Liter (ppm)	cfu	=	Colony Forming Unit
ug/Kg	=	Micrograms per Kilogram (ppb)	mg/Kg	=	Milligrams per Kilogram (ppm)	ng/L	=	Nanogram per Liter

U	=	Undetected
J	=	Analyte concentration detected between RL and MDL (Metals / Organics)
B	=	Detected in the associated Method Blank
D	=	Surrogate recoveries are not calculated due to sample dilution
ND	=	Not Detected at the Reporting Limit
E	=	Value above quantitation range
H	=	Analyte was prepared and/or analyzed outside of the analytical method holding time
I	=	Matrix Interference
R	=	RPD outside accepted recovery limits
S	=	Spike recovery outside recovery limits
Surr	=	Surrogate

DF = Dilution Factor RL = Reporting Limit ST = Sample Type MDL = Method Detection Limit

SAMPLE TYPES

A	=	Analyte
I	=	Internal Standard
S	=	Surrogate
T	=	Tentatively Identified Compound (TIC, concentration estimated)

QC SAMPLE IDENTIFICATIONS

MBLK	=	Method Blank	ICSA	=	Interference Check Standard "A"	OPR	=	Ongoing Precision and Recovery Standard
DUP	=	Method Duplicate	ICSAB	=	Interference Check Standard "AB"			
LCS	=	Laboratory Control Sample	LCSD	=	Laboratory Control Sample Duplicate			
MS	=	Matrix Spike	MSD	=	Matrix Spike Duplicate			
ICB	=	Initial Calibration Blank	CCB	=	Continuing Calibration Blank			
ICV	=	Initial Calibration Verification	ICB	=	Initial Calibration Blank			
PDS	=	Post Digestion Spike	SD	=	Serial Dilution			

CERTIFICATIONS

Below is a list of certifications maintained by the Microbac Merrillville Laboratory. All data included in this report has been reviewed for and meets all project specific and quality control requirem ents of the applicable accreditation, unless otherwise noted. Com plete lists of individual analytes pursuant to each certification below are available upon request.

- Illinois EPA for the analysis wastewater and solid waste in accordance with the requirements of the National Environmental Laboratory Accreditation Program [NELAP] (accreditation #100435)
- Illinois Department of Public Health for the microbiological analysis of drinking water (registry #175458)
- Indiana DEM approved support laboratory for solid waste and wastewater analyses
- Indiana SDH for the chemical analysis of drinking water (lab #C-45-02)
- Indiana SDH for the microbiological analysis of drinking water (lab #M-45-08)
- Iowa DNR for the analysis of samples applicable to the Iowa Wastewater and Underground Storage Tank programs (lab #274)
- Kentucky EPPC for the analysis of samples applicable to the Underground Storage Tank program (lab #0061)
- North Carolina DENR for the environmental analysis for NPDES effluent, surface water, groundwater, and pretreatment regulations (certificate #597)
- Wisconsin DNR for the chemical analysis of wastewater and solid waste (lab #998036710)

MICROBAC LOCATIONS

Corporate	-	Wexford, PA	**Camp Hill Division**	-	Camp Hill, PA
Pittsburgh Division	-	Warrendale, PA	**Knoxville Division**	-	Maryville, TN
Erie Division	-	Erie, PA / Wilkes-Barre, PA	**Venice Division**	-	Venice, FL / Fort Myers, FL
New Castle Division	-	New Castle, PA	**South Carolina Division**	-	New Ellenton, SC
Kentucky Testing Division	-	Louisville, KY / Evansville, IN	**Fayetteville Division**	-	Fayetteville, NC
Massachusetts Division	-	Marlboro, MA	**Southern Testing Division**	-	Wilson, NC
Gascoyne Division	-	Baltimore, MD	**Hauser Division**	-	Boulder, CO
Corona Division	-	Corona, CA	**Friend Laboratory**	-	Waverly, NY
South Jersey Division	-	Turnersville, NJ			

Microbac Laboratories, Inc.

250 W. 84th Drive
Merrillville, IN 46410
(219) 769-8378

COOLER INSPECTION

Thursday, March 17, 2005

Client Name WESTON - VERNON HILLS
Work Order Number ME0503528
Checklist completed by [signature] 3-17-05 (Signature / Date)
Date / Time Received: 3/16/2005 11:15:00 AM
Received by: DB
Reviewed by [signature] 3/17/05 (Initials / Date)

Carrier name: FedEx

After-Hour Arrival?	Yes ☐	No ☑	
Shipping container/cooler in good condition?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on shippping container/cooler?	Yes ☑	No ☐	Not Present ☑ DP 3-17-05
Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
Chain of custody present?	Yes ☑	No ☐	
Chain of custody included sufficient client identification?	Yes ☑	No ☐	
Chain of custody included sufficient sample collector information?	Yes ☐	No ☑	
Chain of custody included a sample description?	Yes ☑	No ☐	
Chain of custody agrees with sample labels?	Yes ☑	No ☐	
Chain of custody identified the appropriate matrix?	Yes ☑	No ☐	
Chain of custody included date of collection?	Yes ☑	No ☐	
Chain of custody included time of collection?	Yes ☑	No ☐	
Chain of custody identified the appropriate number of containers?	Yes ☑	No ☐	
Samples in proper container/bottle?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
Sufficient sample volume for indicated test?	Yes ☑	No ☐	
All samples received within holding time?	Yes ☑	No ☐	
Chain of custody identified the appropriate preservatives?	Yes ☐	No ☑	
Samples properly preserved?	Yes ☑	No ☐	

If No, adjusted by? _____ Date/Time _____

Chain of custody included the requested analyses?	Yes ☑	No ☐
Chain of custody signed when relinquished and received?	Yes ☑	No ☐
Samples received on ice?	Yes ☑	No ☐

Container/Temp Blank temperature: Temp: 4 °C

VOA vials have zero headspace? No VOA vials submitted ☑ Yes ☐ No ☐

ANY "NO" EVALUATION (excluding After-Hour Receipt) REQUIRES CLIENT NOTIFICATION.

General Comments:

Sample ID	Client Sample ID	Cont. Lot #	Comments
ME0503528-01A	MA3-TG1-1-031605-5		
ME0503528-02A	MA3-TG1-2-031605-6		
ME0503528-03A	MA3-TG1-3-031605-7		
ME0503528-04A	MA3-TG2-1-031605-3		

Client representative contacted: _____ Date contacted: _____

Contacted by: _____ Regarding: _____

Notes: _____

COC ID: 031605-1

Chain of Custody Record

WESTON SOLUTIONS

Client: Kerr McGee

Site Name: Moss American | Contact Name: Tom Graan

W. O.: 02687.007.006.0001 | Contact Phone No.: 847-918-4142

Lab: MICROBAC LABS | Lab Contact: N. MCDONALD

TAT | Lab Phone: 219-932-1770

Lab ID	Sample ID	Matrix	PID	MS/MSD	Date-Time Collected	MICROBIAL ENUMERATION									
						Filtered									
						Container	POLY-100mL								
						Preservative	N/A								
	MA3-TG1-1-031605-5	G		N	3/16/2005 11:15	1									
	MA3-TG1-2-031605-6	G		N	3/16/2005 11:20	1									
	MA3-TG1-3-031605-7	G		N	3/16/2005 11:25	1									
	MA3-TG2-1-031605-3	G		N	3/16/2005 09:15	1									

503528

01-A

02-A

03-A

04-A

Remarks/Comments

Sampled By

Lab Use Only

Temp of Cooler when Received, C

1	2	3	4	5
			0	

COC Tape was present on outer package Y N

COC Tape was unbroken on outer package Y N

COC Tape ws present on sample Y N

COC Tape was unbroken on sample Y N

Received in good condition Y N

Labels indicate Properly Preserved Y N

Received within Holding Time Y N

Relinquished By	Date / Time	Received By	Date / Time	Relinquished By	Date / Time	Received By	Date / Time
	02/16/05 17:00						
							3/17/05 935

Microbac

April 11, 2005

Tom Graan
Weston Solutions, Inc.
750 East Bunker Court
Suite 500
Vernon Hills, IL 60061-1450

Work Order No.: ME0503487

RE: Moss American

Dear Tom Graan:

Microbac Laboratories, Inc. received 5 samples on 3/16/2005 for the analyses presented in the following report.

The enclosed results were obtained from and are applicable to the sample(s) as received at the laboratory. All sample results are reported on an "as received" basis unless otherwise noted. This report includes the numbered pages as well as the Cooler Inspection Report and Chain of Custody form(s).

All data included in this report have been reviewed and meet the applicable project specific and certification specific requirements, unless otherwise noted. A qualifications page is included in this report and lists the programs under which Microbac maintains certification.

This report shall not be reproduced except in full, without the written approval of Microbac Laboratories.

We appreciate the opportunity to service your analytical needs. If you have any questions, please feel free to contact us.

Sincerely,
Microbac Laboratories, Inc.

For:

Lisa M. Torres
Project Manager

Enclosures

Microbac

Work Order Sample Summary

Date: *Monday, April 11, 2005*

CLIENT: Weston Solutions, Inc.
Project: Moss American
Lab Order: ME0503487

Lab Sample ID	Client Sample ID	Tag Number	Collection Date	Date Received
ME0503487-01A	MA3-TG3-1-031505-9		3/15/2005 4:10:00 PM	3/16/2005
ME0503487-02A	MA3-TG5-1-031505-5		3/15/2005 11:45:00 AM	3/16/2005
ME0503487-03A	MA3-TG6-1-031505-1		3/15/2005 9:25:00 AM	3/16/2005
ME0503487-04A	MA3-TG6-2-031505-2		3/15/2005 9:35:00 AM	3/16/2005
ME0503487-05A	MA3-TG6-3-031505-3		3/15/2005 9:30:00 AM	3/16/2005

Microbac

ANALYTICAL RESULTS

Date: *Monday, April 11, 2005*

Client:	Weston Solutions, Inc.		
Client Project:	Moss American		
Client Sample ID:	MA3-TG3-1-031505-9	***Work Order / ID:***	ME0503487-01A
Sample Description:		***Collection Date:***	03/15/05 16:10
Sample Matrix:	Groundwater	***Date Received:***	03/16/05 00:00

COMPARATIVE ENUMERATION ASSA Method: **9215B MOD** Prep Date/Time: **03/17/05 14:47** Analyst: **NM**

Analyses	ST	Result	RL	Qual	Units	DF	Analyzed
Total Aerobic Bacteria TMP	A	*1300*	100		cfu/ml	1	03/17/05 00:00
Total Aerobic Degrader Bacteria DMP	A	*ND*	100		cfu/ml	1	03/17/05 00:00

↳ Degrader Microbial population (mean)

Total Microbial Population (mean)

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Microbac

ANALYTICAL RESULTS

Date: *Monday, April 11, 2005*

Client:	Weston Solutions, Inc.		
Client Project:	Moss American		
Client Sample ID:	MA3-TG5-1-031505-5	***Work Order / ID:***	ME0503487-02A
Sample Description:		***Collection Date:***	03/15/05 11:45
Sample Matrix:	Groundwater	***Date Received:***	03/16/05 00:00

COMPARATIVE ENUMERATION ASSA Method: **9215B MOD** Prep Date/Time: **03/17/05 14:47** Analyst: **NM**

Analyses	ST	Result	RL	Qual	Units	DF	Analyzed
Total Aerobic Bacteria	A	*300*	100		cfu/ml	1	03/17/05 00:00
Total Aerobic Degrader Bacteria	A	*ND*	100		cfu/ml	1	03/17/05 00:00

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Microbac

ANALYTICAL RESULTS

Date: *Monday, April 11, 2005*

Client:	Weston Solutions, Inc.		
Client Project:	Moss American		
Client Sample ID:	MA3-TG6-1-031505-1	***Work Order / ID:***	ME0503487-03A
Sample Description:		***Collection Date:***	03/15/05 09:25
Sample Matrix:	Groundwater	***Date Received:***	03/16/05 00:00

COMPARATIVE ENUMERATION ASSA Method: **9215B MOD** Prep Date/Time: **03/17/05 14:47** Analyst: **NM**

Analyses	ST	Result	RL	Qual	Units	DF	Analyzed
Total Aerobic Bacteria	A	*4300*	100		cfu/ml	1	03/17/05 00:00
Total Aerobic Degrader Bacteria	A	*ND*	100		cfu/ml	1	03/17/05 00:00

Microbac

ANALYTICAL RESULTS

Date: *Monday, April 11, 2005*

Client:	Weston Solutions, Inc.		
Client Project:	Moss American		
Client Sample ID:	MA3-TG6-2-031505-2	***Work Order / ID:***	ME0503487-04A
Sample Description:		***Collection Date:***	03/15/05 09:35
Sample Matrix:	Groundwater	***Date Received:***	03/16/05 00:00

COMPARATIVE ENUMERATION ASSA Method: **9215B MOD** Prep Date/Time: **03/17/05 14:47** Analyst: **NM**

Analyses	ST	Result	RL	Qual	Units	DF	Analyzed
Total Aerobic Bacteria	A	*230*	100		cfu/ml	1	03/17/05 00:00
Total Aerobic Degrader Bacteria	A	*ND*	100		cfu/ml	1	03/17/05 00:00

250 West 84th Drive, Merrillville, IN 46410 TEL.800.536.8379 TEL.219.769.8378 FAX 219.769.1664

Microbac

ANALYTICAL RESULTS

Date: *Monday, April 11, 2005*

Client:	Weston Solutions, Inc.		
Client Project:	Moss American		
Client Sample ID:	MA3-TG6-3-031505-3	***Work Order / ID:***	ME0503487-05A
Sample Description:		***Collection Date:***	03/15/05 09:30
Sample Matrix:	Groundwater	***Date Received:***	03/16/05 00:00

COMPARATIVE ENUMERATION ASSA Method: **9215B MOD** Prep Date/Time: **03/17/05 14:47** Analyst: **NM**

Analyses	ST	Result	RL	Qual	Units	DF	Analyzed
Total Aerobic Bacteria	A	*6900*	100		cfu/ml	1	03/17/05 00:00
Total Aerobic Degrader Bacteria	A	*ND*	100		cfu/ml	1	03/17/05 00:00

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Microbac

FLAGS, FOOTNOTES AND ABBREVIATIONS (as needed)

NA	=	Not Analyzed	N/A	=	Not Applicable			
ug/L	=	Micrograms per Liter (ppb)	mg/L	=	Milligrams per Liter (ppm)	cfu	=	Colony Forming Unit
ug/Kg	=	Micrograms per Kilogram (ppb)	mg/Kg	=	Milligrams per Kilogram (ppm)	ng/L	=	Nanogram per Liter

U	=	Undetected
J	=	Analyte concentration detected between RL and MDL (Metals / Organics)
B	=	Detected in the associated Method Blank
D	=	Surrogate recoveries are not calculated due to sample dilution
ND	=	Not Detected at the Reporting Limit
E	=	Value above quantitation range
H	=	Analyte was prepared and/or analyzed outside of the analytical method holding time
I	=	Matrix Interference
R	=	RPD outside accepted recovery limits
S	=	Spike recovery outside recovery limits
Surr	=	Surrogate

DF = Dilution Factor RL = Reporting Limit ST = Sample Type MDL = Method Detection Limit

SAMPLE TYPES

A	=	Analyte
I	=	Internal Standard
S	=	Surrogate
T	=	Tentatively Identified Compound (TIC, concentration estimated)

QC SAMPLE IDENTIFICATIONS

MBLK	=	Method Blank	ICSA	=	Interference Check Standard "A"	OPR	=	Ongoing Precision and Recovery Standard
DUP	=	Method Duplicate	ICSAB	=	Interference Check Standard "AB"			
LCS	=	Laboratory Control Sample	LCSD	=	Laboratory Control Sample Duplicate			
MS	=	Matrix Spike	MSD	=	Matrix Spike Duplicate			
ICB	=	Initial Calibration Blank	CCB	=	Continuing Calibration Blank			
ICV	=	Initial Calibration Verification	ICB	=	Initial Calibration Blank			
PDS	=	Post Digestion Spike	SD	=	Serial Dilution			

CERTIFICATIONS

Below is a list of certifications maintained by the Microbac Merrillville Laboratory. All data included in this report has been reviewed for and meets all project specific and quality control requirem ents of the applicable accreditation, unless otherwise noted. Com plete lists of individual analytes pursuant to each certification below are available upon request.

- Illinois EPA for the analysis wastewater and solid waste in accordance with the requirements of the National Environmental Laboratory Accreditation Program [NELAP] (accreditation #100435)
- Illinois Department of Public Health for the microbiological analysis of drinking water (registry #175458)
- Indiana DEM approved support laboratory for solid waste and wastewater analyses
- Indiana SDH for the chemical analysis of drinking water (lab #C-45-02)
- Indiana SDH for the microbiological analysis of drinking water (lab #M-45-08)
- Iowa DNR for the analysis of samples applicable to the Iowa Wastewater and Underground Storage Tank programs (lab #274)
- Kentucky EPPC for the analysis of samples applicable to the Underground Storage Tank program (lab #0061)
- North Carolina DENR for the environmental analysis for NPDES effluent, surface water, groundwater, and pretreatment regulations (certificate #597)
- Wisconsin DNR for the chemical analysis of wastewater and solid waste (lab #998036710)

MICROBAC LOCATIONS

Corporate	-	Wexford, PA	**Camp Hill Division**	-	Camp Hill, PA
Pittsburgh Division	-	Warrendale, PA	**Knoxville Division**	-	Maryville, TN
Erie Division	-	Erie, PA / Wilkes-Barre, PA	**Venice Division**	-	Venice, FL / Fort Myers, FL
New Castle Division	-	New Castle, PA	**South Carolina Division**	-	New Ellenton, SC
Kentucky Testing Division	-	Louisville, KY / Evansville, IN	**Fayetteville Division**	-	Fayetteville, NC
Massachusetts Division	-	Marlboro, MA	**Southern Testing Division**	-	Wilson, NC
Gascoyne Division	-	Baltimore, MD	**Hauser Division**	-	Boulder, CO
Corona Division	-	Corona, CA	**Friend Laboratory**	-	Waverly, NY
South Jersey Division	-	Turnersville, NJ			

Microbac Laboratories, Inc.
250 W. 84th Drive
Merrillville, IN 46410
(219) 769-8378

COOLER INSPECTION

Wednesday, March 16, 2005

Client Name WESTON - VERNON HILLS
Work Order Number ME0503487
Checklist completed by _____ 3/16/05
Signature Date

Date / Time Received: 3/16/2005
Received by KRS
Reviewed by _____ 3/17/05
Initials Date

Carrier name: FedEx

After-Hour Arrival?	Yes ☐	No ☑	
Shipping container/cooler in good condition?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on shippping container/cooler?	Yes ☐	No ☐	Not Present ☑
Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
Chain of custody present?	Yes ☑	No ☐	
Chain of custody included sufficient client identification?	Yes ☑	No ☐	
Chain of custody included sufficient sample collector information?	Yes ☑	No ☐	
Chain of custody included a sample description?	Yes ☑	No ☐	
Chain of custody agrees with sample labels?	Yes ☑	No ☐	
Chain of custody identified the appropriate matrix?	Yes ☑	No ☐	
Chain of custody included date of collection?	Yes ☑	No ☐	
Chain of custody included time of collection?	Yes ☑	No ☐	
Chain of custody identified the appropriate number of containers?	Yes ☑	No ☐	
Samples in proper container/bottle?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
Sufficient sample volume for indicated test?	Yes ☑	No ☐	
All samples received within holding time?	Yes ☑	No ☐	
Chain of custody identified the appropriate preservatives?	Yes ☑	No ☐	
Samples properly preserved?	Yes ☑	No ☐	
If No, adjusted by? _____		Date/Time _____	
Chain of custody included the requested analyses?	Yes ☑	No ☐	
Chain of custody signed when relinquished and received?	Yes ☑	No ☐	
Samples received on ice?	Yes ☑	No ☐	
Container/Temp Blank temperature	Temp: 3 °C		
VOA vials have zero headspace?	No VOA vials submitted ☑	Yes ☐	No ☐

ANY "NO" EVALUATION (excluding After-Hour Receipt) REQUIRES CLIENT NOTIFICATION.

General Comments:

Sample ID	Client Sample ID	Cont. Lot #	Comments
ME0503487-01A	MA3-TG3-1-031505-9		
ME0503487-02A	MA3-TG5-1-031505-5		
ME0503487-03A	MA3-TG6-1-031505-1		
ME0503487-04A	MA3-TG6-2-031505-2		
ME0503487-05A	MA3-TG6-3-031505-3		

Sample ID	Client Sample ID	Cont. Lot #	Comments

Client representative contacted: _____ Date contacted: _____

Contacted by: _____ Regarding: _____

Notes: _____