QUARTERLY GROUNDWATER TREATMENT PERFORMANCE MONITORING REPORT Q4 2003 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
750 East Bunker Court
Vernon Hills, IL 60061

March 2004

W. O. No. 02687.007.006.0001

Weston Solutions, Inc.
Suite 500
750 East Bunker Court
Vernon Hills, IL 60061-1450
847-918-4000 • Fax 847-918-4055
www.westonsolutions.com

12 March 2004

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

Work Order No. 02687.007.006
KMC Work Order No. 40-50-01-AKW-B

Re: Quarterly Groundwater Treatment Performance Monitoring Report, Q4 2003
Moss-American Site, Milwaukee, Wisconsin

Dear Mr. Hart:

On behalf of Kerr-McGee Chemical, LLC (KMC), Weston Solutions, Inc. (WESTON®), is submitting this report summarizing the results of the fourth quarter (Q4) 2003 groundwater monitoring event for the above-referenced project.

If you have any questions or require additional information regarding this submittal, please do not hesitate to call me at (847) 918-4142.

Very truly yours,

Weston Solutions, Inc.

Thomas P. Graan

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

TPG/tg

Attachments
cc: T. Wentland, WDNR
B. Felix, WDNR

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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, 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 area. These four wells are sampled annually (during Q3 sampling events) in accordance with the annual groundwater monitoring program for the Reach 1 area.

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 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 September (Q3) 2002 sampling event; however, per the Agencies' request, these wells were not abandoned. Instead these wells will be 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. Also, 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

SILO ENCLOSURE

CONSTRUCTION TRAILERS

ASPHALT (TYP.)

GRAVEL (TYP.)

ASPHALT PAD

DECON. PAD

DRUM STORAGE AREA

TREATED SOIL AND SEDIMENT FILL AREA

EXISTING SHEET PILE (TYP.)

DRAINAGE SWALE

Little Menomonee River

WOODS

SG-01

MW-7S
MW-34S
PZ-02
MW-33S
MW-5S
MW-32S
PZ-03
MW-27S
MW-30S
MW-35S
PZ-04
MW-9S
PZ-01
PZ-10
PZ-09
MW-28S
MW-29S
MW-37S
MW-36S
MW-6S
MW-3S
MW-26S
PZ-07
PZ-06
MW-31S
PZ-05
MW-10S
MW-25S
MW-13S

GATE 1
GATE 2
GATE 3
GATE 4
GATE 5
GATE 6

TG1-1 TG1-3 TG2-2
TG2-1 TG2-3 TG2-2
TG3-1 TG3-2 TG3
TG4-1 TG4-2 TG4-3
TG5-1 TG5-2 TG5-3
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
GROUNDWATER MONITORING RESULTS

The Q4 2003 groundwater-monitoring event at the Moss-American site was completed between 8 and 12 December 2003. 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. The results of the Q4 2003 groundwater sampling event are described in the following subsections.

2.1 GROUNDWATER ELEVATION MEASUREMENTS

The depth to water was measured in each of the shallow groundwater monitoring, containment performance monitoring, treatment performance monitoring wells, piezometers, and staff gauge on 8 December 2003, 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 8 December 2003 data. Figure 2-2 presents the potentiometric surface during Q3 2003. An evaluation of the Q4 2003 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 0.031 feet per foot (ft/ft) to

the northeast, as measured from the vicinity of MW-13S to PZ-07. The topography of the site levels out near the river, as does the potentiometric surface with a northerly hydraulic gradient of approximately 0.0095 ft/ft, as measured from the vicinity of PZ-05 to PZ-04. The estimated hydraulic gradients within the treatment gates ranged from -0.0022 to 0.0074 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 0.002 ft/ft in an easterly direction. The hydraulic gradients calculated in the vicinity of treatment gates, TG1, TG3 and TG5 are negative, contrary to the overall groundwater flow direction at the site.

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 0.031 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 0.0031 ft/day. Near the river, using a hydraulic gradient of 0.0095 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 0.095

ft/day. The groundwater flow velocities within the treatment gates are estimated to range from 0.0113 ft/day to 0.0699 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 33 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); eight containment performance monitoring wells (MW-30S, MW-31S, MW-32S, MW-33S, MW-34S, MW-35S, MW-36S and MW-37S); and 18 treatment performance monitoring wells (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).

In addition to the investigative groundwater samples collected, four sample duplicate, two matrix spike/matrix spike duplicate (MS/MSD), and four field blank (identified by an FB prefix) samples were collected for quality assurance/quality control (QA/QC) purposes. Trip banks 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 each monitoring well prior to purging the well for groundwater sample collection. 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 due to the presence of sheen on the purge water during Q4 2003.

2.2.1.1 pH

The pH of the groundwater samples collected during Q4 2003 ranged from 6.44 to 7.24 pH standard units (S.U.). The pH measurements indicate relatively neutral (7.0 S.U.) conditions. 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 Q4 2003 ranged from -108.2 to 111.8 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 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 redox potential.

2.2.1.3 Dissolved Oxygen

DO levels for the groundwater samples collected during Q4 2003 ranged from 0.09 to 3.2 milligrams per liter (mg/L). Most of the monitoring wells sampled in December 2003 exhibited DO levels below 1.0 mg/L. The exceptions to this included MW-5S, MW-33S, MW-36S and TG5-3. 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 anaerobic conditions (<1 mg/L DO). 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 Q4 2003 ranged from 0.662 to 1.627 milliohms per centimeter (mohm/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 include nitrate, nitrite, ammonium, and phosphate ions.

2.2.1.5 Temperature

Groundwater temperatures ranged from 5.43 to 10.32 degrees Celsius (°C) during Q4 2003. Temperatures measured approximately 7 to 8 °C lower in Q4 2003 than in Q3 2003. Q3 2003 temperatures ranged from 12.68 to 17.89 °C. 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 1.51 to 250 nephelometric turbidity units (NTU) during Q4 2003. 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 December 2003 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 December 2003 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 shaded 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. The laboratory reports that included BTEX and PAH analyses results are provided as Appendix A.

Groundwater Sample Results

As shown in Table 2-5, 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

- 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, MW-35S and TG1-1.

- 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 and TG1-1.

- Fluoranthene was detected at concentrations exceeding the PAL of 80 µg/L in the groundwater samples 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 concentrations exceeding the PAL of 50 µg/L in the groundwater samples 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 sample 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.

- 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.

The plume boundary is primarily in an area encompassing seven shallow monitoring wells (MW-7S, MW-33S, MW-34S, MW-35S 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 21 quarterly groundwater sampling events.

Overall, the lateral extent of the groundwater contaminant plume is considerably smaller than in previous years of groundwater sampling. Little change in the contaminant plume size was observed in the past four quarters.

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 these wells without a common pattern. However, these constituents have shown an overall decreasing or constant trend in monitoring wells MW-7S and MW-35S. Well MW-7S has shown a decreasing trend for benzene and benzo(a)pyrene. Although benzene and benzo(a)pyrene concentrations in MW-33S have remained at low levels, an increasing trend is evident for fluorene, with naphthalene showing an overall fluctuating level. Well MW-34S has shown overall fluctuating levels in benzene, naphthalene, fluorene, and benzo(a)pyrene. Well MW-34S contained a trace amount of free product during Q4 2003 with varying levels of free product found in the well in the recent past. This correlates with the elevated levels of constituents found in MW-34S. Well TG1-1 has shown fluctuating benzene, naphthalene, fluorene, and benzo(a)pyrene concentrations since it was first sampled in Q3 2000. Additionally, free product has historically been observed in well TG1-1, and is likely associated with the fluctuating constituent concentrations.

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 groundwater samples are summarized below. The laboratory reports of nutrient and microbial analyses are also included in Appendix A.

Nitrogen and Phosphorous Compounds

NO_3-N was not detected at or above the detection limit. NO_2-N was detected at concentrations ranging from non-detect to 0.026 mg/L. TKN was detected at concentrations ranging from non-detect to 2.0 mg/L. NH_3-N was detected at levels ranging from non-detect to 1.9 mg/L. Overall, nitrogen compound concentrations are at relatively low levels; however, previous sampling events have indicated that NH_3-N is 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 detected at concentrations ranging from non-detect to 0.22 mg/L. ORP was detected at concentrations ranging from non-detect to 0.12 mg/L. From the ratio between carbon, nitrogen and phosphorous, a beneficial level of PO_4-P was found in some of the treatment gates during Q4 2003. However, ORP levels were minimal in many of the gates for Q4 2003.

BOD, COD, and TOC

BOD concentrations for the samples collected throughout the treatment system range from non-detect to 8.5 mg/L. COD concentrations for the samples collected throughout the treatment system ranged from 5.4 to 32.1 mg/L. TOC concentrations for the samples collected throughout the treatment system ranged from 2.8 to 12.9 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 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 4.2×10^2 to 1.37×10^4 colony forming units per milliliter (CFU/mL) during Q4 2003. The total microbial populations for TG3 and TG4 ranged from 3.8×10^2 to 1.25×10^3 CFU/mL during Q4 2003. The total microbial populations for TG5 and TG6 ranged from 1.7×10^2 to 1.21×10^3 CFU/mL during Q4 2003.

The degrader microbial populations for TG1 and TG2 ranged from non-detect to 3.0×10^1 CFU/mL during Q4 2003. The degrader microbial populations for TG3 and TG4 ranged between non-detect and 5.0×10^1 CFU/mL during Q4 2003. The degrader microbial populations for TG5 and TG6 ranged from non-detect to 1.0×10^1 CFU/mL during Q4 2003.

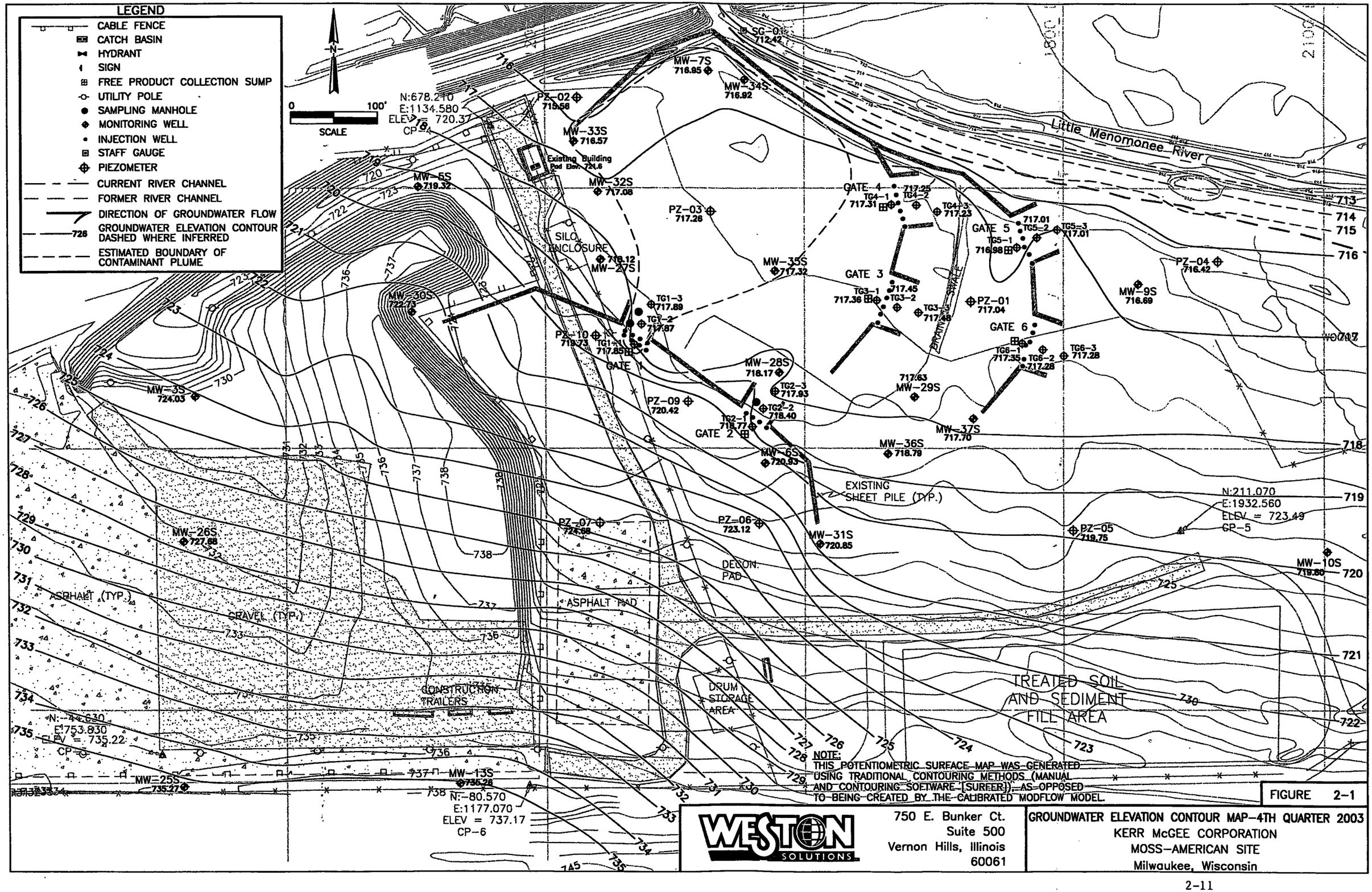

FIGURE 2-1

WESTON SOLUTIONS

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

GROUNDWATER ELEVATION CONTOUR MAP–4TH QUARTER 2003
KERR McGEE CORPORATION
MOSS–AMERICAN SITE
Milwaukee, Wisconsin

J:\CAD93\000\00503.dwg

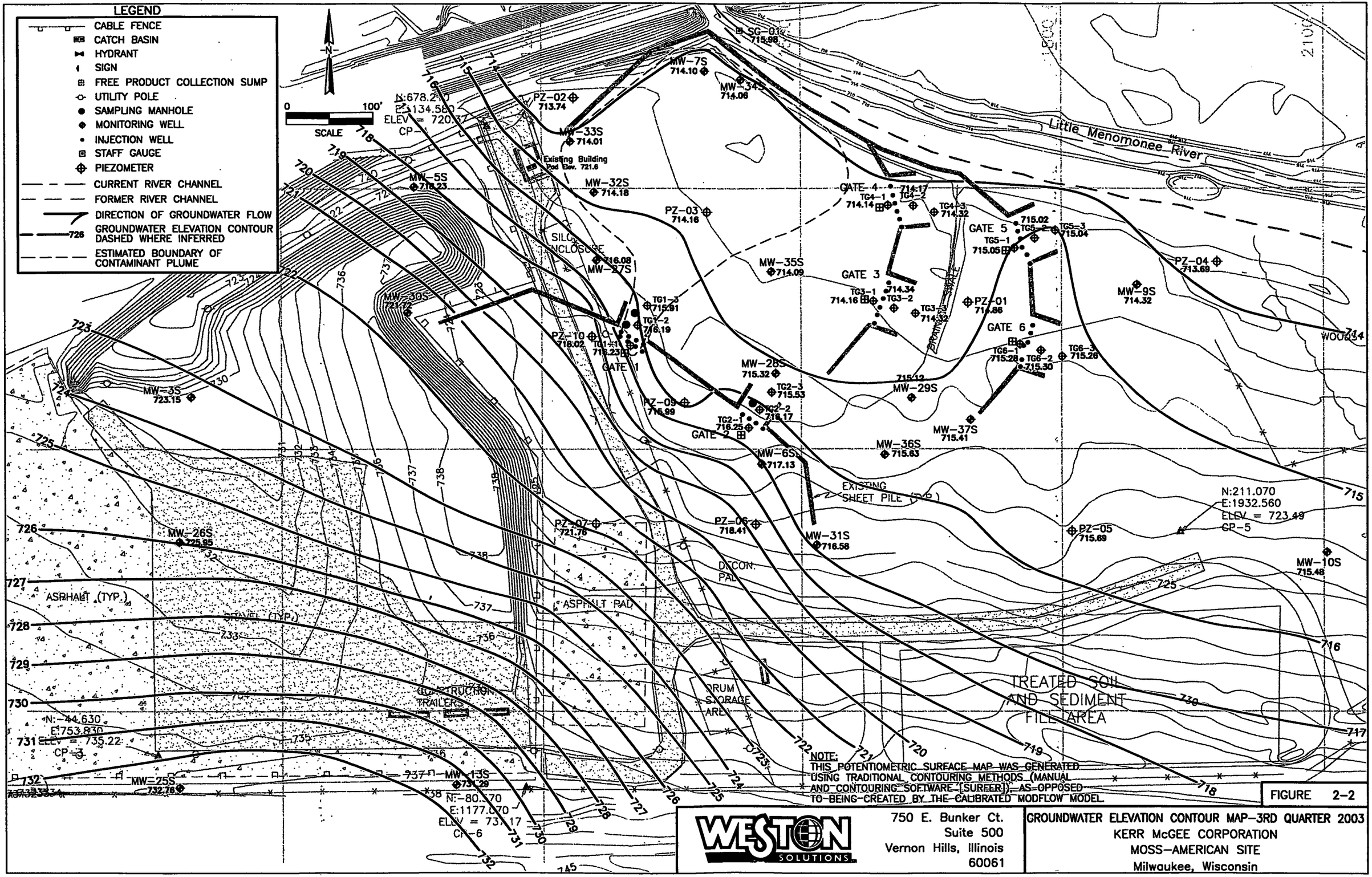

FIGURE 2-2

WESTON SOLUTIONS

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

GROUNDWATER ELEVATION CONTOUR MAP-3RD QUARTER 2003
KERR McGEE CORPORATION
MOSS-AMERICAN SITE
Milwaukee, Wisconsin

J:\CAD93\000\00303.dwg

Table 2-1

Groundwater Elevation Measurements
Shallow and Containment Performance Monitoring Wells
Moss-American Site
Milwaukee, Wisconsin
Fourth Quarter 2003

Well ID	Ground Elevation	TOC Elevation	Depth to Water	GW Elevation	Product Thickness
MW-3S	729.71	731.45	7.42	724.03	None Encountered
MW-5S	723.41	724.63	5.31	719.32	
MW-6S	723.11	725.24	4.31	720.93	
MW-7S	719.47	721.59	4.64	716.95	
MW-9S	719.15	721.66	4.97	716.69	
MW-10S	723.95	726.76	6.96	719.80	
MW-13S	737.73	738.58	3.32	735.26	
MW-25S	736.95	739.19	3.92	735.27	
MW-26S	732.31	731.87	4.19	727.68	
MW-27S	720.57	723.10	4.98	718.12	
MW-28S	719.64	722.13	3.96	718.17	
MW-29S	719.51	722.17	4.54	717.63	
MW-30S	725.35	727.34	4.61	722.73	
MW-31S	725.29	725.31	4.46	720.85	
MW-32S	719.68	722.79	5.71	717.08	
MW-33S	719.25	721.81	5.24	716.57	
MW-34S	718.97	721.52	4.6	716.92	Trace
MW-35S	718.14	721.75	4.43	717.32	None Encountered
MW-36S	720.41	723.21	4.42	718.79	
MW-37S	721.33	723.30	5.6	717.70	

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 8 December 2003.

Table 2-2

Groundwater Elevation Measurements
Treatment Performance Monitoring Wells
Moss-American Site
Milwaukee, Wisconsin
Fourth Quarter 2003

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	5.47	717.85	-0.0004	-0.0038	Trace
TG1-2	720.06	722.81	4.94	717.87			None Encountered
TG1-3	719.56	722.53	4.64	717.89			
TG2-1	720.67	723.80	5.03	718.77	0.0074	0.0699	
TG2-2	720.62	723.05	4.65	718.40			
TG2-3	720.06	722.61	4.68	717.93			
TG3-1	719.14	721.05	3.69	717.36	-0.0018	-0.0170	
TG3-2	718.87	720.92	3.47	717.45			
TG3-3	718.35	720.60	3.12	717.48			
TG4-1	718.06	721.14	3.83	717.31	0.0012	0.0113	
TG4-2	718.26	720.75	3.5	717.25			
TG4-3	718.01	720.04	2.81	717.23			
TG5-1	717.60	721.12	4.22	716.90	-0.0022	-0.0208	
TG5-2	718.18	720.63	3.62	717.01			
TG5-3	718.17	719.99	2.98	717.01			
TG6-1	719.47	721.96	4.61	717.35	0.0014	0.0132	
TG6-2	719.70	722.05	4.77	717.28			
TG6-3	719.58	722.47	5.19	717.28			

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.
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 8 December 2003.

Table 2-3

Groundwater and Surface Water Elevation Measurements
Piezometer and Staff Gauge
Moss-American Site
Milwaukee, Wisconsin
Fourth Quarter 2003

Well ID	Ground Elevation	TOC Elevation	Depth to Water	Water Elevation	Product Thickness
Groundwater					
PZ-01	718.04	721.05	4.01	717.04	None Encountered
PZ-02	718.89	721.84	6.28	715.56	
PZ-03	719.00	722.09	4.83	717.26	
PZ-04	717.30	720.22	3.8	716.42	
PZ-05	724.34	727.43	7.68	719.75	
PZ-06	724.62	727.79	4.67	723.12	
PZ-07	725.78	728.72	4.04	724.68	
PZ-09	721.12	724.08	3.66	720.42	
PZ-10	722.04	725.05	5.32	719.73	
Surface Water					
SG-01	716.22	-	3.80	712.42	Not applicable

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 8 December 2003.

Table 2-4

Field-Measured Parameters
Shallow Groundwater and Containment Performance Monitoring Wells
Moss-American Site
Milwaukee, Wisconsin
Fourth Quarter 2003

StationName	pH (Standard Units)	Specific Conductance (mohm/cm)	Temperature (Deg C)	Redox Potential (mV)	Dissolved Oxygen (mg/L)	Turbidity (NTU)
MW-27S	6.91	0.993	6.53	94.4	0.75	14.7
MW-28S	6.8	1.127	6.27	77.8	0.13	1.51
MW-29S	7.01	0.99	5.85	59.4	0.66	19.7
MW-30S	6.73	1.627	10.26	-102.7	0.17	2.42
MW-31S	6.99	0.72	7.86	69.2	0.65	30.7
MW-32S	6.83	0.952	8.59	69.7	0.3	2
MW-33S	6.6	1.216	5.43	111.8	1.96	3.5
MW-35S	6.64	0.949	6.33	0.4	0.18	18.5
MW-36S	7.24	0.662	5.85	50.1	3.2	250
MW-37S	6.89	0.903	6.73	60	0.3	9.1
MW-5S	7.17	0.821	10.25	-108.2	1.89	4.75
MW-6S	7.13	0.681	7.87	62.3	0.9	166
MW-7S	6.66	0.879	8.4	-32.1	0.12	2.3
MW-9S	6.82	0.913	6.53	93.6	0.17	33.2

Table 2-4 (Continued)

Field-Measured Parameters
Treatment Performance Monitoring Wells
Moss-American Site
Milwaukee, Wisconsin
Fourth Quarter 2003

StationName	pH (Standard Units)	Specific Conductance (mohm/cm)	Temperature (Deg C)	Redox Potential (mV)	Dissolved Oxygen (mg/L)	Turbidity (NTU)
TG1-2	6.91	0.948	7.02	-60.3	0.12	41.5
TG1-3	7.02	1.023	8.29	-57.5	0.13	21.3
TG2-1	6.85	0.912	8.73	-36.3	0.1	2.5
TG2-2	6.97	0.762	7.75	-48.1	0.18	12.24
TG2-3	6.58	1.059	7.9	-43.7	0.21	16.82
TG3-1	6.64	1.22	8.41	-36.2	0.18	3.4
TG3-2	6.68	1.21	8.27	-61.8	0.14	10.6
TG3-3	6.62	1.009	8.63	-61.2	0.12	28.7
TG4-1	6.84	1.229	8.62	-53.63	0.17	19.8
TG4-2	6.75	1.202	9.17	-67.3	0.19	24.5
TG4-3	6.9	1.127	9.46	-58.2	0.09	41.2
TG5-1	6.93	1.131	9.18	-36.5	0.39	3.97
TG5-2	6.93	1.039	9.36	-73	0.34	13.5
TG5-3	6.96	0.803	10.32	-41.1	1.05	34.9
TG6-1	6.7	1.163	9.12	-35.4	0.1	6.41
TG6-2	6.55	1.176	9.83	-20.7	0.21	4.15
TG6-3	6.44	1.362	9.78	-21.6	0.15	9.23

Notes:

S - Shallow well.
TG - Treatment gate performance monitoring well.
NM - Not measured due frozen conditions or free product in well.
mohm/cm - milliohm per centimeter
°C - Degrees Celcius
mV - millivolt
mg/L - milligram per liter
NTU - Nephelometric Turbidity unit

Table 2-5

Groundwater Sample Analytical Results
Shallow Groundwater Monitoring Well Samples
Moss-American Site
Milwaukee, Wisconsin
Fourth Quarter 2003

Sample ID:	MA3-MW5S-081203-01	MA3-MW6S-111203-05	MA3-MW7S-121203-02	MA3-MW9S-111203-10	WDNR PAL (ug/L)	WDNR ES (ug/L)
Sample Matrix:	Groundwater	Groundwater	Groundwater	Groundwater		
Sample Date:	12/8/2003	12/11/2003	12/12/2003	12/11/2003		
Units of Measure:	ug/L	ug/L	ug/L	ug/L		
Parameter						
VOCS						
Benzene	0.2 U	0.2 U	2.3 J	0.2 U	0.5	5
Ethylbenzene	0.2 U	0.2 U	17	0.2 U	140	700
Toluene	0.2 U	0.2 U	2 U	0.2 U	68.6	343
Total Xylenes	0.6 U	0.6 U	35	0.6 U	124	650
PAHs						
Acenaphthene	1.6 U	1.6 UJ	55	1.5 U	NA	NA
Acenaphthylene	1.6 U	1.6 UJ	43	1.5 U	NA	NA
Anthracene	0.04 U	0.041 UJ	0.045 J	0.038 U	600	3,000
Benzo(a)anthracene	0.02 U	0.02 UJ	0.019 U	0.019 U	NA	NA
Benzo(a)pyrene	0.02 U	0.02 UJ	0.019 U	0.019 U	0.02	0.2
Benzo(b)fluoranthene	0.04 U	0.041 UJ	0.039 U	0.038 U	0.02	0.2
Benzo(g,h,i)perylene	0.099 UJ	0.1 UJ	0.096 U	0.095 U	NA	NA
Benzo(k)fluoranthene	0.02 U	0.02 UJ	0.019 U	0.019 U	NA	NA
Chrysene	0.079 U	0.081 UJ	0.077 U	0.076 U	0.02	0.2
Dibenz(a,h)anthracene	0.04 U	0.041 UJ	0.039 U	0.038 U	NA	NA
Fluoranthene	0.04 U	0.041 UJ	0.039 U	0.038 U	80	400
Fluorene	0.18 U	0.18 UJ	8	0.17 U	80	400
Indeno(1,2,3-cd)pyrene	0.079 U	0.081 UJ	0.077 U	0.076 U	NA	NA
Naphthalene	1.4 U	1.4 UJ	3,000	1.3 U	8	40
Phenanthrene	0.079 U	0.081 UJ	0.2 J	0.076 U	NA	NA
Pyrene	0.18 U	0.18 UJ	0.17 U	0.17 U	50	250

Table 2-5 (Continued)

Groundwater Sample Analytical Results
Shallow Groundwater Monitoring Well Samples
Moss-American Site
Milwaukee, Wisconsin
Fourth Quarter 2003

Sample ID:	MA3-MW27S-111203-09	MA3-MW28S-111203-04	MA3-MW29S-111203-02	MA3-MW30S-081203-02	WDNR PAL (ug/L)	WDNR ES (ug/L)
Sample Matrix:	Groundwater	Groundwater	Groundwater	Groundwater		
Sample Date:	12/11/2003	12/11/2003	12/11/2003	12/8/2003		
Units of Measure:	ug/L	ug/L	ug/L	ug/L		
Parameter						
VOCS						
Benzene	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	140	700
Toluene	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	124	650
PAHs						
Acenaphthene	1.6 U	1.7 U	1.6 U	1.6 U	NA	NA
Acenaphthylene	1.6 U	1.7 U	1.6 U	1.6 U	NA	NA
Anthracene	0.039 U	0.042 U	0.04 U	0.04 U	600	3,000
Benzo(a)anthracene	0.02 U	0.021 U	0.02 U	0.02 U	NA	NA
Benzo(a)pyrene	0.02 U	0.021 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	0.02	0.2
Benzo(g,h,i)perylene	0.098 U	0.11 U	0.099 U	0.1 UJ	NA	NA
Benzo(k)fluoranthene	0.02 U	0.021 U	0.02 U	0.02 U	NA	NA
Chrysene	0.078 U	0.084 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	NA	NA
Fluoranthene	0.039 U	0.042 U	0.04 U	0.04 U	80	400
Fluorene	0.18 U	0.19 U	0.18 U	0.18 U	80	400
Indeno(1,2,3-cd)pyrene	0.078 U	0.084 U	0.079 U	0.08 U	NA	NA
Naphthalene	1.4 U	1.5 U	1.4 U	1.4 U	8	40
Phenanthrene	0.078 U	0.084 U	0.079 U	0.08 U	NA	NA
Pyrene	0.18 U	0.19 U	0.18 U	0.18 U	50	250

Table 2-5 (Continued)

Groundwater Sample Analytical Results
Containment Performance Well Samples
Moss-American Site
Milwaukee, Wisconsin
Fourth Quarter 2003

Sample ID:	MA3-MW31S-111203-06	MA3-MW32S-111203-08	MA3-MW33S-111203-07	MA3-MW-34S-121203-01	MA3-MW35S-121203-03	MA3-MW36S-111203-03	MA3-MW37S-111203-01	WDNR PAL (ug/L)	WDNR ES (ug/L)
Sample Matrix:	Groundwater	Groundwater	Groundwater	Groundwater	Groundwater	Groundwater	Groundwater		
Sample Date:	12/11/2003	12/11/2003	12/11/2003	12/12/2003	12/12/2003	12/11/2003	12/11/2003		
Units of Measure:	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L		
Parameter									
VOCs									
Benzene	0.2 U	0.2 U	0.2 U	6.6	0.2 U	0.2 U	0.2 U	0.5	5
Ethylbenzene	0.2 U	0.2 U	0.3 J	24	0.2 U	0.2 U	0.2 U	140	700
Toluene	0.2 U	0.2 U	0.2 U	1.3	0.2 U	0.2 U	0.2 U	68.6	343
Total Xylenes	0.6 U	0.6 U	0.6 U	54	0.6 U	0.6 U	0.6 U	124	650
PAHs									
Acenaphthene	1.6 U	1.6 U	3.1 J	340 J	1.9 J	1.7 U	1.6 U	NA	NA
Acenaphthylene	1.6 U	1.6 U	1.6 U	77 J	1.5 U	1.7 U	1.6 U	NA	NA
Anthracene	0.039 U	0.039 U	0.04 U	32 J	0.092 J	0.042 U	0.04 U	600	3,000
Benzo(a)anthracene	0.02 U	0.02 U	0.02 U	16 J	0.041 J	0.021 U	0.02 U	NA	NA
Benzo(a)pyrene	0.02 U	0.02 U	0.02 U	5.9 J	0.028 J	0.021 U	0.02 U	0.02	0.2
Benzo(b)fluoranthene	0.039 U	0.039 U	0.04 U	6 J	0.038 U	0.042 U	0.04 U	0.02	0.2
Benzo(g,h,i)perylene	0.098 U	0.098 U	0.099 U	2.3 J	0.095 U	0.1 U	0.099 U	NA	NA
Benzo(k)fluoranthene	0.02 U	0.02 U	0.02 U	3.4 J	0.025 J	0.021 U	0.02 U	NA	NA
Chrysene	0.078 U	0.079 U	0.079 U	13 J	0.076 U	0.084 U	0.079 U	0.02	0.2
Dibenz(a,h)anthracene	0.039 U	0.039 U	0.04 U	3 U	0.038 U	0.042 U	0.04 U	NA	NA
Fluoranthene	0.039 U	0.039 U	0.04 U	100 J	0.53	0.042 U	0.04 U	80	400
Fluorene	0.18 U	0.18 U	0.84 J	180 J	0.17 U	0.19 U	0.18 U	80	400
Indeno(1,2,3-cd)pyrene	0.078 U	0.079 U	0.079 U	2.1 J	0.076 U	0.084 U	0.079 U	NA	NA
Naphthalene	1.4 U	1.4 U	56 J	6,500 J	1.3 U	1.5 U	1.4 U	8	40
Phenanthrene	0.078 U	0.079 U	0.091 J	310 J	0.15 J	0.084 U	0.079 U	NA	NA
Pyrene	0.18 U	0.18 U	0.18 U	78 J	0.36 J	0.19 U	0.18 U	50	250

Table 2-5 (Continued)

Groundwater Sample Analytical Results
Treatment Performance Monitoring Well Samples
Moss-American Site
Milwaukee, Wisconsin
Fourth Quarter 2003

Sample ID:	MA3-TG1-1-101203-07	MA3-TG1-2-101203-08	MA3-TG1-3-101203-09	MA3-TG2-1-101203-04	MA3-TG2-2-101203-05	MA3-TG2-3-101203-06	WDNR PAL (ug/L)	WDNR ES (ug/L)
Sample Matrix:	Groundwater	Groundwater	Groundwater	Groundwater	Groundwater	Groundwater		
Sample Date:	12/10/2003	12/10/2003	12/10/2003	12/10/2003	12/10/2003	12/10/2003		
Units of Measure:	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L		
Parameter								
VOCS								
Benzene	1 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.5	5
Ethylbenzene	18	0.5 J	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	0.2 U	68.6	343
Total Xylenes	26	0.6 U	0.6 U	0.6 U	0.6 U	0.6 U	124	650
PAHs								
Acenaphthene	280	31	1.7 U	1.6 U	1.7 U	1.7 U	NA	NA
Acenaphthylene	26 J	1.5 U	1.7 U	1.6 U	1.7 U	1.7 U	NA	NA
Anthracene	26	1.2	0.048 J	0.041 U	0.041 U	0.042 U	600	3,000
Benzo(a)anthracene	16	0.067 J	0.021 U	0.02 U	0.021 U	0.021 U	NA	NA
Benzo(a)pyrene	5.9	0.019 U	0.021 U	0.02 U	0.021 U	0.021 U	0.02	0.2
Benzo(b)fluoranthene	6.2	0.038 U	0.042 U	0.041 U	0.041 U	0.042 U	0.02	0.2
Benzo(g,h,i)perylene	2.5 J	0.095 U	0.1 U	0.1 U	0.1 U	0.1 U	NA	NA
Benzo(k)fluoranthene	3.4	0.019 U	0.021 U	0.02 U	0.021 U	0.021 U	NA	NA
Chrysene	12	0.076 U	0.083 U	0.081 U	0.083 U	0.083 U	0.02	0.2
Dibenz(a,h)anthracene	3 U	0.038 U	0.042 U	0.041 U	0.041 U	0.042 U	NA	NA
Fluoranthene	96	1.9	0.13 J	0.041 U	0.042 J	0.042 U	80	400
Fluorene	130	13	0.36 J	0.18 U	0.19 U	0.19 U	80	400
Indeno(1,2,3-cd)pyrene	2.5 J	0.076 U	0.083 U	0.081 U	0.083 U	0.083 U	NA	NA
Naphthalene	1,500	31	1.5 U	1.4 U	1.5 U	1.5 U	8	40
Phenanthrene	250	7.4	0.083 U	0.081 U	0.083 U	0.083 U	NA	NA
Pyrene	69	1.2	0.19 U	0.18 U	0.19 U	0.19 U	50	250

Table 2-5 (Continued)

Groundwater Sample Analytical Results
Treatment Performance Monitoring Well Samples
Moss-American Site
Milwaukee, Wisconsin
Fourth Quarter 2003

Sample ID:	MA3-TG3-1-101203-01	MA3-TG3-2-101203-02	MA3-TG3-3-101203-03	MA3-TG4-1-091203-07	MA3-TG4-2-091203-08	MA3-TG4-3-091203-09	WDNR	WDNR
Sample Matrix:	Groundwater	Groundwater	Groundwater	Groundwater	Groundwater	Groundwater	PAL	ES
Sample Date:	12/10/2003	12/10/2003	12/10/2003	12/9/2003	12/9/2003	12/9/2003	(ug/L)	(ug/L)
Units of Measure:	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L		
Parameter								
VOCS								
Benzene	0.2 U	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	0.2 U	140	700
Toluene	0.2 U	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	0.6 U	124	650
PAHs								
Acenaphthene	1.6 U	1.7 U	1.6 U	1.6 U	1.5 U	1.5 U	NA	NA
Acenaphthylene	1.6 U	1.7 U	1.6 U	1.6 U	1.5 U	1.5 U	NA	NA
Anthracene	0.04 U	0.042 U	0.041 U	0.04 U	0.049 J	0.038 U	600	3,000
Benzo(a)anthracene	0.02 U	0.034 J	0.02 U	0.02 U	0.019 U	0.019 U	NA	NA
Benzo(a)pyrene	0.02 U	0.2 U	0.02 U	0.02 U	0.019 U	0.019 U	0.02	0.2
Benzo(b)fluoranthene	0.04 U	0.042 U	0.041 U	0.04 U	0.038 U	0.038 U	0.02	0.2
Benzo(g,h,i)perylene	0.1 U	0.1 U	0.1 U	0.1 U	0.095 U	0.095 U	NA	NA
Benzo(k)fluoranthene	0.02 U	0.03 J	0.02 U	0.02 U	0.019 U	0.019 U	NA	NA
Chrysene	0.081 U	0.083 U	0.082 U	0.08 U	0.076 U	0.076 U	0.02	0.2
Dibenz(a,h)anthracene	0.04 U	0.042 U	0.041 U	0.04 U	0.038 U	0.038 U	NA	NA
Fluoranthene	0.046 J	0.057 J	0.05 J	0.04 U	0.22	0.038 U	80	400
Fluorene	0.18 U	0.19 U	0.18 U	0.18 U	0.24 J	0.17 U	80	400
Indeno(1,2,3-cd)pyrene	0.081 U	0.083 U	0.082 U	0.08 U	0.076 U	0.076 U	NA	NA
Naphthalene	1.4 U	1.5 U	1.4 U	1.4 U	1.3 U	1.3 U	8	40
Phenanthrene	0.081 U	0.083 U	0.082 U	0.08 U	0.076 U	0.076 U	NA	NA
Pyrene	0.18 U	0.19 U	0.18 U	0.18 U	0.17 U	0.17 U	50	250

Table 2-5 (Continued)

Groundwater Sample Analytical Results
Treatment Performance Monitoring Well Samples
Moss-American Site
Milwaukee, Wisconsin
Fourth Quarter 2004

Sample ID:	MA3-TG5-1-091203-04	MA3-TG5-2-091203-05	MA3-TG5-3-091203-06	MA3-TG6-1-091203-03	MA3-TG6-2-091203-02	MA3-TG6-3-091203-01	WDNR PAL (ug/L)	WDNR ES (ug/L)
Sample Matrix:	Groundwater	Groundwater	Groundwater	Groundwater	Groundwater	Groundwater		
Sample Date:	12/9/2003	12/9/2003	12/9/2003	12/9/2003	12/9/2003	12/9/2003		
Units of Measure:	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L		
Parameter								
VOCS								
Benzene	0.2 U	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	0.2 U	140	700
Toluene	0.2 U	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	0.6 U	124	650
PAHs								
Acenaphthene	1.5 U	1.5 U	1.5 U	1.5 U	1.5 U	1.6 U	NA	NA
Acenaphthylene	1.5 U	1.5 U	1.5 U	1.5 U	1.5 U	1.6 U	NA	NA
Anthracene	0.038 U	0.038 U	0.039 U	0.038 U	0.038 U	0.039 U	600	3,000
Benzo(a)anthracene	0.019 U	0.019 U	0.019 U	0.019 U	0.019 U	0.019 U	NA	NA
Benzo(a)pyrene	0.019 U	0.019 U	0.019 U	0.019 U	0.019 U	0.019 U	0.02	0.2
Benzo(b)fluoranthene	0.038 U	0.038 U	0.039 U	0.038 U	0.038 U	0.039 U	0.02	0.2
Benzo(g,h,i)perylene	0.096 U	0.096 U	0.096 U	0.094 U	0.094 U	0.097 U	NA	NA
Benzo(k)fluoranthene	0.019 U	0.019 U	0.019 U	0.019 U	0.019 U	0.019 U	NA	NA
Chrysene	0.077 U	0.077 U	0.077 U	0.076 U	0.075 U	0.078 U	0.02	0.2
Dibenz(a,h)anthracene	0.038 U	0.038 U	0.039 U	0.038 U	0.038 U	0.039 U	NA	NA
Fluoranthene	0.038 U	0.046 J	0.039 U	0.038 U	0.085 J	0.05 J	80	400
Fluorene	0.17 U	0.17 U	0.17 U	0.17 U	0.17 U	0.17 U	80	400
Indeno(1,2,3-cd)pyrene	0.077 U	0.077 U	0.077 U	0.076 U	0.075 U	0.078 U	NA	NA
Naphthalene	1.3 U	1.3 U	1.4 U	1.3 U	1.3 U	1.4 U	8	40
Phenanthrene	0.077 U	0.077 U	0.077 U	0.076 U	0.075 U	0.078 U	NA	NA
Pyrene	0.17 U	0.17 U	0.17 U	0.17 U	0.17 U	0.17 U	50	250

Table 2-5 (Continued)

Groundwater Sample Analytical Results
Field Duplicate Samples
Moss-American Site
Milwaukee, Wisconsin
Fourth Quarter 2003

Sample ID:	MA3-MW7S-121203-DUP	MA3-MW28S-111203-DUP	MA3-TG3-2-101203-DUP	MA3-TG6-3-091203-DUP	WDNR PAL (ug/L)	WDNR ES (ug/L)
Sample Matrix:	Groundwater	Groundwater	Groundwater	Groundwater		
Sample Date:	12/12/2003	12/11/2003	12/10/2003	12/9/2003		
Units of Measure:	ug/L	ug/L	ug/L	ug/L		
Parameter						
VOCS						
Benzene	2.1 J	0.2 U	0.2 U	0.2 U	0.5	5
Ethylbenzene	16	0.2 U	0.2 U	0.2 U	140	700
Toluene	2 U	0.2 U	0.2 U	0.2 U	68.6	343
Total Xylenes	32	0.6 U	0.6 U	0.6 U	124	650
PAHs						
Acenaphthene	54	1.6 U	1.6 U	1.5 U	NA	NA
Acenaphthylene	41	1.6 U	1.6 U	1.5 U	NA	NA
Anthracene	0.04 J	0.041 U	0.041 U	0.038 U	600	3,000
Benzo(a)anthracene	0.019 U	0.02 U	0.02 U	0.019 U	NA	NA
Benzo(a)pyrene	0.019 U	0.02 U	0.02 U	0.019 U	0.02	0.2
Benzo(b)fluoranthene	0.038 U	0.041 U	0.041 U	0.038 U	0.02	0.2
Benzo(g,h,i)perylene	0.095 U	0.1 U	0.1 U	0.096 U	NA	NA
Benzo(k)fluoranthene	0.019 U	0.02 U	0.02 U	0.019 U	NA	NA
Chrysene	0.076 U	0.081 U	0.081 U	0.077 U	0.02	0.2
Dibenz(a,h)anthracene	0.038 U	0.041 U	0.041 U	0.038 U	NA	NA
Fluoranthene	0.038 U	0.041 U	0.041 U	0.047 J	80	400
Fluorene	7.8	0.18 U	0.18 U	0.17 U	80	400
Indeno(1,2,3-cd)pyrene	0.076 U	0.081 U	0.081 U	0.077 U	NA	NA
Naphthalene	3,100	1.4 U	1.4 U	1.3 U	8	40
Phenanthrene	0.23 J	0.081 U	0.081 U	0.077 U	NA	NA
Pyrene	0.17 U	0.18 U	0.18 U	0.17 U	50	250

Table 2-5 (Continued)

Groundwater Sample Analytical Results
Field Blank Samples
Moss-American Site
Milwaukee, Wisconsin
Fourth Quarter 2003

Sample ID:	MA3-FB-01	MA3-FB-02	FB-03	FB-04	WDNR PAL (ug/L)	WDNR ES (ug/L)
Sample Matrix:	Groundwater	Groundwater	Groundwater	Groundwater		
Sample Date:	12/8/2003	12/9/2003	12/10/2003	12/11/2003		
Units of Measure:	ug/L	ug/L	ug/L	ug/L		
Parameter						
VOCS						
Benzene	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	140	700
Toluene	0.2 U	0.5 J	0.2 U	0.2 U	68.6	343
Total Xylenes	0.6 U	0.6 U	0.6 U	0.6 U	124	650
PAHs						
Acenaphthene	1.7 U	1.5 U	1.6 U	1.6 U	NA	NA
Acenaphthylene	1.7 U	1.5 U	1.6 U	1.6 U	NA	NA
Anthracene	0.042 U	0.038 U	0.039 U	0.04 U	600	3,000
Benzo(a)anthracene	0.021 U	0.019 U	0.019 U	0.02 U	NA	NA
Benzo(a)pyrene	0.021 U	0.019 U	0.019 U	0.02 U	0.02	0.2
Benzo(b)fluoranthene	0.042 U	0.038 U	0.039 U	0.04 U	0.02	0.2
Benzo(g,h,i)perylene	0.11 UJ	0.096 U	0.097 U	0.1 U	NA	NA
Benzo(k)fluoranthene	0.021 U	0.019 U	0.019 U	0.02 U	NA	NA
Chrysene	0.084 U	0.077 U	0.078 U	0.081 U	0.02	0.2
Dibenz(a,h)anthracene	0.042 U	0.038 U	0.039 U	0.04 U	NA	NA
Fluoranthene	0.042 U	0.038 U	0.039 U	0.04 U	80	400
Fluorene	0.19 U	0.17 U	0.17 U	0.18 U	80	400
Indeno(1,2,3-cd)pyrene	0.084 U	0.077 U	0.078 U	0.081 U	NA	NA
Naphthalene	1.5 U	1.3 U	1.4 U	1.4 U	8	40
Phenanthrene	0.084 U	0.077 U	0.078 U	0.081 U	NA	NA
Pyrene	0.19 U	0.17 U	0.17 U	0.18 U	50	250

Table 2-5 (Continued)

Groundwater Sample Analytical Results
Trip Blank Samples
Moss-American Site
Milwaukee, Wisconsin
Fourth Quarter 2003

Sample ID:	MA3-TB-01	MA3-TB-02	TB-03	TB-04	TB-05	WDNR	WDNR
Sample Matrix:	Groundwater	Groundwater	Groundwater	Groundwater	Groundwater	PAL	ES
Sample Date:	12/8/2003	12/9/2003	12/10/2003	12/11/2003	12/12/2003	(ug/L)	(ug/L)
Units of Measure:	ug/L	ug/L	ug/L	ug/L	ug/L		
Parameter							
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

Table 2-5 (Continued)

Groundwater Sample Analytical Results
Table Notes
Moss-American Site
Milwaukee, Wisconsin
Fourth Quarter 2003

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.
Shaded values indicate concentration exceeding PAL.
Shaded and bold values indicate concentration exceeding PAL and ES.

Table 2-6

Concentration Trends in Groundwater Monitoring Wells
First Quarter 2001 through Fourth Quarter 2003
Moss-American Site
Milwaukee, Wisconsin

	MW-4S[1]	MW-7S	TW-05[3]	MW-32S[2]	MW-33S[2]	MW-34S[2]	MW-35S[2]	TG1-1[2]
Benzene (ug/L)								
First Quarter (March '01)	5.10 J	5.50 J	0.20 U	0.20 U	4.00 U	9.80 J	0.20 U	2.8
Second Quarter (June '01)	---	2.90 J	0.20 U	0.20 U	1.00 U	6.80 J	0.20 U	5
Third Quarter (September '01)	---	3.70 J	0.20 U	0.20 U	1.00 U	9.00 J	0.20 U	3.1
Fourth Quarter (December '01)	---	7.70 J	---	0.20 U	1.00 U	6.10 J	0.20 U	5.7
First Quarter (March '02)	---	3.6 J	---	0.20 U	1.00 U	8.9 J	0.20 U	4.3 J
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
Naphthalene (ug/L)								
First Quarter (March '01)	830	3800	8.60 J	0.78 U	2900	5900	2.36 J	1890
Second Quarter (June '01)	---	3200	8.00 J	0.80 U	2900	5700	1.00 J	2200
Third Quarter (September '01)	---	3700	22	1.00 U	2600	6200	1.00 J	2400
Fourth Quarter (December '01)	---	3300	---	1.00 U	2100	6700	1.00 U	2600
First Quarter (March '02)	---	2100	---	1.00 U	2200	5400	1.00 U	2400
Second Quarter (June '02)	---	3000	---	1.00 U	2900	6100	0.90 U	1500
Third Quarter (September '02)	---	4000	---	1.00 U	2700	7000	1.00 U	1200
Fourth Quarter (December '02)	---	2800	---	1.0 U	2100	5300	1.00 U	8900
First Quarter (March '03)	---	2800	---	1.0 U	2300	6100	1.00 U	1900
Second Quarter (June '03)	---	3400	---	1.2 U	2500	6100	1.2 U	1300 J
Third Quarter (September '03)	---	3800	---	1.3 U	2600	5000	1.2 U	5800
Fourth Quarter (December '03)	---	3000	---	1.4 U	58 J	6500 J	1.3 U	1500

Table 2-6 (continued)

Concentration Trends in Groundwater Monitoring Wells
First Quarter 2001 through Fourth Quarter 2003
Moss-American Site
Milwaukee, Wisconsin

	MW-4S[1]	MW-7S	TW-05[3]	MW-32S[2]	MW-33S[2]	MW-34S[2]	MW-35S[2]	TG1-1[2]
Fluorene (ug/L)								
First Quarter (March '01)	210	10	43	0.17 U	19	83	0.31 J	72
Second Quarter (June '01)	---	8.5	56	0.20 U	27	80	0.20 U	59
Third Quarter (September '01)	---	11	60	0.20 U	34	120	0.20 U	410
Fourth Quarter (December '01)	---	11	---	0.20 U	32	320	0.20 U	80
First Quarter (March '02)	---	8.0	---	0.20 U	37	80	0.20 U	270
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	59.0J	170.0J	0.20 UJ	3400J
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	2400
Fourth Quarter (December '03)	---	8	---	0.18 U	0.84 J	180 J	0.17 U	150
Benzo(a) pyrene (ug/L)								
First Quarter (March '01)	1.00 U	0.19 U	0.110 U	0.019 U	0.20 U	0.23 U	0.023 U	0.39U
Second Quarter (June '01)	---	0.02 U	0.020 U	0.02	0.02 U	0.030 J	0.020 U	0.05 J
Third Quarter (September '01)	---	0.02 U	0.020 J	0.02 U	0.02 U	3	0.020 J	33
Fourth Quarter (December '01)	---	0.02 U	---	0.02 U	0.02 U	19	0.030 J	0.050 J
First Quarter (March '02)	---	0.02 U	---	0.02 U	0.02 U	0.2	0.020 U	23
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

--- - No data available.
U - Constituent not detected; method detection limit (MDL) of the analysis reported.
J - Estimated concentration.
ug/L - Micrograms per liter.
1 - MW-4S was removed during Q2 2001 to prepare for excavation of soils surrounding the well.
2 - Additional wells (MW-32S, MW-33S, MW-34S, MW-35S, and TG1-1) installed after March 2000.
3 - TW-05 was removed during Q4 2001 to prepare for excavation of soils surrounding the well.

Table 2-7

Groundwater Sample Analytical Results
Treatment Performance Monitoring Wells-Nutrient and Biological Parameters
Moss-American Site
Milwaukee, Wisconsin
Fourth Quarter 2003

Parameter (mg/L)	Sample Identification					
	TG1-1	TG1-2	TG1-3	TG2-1	TG2-2	TG2-3
Kjeldahl nitrogen	0.67 J	1.2	0.91 J	0.3 U	0.41 J	1.5
Nitrite	0.015 U	0.015 U	0.015 U	0.015 U	0.015 U	0.015 U
Nitrate (as N)	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U
Ammonia Nitrogen	0.72 J	0.11 U	1.1	0.41 J	0.49 J	1.7
Ortho-Phosphate as P	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U
Biochemical oxygen demand	4.3	5	5.9 U	2.9 U	4.2 U	6.5
Total Organic Carbon	8.6	11.7	11.3	3.1	2.8	12.2
Total Phosphorus as PO4 water	0.12 U	0.12 J	0.16 J	0.12 U	0.12 U	0.22
Chemical oxygen demand	31.4	29.6	29.6	6.1 J	5.4 J	32.1
Total Microbial Population (mean)	13,700	6,700	4,300	420	860	880
Degrader Microbial Population (mean)	10 U	30	10 U	10 U	10 U	20

Parameter (mg/L)	Sample Identification					
	TG3-1	TG3-2	TG3-3	TG4-1	TG4-2	TG4-3
Kjeldahl nitrogen	1.2	0.96 J	1.6	1.2	1.5	1.5
Nitrite	0.015 U	0.015 U	0.026 J	0.015 U	0.015 U	0.015 U
Nitrate (as N)	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U
Ammonia Nitrogen	0.83 J	1.6	0.37 J	0.17 J	1.2	1
Ortho-Phosphate as P	0.01 U	0.011 J	0.01 U	0.01 U	0.024 J	0.049
Biochemical oxygen demand	3.8 U	5.3 U	8.5	3.7 U	5.1 U	3.6 U
Total Organic Carbon	11.9	8.1	12.9	7.9	10.3	9.5
Total Phosphorus as PO4 water	0.14 J	0.16 J	0.12 U	0.12 U	0.12 U	0.18 J
Chemical oxygen demand	25.7	20.4	30.4	20.5	29.2	23.9
Total Microbial Population (mean)	760	930	1,020	1,250	380	900
Degrader Microbial Population (mean)	20	50	10 U	10	10 U	20

Parameter (mg/L)	Sample Identification					
	TG5-1	TG5-2	TG5-3	TG6-1	TG6-2	TG6-3
Kjeldahl nitrogen	0.51 J	1.2	0.72 J	2	1.1	1.2
Nitrite	0.015 U	0.015 U	0.015 U	0.015 U	0.015 U	0.015 U
Nitrate (as N)	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U
Ammonia Nitrogen	0.14 J	1.1	0.11 U	0.72 J	0.7 J	1.9
Ortho-Phosphate as P	0.086	0.057	0.12	0.09	0.023 J	0.061
Biochemical oxygen demand	3.2 U	4.8 U	3.4 U	4 U	3.3 U	3.4 U
Total Organic Carbon	6	7.3	5.8	11.1	6.9	8.6
Total Phosphorus as PO4 water	0.12 U	0.19 J	0.12 U	0.14 J	0.12 U	0.12 U
Chemical oxygen demand	14	20.1	17	28.4	17.8	22
Total Microbial Population (mean)	460	1,210	400	830	170	830
Degrader Microbial Population (mean)	10 U	10	10 U	10 U	10 U	10

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

DO concentrations were at normal levels in most of the wells during Q4 2003. However, DO concentrations were anomalous in monitoring wells MW-5S, MW-33S, MW-36S, and TG5-3, exceeding DO concentration of 1.0 mg/L. DO concentrations were also anomalous during Q4 2002 and Q1 2003 events with several higher DO readings. However, during the Q3 2003 groundwater sampling event, the DO levels were at normal levels with none of the wells exhibiting DO levels above 1.0 mg/L. In addition, $N\text{-}NO_3$ and $N\text{-}NO_2$ were not detected in any treatment performance wells. 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 had been 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 still be monitored.

Recommended guidelines for bioremediation of contaminants in site groundwater include a pH range of 5.5 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 (6.44 to 7.02 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 Q4 2003, wells TG5-2 and TG6-3 exhibited the desired C:N:P ratio. Wells TG3-2, TG5-1, TG6-1 and TG6-3 exhibited the desired C:N:P ratio during the Q3 sampling event. On a sitewide basis, the C:N:P ratio is 100:9:1. Nitrogen and phosphorous appear to be the limiting nutrients at the site.

3.3 BACTERIAL POPULATIONS

Total bacterial counts in the performance monitoring wells decreased in some wells while the counts increased in other wells during Q4 2003 when compared to last quarter's counts. The degrader bacterial counts showed similar trends to the total bacterial 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 not known what the cause of this bacterial decrease is at the site. Since air injection began in October 2000, degrader population in TG1 has typically been higher than in TG2. However, it is uncertain if this trend is due to air/nutrient injection, the presence of higher levels of substrate (contaminants), or a combination of these and/or other factors.

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 Q4 2003.

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 quarterly sampling regime instead of a monthly sampling regime. Also, shallow monitoring wells MW-3S, MW-10S, MW-13S, MW-25S, MW-26S, and MW-20S as well as 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. 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. Nutrient injection at gate TG1 was also discontinued.

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 Q1 2001
Moss-American Site
Milwaukee, Wisconsin

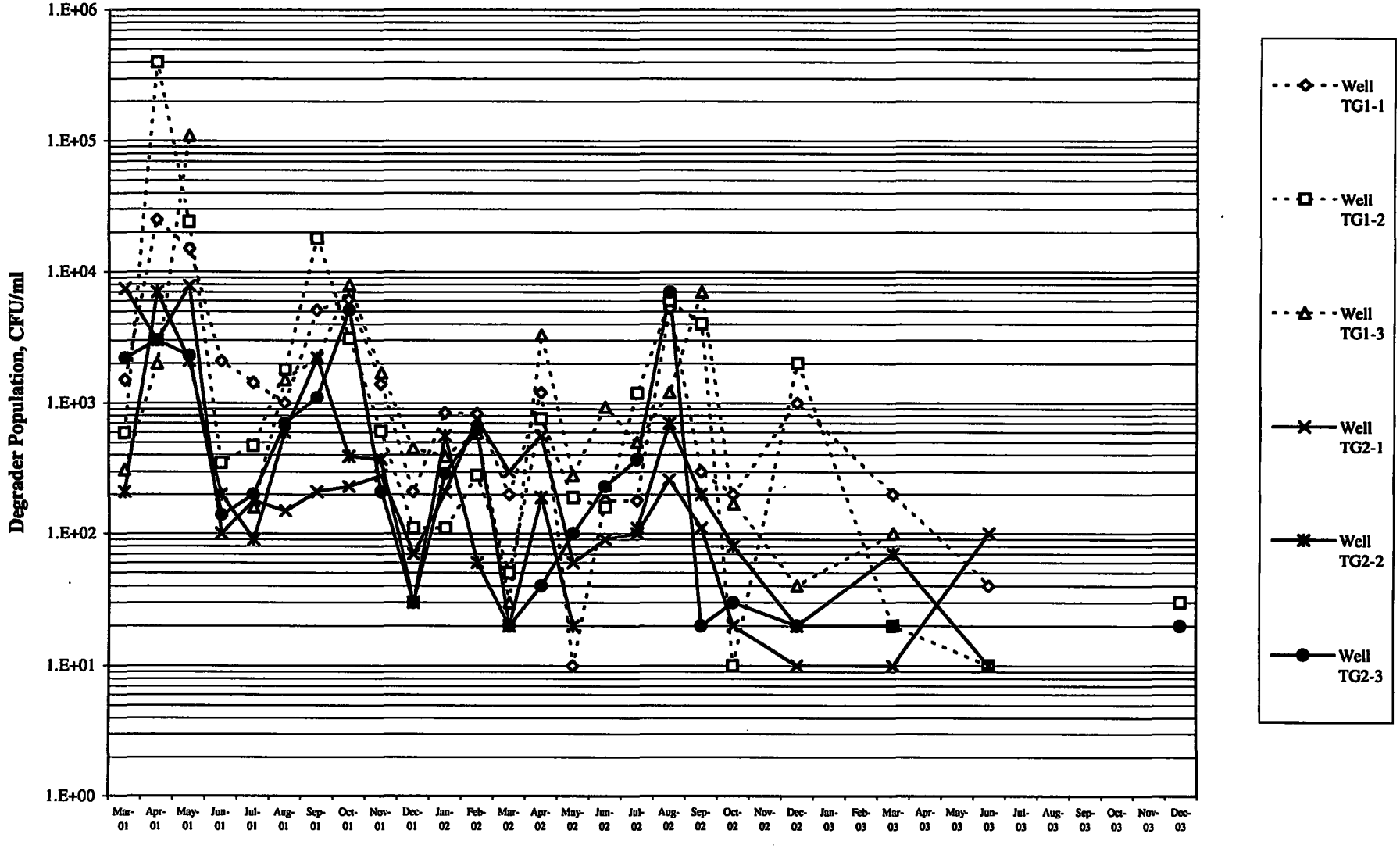

Table 3-1

Calculation of Carbon:Nitrogen:Phosphorous Ratios
Treatment Performance Monitoring Wells
Moss-American Site
Milwaukee, Wisconsin
Fourth Quarter 2003

Well	Carbon[1], mg/L	Total Nitrogen[2], mg/L	Phosphorous[3], mg/L	C-N-P Ratio (100-14-1 desired)		
TG1-1	8.6	0.72	ND	100	8	0
TG1-2	11.7	0	ND	100	0	0
TG1-3	11.3	1.1	ND	100	10	0
TG2-1	3.1	0.41	ND	100	13	0
TG2-2	2.8	0.49	ND	100	18	0
TG2-3	12.2	1.7	ND	100	14	0
TG3-1	11.9	0.83	ND	100	7	0
TG3-2	8.10	1.60	0.01	100	20	0
TG3-3	12.9	0.396	ND	100	3	0
TG4-1	7.9	0.17	ND	100	2	0
TG4-2	10.3	1.2	0.024	100	12	0
TG4-3	9.5	1	0.049	100	11	1
TG5-1	6.00	0.14	0.09	100	2	1
TG5-2	7.3	1.1	0.057	100	15	1
TG5-3	5.8	0	0.12	100	0	2
TG6-1	11.10	0.72	0.09	100	6	1
TG6-2	6.9	0.7	0.023	100	10	0
TG6-3	8.6	1.9	0.061	100	22	1
Site Average	8.67	0.79	0.06	100	9	1

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.

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.

WESTON. 2004. *2003 Annual Maintenance and Monitoring Report for the Little Menomonee River Cleanup Report.*

APPENDIX A

DECEMBER 2003 GROUNDWATER SAMPLE ANALYTICAL RESULTS

Moss American
Milwaukee, Wisconsin
SDG# KMA49

PAHs (SW846 8310)

Lab ID	Lab Code	Sample ID (MA3)	Sample Date	Analysis Date
4180455	M35S1	MW5S-081203-01	12/8/03	12/13/03
4180456	M35S2	MW30S-081203-02	12/8/03	12/13/03
4180457	MFB1	FB-01	12/8/03	12/13/03
4182197	A3G31	TG3-1-101203-01	12/10/03	12/16/03
4182198	TG322	TG3-2-101203-02	12/10/03	12/16/03
4182199	TG32D	TG3-2-101203-DUP	12/10/03	12/16/03
4182200	TG333	TG3-3-101203-03	12/10/03	12/16/03
4182201	TG214	TG2-1-101203-04	12/10/03	12/16/03
4182202	TG225	TG2-2-101203-05	12/10/03	12/16/03
4182203	TG236	TG2-3-101203-06	12/10/03	12/16/03
4182204	TG117	TG1-1-101203-07	12/10/03	12/16/03
4182205	TG128	TG1-2-101203-08	12/10/03	12/16/03
4182206	TG139	TG1-3-101203-09	12/10/03	12/16/03
4182207	FB03C	FB-03	12/10/03	12/16/03

1. Holding Times
All samples were extracted and analyzed within required holding times.

2. Method Blank
Two method blanks were associated with the samples. Both method blanks were free of contamination.

3. Surrogate Recovery
All surrogate recoveries were within required control limits.

4. Laboratory Control Sample
The benzo(g,h,i)perylene RPD was high (38) outside control limits. Benzo(g,h,i)perylene results in samples M35S1, M35S2, and MFB1 are flagged J for positive results and UJ for non-detects. All other LCS results were within required control limits.

5. Matrix Spike/Matrix Spike Duplicate
Matrix QC was not associated with this batch.

6. Field Blanks
FB-1 and FB03 were free of contamination.

7. Field Duplicates
Samples TG322 and TG32D (dup) are field duplicates. The results show good overall correlation.

BTEX-8021

Lab ID	Lab Code	Sample ID (MA3)	Sample Date	Analysis Date
4180455	M35S1	MW5S-081203-01	12/8/03	12/11/03
4180456	M35S2	MW30S-081203-02	12/8/03	12/11/03
4180457	MFB1	FB-01	12/8/03	12/11/03
4180458	MTB1	TB-01	12/8/03	12/11/03
4182197	A3G31	TG3-1-101203-01	12/10/03	12/12/03
4182198	TG322	TG3-2-101203-02	12/10/03	12/12/03
4182199	TG32D	TG3-3-101203-DUP	12/10/03	12/12/03
4182200	TG333	TG3-3-101203-03	12/10/03	12/12/03
4182201	TG214	TG2-1-101203-04	12/10/03	12/12/03
4182202	TG225	TG2-2-101203-05	12/10/03	12/12/03
4182203	TG236	TG2-3-101203-06	12/10/03	12/12/03
4182204	TG117	TG1-1-101203-07	12/10/03	12/12/03
4182205	TG128	TG1-2-101203-08	12/10/03	12/12/03
4182206	TG139	TG1-3-101203-09	12/10/03	12/12/03
4182207	FB03C	FB-03	12/10/03	12/12/03
4182208	TB03C	TB-03	12/10/03	12/12/03

1. Holding Times
All samples were extracted and analyzed within required holding times.

2. Method Blank
Three method blanks were associated with the samples. The method blanks were free of contamination.

3. Surrogate Recovery
All surrogate recoveries were within required control limits.

4. Laboratory Control Sample
All LCS results were within required control limits.

5. Matrix Spike/Matrix Spike Duplicate
Matrix QC is associated with a sample from an alternate delivery group. Therefore, matrix QC does not correspond to any of the samples in this set.

6. Field Blanks
The field blanks FB-1 and FB-3 were free of contamination.

7. Field Duplicates
Samples TG322 and TG32D (dup) are field duplicates. The results show good overall correlation.

8. Trip Blank
Two trip blanks were associated with the samples. The trip blanks were free of contamination.

Data Reviewed by: T. Balla Date: 1/18/04

Moss American
Milwaukee, Wisconsin
SDG# KMA50

PAHs (SW846 8310)

Lab ID	Lab Code	Sample ID (MA3)	Sample Date	Analysis Date
4181347	TG417	TG4-1-091203-07	12/9/03	12/15/03
4181350	TG428	TG4-2-091203-08	12/9/03	12/15/03
4181351	TG439	TG4-3-091203-09	12/9/03	12/15/03
4181352	TG514	TG5-1-091203-04	12/9/03	12/15/03
4181353	TG525	TG5-2-091203-05	12/9/03	12/15/03
4181354	TG536	TG5-3-091203-06	12/9/03	12/15/03
4181355	TG611	TG6-1-091203-03	12/9/03	12/15/03
4181356	TG622	TG6-2-091203-02	12/9/03	12/15/03
4181357	TG632	TG6-3-091203-01	12/9/03	12/16/03
4181358	MS36D	TG6-3-091203-DUP	12/9/03	12/16/03
4181359	FB02W	FB-02	12/9/03	12/16/03

1. Holding Times
All samples were extracted and analyzed within required holding times.

2. Method Blank
One method blanks was associated with the samples. The method blanks was free of contamination.

3. Surrogate Recovery
All surrogate recoveries were within required control limits.

4. Laboratory Control Sample
All LCS results were within required control limits.

5. Matrix Spike/Matrix Spike Duplicate
Matrix QC was performed on sample TG417 (TG4-091203-07). All MS recoveries were within required control limits.

6. Field Blanks
FB-02 contained toluene at 0.5 ug/L. Toluene results in all samples (excluding FB-02) less than 2.5 ug/L are flagged as non-detect U. Remaining blank results were non-detect.

7. Field Duplicates
Samples TG632 and MS36D are field duplicates. The results show good overall correlation.

BTEX-8021

Lab ID	Lab Code	Sample ID (MA3)	Sample Date	Analysis Date
4181347	TG417	TG4-1-091203-07	12/9/03	12/11/03
4181350	TG428	TG4-2-091203-08	12/9/03	12/11/03
4181351	TG439	TG4-3-091203-09	12/9/03	12/11/03
4181352	TG514	TG5-1-091203-04	12/9/03	12/11/03
4181353	TG525	TG5-2-091203-05	12/9/03	12/11/03
4181354	TG536	TG5-3-091203-06	12/9/03	12/11/03
4181355	TG611	TG6-1-091203-03	12/9/03	12/11/03
4181356	TG622	TG6-2-091203-02	12/9/03	12/11/03
4181357	TG632	TG6-3-091203-01	12/9/03	12/11/03
4181358	MS36D	TG6-3-091203-DUP	12/9/03	12/11/03
4181359	FB02W	FB-02	12/9/03	12/11/03
4181360	TB2W	TB-02	12/9/03	12/11/03

1. Holding Times
All samples were extracted and analyzed within required holding times.

2. Method Blank
One method blank was associated with the samples. The method blank was free of contamination.

3. Surrogate Recovery
All surrogate recoveries were within required control limits.

4. Laboratory Control Sample
All LCS results were within required control limits.

5. Matrix Spike/Matrix Spike Duplicate
Matrix QC was performed on sample TG417 (TG4-091203-07). All MS recoveries were within required control limits.

6. Field Blanks
The field blank FB-02 was free of contamination.

7. Field Duplicates
Samples TG632 and MS36D are field duplicates. The results show good overall correlation.

8. Trip Blank
The trip blank (TB-02) was free of contamination.

Data Reviewed by: T. Balla Date: 1/19/04

Moss American
Milwaukee, Wisconsin
SDG# KMA51

PAHs (SW846 8310)

Lab ID	Lab Code	Sample ID (MA3)	Sample Date	Analysis Date
4184350	MA375	MW37S-111203-01	12/11/03	12/28/03
4184351	MA36S	MW29S-11203-02	12/11/03	12/28/03
4184352	MA336	MW36S-111203-03	12/11/03	12/28/03
4184353	28SMA	MW28S-111203-04	12/11/03	12/28/03
4184354	MA28D	MW28S-111203-DUP	12/11/03	12/28/03
4184355	61S05	MW6S-111203-05	12/11/03	12/28/03
4184356	31S06	MW31S-111203-06	12/11/03	12/28/03
4184357	33SMA	MW33S-111203-07	12/11/03	12/28/03
4184358	32S08	MW32S-111203-08	12/11/03	12/28/03
4184359	27S09	MW27S-111203-09	12/11/03	12/28/03
4184360	9S310	MW9S-111203-10	12/11/03	12/28/03
4184361	FB04M	FB-04	12/11/03	12/28/03
4185200	M334S	MW-34S-121203-01	12/12/03	12/17, 12/18/03
4185203	M3-7S	MW7S-121203-02	12/12/03	12/17/03
4185204	M37SD	MW7S-121202-Dup	12/12/03	12/17/03
4185205	M335S	MW35S-121203-03	12/12/03	12/17, 12/18/03

1. Holding Times
All samples were extracted and analyzed within required holding times.

2. Method Blank
Three method blanks were associated with the samples. The three method blanks were free of contamination.

3. Surrogate Recovery
Sample MW6S-111203-05RE had both surrogates high outside control limits. All compounds in the above sample are flagged J for positive results and UJ for non-detects. All other surrogate recoveries were within required control limits.

4. Laboratory Control Sample
There were three LCS samples associated with the samples. LCS 37WCLCS had the following LCS and/or LSCD recovery outside control limits: naphthalene, acenapthene, fluorene, phenanthrene, anthracene, fluoranthene, pyrene, benzo(a)anthracene, chrysene, benzo(b)fluoranthene, benzo(k)fluoranthene, benzo(a)pyrene, benzo(g,h,i)perylene, and indeno(1,2,3-cd)pyrene. LCS349WALCS had acceptable LCS recoveries. LCS363WALCS had out of control LCS or LCSD recoveries or RPDs for naphthalene, acenaphthylene, fluoranthene, dibenz(a,h)anthracene, and benzo(g,h,i)perylene. All other LCS results were within required

control limits. All of the compounds were non-detect in the associated sample except in sample MW33S and MW34S. All positive results in these two samples are flagged J for positive results.

5. Matrix Spike/Matrix Spike Duplicate
Matrix QC was not performed.

6. Field Blanks
FB-04 was free of contamination.

7. Field Duplicates
Samples MW28S-04 and MW28S-Dup and MW7S and MW7S Dup are field duplicates. The results show good overall correlation.

8. Other
Multiple samples required dilutions ranging from 10 to 50 times.

BTEX-8021

Lab ID	Lab Code	Sample ID (MA3)	Sample Date	Analysis Date
4184350	MA375	MW37S-111203-01	12/11/03	12/15/03
4184351	MA36S	MW29S-11203-02	12/11/03	12/15/03
4184352	MA336	MW36S-111203-03	12/11/03	12/15/03
4184353	28SMA	MW28S-111203-04	12/11/03	12/15/03
4184354	MA28D	MW28S-111203-DUP	12/11/03	12/15/03
4184355	61S05	MW6S-111203-05	12/11/03	12/15/03
4184356	31S06	MW31S-111203-06	12/11/03	12/15/03
4184357	33SMA	MW33S-111203-07	12/11/03	12/15/03
4184358	32S08	MW32S-111203-08	12/11/03	12/15/03
4184359	27S09	MW27S-111203-09	12/11/03	12/15/03
4184360	9S310	MW9S-111203-10	12/11/03	12/15/03
4184361	FB04M	FB-04	12/11/03	12/15/03
4184362	04TBM	TB-04	12/11/03	12/15/03
4185200	M334S	MW-34S-121203-01	12/12/03	12/16/03
4185203	M3-7S	MW7S-121203-02	12/12/03	12/16/03
4185204	M37SD	MW7S-121202-Dup	12/12/03	12/16/03
4185205	M335S	MW35S-121203-03	12/12/03	12/16/03
4185206	MAMTB	TB-05	12/12/03	12/16/03

1. Holding Times
All samples were extracted and analyzed within required holding times.

2. Method Blank
Two method blanks were associated with the samples. The method blanks were free of contamination.

3. Surrogate Recovery

All surrogate recoveries were within required control limits.

4. Laboratory Control Sample
All LCS results were within required control limits.

5. Matrix Spike/Matrix Spike Duplicate
Matrix QC was performed on sample MW34S. All MS recoveries were within required control limits.

6. Field Blanks
The field blank FB-02 was free of contamination.

7. Field Duplicates
Samples MW28S-04 and MW28S-Dup and MW7S and MW7S Dup are field duplicates. The results show good overall correlation.

8. Trip Blank
The trip blank (TB-02) was free of contamination.

Data Reviewed by: T. Balla Date: 1/21/04

Sample Reference List for SDG Number KMA49 with a Data Package Type of I

07802 - Kerr-McGee Corporation
Moss American Site - WI

Lab Sample Number	Lab Sample Code	Client Sample Description
4180455	M35S1	MA3-MW5S-081203-01 Grab Water Sample
4180456	M35S2	MA3-MW30S-081203-02 Grab Water Sample
4180457	MFB1-	MA3-FB-01 Grab Water Sample
4180458	MTB1-	MA3-TB-01 Water Sample
4182197	A3G31	MA3-TG3-1-101203-01 Grab Water Sample
4182198	TG322	MA3-TG3-2-101203-02 Grab Water Sample
4182199	TG32D	MA3-TG3-2-101203-DUP Grab Water Sample
4182200	TG333	MA3-TG3-3-101203-03 Grab Water Sample
4182201	TG214	MA3-TG2-1-101203-04 Grab Water Sample
4182202	TG225	MA3-TG2-2-101203-05 Grab Water Sample
4182203	TG236	MA3-TG2-3-101203-06 Grab Water Sample
4182204	TG117	MA3-TG1-1-101203-07 Grab Water Sample
4182205	TG128	MA3-TG1-2-101203-08 Grab Water Sample
4182206	TG139	MA3-TG1-3-101203-09 Grab Water Sample
4182207	FB03C	FB-03 Grab Water Sample
4182208	TB03C	TB-03 Water Sample

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Analysis Request / Environmental Services Chain of Custody

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For Lancaster Laboratories use only
Acct. # 7802 Group# 877750 Sample # 4180455-58

COC # 0039284

Please print. Instructions on reverse side correspond with circled numbers.

(1) Client: KMC/WESTON Acct. #:
Project Name/#: Moss American PWSID #:
Project Manager: Tom Groan P.O.#:
Sampler: Pihl & Hagiwara Quote #:
Name of state where samples were collected: WI

(4) Analyses Requested

(5) For Lab Use Only
FSC:
SCR #: 184860

(6)

(2) Sample Identification	Collection Date	Collection Time	(3) Matrix	BTEX	PAH	Remarks
MA3-MW5S-081203-01	12-8-03	1650	GW	X	X	3 TIMES PER SAMPLES CONTAINERS. CAF 12/10/05
MA3-MW30S-081203-02	↓	1650	GW	X	X	
MA3-FB-01		1725	W	X	X	
MA3-TB-01	↓	0945	W	X	X	BTEX only

(7) Turnaround Time Requested (TAT) (please circle): Normal Rush
(Rush TAT is subject to Lancaster Laboratories approval and surcharge.)
Date results are needed:
Rush results requested by (please circle): Phone Fax E-mail
Phone #: 847-918-4000 Fax #: 847-918-4055
E-mail address:

(8) Data Package Options (please circle if required)
QC Summary, Type I (Tier I), Type II (Tier II), Type III (NJ Red. Del.), Type IV (CLP), Type VI (Raw Data), GLP, Other
SDG Complete? Yes (No)
Site-specific QC required? Yes No
(If yes, indicate QC sample and submit triplicate volume.)
Internal Chain of Custody required? Yes No

Per Quote

(9)

Relinquished by:	Date	Time	Received by:	Date	Time
[signature]	12/3/03	13:50	[signature]	12/4/03	1400
[signature]	12/6/03	1800			
			[signature]	12-4-03	0930

Lancaster Laboratories, Inc., 2425 New Holland Pike, PO Box 12425, Lancaster, PA 17605-2425 (717) 656-2300
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2102 Rev. 10/27/02

Analysis Request / Environmental Services Chain of Custody

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For Lancaster Laboratories use only
Acct. # 7802 Group# 878074 Sample # 418 2197-208

COC # 0029386

Please print. Instructions on reverse side correspond with circled numbers.

(1)
Client: KMC/Newton Acct. #:
Project Name/#: Mass-American PWSID #:
Project Manager: Tom Green P.O.#:
Sampler: Pihl + Hagiwara Quote #:
Name of state where samples were collected: WI

(4) (5) Analyses Requested — PAH

For Lab Use Only
FSC:
SCR #:

(6) Remarks

(2) (3)

MA3-TG3-1-101203-01	12-10-03	0915	X		X	2	X				
-TG3-2-101203-02		0930	X		X	2	X				
-TG3-3-101203-03		0945	X		X	2	X				
-TG3-2-101203-DUP		0930	X		X	2	X				
FB-03		1700	X		X	2	X				

(7) Turnaround Time Requested (TAT) (please circle) (Normal) Rush
(Rush TAT is subject to Lancaster Laboratories approval and surcharge.)
Date results are needed:
Rush results requested by (please circle): Phone Fax E-mail
Phone #: Fax #:
E-mail address:

(8) Data Package Options (please circle if required)
QC Summary Type VI (Raw Data)
Type I (Tier I) GLP
Type II (Tier II) Other
Type III (NJ Red. Del.)
Type IV (CLP)
Per Quote

SDG Complete? Yes (No)
Site-specific QC required? Yes No
(If yes, indicate QC sample and submit triplicate volume.)
Internal Chain of Custody required? Yes No

(9)

Relinquished by:	Date	Time	Received by:	Date	Time
Manessa Pihl	12/10/03	1730			
Relinquished by:	Date	Time	Received by:	Date	Time
Relinquished by:	Date	Time	Received by:	Date	Time
Relinquished by:	Date	Time	Received by:	Date	Time
Relinquished by:	Date	Time	Received by: D. Carlin	12/11/03	0935

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Analysis Request / Environmental Services Chain of Custody

Lancaster Laboratories
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For Lancaster Laboratories use only
Acct. # 7802 Group# 878074 Sample # 4182197-208

COC # 0029385

Please print. Instructions on reverse side correspond with circled numbers.

(1)
Client: KMC/Weston Acct. #:
Project Name/#: Moss-American PWSID #:
Project Manager: Tom Graan P.O.#:
Sampler: Pihl + Hagiwara Quote #:
Name of state where samples were collected: WI

(2) (3) (4) (5) Analyses Requested (6)

For Lab Use Only
FSC:
SCR #:

Sample	Date	Time							Containers	NH3	COD	TKN	TP PO4						Remarks
MA3-T63-1-101203-01	12-10-03	0915	X			X			2	X	X	X	X						
T63-2-101203-02	↓	0930	X			X			2	X	X	X	X						
T63-3-101203-03		0945	X			X			2	X	X	X	X						
T62-1-101203-04		1130	X			X			2	X	X	X	X						
T62-2-101203-05	↓	1145	X			X			2	X	X	X	X						

(7) Turnaround Time Requested (TAT) (please circle): (Normal) Rush
(Rush TAT is subject to Lancaster Laboratories approval and surcharge.)
Date results are needed:
Rush results requested by (please circle): Phone Fax E-mail
Phone #: Fax #:
E-mail address:

(8) Data Package Options (please circle if required)
QC Summary Type VI (Raw Data)
Type I (Tier I) GLP
Type II (Tier II) Other
Type III (NJ Red. Del.)
Type IV (CLP)
Per Quote

SDG Complete? Yes (No)
Site-specific QC required? Yes No
(If yes, indicate QC sample and submit triplicate volume.)
Internal Chain of Custody required? Yes No

(9)

Relinquished by:	Date	Time	Received by:	Date	Time
Marissa Pihl	12/10/03				
			P. Carlin	12/11/03	0935

Lancaster Laboratories, Inc., 2425 New Holland Pike, PO Box 12425, Lancaster, PA 17605-2425 (717) 656-2300
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2102 Rev. 10/27/02

Analysis Request / Environmental Services Chain of Custody

Lancaster Laboratories
Where quality is a science.

For Lancaster Laboratories use only
Acct.# 7802 Group# 878074 Sample # 418197-208

COC # 0029387

PG 2 OF 3

Please print. Instructions on reverse side correspond with circled numbers.

(1) Client: KMC/Weston Acct. #:
Project Name/#: Moss-American PWSID #:
Project Manager: Tom Groan P.O.#:
Sampler: Pihl + Hagiwara Quote #:
Name of state where samples were collected: WI

For Lab Use Only
FSC:
SCR #:
(6)

(2)		(3)	(4)	(5) NO2	NO3	ND3	BTEX	PAH	Remarks
MA3-TG3-2-101203-02	12-10-03	0930	X X	X	X	X			
MA3-TG3-1-101203-01		0915	X X	X	X	2			
MA3-TG3-3-101203-03		0945	X X	X	X	2			
MA3-TG2-2-101203-05		1145	X X	X	X	2			
MA3-TG1-3-101203-09		1610	X X	X	X	2			
MA3-TG2-1-101203-04		1130	X X	X	X	2			
MA3-TG2-3-101203-06		1200	X X	X	X	2			
MA3-TG1-2-101203-08		1600	X X	X	X	2			
MA3-TG1-1-101203-07		1550	X X	X	X	2			
FB-03		1700	X X	X	X	3			

(7) **Turnaround Time Requested (TAT)** (please circle): Normal Rush
(Rush TAT is subject to Lancaster Laboratories approval and surcharge.)
Date results are needed:
Rush results requested by (please circle): Phone Fax E-mail
Phone #: Fax #:
E-mail address:

(8) **Data Package Options** (please circle if required)
QC Summary, Type I (Tier I), Type II (Tier II), Type III (NJ Red. Del.), Type IV (CLP), Type VI (Raw Data), GLP, Other
SDG Complete? Yes No
Site-specific QC required? Yes No
(If yes, indicate QC sample and submit triplicate volume.)
Internal Chain of Custody required? Yes No

Per Quote

(9)

Relinquished by:	Date	Time	Received by:	Date	Time
Maresa Pihl	12/10/03	1730			
Relinquished by:	Date	Time	Received by:	Date	Time
Relinquished by:	Date	Time	Received by:	Date	Time
Relinquished by:	Date	Time	Received by:	Date	Time
Relinquished by:	Date	Time	Received by:	12/11/03	0935

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2102 Rev. 10/27/02

Analysis Request / Environmental Services Chain of Custody

Lancaster Laboratories
Where quality is a science.

For Lancaster Laboratories use only
Acct. # 7802 Group# 878074 Sample # 418 2197-208

COC # 0041438

PG 3 OF 3

Please print. Instructions on reverse side correspond with circled numbers.

(1)
Client: FMC / Weston Acct. #:
Project Name/#: Moss-American PWSID #:
Project Manager: Tom Graan P.O.#:
Sampler: Phl + Aaginsra Quote #:
Name of state where samples were collected: WI

For Lab Use Only
FSC:
SCR #:

(2) (3) (4) (5) Analyses Requested (6)

Sample Identification	Date Collected	Time Collected	(3)		Matrix			Total # of Containers	BTEX	O PO4	BOD							Remarks
TB-03	12-10-03	0800	X			X		2	X									
MA3-TG1-1-101203-07		1550	X			X		1		X	X							
TG1-2-101203-08		1600	X			X		1		X	X							
TG1-3-101203-09		1610	X			X		1		X	X							
TG2-1-101203-04		1130	X			X		1		X	X							
TG2-2-101203-05		1145	X			X		1		X	X							
TG2-3-101203-06		1200	X			X		1		X	X							
TG3-1-101203-01		0915	X			X		1		X	X							
TG3-2-101203-02		0930	X			X		1		X	X							
TG3-3-101203-03		0945	X			X		1		X	X							

(7) Turnaround Time Requested (TAT) (please circle): Normal (circled) Rush
(Rush TAT is subject to Lancaster Laboratories approval and surcharge.)
Date results are needed:
Rush results requested by (please circle): Phone Fax E-mail
Phone #: Fax #:
E-mail address:

(8) Data Package Options (please circle if required)
QC Summary Type VI (Raw Data)
Type I (Tier I) GLP
Type II (Tier II) Other
Type III (NJ Red. Del.)
Type IV (CLP)
Per Quote

SDG Complete? Yes No (circled)
Site-specific QC required? Yes No
(If yes, indicate QC sample and submit triplicate volume.)
Internal Chain of Custody required? Yes No

(9)

Relinquished by:	Date	Time	Received by:	Date	Time
Manzza Phl	12/10/03	1730			
Relinquished by:	Date	Time	Received by:	Date	Time
Relinquished by:	Date	Time	Received by:	Date	Time
Relinquished by:	Date	Time	Received by:	Date	Time
Relinquished by:	Date	Time	Received by: [signature]	12/11/03	0935

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Analysis Request / Environmental Services Chain of Custody

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For Lancaster Laboratories use only
Acct. # 7802 Group# 878074 Sample # 4182197-208

COC # 0029384

Please print. Instructions on reverse side correspond with circled numbers.

(1)
Client: KMC/Weston Acct. #:
Project Name/#: Moss-American PWSID #:
Project Manager: Tom Graan P.O.#:
Sampler: Pihl + Hagiwara Quote #:
Name of state where samples were collected: WI

(5) Analyses Requested

For Lab Use Only
FSC:
SCR #:

(2) Sample Identification	Date	Time	(3)			(4)	Containers	TOC	NH3	COD	TKN	TP PO4					(6) Remarks
MA3-TG3-1-101203-01	12-10-03	0915	X			X	1	X									
TG3-2-101203-02	↓	0930	X			X	1	X									
TG3-3-101203-03		0945	X			X	1	X									
TG2-1- -04		1130	X			X	1	X									
TG2-2- -05		1145	X			X	1	X									
TG2-3- -06		1200	X			X	3	X	X	X	X	X					
TG1-1- -07		1550	X			X	3	X	X	X	X	X					
TG1-2- -08		1600	X			X	3	X	X	X	X	X					
TG1-3- -09	↓	1610	X			X	3	X	X	X	X	X					

(7) Turnaround Time Requested (TAT) (please circle) (Normal) Rush
(Rush TAT is subject to Lancaster Laboratories approval and surcharge.)
Date results are needed:
Rush results requested by (please circle): Phone Fax E-mail
Phone #: Fax #:
E-mail address:

(8) Data Package Options (please circle if required)
QC Summary Type VI (Raw Data)
Type I (Tier I) GLP
Type II (Tier II) Other
Type III (NJ Red. Del.)
Type IV (CLP)
Per Quote

SDG Complete? Yes (No)
Site-specific QC required? Yes No
(If yes, indicate QC sample and submit triplicate volume.)
Internal Chain of Custody required? Yes No

(9)

Relinquished by:	Date	Time	Received by:	Date	Time
Marissa Pihl	12/10/03	1730			
Relinquished by:	Date	Time	Received by:	Date	Time
Relinquished by:	Date	Time	Received by:	Date	Time
Relinquished by:	Date	Time	Received by:	Date	Time
Relinquished by:	Date	Time	Received by: D. Coln	12/11/03	0935

Analysis Request / Environmental Services Chain of Custody

Lancaster Laboratories
Where quality is a science.

For Lancaster Laboratories use only
Acct. # 7802 Group# 878074 Sample # 4182197-208

COC # 0029388

Please print. Instructions on reverse side correspond with circled numbers.

PG 1 of 3

① Client: KMC/Weston Acct. #:
Project Name/#: Moss-American PWSID #:
Project Manager: Tom Graan P.O.#:
Sampler: Pihl + Hagiwara Quote #:
Name of state where samples were collected: WI

For Lab Use Only
FSC:
SCR #:

②			③				④	⑤ BTEX								⑥ Remarks
MA3-TG3-2-101203-02	12-10-03	0930	X			X	3	X								
TG3-2-101203-DUP	↓	0930	X			X	3	X								
TG3-1-101203-01		0915	X			X	3	X								
TG3-3-101203-03		0945	X			X	3	X								
TG2-1-101203-04		1130	X			X	3	X								
TG2-2-101203-05		1145	X			X	3	X								
TG2-3-101203-06		1200	X			X	3	X								
TG1-1-101203-07		1550	X			X	3	X								
TG1-2-101203-08		1600	X			X	3	X								
TG1-3-101203-09	↓	1610	X			X	3	X								

⑦ Turnaround Time Requested (TAT) (please circle): (Normal) Rush
(Rush TAT is subject to Lancaster Laboratories approval and surcharge.)
Date results are needed:
Rush results requested by (please circle): Phone Fax E-mail
Phone #: Fax #:
E-mail address:

⑧ Data Package Options (please circle if required) SDG Complete? Yes (No)
QC Summary Type VI (Raw Data)
Type I (Tier I) GLP
Type II (Tier II) Other
Type III (NJ Red. Del.)
Type IV (CLP)
Per Quote

Site-specific QC required? Yes No
(If yes, indicate QC sample and submit triplicate volume.)
Internal Chain of Custody required? Yes No

Relinquished by:	Date	Time	Received by:	Date	Time ⑨
Marissa Pihl	12/10/03	1730			
			[signature]	12/11/03	0935

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2102 Rev. 10/27/02

Analysis Request / Environmental Services Chain of Custody

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For Lancaster Laboratories use only
Acct. # 7802 Group# 818076 Sample # 418197-208

COC # 0029382

Please print. Instructions on reverse side correspond with circled numbers.

(1)
Client: KMC / Weston — Acct. #:
Project Name/#: Moss-American — PWSID #:
Project Manager: Tom Graan — P.O.#:
Sampler: Pahl + Hagiwara — Quote #:
Name of state where samples were collected: WI

For Lab Use Only
FSC:
SCR #:

(2)		(3)					(4)	(5)	(6)
								PAH	
MA3-TG1-1-101203-07	12-10-03	1550	X		X	2	X		
TG1-2- -08		1600	X		X	2	X		
TG1-3- -09		1610	X		X	2	X		
TG2-1 -04		1130	X		X	2	X		
TG2-2 -05		1145	X		X	2	X		
TG2-3- -06		1200	X		X	2	X		

(7) **Turnaround Time Requested (TAT) (please circle):** Normal Rush
(Rush TAT is subject to Lancaster Laboratories approval and surcharge.)
Date results are needed:
Rush results requested by (please circle): Phone Fax E-mail
Phone #: Fax #:
E-mail address:

(8) **Data Package Options** (please circle if required)
QC Summary — Type VI (Raw Data)
Type I (Tier I) — GLP
Type II (Tier II) — Other
Type III (NJ Red. Del.)
Type IV (CLP)
Site-specific QC required? Yes No
(If yes, indicate QC sample and submit triplicate volume.)
External Chain of Custody required? Yes No
SDG Complete? Yes No

(9) Relinquished by:	Date	Time	Received by:	Date	Time
Marissa Pahl	12/10/03	1730			
Relinquished by:	Date	Time	Received by:	Date	Time
Relinquished by:	Date	Time	Received by:	Date	Time
Relinquished by:	Date	Time	Received by:	Date	Time
Relinquished by:	Date	Time	Received by:	12/11/03	1010 0935

1/6/04

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2102 Rev. 10/27/02

Lancaster Laboratories

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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 877750. Samples arrived at the laboratory on Tuesday, December 09, 2003. The PO# for this group is ZAKW1KEOK0A90089.

Client Description	Lancaster Labs Number
MA3-MW5S-081203-01 Grab Water Sample	4180455
MA3-MW30S-081203-02 Grab Water Sample	4180456
MA3-FB-01 Grab Water Sample	4180457
MA3-TB-01 Water Sample	4180458

METHODOLOGY

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

1 COPY TO	Kerr-McGee Corporation	Attn: Dr. Jeff Ostmeyer
1 COPY TO	Weston Solutions, Inc.	Attn: Mr. Tom Graan
1 COPY TO	Data Package Group	

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

Lancaster Laboratories

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

Respectfully Submitted,

Michele A. Jarosick

Michele A Jarosick
Senior Chemist

0
0
1
8

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PO Box 12425
Lancaster, PA 17605-2425
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Lancaster Laboratories

REPRINT

Lancaster Laboratories Sample No. WW 4180455

MA3-MW5S-081203-01 Grab Water Sample
Moss American Site - WI

Collected:12/08/2003 16:50 by PH

Account Number: 07802

Submitted: 12/09/2003 09:30
Reported: 01/07/2004 at 10:08
Discard: 02/07/2004

Kerr-McGee Corporation
PO Box 3048
Livonia MI 48150

M35S1 SDG#: KMA49-01

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. UJ	1.4	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. UJ	0.020	ug/l	1

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

Laboratory Chronicle

0019

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Lancaster, PA 17605-2425
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Lancaster Laboratories

REPRINT

Lancaster Laboratories Sample No. WW 4180455

MA3-MW5S-081203-01 Grab Water Sample
Moss American Site - WI

Collected:12/08/2003 16:50 by PH

Account Number: 07802

Submitted: 12/09/2003 09:30
Reported: 01/07/2004 at 10:08
Discard: 02/07/2004

Kerr-McGee Corporation
PO Box 3048
Livonia MI 48150

M35S1 SDG#: KMA49-01

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilutio Factor
08213	BTEX (8021)	SW-846 8021B	1	12/11/2003 22:25	Michael F Barrow	1
00774	PAH's in Water by HPLC	SW-846 8310	1	12/13/2003 21:57	Mark A Clark	1
01146	GC VOA Water Prep	SW-846 5030B	1	12/11/2003 22:25	Michael F Barrow	n.a.
03337	PAH Water Extraction	SW-846 3510C	1	12/11/2003 16:00	Elia R Botrous	1

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02000

Lancaster Laboratories

REPRINT

Lancaster Laboratories Sample No. WW 4180456

MA3-MW30S-081203-02 Grab Water Sample
Moss American Site - WI

Collected:12/08/2003 16:50 by PH

Account Number: 07802

Submitted: 12/09/2003 09:30
Reported: 01/07/2004 at 10:08
Discard: 02/07/2004

Kerr-McGee Corporation
PO Box 3048
Livonia MI 48150

M35S2 SDG#: KMA49-02

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. VJ	1.4	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

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

TB

Laboratory Chronicle

0021

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Lancaster, PA 17605-2425
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Lancaster Laboratories

REPRINT

Lancaster Laboratories Sample No. WW 4180456

MA3-MW30S-081203-02 Grab Water Sample
Moss American Site - WI

Collected:12/08/2003 16:50 by PH

Account Number: 07802

Submitted: 12/09/2003 09:30
Reported: 01/07/2004 at 10:08
Discard: 02/07/2004

Kerr-McGee Corporation
PO Box 3048
Livonia MI 48150

M35S2 SDG#: KMA49-02

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
08213	BTEX (8021)	SW-846 8021B	1	12/11/2003 23:05	Michael F Barrow	1
00774	PAH's in Water by HPLC	SW-846 8310	1	12/13/2003 22:35	Mark A Clark	1
01146	GC VOA Water Prep	SW-846 5030B	1	12/11/2003 23:05	Michael F Barrow	n.a.
03337	PAH Water Extraction	SW-846 3510C	1	12/11/2003 16:00	Elia R Botrous	1

0022

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Lancaster, PA 17605-2425
717-656-2300 Fax: 717-656-2681

Lancaster Laboratories

REPRINT

Lancaster Laboratories Sample No. WW 4180457

MA3-FB-01 Grab Water Sample
Moss American Site - WI

Collected:12/08/2003 17:25 by PH

Account Number: 07802

Submitted: 12/09/2003 09:30
Reported: 01/07/2004 at 10:08
Discard: 02/07/2004

Kerr-McGee Corporation
PO Box 3048
Livonia MI 48150

MFB1- SDG#: KMA49-03FB

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. UJ	1.5	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.	0.11	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

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

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

PB

0023

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

Lancaster Laboratories

REPRINT

Lancaster Laboratories Sample No. WW 4180457

MA3-FB-01 Grab Water Sample
Moss American Site - WI

Collected:12/08/2003 17:25 by PH

Account Number: 07802

Submitted: 12/09/2003 09:30
Reported: 01/07/2004 at 10:08
Discard: 02/07/2004

Kerr-McGee Corporation
PO Box 3048
Livonia MI 48150

MFB1- SDG#: KMA49-03FB

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
08213	BTEX (8021)	SW-846 8021B	1	12/11/2003 23:45	Michael F Barrow	1
00774	PAH's in Water by HPLC	SW-846 8310	1	12/13/2003 23:14	Mark A Clark	1
01146	GC VOA Water Prep	SW-846 5030B	1	12/11/2003 23:45	Michael F Barrow	n.a.
03337	PAH Water Extraction	SW-846 3510C	1	12/11/2003 16:00	Elia R Botrous	1

0024

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REPRINT

Lancaster Laboratories Sample No. WW 4180458

MA3-TB-01 Water Sample
Moss American Site - WI

Collected:12/08/2003 09:45

Account Number: 07802

Submitted: 12/09/2003 09:30
Reported: 01/07/2004 at 10:08
Discard: 02/07/2004

Kerr-McGee Corporation
PO Box 3048
Livonia MI 48150

MTB1- SDG#: KMA49-04TB

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	12/11/2003 21:45	Michael F Barrow	1
01146	GC VOA Water Prep	SW-846 5030B	1	12/11/2003 21:45	Michael F Barrow	n.a.

0025

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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 878074. Samples arrived at the laboratory on Thursday, December 11, 2003. The PO# for this group is ZAKW1KEOK0A90089.

Client Description	Lancaster Labs Number
MA3-TG3-1-101203-01 Grab Water Sample	4182197
MA3-TG3-2-101203-02 Grab Water Sample	4182198
MA3-TG3-2-101203-DUP Grab Water Sample	4182199
MA3-TG3-3-101203-03 Grab Water Sample	4182200
MA3-TG2-1-101203-04 Grab Water Sample	4182201
MA3-TG2-2-101203-05 Grab Water Sample	4182202
MA3-TG2-3-101203-06 Grab Water Sample	4182203
MA3-TG1-1-101203-07 Grab Water Sample	4182204
MA3-TG1-2-101203-08 Grab Water Sample	4182205
MA3-TG1-3-101203-09 Grab Water Sample	4182206
FB-03 Grab Water Sample	4182207
TB-03 Water Sample	4182208

METHODOLOGY

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

1 COPY TO	Kerr-McGee Corporation	Attn: Dr. Jeff Ostmeyer
1 COPY TO	Weston Solutions, Inc.	Attn: Mr. Tom Graan
1 COPY TO	Data Package Group	

0026

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

Lancaster Laboratories

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

Respectfully Submitted,

Michele A. Jarosick

Michele A Jarosick
Senior Chemist

0927

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

Lancaster Laboratories

Lancaster Laboratories Sample No. WW 4182197

MA3-TG3-1-101203-01 Grab Water Sample
Moss American Superfund Site - Milwaukee, WI

Collected:12/10/2003 09:15 by MP

Account Number: 07802

Submitted: 12/11/2003 09:35
Reported: 12/29/2003 at 11:43
Discard: 01/29/2004

Kerr-McGee Corporation
PO Box 3048
Livonia MI 48150

A3G31 SDG#: KMA49-05

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
00217	Kjeldahl Nitrogen	7727-37-9	1.2	0.30	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	0.83 J	0.11	mg/l	1
	Sufficient sample volume was not available to perform a MS/MSD for this analysis. Therefore, a LCS/LCSD was performed to demonstrate precision and accuracy at a batch level.					
00226	Ortho-Phosphate as P	14265-44-2	N.D.	0.010	mg/l	1
00235	Biochemical Oxygen Demand	n.a.	N.D.	3.8	mg/l	1
00273	Total Organic Carbon	n.a.	11.9	0.50	mg/l	1
00345	Total Phosphorus as PO4 water	14265-44-2	0.14 J	0.12	mg/l	1
01553	Chemical Oxygen Demand	n.a.	25.7	1.7	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.	1.4	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	0.046 J	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

0028

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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 4182197

MA3-TG3-1-101203-01 Grab Water Sample
Moss American Superfund Site - Milwaukee, WI

Collected:12/10/2003 09:15 by MP

Account Number: 07802

Submitted: 12/11/2003 09:35
Reported: 12/29/2003 at 11:43
Discard: 01/29/2004

Kerr-McGee Corporation
PO Box 3048
Livonia MI 48150

A3G31 SDG#: KMA49-05

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
07410	Benzo(k)fluoranthene	207-08-9	N.D.	0.020	ug/l	1

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

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
00217	Kjeldahl Nitrogen	EPA 351.2	1	12/23/2003 11:58	Katherine D Webster	1
00219	Nitrite Nitrogen	EPA 353.2	1	12/12/2003 08:27	Michelle A Bolton	1
00220	Nitrate Nitrogen	EPA 353.2	1	12/26/2003 13:24	Michelle A Bolton	1
00221	Ammonia Nitrogen	EPA 350.2	1	12/15/2003 20:30	Luz M Groff	1
00226	Ortho-Phosphate as P	EPA 365.3	1	12/11/2003 22:40	Daniel S Smith	1
00235	Biochemical Oxygen Demand	EPA 405.1	1	12/11/2003 21:57	Nicole R Rohrer	1
00273	Total Organic Carbon	EPA 415.1	1	12/12/2003 12:22	Timothy M Petree	1
00345	Total Phosphorus as PO4 water	EPA 365.1	1	12/22/2003 15:06	Michelle A Bolton	1
01553	Chemical Oxygen Demand	EPA 410.2	1	12/18/2003 06:25	Susan A Engle	1
08213	BTEX (8021)	SW-846 8021B	1	12/12/2003 16:21	Michael F Barrow	1
00774	PAH's in Water by HPLC	SW-846 8310	1	12/16/2003 06:03	Mark A Clark	1
01146	GC VOA Water Prep	SW-846 5030B	1	12/12/2003 16:21	Michael F Barrow	n.a.
01460	Total Kjeldahl Nitrogen Digest	EPA 351.2	2	12/22/2003 13:45	Nancy J Shoop	1
03337	PAH Water Extraction	SW-846 3510C	1	12/12/2003 12:00	Zachary S Dennis	1
08264	Total Phos as PO4 Prep (water)	EPA 365.1	1	12/16/2003 15:00	Nancy J Shoop	1

0029

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

Lancaster Laboratories Sample No. WW 4182198

MA3-TG3-2-101203-02 Grab Water Sample
Moss American Superfund Site - Milwaukee, WI

Collected:12/10/2003 09:30 by MP

Account Number: 07802

Submitted: 12/11/2003 09:35
Reported: 12/29/2003 at 11:43
Discard: 01/29/2004

Kerr-McGee Corporation
PO Box 3048
Livonia MI 48150

TG322 SDG#: KMA49-06

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
00217	Kjeldahl Nitrogen	7727-37-9	0.96 J	0.30	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	1.6	0.11	mg/l	1
	Sufficient sample volume was not available to perform a MS/MSD for this analysis. Therefore, a LCS/LCSD was performed to demonstrate precision and accuracy at a batch level.					
00226	Ortho-Phosphate as P	14265-44-2	0.011 J	0.010	mg/l	1
00235	Biochemical Oxygen Demand	n.a.	N.D.	5.3	mg/l	1
00273	Total Organic Carbon	n.a.	8.1	0.50	mg/l	1
00345	Total Phosphorus as PO4 water	14265-44-2	0.16 J	0.12	mg/l	1
01553	Chemical Oxygen Demand	n.a.	20.4	1.7	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.	1.7	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.	0.083	ug/l	1
00789	Anthracene	120-12-7	N.D.	0.042	ug/l	1
00807	Fluoranthene	206-44-0	0.057 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	0.034 J	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.	0.20	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.	0.083	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.	0.083	ug/l	1

0 0 3 0

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Lancaster Laboratories Sample No. WW 4182198

MA3-TG3-2-101203-02 Grab Water Sample
Moss American Superfund Site - Milwaukee, WI

Collected:12/10/2003 09:30 by MP

Account Number: 07802

Submitted: 12/11/2003 09:35
Reported: 12/29/2003 at 11:43
Discard: 01/29/2004

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TG322 SDG#: KMA49-06

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
07410	Benzo(k)fluoranthene	207-08-9	0.030 J	0.021	ug/l	1

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

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

Due to the presence of an interferent near its retention time, the normal reporting limit was not attained for benzo(a)pyrene. 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	12/23/2003 11:58	Katherine D Webster	1
00219	Nitrite Nitrogen	EPA 353.2	1	12/12/2003 08:28	Michelle A Bolton	1
00220	Nitrate Nitrogen	EPA 353.2	1	12/26/2003 13:26	Michelle A Bolton	1
00221	Ammonia Nitrogen	EPA 350.2	1	12/15/2003 20:30	Luz M Groff	1
00226	Ortho-Phosphate as P	EPA 365.3	1	12/11/2003 22:40	Daniel S Smith	1
00235	Biochemical Oxygen Demand	EPA 405.1	1	12/11/2003 21:57	Nicole R Rohrer	1
00273	Total Organic Carbon	EPA 415.1	1	12/12/2003 12:30	Timothy M Petree	1
00345	Total Phosphorus as PO4 water	EPA 365.1	1	12/22/2003 15:07	Michelle A Bolton	1
01553	Chemical Oxygen Demand	EPA 410.2	1	12/18/2003 06:25	Susan A Engle	1
08213	BTEX (8021)	SW-846 8021B	1	12/12/2003 17:00	Michael F Barrow	1
00774	PAH's in Water by HPLC	SW-846 8310	1	12/16/2003 06:42	Mark A Clark	1
01146	GC VOA Water Prep	SW-846 5030B	1	12/12/2003 17:00	Michael F Barrow	n.a.
01460	Total Kjeldahl Nitrogen Digest	EPA 351.2	2	12/22/2003 13:45	Nancy J Shoop	1
03337	PAH Water Extraction	SW-846 3510C	1	12/12/2003 12:00	Zachary S Dennis	1
08264	Total Phos as PO4 Prep (water)	EPA 365.1	1	12/16/2003 15:00	Nancy J Shoop	1

0031

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Lancaster Laboratories

Lancaster Laboratories Sample No. WW 4182199

MA3-TG3-2-101203-DUP Grab Water Sample
Moss American Superfund Site - Milwaukee, WI

Collected:12/10/2003 09:30 by MP

Account Number: 07802

Submitted: 12/11/2003 09:35
Reported: 12/29/2003 at 11:44
Discard: 01/29/2004

Kerr-McGee Corporation
PO Box 3048
Livonia MI 48150

TG32D SDG#: KMA49-03

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.	1.4	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

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

Laboratory Chronicle

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

0032

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Lancaster, PA 17605-2425
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Lancaster Laboratories

Lancaster Laboratories Sample No. WW 4182199

MA3-TG3-2-101203-DUP Grab Water Sample
Moss American Superfund Site - Milwaukee, WI

Collected:12/10/2003 09:30 by MP

Account Number: 07802

Submitted: 12/11/2003 09:35
Reported: 12/29/2003 at 11:44
Discard: 01/29/2004

Kerr-McGee Corporation
PO Box 3048
Livonia MI 48150

TG32D SDG#: KMA49-03

08213	BTEX (8021)	SW-846 8021B	1	12/12/2003 17:40	Michael F Barrow	1
00774	PAH's in Water by HPLC	SW-846 8310	1	12/16/2003 07:20	Mark A Clark	1
01146	GC VOA Water Prep	SW-846 5030B	1	12/12/2003 17:40	Michael F Barrow	n.a.
03337	PAH Water Extraction	SW-846 3510C	1	12/12/2003 12:00	Zachary S Dennis	1

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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 4182200

MA3-TG3-3-101203-03 Grab Water Sample
Moss American Superfund Site - Milwaukee, WI

Collected:12/10/2003 09:45 by MP

Account Number: 07802

Submitted: 12/11/2003 09:35
Reported: 12/29/2003 at 11:44
Discard: 01/29/2004

Kerr-McGee Corporation
PO Box 3048
Livonia MI 48150

TG333 SDG#: KMA49-08

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	0.30	mg/l	1
00219	Nitrite Nitrogen	14797-65-0	0.026 J	0.015	mg/l	1
00220	Nitrate Nitrogen	14797-55-8	N.D.	0.040	mg/l	1
00221	Ammonia Nitrogen	7664-41-7	0.37 J	0.11	mg/l	1
	Sufficient sample volume was not available to perform a MS/MSD for this analysis. Therefore, a LCS/LCSD was performed to demonstrate precision and accuracy at a batch level.					
00226	Ortho-Phosphate as P	14265-44-2	N.D.	0.010	mg/l	1
00235	Biochemical Oxygen Demand	n.a.	8.5	0.80	mg/l	1
00273	Total Organic Carbon	n.a.	12.9	0.50	mg/l	1
00345	Total Phosphorus as PO4 water	14265-44-2	N.D.	0.12	mg/l	1
01553	Chemical Oxygen Demand	n.a.	30.4	1.7	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.	1.4	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	0.050 J	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

0034

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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 4182200

MA3-TG3-3-101203-03 Grab Water Sample
Moss American Superfund Site - Milwaukee, WI

Collected:12/10/2003 09:45 by MP

Account Number: 07802

Submitted: 12/11/2003 09:35
Reported: 12/29/2003 at 11:44
Discard: 01/29/2004

Kerr-McGee Corporation
PO Box 3048
Livonia MI 48150

TG333 SDG#: KMA49-08

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
07410	Benzo(k)fluoranthene	207-08-9	N.D.	0.020	ug/l	1

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

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
00217	Kjeldahl Nitrogen	EPA 351.2	1	12/23/2003 11:59	Katherine D Webster	1
00219	Nitrite Nitrogen	EPA 353.2	1	12/12/2003 09:01	Michelle A Bolton	1
00220	Nitrate Nitrogen	EPA 353.2	1	12/26/2003 13:31	Michelle A Bolton	1
00221	Ammonia Nitrogen	EPA 350.2	1	12/15/2003 20:30	Luz M Groff	1
00226	Ortho-Phosphate as P	EPA 365.3	1	12/11/2003 22:40	Daniel S Smith	1
00235	Biochemical Oxygen Demand	EPA 405.1	1	12/11/2003 21:57	Nicole R Rohrer	1
00273	Total Organic Carbon	EPA 415.1	1	12/12/2003 12:55	Timothy M Petree	1
00345	Total Phosphorus as PO4 water	EPA 365.1	1	12/22/2003 15:12	Michelle A Bolton	1
01553	Chemical Oxygen Demand	EPA 410.2	1	12/18/2003 06:25	Susan A Engle	1
08213	BTEX (8021)	SW-846 8021B	1	12/12/2003 18:20	Michael F Barrow	1
00774	PAH's in Water by HPLC	SW-846 8310	1	12/16/2003 07:59	Mark A Clark	1
01146	GC VOA Water Prep	SW-846 5030B	1	12/12/2003 18:20	Michael F Barrow	n.a.
01460	Total Kjeldahl Nitrogen Digest	EPA 351.2	2	12/22/2003 13:45	Nancy J Shoop	1
03337	PAH Water Extraction	SW-846 3510C	1	12/12/2003 12:00	Zachary S Dennis	1
08264	Total Phos as PO4 Prep (water)	EPA 365.1	1	12/16/2003 15:00	Nancy J Shoop	1

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Lancaster Laboratories Sample No. WW 4182201

MA3-TG2-1-101203-04 Grab Water Sample
Moss American Superfund Site - Milwaukee, WI

Collected:12/10/2003 11:30 by MP

Account Number: 07802

Submitted: 12/11/2003 09:35
Reported: 12/29/2003 at 11:44
Discard: 01/29/2004

Kerr-McGee Corporation
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Livonia MI 48150

TG214 SDG#: KMA49-09

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.	0.30	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
	Sufficient sample volume was not available to perform a MS/MSD for this analysis. Therefore, a LCS/LCSD was performed to demonstrate precision and accuracy at a batch level.					
00226	Ortho-Phosphate as P	14265-44-2	N.D.	0.010	mg/l	1
00235	Biochemical Oxygen Demand	n.a.	N.D.	2.9	mg/l	1
00273	Total Organic Carbon	n.a.	3.1	0.50	mg/l	1
00345	Total Phosphorus as PO4 water	14265-44-2	N.D.	0.12	mg/l	1
01553	Chemical Oxygen Demand	n.a.	6.1 J	1.7	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.	1.4	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

00036

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Lancaster Laboratories Sample No. WW 4182201

MA3-TG2-1-101203-04 Grab Water Sample
Moss American Superfund Site - Milwaukee, WI

Collected:12/10/2003 11:30 by MP

Account Number: 07802

Submitted: 12/11/2003 09:35
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Discard: 01/29/2004

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TG214 SDG#: KMA49-09

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
07410	Benzo(k)fluoranthene	207-08-9	N.D.	0.020	ug/l	1

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

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
00217	Kjeldahl Nitrogen	EPA 351.2	1	12/23/2003 12:00	Katherine D Webster	1
00219	Nitrite Nitrogen	EPA 353.2	1	12/12/2003 09:16	Michelle A Bolton	1
00220	Nitrate Nitrogen	EPA 353.2	1	12/26/2003 14:28	Michelle A Bolton	1
00221	Ammonia Nitrogen	EPA 350.2	1	12/15/2003 20:30	Luz M Groff	1
00226	Ortho-Phosphate as P	EPA 365.3	1	12/11/2003 22:40	Daniel S Smith	1
00235	Biochemical Oxygen Demand	EPA 405.1	1	12/11/2003 21:57	Nicole R Rohrer	1
00273	Total Organic Carbon	EPA 415.1	1	12/12/2003 13:19	Timothy M Petree	1
00345	Total Phosphorus as PO4 water	EPA 365.1	1	12/22/2003 15:13	Michelle A Bolton	1
01553	Chemical Oxygen Demand	EPA 410.2	1	12/18/2003 06:25	Susan A Engle	1
08213	BTEX (8021)	SW-846 8021B	1	12/12/2003 19:00	Michael F Barrow	1
00774	PAH's in Water by HPLC	SW-846 8310	1	12/16/2003 08:37	Mark A Clark	1
01146	GC VOA Water Prep	SW-846 5030B	1	12/12/2003 19:00	Michael F Barrow	n.a.
01460	Total Kjeldahl Nitrogen Digest	EPA 351.2	2	12/22/2003 13:45	Nancy J Shoop	1
03337	PAH Water Extraction	SW-846 3510C	1	12/12/2003 12:00	Zachary S Dennis	1
08264	Total Phos as PO4 Prep (water)	EPA 365.1	1	12/16/2003 15:00	Nancy J Shoop	1

0037

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Lancaster Laboratories Sample No. WW 4182202

MA3-TG2-2-101203-05 Grab Water Sample
Moss American Superfund Site - Milwaukee, WI

Collected:12/10/2003 11:45 by MP

Account Number: 07802

Submitted: 12/11/2003 09:35
Reported: 12/29/2003 at 11:44
Discard: 01/29/2004

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TG225 SDG#: KMA49-10

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
00217	Kjeldahl Nitrogen	7727-37-9	0.41 J	0.30	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	0.49 J	0.11	mg/l	1
	Sufficient sample volume was not available to perform a MS/MSD for this analysis. Therefore, a LCS/LCSD was performed to demonstrate precision and accuracy at a batch level.					
00226	Ortho-Phosphate as P	14265-44-2	N.D.	0.010	mg/l	1
00235	Biochemical Oxygen Demand	n.a.	N.D.	4.2	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.	0.12	mg/l	1
01553	Chemical Oxygen Demand	n.a.	5.4 J	1.7	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.	1.7	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.	0.083	ug/l	1
00789	Anthracene	120-12-7	N.D.	0.041	ug/l	1
00807	Fluoranthene	206-44-0	0.042 J	0.041	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.	0.041	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.	0.083	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.	0.083	ug/l	1

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Lancaster Laboratories Sample No. WW 4182202

MA3-TG2-2-101203-05 Grab Water Sample
Moss American Superfund Site - Milwaukee, WI

Collected:12/10/2003 11:45 by MP

Account Number: 07802

Submitted: 12/11/2003 09:35
Reported: 12/29/2003 at 11:44
Discard: 01/29/2004

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PO Box 3048
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TG225 SDG#: KMA49-10

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
07410	Benzo(k)fluoranthene	207-08-9	N.D.	0.021	ug/l	1

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

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
00217	Kjeldahl Nitrogen	EPA 351.2	1	12/23/2003 12:01	Katherine D Webster	1
00219	Nitrite Nitrogen	EPA 353.2	1	12/12/2003 09:17	Michelle A Bolton	1
00220	Nitrate Nitrogen	EPA 353.2	1	12/26/2003 14:32	Michelle A Bolton	1
00221	Ammonia Nitrogen	EPA 350.2	1	12/15/2003 20:30	Luz M Groff	1
00226	Ortho-Phosphate as P	EPA 365.3	1	12/11/2003 22:40	Daniel S Smith	1
00235	Biochemical Oxygen Demand	EPA 405.1	1	12/11/2003 21:57	Nicole R Rohrer	1
00273	Total Organic Carbon	EPA 415.1	1	12/12/2003 13:27	Timothy M Petree	1
00345	Total Phosphorus as PO4 water	EPA 365.1	1	12/22/2003 15:14	Michelle A Bolton	1
01553	Chemical Oxygen Demand	EPA 410.2	1	12/18/2003 06:25	Susan A Engle	1
08213	BTEX (8021)	SW-846 8021B	1	12/12/2003 19:39	Michael F Barrow	1
00774	PAH's in Water by HPLC	SW-846 8310	1	12/16/2003 13:57	Mark A Clark	1
01146	GC VOA Water Prep	SW-846 5030B	1	12/12/2003 19:39	Michael F Barrow	n.a.
01460	Total Kjeldahl Nitrogen Digest	EPA 351.2	2	12/22/2003 13:45	Nancy J Shoop	1
03337	PAH Water Extraction	SW-846 3510C	1	12/12/2003 12:00	Zachary S Dennis	1
08264	Total Phos as PO4 Prep (water)	EPA 365.1	1	12/16/2003 15:00	Nancy J Shoop	1

0039

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Lancaster Laboratories Sample No. WW 4182203

MA3-TG2-3-101203-06 Grab Water Sample
Moss American Superfund Site - Milwaukee, WI

Collected:12/10/2003 12:00 by MP

Account Number: 07802

Submitted: 12/11/2003 09:35
Reported: 12/29/2003 at 11:44
Discard: 01/29/2004

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TG236 SDG#: KMA49-11

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
00217	Kjeldahl Nitrogen	7727-37-9	1.5	0.30	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	1.7	0.11	mg/l	1
	Sufficient sample volume was not available to perform a MS/MSD for this analysis. Therefore, a LCS/LCSD was performed to demonstrate precision and accuracy at a batch level.					
00226	Ortho-Phosphate as P	14265-44-2	N.D.	0.010	mg/l	1
00235	Biochemical Oxygen Demand	n.a.	6.5	0.80	mg/l	1
00273	Total Organic Carbon	n.a.	12.2	0.50	mg/l	1
00345	Total Phosphorus as PO4 water	14265-44-2	0.22	0.12	mg/l	1
01553	Chemical Oxygen Demand	n.a.	32.1	1.7	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.	1.7	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.	0.083	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.	0.083	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.	0.083	ug/l	1

0040

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Lancaster Laboratories Sample No. WW 4182203

MA3-TG2-3-101203-06 Grab Water Sample
Moss American Superfund Site - Milwaukee, WI

Collected:12/10/2003 12:00 by MP

Account Number: 07802

Submitted: 12/11/2003 09:35
Reported: 12/29/2003 at 11:44
Discard: 01/29/2004

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TG236 SDG#: KMA49-11

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
07410	Benzo(k)fluoranthene	207-08-9	N.D.	0.021	ug/l	1

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

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
00217	Kjeldahl Nitrogen	EPA 351.2	1	12/23/2003 12:03	Katherine D Webster	1
00219	Nitrite Nitrogen	EPA 353.2	1	12/12/2003 09:18	Michelle A Bolton	1
00220	Nitrate Nitrogen	EPA 353.2	1	12/26/2003 14:36	Michelle A Bolton	1
00221	Ammonia Nitrogen	EPA 350.2	1	12/15/2003 20:30	Luz M Groff	1
00226	Ortho-Phosphate as P	EPA 365.3	1	12/11/2003 22:40	Daniel S Smith	1
00235	Biochemical Oxygen Demand	EPA 405.1	1	12/11/2003 21:57	Nicole R Rohrer	1
00273	Total Organic Carbon	EPA 415.1	1	12/12/2003 13:35	Timothy M Petree	1
00345	Total Phosphorus as PO4 water	EPA 365.1	1	12/22/2003 15:15	Michelle A Bolton	1
01553	Chemical Oxygen Demand	EPA 410.2	1	12/18/2003 06:25	Susan A Engle	1
08213	BTEX (8021)	SW-846 8021B	1	12/12/2003 20:19	Michael F Barrow	1
00774	PAH's in Water by HPLC	SW-846 8310	1	12/16/2003 14:36	Mark A Clark	1
01146	GC VOA Water Prep	SW-846 5030B	1	12/12/2003 20:19	Michael F Barrow	n.a.
01460	Total Kjeldahl Nitrogen Digest	EPA 351.2	2	12/22/2003 13:45	Nancy J Shoop	1
03337	PAH Water Extraction	SW-846 3510C	1	12/12/2003 12:00	Zachary S Dennis	1
08264	Total Phos as PO4 Prep (water)	EPA 365.1	1	12/16/2003 15:00	Nancy J Shoop	1

0041

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Lancaster Laboratories

Lancaster Laboratories Sample No. WW 4182204

MA3-TG1-1-101203-07 Grab Water Sample
Moss American Superfund Site - Milwaukee, WI

Collected:12/10/2003 15:50 by MP

Account Number: 07802

Submitted: 12/11/2003 09:35
Reported: 12/29/2003 at 11:44
Discard: 01/29/2004

Kerr-McGee Corporation
PO Box 3048
Livonia MI 48150

TG117 SDG#: KMA49-12

CAT No.	Analysis Name	CAS Number	As Received Result		As Received Method Detection Limit	Units	Dilution Factor
00217	Kjeldahl Nitrogen	7727-37-9	0.67	J	0.30	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	0.72	J	0.11	mg/l	1
	Sufficient sample volume was not available to perform a MS/MSD for this analysis. Therefore, a LCS/LCSD was performed to demonstrate precision and accuracy at a batch level.						
00226	Ortho-Phosphate as P	14265-44-2	N.D.		0.010	mg/l	1
00235	Biochemical Oxygen Demand	n.a.	4.3		0.80	mg/l	1
00273	Total Organic Carbon	n.a.	8.6		0.50	mg/l	1
00345	Total Phosphorus as PO4 water	14265-44-2	N.D.		0.12	mg/l	1
01553	Chemical Oxygen Demand	n.a.	31.4		1.7	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	18.		1.0	ug/l	5
00779	Total Xylenes	1330-20-7	26.		3.0	ug/l	5
	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	1,500.		13.	ug/l	10
00782	Acenaphthylene	208-96-8	26.	J	15.	ug/l	10
00783	Acenaphthene	83-32-9	280.		15.	ug/l	10
00784	Fluorene	86-73-7	150.		1.7	ug/l	10
00785	Phenanthrene	85-01-8	250.		1.5	ug/l	20
00789	Anthracene	120-12-7	26.		0.38	ug/l	10
00807	Fluoranthene	206-44-0	96.		0.76	ug/l	20
00811	Pyrene	129-00-0	69.		1.7	ug/l	10
00812	Benzo(a)anthracene	56-55-3	16.		0.19	ug/l	10
00818	Benzo(b)fluoranthene	205-99-2	6.2		0.38	ug/l	10
00823	Benzo(a)pyrene	50-32-8	5.9		0.19	ug/l	10
00895	Dibenz(a,h)anthracene	53-70-3	N.D.		3.0	ug/l	10

0042

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PO Box 12425
Lancaster, PA 17605-2425
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Lancaster Laboratories Sample No. WW 4182204

MA3-TG1-1-101203-07 Grab Water Sample
Moss American Superfund Site - Milwaukee, WI

Collected:12/10/2003 15:50 by MP

Account Number: 07802

Submitted: 12/11/2003 09:35
Reported: 12/29/2003 at 11:44
Discard: 01/29/2004

Kerr-McGee Corporation
PO Box 3048
Livonia MI 48150

TG117 SDG#: KMA49-12

CAT No.	Analysis Name	CAS Number	As Received Result		As Received Method Detection Limit	Units	Dilution Factor
00898	Indeno(1,2,3-cd)pyrene	193-39-5	2.5	J	0.76	ug/l	10
00907	Benzo(g,h,i)perylene	191-24-2	2.5	J	0.96	ug/l	10
07409	Chrysene	218-01-9	12.		0.76	ug/l	10
07410	Benzo(k)fluoranthene	207-08-9	3.4		0.19	ug/l	10

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

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.

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

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	12/23/2003 12:06	Katherine D Webster	1
00219	Nitrite Nitrogen	EPA 353.2	1	12/12/2003 09:19	Michelle A Bolton	1
00220	Nitrate Nitrogen	EPA 353.2	1	12/26/2003 14:41	Michelle A Bolton	1
00221	Ammonia Nitrogen	EPA 350.2	1	12/15/2003 20:30	Luz M Groff	1
00226	Ortho-Phosphate as P	EPA 365.3	1	12/11/2003 22:40	Daniel S Smith	1
00235	Biochemical Oxygen Demand	EPA 405.1	1	12/11/2003 21:57	Nicole R Rohrer	1
00273	Total Organic Carbon	EPA 415.1	1	12/12/2003 13:43	Timothy M Petree	1
00345	Total Phosphorus as PO4 water	EPA 365.1	1	12/22/2003 15:16	Michelle A Bolton	1
01553	Chemical Oxygen Demand	EPA 410.2	1	12/18/2003 06:25	Susan A Engle	1
08213	BTEX (8021)	SW-846 8021B	1	12/12/2003 15:41	Michael F Barrow	5
00774	PAH's in Water by HPLC	SW-846 8310	1	12/16/2003 15:18	Mark A Clark	10
00774	PAH's in Water by HPLC	SW-846 8310	1	12/22/2003 19:29	Mark A Clark	20

0043

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Lancaster Laboratories Sample No. WW 4182204

MA3-TG1-1-101203-07 Grab Water Sample
Moss American Superfund Site - Milwaukee, WI

Collected:12/10/2003 15:50 by MP

Account Number: 07802

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Livonia MI 48150

TG117 SDG#: KMA49-12

01146	GC VOA Water Prep	SW-846 5030B	1	12/12/2003 15:41	Michael F Barrow	n.a.
01460	Total Kjeldahl Nitrogen Digest	EPA 351.2	2	12/22/2003 13:45	Nancy J Shoop	1
03337	PAH Water Extraction	SW-846 3510C	1	12/12/2003 12:00	Zachary S Dennis	1
08264	Total Phos as PO4 Prep (water)	EPA 365.1	1	12/16/2003 15:00	Nancy J Shoop	1

0044

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Lancaster Laboratories Sample No. WW 4182205

MA3-TG1-2-101203-08 Grab Water Sample
Moss American Superfund Site - Milwaukee, WI

Collected:12/10/2003 16:00 by MP

Account Number: 07802

Submitted: 12/11/2003 09:35
Reported: 12/29/2003 at 11:44
Discard: 01/29/2004

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TG128 SDG#: KMA49-13

CAT No.	Analysis Name	CAS Number	As Received Result		As Received Method Detection Limit	Units	Dilution Factor
00217	Kjeldahl Nitrogen	7727-37-9	1.2		0.30	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	N.D.		0.11	mg/l	1
	Sufficient sample volume was not available to perform a MS/MSD for this analysis. Therefore, a LCS/LCSD was performed to demonstrate precision and accuracy at a batch level.						
00226	Ortho-Phosphate as P	14265-44-2	N.D.		0.010	mg/l	1
00235	Biochemical Oxygen Demand	n.a.	5.0		0.80	mg/l	1
00273	Total Organic Carbon	n.a.	11.7		0.50	mg/l	1
00345	Total Phosphorus as PO4 water	14265-44-2	0.12	J	0.12	mg/l	1
01553	Chemical Oxygen Demand	n.a.	29.6		1.7	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	0.5	J	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	31.		1.3	ug/l	1
00782	Acenaphthylene	208-96-8	N.D.		1.5	ug/l	1
00783	Acenaphthene	83-32-9	31.		1.5	ug/l	1
00784	Fluorene	86-73-7	13.		0.17	ug/l	1
00785	Phenanthrene	85-01-8	7.4		0.076	ug/l	1
00789	Anthracene	120-12-7	1.2		0.038	ug/l	1
00807	Fluoranthene	206-44-0	1.9		0.038	ug/l	1
00811	Pyrene	129-00-0	1.2		0.17	ug/l	1
00812	Benzo(a)anthracene	56-55-3	0.067	J	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.		0.076	ug/l	1
00907	Benzo(g,h,i)perylene	191-24-2	N.D.		0.095	ug/l	1
07409	Chrysene	218-01-9	N.D.		0.076	ug/l	1

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Lancaster Laboratories Sample No. WW 4182205

MA3-TG1-2-101203-08 Grab Water Sample
Moss American Superfund Site - Milwaukee, WI

Collected:12/10/2003 16:00 by MP

Account Number: 07802

Submitted: 12/11/2003 09:35
Reported: 12/29/2003 at 11:44
Discard: 01/29/2004

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Livonia MI 48150

TG128 SDG#: KMA49-13

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
07410	Benzo(k)fluoranthene	207-08-9	N.D.	0.019	ug/l	1

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

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
00217	Kjeldahl Nitrogen	EPA 351.2	1	12/23/2003 12:07	Katherine D Webster	1
00219	Nitrite Nitrogen	EPA 353.2	1	12/12/2003 09:23	Michelle A Bolton	1
00220	Nitrate Nitrogen	EPA 353.2	1	12/26/2003 14:44	Michelle A Bolton	1
00221	Ammonia Nitrogen	EPA 350.2	1	12/15/2003 20:30	Luz M Groff	1
00226	Ortho-Phosphate as P	EPA 365.3	1	12/11/2003 22:40	Daniel S Smith	1
00235	Biochemical Oxygen Demand	EPA 405.1	1	12/11/2003 21:57	Nicole R Rohrer	1
00273	Total Organic Carbon	EPA 415.1	1	12/12/2003 13:51	Timothy M Petree	1
00345	Total Phosphorus as PO4 water	EPA 365.1	1	12/22/2003 15:17	Michelle A Bolton	1
01553	Chemical Oxygen Demand	EPA 410.2	1	12/18/2003 06:25	Susan A Engle	1
08213	BTEX (8021)	SW-846 8021B	1	12/12/2003 20:59	Michael F Barrow	1
00774	PAH's in Water by HPLC	SW-846 8310	1	12/16/2003 15:56	Mark A Clark	1
01146	GC VOA Water Prep	SW-846 5030B	1	12/12/2003 20:59	Michael F Barrow	n.a.
01460	Total Kjeldahl Nitrogen Digest	EPA 351.2	2	12/22/2003 13:45	Nancy J Shoop	1
03337	PAH Water Extraction	SW-846 3510C	1	12/12/2003 12:00	Zachary S Dennis	1
08264	Total Phos as PO4 Prep (water)	EPA 365.1	1	12/16/2003 15:00	Nancy J Shoop	1

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Lancaster, PA 17605-2425
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Lancaster Laboratories Sample No. WW 4182206

MA3-TG1-3-101203-09 Grab Water Sample
Moss American Superfund Site - Milwaukee, WI

Collected:12/10/2003 16:10 by MP

Account Number: 07802

Submitted: 12/11/2003 09:35
Reported: 12/29/2003 at 11:45
Discard: 01/29/2004

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PO Box 3048
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TG139 SDG#: KMA49-14

CAT No.	Analysis Name	CAS Number	As Received Result		As Received Method Detection Limit	Units	Dilution Factor
00217	Kjeldahl Nitrogen	7727-37-9	0.91	J	0.30	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	1.1		0.11	mg/l	1
	Sufficient sample volume was not available to perform a MS/MSD for this analysis. Therefore, a LCS/LCSD was performed to demonstrate precision and accuracy at a batch level.						
00226	Ortho-Phosphate as P	14265-44-2	N.D.		0.010	mg/l	1
00235	Biochemical Oxygen Demand	n.a.	N.D.		5.9	mg/l	1
00273	Total Organic Carbon	n.a.	11.3		0.50	mg/l	1
00345	Total Phosphorus as PO4 water	14265-44-2	0.16	J	0.12	mg/l	1
01553	Chemical Oxygen Demand	n.a.	29.6		1.7	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.		1.7	ug/l	1
00783	Acenaphthene	83-32-9	N.D.		1.7	ug/l	1
00784	Fluorene	86-73-7	0.36	J	0.19	ug/l	1
00785	Phenanthrene	85-01-8	N.D.		0.083	ug/l	1
00789	Anthracene	120-12-7	0.048	J	0.042	ug/l	1
00807	Fluoranthene	206-44-0	0.13	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.		0.083	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.		0.083	ug/l	1

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Lancaster Laboratories Sample No. WW 4182206

MA3-TG1-3-101203-09 Grab Water Sample
Moss American Superfund Site - Milwaukee, WI

Collected:12/10/2003 16:10 by MP

Account Number: 07802

Submitted: 12/11/2003 09:35
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Discard: 01/29/2004

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TG139 SDG#: KMA49-14

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
07410	Benzo(k)fluoranthene	207-08-9	N.D.	0.021	ug/l	1

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

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
00217	Kjeldahl Nitrogen	EPA 351.2	1	12/23/2003 12:08	Katherine D Webster	1
00219	Nitrite Nitrogen	EPA 353.2	1	12/12/2003 09:24	Michelle A Bolton	1
00220	Nitrate Nitrogen	EPA 353.2	1	12/26/2003 14:46	Michelle A Bolton	1
00221	Ammonia Nitrogen	EPA 350.2	1	12/15/2003 20:30	Luz M Groff	1
00226	Ortho-Phosphate as P	EPA 365.3	1	12/11/2003 22:40	Daniel S Smith	1
00235	Biochemical Oxygen Demand	EPA 405.1	1	12/11/2003 21:57	Nicole R Rohrer	1
00273	Total Organic Carbon	EPA 415.1	1	12/12/2003 13:59	Timothy M Petree	1
00345	Total Phosphorus as PO4 water	EPA 365.1	1	12/22/2003 15:18	Michelle A Bolton	1
01553	Chemical Oxygen Demand	EPA 410.2	1	12/18/2003 06:25	Susan A Engle	1
08213	BTEX (8021)	SW-846 8021B	1	12/12/2003 21:39	Michael F Barrow	1
00774	PAH's in Water by HPLC	SW-846 8310	1	12/16/2003 16:35	Mark A Clark	1
01146	GC VOA Water Prep	SW-846 5030B	1	12/12/2003 21:39	Michael F Barrow	n.a.
01460	Total Kjeldahl Nitrogen Digest	EPA 351.2	2	12/22/2003 13:45	Nancy J Shoop	1
03337	PAH Water Extraction	SW-846 3510C	1	12/12/2003 12:00	Zachary S Dennis	1
08264	Total Phos as PO4 Prep (water)	EPA 365.1	1	12/16/2003 15:00	Nancy J Shoop	1

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Lancaster Laboratories

Lancaster Laboratories Sample No. WW 4182207

FB-03 Grab Water Sample
Moss American Superfund Site - Milwaukee, WI

Collected:12/10/2003 17:00 by MP

Account Number: 07802

Submitted: 12/11/2003 09:35
Reported: 12/29/2003 at 11:45
Discard: 01/29/2004

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PO Box 3048
Livonia MI 48150

FB03C SDG#: KMA49-15

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
	A site-specific MSD sample was not submitted for the project. A LCS/LCSD was performed to demonstrate precision and accuracy at a batch level.					
00774	PAH's in Water by HPLC					
00775	Naphthalene	91-20-3	N.D.	1.4	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.	0.17	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.	0.17	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.	0.078	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
	Sufficient sample volume was not available to perform a MS/MSD for this analysis. Therefore, a LCS/LCSD was performed to demonstrate precision and accuracy at a batch level.					

Laboratory Chronicle

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Lancaster Laboratories Sample No. WW 4182207

FB-03 Grab Water Sample
Moss American Superfund Site - Milwaukee, WI

Collected:12/10/2003 17:00 by MP

Account Number: 07802

Submitted: 12/11/2003 09:35
Reported: 12/29/2003 at 11:45
Discard: 01/29/2004

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PO Box 3048
Livonia MI 48150

FB03C SDG#: KMA49-15

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
08213	BTEX (8021)	SW-846 8021B	1	12/15/2003 05:53	Todd T Smythe	1
00774	PAH's in Water by HPLC	SW-846 8310	1	12/16/2003 17:14	Mark A Clark	1
01146	GC VOA Water Prep	SW-846 5030B	1	12/15/2003 05:53	Todd T Smythe	n.a.
03337	PAH Water Extraction	SW-846 3510C	1	12/12/2003 12:00	Zachary S Dennis	1

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Lancaster Laboratories

Lancaster Laboratories Sample No. WW 4182208

TB-03 Water Sample
Moss American Superfund Site - Milwaukee, WI

Collected:12/10/2003 08:00

Account Number: 07802

Submitted: 12/11/2003 09:35
Reported: 12/29/2003 at 11:45
Discard: 01/29/2004

Kerr-McGee Corporation
PO Box 3048
Livonia MI 48150

TB03C SDG#: KMA49-16TB

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

A site-specific MSD sample was not submitted for the project. A LCS/LCSD was performed to demonstrate precision and accuracy at a batch level.

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
08213	BTEX (8021)	SW-846 8021B	1	12/15/2003 06:33	Todd T Smythe	1
01146	GC VOA Water Prep	SW-846 5030B	1	12/15/2003 06:33	Todd T Smythe	n.a.

0051

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Case Narrative
Client: Kerr-McGee Corporation
SDG: KMA49

LANCASTER LABORATORIES
PAH by HPLC

SAMPLE NUMBER(S) :

LL #'s	Sample Code	Matrix Water	Comments
4180455	M35S1	X	
4180456	M35S2	X	
4180457	MFB1-	X	Client Blank
4182197	A3G31	X	
4182198	TG322	X	
4182199	TG32D	X	
4182200	TG333	X	
4182201	TG214	X	
4182202	TG225	X	
4182203	TG236	X	
4182204	TG117	X	10X Dilution
4182204DL	TG117DL	X	20X Dilution
4182205	TG128	X	
4182206	TG139	X	
4182207	FB03C	X	
LABORATORY SUBMITTED QC:			
SBLKWI345	SBLKWI3452	X	Method Blank
SBLKWJ344	SBLKWJ3442	X	Method Blank
344WJLCS	344WJLCS2	X	Lab Control Sample
344WJLCSD	344WJLCSD2	X	Lab Control Sample Dup
345WILCS	345WILCS2	X	Lab Control Sample
345WILCSD	345WILCSD2	X	Lab Control Sample Dup

SAMPLE PREPARATION:

No problems were encountered during the extraction of these samples.

ANALYSIS:

The method used for analysis was SW-846 8310.

All samples were analyzed for polynuclear aromatic hydrocarbons by HPLC.

Sufficient sample volume was not available to perform MS/MSD's for the analysis of all samples. Therefore, LCS/LCSD's were performed to demonstrate precision and accuracy at batch levels.

Due to the nature of the sample matrix, TG117 was analyzed at an initial 10X dilution.

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

QUALITY CONTROL AND NONCONFORMANCE SUMMARY:

The relative percent difference (RPD) for benzo(g,h,i)perylene between 344WJLCS2 and 344WJLCSD2 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.

Case Narrative (continued)
SDG#: KMA49

Sample Code	Compound
TG322	benzo(a)pyrene
TG214	benzo(a)pyrene
TG117	triphenylene, dibenz(a,h)anthracene
TG117DL	triphenylene

Due to missed peaks during the initial processing, manual integrations were performed for the following compounds:

Sample Code/File	Compound
345WILCS2	dibenz(a,h)anthracene, benzo(g,h,i)perylene, indeno(1,2,3-cd)pyrene
345WILCSD2	triphenylene, benzo(a)anthracene, chrysene, benzo(b)fluoranthene, benzo(k)fluoranthene, benzo(a)pyrene, dibenz(a,h)anthracene, benzo(g,h,i)perylene, indeno(1,2,3-cd)pyrene
03344.07	naphthalene,acenaphthylene, 1-methylnaphthalene, 2-methylnaphthalene, acenaphthene, fluorene, indeno(1,2,3-cd)pyrene,
03344.08	acenaphthylene, 1-methylnaphthalene, indeno(1,2,3-cd)pyrene,
03344.11	anthracene, fluoranthene, pyrene, benzo(g,h,i)perylene, indeno(1,2,3-cd)pyrene
03344.12	indeno(1,2,3-cd)pyrene

No further interpretation is necessary for the data submitted.

Case Narrative Reviewed and Approved by:

Charles J. Neslund Date: 1/6/04

Charles J. Neslund
Group Leader, GC/MS Semivolatiles

Sample Reference List for SDG Number KMA50 with a Data Package Type of I

07802 - Kerr-McGee Corporation
Moss American Superfund Site - Milwaukee, WI

Lab Sample Number	Lab Sample Code	Client Sample Description
4181347	TG417	MA3-TG4-1-091203-07 Unspiked Grab Water Sample
4181348	TG417	MA3-TG4-1-091203-07 Matrix Spike Grab Water Sample
4181349	TG417	MA3-TG4-1-091203-07 Matrix Spike Dup Grab Water
4181350	TG428	MA3-TG4-2-091203-08 Grab Water Sample
4181351	TG439	MA3-TG4-3-091203-09 Grab Water Sample
4181352	TG514	MA3-TG5-1-091203-04 Grab Water Sample
4181353	TG525	MA3-TG5-2-091203-05 Grab Water Sample
4181354	TG536	MA3-TG5-3-091203-06 Grab Water Sample
4181355	TG611	MA3-TG6-1-091203-03 Grab Water Sample
4181356	TG622	MA3-TG6-2-091203-02 Grab Water Sample
4181357	TG632	MA3-TG6-3-091203-01 Grab Water Sample
4181358	MS36D	MA3-TG6-3-091203-DUP Grab Water Sample
4181359	FB02W	MA3-FB-02 Grab Water Sample
4181360	TB02W	MA3-TB-02 Water Sample

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Acct. # 7802 Group# 877878 Sample # 4181347-60

COC # 0041445

Pg # 1 of 4

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(1)
Client: KMC / Weston Acct. #:
Project Name/#: Moss American PWSID #:
Project Manager: Tom Graan P.O.#:
Sampler: Pihl & Hagiwara Quote #:
Name of state where samples were collected: WI

For Lab Use Only
FSC:
SCR #: 1184862

(2) (3) (4) (5) Analyses Requested (6)

									BTEX	NO2	NO3							Remarks
MA3-TG5-1-091203-04	12-9-03	1150	X			X		1		X								
TG5-1-091203-04		1150	X			X		1			X							
TB-02		0810	X			X		2	X									
TG4-1-091203-07		1515	X			X		3	X									
TG4-1-091203-MS/MSD		1515	X			X		6	X									
TG5-2-091203-05		1155	X			X		1		X								
TG5-2-091203-05		1155	X			X		1			X							
TG6-2-091203-02		0955	X			X		1		X								
TG6-2-091203-02		0955	X			X		1			X							
TG4-1-091203-07		1515	X			X		1		X								

(7) **Turnaround Time Requested (TAT)** (please circle): (Normal) Rush
(Rush TAT is subject to Lancaster Laboratories approval and surcharge.)
Date results are needed:
Rush results requested by (please circle): Phone Fax E-mail
Phone #: Fax #:
E-mail address:

(8) **Data Package Options** (please circle if required)
QC Summary Type VI (Raw Data)
Type I (Tier I) GLP
Type II (Tier II) Other:
Type III (NJ Red. Del.)
Type IV (CLP)
Per QAPP

SDG Complete? Yes (No)
Site-specific QC required? Yes No
(If yes, indicate QC sample and submit triplicate volume.)
Internal Chain of Custody required? Yes No

(9)

Relinquished by:	Date	Time	Received by:	Date	Time
L. [signature]	12-9-03	0900	Manzeer Pihl	12-8-03	1830
Manzeer Pihl	12-9-03	1700			
			Kathy Binkley	12-10-03	0950

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Analysis Request / Environmental Services Chain of Custody

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Acct. # 7802 Group# 877878 Sample # 4181347-60

COC # 0034610

PG 2 OF 4

Please print. Instructions on reverse side correspond with circled numbers.

(1)
Client: KMC / WESTON Acct. #:
Project Name/#: Moss American PWSID #:
Project Manager: Tom Graan P.O.#:
Sampler: Pihl & Hagiwara Quote #:
Name of state where samples were collected: WI

For Lab Use Only
FSC:
SCR #: 1182212

(2) (3) (4) (5) Analyses Requested (6)

Sample	Date	Time						Total # of containers	BTEX	NO2	NO3	PAH					Remarks
MA3-FB02	12-9-03	1630	X			X		3	X			X					
MA3-TG4-3-091203-09		1525	X			X		1		X							
TG4-3-091203-09		1525	X			X		1			X						
TG4-3-091203-09		1525	X			X		3	X								
TG5-3-091203-06		1200	X			X		1		X							
TG5-3-091203-06		1200	X			X		1			X						
TG5-3-091203-06		1200	X			X		3	X								
TG4-2-091203-08		1520	X			X		1		X							
TG4-2-091203-08		1520	X			X		1			X						
TG4-2-091203-08		1520	X			X		3	X								

(7) **Turnaround Time Requested (TAT)** (please circle): Normal Rush
(Rush TAT is subject to Lancaster Laboratories approval and surcharge.)
Date results are needed:
Rush results requested by (please circle): Phone Fax E-mail
Phone #: 847-918-4000 Fax #: 847-918-4055
E-mail address:

(8) **Data Package Options** (please circle if required) SDG Complete? Yes No
QC Summary Type VI (Raw Data)
Type I (Tier I) GLP Site-specific QC required? Yes No
Type II (Tier II) Other (If yes, indicate QC sample and submit triplicate volume.)
Type III (NJ Red. Del.) Internal Chain of Custody required? Yes No
Type IV (CLP)
Per Quote

(9)

Relinquished by:	Date	Time	Received by:	Date	Time
[signature]	12/9/03	0930	Yoshie Hagiwara	12/9/03	1400
Marissa Pihl	12/9/03	1700			
			Kathy Binkley	12-10-03	0950

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Acct. # 7802 Group# 877878 Sample # 4181347-60

COC # 0039285

PG 3 OF 4

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(1)
Client: EMC/WESTON Acct. #:
Project Name/#: Moss American PWSID #:
Project Manager: Tom Graan P.O.#:
Sampler: Phil & Hagiwara Quote #:
Name of state where samples were collected: WI

For Lab Use Only
FSC:
SCR #: 1184860

(2) (3) (4) (5) (6)

Sample	Date	Time						Total #	BTEX	NO2	NO3						Remarks
MA3-TG6-3-091203-01	12-09-03	0945	X			X		1		X							
TG6-3-091203-01		0945	X			X		1			X						
TG6-3-091203-01		0945	X			X		3	X								
TG6-3-091203-DUP		0945	X			X		3	X								
TG6-2-091203-02		0955	X			X		3	X								
TG6-1-091203-03		1000	X			X		1		X							
TG6-1-091203-03		1000	X			X		1			X						
TG6-1-091203-03		1000	X			X		3	X								
TG5-2-091203-05		1155	X			X		3	X								
TG5-1-091203-04		1150	X			X		3	X								

(7) Turnaround Time Requested (TAT) (please circle): Normal (circled) Rush
(Rush TAT is subject to Lancaster Laboratories approval and surcharge.)
Date results are needed:
Rush results requested by (please circle): Phone Fax E-mail
Phone #: Fax #:
E-mail address:

(8) Data Package Options (please circle if required) SDG Complete? Yes No (circled)
QC Summary Type VI (Raw Data)
Type I (Tier I) GLP
Type II (Tier II) Other
Type III (NJ Red. Del.)
Type IV (CLP)
Per Quote

Site-specific QC required? Yes No
(If yes, indicate QC sample and submit triplicate volume.)
Internal Chain of Custody required? Yes No

(9)

Relinquished by:	Date	Time	Received by:	Date	Time
[signature]	12/3/03	13:50	Yoshie Hagiwara	12/5/03	1400
Marissa Phil	12-9-03	1700			
			Kathy Binkley	12-10-03	0950

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Acct. # 7802 Group# 877878 Sample # 4181347-60

COC # 0041442
PG 4 OF 4

Please print. Instructions on reverse side correspond with circled numbers.

(1)
Client: Weston / KMC Acct. #:
Project Name/#: Moss-American PWSID #:
Project Manager: Tom Graan P.O.#:
Sampler: Pihl + Hagiwara Quote #:
Name of state where samples were collected: WI

For Lab Use Only
FSC:
SCR #:

(2) (3) (4) (5) (6)

Sample	Date	Time							NO3	TOC							Remarks
MA3-T64-1-091203-07	12-09-03	1515	X			X		1	X								
T66-1-091203-01		0945	X			X		1		X							
T66-2-091203-02		0955	X			X		1		X							
T66-3-091203-03		1000	X			X		1		X							
T65-1-091203-04		1150	X			X		1		X							
T65-2-091203-05		1155	X			X		1		X							
T65-3-091203-06		1200	X			X		1		X							
T64-1-091203-07		1515	X			X		1		X							
T64-2-091203-08		1520	X			X		1		X							
T64-3-091203-09		1525	X			X		1		X							

(7) Turnaround Time Requested (TAT) (please circle): Normal (circled) Rush
(Rush TAT is subject to Lancaster Laboratories approval and surcharge.)
Date results are needed:
Rush results requested by (please circle): Phone Fax E-mail
Phone #: Fax #:
E-mail address:

(8) Data Package Options (please circle if required) — SDG Complete? Yes No (circled)
QC Summary — Type VI (Raw Data)
Type I (Tier I) — GLP — Site-specific QC required? Yes No
Type II (Tier II) — Other — (If yes, indicate QC sample and submit triplicate volume.)
Type III (NJ Red. Del.) — Internal Chain of Custody required? Yes No
Type IV (CLP)
Per Quote

(9)

Relinquished by:	Date	Time	Received by:	Date	Time
Maressa Pihl	12-9-03	1700			
			Kathy Birkey	12-10-03	0950

Analysis Request / Environmental Services Chain of Custody

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For Lancaster Laboratories use only
Acct. # 7802 Group# 847847 Sample # 4181347-60

COC # 0041432

Please print. Instructions on reverse side correspond with circled numbers.

(1) Client: KMC/Weston Acct. #:
Project Name/#: Moss-American PWSID #:
Project Manager: Tom Graan P.O.#:
Sampler: Pihl + Hagiwara Quote #:
Name of state where samples were collected: WI

For Lab Use Only
FSC:
SCR #:

(6)

(2) Sample Identification	Date	Time	(3) Matrix	(4) # of containers	(5) Analysis Requested: PAH	COD	TP 204	TKN	NH3	Remarks
MA3-TG5-1-091203-04	12-9-03	1150	X	2	X					
TG5-2-091203-05		1155	X	2	X					
TG5-3-091203-06		1200	X	2	X					
TG5-3-091203-06		1200	X	2		X	X	X	X	
TG6-1-091203-01	↓	0945	X	2		X	X	X	X	

(7) Turnaround Time Requested (TAT) (please circle): Normal Rush
(Rush TAT is subject to Lancaster Laboratories approval and surcharge.)
Date results are needed:
Rush results requested by (please circle): Phone Fax E-mail
Phone #: Fax #:
E-mail address:

(8) Data Package Options (please circle if required)
QC Summary Type VI (Raw Data)
Type I (Tier I) GLP
Type II (Tier II) Other
Type III (NJ Red Del.)
Type IV (CLP)
SDG Complete? Yes No
Site-specific QC required? Yes No
(If yes, indicate QC sample and submit triplicate volume.)
Internal Chain of Custody required? Yes No

(9) Relinquished by:	Date	Time	Received by:	Date	Time
Mark Hagiwara Pihl	12-9-03	1700			
Relinquished by:	Date	Time	Received by:	Date	Time
Relinquished by:	Date	Time	Received by:	Date	Time
Relinquished by:	Date	Time	Received by:	Date	Time
Relinquished by:	Date	Time	Received by: Kathy Brinkman	Date 12-10-03	Time 0950

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Acct. # 7802 Group# 877878 Sample # 4181347-60

COC # 0041433

Please print. Instructions on reverse side correspond with circled numbers.

(1)
Client: FMC/Weston Acct. #:
Project Name/#: Moss-American PWSID #:
Project Manager: Tom Green P.O.#:
Sampler: Pihl + Hagiwara Quote #:
Name of state where samples were collected: WI

(4) (5) Analyses Requested (6)

For Lab Use Only
FSC:
SCR #:

(2) (3)

Sample Identification	Date Collected	Time Collected						Total # of Containers	PAH									Remarks
MA3-TG6-1-091203-01	12-9-03	0945	X			X		2	X									
FB-02	↓	1630	X			X		2	X									
TG6-2-091203-02		0955	X			X		2	X									
TG6-3-091203-03		1000	X			X		2	X									
TG6-3-09I203-DUP	↓	~~1000~~ 0945 on container VAD 12-10-03	X			X		2	X									

(7) Turnaround Time Requested (TAT) (please circle): Normal Rush
(Rush TAT is subject to Lancaster Laboratories approval and surcharge.)
Date results are needed:
Rush results requested by (please circle): Phone Fax E-mail
Phone #: Fax #:
E-mail address:

(8) Data Package Options (please circle if required)

QC Summary
Type I (Tier I)
Type II (Tier II)
Type III (NJ Red. Del.)
Type IV (CLP)
Type VI (Raw Data)
GLP
Other Per QAPP

SDG Complete? Yes **No**

Site-specific QC required? Yes No
(If yes, indicate QC sample and submit triplicate volume.)
Internal Chain of Custody required? Yes No

(9)

Relinquished by:	Date	Time	Received by:	Date	Time
Marissa Pihl	12-9-03	1700			
Relinquished by:	Date	Time	Received by:	Date	Time
Relinquished by:	Date	Time	Received by:	Date	Time
Relinquished by:	Date	Time	Received by:	Date	Time
Relinquished by:	Date	Time	Received by: Kathy Binkley	12-10-03	0950

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Analysis Request / Environmental Services Chain of Custody

Lancaster Laboratories
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For Lancaster Laboratories use only
Acct. # 7802 Group# 877878 Sample # 418134760

COC # 0041441

Please print. Instructions on reverse side correspond with circled numbers.

(1)
Client: KMC / Weston Acct. #:
Project Name/#: Moss-American PWSID #:
Project Manager: Tom Graan P.O.#:
Sampler: Pihl + Hagiwara Quote #:
Name of state where samples were collected: WI

(4) Analyses Requested

(5)

(2) Sample Identification	Date Collected	Time Collected	(3) Matrix	Containers	Preservation	Ortho-P	N-NH3	COD	TKN	TP PO4	BOD				(6) Remarks
MA3-TG6-2-091203-02	12-9-03	0955	X	X	1			X	X	X					
TG6-2-091203-02		0955	X	X	1		X								
TG6-3-091203-03		1000	X	X	1			X	X	X					
TG6-3-091203-03		1000	X	X	1		X								
TG6-1-091203-01		0945	X	X	1	X					X				
TG6-2-091203-02		0955	X	X	1	X					X				
TG6-3-091203-03		1000	X	X	1	X					X				
TG5-1-091203-04		1150	X	X	1	X					X				
TG5-2-091203-05		1155	X	X	1	X					X				
TG5-3-091203-06		1200	X	X	1	X					X				

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FSC:
SCR #:

(7) Turnaround Time Requested (TAT) (please circle): Normal Rush
(Rush TAT is subject to Lancaster Laboratories approval and surcharge.)
Date results are needed:
Rush results requested by (please circle): Phone Fax E-mail
Phone #: Fax #:
E-mail address:

(8) Data Package Options (please circle if required)
QC Summary Type VI (Raw Data)
Type I (Tier I) GLP
Type II (Tier II) Other
Type III (NJ Red. Del.)
Type IV (CLP)

SDG Complete? Yes (No)
Site-specific QC required? Yes No
(If yes, indicate QC sample and submit triplicate volume.)
Internal Chain of Custody required? Yes No

Relinquished by:	Date	Time	Received by:	Date	Time
Marsha Pihl	12-9-03	1700			
Relinquished by:	Date	Time	Received by:	Date	Time
Relinquished by:	Date	Time	Received by:	Date	Time
Relinquished by:	Date	Time	Received by:	Date	Time
Relinquished by:	Date	Time	Received by: Kathy Binkley	12-10-03	0950

(9)

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Analysis Request / Environmental Services Chain of Custody

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For Lancaster Laboratories use only
Acct. # 7802 Group# 89787 Sample # 418347-60

COC # 0041440

Please print. Instructions on reverse side correspond with circled numbers.

(1) Client: KMC/Weston Acct. #:
Project Name/#: Moss-American PWSID #:
Project Manager: Tom Graan P.O.#:
Sampler: Pihl + Hagwara Quote #:
Name of state where samples were collected: WI

For Lab Use Only
FSC:
SCR #:

(2) Sample Identification	Date Collected	Time Collected	(3) Matrix	(4) # of Containers	(5) Ortho-P	(5) BOD	Remarks
MA3-TG4-1-091203-07	12-9-03	1515	X	1	X	X	
MA3-TG4-2-091203-08	↓	1520	X	1	X	X	
MA3TG4-3-091203-09	↓	1525	X	1	X	X	

(7) Turnaround Time Requested (TAT) (please circle): Normal Rush
(Rush TAT is subject to Lancaster Laboratories approval and surcharge.)
Date results are needed:
Rush results requested by (please circle): Phone Fax E-mail
Phone #: Fax #:
E-mail address:

(8) Data Package Options (please circle if required)
QC Summary Type VI (Raw Data)
Type I (Tier I) GLP
Type II (Tier II) Other
Type III (NJ Red. Del.)
Type IV (CLP)

SDG Complete? Yes No

Site-specific QC required? Yes No
(If yes, indicate QC sample and submit triplicate volume.)
Internal Chain of Custody required? Yes No

(9) Relinquished by:	Date	Time	Received by:	Date	Time
Marsha Pihl	12-9-03	1700			
Relinquished by:	Date	Time	Received by:	Date	Time
Relinquished by:	Date	Time	Received by:	Date	Time
Relinquished by:	Date	Time	Received by:	Date	Time
Relinquished by:	Date	Time	Received by: Kathy Binkley	12-10-03	0950

Analysis Request / Environmental Services Chain of Custody

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For Lancaster Laboratories use only
Acct. # 7802 Group# 877898 Sample # 418134760

COC # 0041444

Please print. Instructions on reverse side correspond with circled numbers.

1
Client: KMC/Weston Acct. #:
Project Name/#: Moss-American PWSID #:
Project Manager: Tom Graan P.O.#:
Sampler: Pihl + Hagiwara Quote #:
Name of state where samples were collected: WI

For Lab Use Only
FSC:
SCR #:

2 3 4 5 6 Analyses Requested

Sample Identification	Date Collected	Time Collected	3			4	Total # of Containers	PAH								Remarks
MA3-TG4-1-091203-07	12-9-03	1515	X			X	2	X								
MA3-TG4-1-091203-MS/MSD	↓	1515	X			X	4	X								
MA3-TG4-2-091203-08		1520	X			X	2	X								
MA3-TG4-3-091203-09	↓	1525	X			X	2	X								

7 Turnaround Time Requested (TAT) (please circle): Normal (circled) Rush
(Rush TAT is subject to Lancaster Laboratories approval and surcharge.)
Date results are needed:
Rush results requested by (please circle): Phone Fax E-mail
Phone #: Fax #:
E-mail address:

8 Data Package Options (please circle if required)
QC Summary — Type VI (Raw Data)
Type I (Tier I) — GLP
Type II (Tier II) — Other
Type III (NJ Red. Del.)
Type IV (CLP)
Per Quote

SDG Complete? Yes No (circled)
Site-specific QC required? Yes No
(If yes, indicate QC sample and submit triplicate volume.)
Internal Chain of Custody required? Yes No

9

Relinquished by:	Date	Time	Received by:	Date	Time
Marissa Pihl	12-9-03	1700			
			Kathy Binkley	12-10-03	0950

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Analysis Request / Environmental Services Chain of Custody

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For Lancaster Laboratories use only
Acct. # 7802 Group# 877878 Sample # 4181347-60

COC # 0041439

Please print. Instructions on reverse side correspond with circled numbers.

(1)
Client: KMC/Weston Acct. #:
Project Name/#: Moss-American PWSID #:
Project Manager: Tom Graan P.O.#:
Sampler: Pihl + Hagiwara Quote #:
Name of state where samples were collected: WI

For Lab Use Only
FSC:
SCR #:

(2) (3) (4) (5) Analyses Requested (6)

Sample Identification	Date Collected	Time Collected	(3)	(3)	(4)	(4)	(4)	Total	COD	TP PO4	TKN	NH3					Remarks
MA3-TG4-1-091203-07	12-9-03	1515	X			X		2	X	X	X	X					
TG4-2-08	↓	1520	X			X		2	X	X	X	X					
TG4-3-09	↓	1525	X			X		2	X	X	X	X					
TG5-1-04	↓	1150	X			X		2	X	X	X	X					
TG5-2-05	↓	1155	X			X		2	X	X	X	X					

(7) **Turnaround Time Requested (TAT) (please circle):** Normal (circled) Rush
(Rush TAT is subject to Lancaster Laboratories approval and surcharge.)
Date results are needed:
Rush results requested by (please circle): Phone Fax E-mail
Phone #: Fax #:
E-mail address:

(8) **Data Package Options** (please circle if required)
QC Summary Type VI (Raw Data)
Type I (Tier I) GLP
Type II (Tier II) Other
Type III (NJ Red. Del.)
Type IV (CLP)
Per Quote

SDG Complete? Yes No (circled)
Site-specific QC required? Yes No
(If yes, indicate QC sample and submit triplicate volume.)
Internal Chain of Custody required? Yes No

(9)

Relinquished by:	Date	Time	Received by:	Date	Time
Mar3 Saml (signature)	12-9-03	1700			
Relinquished by:	Date	Time	Received by:	Date	Time
Relinquished by:	Date	Time	Received by:	Date	Time
Relinquished by:	Date	Time	Received by:	Date	Time
Relinquished by:	Date	Time	Received by: Kathy Binkley (signature)	12-10-03	0850

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Copies: White and yellow should accompany samples to Lancaster Laboratories. The pink copy should be retained by the client.

2102 Rev. 10/27/02

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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 877878. Samples arrived at the laboratory on Wednesday, December 10, 2003. The PO# for this group is ZAKW1KEOK0A90089.

Client Description	Lancaster Labs Number
MA3-TG4-1-091203-07 Unspiked Grab Water Sample	4181347
MA3-TG4-1-091203-07 Matrix Spike Grab Water Sample	4181348
MA3-TG4-1-091203-07 Matrix Spike Dup Grab Water	4181349
MA3-TG4-2-091203-08 Grab Water Sample	4181350
MA3-TG4-3-091203-09 Grab Water Sample	4181351
MA3-TG5-1-091203-04 Grab Water Sample	4181352
MA3-TG5-2-091203-05 Grab Water Sample	4181353
MA3-TG5-3-091203-06 Grab Water Sample	4181354
MA3-TG6-1-091203-03 Grab Water Sample	4181355
MA3-TG6-2-091203-02 Grab Water Sample	4181356
MA3-TG6-3-091203-01 Grab Water Sample	4181357
MA3-TG6-3-091203-DUP Grab Water Sample	4181358
MA3-FB-02 Grab Water Sample	4181359
MA3-TB-02 Water Sample	4181360

METHODOLOGY

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

1 COPY TO	Weston Solutions, Inc.	Attn: Mr. Tom Graan
1 COPY TO	Kerr-McGee Corporation	Attn: Dr. Jeff Ostmeyer
1 COPY TO	Data Package Group	

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

Respectfully Submitted,

Robert G. Heisey
Robert G. Heisey
Sr. Chemist/Coordinator

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Lancaster Laboratories Sample No. WW 4181347

MA3-TG4-1-091203-07 Unspiked Grab Water Sample
Moss American Superfund Site - Milwaukee, WI -

Collected:12/09/2003 15:15 by MP

Account Number: 07802

Submitted: 12/10/2003 09:50
Reported: 01/05/2004 at 14:50
Discard: 02/05/2004

Kerr-McGee Corporation
PO Box 3048
Livonia MI 48150

TG417 SDG#: KMA50-01BKG

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
00217	Kjeldahl Nitrogen	7727-37-9	1.2	0.30	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	0.17 J	0.11	mg/l	1
	Sufficient sample volume was not available to perform a MS/MSD for this analysis. Therefore, a LCS/LCSD was performed to demonstrate precision and accuracy at a batch level.					
00226	Ortho-Phosphate as P	14265-44-2	N.D.	0.010	mg/l	1
00235	Biochemical Oxygen Demand	n.a.	N.D.	3.7	mg/l	1
00273	Total Organic Carbon	n.a.	7.9	0.50	mg/l	1
00345	Total Phosphorus as PO4 water	14265-44-2	N.D.	0.12	mg/l	1
01553	Chemical Oxygen Demand	n.a.	20.5	1.7	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.	1.4	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

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Lancaster Laboratories Sample No. WW 4181347

MA3-TG4-1-091203-07 Unspiked Grab Water Sample
Moss American Superfund Site - Milwaukee, WI

Collected:12/09/2003 15:15 by MP

Account Number: 07802

Submitted: 12/10/2003 09:50
Reported: 01/05/2004 at 14:50
Discard: 02/05/2004

Kerr-McGee Corporation
PO Box 3048
Livonia MI 48150

TG417 SDG#: KMA50-01BKG

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
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
00217	Kjeldahl Nitrogen	EPA 351.2	1	12/11/2003 19:08	Venia B McFadden	1
00219	Nitrite Nitrogen	EPA 353.2	2	12/10/2003 23:15	Kyle W Eckenroad	1
00220	Nitrate Nitrogen	EPA 353.2	1	12/22/2003 19:16	Kyle W Eckenroad	1
00221	Ammonia Nitrogen	EPA 350.2	1	12/15/2003 18:00	Luz M Groff	1
00226	Ortho-Phosphate as P	EPA 365.3	1	12/11/2003 03:40	Daniel S Smith	1
00235	Biochemical Oxygen Demand	EPA 405.1	1	12/10/2003 22:07	Nicole R Rohrer	1
00273	Total Organic Carbon	EPA 415.1	1	12/12/2003 10:10	Timothy M Petree	1
00345	Total Phosphorus as PO4 water	EPA 365.1	1	12/22/2003 14:53	Michelle A Bolton	1
01553	Chemical Oxygen Demand	EPA 410.2	1	12/15/2003 08:00	Susan A Engle	1
08213	BTEX (8021)	SW-846 8021B	1	12/11/2003 13:46	Martha L Seidel	1
00774	PAH's in Water by HPLC	SW-846 8310	1	12/15/2003 17:12	Mark A Clark	1
01146	GC VOA Water Prep	SW-846 5030B	1	12/11/2003 13:46	Martha L Seidel	n.a.
01460	Total Kjeldahl Nitrogen Digest	EPA 351.2	1	12/11/2003 09:20	Choon Y Tian	1
03337	PAH Water Extraction	SW-846 3510C	1	12/11/2003 23:00	Felix C Arroyo	1
08264	Total Phos as PO4 Prep (water)	EPA 365.1	1	12/16/2003 15:00	Nancy J Shoop	1

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Lancaster Laboratories Sample No. WW 4181348

MA3-TG4-1-091203-07 Matrix Spike Grab Water Sample
Moss American Superfund Site - Milwaukee, WI

Collected:12/09/2003 15:15 by MP

Account Number: 07802

Submitted: 12/10/2003 09:50
Reported: 01/05/2004 at 14:50
Discard: 02/05/2004

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PO Box 3048
Livonia MI 48150

TG417 SDG#: KMA50-01MS

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	18.	0.2	ug/l	1
00777	Toluene	108-88-3	21.	0.2	ug/l	1
00778	Ethylbenzene	100-41-4	22.	0.2	ug/l	1
00779	Total Xylenes	1330-20-7	67.	0.6	ug/l	1
00774	PAH's in Water by HPLC					
00775	Naphthalene	91-20-3	160.	1.4	ug/l	1
00782	Acenaphthylene	208-96-8	170.	1.6	ug/l	1
00783	Acenaphthene	83-32-9	170.	1.6	ug/l	1
00784	Fluorene	86-73-7	17.	0.18	ug/l	1
00785	Phenanthrene	85-01-8	5.6	0.080	ug/l	1
00789	Anthracene	120-12-7	2.8	0.040	ug/l	1
00807	Fluoranthene	206-44-0	2.7	0.040	ug/l	1
00811	Pyrene	129-00-0	18.	0.18	ug/l	1
00812	Benzo(a)anthracene	56-55-3	1.3	0.020	ug/l	1
00818	Benzo(b)fluoranthene	205-99-2	1.1	0.040	ug/l	1
00823	Benzo(a)pyrene	50-32-8	1.3	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	5.5	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	5.4	0.080	ug/l	1
07410	Benzo(k)fluoranthene	207-08-9	1.1	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	12/11/2003 14:19	Martha L Seidel	1
00774	PAH's in Water by HPLC	SW-846 8310	1	12/22/2003 16:09	Mark A Clar[illegible]23	1

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Lancaster Laboratories Sample No. WW 4181348

MA3-TG4-1-091203-07 Matrix Spike Grab Water Sample
Moss American Superfund Site - Milwaukee, WI

Collected:12/09/2003 15:15 by MP

Account Number: 07802

Submitted: 12/10/2003 09:50
Reported: 01/05/2004 at 14:50
Discard: 02/05/2004

Kerr-McGee Corporation
PO Box 3048
Livonia MI 48150

TG417 SDG#: KMA50-01MS

03337	PAH Water Extraction	SW-846 3510C	1	12/11/2003 23:00	Felix C Arroyo	1

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Lancaster Laboratories Sample No. WW 4181349

MA3-TG4-1-091203-07 Matrix Spike Dup Grab Water
Moss American Superfund Site - Milwaukee, WI

Collected:12/09/2003 15:15 by MP

Account Number: 07802

Submitted: 12/10/2003 09:50
Reported: 01/05/2004 at 14:50
Discard: 02/05/2004

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PO Box 3048
Livonia MI 48150

TG417 SDG#: KMA50-01MSD

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	18.	0.2	ug/l	1
00777	Toluene	108-88-3	21.	0.2	ug/l	1
00778	Ethylbenzene	100-41-4	22.	0.2	ug/l	1
00779	Total Xylenes	1330-20-7	66.	0.6	ug/l	1
00774	PAH's in Water by HPLC					
00775	Naphthalene	91-20-3	170.	1.4	ug/l	1
00782	Acenaphthylene	208-96-8	170.	1.6	ug/l	1
00783	Acenaphthene	83-32-9	180.	1.6	ug/l	1
00784	Fluorene	86-73-7	17.	0.18	ug/l	1
00785	Phenanthrene	85-01-8	5.6	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	18.	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	1.1	0.040	ug/l	1
00823	Benzo(a)pyrene	50-32-8	1.3	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	5.7	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	5.4	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	12/11/2003 14:52	Martha L Seidel	1
00774	PAH's in Water by HPLC	SW-846 8310	1	12/22/2003 16:47	Mark A Clark	1

0625

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Lancaster Laboratories Sample No. WW 4181349

MA3-TG4-1-091203-07 Matrix Spike Dup Grab Water
Moss American Superfund Site - Milwaukee, WI

Collected:12/09/2003 15:15 by MP

Account Number: 07802

Submitted: 12/10/2003 09:50
Reported: 01/05/2004 at 14:50
Discard: 02/05/2004

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TG417 SDG#: KMA50-01MSD

03337	PAH Water Extraction	SW-846 3510C	1	12/11/2003 23:00	Felix C Arroyo	1

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Lancaster Laboratories Sample No. WW 4181350

MA3-TG4-2-091203-08 Grab Water Sample
Moss American Superfund Site - Milwaukee, WI

Collected:12/09/2003 15:20 by MP

Account Number: 07802

Submitted: 12/10/2003 09:50
Reported: 01/05/2004 at 14:50
Discard: 02/05/2004

Kerr-McGee Corporation
PO Box 3048
Livonia MI 48150

TG428 SDG#: KMA50-02

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
00217	Kjeldahl Nitrogen	7727-37-9	1.5	0.30	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
	Sufficient sample volume was not available to perform a MS/MSD for this analysis. Therefore, a LCS/LCSD was performed to demonstrate precision and accuracy at a batch level.					
00226	Ortho-Phosphate as P	14265-44-2	0.024 J	0.010	mg/l	1
00235	Biochemical Oxygen Demand	n.a.	N.D.	5.1	mg/l	1
00273	Total Organic Carbon	n.a.	10.3	0.50	mg/l	1
00345	Total Phosphorus as PO4 water	14265-44-2	N.D.	0.12	mg/l	1
01553	Chemical Oxygen Demand	n.a.	29.2	1.7	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.	1.3	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	0.24 J	0.17	ug/l	1
00785	Phenanthrene	85-01-8	N.D.	0.076	ug/l	1
00789	Anthracene	120-12-7	0.049 J	0.038	ug/l	1
00807	Fluoranthene	206-44-0	0.22	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.	0.076	ug/l	1
00907	Benzo(g,h,i)perylene	191-24-2	N.D.	0.095	ug/l	1

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Lancaster Laboratories Sample No. WW 4181350

MA3-TG4-2-091203-08 Grab Water Sample
Moss American Superfund Site - Milwaukee, WI

Collected:12/09/2003 15:20 by MP

Account Number: 07802

Submitted: 12/10/2003 09:50
Reported: 01/05/2004 at 14:50
Discard: 02/05/2004

Kerr-McGee Corporation
PO Box 3048
Livonia MI 48150

TG428 SDG#: KMA50-02

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
07409	Chrysene	218-01-9	N.D.	0.076	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
00217	Kjeldahl Nitrogen	EPA 351.2	1	12/11/2003 19:12	Venia B McFadden	1
00219	Nitrite Nitrogen	EPA 353.2	2	12/10/2003 23:37	Kyle W Eckenroad	1
00220	Nitrate Nitrogen	EPA 353.2	1	12/22/2003 19:20	Kyle W Eckenroad	1
00221	Ammonia Nitrogen	EPA 350.2	1	12/15/2003 18:00	Luz M Groff	1
00226	Ortho-Phosphate as P	EPA 365.3	1	12/11/2003 03:40	Daniel S Smith	1
00235	Biochemical Oxygen Demand	EPA 405.1	1	12/10/2003 22:07	Nicole R Rohrer	1
00273	Total Organic Carbon	EPA 415.1	1	12/12/2003 10:35	Timothy M Petree	1
00345	Total Phosphorus as PO4 water	EPA 365.1	1	12/22/2003 14:56	Michelle A Bolton	1
01553	Chemical Oxygen Demand	EPA 410.2	1	12/15/2003 08:00	Susan A Engle	1
08213	BTEX (8021)	SW-846 8021B	1	12/11/2003 15:57	Martha L Seidel	1
00774	PAH's in Water by HPLC	SW-846 8310	1	12/15/2003 19:07	Mark A Clark	1
01146	GC VOA Water Prep	SW-846 5030B	1	12/11/2003 15:57	Martha L Seidel	n.a.
01460	Total Kjeldahl Nitrogen Digest	EPA 351.2	1	12/11/2003 09:20	Choon Y Tian	1
03337	PAH Water Extraction	SW-846 3510C	1	12/11/2003 23:00	Felix C Arroyo	1
08264	Total Phos as PO4 Prep (water)	EPA 365.1	1	12/16/2003 15:00	Nancy J Shoop	1

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Lancaster Laboratories

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Lancaster Laboratories Sample No. WW 4181351

MA3-TG4-3-091203-09 Grab Water Sample
Moss American Superfund Site - Milwaukee, WI

Collected:12/09/2003 15:25 by MP

Account Number: 07802

Submitted: 12/10/2003 09:50
Reported: 01/05/2004 at 14:50
Discard: 02/05/2004

Kerr-McGee Corporation
PO Box 3048
Livonia MI 48150

TG439 SDG#: KMA50-03

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
00217	Kjeldahl Nitrogen	7727-37-9	1.5	0.30	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
	Sufficient sample volume was not available to perform a MS/MSD for this analysis. Therefore, a LCS/LCSD was performed to demonstrate precision and accuracy at a batch level.					
00226	Ortho-Phosphate as P	14265-44-2	0.049	0.010	mg/l	1
00235	Biochemical Oxygen Demand	n.a.	N.D.	3.6	mg/l	1
00273	Total Organic Carbon	n.a.	9.5	0.50	mg/l	1
00345	Total Phosphorus as PO4 water	14265-44-2	0.18 J	0.12	mg/l	1
01553	Chemical Oxygen Demand	n.a.	23.9	1.7	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.	1.3	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.	0.076	ug/l	1
00789	Anthracene	120-12-7	N.D.	0.038	ug/l	1
00807	Fluoranthene	206-44-0	N.D.	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.	0.076	ug/l	1
00907	Benzo(g,h,i)perylene	191-24-2	N.D.	0.095	ug/l	1

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Lancaster Laboratories Sample No. WW 4181351

MA3-TG4-3-091203-09 Grab Water Sample
Moss American Superfund Site - Milwaukee, WI

Collected:12/09/2003 15:25 by MP

Account Number: 07802

Submitted: 12/10/2003 09:50
Reported: 01/05/2004 at 14:50
Discard: 02/05/2004

Kerr-McGee Corporation
PO Box 3048
Livonia MI 48150

TG439 SDG#: KMA50-03

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
07409	Chrysene	218-01-9	N.D.	0.076	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
00217	Kjeldahl Nitrogen	EPA 351.2	1	12/11/2003 19:13	Venia B McFadden	1
00219	Nitrite Nitrogen	EPA 353.2	2	12/10/2003 23:18	Kyle W Eckenroad	1
00220	Nitrate Nitrogen	EPA 353.2	1	12/22/2003 19:21	Kyle W Eckenroad	1
00221	Ammonia Nitrogen	EPA 350.2	1	12/15/2003 18:00	Luz M Groff	1
00226	Ortho-Phosphate as P	EPA 365.3	1	12/11/2003 03:40	Daniel S Smith	1
00235	Biochemical Oxygen Demand	EPA 405.1	1	12/10/2003 22:07	Nicole R Rohrer	1
00273	Total Organic Carbon	EPA 415.1	1	12/12/2003 10:43	Timothy M Petree	1
00345	Total Phosphorus as PO4 water	EPA 365.1	1	12/22/2003 14:57	Michelle A Bolton	1
01553	Chemical Oxygen Demand	EPA 410.2	1	12/15/2003 08:00	Susan A Engle	1
08213	BTEX (8021)	SW-846 8021B	1	12/11/2003 16:30	Martha L Seidel	1
00774	PAH's in Water by HPLC	SW-846 8310	1	12/15/2003 19:46	Mark A Clark	1
01146	GC VOA Water Prep	SW-846 5030B	1	12/11/2003 16:30	Martha L Seidel	n.a.
01460	Total Kjeldahl Nitrogen Digest	EPA 351.2	1	12/11/2003 09:20	Choon Y Tian	1
03337	PAH Water Extraction	SW-846 3510C	1	12/11/2003 23:00	Felix C Arroyo	1
08264	Total Phos as PO4 Prep (water)	EPA 365.1	1	12/16/2003 15:00	Nancy J Shoop	1

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Analysis Report

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Lancaster Laboratories Sample No. WW 4181352

MA3-TG5-1-091203-04 Grab Water Sample
Moss American Superfund Site - Milwaukee, WI

Collected:12/09/2003 11:50 by MP

Account Number: 07802

Submitted: 12/10/2003 09:50
Reported: 01/05/2004 at 14:50
Discard: 02/05/2004

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PO Box 3048
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TG514 SDG#: KMA50-04

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
00217	Kjeldahl Nitrogen	7727-37-9	0.51 J	0.30	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	0.14 J	0.11	mg/l	1
	Sufficient sample volume was not available to perform a MS/MSD for this analysis. Therefore, a LCS/LCSD was performed to demonstrate precision and accuracy at a batch level.					
00226	Ortho-Phosphate as P	14265-44-2	0.086	0.010	mg/l	1
00235	Biochemical Oxygen Demand	n.a.	N.D.	3.2	mg/l	1
00273	Total Organic Carbon	n.a.	6.0	0.50	mg/l	1
00345	Total Phosphorus as PO4 water	14265-44-2	N.D.	0.12	mg/l	1
01553	Chemical Oxygen Demand	n.a.	14.0	1.7	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.	1.3	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	N.D.	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

0831

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Lancaster Laboratories Sample No. WW 4181352

MA3-TG5-1-091203-04 Grab Water Sample
Moss American Superfund Site - Milwaukee, WI-

Collected:12/09/2003 11:50 by MP

Account Number: 07802

Submitted: 12/10/2003 09:50
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Discard: 02/05/2004

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TG514 SDG#: KMA50-04

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
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	Analysis Trial#	Date and Time	Analyst	Dilution Factor
00217	Kjeldahl Nitrogen	EPA 351.2	1	12/11/2003 19:13	Venia B McFadden	1
00219	Nitrite Nitrogen	EPA 353.2	2	12/10/2003 23:20	Kyle W Eckenroad	1
00220	Nitrate Nitrogen	EPA 353.2	1	12/22/2003 19:31	Kyle W Eckenroad	1
00221	Ammonia Nitrogen	EPA 350.2	1	12/15/2003 18:00	Luz M Groff	1
00226	Ortho-Phosphate as P	EPA 365.3	1	12/11/2003 03:40	Daniel S Smith	1
00235	Biochemical Oxygen Demand	EPA 405.1	1	12/10/2003 22:07	Nicole R Rohrer	1
00273	Total Organic Carbon	EPA 415.1	1	12/12/2003 10:51	Timothy M Petree	1
00345	Total Phosphorus as PO4 water	EPA 365.1	1	12/22/2003 15:00	Michelle A Bolton	1
01553	Chemical Oxygen Demand	EPA 410.2	1	12/15/2003 08:00	Susan A Engle	1
08213	BTEX (8021)	SW-846 8021B	1	12/11/2003 17:03	Martha L Seidel	1
00774	PAH's in Water by HPLC	SW-846 8310	1	12/15/2003 21:03	Mark A Clark	1
01146	GC VOA Water Prep	SW-846 5030B	1	12/11/2003 17:03	Martha L Seidel	n.a.
01460	Total Kjeldahl Nitrogen Digest	EPA 351.2	1	12/11/2003 09:20	Choon Y Tian	1
03337	PAH Water Extraction	SW-846 3510C	1	12/11/2003 23:00	Felix C Arroyo	1
08264	Total Phos as PO4 Prep (water)	EPA 365.1	1	12/16/2003 15:00	Nancy J Shoop	1

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Lancaster Laboratories Sample No. WW 4181353

MA3-TG5-2-091203-05 Grab Water Sample
Moss American Superfund Site - Milwaukee, WI

Collected:12/09/2003 11:55 by MP

Account Number: 07802

Submitted: 12/10/2003 09:50
Reported: 01/05/2004 at 14:50
Discard: 02/05/2004

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TG525 SDG#: KMA50-05

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
00217	Kjeldahl Nitrogen	7727-37-9	1.2	0.30	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	1.1	0.11	mg/l	1
	Sufficient sample volume was not available to perform a MS/MSD for this analysis. Therefore, a LCS/LCSD was performed to demonstrate precision and accuracy at a batch level.					
00226	Ortho-Phosphate as P	14265-44-2	0.057	0.010	mg/l	1
00235	Biochemical Oxygen Demand	n.a.	N.D.	4.8	mg/l	1
00273	Total Organic Carbon	n.a.	7.3	0.50	mg/l	1
00345	Total Phosphorus as PO4 water	14265-44-2	0.19 J	0.12	mg/l	1
01553	Chemical Oxygen Demand	n.a.	20.1	1.7	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.	1.3	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	0.046 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

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Lancaster Laboratories Sample No. WW 4181353

MA3-TG5-2-091203-05 Grab Water Sample
Moss American Superfund Site - Milwaukee, WI

Collected:12/09/2003 11:55 by MP

Account Number: 07802

Submitted: 12/10/2003 09:50
Reported: 01/05/2004 at 14:50
Discard: 02/05/2004

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TG525 SDG#: KMA50-05

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
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
00217	Kjeldahl Nitrogen	EPA 351.2	1	12/11/2003 19:14	Venia B McFadden	1
00219	Nitrite Nitrogen	EPA 353.2	2	12/10/2003 23:21	Kyle W Eckenroad	1
00220	Nitrate Nitrogen	EPA 353.2	1	12/22/2003 19:33	Kyle W Eckenroad	1
00221	Ammonia Nitrogen	EPA 350.2	1	12/15/2003 18:00	Luz M Groff	1
00226	Ortho-Phosphate as P	EPA 365.3	1	12/11/2003 03:40	Daniel S Smith	1
00235	Biochemical Oxygen Demand	EPA 405.1	1	12/10/2003 22:07	Nicole R Rohrer	1
00273	Total Organic Carbon	EPA 415.1	1	12/12/2003 10:59	Timothy M Petree	1
00345	Total Phosphorus as PO4 water	EPA 365.1	1	12/22/2003 15:01	Michelle A Bolton	1
01553	Chemical Oxygen Demand	EPA 410.2	1	12/15/2003 08:00	Susan A Engle	1
08213	BTEX (8021)	SW-846 8021B	1	12/11/2003 17:36	Martha L Seidel	1
00774	PAH's in Water by HPLC	SW-846 8310	1	12/15/2003 21:42	Mark A Clark	1
01146	GC VOA Water Prep	SW-846 5030B	1	12/11/2003 17:36	Martha L Seidel	n.a.
01460	Total Kjeldahl Nitrogen Digest	EPA 351.2	1	12/11/2003 09:20	Choon Y Tian	1
03337	PAH Water Extraction	SW-846 3510C	1	12/11/2003 23:00	Felix C Arroyo	1
08264	Total Phos as PO4 Prep (water)	EPA 365.1	1	12/16/2003 15:00	Nancy J Shoop	1

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Lancaster Laboratories Sample No. WW 4181354

MA3-TG5-3-091203-06 Grab Water Sample
Moss American Superfund Site - Milwaukee, WI

Collected:12/09/2003 12:00 by MP

Account Number: 07802

Submitted: 12/10/2003 09:50
Reported: 01/05/2004 at 14:50
Discard: 02/05/2004

Kerr-McGee Corporation
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TG536 SDG#: KMA50-06

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
00217	Kjeldahl Nitrogen	7727-37-9	0.72 J	0.30	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	N.D.	0.11	mg/l	1
	Sufficient sample volume was not available to perform a MS/MSD for this analysis. Therefore, a LCS/LCSD was performed to demonstrate precision and accuracy at a batch level.					
00226	Ortho-Phosphate as P	14265-44-2	0.12	0.010	mg/l	1
00235	Biochemical Oxygen Demand	n.a.	N.D.	3.4	mg/l	1
00273	Total Organic Carbon	n.a.	5.8	0.50	mg/l	1
00345	Total Phosphorus as PO4 water	14265-44-2	N.D.	0.12	mg/l	1
01553	Chemical Oxygen Demand	n.a.	17.0	1.7	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.	1.4	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

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Lancaster Laboratories Sample No. WW 4181354

MA3-TG5-3-091203-06 Grab Water Sample
Moss American Superfund Site - Milwaukee, WI

Collected:12/09/2003 12:00 by MP

Account Number: 07802

Submitted: 12/10/2003 09:50
Reported: 01/05/2004 at 14:50
Discard: 02/05/2004

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TG536 SDG#: KMA50-06

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
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
00217	Kjeldahl Nitrogen	EPA 351.2	1	12/11/2003 19:15	Venia B McFadden	1
00219	Nitrite Nitrogen	EPA 353.2	2	12/10/2003 23:25	Kyle W Eckenroad	1
00220	Nitrate Nitrogen	EPA 353.2	1	12/22/2003 19:34	Kyle W Eckenroad	1
00221	Ammonia Nitrogen	EPA 350.2	1	12/15/2003 18:00	Luz M Groff	1
00226	Ortho-Phosphate as P	EPA 365.3	1	12/11/2003 03:40	Daniel S Smith	1
00235	Biochemical Oxygen Demand	EPA 405.1	1	12/10/2003 22:07	Nicole R Rohrer	1
00273	Total Organic Carbon	EPA 415.1	1	12/12/2003 11:07	Timothy M Petree	1
00345	Total Phosphorus as PO4 water	EPA 365.1	1	12/22/2003 15:02	Michelle A Bolton	1
01553	Chemical Oxygen Demand	EPA 410.2	1	12/15/2003 08:00	Susan A Engle	1
08213	BTEX (8021)	SW-846 8021B	1	12/11/2003 18:09	Martha L Seidel	1
00774	PAH's in Water by HPLC	SW-846 8310	1	12/15/2003 22:20	Mark A Clark	1
01146	GC VOA Water Prep	SW-846 5030B	1	12/11/2003 18:09	Martha L Seidel	n.a.
01460	Total Kjeldahl Nitrogen Digest	EPA 351.2	1	12/11/2003 09:20	Choon Y Tian	1
03337	PAH Water Extraction	SW-846 3510C	1	12/11/2003 23:00	Felix C Arroyo	1
08264	Total Phos as PO4 Prep (water)	EPA 365.1	1	12/16/2003 15:00	Nancy J Shoop	1

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Lancaster Laboratories Sample No. WW 4181355

MA3-TG6-1-091203-03 Grab Water Sample
Moss American Superfund Site - Milwaukee, WI-

Collected:12/09/2003 10:00 by MP

Account Number: 07802

Submitted: 12/10/2003 09:50
Reported: 01/05/2004 at 14:50
Discard: 02/05/2004

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TG611 SDG#: KMA50-07

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
00217	Kjeldahl Nitrogen	7727-37-9	2.0	0.30	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	0.72 J	0.11	mg/l	1
	Sufficient sample volume was not available to perform a MS/MSD for this analysis. Therefore, a LCS/LCSD was performed to demonstrate precision and accuracy at a batch level.					
00226	Ortho-Phosphate as P	14265-44-2	0.090	0.010	mg/l	1
00235	Biochemical Oxygen Demand	n.a.	N.D.	4.0	mg/l	1
00273	Total Organic Carbon	n.a.	11.1	0.50	mg/l	1
00345	Total Phosphorus as PO4 water	14265-44-2	0.14 J	0.12	mg/l	1
01553	Chemical Oxygen Demand	n.a.	28.4	1.7	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.	1.3	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.	0.076	ug/l	1
00789	Anthracene	120-12-7	N.D.	0.038	ug/l	1
00807	Fluoranthene	206-44-0	N.D.	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.	0.076	ug/l	1
00907	Benzo(g,h,i)perylene	191-24-2	N.D.	0.094	ug/l	1

0037

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MA3-TG6-1-091203-03 Grab Water Sample
Moss American Superfund Site - Milwaukee, WI

Collected:12/09/2003 10:00 by MP

Account Number: 07802

Submitted: 12/10/2003 09:50
Reported: 01/05/2004 at 14:50
Discard: 02/05/2004

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Livonia MI 48150

TG611 SDG#: KMA50-07

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
07409	Chrysene	218-01-9	N.D.	0.076	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
00217	Kjeldahl Nitrogen	EPA 351.2	1	12/11/2003 19:16	Venia B McFadden	1
00219	Nitrite Nitrogen	EPA 353.2	2	12/10/2003 23:26	Kyle W Eckenroad	1
00220	Nitrate Nitrogen	EPA 353.2	1	12/22/2003 19:35	Kyle W Eckenroad	1
00221	Ammonia Nitrogen	EPA 350.2	1	12/15/2003 18:00	Luz M Groff	1
00226	Ortho-Phosphate as P	EPA 365.3	1	12/11/2003 03:40	Daniel S Smith	1
00235	Biochemical Oxygen Demand	EPA 405.1	1	12/10/2003 22:07	Nicole R Rohrer	1
00273	Total Organic Carbon	EPA 415.1	1	12/12/2003 11:31	Timothy M Petree	1
00345	Total Phosphorus as PO4 water	EPA 365.1	1	12/22/2003 15:03	Michelle A Bolton	1
01553	Chemical Oxygen Demand	EPA 410.2	1	12/15/2003 08:00	Susan A Engle	1
08213	BTEX (8021)	SW-846 8021B	1	12/11/2003 19:47	Martha L Seidel	1
00774	PAH's in Water by HPLC	SW-846 8310	1	12/15/2003 22:59	Mark A Clark	1
01146	GC VOA Water Prep	SW-846 5030B	1	12/11/2003 19:47	Martha L Seidel	n.a.
01460	Total Kjeldahl Nitrogen Digest	EPA 351.2	1	12/11/2003 09:20	Choon Y Tian	1
03337	PAH Water Extraction	SW-846 3510C	1	12/11/2003 23:00	Felix C Arroyo	1
08264	Total Phos as PO4 Prep (water)	EPA 365.1	1	12/16/2003 15:00	Nancy J Shoop	1

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MA3-TG6-2-091203-02 Grab Water Sample
Moss American Superfund Site - Milwaukee, WI

Collected:12/09/2003 09:55 by MP

Account Number: 07802

Submitted: 12/10/2003 09:50
Reported: 01/05/2004 at 14:50
Discard: 02/05/2004

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TG622 SDG#: KMA50-08

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	0.30	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	0.70 J	0.11	mg/l	1
	Sufficient sample volume was not available to perform a MS/MSD for this analysis. Therefore, a LCS/LCSD was performed to demonstrate precision and accuracy at a batch level.					
00226	Ortho-Phosphate as P	14265-44-2	0.023 J	0.010	mg/l	1
00235	Biochemical Oxygen Demand	n.a.	N.D.	3.3	mg/l	1
00273	Total Organic Carbon	n.a.	6.9	0.50	mg/l	1
00345	Total Phosphorus as PO4 water	14265-44-2	N.D.	0.12	mg/l	1
01553	Chemical Oxygen Demand	n.a.	17.8	1.7	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.	1.3	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.	0.075	ug/l	1
00789	Anthracene	120-12-7	N.D.	0.038	ug/l	1
00807	Fluoranthene	206-44-0	0.085 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.	0.075	ug/l	1
00907	Benzo(g,h,i)perylene	191-24-2	N.D.	0.094	ug/l	1

0835

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MA3-TG6-2-091203-02 Grab Water Sample
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Collected:12/09/2003 09:55 by MP

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Submitted: 12/10/2003 09:50
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TG622 SDG#: KMA50-08

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
07409	Chrysene	218-01-9	N.D.	0.075	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
00217	Kjeldahl Nitrogen	EPA 351.2	1	12/11/2003 19:17	Venia B McFadden	1
00219	Nitrite Nitrogen	EPA 353.2	2	12/10/2003 23:27	Kyle W Eckenroad	1
00220	Nitrate Nitrogen	EPA 353.2	1	12/22/2003 19:36	Kyle W Eckenroad	1
00221	Ammonia Nitrogen	EPA 350.2	1	12/15/2003 18:00	Luz M Groff	1
00226	Ortho-Phosphate as P	EPA 365.3	1	12/11/2003 03:40	Daniel S Smith	1
00235	Biochemical Oxygen Demand	EPA 405.1	1	12/10/2003 22:07	Nicole R Rohrer	1
00273	Total Organic Carbon	EPA 415.1	1	12/12/2003 11:39	Timothy M Petree	1
00345	Total Phosphorus as PO4 water	EPA 365.1	1	12/22/2003 15:04	Michelle A Bolton	1
01553	Chemical Oxygen Demand	EPA 410.2	1	12/15/2003 08:00	Susan A Engle	1
08213	BTEX (8021)	SW-846 8021B	1	12/11/2003 20:20	Martha L Seidel	1
00774	PAH's in Water by HPLC	SW-846 8310	1	12/15/2003 23:37	Mark A Clark	1
01146	GC VOA Water Prep	SW-846 5030B	1	12/11/2003 20:20	Martha L Seidel	n.a.
01460	Total Kjeldahl Nitrogen Digest	EPA 351.2	1	12/11/2003 09:20	Choon Y Tian	1
03337	PAH Water Extraction	SW-846 3510C	1	12/11/2003 23:00	Felix C Arroyo	1
08264	Total Phos as PO4 Prep (water)	EPA 365.1	1	12/16/2003 15:00	Nancy J Shoop	1

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Lancaster Laboratories Sample No. WW 4181357

MA3-TG6-3-091203-01 Grab Water Sample
Moss American Superfund Site - Milwaukee, WI

Collected:12/09/2003 09:45 by MP

Account Number: 07802

Submitted: 12/10/2003 09:50
Reported: 01/05/2004 at 14:50
Discard: 02/05/2004

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TG632 SDG#: KMA50-09

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
00217	Kjeldahl Nitrogen	7727-37-9	1.2	0.30	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	1.9	0.11	mg/l	1
	Sufficient sample volume was not available to perform a MS/MSD for this analysis. Therefore, a LCS/LCSD was performed to demonstrate precision and accuracy at a batch level.					
00226	Ortho-Phosphate as P	14265-44-2	0.061	0.010	mg/l	1
00235	Biochemical Oxygen Demand	n.a.	N.D.	3.4	mg/l	1
00273	Total Organic Carbon	n.a.	8.6	0.50	mg/l	1
00345	Total Phosphorus as PO4 water	14265-44-2	N.D.	0.12	mg/l	1
01553	Chemical Oxygen Demand	n.a.	22.0	1.7	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.	1.4	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.	0.17	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	0.050 J	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.	0.078	ug/l	1
00907	Benzo(g,h,i)perylene	191-24-2	N.D.	0.097	ug/l	1

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MA3-TG6-3-091203-01 Grab Water Sample
Moss American Superfund Site - Milwaukee, WI

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Submitted: 12/10/2003 09:50
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TG632 SDG#: KMA50-09

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

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
00217	Kjeldahl Nitrogen	EPA 351.2	1	12/11/2003 19:18	Venia B McFadden	1
00219	Nitrite Nitrogen	EPA 353.2	2	12/10/2003 23:36	Kyle W Eckenroad	1
00220	Nitrate Nitrogen	EPA 353.2	1	12/22/2003 19:38	Kyle W Eckenroad	1
00221	Ammonia Nitrogen	EPA 350.2	1	12/15/2003 18:00	Luz M Groff	1
00226	Ortho-Phosphate as P	EPA 365.3	1	12/11/2003 03:40	Daniel S Smith	1
00235	Biochemical Oxygen Demand	EPA 405.1	1	12/10/2003 22:07	Nicole R Rohrer	1
00273	Total Organic Carbon	EPA 415.1	1	12/12/2003 11:47	Timothy M Petree	1
00345	Total Phosphorus as PO4 water	EPA 365.1	1	12/22/2003 15:05	Michelle A Bolton	1
01553	Chemical Oxygen Demand	EPA 410.2	1	12/15/2003 08:00	Susan A Engle	1
08213	BTEX (8021)	SW-846 8021B	1	12/11/2003 20:52	Martha L Seidel	1
00774	PAH's in Water by HPLC	SW-846 8310	1	12/16/2003 00:16	Mark A Clark	1
01146	GC VOA Water Prep	SW-846 5030B	1	12/11/2003 20:52	Martha L Seidel	n.a.
01460	Total Kjeldahl Nitrogen Digest	EPA 351.2	1	12/11/2003 09:20	Choon Y Tian	1
03337	PAH Water Extraction	SW-846 3510C	1	12/11/2003 23:00	Felix C Arroyo	1
08264	Total Phos as PO4 Prep (water)	EPA 365.1	1	12/16/2003 15:00	Nancy J Shoop	1

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Lancaster Laboratories Sample No. WW 4181358

MA3-TG6-3-091203-DUP Grab Water Sample
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Collected:12/09/2003 09:45 by MP

Account Number: 07802

Submitted: 12/10/2003 09:50
Reported: 01/05/2004 at 14:50
Discard: 02/05/2004

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MS36D SDG#: KMA50-10

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.	1.3	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	0.047 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

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
08213	BTEX (8021)	SW-846 8021B	1	12/11/2003 21:25	Martha L Seidel	1
00774	PAH's in Water by HPLC	SW-846 8310	1	12/16/2003 00:54	Mark A Clarke 0043	1

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Lancaster Laboratories Sample No. WW 4181358

MA3-TG6-3-091203-DUP Grab Water Sample
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Account Number: 07802

Submitted: 12/10/2003 09:50
Reported: 01/05/2004 at 14:50
Discard: 02/05/2004

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MS36D SDG#: KMA50-10

01146	GC VOA Water Prep	SW-846 5030B	1	12/11/2003 21:25	Martha L Seidel	n.a.
03337	PAH Water Extraction	SW-846 3510C	1	12/11/2003 23:00	Felix C Arroyo	1

0044

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Lancaster Laboratories Sample No. WW 4181359

MA3-FB-02 Grab Water Sample
Moss American Superfund Site - Milwaukee, WI

Collected:12/09/2003 16:30 by MP

Account Number: 07802

Submitted: 12/10/2003 09:50
Reported: 01/05/2004 at 14:50
Discard: 02/05/2004

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FB02W SDG#: KMA50-11FB

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	0.5 J	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.	1.3	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	N.D.	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

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
08213	BTEX (8021)	SW-846 8021B	1	12/11/2003 12:40	Martha L Seidel	1
00774	PAH's in Water by HPLC	SW-846 8310	1	12/16/2003 01:33	Mark A Clark 0045	1

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MA3-FB-02 Grab Water Sample
Moss American Superfund Site - Milwaukee, WI

Collected: 12/09/2003 16:30 by MP

Account Number: 07802

Submitted: 12/10/2003 09:50
Reported: 01/05/2004 at 14:50
Discard: 02/05/2004

Kerr-McGee Corporation
PO Box 3048
Livonia MI 48150

FB02W SDG#: KMA50-11FB

01146	GC VOA Water Prep	SW-846 5030B	1	12/11/2003 12:40	Martha L Seidel	n.a.
03337	PAH Water Extraction	SW-846 3510C	1	12/11/2003 23:00	Felix C Arroyo	1

0646

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

Lancaster Laboratories

REPRINT

Lancaster Laboratories Sample No. WW 4181360

MA3-TB-02 Water Sample
Moss American Superfund Site - Milwaukee, WI

Collected:12/09/2003 08:10 by MP

Account Number: 07802

Submitted: 12/10/2003 09:50
Reported: 01/05/2004 at 14:51
Discard: 02/05/2004

Kerr-McGee Corporation
PO Box 3048
Livonia MI 48150

TB02W SDG#: KMA50-12TB

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	12/11/2003 13:13	Martha L Seidel	1
01146	GC VOA Water Prep	SW-846 5030B	1	12/11/2003 13:13	Martha L Seidel	n.a.

0847

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

Case Narrative (continued)
SDG#: KMA50

ANALYSIS:

The method used for analysis was SW-846 8310.

All samples were analyzed for polynuclear aromatic hydrocarbons by HPLC.

No problems were encountered during the analysis of these samples.

QUALITY CONTROL AND NONCONFORMANCE SUMMARY:

All QC was within specifications.

DATA INTERPRETATION:

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

Due to missed peaks during the initial processing, manual integrations were performed for the following compounds:

Sample Code/File	Compound
TG417MS	dibenz(a,h)anthracene, benzo(g,h,i)perylene, indeno(1,2,3-cd)pyrene
TG417MSD	benzo(a)pyrene, dibenz(a,h)anthracene, benzo(g,h,i)perylene, indeno(1,2,3-cd)pyrene

No further interpretation is necessary for the data submitted.

Case Narrative Reviewed and Approved by:

Charles J. Neslund
Group Leader, GC/MS Semivolatiles

Date: 12/31/08

0851

Case Narrative
Client: Kerr-McGee Corporation
SDG: KMA50

LANCASTER LABORATORIES
PAH by HPLC

SAMPLE NUMBER(S) :

LL #'s	Sample Code	Matrix Water	Comments
4181347	TG417	X	Unspiked
4181348	TG417MS	X	Matrix Spike
4181349	TG417MSD	X	Matrix Spike Dup
4181350	TG428	X	
4181351	TG439	X	
4181352	TG514	X	
4181353	TG525	X	
4181354	TG536	X	
4181355	TG611	X	
4181356	TG622	X	
4181357	TG632	X	
4181358	MS36D	X	
4181359	FB02W	X	Client Blank

LABORATORY SUBMITTED QC:

SBLKWA345	SBLKWA3452	X	Method Blank
345WALCS	345WALCS2	X	Lab Control Sample

SAMPLE PREPARATION:

No problems were encountered during the extraction of these samples.

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Analysis Request / Environmental Services Chain of Custody

Lancaster Laboratories
Where quality is a science.

For Lancaster Laboratories use only
Acct. # 7802 Group# 87F380 Sample # 418435062

COC # 0029380

Please print. Instructions on reverse side correspond with circled numbers.

(1)
Client: BMC/Weston Acct. #:
Project Name/#: Moss-American PWSID #:
Project Manager: Tom Graan P.O.#:
Sampler: RM + Hagiwara Quote #:
Name of state where samples were collected: WI

For Lab Use Only
FSC:
SCR #:

(2) Sample Identification	Collection Date	Time	(3) Matrix	(4) # of Containers	(5) BTEX	Remarks (6)
MA3-MW37S-111203-01	12-11-03	1000	X	3	X	
MW16S-111203-05		1145	X	3	X	
MW33S-111203-07		1510	X	3	X	
MW32S-111203-08		1520	X	3	X	
MW27S-111203-09		1530	X	3	X	
MW29S-111203-02		1015	X	3	X	
MW31S-111203-06		1200	X	3	X	
MW9S-111203-10		1630	X	3	X	
MW36S-111203-03		1030	X	3	X	
MW28S-111203-DUP		1130	X	3	X	

(7) Turnaround Time Requested (TAT) (please circle): Normal / Rush
(Rush TAT is subject to Lancaster Laboratories approval and surcharge.)
Date results are needed:
Rush results requested by (please circle): Phone Fax E-mail
Phone #: Fax #:
E-mail address:

(8) Data Package Options (please circle if required)
QC Summary, Type I (Tier I), Type II (Tier II), Type III (NJ Red. Del.), Type IV (CLP), Type VI (Raw Data), GLP, Other
SDG Complete? Yes / No
Site-specific QC required? Yes / No
(If yes, indicate QC sample and submit triplicate volume.)
Internal Chain of Custody required? Yes / No
Per Quote

(9)

Relinquished by:	Date	Time	Received by:	Date	Time
[signature] RM	12/11/03	1700			
Relinquished by:	Date	Time	Received by:	Date	Time
Relinquished by:	Date	Time	Received by:	Date	Time
Relinquished by:	Date	Time	Received by:	Date	Time
Relinquished by:	Date	Time	Received by: [signature]	12/12/03	0920

Lancaster Laboratories, Inc., 2425 New Holland Pike, PO Box 12425, Lancaster, PA 17605-2425 (717) 656-2300
Copies: White and yellow should accompany samples to Lancaster Laboratories. The pink copy should be retained by the client.

2102 Rev. 10/27/02

Analysis Request / Environmental Services Chain of Custody

Lancaster Laboratories
Where quality is a science.

For Lancaster Laboratories use only
Acct. # 7802 Group# 878330 Sample # 418 4350-62

COC # 0041437

Please print. Instructions on reverse side correspond with circled numbers.

(1)
Client: KMC/Weston Acct. #: ______
Project Name/#: Moss-American PWSID #: ______
Project Manager: Tom Graan P.O.#: ______
Sampler: Pihl + Hagiwara Quote #: ______
Name of state where samples were collected: WI

For Lab Use Only
FSC: ______
SCR #: ______

(2) (3) Matrix (4) (5) Analyses Requested (6)

[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	PAH									Remarks
MA3-MW28S-111203-04	12-11-03	1130	X			X		2	X									
MW37S-111203-01	↓	1000	X			X		2	X									
MW36S-111203-03		1030	X			X		2	X									
MW28S-111203-DUP		1130	X			X		2	X									
MW31S-111203-06	↓	1200	X			X		2	X									

(7) Turnaround Time Requested (TAT) (please circle): (Normal) Rush
(Rush TAT is subject to Lancaster Laboratories approval and surcharge.)
Date results are needed: ______
Rush results requested by (please circle): Phone Fax E-mail
Phone #: ______ Fax #: ______
E-mail address: ______

(8) Data Package Options (please circle if required)
QC Summary Type VI (Raw Data)
Type I (Tier I) GLP
Type II (Tier II) Other
Type III (NJ Red. Del.)
Type IV (CLP)
Per Quote

SDG Complete? Yes (No)
Site-specific QC required? Yes No
(If yes, indicate QC sample and submit triplicate volume.)
Internal Chain of Custody required? Yes No

(9)

Relinquished by:	Date	Time	Received by:	Date	Time
Marissa Pihl	12/11/03	1700			
			[signature]	12/12/03	0920

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Analysis Request / Environmental Services Chain of Custody

Lancaster Laboratories
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For Lancaster Laboratories use only
Acct. # 7802 Group# 878330 Sample # 484350-62

COC # 0029379

Please print. Instructions on reverse side correspond with circled numbers.

(1) Client: KMC/Weston Acct. #:
Project Name/#: Moss-American PWSID #:
Project Manager: Tom Graan P.O.#:
Sampler: Rhl + Hagiwara Quote #:
Name of state where samples were collected: WI

For Lab Use Only
FSC:
SCR #:

(2)			(3)			(4)	(5) PAH	Remarks
MA3-MW65-111203-05	12-11-03	1145	X		X	2	X	
MW335-111203-07		1510	X		X	2	X	
~~MW95-111203-10~~		~~1030~~	X		X	2	X	
MW275-111203-09		1530	X		X	2	X	
MW295-111203-02		1015	X		X	2	X	
MW325-111203-08		1520	X		X	2	X	

(7) Turnaround Time Requested (TAT) (please circle): (Normal) Rush
(Rush TAT is subject to Lancaster Laboratories approval and surcharge.)
Date results are needed:
Rush results requested by (please circle): Phone Fax E-mail
Phone #: Fax #:
E-mail address:

(8) Data Package Options (please circle if required)
QC Summary Type VI (Raw Data) SDG Complete? Yes (No)
Type I (Tier I) GLP
Type II (Tier II) Other
Type III (NJ Red. Del.)
Type IV (CLP)
Site-specific QC required? Yes No
(If yes, indicate QC sample and submit triplicate volume.)
Internal Chain of Custody required? Yes No
Per Quote

(9) Relinquished by:	Date	Time	Received by:	Date	Time
Manessa Rhl	12/11/03	1700			
Relinquished by:	Date	Time	Received by:	Date	Time
Relinquished by:	Date	Time	Received by:	Date	Time
Relinquished by:	Date	Time	Received by:	Date	Time
Relinquished by:	Date	Time	Received by:	Date	Time
				12/12/03	9:20

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Analysis Request / Environmental Services Chain of Custody

Lancaster Laboratories
Where quality is a science.

Acct. # 7802 For Lancaster Laboratories use only Group# 878330 Sample # 418 4350-62

COC # 0029381

Please print. Instructions on reverse side correspond with circled numbers.

(1) Client: KMC / Weston Acct. #:
Project Name/#: Moss-American PWSID #:
Project Manager: Tom Graan P.O.#:
Sampler: PML + Nagwara Quote #:
Name of state where samples were collected: WI

For Lab Use Only
FSC:
SCR #:

(2)		(3)	(4)	(5) BTEX	(5) PAH	Remarks
~~MA3-BBS~~ MW85-111203-04	12-11-03	1130	3	X		
TB-04		0830	2	X		
FB-04		1603	5	X	X	
MA3 - MW95-11203-10		1630	2		X	

(7) Turnaround Time Requested (TAT) (please circle): (Normal) Rush
(Rush TAT is subject to Lancaster Laboratories approval and surcharge.)
Date results are needed:
Rush results requested by (please circle): Phone Fax E-mail
Phone #: Fax #:
E-mail address:

(8) Data Package Options (please circle if required)
QC Summary Type VI (Raw Data)
Type I (Tier I) CLP
Type II (Tier II) Other
Type III (NJ Red. Del.)
Type IV (CLP)

SDG Complete? Yes (No)
Site-specific QC required? Yes No
(If yes, indicate QC sample and submit triplicate volume.)
Internal Chain of Custody required? Yes No

Per QAPP

(9) Relinquished by:	Date	Time	Received by:	Date	Time
Marissa PML	12/11/03	1700			
Relinquished by:	Date	Time	Received by:	Date	Time
Relinquished by:	Date	Time	Received by:	Date	Time
Relinquished by:	Date	Time	Received by:	Date	Time
Relinquished by:	Date	Time	Received by:	12/12/03	0920

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Analysis Request / Environmental Services Chain of Custody

Lancaster Laboratories
Where quality is a science.

For Lancaster Laboratories use only
Acct. # 7802 Group# 878466 Sample # 418520-6

COC # 0041436

Please print. Instructions on reverse side correspond with circled numbers.

(1)
Client: KMC/Weston Acct. #:
Project Name/#: Moss-American PWSID #:
Project Manager: Tom Graan P.O.#:
Sampler: Pihl + Hagiwara Quote #:
Name of state where samples were collected: WI

(2) (3) (4) (5) (6)

Sample Identification	Date Collected	Time Collected	Matrix	Preservation	# of Containers	PAH	Remarks
MA3-MW-7S-121203-02	12-12-03	0900	X	X	2	X	
MA3-MW-7S-121203-DUP		0900	X	X	2	X	
MA3-MW-34S-121203-01		0840	X	X	2	X	
MA3-MW-34S-121203-MS/MSD	↓	0840	X	X	4	X	

For Lab Use Only
FSC:
SCR #:

(7) Turnaround Time Requested (TAT) (please circle): Normal Rush
(Rush TAT is subject to Lancaster Laboratories approval and surcharge.)
Date results are needed:
Rush results requested by (please circle): Phone Fax E-mail
Phone #: Fax #:
E-mail address:

(8) Data Package Options (please circle if required)
QC Summary Type VI (Raw Data)
Type I (Tier I) GLP
Type II (Tier II) Other
Type III (NJ Red. Del.)
Type V (CLP)
SDG Complete? Yes No
Site specific QC required? Yes No
(If yes, indicate QC sample and submit triplicate volume.)
Internal Chain of Custody required? Yes No
Per Quote

(9)

Relinquished by:	Date	Time	Received by:	Date	Time
Marissa Pihl	12/12/03	1130			
Relinquished by:	Date	Time	Received by:	Date	Time
Relinquished by:	Date	Time	Received by:	Date	Time
Relinquished by:	Date	Time	Received by:	Date	Time
Relinquished by:	Date	Time	Received by: Ashley Dixon	12/13/03	1115

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2102 Rev. 10/27/02

Analysis Request / Environmental Services Chain of Custody

Lancaster Laboratories
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For Lancaster Laboratories use only
Acct. #: 7802 Group#: 878446 Sample #: 4185200-6

COC # 0041435

Please print. Instructions on reverse side correspond with circled numbers.

(1)
Client: XMC/Weston Acct. #:
Project Name/#: Moss-American PWSID #:
Project Manager: Tom Green P.O.#:
Sampler: Pihl + Hagiwara Quote #:
Name of state where samples were collected: WI

(4) Matrix (5) Analyses Requested

For Lab Use Only
FSC:
SCR #:

(2) (3) (6)

Sample Identification	Date Collected	Time Collected						BTEX	PAH								Remarks
TB-05	12-12-03	0800	X			X	2	X									
~~FB-05~~			~~X~~			~~X~~	~~5~~	~~X~~	~~X~~								
MA3-MW34S-121203-01		0840	X			X	3	X									
MA3-MW34S-121203-MS/MSD		0840	X			X	6	X									
MA3-MW7S-121203-02		0900	X			X	3	X									
MA3-MW7S-121203-DUP	↓	0900	X			X	3	X									
MA3-MW35S-121203-03		1030	X			X	5	X	X								

(7) Turnaround Time Requested (TAT) (please circle): (Normal) Rush
(Rush TAT is subject to Lancaster Laboratories approval and surcharge.)
Date results are needed:
Rush results requested by (please circle): Phone Fax E-mail
Phone #: Fax #:
E-mail address:

(8) Data Package Options (please circle if required)
QC Summary Type VI (Raw Data)
Type I (Tier I) GLP
Type II (Tier II) Other
Type III (NJ Red. Del.)
Type IV (CLP)
Per Quote

SDG Complete? (Yes) No
Site-specific QC required? Yes No
(If yes, indicate QC sample and submit triplicate volume.)
Internal Chain of Custody required? Yes No

(9)

Relinquished by:	Date	Time	Received by:	Date	Time
Marissa Pihl	12/12/03	1130			
			Ashley Tool	12/13/03	1115

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2102 Rev. 10/27/02

Lancaster Laboratories

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 878330. Samples arrived at the laboratory on Friday, December 12, 2003. The PO# for this group is ZAKW1KEOK0A90089.

Client Description	Lancaster Labs Number
MA3-MW37S-111203-01 Grab Water Sample	4184350
MA3-MW29S-111203-02 Grab Water Sample	4184351
MA3-MW36S-111203-03 Grab Water Sample	4184352
MA3-MW28S-111203-04 Grab Water Sample	4184353
MA3-MW28S-111203-DUP Grab Water Sample	4184354
MA3-MW6S-111203-05 Grab Water Sample	4184355
MA3-MW31S-111203-06 Grab Water Sample	4184356
MA3-MW33S-111203-07 Grab Water Sample	4184357
MA3-MW32S-111203-08 Grab Water Sample	4184358
MA3-MW27S-111203-09 Grab Water Sample	4184359
MA3-MW9S-111203-10 Grab Water Sample	4184360
FB-04 Grab Water Sample	4184361
TB-04 Water Sample	4184362

METHODOLOGY

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

1 COPY TO	Kerr-McGee Corporation	Attn: Dr. Jeff Ostmeyer
1 COPY TO	Weston Solutions, Inc.	Attn: Mr. Tom Graan
1 COPY TO	Data Package Group	

0011

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

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

Respectfully Submitted,

Michele A. Jarosick

Michele A Jarosick
Senior Chemist

0012

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 4184350

MA3-MW37S-111203-01 Grab Water Sample
Moss American Superfund Site - Milwaukee, WI

Collected:12/11/2003 10:00 by MP

Account Number: 07802

Submitted: 12/12/2003 09:20
Reported: 12/31/2003 at 11:16
Discard: 01/31/2004

Kerr-McGee Corporation
PO Box 3048
Livonia MI 48150

MA375 SDG#: KMA51-01

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.	1.4	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

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

The recoveries of several compounds were outside QC limits in the LCSD associated with this sample. All recoveries were within specifications in the LCS. The sample was re-extracted outside of the method holding time. Comparable sample data were observed between the two extractions. The results reported are from the initial extraction of the sample.

0013

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 4184350

MA3-MW37S-111203-01 Grab Water Sample
Moss American Superfund Site - Milwaukee, WI

Collected:12/11/2003 10:00 by MP

Account Number: 07802

Submitted: 12/12/2003 09:20
Reported: 12/31/2003 at 11:16
Discard: 01/31/2004

Kerr-McGee Corporation
PO Box 3048
Livonia MI 48150

MA375 SDG#: KMA51-01

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
08213	BTEX (8021)	SW-846 8021B	1	12/15/2003 15:42	Martha L Seidel	1
00774	PAH's in Water by HPLC	SW-846 8310	1	12/28/2003 01:42	Mark A Clark	1
01146	GC VOA Water Prep	SW-846 5030B	1	12/15/2003 15:42	Martha L Seidel	n.a.
03337	PAH Water Extraction	SW-846 3510C	1	12/15/2003 11:00	Zachary S Dennis	1

0014

Lancaster Laboratories

Lancaster Laboratories Sample No. WW 4184351

MA3-MW29S-111203-02 Grab Water Sample
Moss American Superfund Site - Milwaukee, WI

Collected:12/11/2003 10:15 by MP

Account Number: 07802

Submitted: 12/12/2003 09:20
Reported: 12/31/2003 at 11:16
Discard: 01/31/2004

Kerr-McGee Corporation
PO Box 3048
Livonia MI 48150

MA36S SDG#: KMA51-02

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.	1.4	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

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

The recoveries of several compounds were outside QC limits in the LCSD associated with this sample. All recoveries were within specifications in the LCS. The sample was re-extracted outside of the method holding time. Comparable sample data were observed between the two extractions. The results reported are from the initial extraction of the sample.

0015

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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 4184351

MA3-MW29S-111203-02 Grab Water Sample
Moss American Superfund Site - Milwaukee, WI

Collected:12/11/2003 10:15 by MP

Account Number: 07802

Submitted: 12/12/2003 09:20
Reported: 12/31/2003 at 11:16
Discard: 01/31/2004

Kerr-McGee Corporation
PO Box 3048
Livonia MI 48150

MA36S SDG#: KMA51-02

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
08213	BTEX (8021)	SW-846 8021B	1	12/15/2003 16:15	Martha L Seidel	1
00774	PAH's in Water by HPLC	SW-846 8310	1	12/28/2003 02:21	Mark A Clark	1
01146	GC VOA Water Prep	SW-846 5030B	1	12/15/2003 16:15	Martha L Seidel	n.a.
03337	PAH Water Extraction	SW-846 3510C	1	12/15/2003 11:00	Zachary S Dennis	1

0016

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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 4184352

MA3-MW36S-111203-03 Grab Water Sample
Moss American Superfund Site - Milwaukee, WI

Collected:12/11/2003 10:30 by MP

Account Number: 07802

Submitted: 12/12/2003 09:20
Reported: 12/31/2003 at 11:16
Discard: 01/31/2004

Kerr-McGee Corporation
PO Box 3048
Livonia MI 48150

MA336 SDG#: KMA51-03

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.	1.5	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

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

The recoveries of several compounds were outside QC limits in the LCSD associated with this sample. All recoveries were within specifications in the LCS. The sample was re-extracted outside of the method holding time. Comparable sample data were observed between the two extractions. The results reported are from the initial extraction of the sample.

Due to insufficient sample, the reporting limits for the PAH compounds were

0017

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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 4184352

MA3-MW36S-111203-03 Grab Water Sample
Moss American Superfund Site - Milwaukee, WI

Collected:12/11/2003 10:30 by MP

Account Number: 07802

Submitted: 12/12/2003 09:20
Reported: 12/31/2003 at 11:16
Discard: 01/31/2004

Kerr-McGee Corporation
PO Box 3048
Livonia MI 48150

MA336 SDG#: KMA51-03

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

raised.

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
08213	BTEX (8021)	SW-846 8021B	1	12/15/2003 16:48	Martha L Seidel	1
00774	PAH's in Water by HPLC	SW-846 8310	1	12/28/2003 03:00	Mark A Clark	1
01146	GC VOA Water Prep	SW-846 5030B	1	12/15/2003 16:48	Martha L Seidel	n.a.
03337	PAH Water Extraction	SW-846 3510C	1	12/15/2003 11:00	Zachary S Dennis	1

0
0
1
8

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Lancaster, PA 17605-2425
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Lancaster Laboratories

Lancaster Laboratories Sample No. WW 4184353

MA3-MW28S-111203-04 Grab Water Sample
Moss American Superfund Site - Milwaukee, WI

Collected:12/11/2003 11:30 by MP

Account Number: 07802

Submitted: 12/12/2003 09:20
Reported: 12/31/2003 at 11:17
Discard: 01/31/2004

Kerr-McGee Corporation
PO Box 3048
Livonia MI 48150

28SMA SDG#: KMA51-04

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.	1.5	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.	0.11	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

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

The recoveries of several compounds were outside QC limits in the LCSD associated with this sample. All recoveries were within specifications in the LCS. The sample was re-extracted outside of the method holding time. Comparable sample data were observed between the two extractions. The results reported are from the initial extraction of the sample.

Due to insufficient sample, the reporting limits for the PAH compounds were

0019

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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 4184353

MA3-MW28S-111203-04 Grab Water Sample
Moss American Superfund Site - Milwaukee, WI

Collected:12/11/2003 11:30 by MP

Account Number: 07802

Submitted: 12/12/2003 09:20
Reported: 12/31/2003 at 11:17
Discard: 01/31/2004

Kerr-McGee Corporation
PO Box 3048
Livonia MI 48150

28SMA SDG#: KMA51-04

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

raised.

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
08213	BTEX (8021)	SW-846 8021B	1	12/15/2003 17:21	Martha L Seidel	1
00774	PAH's in Water by HPLC	SW-846 8310	1	12/28/2003 03:38	Mark A Clark	1
01146	GC VOA Water Prep	SW-846 5030B	1	12/15/2003 17:21	Martha L Seidel	n.a.
03337	PAH Water Extraction	SW-846 3510C	1	12/15/2003 11:00	Zachary S Dennis	1

0020

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Lancaster, PA 17605-2425
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Lancaster Laboratories

Lancaster Laboratories Sample No. WW 4184354

MA3-MW28S-111203-DUP Grab Water Sample
Moss American Superfund Site - Milwaukee, WI

Collected:12/11/2003 11:30 by MP

Account Number: 07802

Submitted: 12/12/2003 09:20
Reported: 12/31/2003 at 11:17
Discard: 01/31/2004

Kerr-McGee Corporation
PO Box 3048
Livonia MI 48150

MA28D SDG#: KMA51-05

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.	1.4	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

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

The recoveries of several compounds were outside QC limits in the LCSD associated with this sample. All recoveries were within specifications in the LCS. The sample was re-extracted outside of the method holding time. Comparable sample data were observed between the two extractions. The results reported are from the initial extraction of the sample.

0021

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

Lancaster Laboratories

Lancaster Laboratories Sample No. WW 4184354

MA3-MW28S-111203-DUP Grab Water Sample
Moss American Superfund Site - Milwaukee, WI

Collected:12/11/2003 11:30 by MP

Account Number: 07802

Submitted: 12/12/2003 09:20
Reported: 12/31/2003 at 11:17
Discard: 01/31/2004

Kerr-McGee Corporation
PO Box 3048
Livonia MI 48150

MA28D SDG#: KMA51-05

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilutic Factor
08213	BTEX (8021)	SW-846 8021B	1	12/15/2003 17:53	Martha L Seidel	1
00774	PAH's in Water by HPLC	SW-846 8310	1	12/28/2003 04:17	Mark A Clark	1
01146	GC VOA Water Prep	SW-846 5030B	1	12/15/2003 17:53	Martha L Seidel	n.a.
03337	PAH Water Extraction	SW-846 3510C	1	12/15/2003 11:00	Zachary S Dennis	1

Lancaster Laboratories

Lancaster Laboratories Sample No. WW 4184355

MA3-MW6S-111203-05 Grab Water Sample
Moss American Superfund Site - Milwaukee, WI

Collected:12/11/2003 11:45 by MP

Account Number: 07802

Submitted: 12/12/2003 09:20
Reported: 12/31/2003 at 11:17
Discard: 01/31/2004

Kerr-McGee Corporation
PO Box 3048
Livonia MI 48150

61S05 SDG#: KMA51-06

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.	1.4	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

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

The recoveries of several compounds were outside QC limits in the LCSD associated with this sample. All recoveries were within specifications in the LCS. The sample was re-extracted outside of the method holding time. Comparable sample data were observed between the two extractions. The results reported are from the initial extraction of the sample.

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2425 New Holland Pike
PO Box 12425
Lancaster, PA 17605-2425
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TB

Lancaster Laboratories

Lancaster Laboratories Sample No. WW 4184355

MA3-MW6S-111203-05 Grab Water Sample
Moss American Superfund Site - Milwaukee, WI

Collected:12/11/2003 11:45 by MP

Account Number: 07802

Submitted: 12/12/2003 09:20
Reported: 12/31/2003 at 11:17
Discard: 01/31/2004

Kerr-McGee Corporation
PO Box 3048
Livonia MI 48150

61S05 SDG#: KMA51-06

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
08213	BTEX (8021)	SW-846 8021B	1	12/15/2003 18:26	Martha L Seidel	1
00774	PAH's in Water by HPLC	SW-846 8310	1	12/28/2003 04:55	Mark A Clark	1
01146	GC VOA Water Prep	SW-846 5030B	1	12/15/2003 18:26	Martha L Seidel	n.a.
03337	PAH Water Extraction	SW-846 3510C	1	12/15/2003 11:00	Zachary S Dennis	1

0024

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2425 New Holland Pike
PO Box 12425
Lancaster, PA 17605-2425
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Lancaster Laboratories

Lancaster Laboratories Sample No. WW 4184356

MA3-MW31S-111203-06 Grab Water Sample
Moss American Superfund Site - Milwaukee, WI

Collected:12/11/2003 12:00 by MP

Account Number: 07802

Submitted: 12/12/2003 09:20
Reported: 12/31/2003 at 11:17
Discard: 01/31/2004

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PO Box 3048
Livonia MI 48150

31S06 SDG#: KMA51-07

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	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.	1.4	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

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

The recoveries of several compounds were outside QC limits in the LCSD associated with this sample. All recoveries were within specifications in the LCS. The sample was re-extracted outside of the method holding time. Comparable sample data were observed between the two extractions. The results reported are from the initial extraction of the sample.

00025

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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 4184356

MA3-MW31S-111203-06 Grab Water Sample
Moss American Superfund Site - Milwaukee, WI

Collected:12/11/2003 12:00 by MP

Account Number: 07802

Submitted: 12/12/2003 09:20
Reported: 12/31/2003 at 11:17
Discard: 01/31/2004

Kerr-McGee Corporation
PO Box 3048
Livonia MI 48150

31S06 SDG#: KMA51-07

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
08213	BTEX (8021)	SW-846 8021B	1	12/15/2003 18:58	Martha L Seidel	1
00774	PAH's in Water by HPLC	SW-846 8310	1	12/28/2003 05:34	Mark A Clark	1
01146	GC VOA Water Prep	SW-846 5030B	1	12/15/2003 18:58	Martha L Seidel	n.a.
03337	PAH Water Extraction	SW-846 3510C	1	12/15/2003 11:00	Zachary S Dennis	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 4184357

MA3-MW33S-111203-07 Grab Water Sample
Moss American Superfund Site - Milwaukee, WI

Collected:12/11/2003 15:10 by MP

Account Number: 07802

Submitted: 12/12/2003 09:20
Reported: 12/31/2003 at 11:17
Discard: 01/31/2004

Kerr-McGee Corporation
PO Box 3048
Livonia MI 48150

33SMA SDG#: KMA51-08

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	0.3 J	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	58. J	1.4	ug/l	1
00782	Acenaphthylene	208-96-8	N.D.	1.6	ug/l	1
00783	Acenaphthene	83-32-9	3.1 J	1.6	ug/l	1
00784	Fluorene	86-73-7	0.84 J	0.18	ug/l	1
00785	Phenanthrene	85-01-8	0.091 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

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

The recoveries of several compounds were outside QC limits in the LCSD associated with this sample. All recoveries were within specifications in the LCS. The sample was re-extracted outside of the method holding time. Comparable sample data were observed between the two extractions. The results reported are from the initial extraction of the sample.

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2425 New Holland Pike
PO Box 12425
Lancaster, PA 17605-2425
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Lancaster Laboratories

Lancaster Laboratories Sample No. WW 4184357

MA3-MW33S-111203-07 Grab Water Sample
Moss American Superfund Site - Milwaukee, WI

Collected:12/11/2003 15:10 by MP

Account Number: 07802

Submitted: 12/12/2003 09:20
Reported: 12/31/2003 at 11:17
Discard: 01/31/2004

Kerr-McGee Corporation
PO Box 3048
Livonia MI 48150

33SMA SDG#: KMA51-08

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilutio Factor
08213	BTEX (8021)	SW-846 8021B	1	12/15/2003 19:31	Martha L Seidel	1
00774	PAH's in Water by HPLC	SW-846 8310	1	12/28/2003 06:51	Mark A Clark	1
01146	GC VOA Water Prep	SW-846 5030B	1	12/15/2003 19:31	Martha L Seidel	n.a.
03337	PAH Water Extraction	SW-846 3510C	1	12/15/2003 11:00	Zachary S Dennis	1

0028

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2425 New Holland Pike
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717-656-2300 Fax: 717-656-2681

Lancaster Laboratories

Lancaster Laboratories Sample No. WW 4184358

MA3-MW32S-111203-08 Grab Water Sample
Moss American Superfund Site - Milwaukee, WI

Collected:12/11/2003 15:20 by MP

Account Number: 07802

Submitted: 12/12/2003 09:20
Reported: 12/31/2003 at 11:17
Discard: 01/31/2004

Kerr-McGee Corporation
PO Box 3048
Livonia MI 48150

32S08 SDG#: KMA51-09

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.	1.4	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.	0.039	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.	0.079	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.	0.079	ug/l	1
07410	Benzo(k)fluoranthene	207-08-9	N.D.	0.020	ug/l	1

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

The recoveries of several compounds were outside QC limits in the LCSD associated with this sample. All recoveries were within specifications in the LCS. The sample was re-extracted outside of the method holding time. Comparable sample data were observed between the two extractions. The results reported are from the initial extraction of the sample.

00029

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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 4184358

MA3-MW32S-111203-08 Grab Water Sample
Moss American Superfund Site - Milwaukee, WI

Collected:12/11/2003 15:20 by MP

Account Number: 07802

Submitted: 12/12/2003 09:20
Reported: 12/31/2003 at 11:17
Discard: 01/31/2004

Kerr-McGee Corporation
PO Box 3048
Livonia MI 48150

32S08 SDG#: KMA51-09

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
08213	BTEX (8021)	SW-846 8021B	1	12/15/2003 21:09	Martha L Seidel	1
00774	PAH's in Water by HPLC	SW-846 8310	1	12/28/2003 07:30	Mark A Clark	1
01146	GC VOA Water Prep	SW-846 5030B	1	12/15/2003 21:09	Martha L Seidel	n.a.
03337	PAH Water Extraction	SW-846 3510C	1	12/15/2003 11:00	Zachary S Dennis	1

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Lancaster, PA 17605-2425
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Lancaster Laboratories

Lancaster Laboratories Sample No. WW 4184359

MA3-MW27S-111203-09 Grab Water Sample
Moss American Superfund Site - Milwaukee, WI

Collected:12/11/2003 15:30 by MP

Account Number: 07802

Submitted: 12/12/2003 09:20
Reported: 12/31/2003 at 11:17
Discard: 01/31/2004

Kerr-McGee Corporation
PO Box 3048
Livonia MI 48150

27S09 SDG#: KMA51-10

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.	1.4	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

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

The recoveries of several compounds were outside QC limits in the LCSD associated with this sample. All recoveries were within specifications in the LCS. The sample was re-extracted outside of the method holding time. Comparable sample data were observed between the two extractions. The results reported are from the initial extraction of the sample.

0031

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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 4184359

MA3-MW27S-111203-09 Grab Water Sample
Moss American Superfund Site - Milwaukee, WI

Collected:12/11/2003 15:30 by MP

Account Number: 07802

Submitted: 12/12/2003 09:20
Reported: 12/31/2003 at 11:17
Discard: 01/31/2004

Kerr-McGee Corporation
PO Box 3048
Livonia MI 48150

27S09 SDG#: KMA51-10

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
08213	BTEX (8021)	SW-846 8021B	1	12/15/2003 21:41	Martha L Seidel	1
00774	PAH's in Water by HPLC	SW-846 8310	1	12/28/2003 08:08	Mark A Clark	1
01146	GC VOA Water Prep	SW-846 5030B	1	12/15/2003 21:41	Martha L Seidel	n.a.
03337	PAH Water Extraction	SW-846 3510C	1	12/15/2003 11:00	Zachary S Dennis	1

0032

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Lancaster, PA 17605-2425
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Lancaster Laboratories

Lancaster Laboratories Sample No. WW 4184360

MA3-MW9S-111203-10 Grab Water Sample
Moss American Superfund Site - Milwaukee, WI

Collected:12/11/2003 16:30 by MP

Account Number: 07802

Submitted: 12/12/2003 09:20
Reported: 12/31/2003 at 11:17
Discard: 01/31/2004

Kerr-McGee Corporation
PO Box 3048
Livonia MI 48150

9S310 SDG#: KMA51-11

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.	1.3	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.	0.076	ug/l	1
00789	Anthracene	120-12-7	N.D.	0.038	ug/l	1
00807	Fluoranthene	206-44-0	N.D.	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.	0.076	ug/l	1
00907	Benzo(g,h,i)perylene	191-24-2	N.D.	0.095	ug/l	1
07409	Chrysene	218-01-9	N.D.	0.076	ug/l	1
07410	Benzo(k)fluoranthene	207-08-9	N.D.	0.019	ug/l	1

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

The recoveries of several compounds were outside QC limits in the LCSD associated with this sample. All recoveries were within specifications in the LCS. The sample was re-extracted outside of the method holding time. Comparable sample data were observed between the two extractions. The results reported are from the initial extraction of the sample.

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Lancaster Laboratories

Lancaster Laboratories Sample No. WW 4184360

MA3-MW9S-111203-10 Grab Water Sample
Moss American Superfund Site - Milwaukee, WI

Collected:12/11/2003 16:30 by MP

Account Number: 07802

Submitted: 12/12/2003 09:20
Reported: 12/31/2003 at 11:17
Discard: 01/31/2004

Kerr-McGee Corporation
PO Box 3048
Livonia MI 48150

9S310 SDG#: KMA51-11

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilutic Factor
08213	BTEX (8021)	SW-846 8021B	1	12/15/2003 22:14	Martha L Seidel	1
00774	PAH's in Water by HPLC	SW-846 8310	1	12/28/2003 08:47	Mark A Clark	1
01146	GC VOA Water Prep	SW-846 5030B	1	12/15/2003 22:14	Martha L Seidel	n.a.
03337	PAH Water Extraction	SW-846 3510C	1	12/15/2003 11:00	Zachary S Dennis	1

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PO Box 12425
Lancaster, PA 17605-2425
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Lancaster Laboratories

Lancaster Laboratories Sample No. WW 4184361

FB-04 Grab Water Sample
Moss American Superfund Site - Milwaukee, WI

Collected:12/11/2003 16:03 by MP

Account Number: 07802

Submitted: 12/12/2003 09:20
Reported: 12/31/2003 at 11:17
Discard: 01/31/2004

Kerr-McGee Corporation
PO Box 3048
Livonia MI 48150

FB04M SDG#: KMA51-12FB

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.	1.4	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

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

The recoveries of several compounds were outside QC limits in the LCSD associated with this sample. All recoveries were within specifications in the LCS. The sample was re-extracted outside of the method holding time. Comparable sample data were observed between the two extractions. The results reported are from the initial extraction of the sample.

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PO Box 12425
Lancaster, PA 17605-2425
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Lancaster Laboratories

Lancaster Laboratories Sample No. WW 4184361

FB-04 Grab Water Sample
Moss American Superfund Site - Milwaukee, WI

Collected:12/11/2003 16:03 by MP

Account Number: 07802

Submitted: 12/12/2003 09:20
Reported: 12/31/2003 at 11:17
Discard: 01/31/2004

Kerr-McGee Corporation
PO Box 3048
Livonia MI 48150

FB04M SDG#: KMA51-12FB

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilutio Factor
08213	BTEX (8021)	SW-846 8021B	1	12/15/2003 22:46	Martha L Seidel	1
00774	PAH's in Water by HPLC	SW-846 8310	1	12/28/2003 09:25	Mark A Clark	1
01146	GC VOA Water Prep	SW-846 5030B	1	12/15/2003 22:46	Martha L Seidel	n.a.
03337	PAH Water Extraction	SW-846 3510C	1	12/15/2003 11:00	Zachary S Dennis	1

0036

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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 4184362

TB-04 Water Sample
Moss American Superfund Site - Milwaukee, WI

Collected:12/11/2003 08:30

Account Number: 07802

Submitted: 12/12/2003 09:20
Reported: 12/31/2003 at 11:17
Discard: 01/31/2004

Kerr-McGee Corporation
PO Box 3048
Livonia MI 48150

04TBM SDG#: KMA51-13TB

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	12/15/2003 14:37	Martha L Seidel	1
01146	GC VOA Water Prep	SW-846 5030B	1	12/15/2003 14:37	Martha L Seidel	n.a.

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

Lancaster Laboratories

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 878466. Samples arrived at the laboratory on Saturday, December 13, 2003. The PO# for this group is ZAKW1KEOK0A90089.

Client Description	Lancaster Labs Number
MA3-MW-34S-121203-01 Unspiked Grab Water Sample	4185200
MA3-MW34S-121203-01 Matrix Spike Grab Water	4185201
MA3-MW34S-121203-01 Matrix Spike Dup. Grab Water	4185202
MA3-MW7S-121203-02 Grab Water Sample	4185203
MA3-MW7S-121203-DUP Grab Water Sample	4185204
MA3-MW35S-121203-03 Grab Water Sample	4185205
TB-05 Trip Blank Water Sample	4185206

METHODOLOGY

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

1 COPY TO	Kerr-McGee Corporation	Attn: Dr. Jeff Ostmeyer
1 COPY TO	Weston Solutions, Inc.	Attn: Mr. Tom Graan
1 COPY TO	Data Package Group	

0 0 3 0 0

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

Lancaster Laboratories

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

Respectfully Submitted,

Victoria M. Martell
Chemist

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 4185200

MA3-MW-34S-121203-01 Unspiked Grab Water Sample
Moss American Site - WI

Collected:12/12/2003 08:40 by MP

Account Number: 07802

Submitted: 12/13/2003 11:15
Reported: 12/22/2003 at 14:16
Discard: 01/22/2004

Kerr-McGee Corporation
PO Box 3048
Livonia MI 48150

M334S SDG#: KMA51-14BKG

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	6.6		0.2	ug/l	1
00777	Toluene	108-88-3	1.3		0.2	ug/l	1
00778	Ethylbenzene	100-41-4	24.		0.2	ug/l	1
00779	Total Xylenes	1330-20-7	54.		0.6	ug/l	1
00774	PAH's in Water by HPLC						
00775	Naphthalene	91-20-3	6,500.	J	70.	ug/l	50
00782	Acenaphthylene	208-96-8	77.	J	16.	ug/l	10
00783	Acenaphthene	83-32-9	340.	J	16.	ug/l	10
00784	Fluorene	86-73-7	180.		1.8	ug/l	10
00785	Phenanthrene	85-01-8	310.		4.0	ug/l	50
00789	Anthracene	120-12-7	32.		0.40	ug/l	10
00807	Fluoranthene	206-44-0	100.		2.0	ug/l	50
00811	Pyrene	129-00-0	78.		1.8	ug/l	10
00812	Benzo(a)anthracene	56-55-3	16.		0.20	ug/l	10
00818	Benzo(b)fluoranthene	205-99-2	6.0		0.40	ug/l	10
00823	Benzo(a)pyrene	50-32-8	5.9	J	0.20	ug/l	10
00895	Dibenz(a,h)anthracene	53-70-3	N.D.		3.0	ug/l	10
00898	Indeno(1,2,3-cd)pyrene	193-39-5	2.1	J	0.80	ug/l	10
00907	Benzo(g,h,i)perylene	191-24-2	2.3	J	1.0	ug/l	10
07409	Chrysene	218-01-9	13.	J	0.80	ug/l	10
07410	Benzo(k)fluoranthene	207-08-9	3.4	J	0.20	ug/l	10

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.

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

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.

0040

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Lancaster Laboratories

Lancaster Laboratories Sample No. WW 4185200

MA3-MW-34S-121203-01 Unspiked Grab Water Sample
Moss American Site - WI

Collected:12/12/2003 08:40 by MP

Account Number: 07802

Submitted: 12/13/2003 11:15
Reported: 12/22/2003 at 14:16
Discard: 01/22/2004

Kerr-McGee Corporation
PO Box 3048
Livonia MI 48150

M334S SDG#: KMA51-14BKG

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
08213	BTEX (8021)	SW-846 8021B	1	12/16/2003 00:18	Linda C Pape	1
00774	PAH's in Water by HPLC	SW-846 8310	1	12/17/2003 11:08	Mark A Clark	10
00774	PAH's in Water by HPLC	SW-846 8310	1	12/18/2003 11:27	Mark A Clark	50
01146	GC VOA Water Prep	SW-846 5030B	1	12/16/2003 11:32	Martha L Seidel	n.a.
03337	PAH Water Extraction	SW-846 3510C	1	12/15/2003 23:00	Felix C Arroyo	1

0041

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

Lancaster Laboratories Sample No. WW 4185201

MA3-MW34S-121203-01 Matrix Spike Grab Water
Moss American Site - WI

Collected:12/12/2003 08:40 by MP

Account Number: 07802

Submitted: 12/13/2003 11:15
Reported: 12/22/2003 at 14:16
Discard: 01/22/2004

Kerr-McGee Corporation
PO Box 3048
Livonia MI 48150

M334S SDG#: KMA51-14MS

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	190.	2.0	ug/l	10
00777	Toluene	108-88-3	210.	2.0	ug/l	10
00778	Ethylbenzene	100-41-4	220.	2.0	ug/l	10
00779	Total Xylenes	1330-20-7	670.	6.0	ug/l	10
00774	PAH's in Water by HPLC					
00775	Naphthalene	91-20-3	6,800.	14.	ug/l	10
00782	Acenaphthylene	208-96-8	280.	16.	ug/l	10
00783	Acenaphthene	83-32-9	550.	16.	ug/l	10
00784	Fluorene	86-73-7	210.	1.8	ug/l	10
00785	Phenanthrene	85-01-8	330.	0.80	ug/l	10
00789	Anthracene	120-12-7	37.	0.40	ug/l	10
00807	Fluoranthene	206-44-0	120.	0.40	ug/l	10
00811	Pyrene	129-00-0	100.	1.8	ug/l	10
00812	Benzo(a)anthracene	56-55-3	19.	0.20	ug/l	10
00818	Benzo(b)fluoranthene	205-99-2	7.6	0.40	ug/l	10
00823	Benzo(a)pyrene	50-32-8	7.6	0.20	ug/l	10
00895	Dibenz(a,h)anthracene	53-70-3	3.2	0.40	ug/l	10
00898	Indeno(1,2,3-cd)pyrene	193-39-5	7.1	0.80	ug/l	10
00907	Benzo(g,h,i)perylene	191-24-2	13.	1.0	ug/l	10
07409	Chrysene	218-01-9	20.	0.80	ug/l	10
07410	Benzo(k)fluoranthene	207-08-9	4.8	0.20	ug/l	10

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.

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

0042

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Lancaster, PA 17605-2425
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Lancaster Laboratories

Lancaster Laboratories Sample No. WW 4185201

MA3-MW34S-121203-01 Matrix Spike Grab Water
Moss American Site - WI

Collected:12/12/2003 08:40 by MP

Account Number: 07802

Submitted: 12/13/2003 11:15
Reported: 12/22/2003 at 14:16
Discard: 01/22/2004

Kerr-McGee Corporation
PO Box 3048
Livonia MI 48150

M334S SDG#: KMA51-14MS

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
08213	BTEX (8021)	SW-846 8021B	1	12/16/2003 05:25	Linda C Pape	10
00774	PAH's in Water by HPLC	SW-846 8310	1	12/17/2003 16:23	Mark A Clark	10
01146	GC VOA Water Prep	SW-846 5030B	1	12/16/2003 05:25	Linda C Pape	n.a.
03337	PAH Water Extraction	SW-846 3510C	1	12/15/2003 23:00	Felix C Arroyo	1

0043

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Lancaster, PA 17605-2425
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Lancaster Laboratories

Lancaster Laboratories Sample No. WW 4185202

MA3-MW34S-121203-01 Matrix Spike Dup. Grab Water
Moss American Site - WI

Collected:12/12/2003 08:40 by MP

Account Number: 07802

Submitted: 12/13/2003 11:15
Reported: 12/22/2003 at 14:16
Discard: 01/22/2004

Kerr-McGee Corporation
PO Box 3048
Livonia MI 48150

M334S SDG#: KMA51-14MSD

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	200.	2.0	ug/l	10
00777	Toluene	108-88-3	210.	2.0	ug/l	10
00778	Ethylbenzene	100-41-4	220.	2.0	ug/l	10
00779	Total Xylenes	1330-20-7	670.	6.0	ug/l	10
00774	PAH's in Water by HPLC					
00775	Naphthalene	91-20-3	6,900.	14.	ug/l	10
00782	Acenaphthylene	208-96-8	280.	16.	ug/l	10
00783	Acenaphthene	83-32-9	720.	16.	ug/l	10
00784	Fluorene	86-73-7	360.	1.8	ug/l	10
00785	Phenanthrene	85-01-8	690.	0.80	ug/l	10
00789	Anthracene	120-12-7	83.	0.40	ug/l	10
00807	Fluoranthene	206-44-0	330.	0.40	ug/l	10
00811	Pyrene	129-00-0	260.	1.8	ug/l	10
00812	Benzo(a)anthracene	56-55-3	55.	0.20	ug/l	10
00818	Benzo(b)fluoranthene	205-99-2	21.	0.40	ug/l	10
00823	Benzo(a)pyrene	50-32-8	21.	0.20	ug/l	10
00895	Dibenz(a,h)anthracene	53-70-3	4.5	0.40	ug/l	10
00898	Indeno(1,2,3-cd)pyrene	193-39-5	12.	0.80	ug/l	10
00907	Benzo(g,h,i)perylene	191-24-2	18.	1.0	ug/l	10
07409	Chrysene	218-01-9	49.	0.80	ug/l	10
07410	Benzo(k)fluoranthene	207-08-9	12.	0.20	ug/l	10

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.

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

0044

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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 4185202

MA3-MW34S-121203-01 Matrix Spike Dup, Grab Water
Moss American Site - WI

Collected:12/12/2003 08:40 by MP

Account Number: 07802

Submitted: 12/13/2003 11:15
Reported: 12/22/2003 at 14:16
Discard: 01/22/2004

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Livonia MI 48150

M334S SDG#: KMA51-14MSD

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
08213	BTEX (8021)	SW-846 8021B	1	12/16/2003 05:58	Linda C Pape	10
00774	PAH's in Water by HPLC	SW-846 8310	1	12/17/2003 17:05	Mark A Clark	10
01146	GC VOA Water Prep	SW-846 5030B	1	12/16/2003 05:58	Linda C Pape	n.a.
03337	PAH Water Extraction	SW-846 3510C	1	12/15/2003 23:00	Felix C Arroyo	1

0045

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2425 New Holland Pike
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Analysis Report

Lancaster Laboratories

Lancaster Laboratories Sample No. WW 4185203

MA3-MW7S-121203-02 Grab Water Sample
Moss American Site - WI

Collected:12/12/2003 09:00 by MP

Account Number: 07802

Submitted: 12/13/2003 11:15
Reported: 12/22/2003 at 14:16
Discard: 01/22/2004

Kerr-McGee Corporation
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M3-7S SDG#: KMA51-15

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	2.3	J	2.0	ug/l	10
00777	Toluene	108-88-3	N.D.		2.0	ug/l	10
00778	Ethylbenzene	100-41-4	17.		2.0	ug/l	10
00779	Total Xylenes	1330-20-7	35.		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	3,000.		27.	ug/l	20
00782	Acenaphthylene	208-96-8	43.		1.5	ug/l	1
00783	Acenaphthene	83-32-9	55.		1.5	ug/l	1
00784	Fluorene	86-73-7	8.0		0.17	ug/l	1
00785	Phenanthrene	85-01-8	0.20	J	0.077	ug/l	1
00789	Anthracene	120-12-7	0.045	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.		0.17	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
					0946	

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Lancaster, PA 17605-2425
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Lancaster Laboratories

Lancaster Laboratories Sample No. WW 4185203

MA3-MW7S-121203-02 Grab Water Sample
Moss American Site - WI

Collected:12/12/2003 09:00 by MP

Account Number: 07802

Submitted: 12/13/2003 11:15
Reported: 12/22/2003 at 14:16
Discard: 01/22/2004

Kerr-McGee Corporation
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Livonia MI 48150

M3-7S SDG#: KMA51-15

08213	BTEX (8021)	SW-846 8021B	1	12/16/2003 08:41	Linda C Pape	10
00774	PAH's in Water by HPLC	SW-846 8310	1	12/17/2003 14:24	Mark A Clark	1
00774	PAH's in Water by HPLC	SW-846 8310	1	12/18/2003 12:10	Mark A Clark	20
01146	GC VOA Water Prep	SW-846 5030B	1	12/16/2003 08:41	Linda C Pape	n.a.
03337	PAH Water Extraction	SW-846 3510C	1	12/15/2003 23:00	Felix C Arroyo	1

0047

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Lancaster Laboratories

Lancaster Laboratories Sample No. WW 4185204

MA3-MW7S-121203-DUP Grab Water Sample
Moss American Site - WI

Collected:12/12/2003 09:00 by MP

Account Number: 07802

Submitted: 12/13/2003 11:15
Reported: 12/22/2003 at 14:16
Discard: 01/22/2004

Kerr-McGee Corporation
PO Box 3048
Livonia MI 48150

M37SD SDG#: KMA51-16

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	2.1 J	2.0	ug/l	10
00777	Toluene	108-88-3	N.D.	2.0	ug/l	10
00778	Ethylbenzene	100-41-4	16.	2.0	ug/l	10
00779	Total Xylenes	1330-20-7	32.	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	3,100.	27.	ug/l	20
00782	Acenaphthylene	208-96-8	41.	1.5	ug/l	1
00783	Acenaphthene	83-32-9	54.	1.5	ug/l	1
00784	Fluorene	86-73-7	7.8	0.17	ug/l	1
00785	Phenanthrene	85-01-8	0.23 J	0.076	ug/l	1
00789	Anthracene	120-12-7	0.040 J	0.038	ug/l	1
00807	Fluoranthene	206-44-0	N.D.	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.	0.076	ug/l	1
00907	Benzo(g,h,i)perylene	191-24-2	N.D.	0.095	ug/l	1
07409	Chrysene	218-01-9	N.D.	0.076	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
					0048	

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2425 New Holland Pike
PO Box 12425
Lancaster, PA 17605-2425
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Lancaster Laboratories

Lancaster Laboratories Sample No. WW 4185204

MA3-MW7S-121203-DUP Grab Water Sample
Moss American Site - WI

Collected:12/12/2003 09:00 by MP

Account Number: 07802

Submitted: 12/13/2003 11:15
Reported: 12/22/2003 at 14:16
Discard: 01/22/2004

Kerr-McGee Corporation
PO Box 3048
Livonia MI 48150

M37SD SDG#: KMA51-16

08213	BTEX (8021)	SW-846 8021B	1	12/16/2003 09:13	Martha L Seidel	10
00774	PAH's in Water by HPLC	SW-846 8310	1	12/17/2003 15:03	Mark A Clark	1
00774	PAH's in Water by HPLC	SW-846 8310	1	12/18/2003 12:52	Mark A Clark	20
01146	GC VOA Water Prep	SW-846 5030B	1	12/16/2003 09:13	Martha L Seidel	n.a.
03337	PAH Water Extraction	SW-846 3510C	1	12/15/2003 23:00	Felix C Arroyo	1

0049

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Lancaster Laboratories

Lancaster Laboratories Sample No. WW 4185205

MA3-MW35S-121203-03 Grab Water Sample
Moss American Site - WI

Collected:12/12/2003 10:30 by MP

Account Number: 07802

Submitted: 12/13/2003 11:15
Reported: 12/22/2003 at 14:17
Discard: 01/22/2004

Kerr-McGee Corporation
PO Box 3048
Livonia MI 48150

M335S SDG#: KMA51-17

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.		1.3	ug/l	1
00782	Acenaphthylene	208-96-8	N.D.		1.5	ug/l	1
00783	Acenaphthene	83-32-9	1.9	J	1.5	ug/l	1
00784	Fluorene	86-73-7	N.D.		0.17	ug/l	1
00785	Phenanthrene	85-01-8	0.15	J	0.076	ug/l	1
00789	Anthracene	120-12-7	0.092	J	0.038	ug/l	1
00807	Fluoranthene	206-44-0	0.53		0.038	ug/l	1
00811	Pyrene	129-00-0	0.36	J	0.17	ug/l	1
00812	Benzo(a)anthracene	56-55-3	0.041	J	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	0.028	J	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.		0.076	ug/l	1
00907	Benzo(g,h,i)perylene	191-24-2	N.D.		0.095	ug/l	1
07409	Chrysene	218-01-9	N.D.		0.076	ug/l	1
07410	Benzo(k)fluoranthene	207-08-9	0.025	J	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	12/16/2003 11:00	Martha L Seidel	1
00774	PAH's in Water by HPLC	SW-846 8310	1	12/17/2003 15:41	Mark A Clark	1
01146	GC VOA Water Prep	SW-846 5030B	1	12/16/2003 11:00	Martha L Seidel	n.a.

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

Lancaster Laboratories

Lancaster Laboratories Sample No. WW 4185205

MA3-MW35S-121203-03 Grab Water Sample
Moss American Site - WI

Collected:12/12/2003 10:30 by MP

Account Number: 07802

Submitted: 12/13/2003 11:15
Reported: 12/22/2003 at 14:17
Discard: 01/22/2004

Kerr-McGee Corporation
PO Box 3048
Livonia MI 48150

M335S SDG#: KMA51-17

03337	PAH Water Extraction	SW-846 3510C	1	12/15/2003 23:00	Felix C Arroyo	1

0051

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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

Lancaster Laboratories Sample No. WW 4185206

TB-05 Trip Blank Water Sample
Moss American Site - WI

Collected:12/12/2003 08:00 by MP

Account Number: 07802

Submitted: 12/13/2003 11:15
Reported: 12/22/2003 at 14:17
Discard: 01/22/2004

Kerr-McGee Corporation
PO Box 3048
Livonia MI 48150

MAMTB SDG#: KMA51-18TB*

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	12/15/2003 15:09	Martha L Seidel	1
01146	GC VOA Water Prep	SW-846 5030B	1	12/15/2003 15:09	Martha L Seidel	n.a.

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

Case Narrative (continued)
SDG#: KMA51

Sample Code	Compound
M334S	triphenylene, dibenz(a,h)anthracene
M334SDL	triphenylene
M334SMS	triphenylene
M334SMSD	triphenylene

Due to missed peaks during the initial processing, manual integrations were performed for the following compounds:

Sample Code/File	Compound
M334SMS	indeno(1,2,3-cd)pyrene
M334SMSD	indeno(1,2,3-cd)pyrene, dibenz(a,h)anthracene

Due to the presence of an interferent near its retention time, the reporting limit was not met for dibenz(a,h)anthracene in M334S. The reporting limit was adjusted accordingly.

No further interpretation is necessary for the data submitted.

Case Narrative Reviewed and Approved by:

Christine M. Ratchford for CJN Date: 1-6-04
Charles J. Neslund
Group Leader, GC/MS Semivolatiles

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Reextractions were required for all samples on organic extraction 03347WAC026 due to unacceptable recoveries in the associated quality control samples.

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

QUALITY CONTROL AND NONCONFORMANCE SUMMARY:

In 61S05RE, surrogate recoveries were outside QC limits.

A number of recoveries were outside QC limits in 347WCLCSD2. Refer to the laboratory control sample recoveries form for the specific recoveries outside QC limits. Therefore all samples on organic extraction batch 03347WAC026 were reextracted. The reextractions were performed outside the method required holding time. Both sets of data for these samples are included in this data package.

A number of recoveries were outside QC limits in M334SMS and M334SMSD. A number of relative percent differences (RPD's) between M334SMS and M334SMSD were greater than 30 percent. Refer to the matrix spike/matrix spike duplicate form for the specific recoveries and RPD's outside QC limits.

The recovery of fluoranthene was below QC limits in 363WALCSD2. The RPD's for naphthalene, acenaphthylene, dibenz(a,h)anthracene and benzo(g,h,i)perylene between 363WALCS2 and 363WALCSD2 were 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 improper integrations during the initial processing, manual integrations were performed for the following compounds.

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Case Narrative (continued)
SDG#: KMA51

SAMPLE NUMBER(S) continued:

LL #'s	Sample Code	Matrix Water	Comments
4185203	M3-7S	X	
4185203DL	M3-7SDL	X	20X Dilution
4185204	M37SD	X	
4185204DL	M37SDDL	X	20X Dilution
4185205	M335S	X	
LABORATORY SUBMITTED QC:			
SBLKWC347	SBLKWC3472	X	Method Blank
SBLKWA349	SBLKWA3492	X	Method Blank
SBLKWA363	SBLKWA3632	X	Method Blank
347WCLCS	347WCLCS2	X	Lab Control Sample
347WCLCSD	347WCLCSD2	X	Lab Control Sample Dup
349WALCS	349WALCS2	X	Lab Control Sample
363WALCS	363WALCS2	X	Lab Control Sample
363WALCSD	363WALCSD2	X	Lab Control Sample Dup

SAMPLE PREPARATION:

No problems were encountered during the extraction of these samples.

ANALYSIS:

The method used for analysis was SW-846 8310.

All samples were analyzed for polynuclear aromatic hydrocarbons by HPLC.

Sufficient sample volume was not available to perform a MS/MSD for the analysis of samples on organic extraction batches 03347WAC026 and 03363WAA026. Therefore, LCS/LCSD's were performed to demonstrate precision and accuracy at a batch level.

Due to the sample matrix, M334S, M334SMS and M334SMSD were analyzed at initial 10X dilutions.

Case Narrative
Client: Kerr-McGee Corporation
SDG: KMA51

LANCASTER LABORATORIES
PAH by HPLC

SAMPLE NUMBER(S) :

LL #'s	Sample Code	Matrix Water	Comments
4184350	MA375	X	
4184350RE	MA375RE	X	Reextraction
4184351	MA36S	X	
4184351RE	MA36SRE	X	Reextraction
4184352	MA336	X	
4184352RE	MA336RE	X	Reextraction
4184353	28SMA	X	
4184353RE	28SMARE	X	Reextraction
4184354	MA28D	X	
4184354RE	MA28DRE	X	Reextraction
4184355	61S05	X	
4184355RE	61S05RE	X	Reextraction
4184356	31S06	X	
4184356RE	31S06RE	X	Reextraction
4184357	33SMA	X	
4184357RE	33SMARE	X	Reextraction
4184358	32S08	X	
4184358RE	32S08RE	X	Reextraction
4184359	27S09	X	
4184359RE	27S09RE	X	Reextraction
4184360	9S310	X	
4184360RE	9S310RE	X	Reextraction
4184361	FB04M	X	Client Blank
4184361RE	FB04MRE	X	Reextraction
4185200	M334S	X	10X Dilution
4185200DL	M334SDL	X	50X Dilution
4185201	M334SMS	X	Matrix Spike 10X Dilution
4185202	M334SMSD	X	Matrix Spike Dup 10X Dilution

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INDIANA CERT ID
M-45-8
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CERTIFICATE OF ANALYSIS

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Tom Graam
750 East Bunker Court
Suite 500
Vernon Hills,IL 60061-1450

F nit No.

Date Reported	12/31/2003
Date Received	12/10/2003
Order Number	0312-00175
Invoice No.	31168
Cust #	R017
Sample Date	12/9/2003
Sample Time	9:45
Cust P.O.	0018581

Subject: Moss-American Project

Test	Result	Date	Tech	Method
MA3-TG6-1-091203-01, 12/09/03 @ 09:45 BY PH				
Total Aerobic Bacteria	830. cfu/ml	12/31/2003	NMC	9215B MODIFIED
erobic Degrader Bacteria	<10. cfu/ml	12/31/2003	NMC	9215B MODIFIED
MA3-TG6-2-091203-02, 12/09/03 @ 09:55 BY PH				
Total Aerobic Bacteria	170. cfu/ml	12/31/2003	NMC	9215B MODIFIED
erobic Degrader Bacteria	<10. cfu/ml	12/31/2003	NMC	9215B MODIFIED
MA3-TG6-3-091203-03, 12/09/03 @ 10:00 BY PH				
Total Aerobic Bacteria	830. cfu/ml	12/31/2003	NMC	9215B MODIFIED
erobic Degrader Bacteria	10. cfu/ml	12/31/2003	NMC	9215B MODIFIED
MA3-TG5-1-091203-04, 12/09/03 @ 11:50 BY PH				
Total Aerobic Bacteria	460. cfu/ml	12/31/2003	NMC	9215B MODIFIED
Aerobic Degrader Bacteria	<10. cfu/ml	12/31/2003	NMC	9215B MODIFIED
MA3-TG5-2-091203-05, 12/09/03 @ 11:55 BY PH				
Total Aerobic Bacteria	1,210. cfu/ml	12/31/2003	NMC	9215B MODIFIED
Aerobic Degrader Bacteria	10. cfu/ml	12/31/2003	NMC	9215B MODIFIED
MA3-TG5-3-091203-06, 12/09/03 @ 12:00 BY PH				

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CERTIFICATE OF ANALYSIS

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

P nit No.

Subject: Moss-American Project

Date Reported	12/31/2003
Date Received	12/10/2003
Order Number	0312-00175
Invoice No.	31168
Cust #	R017
Sample Date	12/9/2003
Sample Time	9:45
Cust P.O.	0018581

Test	Result	Date	Tech	Method
MA3-TG5-3-091203-06, 12/09/03 @ 12:00 BY PH				
Total Aerobic Bacteria	400. cfu/ml	12/31/2003	NMC	9215B MODIFIED
erobic Degrader Bacteria	<10. cfu/ml	12/31/2003	NMC	9215B MODIFIED
MA3-TG4-1-091203-07, 12/09/03 @ 15:15 BY PH				
Total Aerobic Bacteria	1,250. cfu/ml	12/31/2003	NMC	9215B MODIFIED
erobic Degrader Bacteria	10. cfu/ml	12/31/2003	NMC	9215B MODIFIED
MA3-TG4-2-091203-08, 12/09/03 @ 15:20 BY PH				
Total Aerobic Bacteria	380. cfu/ml	12/31/2003	NMC	9215B MODIFIED
erobic Degrader Bacteria	<10. cfu/ml	12/31/2003	NMC	9215B MODIFIED
MA3-TG4-3-091203-09, 12/09/03 @ 15:25 BY PH				
Total Aerobic Bacteria	900. cfu/ml	12/31/2003	NMC	9215B MODIFIED
erobic Degrader Bacteria	20. cfu/ml	12/31/2003	NMC	9215B MODIFIED

This Document has been reviewed and is electronically signed by:
Karen A. Ziolkowski, Laboratory Manager

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Acct. #__________ Group#__________ Sample #__________

COC # 0041443

312-1

Microbac Laboratories, Inc.
219-932-1770

Please print. Instructions on reverse side correspond with circled numbers.

Client: Weston Acct. #:

Project Name/#: Moss-American PWSID #:

Project Manager: Tom Graan P.O.#:

Sampler: Pihl + Hagiwara Quote #:

Name of state where samples were collected: WI

Sample Identification	Date Collected	Time Collected	Grab (3)	Composite	Matrix (4): Soil	Water (☐ Potable ☐ NPDES; Check if Applicable)	Other	Total # of Containers	Analyses Requested (5): Microbac Enum.									Remarks	Temperature of samples upon receipt (if requested) (6)
MA3-T66-1-091203-01	12-9-03	0945	X			X			X										
T66-2-091203-02	↓	0955	X			X			X										
T66-3-091203-03		1000	X			X			X										
T65-1-091203-04		1150	X			X			X										
T65-2-091203-05		1155	X			X			X										
T65-3-091203-06		1200	X			X			X										
T64-1-091203-07		1515	X			X			X										
T64-2-091203-08		1520	X			X			X										
T64-3-091203-09	↓	1525	X			X			X										

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FSC:
SCR #:

Turnaround Time Requested (TAT) (please circle): (Normal) Rush
(Rush TAT is subject to Lancaster Laboratories approval and surcharge.)
Date results are needed:
Rush results requested by (please circle): Phone Fax E-mail
Phone #: Fax #:
E-mail address:

Data Package Options (please circle if required)
QC Summary Type VI (Raw Data)
Type I (Tier I) GLP
Type II (Tier II) Other
Type III (NJ Red. Del.)
Type IV (CLP)

SDG Complete? Yes (No)

Site-specific QC required? Yes No
(If yes, indicate QC sample and submit triplicate volume.)
Internal Chain of Custody required? Yes No

Relinquished by:	Date	Time	Received by:	Date	Time (9)
Nan Pihl	12-9-03	1700	[signature]	12/10/03	10:00
Relinquished by:	Date	Time	Received by:	Date	Time
Relinquished by:	Date	Time	Received by:	Date	Time
Relinquished by:	Date	Time	Received by:	Date	Time
Relinquished by:	Date	Time	Received by:	Date	Time

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Tom Graam
750 East Bunker Court
Suite 500
Vernon Hills,IL 60061-1450

P nit No.

Date Reported	12/31/2003
Date Received	12/11/2003
Order Number	0312-00204
Invoice No.	31169
Cust #	R017
Sample Date	12/10/2003
Sample Time	9:15
Cust P.O.	0018581

Subject: Moss-American Project

Test	Result	Date	Tech	Method
MA3-TG3-1-101203-01, 12/10/03 @ 09:15 BY PH				
Total Aerobic Bacteria	760. cfu/ml	12/31/2003	NMC	9215B MODIFIED
erobic Degrader Bacteria	20. cfu/ml	12/31/2003	NMC	9215B MODIFIED
MA3-TG3-2-101203-02, 12/10/03 @ 09:30 BY PH				
Total Aerobic Bacteria	930. cfu/ml	12/31/2003	NMC	9215B MODIFIED
erobic Degrader Bacteria	50. cfu/ml	12/31/2003	NMC	9215B MODIFIED
MA3-TG3-3-101203-03, 12/10/03 @ 09:45 BY PH				
Total Aerobic Bacteria	1,020. cfu/ml	12/31/2003	NMC	9215B MODIFIED
erobic Degrader Bacteria	<10. cfu/ml	12/31/2003	NMC	9215B MODIFIED
MA3-TG2-1-101203-04, 12/10/03 @ 11:30 BY PH				
Total Aerobic Bacteria	420. cfu/ml	12/31/2003	NMC	9215B MODIFIED
erobic Degrader Bacteria	<10. cfu/ml	12/31/2003	NMC	9215B MODIFIED
MA3-TG2-2-101203-05, 12/10/03 @ 11:45 BY PH				
Total Aerobic Bacteria	860. cfu/ml	12/31/2003	NMC	9215B MODIFIED
Aerobic Degrader Bacteria	<10. cfu/ml	12/31/2003	NMC	9215B MODIFIED
MA3-TG2-3-101203-06, 12/10/03 @ 12:00 BY PH				

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Tom Graam
750 East Bunker Court
Suite 500
Vernon Hills,IL 60061-1450

P nit No.

Subject: Moss-American Project

Date Reported	12/31/2003
Date Received	12/11/2003
Order Number	0312-00204
Invoice No.	31169
Cust #	R017
Sample Date	12/10/2003
Sample Time	9:15
Cust P.O.	0018581

Test	Result	Date	Tech	Method
MA3-TG2-3-101203-06, 12/10/03 @ 12:00 BY PH				
Total Aerobic Bacteria	880. cfu/ml	12/31/2003	NMC	9215B MODIFIED
erobic Degrader Bacteria	20. cfu/ml	12/31/2003	NMC	9215B MODIFIED
MA3-TG1-1-101203-07, 12/10/03 @ 15:50 BY PH				
Total Aerobic Bacteria	13,700. cfu/ml	12/31/2003	NMC	9215B MODIFIED
erobic Degrader Bacteria	<10. cfu/ml	12/31/2003	NMC	9215B MODIFIED
MA3-TG1-2-101203-08, 12/10/03 @ 16:00 BY PH				
Total Aerobic Bacteria	6,700. cfu/ml	12/31/2003	NMC	9215B MODIFIED
erobic Degrader Bacteria	30. cfu/ml	12/31/2003	NMC	9215B MODIFIED
MA3-TG1-3-101203-09, 12/10/03 @ 16:10 BY PH				
Total Aerobic Bacteria	4,300. cfu/ml	12/31/2003	NMC	9215B MODIFIED
erobic Degrader Bacteria	<10. cfu/ml	12/31/2003	NMC	9215B MODIFIED

This Document has been reviewed and is electronically signed by:
Karen A. Ziolkowski, Laboratory Manager

Analysis Request / Environmental Services Chain of Custody

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Acct. # _____ Group# _____ Sample # _____

312-204

COC # 0029383

MICROBAC LABORATORIES, INC. (219-932-1770)

Please print. Instructions on reverse side correspond with circled numbers.

1

Client: KMC/Weston Acct. #: _____

Project Name/#: Moss-American PWSID #: _____

Project Manager: Tom Graan P.O.#: _____

Sampler: Pihl + Hayiwara Quote #: _____

Name of state where samples were collected: WI

2 Sample Identification	Date Collected	Time Collected	3 Grab	Composite	Matrix: Soil	Water	Other	4 Total # of Containers	5 Analyses Requested: Microbac. Enum.	Remarks
MA3-TG3-1-101203-01	12-10-03	0915	X			X		1	X	
TG3-2- -02		0930	X			X		1	X	
TG3-3- -03		0945	X			X		1	X	
TG2-1- -04		1130	X			X		1	X	
TG2-2- -05		1145	X			X		1	X	
TG2-3- -06		1200	X			X		1	X	
TG1-1- -07		1550	X			X		1	X	
TG1-2- -08		1600	X			X		1	X	
TG1-3- -09		1610	X			X		1	X	

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FSC: _____
SCR #: _____

6 Temperature of samples upon receipt (if requested)

7 **Turnaround Time Requested** (TAT) (please circle) Normal Rush
(Rush TAT is subject to Lancaster Laboratories approval and surcharge.)
Date results are needed: _____
Rush results requested by (please circle): Phone Fax E-mail
Phone #: _____ Fax #: _____
E-mail address: _____

8 **Data Package Options** (please circle if required)
QC Summary Type VI (Raw Data)
Type I (Tier I) GLP
Type II (Tier II) Other
Type III (NJ Red. Del.)
Type IV (CLP)
Per Quote

SDG Complete? Yes No

Site-specific QC required? Yes No
(If yes, indicate QC sample and submit triplicate volume.)
Internal Chain of Custody required? Yes No

9

Relinquished by:	Date	Time	Received by:	Date	Time
Marissa Pihl	12/10/03	1730			
Relinquished by:	Date	Time	Received by:	Date	Time
Relinquished by:	Date	Time	Received by:	Date	Time
Relinquished by:	Date	Time	Received by:	Date	Time
Relinquished by:	Date	Time	Received by:	Date	Time

Lancaster Laboratories, Inc., 2425 New Holland Pike, PO Box 12425, Lancaster, PA 17605-2425 (717) 656-2300
Copies: White and yellow should accompany samples to Lancaster Laboratories. The pink copy should be retained by the client.

2102 Rev. 10/27/02