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QUARTERLY GROUNDWATER TREATMENT PERFORMANCE MONITORING REPORT Q4 2002 MOSS-AMERICAN SITE MILWAUKEE, WISCONSIN

Prepared for

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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 direct 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. The locations of all existing groundwater-monitoring wells included in the sampling program are indicated on Figure 1-1. These shallow groundwater monitoring wells are sampled on a quarterly basis.

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 during 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 was taking place.

Also, 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. This recommendation was approved by the Agencies, so the last monthly sampling event occurred in October 2002. 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. Last time these wells were sampled was during Q3 2002; however, these wells were abandoned. Water levels will continue to be taken from them to assist in the production of the quarterly groundwater elevation contour map.

Well on

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 well locations are indicated on Figure 1-1. 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.

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, benzo(a)pyrene, acenaphthene, anthracene. benzo(a)anthracene, benzo(b)fluoranthene. benzo(k)fluoranthene, chrysene, benzo(g,h,i)perylene, 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

1-2

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DO. Quarterly laboratory analyses required for the treatment performance wells include microbial enumeration, nitrate-nitrogen (NO₃-N), nitrite-nitrogen (NO₂-N), total Kjeldahl nitrogen (TKN), ammonia-nitrogen (NH₃-N), total phosphate-phosphorous (PO₄-P), orthophosphate (ORP), biochemical oxygen demand (BOD), chemical oxygen demand (COD), total organic carbon (TOC), BTEX, and the PAHs indicated in the above paragraph.

SECTION 2

GROUNDWATER MONITORING RESULTS

The Q4 2002 groundwater-monitoring event at the Moss-American site was completed between 9 to 12 December 2002. The Q4 2002 groundwater remedial system treatment performance monitoring sampling includes data obtained from 23 to 24 October 2002. 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 groundwater samples that were collected and analyzed from the shallow wells 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, and treatment performance monitoring wells on 9 December 2002, prior to the commencement of groundwater sampling. In addition, the depth to groundwater was measured during the monthly sampling event in each treatment performance monitoring well prior to sample collection. 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 resulting 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 October 2002 groundwater elevation data for the treatment performance monitoring wells is available upon request. Figure 2-1 presents a groundwater elevation contour map that shows the potentiometric surface within the shallow groundwater-bearing zone based on the 9 December 2002 data. Figure 2-2 indicates the potentiometric surface during Q3 2002. An evaluation of the Q4 2002 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 0.0230 feet per foot (ft/ft) to the northeast. The topography of the site levels out near the river as does the potentiometric surface with an eastward hydraulic gradient of approximately 0.0020 ft/ft. The estimated hydraulic gradients within the treatment gates ranged from 0.0006 to 0.0192 ft/ft (Table 2-2). The hydraulic gradient is relatively flat within the treatment gate area with an overall hydraulic gradient from TG1 to TG6 of approximately 0.0007 ft/ft in an easterly direction. Due to the low hydraulic gradient in the vicinity of the treatment gates, the calculated hydraulic gradients through TG1 and TG3 are westward, 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/e

where:

v = groundwater velocity

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

i = hydraulic gradient

e = 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 (2.8 ft/day). Using a hydraulic gradient of 0.0230 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 0.0002 ft/day. Near the river, using a hydraulic gradient of 0.0020 ft/ft, a porosity of 0.3, and a hydraulic conductivity of 2.8 ft/day, the velocity of groundwater flow is calculated to be approximately 0.0017 ft/day. The groundwater flow velocities within the treatment gates are estimated to range from 0.0057 ft/day to 0.1814 ft/day (excluding the data for TG1 and TG3). 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 7 shallow groundwater monitoring wells (MW-5S, MW-6S, MW-7S, MW-9S, MW-27S, MW-28S, and MW-29S); 8 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 two field blank (identified by an FB prefix) samples were collected for quality assurance/quality control (QA/QC) purposes. Trip blanks accompanied each cooler of sample containers from the laboratory to the site and were shipped back to the laboratory within each cooler containing volatile organic compound (VOC) samples.

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

2.2.1 Field-Measured Parameters

The groundwater samples were measured in the field for pH, specific conductance, temperature, redox potential, DO, and turbidity. The field parameters were collected using a YSI 556 portable water quality meter and a turbidimeter. 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 2-3. They are also presented in Appendix A for the treatment performance monitoring wells during October and December 2002. Water quality measurements were not collected from well TG1-1 due to the presence of free product in the well water.

2.2.1.1 pH

The pH of the groundwater samples collected during Q4 2002 ranged from 6.33 to 7.26 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 dependant.

2.2.1.2 Redox Potential

The redox potentials of the groundwater samples collected at the site during Q4 2002 ranged from -48.1 to 199.2 millivolts (mV). The field readings showed that readings for redox potential in the treatment gate areas were mostly negative while readings for surrounding shallow and containment performance monitoring wells were predominantly positive. 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., NO₃, SO₄, and Fe³⁺) predominate in comparison to their reduced counterparts (NH₄⁺, S²⁻, and Fe²⁺, 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 2002 ranged from 0.03 to 3.35 milligrams per liter (mg/L). Readings indicating DO levels greater than 1.0 mg/L were observed intermittently in the monitoring wells. However, these readings were only observed during the December 2002 groundwater sampling event, and DO levels are typically below 1.0 mg/L. These readings could thus be anomalies attributable to equipment malfunction due to cold weather. 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 promote 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. Figure 2-3 indicates the DO concentrations over time in the treatment performance monitoring wells.

2.2.1.4 Specific Conductance

The specific conductance, or conductivity, of the groundwater samples collected during Q4 2002 ranged from 0.638 to 1.530 millimhos per centimeter (mU/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 6.95 to 14.14 degrees Celsius (°C) during Q4 2002. Temperatures measured approximately 5 °C lower in Q4 2002 in Q3 2002. Q3 2002 temperatures ranged from 11.50 to 19.82 °C. Temperature is an extremely important factor in bioremediation since microbial growth rates are greatly dependent upon temperature.

2.2.1.6 **Turbidity**

Turbidity ranged from 0.22 to 487 nephelometric turbidity units (NTU) during Q4 2002; however, turbidity was only measured at levels >20 NTU in six wells during Q4 2002. 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 October and December 2002 are provided in Appendices B and C, respectively. 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 2002 sampling event was analyzed for BTEX and PAH compounds. The results of these analyses are presented and compared to Wisconsin Department of Natural Resource (WDNR) PALs and ESs in Table 2-4. Table 2-4 also indicates those parameters that were detected at concentrations exceeding their respective PALs (shown as shaded values). Parameters with concentrations exceeding both PALs and ESs are presented as shaded and bold values in Table 2-4. Exceedences are summarized in the following paragraphs. The laboratory reports that included results of the BTEX and PAH analyses are

provided as Appendix C.

Groundwater Sample Results

As shown in Table 2-4, benzene, anthracene, 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:

PAL Exceedances

- Benzene was detected at concentrations exceeding the WDNR PAL of 0.5 micrograms per liter (μg/L) in the groundwater samples collected from wells MW-34S and TG1-1.
- Anthracene was detected at a concentration exceeding the WDNR PAL of 600 μg/L in the groundwater sample collected from well TG1-1.
- Benzo(a)pyrene was detected at concentrations exceeding the WDNR PAL of 0.02 μg/L in the groundwater samples collected from wells MW-34S, TG1-1, and TG6-2. A field blank, FB-01, also had a concentration that exceeded the PAL.
- Benzo(b)fluoranthene was detected at concentrations exceeding the WDNR 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 WDNR PAL of 0.02 μ g/L in the groundwater samples collected from wells MW-34S and TG1-1.
- Fluoranthene was detected at concentrations exceeding the WDNR PAL of 80 μg/L in the groundwater samples collected from wells MW-34S and TG1-1.
- Fluorene was detected at concentrations exceeding the WDNR PAL of 80 μg/L in the groundwater samples collected from wells MW-34S and TG1-1.
- Naphthalene was detected at concentrations exceeding the WDNR PAL of 8 μg/L in the groundwater samples collected from wells MW-7S, MW-33S, MW-34S, TG1-1, and TG1-2.

• Pyrene was detected at concentrations exceeding the WDNR PAL of 50 μ g/L in the groundwater samples collected from wells MW-34S and TG1-1.

ES Exceedences

- Benzene was detected at a concentration exceeding the WDNR ES of 5 μ g/L in the groundwater sample collected from well MW-34S.
- Benzo(a)pyrene was detected at concentrations exceeding the WDNR 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 WDNR 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 WDNR ES of 0.2 μg/L in the groundwater samples collected from wells MW-34S and TG1-1.
- Fluoranthene was detected at a concentration that exceeded the WDNR ES of 400 μg/L in the groundwater sample collected from well TG1-1.
- Fluorene was detected at a concentration exceeding the WDNR ES of 400 μg/L in the groundwater sample collected from well TG1-1.
- Naphthalene was detected at concentrations exceeding the WDNR ES of 40 µg/L in the groundwater samples collected from wells MW-7S, MW-33S, MW-34S, TG1-1, and TG1-2.
- Pyrene was detected at a concentration exceeding the WDNR ES of 250 μg/L in the groundwater sample collected from well TG1-1.

The plume boundary is primarily in an area encompassing five shallow monitoring wells (MW-7S, MW-33S, MW-34S, TG1-1, and TG1-2). There was a PAL exceedence in well TG6-2, but it is considered an anomaly because of its distance from the rest of the PAL exceedences and because it was low-level exceedence of benzo(a)pyrene. Therefore, it was not included in the plume boundary. The majority of PAL and ES exceedences are associated with wells MW-34S and TG1-1, which contained trace and 3 inches of free product, respectively, in the quarterly investigation. 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. The only

exception is naphthalene, which was measured at higher levels in three other wells at the site. Based on these detected concentrations, the contaminant plume generally indicates a northeasterly trend, as indicated in Figure 2-1, as well as the previous 18 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 three 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 2-5. 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, MW-32S, and MW-35S. These constituents had also shown an overall decreasing trend in well MW-4S prior to its removal in Q2 2001. 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 been consistently below detection limits, 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 Recently, benzene and naphthalene have showed a decreasing trend in benzo(a)pyrene. concentrations while fluorene and benzo(a)pyrene have shown an increasing trend. Well MW-34S contained a trace amount of free product during Q4 2002 with varying levels of free product being 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. Recently, however, TG1-1 showed a large increase in these constituent concentrations. Naphthalene, fluorene, and benzo(a)pyrene concentrations were the highest they have been since sampling began at the well. Fluorene and benzo(a)pyrene levels were approximately 10 times higher, while naphthalene levels were approximately 3 times higher than the levels found in the past.

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, NO₃-N, NO₂-N, TKN, NH₃-N, PO₄-P, and ORP in October and for BOD, COD, TOC, BTEX, and PAHs in December. The analytical results for microbial enumeration, NO₃-N, NO₂-N, TKN, NH₃-N, PO₄-P, ORP, BOD, COD, and TOC are presented in Table 2-6. The analytical results for the treatment performance monitoring groundwater samples are summarized below.

Nitrogen and Phosphorous Compounds

NO₃-N was detected at levels ranging from nondetect to 0.13 mg/L. NO₂-N was detected at levels ranging from nondetect to 0.041 mg/L. TKN was detected at concentrations ranging from nondetect to 2.3 mg/L. NH₃-N was detected at levels ranging from nondetect to 1.5 mg/L. Temporal changes of NO₃-N, NO₂-N, and NH₃-N concentrations in the treatment performance monitoring wells with respect to the treatment gates are presented in Figures 2-4, 2-5, and 2-6, respectively. Overall, nitrogen compound concentrations are at relatively low levels; however, NH₃-N is typically an order of magnitude greater than NO₃-N concentrations and approximately two orders or magnitude greater than NO₂-N. NH₃-N is slightly higher in the TG3 wells. NO₃-N levels were mostly nondetect in the wells for Q4 2002. The exceptions were well TG3-1 in October and December, and well TG5-3 in December. There were some sporadic detections of NO₂-N in gates 1, 2, 3, and 4 during Q4, but gates 5 and 6 did not have any detections of NO₂-N.

PO₄-P was detected at concentrations ranging from nondetect to 0.51 mg/L. ORP was detected at concentrations ranging from nondetect to 0.153 mg/L. The temporal changes of PO₄-P and ORP concentrations in the treatment performance monitoring wells with respect to the treatment gates are presented in Figures 2-7 and 2-8, respectively. A relatively good level of PO₄-P was found throughout the treatment gates for Q4 2002. However, ORP levels were minimal in the gates for Q4 2002 with the exception of well TG2-1 in December.

BOD, COD, and TOC

BOD concentrations for the samples collected throughout the treatment system range from nondetect to 34.8 mg/L. COD concentrations for the samples collected throughout the treatment system range from 6.8 to 148 mg/L. TOC concentrations for the samples collected throughout the treatment system range from 2.59 to 17.3 mg/L. As expected, the treatment gate wells indicate fewer BODS when 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; 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. In support of this, only two wells (TG1-1 and TG3-3) had detections for BOD during Q4 2002. The rest of the treatment performance wells were nondetect for BOD. Futhermore BOD and COD levels were quite high in well TG1-1 during December. This could be due to the higher levels of constituent concentrations found in the well during this quarter's sampling.

Microbial Enumeration

The monthly mean of the total microbe populations for TG1 and TG2 ranged from 2.60×10^2 to 1.87×10^4 colony forming units per milliliter (CFU/mL) during Q4 2002. The monthly mean of the total microbe populations for TG3 and TG4 ranged from 7.50×10^2 to 7.50×10^4 CFU/mL during Q4 2002. The monthly mean of the total microbe populations for TG5 and TG6 ranged from 6.30×10^2 to 1.10×10^4 CFU/mL during Q4 2002. The temporal changes in total microbial populations are presented in Figure 2-9.

The monthly mean of the degrader microbe populations for TG1 and TG2 ranged from 1.00×10^{1} to 2.00×10^{3} CFU/mL during Q4 2002. The monthly mean of the microbe populations for TG3 and TG4 ranged from <10 to 2.20×10^{3} CFU/mL during Q4 2002. The monthly mean of N:WOIMOSSAMER: 32353RPT.DOC 2-11

the microbe populations for TG5 and TG6 ranged from <10 to 1.00×10^3 CFU/mL during Q4 2002. The temporal changes in degrader microbial populations are presented in Figure 2-10.

Figure 2-3

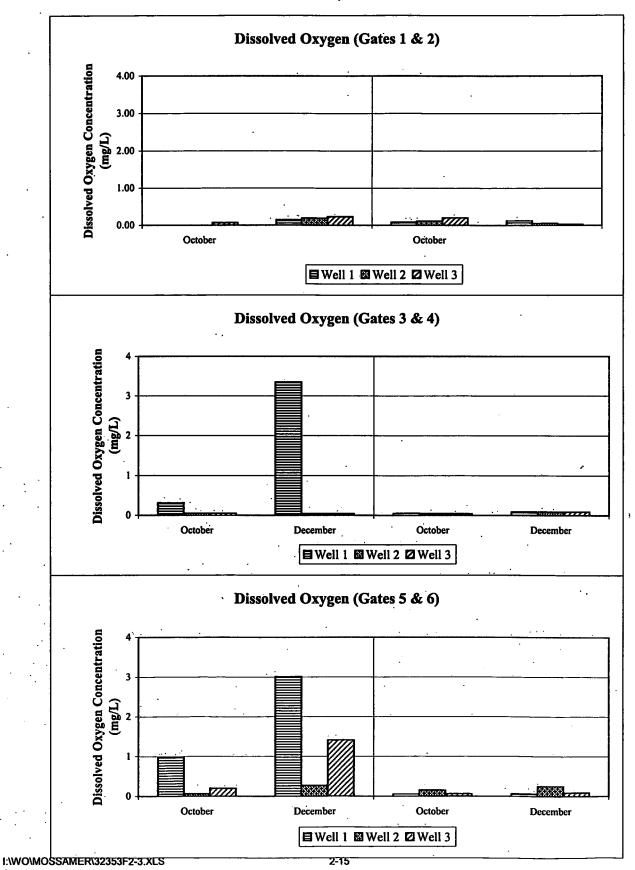


Figure 2-4

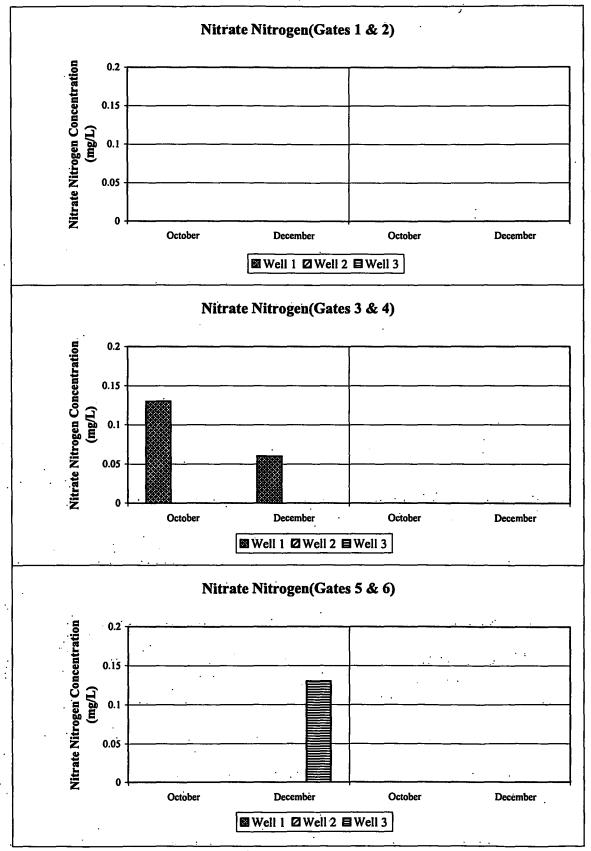


Figure 2-5

Treatment Performance Monitoring Wells
Fourth Quarter 2002
Moss-American Site
Milwaukee, Wisconsin

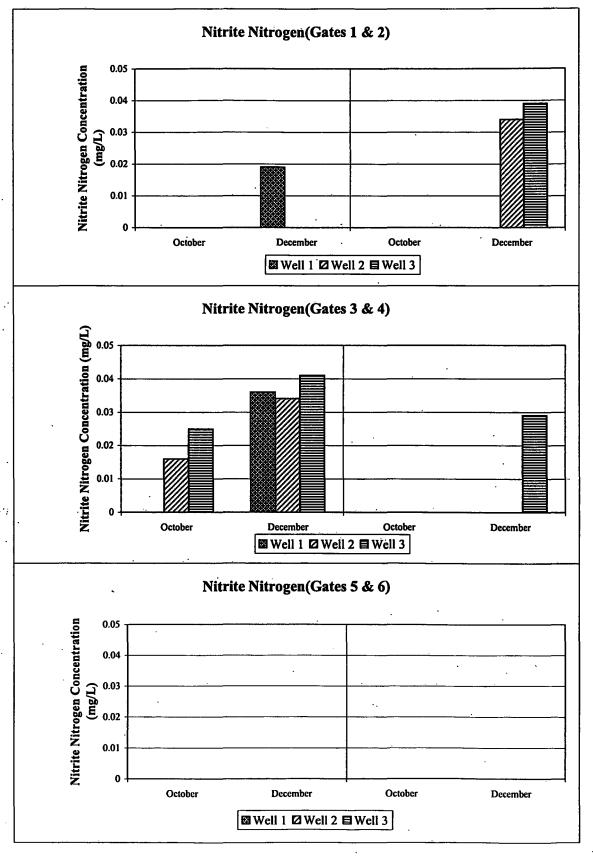


Figure 2-6

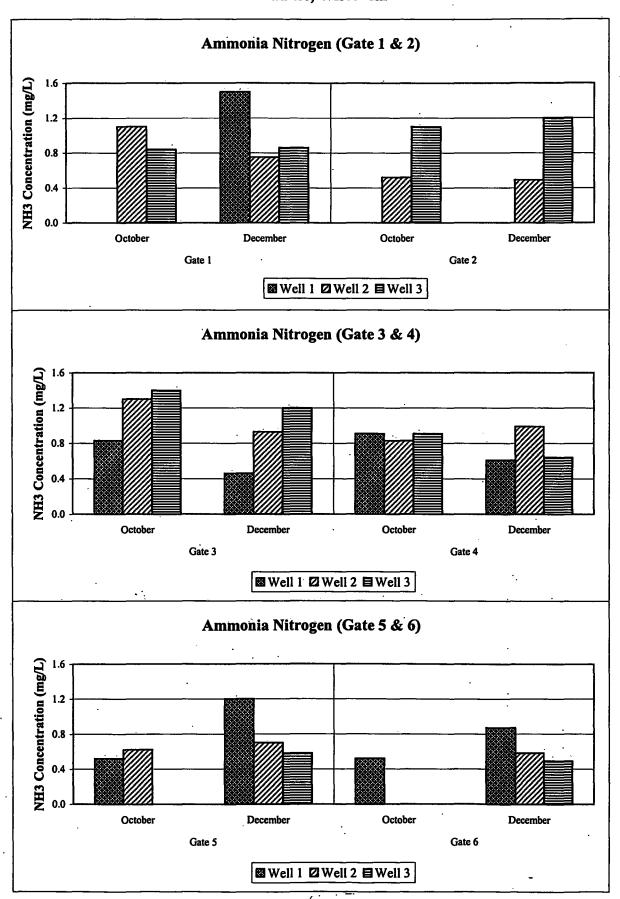


Figure 2-7

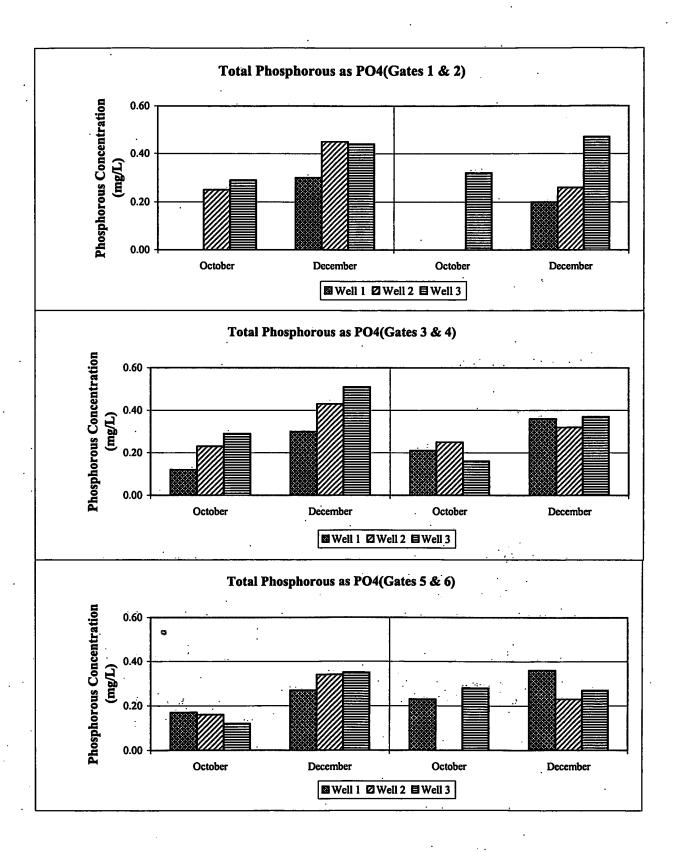


Figure 2-8

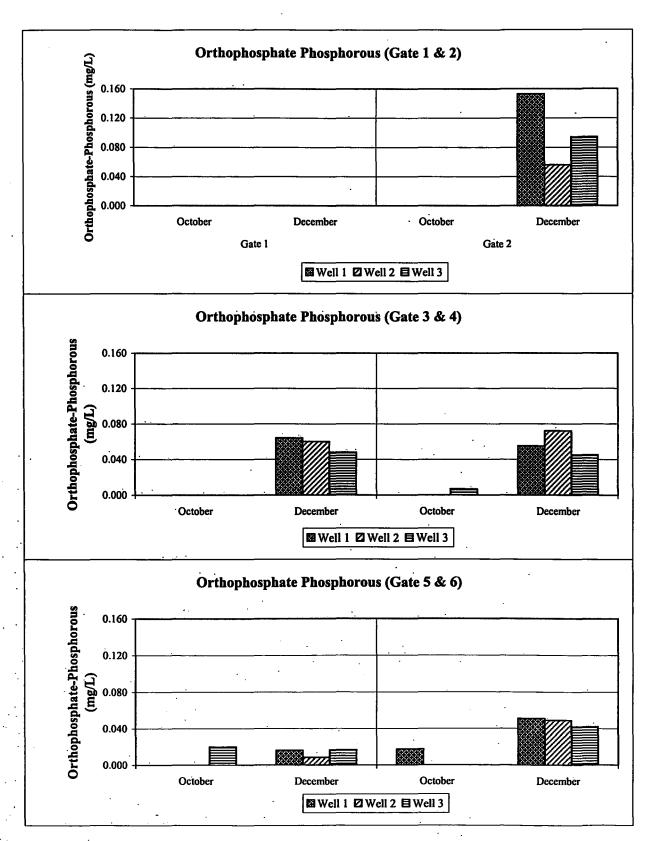


Figure 2-9

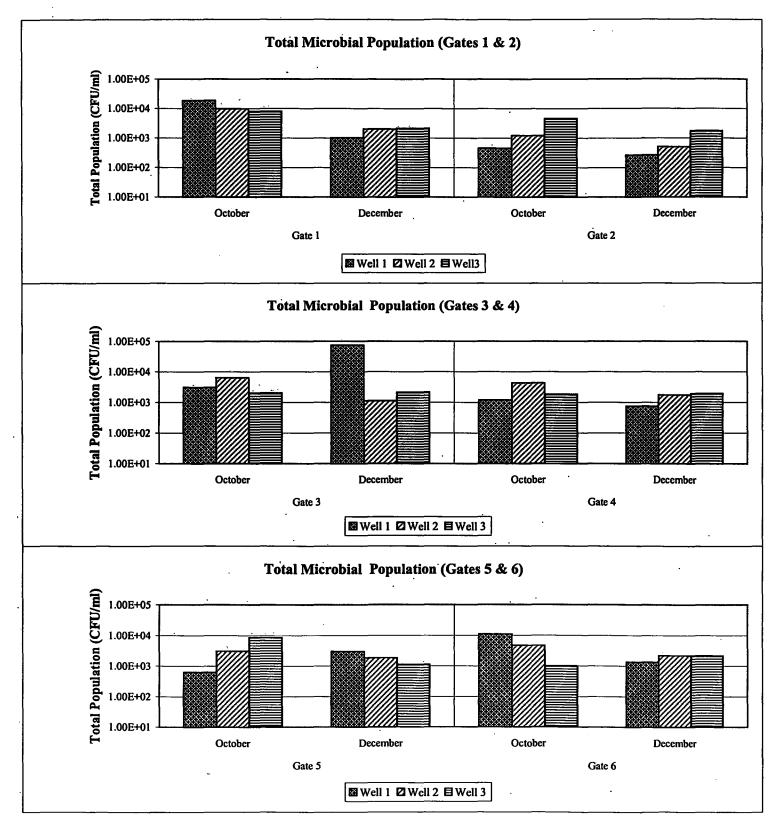


Figure 2-10

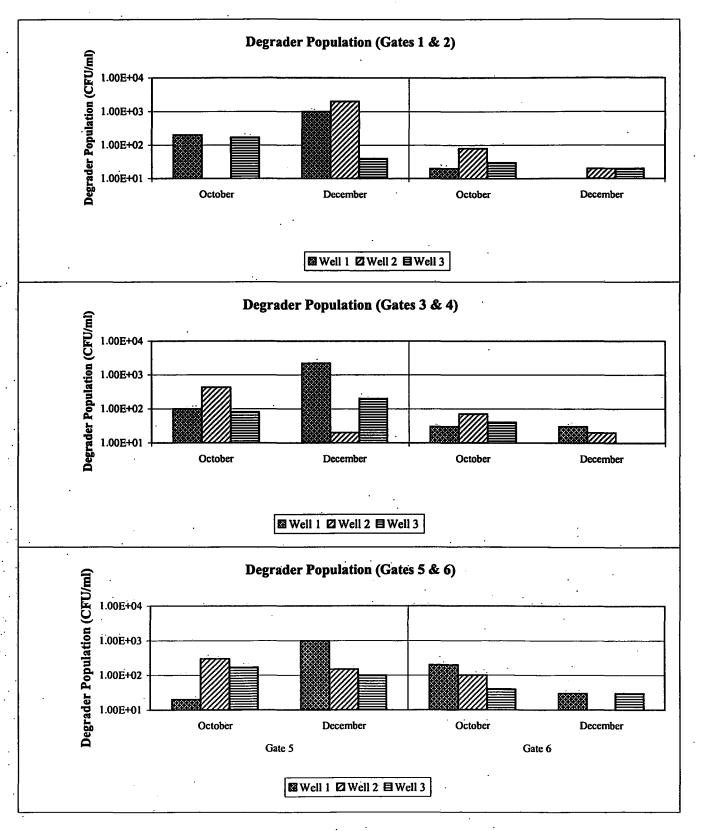


Table 2-1

Groundwater Elevation Measurements Shallow Monitoring and Containment Performance Monitoring Wells Moss-American Site Milwaukee, Wisconsin Fourth Quarter 2002

Well ID	Ground Elevation	TOC Elevation	Depth to Water	GW Elevation	Product Thickness
MW-3S	729.71	731.45	8.05	723.40	ND
MW-5S	723.41	724.63	5.73	718.90	ND
MW-6S	723.11	725.24	4.58	720.66	ND
MW-7S	719.47	721.59	5.57	716.02	ND
MW-9S	719.15	721.66	5.80	715.86	ND
MW-10S	723.95	726.76	7.70	719.06	ND
MW-13S	. 737.73	738.58	4.80	733.78	ND
MW-25S	736.95	739.19	4.53	734.66	ND
MW-26S	732.31	731.87 ·	5.35	726.52	ND
MW-27S	720.57 .	723.10	5.67	717.43	ND
MW-28S	719.64	722.13	5.51	716.62	ND
MW-29S	719.51	. 722.17	5.35	716.82	ND
MW-30S	725.35	727.34	4.90	722.44	ND
MW-31S	725.29	726.61	4.31	722.30	ND
MW-32S	719.68	. 722.79	6.69	716.10	ND
MW-33S	719.25	721.81	6.02	715.79	ND
MW-34S	718.97	721.52	5.38	716.14	TRACE
MW-35S	719.14	721.75	5.45	716.30	ND
MW-36S	720.41	723.21	4.92	718.29	ND
MW-37S	.721.33	723.30	6.35	716.95	ND

Notes: All values in feet.

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

TOC = Top of well casing.

GW = Groundwater.

NM = Not measured.

ND = Not detected.

Surveying performed on 30 December 2002 Bernklau Surveying.

Depth to groundwater was measured on 9 December 2002.

Table 2-3 (continued)

Field-Measured Parameters Treatment Performance Monitoring Wells Moss-American Site Milwaukee, Wisconsin Fourth Quarter 2002

337-11	pH	Specific	Temperature	Redox	Dissolved	TLidit-
Well Number	(Standard Units)	Conductance (mmho/cm)	(°C)	Potential (mV)	Oxygen (mg/L)	Turbidity (NTU)
TG1-1	NM	NM	NM	NM	0.14	NM
TG1-2	6.89	1.022	9.64	32.5	0.19	4.40
TG1-3	6.92	1.043	9.83	40.9	0.23	18.00
TG2-1	6.62	0.762	. 9.66	72.2	0.12	2.77
TG2-2	6.76	0.720	9.69	11.5	0.05	2.77
TG2-3	6.33	1.147	8.87	. 26.0	0.03	1.57
TG3-1	6.52	1.111	9.36	-25.4	3.35	1.50
TG3-2	6.77	0.987	9.29	-32.6	0.04	2.82
TG3-3	6.54	1.095	9.20	-21.5	0.04	7.80
TG4-1	6.93	0.946	8.73	0.0	0.09	6.34
TG4-2	6.91	0.917	9.05	-16.0	0.09	6.89
TG4-3	6.86	0.944	9.30	3.0	0.09	12.80
TG5-1	6.72	0.789	6.95	47.7	3.01	3.90
TG5-2	6.87	. 0.806	7.40	-9.7	0.27	10.50
TG5-3	7.07	0.781	7.73	64.7	1.41	7.51
TG6-1	6.96	1.171	6.96	33.8	0.06	47.0
TG6-2	6.71	. 1.013	9.75	65.9	0.25	61.0
TG6-3	6.38	1.211	8.94	58.4	0.09	221.00

Notes: S- Shallow Well.

TG- Treatment gate performance monitoring well.

NM- Not measured.

mmho/cm- millimho per centimeter.

oC-Degrees Celcius.

mV- millivolt.

mg/L- milligrams per liter.

NTU- Nephelometric turbidity units.

Table 2-4

Groundwater Sample Analytical Results Shallow Groundwater Monitoring Well Samples Moss-American Site Milwaukee, Wisconsin Fourth Quarter 2002

Sample ID:	MW-5S	MW-6S	MW-7S	MW-9S	MW-27S	MW-28S	MW-29S			
Sample Matrix:	Groundwater	WDNR	WDNR							
Sample Date:	12/12/2002	12/11/2002	12/11/2002	12/11/2002	12/11/2002	12/11/2002	12/12/2002	PAL,	ES,	
Units of Measure:	ug/L	ug/L	ug/L							
Parameters										
VOCs										
Benzene	0.2 U	0.2 U	4 U	0.2 U	0.2 U	0.2 U	0.2 U	0.5	5	
Toluene	0.2 U	0.2 U	4 U	0.2 U	0.2 U	0.2 U	0.2 U	68.6	343	
Ethylbenzene	0.2 U	0.2 U	13 J	0.2 U	0.2 U	0.2 U	0.2 U	140	700	
Total Xylenes	0.6 U	0.6 U	31 J	0.6 U	0.6 U	0.6 U	0.6 U	124	620	
PAHs	•									
Acenaphthene	2 U	2 UJ	66 J	2 UJ	2 UJ	2 UJ	2 UJ	NA	NA	
Acenaphthylene	2 U	2 UJ	42 J	2 UJ	2 UJ	2 UJ	2 UJ	NA	NA	
Anthracene	0.04 U	0.04 UJ	600	3000						
Benzo(a)anthracene	0.02 U	0.02 UJ	NA	NA						
Benzo(a)pyrene	0.02 U	0.02 UJ	0.02	0.2						
Benzo(b)fluoranthene	0.04 U	0.04 UJ	0.02	0.2						
Benzo(g,h,i)perylene	0.1 U	0.1 UJ	NA	NA						
Benzo(k)fluoranthene	0.02 U	0.02 UJ	NA	NA						
Chrysene	0.08 U	0.08 UJ	0.02	0.2						
Dibenz(a,h)anthracene	0.04 U	0.04 UJ	NA	NA						
Fluoranthene	0.04 U	0.04 UJ	0.054 J	0.04 UJ	0.04 UJ	0.04 UJ	0.04 UJ	80	400	
Fluorene	0.2 U	0.2 UJ	11 J	0.2 UJ	0.2 UJ	0.2 UJ	0.2 UJ	80	400	
Indeno(1,2,3-cd)pyrene	0.08 U	0.08 UJ	0.08 UJ	0.08 UJ	0.08 UJ	UJ 80.0	0.08 UJ	NA	NA	
Naphthalene	1 U	1 U	2800	1 U	1 U	1 U	1 U_	8	40	
Phenanthrene	0.08 U	0.08 UJ	0.3 J	0.08 UJ	0.08 UJ	0.08 UJ	0.08 UJ	NA	NA	
Рутепе	0.2 U	0.2 UJ	50	250						

Table 2-4 (continued)

Groundwater Sample Analytical Results Containment Performance Monitoring Well Samples Moss-American Site Milwaukee, Wisconsin Fourth Quarter 2002

Sample ID:	MW-30S	MW-31S	MW-32S	MW-33S	MW-34S	MW-35S	MW-36S	MW-37S		
Sample Matrix:	Groundwater	Groundwater	Groundwater	Groundwater	Groundwater	Groundwater	Groundwater	Groundwater	WDNR	WDNR
Sample Date:	12/12/2002	12/12/2002	12/11/2002	12/11/2002	12/11/2002	12/11/2002	12/11/2002	12/11/2002	PAL,	ES,
Units of Measure:	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
Parameters										
VOCs										
Benzene	0.2 U	0.2 U	0.2 U	2 U	5.6 J	0.2 U	0.2 U	0.2 U	0.5	5
Toluene	0.2 U	0.2 U	0.2 U	5.1 J	5 U	0.2 U	0.27 J	0.2 U	68.6	343
Ethylbenzene	0.2 U	0.2 U	0.2 U	18	22 J	0.2 U	0.2 U	0.2 U	140	700
Total Xylenes	0.6 U	0.6 U	0.6 U	62	54 J	0.6 U	0.6 U	0.6 U	124	620
PAHs										
Acenaphthene	2 U	2 U	2 UJ	170 J	310 J	2 UJ	2 U	2 U	NA	NA
Acenaphthylene	2 U	2 U	2 UJ	46 J	69 J	2 UJ	2 U	2 U	NA	NA
Anthracene	0.04 U	0.04 U	0.04 UJ	0.18 J	28 J	0.12 J	0.04 <u>U</u>	0.04 U	600	3000
Benzo(a)anthracene	0.02 U	0.02 U	0.02 UJ	0.02 UJ	15 J	0.027 J	0.02 U	0.02 U	NA_	NA
Benzo(a)pyrene	0.02 U	0.02 U	0.02 UJ	0.02 UJ	E-7 132 5.6 J	0.02 UJ	0.02 U	0.02 U	0.02	0.2
Benzo(b)fluoranthene	0.04 U	0.04 U	0.04 UJ	0.04 UJ	####53 J	0.04 UJ	0.04 U	0.04 U	0.02	0.2
Benzo(g,h,i)perylene	0.1 U	0.1 U	0.1 UJ	0.1 UJ	2.3 J	0.1 UJ	0.1 U	0.1 U	NA	NA
Benzo(k)fluoranthene	0.02 U	0.02 U	0.02 UJ	0.02 UJ	3 J	0.02 UJ	0.02 U	0.02 U	NA	NA
Chrysene	0.08 U	0.08 U	0.08 UJ		超级/3912 J	0.08 UJ	0.08 U	0.08 U	0.02	0.2
Dibenz(a,h)anthracene	0.04 U	0.04 U	0.04 UJ	0.04 UJ	0.92 J	0.04 UJ	0.04 U	0.04 U	NA	NA
Fluoranthene	0.04 U	0.04 U	0.04 UJ	0.04 UJ	17 198 J	0.59 J	0.04 U	0.04 U	80	400
Fluorene	0.2 U	0.2 U	0.2 UJ		65 27 170 J	0.2 UJ	0.2 U	0.2 U	80	400
Indeno(1,2,3-cd)pyrene	0.08 U	0.08 U	0.08 UJ	0.08 UJ	2.1 J	0.08 UJ	0.08 U	0.08 U	NA	NA
Naphthalene	1 U	1 U	1 U	222 2100	3300	1 U	1 U	1 U	8	40
Phenanthrene	0.08 U	0.08 U	0.08 UJ	7.4 J	290 J	0.09 J	0.08 U	0.08 ป	NA	NA
Pyrene	0.2 U	0.2 U	0.2 UJ	0.2 UJ	建立200377 J	0.35 J	0.2 U	0.2 U	50	250

Table 2-4 (continued)

Groundwater Sample Analytical Results Treatment Performance Monitoring Well Samples Moss-American Site Milwaukee, Wisconsin Fourth Quarter 2002

Sample ID:	TG1-1	TG1-2	TG1-3	TG2-1	TG2-2	TG2-3		
Sample Matrix:	Groundwater	Groundwater	Groundwater	Groundwater	Groundwater	Groundwater	WDNR	WDNR
Sample Date:	12/11/2002	12/11/2002	12/11/2002	12/10/2002	12/10/2002	12/10/2002	PAL,	ES,
Units of Measure:	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
Parameters	Parameters							
VOCs								
Benzene	4.9J	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.5	5
Toluene	4 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	68.6	343
Ethylbenzene	36	0.5 J	0.2 U	0.2 U	0.2 U	0.2 U	140	700
Total Xylenes	57 J	0.6 U	0.6 U	0.6 U	0.6 U	0.6 U	124	620
PAHs								
Acenaphthene	4400 J	32 J	2 UJ	2 U	2 U	2 U	NA	NA
Acenaphthylene	300 J	2 UJ	2 UJ	2 U	2 U	2 U	NA	NA
Anthracene	₩₩860 J	1.5 J	0.04 UJ	0.04 U	0.04 U	0.04 U	600	3000
Benzo(a)anthracene	740.J	0.07 J	0.02 UJ	0.02 U	0.02 U	0.02 U	NA	NA
Benzo(a)pyrene	290 J	0.02 UJ	0.02 UJ	0.02 U	0.02 U	0.02 U	0.02	0.2
Benzo(b)fluoranthene	280 J	0.04 UJ	0.04 UJ	0.04 U	0.04 U	. 0.04 U	0.02	0.2
Benzo(g,h,i)perylene	110 J	0.1 UJ	0.1 UJ	0.1 U	0.1 U	0.1 U	NA	NA
Benzo(k)fluoranthene	160 J	0.02 UJ	0.02 UJ	0.02.U	0.02 U	0.02 U	NA	NA
Chrysene		0.08 UJ	0.08 UJ	0.08 U	0.08 U	0.08 U	-0.02	0.2
Dibenz(a,h)anthracene	0.8 UJ	0.04 UJ	0.04 UJ	0.04 UJ	0.04 UJ .	0.04 UJ	. NA	NA
Fluoranthene	4200 J	2.2 J	0.055 J	0.04 U	0.046 J	0.04 U	80	400
Fluorene	海流 3400 J	14 J	0.2 UJ	0.2 U	0.2 U	0.2 U	80	400
Indeno(1,2,3-cd)pyrene	2 UJ	0.08 UJ	0.08 UJ	0.08 UJ	0.08 UJ	0.08 UJ	NA	NA
Naphthalene	8900	36.5 48	1 U	1 U	1 U	1 U	8 ,	40
Phenanthrene	8800 J	11 J	0.08 UJ	0.08 U	0.08 U	0.08 U	NA:	NA
Pyrene	2000年3300 J	1.4 J	0.2 UJ	0.2 U	0.2 U	0.2 U	50	250

Groundwater Sample Analytical Results Treatment Performance Monitoring Well Samples

Moss-American Site Milwaukee, Wisconsin Fourth Quarter 2002

Sample ID:	TG3-1	TG3-2	TG3-3	TG4-1	TG4-2	TG4-3		
Sample Matrix:	Groundwater	Groundwater	Groundwater	Groundwater	Groundwater	Groundwater	WDNR	WDNR
Sample Date:	12/10/2002	12/10/2002	12/10/2002	12/10/2002	12/10/2002	12/10/2002	PAL,	ES,
Units of Measure:	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
Parameters								
VOCs								
Benzene	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.5	5
Toluene	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	68.6	343
Ethylbenzene	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	140	700
Total Xylenes	0.6 U	0.6 U	0.6 U	0.6 U	0.6 U	0.6 U	124	620
PAHs		<u></u>						
Acenaphthene	2 U	2 U_	2 U	2 U	2 U	2 U	NA	NA
Acenaphthylene	2 U	2 U	2 U	2 U	2 U	2 U	NA	NA
Anthracene	0.04 U	0.04 U	0.04 U	0.04 U	0.074 J	0.04 U	600	3000
Benzo(a)anthracene	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	NA	NA
Benzo(a)pyrene	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02	0.2
Benzo(b)fluoranthene	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U	0.02	0.2
Benzo(g,h,i)perylene	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	NA	NA
Benzo(k)fluoranthene	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	NA	NA NA
Chrysene	0.08 U	0.08 U	0.08 U	0.08 U	0.08 U	0.08 U	0.02	0.2
Dibenz(a,h)anthracene	0.04 UJ	0.04 UJ	0.04 UJ	0.04 UJ	0.04 UJ	0.04 UJ	NA	NA
Fluoranthene	0.044 J	0.044 J	0.061 J	0.04 U	0.22	0.04 U	80	400
Fluorene	0.21 J	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	80	400
Indeno(1,2,3-cd)pyrene	0.08 UJ	0.08 UJ	0.08 UJ	0.08 UJ	0.08 UJ	0.08 UJ	NA	NA
Naphthalene	1 U	1 U	1 U	1 U	1 U	1 U	8	40
Phenanthrene	0.08 U	0.08 U	0.11 J	0.08 U	0.08 U	0.08 U	NA	NA
Pyrene	0.2 U	0.2 U	0.2 <u>U</u>	0.2 U	0.2 U	0.2 U	50	250

Groundwater Sample Analytical Results Treatment Performance Monitoring Well Samples

Moss-American Site Milwaukee, Wisconsin Fourth Quarter 2002

Sample ID:	TG5-1	TG5-2	TG5-3	TG6-1	TG6-2	TG6-3			
Sample Matrix:	Groundwater	Groundwater	Groundwater	Groundwater	Groundwater	Groundwater	WDNR	WDNR	
Sample Date:	12/9/2002	12/9/2002	12/9/2002	12/10/2002	12/10/2002	12/10/2002	PAL,	ES,	
Units of Measure:	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	
Parameters									
VOCs									
Benzene	0.2 U	0.2 U	0.2. U	0.2 U	0.2 U	0.2 U	0.5	5	
Toluene	0.2 U	68.6	343						
Ethylbenzene	0.2 U	140	700						
Total Xylenes	0.6 U	124	620						
PAHs	PAHs								
Acenaphthene	2 U	2 U	2 U	2 U	2 U	2 U	NA	NA	
Acenaphthylene	2 U	2 U	2 U	2 U	2 U	2 U	NA	NA	
Anthracene	0.04 U	600	3000						
Benzo(a)anthracene	0.02 U	NA	NA						
Benzo(a)pyrene	0.02 U	0.02 U	0.02 U	0.02 U	₩330.028 J	0.02 U	0.02	0.2	
Benzo(b)fluoranthene	0.04 U	0.02	0.2						
Benzo(g,h,i)perylene	0.1 U	NA	NA						
Benzo(k)fluoranthene	0.02 U	NA	NA						
Chrysene	0.08 U	0.08 U	0.09 U	0.08 U	0.08 U	0.08 U	0.02	0.2	
Dibenz(a,h)anthracene	0.04 U	0.04 UJ	0.04 UJ	0.04 UJ	0.095 J	0.04 UJ	NA	NA	
Fluoranthene	0.04 U	0.075 J	0.065 J	0.04 U	0.088 J	0.058 J	80	400	
Fluorene	0.2 U	-80	400						
Indeno(1,2,3-cd)pyrene	0.08 U	0.08 U	0.09 U	0.08 UJ	0.11 J	0.08 UJ	NA	NA	
Naphthalene	1 U	1 U	1 U	1 U	1 U	1 U	8	40	
Phenanthrene	. 0.08 U	0.08 U	0.09 U	0.08 U	0.08 U	0.08 U	NA	NA	
Pyrene	0.2 U	50	250						

Groundwater Sample Analytical Results Field Duplicate Samples Moss-American Site Milwaukee, Wisconsin Fourth Quarter 2002

C				7041777						
Sample ID:	MW-35S-DUP	MW-37S-DUP	TG2-2-DUP	TG5-1-DUP						
Sample Matrix:	Groundwater	Groundwater	Groundwater	Groundwater	WDNR	WDNR				
Sample Date:	12/11/2002	12/12/2002	12/10/2002	12/9/2002	PAL,	ES,				
Units of Measure:	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L				
Parameters										
VOCs										
Benzene	0.2 U	0.2 U	0.2 U	0.2 U	0.5	5				
Toluene	0.2 U	0.2 U	0.2 U	0.2 U	68.6	343				
Ethylbenzene	0.2 U	0,2 U	0.2 U	0.2 U	140	700				
Total Xylenes	0.6 U	0.6 U	0.6 U	0.6 U	124	620				
PAHs										
Acenaphthene	2 UJ	2 U	2 U	2 U	NA	NA				
Acenaphthylene	2 UJ	2 U	2 U	2 U	NA	NA				
Anthracene	. 0.14 J	0.04 U	0.04 U	0.04 U	600	3000				
Benzo(a)anthracene	0.031 J	0.02 U	0.02 U	0.02 U	NA	NA				
Benzo(a)pyrene	0.02 UJ	0.02 U	0.02 U	0.02 U	0.02	0.2				
Benzo(b)fluoranthene	0.04 UJ	0.04 U	0.04 U	0.04 U	0.02	0.2				
Benzo(g,h,i)perylene	0.1 UJ	0.1 U	0.1 U	0.1 U	NA	NA				
Benzo(k)fluoranthene	0.02 UJ	0.02 U	0.02 U	0.02 U	NA	NA				
Chrysene	0.08 UJ	0.08 U	0.08 U	0.08 U	0.02	0.2				
Dibenz(a,h)anthracene	0.04 UJ	0.04 U	0.04 UJ	0.04 UJ	NA	NA				
Fluoranthene	0.7 J	0.04 U	0.046 J	0.04 U	80	400				
Fluorene	0.2 UJ	0.2 U	0.2 U	0.2 U	80	400				
Indeno(1,2,3-cd)pyrene	0.08 UJ	0.08 U	0.08 UJ	0.08 U	NA	NA				
Naphthalene	1 U	1 U	1 U	1 U	8	40				
Phenanthrene	0.11 J	0.08 U	0.08 U	0.08 U	NA	NA				
Pyrene	0.42 J	0.2 U	0.2 U	0.2 U	50	250				

Groundwater Sample Analytical Results Matrix Spike/Matrix Spike Duplicate Samples Moss-American Site Milwaukee, Wisconsin Fourth Quarter 2002

Sample ID:	MW-29S-MS	MW-29S-MSD	TG6-2-MS	TG6-2-MSD		
Sample Matrix:	Groundwater	Groundwater	Groundwater	Groundwater	WDNR	WDNR
Sample Date:	12/12/2002	12/12/2002	12/10/2002	12/10/2002	PAL,	ES,
Units of Measure:	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
Parameters						
VOCs						
Benzene	20	20	22	22	0.5	5
Toluene	22	22	22	23	68.6	343
Ethylbenzene	22	22	23	23	140	700
Total Xylenes	66	66	68	70	124	620
PAHs						
Acenaphthene	170	180	180	180	NA	NA
Acenaphthylene	150	160	160	160	NA	· NA
Anthracene	2.7	2.7	2.8	2.8	600	3000
Benzo(a)anthracene	1.4	1.4	1.4	1.5	NA	NA
Benzo(a)pyrene	1.5	1.5	1.5	1.5	0.02	0.2
Benzo(b)fluoranthene	1.2	1.1	1.1	1.2	0.02	0.2
Benzo(g,h,i)perylene	11	11	11	11	NA	NA
Benzo(k)fluoranthene	1.2	1.2	1.1	1.2	NA	NA
Chrysene	5.7	5.6	5.6	5.7	0.02	0.2
Dibenz(a,h)anthracene	3	3	2.9 J	2.9 J	NA	NA
Fluoranthene	3	3	3.1	3.1	80	400
Fluorene	16	17	17	17	80	400
Indeno(1,2,3-cd)pyrene	6.3	6.3	6.3 J	6.4 J	NA	NA
Naphthalene	150	160	160	150	8	40
Phenanthrene	5	5.2	5.4	5.4	NA	NA
Pyrene	18	18	19	19	50	250

Groundwater Sample Analytical Results Field Blank Samples Moss-American Site Milwaukee, Wisconsin Fourth Quarter 2002

Sample ID:	FB-01	FB-02		
Sample Matrix:	Groundwater	Groundwater	WDNR	WDNR
Sample Date:	12/10/2002	12/12/2002	PAL,	ES,
Units of Measure:	ug/L	ug/L	ug/L	ug/L
Parameters	<u> </u>	<u> </u>	ug/D	ug/LJ
VOCs				
Benzene	0.2 U	0.2 U	0.5	5
Toluene	0.2 U	0.2 U	68.6	343
Ethylbenzene	0.2 U	0.2 U	140	700
Total Xylenes	0.6 U	0.6 U	124	620
PAHs				
Acenaphthene	2 U	2 UJ	NA	NA
Acenaphthylene	2 U	2 UJ	NA	NA
Anthracene	0.04 U	0.04 UJ	600	3000
Benzo(a)anthracene	0.02 U	0.02 UJ	NA	NA
Benzo(a)pyrene	0.032 J	0.02 UJ	0.02	0.2
Benzo(b)fluoranthene	0.04 U	0.04 UJ	0.02	0.2
Benzo(g,h,i)perylene	0.1 U	0.1 UJ	NA	NA
Benzo(k)fluoranthene	0.02 U	0.02 UJ	NA	NA
Chrysene	0.08 U	0.08 UJ	0.02	0.2
Dibenz(a,h)anthracene	0.04 UJ	0.04 UJ	NA	NA
Fluoranthene	0.04 U	0.04 UJ	80	400
Fluorene	0.2 U	0.2 UJ	80	400
Indeno(1,2,3-cd)pyrene	0.08 UJ	0.08 UJ	NA	NA
Naphthalene	1 U	. 1 U	8	40
Phenanthrene	0.08 U	0.08 UJ	NA	NA
Pyrene	0.2 U	0.2 UJ	50	250

Groundwater Sample Analytical Results Table Notes Moss-American Site Milwaukee, Wisconsin Fourth Quarter 2002

- 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.
- NM Not measured.
- Shaded values indicate concentration exceeding PAL.
- Shaded and bold values indicate concentration exceeding PAL and ES.

Table 2-5

Concentration Trends in Groundwater Monitoring Wells First Quarter 2000 through Fourth Quarter 2002 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 '00)	4.00	5.20	0.20 U					
Second Quarter (June '00)	3.40	4.00 J	0.20 U	0.20 U	1.00 U	9.50 J	0.20 U	
Third Quarter (September '00)	25.0	4.00 U	0.20 U	0.20 U	1.00 U	8.10 J	0.20 U	2.80
Fourth Quarter (December '00)	2.60	3.40 J	0.20 U	0.20 U	8.30 J	2.00 U	0.20 U	7.00
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	2.80
Second Quarter (June '01)		2.90 J	0.20 U	0.20 U	1.00 U	6.80 J	0.20 U	5.00
Third Quarter (September '01)		3.70 J	0.20 U	0.20 U	1.00 U	9.00 J	0.20 U	3.10
Fourth Quarter (December '01)		7.70 J		0.20 U	1.00 U	6.10 J	0.20 U	5.70
First Quarter (March '02)		3.6 J		0.20 U	1.00 U	8.9 J	0.20 ั	4.3 J
Second Quarter (June '02)		0.43 J		0.20 U	2 J	12.00	0.20 U	3.2 J
Third Quarter (September '02)		5 U		0.20 U	4 UJ	10 UJ	0.20 U	1.30
Fourth Quarter (December '02)		4 U		0.20 U	2 U	5.6 J	0.20 U	4.9 J
Naphthalene (ug/L)								
First Quarter (March '00)	1,020	3,950	9.80 J					
Second Quarter (June '00)	364 J	4,260	6.96 J	40.70	1,920	5,980	42.70	
Third Quarter (September '00)	810	3,960	15.30 J	59.30	2,220	5,720	0.78 U	475
Fourth Quarter (December '00)	720	3,470	10.00 J	1.25 J	1,760	5,050	0.94 J	3,300
First Quarter (March '01)	830	3,800	8.60 J	0.78 U	2,900	5,900	2.36 J	1,890
Second Quarter (June '01)		3,200	8.00 J	0.80 U	2,900	5,700	1.00 J	2,200
Third Quarter (September '01)		3,700	22.00	1.00 U	2,600	6,200	1.00 J	2,400
Fourth Quarter (December '01)		3,300		1.00 U	2,100	6,700	1.00 U	2,600
First Quarter (March '02)		2,100		1.00 U	2,200	5,400	1.00 U	2,400
Second Quarter (June '02)		3,000		1.00 U	2,900	6,100	0.90 U	1,500
Third Quarter (September '02)		4,000		1.00 U	2,700	7,000	1.00 U	1,200
Fourth Quarter (December '02)		2,800		1.0 U	2,100	5,300	1.00 U	8,900

Concentration Trends in Groundwater Monitoring Wells First Quarter 2000 through Fourth Quarter 2002

Moss-American Site

		Mi	lwankaa W	icconcin				
	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 '00)	281	15.8	55.5					
Second Quarter (June '00)	223	12.8	53.2	0.17 U	1.41	89.0	4.92	
Third Quarter (September '00)	103	14.2	74.6	0.19	5.86	73.0 J	0.17 U	16.2
Fourth Quarter (December '00)	217	12.7	40.1	0.82 U	15.0	74.0	0.23 J	69.2
First Quarter (March '01)	210	10.0	43.0	0.17 U	19.0	83.0	0.31 J	72.0
Second Quarter (June '01)		8.5	56.0	0.20 U	27.0	80.0	0.20 U	59.0
Third Quarter (September '01)		11.0	60.0	0.20 U	34.0	120.0	0.20 U	410
Fourth Quarter (December '01)		11.0		0.20 U	32.0	320.0	0.20 U	80
First Quarter (March '02)		8.0		0.20 U	37.0	80.0	0.20 U	270
Second Quarter (June '02)		7.0		0.20 U	50.0	120.0	0.20 U	70
Third Quarter (September '02)		11.0		0.20 U	60.0	130.0	0.20 U	330
Fourth Quarter (December '02)		11.0		0.20 UJ	59.0J	170.0J	0.20 UJ	3400J
Benzo(a) pyrene (ug/L)								
First Quarter (March '00)	8.40	0.21 U	1.440				+	
Second Quarter (June '00)	1.70 J	0.021 U	0.361	0.02 U	0.02 U	2.00 U	0.162	
Third Quarter (September '00)	6.70 J	0.019 U	0.890	0.02 U	0.02 U	0.10	0.153	0.052
Fourth Quarter (December '00)	0.051 J	0.02 U	0.096 U	0.021 U	0.02 U	0.031 J	0.138	0.19 U
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 Ј	0.02 U	0.02 U	3.00	0.020 J	33.0
Fourth Quarter (December '01)		0.02 U		0.02 U	0.02 U	19.00	0.030 J	0.050 J
First Quarter (March '02)		0.02 U		0.02 U	0.02 U	0.20	0.020 U	23
Second Quarter (June '02)		0.02 J		0.02 U	0.02 U	4.00	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	5.6J	0.02 UJ	290Ј

^{--- -} 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 2-6

Groundwater Sample Analytical Results Treatment Peformance Monitoring Wells - Nutrient and Biological Parameters Moss-American Site Milwaukee, Wisconsin Fourth Quarter 2002

•			Sample Id	lentification		
Parameter (mg/L)	TG	1-1	TO	G1-2	TO	G1-3
	October	December	October	December	October	December
Ammonia Nitrogen	0.46 U	1.5	1.1	0.75 J	0.84 J	0.86 J
Biochemical Oxygen Demand (BOD)	NM	34.8	NM	4.4 U	NM	4.3 U
Chemical Oxygen Demand (COD)	NM	148	NM	32.2	NM	28.1
Kjeldahl Nitrogen	1.9	2.3 J	1.7	1.4	1.1	1.1
Nitrate Nitrogen	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U
Nitrite Nitrogen	0.015 U	0.019 J	0.015 U	0.015 U	0.015 ·U	0.015 U
Ortho-Phosphate as P	0.0066 . U	0.0066 U	0.0066 U	0.0066 U	0.0066 U	0.0066 U
Total Organic Carbon (non-purgable)	NM	17.3	NM	12.3	NM	9.99
Total Phosphorous as PO4	0.12 U	0.3	0.25	0.45	0.29	0.44
Total Microbial Population (mean)	1.87E+04	1.01E+03	9.80E+03	2.03E+03	8.00E+03	2.16E+03
Degrader Microbial Population (mean)	2.00E+02	1.00E+03	1.00E+01	2.00E+03	1.70E+02	4.00E+01
	TG	2-1	TG2-2		TG2-3	
•	October	December	October	December	October	December
Ammonia Nitrogen	0.46 U	0.46 U	0.52 J	0.49 J	1.1	1.2
Biochemical Oxygen Demand (BOD)	NM .	2.6 U	NM	2.8 U	NM	5.5 U
Chemical Oxygen Demand (COD)	NM	6.8 J	NM	8.4	NM	32.3
Kjeldahl Nitrogen	0.47 J	0.3 U	0.9 J	0.43 J	1.8	1.6
Nitrate Nitrogen	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U
Nitrite Nitrogen	0.015 U	0.015 U	0.015 U	0.034 J	0.015 U	0.039 J
Ortho-Phosphate as P	0.0066 U	0.153	0.0066 U	0.056	0.0066 U	0.094
Total Organic Carbon (non-purgable)	NM	2.59	NM	3.15	NM	12.7
Total Phosphorous as PO4	0.12 U	0.2	0.12 U	0.26	0.32	0.47
Total Microbial Population (mean)	4.50E+02	2.60E+02	1.22E+03	5.00E+02	4.60E+03	1.75E+03
Degrader Microbial Population (mean)	2.00E+01	1.00E+01	8.00E+01	2.00E+01	3.00E+01	2.00E+01

Groundwater Sample Analytical Results Treatment Performance Monitoring Wells - Nutrient and Biological Parameters Moss-American Site Milwaukee, Wisconsin Fourth Quarter 2002

			Sample Id	lentification		
Parameter (mg/L)	TG	7 3-1	TO	G3-2	TO	3-3
	October	December	October	December	October	December
Ammonia Nitrogen	0.83 J	0.46 J	1.3	0.93 J	1.4	1.2
Biochemical Oxygen Demand (BOD)	NM	2.9 U	NM	5.6 U	NM.	6.4
Chemical Oxygen Demand (COD)	NM	26.2	NM	23.2	NM	39.5
Kjeldahl Nitrogen	2.2	0.4 J	1.7	1.3	2.3	2.3
Nitrate Nitrogen	0.13	0.06 J	0.04 U	0.04 U	0.04 U	0.04 U
Nitrite Nitrogen	0.015 U	0.036 J	0.016 J	0.034 J	0.025 J	0.041 J
Ortho-Phosphate as P	0.0066 U	0.064	0.0066 U	0.06	0.0066 U	0.048
Total Organic Carbon (non-purgable)	NM	10.9	NM	8.82	NM	14.4
Total Phosphorous as PO4	0.12 J	0.3	0.23	0.43	0.29	0.51
Total Microbial Population (mean)	3.10E+03	7.50E+04	6.40E+03	1.13E+03	2.01E+03	2.15E+03
Degrader Microbial Population (mean)	1.00E+02	2.20E+03	4.30E+02	2.00E+01	8.00E+01	2.00E+02
	TG	34-1·	TG4-2		TG	4-3
	October	December	October	December	October	December
Ammonia Nitrogen	0.91 J	0.61 J	0.83 J	0.99 J	0.91 J	0.64 J
Biochemical Oxygen Demand (BOD)	NM_	2.7 U	NM	3.6 U	NM	2.5 U
Chemical Oxygen Demand (COD)	NM	26.2	NM:	26.6	NM	24.3
Kjeldahl Nitrogen	1.1	0.79 J	1.3	1.2	1.2	1 J
Nitrate Nitrogen	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U
Nitrite Nitrogen	0.015 U	0.015 U	0.015 U	0.015 U	0.015 U	0.029 J
Ortho-Phosphate as P	0.0066 U	0.055	0.0066 U	0.072	0.0067 J	0.045
Total Organic Carbon (non-purgable)	NM	8.09	NM	11.5	NM	9.95
Total Phosphorous as PO4	0.21	0.36	0.25	0.32	0.16 J	0.37
Total Microbial Population (mean)	1.18E+03	7.50E+02	4.30E+03	1.75E+03	1.83E+03	1.93E+03
Degrader Microbial Population (mean)	3.00E+01	3.00E+01	7.00E+01	2.00E+01	4.00E+01	<10

Groundwater Sample Analytical Results Treatment Performance Monitoring Wells - Nutrient and Biological Parameters Moss-American Site Milwaukee, Wisconsin Fourth Quarter 2002

	1		Sample Id	lentification		
Parameter (mg/L)	TO	5 5-1		G5-2	TG	5-3
	October	December	October	December	October	December
Ammonia Nitrogen	0.52 J	1.2	0.62 J	0.7 J	0.46 U	0.58 J
Biochemical Oxygen Demand (BOD)	NM	2.6 U	NM	2.5 U	NM	2.8 U
Chemical Oxygen Demand (COD)	NM	10.3	NM	14.8	NM	27
Kjeldahl Nitrogen	0.75 J	0.3 U	1	0.75 J	0.63 J	0.48 J
Nitrate Nitrogen	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U	0.13
Nitrite Nitrogen	0.015 U	0.015 U	0.015 U	0.015 U	0.015 U	0.015 U
Ortho-Phosphate as P	0.0066 U	0.0161 J	0.0066 U	0.0085 J	0.0198 J	0.0166 J
Total Organic Carbon (non-purgable)	NM	4.75	NM	6.19	NM	6.02
Total Phosphorous as PO4	0.17 J	0.27	0.16 J	0.34	0.12 J	0.35
Total Microbial Population (mean)	6.30E+02	3.00E+03	3.10E+03	1.84E+03	8.80E+03	1.11E+03
Degrader Microbial Population (mean)	2.00E+01	1.00E+03	3.00E+02	1.50E+02	1.70E+02	1.00E+02
	TO	3 6-1	TO	G6-2	TG	6-3
	October	December	October	December	October	December
Ammonia Nitrogen	0.52 J	0.87 J	0.46 U	0.58 J	0.46 U	0.49 J
Biochemical Oxygen Demand (BOD)	NM	3.3 U	NM	3 U	NM ,	3.4 U
Chemical Oxygen Demand (COD)	NM	21.3	NM	17.5	NM	19.4
Kjeldahl Nitrogen	0.89 J	0.95 J	1.1	0.74 J	1.2	0.85 J
Nitrate Nitrogen	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U
Nitrite Nitrogen	0.015 U	0.015 U	0.015 U	0.015 U	0.015 U	0.015 U
Ortho-Phosphate as P	0.0173 J	0.051	0.0066 U	0.049	0.0066 U	0.042
Total Organic Carbon (non-purgable)	NM	8.82	NM	7.22	NM	8.01
Total Phosphorous as PO4	0.23	0.36	0.12 U	0.23	0.28	0.27
Total Microbial Population (mean)	1.10E+04	1.36E+03	4.70E+03	2.19E+03	1.00E+03	2.18E+03
Degrader Microbial Population (mean)	2.00E+02	3.00E+01	1.00E+02	<10	4.00E+01	3.00E+01

[.] U - Compound not detected. Detection limit indicated.

J - Estimated value.

NA - Not analyzed.

NS - Well not measured due to freezing conditions.

SECTION 3

EVALUATION OF PILOT SCALE OPERATIONS

Augmentation of the groundwater treatment system was initiated in October 2000 by injecting air at the treatment gates. In late June 2001, nutrient addition was initiated at TG1 using a solution containing potassium nitrate (KNO₃) and potassium phosphate (KHPO₄). 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 anomalous during Q4 2002. Levels were very low during October 2002, but there were a few higher DO readings during December 2002. The higher DO readings were found in wells TG3-1 (3.35 mg/L), TG5-1 (3.01 mg/L), TG5-3 (1.41 mg/L), MW-5S (2.37 mg/L), MW-31S (2.24 mg/L), and MW-36S (3.01 mg/L) in December. The cause for the DO anomalies is uncertain but could be attributable to equipment malfunction due to cold weather. However, the DO concentrations in these wells indicate that oxidizing conditions may exist. The redox potential readings seem to affirm this as most of the wells had positive redox potentials. The only negative redox potential measured during December 2002 was -25.4 mV in well TG3-1. However, the ratio of NO₃-N to NH₃-N for the gate wells was 1:37.5 for well TG3-1; 1:30 for well TG5-1; and 1:4.5 for well TG5-3. This information suggest nitrogen is primarily present in its reduced state, indicating a reducing environment exists in the wells. No nitrogen data is available 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 last quarter and this quarter. KMC/WESTON attempted to install inflatable bladder packers in TG1 and TG2 injection wells in August 2001. However, KMC/WESTON was unable to properly install the packers 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. Nutrient and contaminant levels will still be monitored, however.

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 (6.33 to 7.26 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. TG2-1 and TG2-2 were the only wells that exhibited the desired C:N:P ratio. In the recent past, no wells displayed the desired C:N:P ratio. On a sitewide basis, the C:N:P ratio is 100:9.4:0.8, which is very close to the desired ratio. Nitrogen and phosphorus are the limiting nutrients at the site.

3.3 BACTERIAL POPULATIONS

Total bacteria counts in TG1 fluctuated during Q4 2002. Bacteria counts in wells TG1-1 and TG1-2 decreased in October 2002 when compared to last quarter's counts but rebounded again in December 2002. Bacteria counts in well TG1-3 continued to decline since Q3 2002. The TG-2 wells also exhibited a decline in bacterial counts since the last quarter of sampling. 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 total bacteria levels in TG1 and TG2 since Q1 2001. It is not known what is the cause of this bacterial decrease at the site. Since air injection began in October 2000, degrader populations in TG1 have typically been higher than in TG2. This same general trend was evident this quarter as well. 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 2002.

3.5 SITE MODIFICATIONS

Per the Q2 2002 Monitoring Report recommendations, modifications have been made to the system at the site. Beginning at the end of 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). PZ-08 could not be installed due to muddy site conditions, and PZ-01 had to be relocated from its proposed location due to the steep grade at that spot. It was placed between gates 3 and 6 instead. Hydraulic conductivity tests were also performed on these newly installed piezometers. This additional work and data is currently being reviewed and analyzed. A report summarizing this work will be produced in the near future.

From this investigation, a new round of surveying was performed to verify elevations of the monitoring wells and ground elevations. Records were updated with this information, and it was used to prepare the groundwater elevation contour map for this quarter. Tables 2-1 and 2-2 reflect this new information as well.

Figure 3-1

Comparison of Degrader Populations in Treament Gates 1 and 2 since Q1 2001

Moss-American Site

Milwaukee, Wisconsin

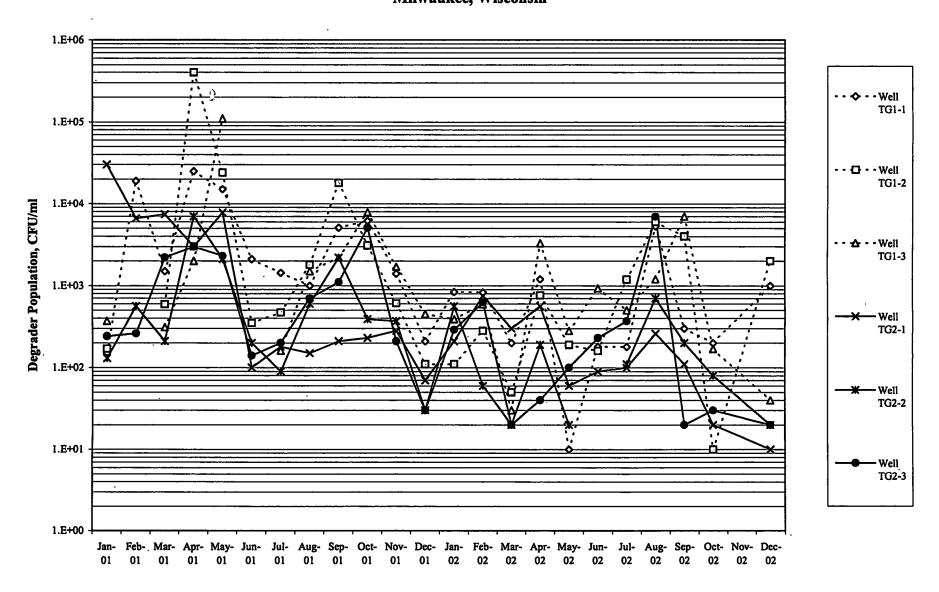


Table 3-1

Calculation of Carbon:Nitrogen:Phosphorous Ratios Treatment Performance Monitoring Wells Moss-American Site Milwaukee, Wisconsin Fourth Quarter 2002

				C-N-P Ratio
Well	Carbon ¹ , mg/L	Total Nitrogen ² , mg/L	Phosphorous ³ , mg/L	
TG1-1	17.3	1.519	ND	100 - 88 - 00
TG1-2	12.3	0.75	ND	100 - 619 - 00
TG1-3	9.99	0.86	ND	100 - 864 - 00
TG2-1	2.59	0.46	0.153	100 - 17.8 - 5.9
TG2-2	3.15	0.524	0.056	100 - 16.6 - 1.8
TG2-3	12.7	1.239	0.094	100 - 29.85 - 0.7
TG3-1	10.9	0.556	0.064	100 - 55:12 - 0.6
TG3-2	8.82	0.964	0.06	100 - 10.9 - 0.7
TG3-3	14.4	1.241	0.048	100 - 8.65 - 0.3
TG4-1	8.09	0.61	0.055	100 - 7.5 - 0.7
TG4-2	11.5	0.99	0.072	100 - 8.6 - 0.6
TG4-3	9.95	0.669	0.045	100 - 6.74 - 0.5
TG5-1	4.75	1.2	0.0161	100 - 25.3 - 0.3
TG5-2	6.19	0.7	0.0085	100 - 141-3 - 091
TG5-3	6.02	0.71	0.0166	100 - 118 - 03
TG6-1	. 8.82	0.87	0.051	100 - 999 - 0.6
TG6-2	7.22	0.58	0.049	100 - 8.0 0.7
TG6-3	8.01	0.49	0.042	100 - 6.12 - 0.5
Site Average	9.0	0.83	. 0.046	100 - 10.4 - 0.8

- 1- Carbon measured as Total Organic Carbon (non-purgable).
- 2- Total Nitrogen measured as NH₃-N, NO₂-N, and NO₃-N.
- 3- Phosphorous measured as Orthophosphate (PO₄-P).
- ND- Constituents not detected.

Shaded values indicate values less than desired ratio.

APPENDIX A

MONTHLY FIELD-MEASURED PARAMETERS FOR TREATMENT PERFORMANCE MONITORING WELLS

Appendix A

Monthly Field-Measured Parameters for Treatment Performance Monitoring Wells

			pH	Specific Conductance	Redox Potential	Dissolved oxygen	Turbidity
Well Number	Date	Temperature (°C)	(Standard Units)	(mmhos/cm)	(mV)	(mg/L)	(NTU)
TG1-1	10/24/2002	11.56	6.88	1.042	-15.7	NM	NM NM
	12/9/2002	NM	NM	NM	NM	0.14	NM NM
TG1-2	10/24/2002	13.35	6.83	1.025	-39.9	0.10	NM
	12/11/2002	9.64	6.89	1.022	32.5	0.19	4.40
TG1-3	10/24/2002	13.20	6.90	1.036	-5.4	0.07	NM
	12/11/2002	9.83	6.92	1.043	40.9	0.23	18.00
TG2-1	10/24/2002	12.61	6.70	0.797	70.8	0.08	NM_
	12/10/2002	9.66	6.62	0.762	72.2	0.12	2.77
TG2-2	10/24/2002	12.35	6.87	0.768	-18.0	0.11	NM
	12/10/2002	9.69	6.76	0.720	11.5	0.05	2.77
TG2-3	10/24/2002	12.96	6.49	1.222	11.2	0.20	NM
102-0	12/10/2002	8.87	6.33	1.147	26.0	0.03	1.57
TG3-1	10/24/2002	13.72	6.51	1.165	29.6	0.31	NM
103-1	12/10/2002	9.36	6.52	1.111	-25.4	3.35	1.50
TG3-2	10/24/2002	13.23	6.78	1.010	-48.1	0.05	NM
163-2	12/10/2002		6.77	0.987	-32.6	0.04	2.82
	10/24/2002		6.51	1.180	-32.0	0.05	NM
TG3-3	12/10/2002		6.54	1.095	-21.5	0.04	7.80
	10/23/2002		7.00	0.893	-5.7	0.05	NM
TG4-1	12/10/2002		6.93	0.946	. 0.0	0.09	6.34
	10/23/2002		7.02	0.903	-27.3	0.04	NM
TG4-2	12/10/2002		6.91	0.917	-16.0	0.09	6.89
	10/23/2002		6.95	0.919	-4.9	0.04	NM
TG4-3	12/10/2002		6.86	0.944	3.0	0.09	12.80
	10/23/2002		6.81	0.878	34.5	0.98	NM
TG5-1	12/9/2002		6.72	0.789	47.7	3.01	3.90
	10/23/2002		6.98	0.913	-37.2	0.06	NM
TG5-2	12/9/2002		6.57	0.806	-9.7	0.27	10.50
	•			0.838	140.9	0.20	
TG5-3	10/23/2002		6.99 7.07	0.781	64.7		7.51
	12/9/2002					1.41	7.51
TG6-1	10/23/2002		6.76	1.156	49.1	0.05	NM 47.00
	12/10/2002		6.96	1.171	33.8	0.06	47.00
TG6-2	10/23/2002		6.66	1.144	88.5	0.15	NM NM
	12/10/2002		6.71	1.013	65.9	0.25	61.00
TG6-3	10/23/2002		6.70	1.253	31.2	0.06	NM
	12/10/2002	8.94	6.38	1.211	58.4	0.09	221.00

NM- Not Measured.

APPENDIX B

OCTOBER 2002 GROUNDWATER SAMPLE ANALYTICAL RESULTS



ANALYTICAL RESULTS

Prepared for:

Kerr-McGee Corporation P.O. Box 25861 Oklahoma City OK 73125

405-270-2602

Prepared by:

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



SAMPLE GROUP

The sample group for this submittal is 828130. Samples arrived at the laboratory on Thursday, October 24, 2002.

Client Description	Lancaster Labs Number
MA3-TG5-1-231002-04 Grab Water Sample	3926453
MA3-TG5-2-231002-05 Grab Water Sample	3926454
MA3-TG5-3-231002-06 Grab Water Sample	3926455
MA3-TG6-1-231002-01 Grab Water Sample	3926456
MA3-TG6-2-231002-02 Grab Water Sample	3926457
MA3-TG6-3-231002-03 Grab Water Sample	3926458
MA3-TG4-1-231002-07 Grab Water Sample	3926459
MA3-TG4-2-231002-08 Grab Water Sample	3926460
MA3-TG4-3-231002-09 Grab Water Sample	3926461

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	•



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

Respectfully Submitted,



Oklahoma City OK 73125

ha Boaniwad



Page 1 of 1

Lancaster Laboratories Sample No. WW 3926453

Collected:10/23/2002 15:15 by BS Account Number: 07802

Submitted: 10/24/2002 09:10 Kerr-McGee Corporation Reported: 11/06/2002 at 17:26 P.O. Box 25861

Discard: 12/07/2002

MA3-TG5-1-231002-04 Grab Water Sample

Moss American Superfund Site - Milwaukee, WI

5-1-2 SDG#: KMA27-01

				We KecelAed		
CAT			As Received	Method		Dilution
No.	Analysis Name	CAS Number	Result	Detection Limit	Units	Factor
00217	Kjeldahl Nitrogen	7727-37-9	0.75 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	0.52 J	0.46	mg/l	1
	Sufficient sample volume was no analysis. Therefore, a LCS/LCSD accuracy at a batch level.		_			
00226	Ortho-Phosphate as P	14265-44-2	N.D.	0.0066	mg/l	1
·00345	Total Phosphorus as PO4 water	14265-44-2	0.17 J	0.12	mg/l	1

CAT		_		Analysis		Dilution
No.	Analysis Name	Method	Trial#	Date and Time	Analyst	Factor
00217	Kjeldahl Nitrogen	EPA 351.2	1	10/28/2002 17:09	Nicole M Kepley	1
·00219	Nitrite Nitrogen	EPA 353.2	1	10/25/2002 09:03	Christian C Ehrhart	1
00220	Nitrate Nitrogen	ÉPA 353.2	1	10/30/2002 17:45	Nicole M Kepley	1
00221	Ammonia Nitrogen	EPA 350.2	1	10/28/2002 15:00	Luz M Groff	1
00226	Ortho-Phosphate as P	EPA 365.3	1	10/25/2002 04:15	Daniel S Smith	. 1
00345	Total Phosphorus as PO4 water	EPA 365.1	2	11/05/2002 16:25	Venia B McFadden	1
01460	Total Kjeldahl Nitrogen Digest	EPA 351.2	1	10/25/2002 09:30	Cheryl L Robinson	1
08264	Total Phos as PO4 Prep (water)	EPA 365.1	1	10/28/2002 08:30	James S Mathiot	1



Lancaster Laboratories Sample No. WW 3926454

Collected: 10/23/2002 15:20

by BS

Account Number: 07802

Submitted: 10/24/2002 09:10

Kerr-McGee Corporation

Reported: 11/06/2002 at 17:26

P.O. Box 25861

Discard: 12/07/2002

Oklahoma City OK 73125

MA3-TG5-2-231002-05 Grab Water Sample

Moss American Superfund Site - Milwaukee, WI

5-5-2

SDG#: KMA27-02

CAT	a		As Received	As Received Nethod		Dilution
No.	Analysis Name	CAS Number	Result	Detection Limit	Units	Factor
00217	Kjeldahl Nitrogen	7727-37-9	1.0	0.30	mg/l	1
00219	Nitrite Nitrogen	14797-65-0	N.D.	0.015	mg/1	1
00220	Nitrate Nitrogen	14797-55-8	N.D.	0.040	mg/1	1 .
00221	Ammonia Nitrogen	7664-41-7	0.62 J	0.46	mg/1	1
	Sufficient sample volume was not analysis. Therefore, a LCS/LCSD	A TOTAL CONTRACTOR OF THE PARTY	Alexander and the second second second second		\$1.000 P	
	accuracy at a batch level.		724 - 27	THE THE MENTERS	10000000000	3
00226	Ortho-Phosphate as P	14265-44-2	N.D.	0.0066	mg/l	1
00345	Total Phosphorus as PO4 water	14265-44-2	0.16 J	0.12	mg/l	1

			Laboratory	Chro	nicie		7540
	CAT				Analysis		Dilution
6	No.	Analysis Name	Nethod	Trial#	Date and Time	Analyst	Factor
	00217	Kjeldahl Nitrogen	EPA 351.2	1	10/28/2002 17:13	Nicole M Kepley	1
	00219	Nitrite Nitrogen	EPA 353.2	1	10/25/2002 09:04	Christian C Ehrhart	1
	00220	Nitrate Nitrogen	EPA 353.2	1	10/30/2002 17:46	Nicole M Kepley	1
	00221	Ammonia Nitrogen	EPA 350.2	1	10/28/2002 15:00	Luz M Groff	1
	00226	Ortho-Phosphate as P	EPA 365.3	1	10/25/2002 04:15	Daniel S Smith	1
	00345	Total Phosphorus as PO4 water	EPA 365.1	1	10/30/2002 21:39	Venia B McFadden	1 .
	01460	Total Kjeldahl Nitrogen Digest	EPA 351.2	1	10/25/2002 09:30	Cheryl L Robinson	1
¥.	08264	Total Phos as PO4 Prep (water)	EPA 365.1	1	10/28/2002 08:30	James S Mathiot	1



Lancaster Laboratories Sample No. WW 3926455

Collected:10/23/2002 15:25 by BS

Submitted: 10/24/2002 09:10 Reported: 11/06/2002 at 17:26

Discard: 12/07/2002

MA3-TG5-3-231002-06 Grab Water Sample

Moss American Superfund Site - Milwaukee, WI

Account Number: 07802

Kerr-McGee Corporation

P.O. Box 25861

Oklahoma City OK 73125

5-3-2 SDG#: KMA27-03

CAT			As Received	As Received Method		Dilution
No.	Analysis Name	CAS Number	Result	Detection Limit	Units	Factor
00217	Kjeldahl Nitrogen	7727-37-9	0.63 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.	0.46	mg/l	1
	Sufficient sample volume was not analysis. Therefore, a LCS/LCSD accuracy at a batch level.	•	•			
00226	Ortho-Phosphate as P	14265-44-2	0.0198 J	0.0066	mg/l	1
00345	Total Phosphorus as PO4 water	14265-44-2	0.12 [.] J	0.12	mg/l	1

		Haboracory	CIII O	TITCIC		
CAT			•	Analysis ·		Dilution
No.	Analysis Name	Method	Trial#	Date and Time	Analyst	Factor
00217	Kjeldahl Nitrogen	EPA 351.2	1	10/28/2002 17:14	Nicole M Kepley	1
00219	Nitrite Nitrogen	EPA 353.2	1	10/25/2002 09:05	Christian C Ehrhart	1
00220	Nitrate Nitrogen	EPA 353.2	1	10/30/2002 17:47	Nicole M Kepley	1
00221	Ammonia Nitrogen	EPA 350.2	1	10/28/2002 15:00	Luz M Groff	1
00226	Ortho-Phosphate as P	EPA 365.3	1	10/25/2002 04:15	Daniel S Smith	1
00345	Total Phosphorus as PO4 water	EPA 365.1	1	10/30/2002 21:40	Venia B McFadden	1
01460	Total Kjeldahl Nitrogen Digest	EPA 351.2	1	10/25/2002 09:30	Cheryl L Robinson	1
08264	Total Phos as PO4 Prep	EPA 365.1	1	10/28/2002 08:30	James S Mathiot	1

Analysis Report



Page 1 of 1

3926456 Lancaster Laboratories Sample No. WW

Collected:10/23/2002 14:05

Account Number: 07802

Submitted: 10/24/2002 09:10 Reported: 11/06/2002 at 17:26 Discard: 12/07/2002

Kerr-McGee Corporation

P.O. Box 25861

Oklahoma City OK 73125

MA3-TG6-1-231002-01 Grab Water Sample

Moss American Superfund Site - Milwaukee, WI

SDG#: KMA27-04 6-1-2

		•	As Received		
		As Received	Method	•	Dilution
Analysis Name	CAS Number	Result	Detection Limit	Units	Factor
Kjeldahl Nitrogen	7727-37-9	0.89 J	0.30	mg/l	1
Nitrite Nitrogen	14797-65-0	N.D.	0.015	mg/l	1
Nitrate Nitrogen	14797-55-8	N.D.	0.040	mg/l	. 1
Ammonia Nitrogen	7664-41-7	0.52 J	0.46	mg/l	1
Sufficient sample volume was not	available to	perform a MS/MSD	for this		
analysis. Therefore, a LCS/LCSD accuracy at a batch level.	was performed	to demonstrate p	recision and		
Ortho-Phosphate as P	14265-44-2	0.0173 J	0.0066	mg/l	1
Total Phosphorus as PO4 water	14265-44-2	0.23	0.12	mg/l	1
	Kjeldahl Nitrogen Nitrite Nitrogen Nitrate Nitrogen Ammonia Nitrogen Sufficient sample volume was not analysis. Therefore, a LCS/LCSD accuracy at a batch level. Ortho-Phosphate as P	Kjeldahl Nitrogen 7727-37-9 Nitrite Nitrogen 14797-65-0 Nitrate Nitrogen 14797-55-8 Ammonia Nitrogen 7664-41-7 Sufficient sample volume was not available to analysis. Therefore, a LCS/LCSD was performed accuracy at a batch level. Ortho-Phosphate as P 14265-44-2	Analysis Name CAS Number Result Kjeldahl Nitrogen 7727-37-9 Nitrite Nitrogen 14797-65-0 N.D. Nitrate Nitrogen 14797-55-8 N.D. Ammonia Nitrogen 7664-41-7 Sufficient sample volume was not available to perform a MS/MSD analysis. Therefore, a LCS/LCSD was performed to demonstrate paccuracy at a batch level. Ortho-Phosphate as P 14265-44-2 0.0173 J	As Received Method Analysis Name CAS Number Result Detection Limit Kjeldahl Nitrogen 7727-37-9 0.89 J 0.30 Nitrite Nitrogen 14797-65-0 N.D. 0.015 Nitrate Nitrogen 14797-55-8 N.D. 0.040 Ammonia Nitrogen 7664-41-7 0.52 J 0.46 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. Ortho-Phosphate as P 14265-44-2 0.0173 J 0.0066	As Received Method Analysis Name CAS Number Result Detection Units Limit Limit Limit Kjeldahl Nitrogen 7727-37-9 0.89 J 0.30 mg/l Nitrite Nitrogen 14797-65-0 N.D. 0.015 mg/l Nitrate Nitrogen 14797-55-8 N.D. 0.040 mg/l Ammonia Nitrogen 7664-41-7 0.52 J 0.46 mg/l 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. Ortho-Phosphate as P 14265-44-2 0.0173 J 0.0066 mg/l

		manor a cory	بعدب	411010		
CAT	_			Analysis		Dilution
No.	Analysis Name	Method	Trial#	Date and Time	Analyst	Factor
00217	Kjeldahl Nitrogen	EPA 351.2	1	10/28/2002 17:16	Nicole M Kepley	1
00219	Nitrite Nitrogen	EPA 353.2	1	10/25/2002 09:09	Christian C Ehrhart	1
00220	Nitrate Nitrogen	EPA 353.2	1	10/30/2002 17:51	Nicole M Kepley	ı
00221	Ammonia Nitrogen	EPA 350.2	1	10/28/2002 15:00	Luz M Groff	1
00226	Ortho-Phosphate as P	EPA 365.3	1	10/25/2002.04:15	Daniel S Smith	1
00345	Total Phosphorus as PO4 water	EPA 365.1	1	10/30/2002 21:40	Venia B McFadden	1
01460	Total Kjeldahl Nitrogen Digest	EPA 351.2	1	10/25/2002 09:30	Cheryl L Robinson	į
08264	Total Phos as PO4 Prep	EPA 365.1	1	10/28/2002 08:30	James S Mathiot	. 1





Lancaster Laboratories Sample No. 3926457

Collected:10/23/2002 14:10 by BS Account Number: 07802

Submitted: 10/24/2002 09:10

Kerr-McGee Corporation

P.O. Box 25861

Reported: 11/06/2002 at 17:26

Oklahoma City OK 73125

Discard: 12/07/2002

MA3-TG6-2-231002-02 Grab Water Sample

Moss American Superfund Site - Milwaukee, WI

6-2-2

SDG#: KMA27-05

CAT			As Received	As Received Method		Dilution
No.	Analysis Name	CAS Number	Result	Detection Limit	Units	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/1	1
00221	Ammonia Nitrogen	7664-41-7	N.D.	0.46	mg/l	1
4	Sufficient sample volume was not analysis. Therefore, a LCS/LCSD accuracy at a batch level.		-			
00226	Ortho-Phosphate as P	14265-44-2	N.D.	0.0066	mg/l	1
00345	Total Phosphorus as PO4 water	14265-44-2	и.p.	0.12	mg/l	1

•						
CAT	•	_	•	Analysis		Dilution
No.	Analysis Name	Method.	Trial#	Date and Time	Analyst	Factor
00217	Kjeldahl Nitrogen	EPA 351.2	1	10/28/2002 17:17	Nicole M Kepley	1
00219	Nitrite Nitrogen	BPA 353.2	'i	10/25/2002 09:10	Christian C Ehrhart	1
00220	Nitrate Nitrogen	EPA 353.2	1	10/30/2002 17:52	Nicole M Kepley	1
00221	Ammonia Nitrogen	EPA 350.2	1	10/28/2002 15:00	Luz M Groff	1
00226	Ortho-Phosphate as P	BPA 365.3	1	10/25/2002 04:15	Daniel S Smith	1
00345	Total Phosphorus as PO4 water	EPA 365.1	1	.10/30/2002 21:41	Venia B McFadden	1
01460	Total Kjeldahl Nitrogen Digest	EPA 351.2	1	10/25/2002 09:30	Cheryl L Robinson	1
08264	Total Phos as PO4 Prep	EPA 365.1	1	10/28/2002 08:30	James S Mathiot	1



Lancaster Laboratories Sample No. 3926458

Collected:10/23/2002 14:15 by BS

Account Number: 07802

Submitted: 10/24/2002 09:10

Kerr-McGee Corporation

Reported: 11/06/2002 at 17:27

P.O. Box 25861

Oklahoma City OK 73125

Discard: 12/07/2002

MA3-TG6-3-231002-03 Grab Water Sample

Moss American Superfund Site - Milwaukee, WI

6-3-2 SDG#: KMA27-06

	•			As Received		
CAT			As Received	Method		Dilution
No.	Analysis Name	CAS Number	Result	Detection Limit	Units	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.	0.46	mg/l	1
	Sufficient sample volume was not	available to	perform a MS/MSI	for this		
	analysis. Therefore, a LCS/LCSD accuracy at a batch level.	was performed	to demonstrate p	precision and		
00226	Ortho-Phosphate as P	14265-44-2	N.D.	0.0066	mg/l	1
00345	Total Phosphorus as PO4 water	14265-44-2	0.28	0.12	mg/1	1

		Laboracory		111010			
. CAT	Analysis						
No.	Analysis Name	Method	Trial#	Date and Time	Analyst	Factor	
00217	Kjeldahl Nitrogen	EPA 351.2	1	10/28/2002 17:18	Nicole M Kepley	1	
00219	Nitrite Nitrogen	EPA 353.2	1	10/25/2002 09:11	Christian C Ehrhart	1	
00220	Nitrate Nitrogen	EPA 353.2	1	10/30/2002 17:53	Nicole M Kepley	ì	
00221	Ammonia Nitrogen	EPA 350:2	1	10/28/2002 15:00	Luz M Groff	1	
00226	Ortho-Phosphate as P	EPA 365.3	1	10/25/2002 04:15	Daniel S Smith	1	
00345	Total Phosphorus as PO4 water	EPA 365.1	2	11/05/2002 16:26	Venia B McFadden	1	
01460	Total Kjeldahl Nitrogen Digest	EPA 351.2	1	10/25/2002 09:30	Cheryl L Robinson	. 1	
08264	Total Phos as PO4 Prep	EPA 365.1	1	10/28/2002 08:30	James S Mathiot	· 1	



Lancaster Laboratories Sample No. 3926459

Collected:10/23/2002 16:35

Account Number: 07802

Submitted: 10/24/2002 09:10

Kerr-McGee Corporation

Reported: 11/06/2002 at 17:27

P.O. Box 25861

Discard: 12/07/2002

MA3-TG4-1-231002-07 Grab Water Sample

Oklahoma City OK 73125

Moss American Superfund Site - Milwaukee, WI

4-1-2

SDG#: KMA27-07

CAT			As Received	As Received Method		Dilution
No.	Analysis Name	CAS Number	Result	Detection Limit	Units	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	0.91 J	0.46	mg/l	· 1
•	Sufficient sample volume was not	available to	perform a MS/MSD	for this		
•	analysis. Therefore, a LCS/LCSD accuracy at a batch level.	was performed	to demonstrate p	recision and		
00226	Ortho-Phosphate as P	14265-44-2	N.D.	0.0066	mg/l	1
00345	Total Phosphorus as PO4 water	14265-44-2	0.21	0.12	mg/l	· 1

-						
CAT		_		Analysis	•	Dilution
No.	Analysis Name	Method	Trial#	Date and Time	Analyst	Factor
00217	Kjeldahl Nitrogen	EPA 351.2	1	10/28/2002 17:19	Nicole M Kepley	1.
.00219	Nitrite Nitrogen	EPA 353.2	1	10/25/2002 09:18	Christian C Ehrhart	1
00220	Nitrate Nitrogen	EPA 353.2	1	10/30/2002 17:55	Nicole M Kepley	1
00221	Ammonia Nitrogen	EPA 350.2	1	10/28/2002 15:00	Luz M. Groff	1 .
00226	Ortho-Phosphate as P	EPA 365.3	1	10/25/2002 04:15	Daniel S Smith	1
00345	Total Phosphorus as PO4 water	EPA 365.1	1	10/30/2002 21:45	Venia B McFadden	1
01460	Total Kjeldahl Nitrogen Digest	EPA 351.2	1.	10/25/2002 09:30	Cheryl L Robinson	1
08264	Total Phos as PO4 Prep	EPA 365.1	1	10/28/2002 08:30	James S Mathiot	1



Lancaster Laboratories Sample No. WW 3926460

Collected:10/23/2002 16:40 by BS

Submitted: 10/24/2002 09:10 Reported: 11/06/2002 at 17:27

Discard: 12/07/2002

MA3-TG4-2-231002-08 Grab Water Sample

Moss American Superfund Site - Milwaukee, WI

Account Number: 07802

Kerr-McGee Corporation

P.O. Box 25861

Oklahoma City OK 73125

4-2-2 SDG#: KMA27-08

CAT		,	As Received	As Received Method		Dilution
No.	Analysis Name	CAS Number	Result	Detection Limit	Units	Pactor
00217	Kjeldahl Nitrogen	7727-37-9	1.3	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	0.46	mg/l·	1
	Sufficient sample volume was not analysis. Therefore, a LCS/LCSD		•			
	accuracy at a batch level.					
00226	Ortho-Phosphate as P	14265-44-2	N.D	0.0066 ⁻	mg/l	1
00345	Total Phosphorus as PO4 water	14265-44-2	0.25	0.12	mg/l	1

		Laboracory	CILLO	nicie		
CÀT	•	_	•	Analysis'		Dilution
No.	Analysis Name	Method	Trial#	Date and Time	Analyst	Factor
00217	Kjeldahl Nitrogen	EPA 351.2	1	10/28/2002 17:21	Nicole M Kepley	1.
00219	Nitrite Nitrogen	EPA 353.2	1	10/25/2002 09:16	Christian C Ehrhart	1
00220	Nitrate Nitrogen	EPA 353.2	1	10/30/2002 17:56	Nicole M Kepley	1
00221	Ammonia Nitrogen	EPA 350.2	1	10/28/2002 15:00	Luz M Groff	1
00226	Ortho-Phosphate as P	EPA 365.3	1	10/25/2002 04:15	Daniel S Smith	i
.00345	Total Phosphorus as PO4 water	EPA 365.1	, 2	11/05/2002 16:27	Venia B McFadden	i
01460	Total Kjeldahl Nitrogen Digest	EPA 351.2	1	10/25/2002 09:30	Cheryl L Robinson	1
08264	Total Phos as PO4 Prep (water)	EPA. 365.1	1	10/28/2002 08:30	James S Mathiot	1 .



Lancaster Laboratories Sample No. 3926461

Collected:10/23/2002 16:45

by BS

Account Number: 07802

Submitted: 10/24/2002 09:10

Reported: 11/06/2002 at 17:28

Kerr-McGee Corporation

P.O. Box 25861

Discard: 12/07/2002

Oklahoma City OK 73125

MA3-TG4-3-231002-09 Grab Water Sample Moss American Superfund Site - Milwaukee, WI

4-3-2 SDG#: KMA27-09

				As Received		
CAT			As Received	Method		Dilution
No.	Analysis Name	CAS Number	Result	Detection Limit	Units	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	0.91 J	0.46	mg/l	1
•	Sufficient sample volume was not analysis. Therefore, a LCS/LCSD accuracy at a batch level.		•			
00226	Ortho-Phosphate as P	14265-44-2	0.0067 J	0.0066	mg/l	1
00345	Total Phosphorus as PO4 water	14265-44-2	0.16 J	0.12	mg/l	1

_		Haboracory	CILLO	111010	•	
CAT				Analysis	·	Dilution
ЙO.	Analysis Name	Method	Trial#	Date and Time	Analyst	Factor
00217	Kjeldahl Nitrogen	EPA 351.2	1	10/28/2002 17:22	Nicole M Kepley	1
00219	Nitrite Nitrogen	EPA 353.2	1	10/25/2002 09:15	Christian C Ehrhart	1
00220	Nitrate Nitrogen	EPA 353.2	1	10/30/2002 17:57	Nicole M Kepley	1
00221	Ammonia Nitrogen	EPA 350.2	1	10/28/2002 15:00	Luz M Groff	1
00226	Ortho-Phosphate as P	EPA 365.3	1	10/25/2002 04:15	Daniel S Smith	1
00345	Total Phosphorus as PO4 water	EPA 365.1	1	10/30/2002 21:47	Venia B McFadden	1
01460	Total Kjeldahl Nitrogen Digest	EPA 351.2	`1	10/25/2002 09:30	Cheryl L. Robinson	1 '
08264	Total Phos as PO4 Prep (water)	EPA 365.1	1	10/28/2002 08:30	James S Mathiot	1



ANALYTICAL RESULTS

Prepared for:

Kerr-McGee Corporation P.O. Box 25861 Oklahoma City OK 73125

405-270-2602

Prepared by:

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

SAMPLE GROUP

The sample group for this submittal is 828314. Samples arrived at the laboratory on Friday, October 25, 2002.

Client Description	<u>Lancaster Labs Number</u>
MA3-TG2-1-241002-04 Grab Water Sample	3927743
MA3-TG2-2-241002-05 Grab Water Sample	3927744
MA3-TG2-3-241002-06 Grab Water Sample	3927745
MA3-TG3-1-241002-01 Grab Water Sample	3927746
MA3-TG3-2-241002-02 Grab Water Sample	3927747
MA3-TG3-3-241002-03 Grab Water Sample	3927748
MA3-TG1-1-241002-07 Grab Water Sample	3927749
MA3-TG1-2-241002-08 Grab Water Sample	3927750
MA3-TG1-3-241002-09 Grab Water Sample	3927751
•	

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	••





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

Respectfully Submitted,

Erik J. Frederiksen Group Leader





Lancaster Laboratories Sample No. 3927743

Moss American Superfund Site - Milwaukee, WI

Collected:10/24/2002 11:25 Account Number: 07802

Submitted: 10/25/2002 09:15 Kerr-McGee Corporation

Reported: 11/08/2002 at 17:03 P.O. Box 25861

Oklahoma City OK 73125 Discard: 12/09/2002 MA3-TG2-1-241002-04 Grab Water Sample

SDG#: KMA27-10

M321-

				As Received		
CAT			As Received	Method		Dilution
No.	Analysis Name	CAS Number	Result	Detection Limit	Units	Factor
00217	Kjeldahl Nitrogen	7727-37-9	0.47 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.	0.46	mg/l	1
	Sufficient sample volume was no	t available to	perform a MS/MSI	for this		
•	analysis. Therefore, a LCS/LCSD accuracy at a batch level.	was performed	to demonstrate p	precision and		•
00226	Ortho-Phosphate as P	14265-44-2	N.D.	0.0066	mg/l	1
00345	Total Phosphorus as PO4 water	14265-44-2	N.D.	012	mg/l	1

		Haboracory	CILLO	HILCIC		
CAT				Analysis		Dilution
No.	Analysis Name	Method	Trial#	Date and Time	Analyst	Factor
00217	Kjeldahl Nitrogen	EPA 351.2	1	10/28/2002 17:49	Nicole M Kepley	i
00219	Nitrite Nitrogen	EPA 353.2	1	10/25/2002 17:56	Nicole M Kepley	1
00220	Nitrate Nitrogen	EPA 353.2	1	11/07/2002 15:08	Nicole M Kepley	1
00221	Ammonia Nitrogen	EPA 350.2	1	10/28/2002 15:00	· Luz M Groff	· 1
00226	Ortho-Phosphate as P	EPA 365.3	1	10/25/2002 19:15	Daniel S Smith	1
00345	Total Phosphorus as PO4 water	EPA 365.1	1	10/30/2002 21:48	Venia B McFadden	1
01460	Total Kjeldahl Nitrogen Digest	EPA 351.2	1	10/28/2002 08:12	James S Mathiot	1
08264	Total Phos as PO4 Prep (water)	EPA 365.1	. 1	10/28/2002 08:30	James S Mathiot	1



Lancaster Laboratories Sample No. WW 3927744

Collected:10/24/2002 11:30 by BS Ac

Submitted: 10/25/2002 09:15 Reported: 11/08/2002 at 17:04

Discard: 12/09/2002

MA3-TG2-2-241002-05 Grab Water Sample

Moss American Superfund Site - Milwaukee, WI

Account Number: 07802

Kerr-McGee Corporation

P.O. Box 25861

Oklahoma City OK 73125

M2224 SDG#: KMA27-11

				As Received		
CAT			As Received	Method		Dilution
ŅО.	Analysis Name	CAS Number	Result .	Detection Limit	Units	Factor .
00217	Kjeldahl Nitrogen	7727-37-9	0.90 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	0.52 J	0.46	mg/l	1
	Sufficient sample volume was not	t available to	perform a MS/MSI	o for this		
	analysis. Therefore, a LCS/LCSD accuracy at a batch level.	was performed	to demonstrate p	precision and		
00226	Ortho-Phosphate as P	14265-44-2	N.D.	0.0066	mg/l	1
00345	Total Phosphorus as PO4 water	14265-44-2	N.D.	0.12	mg/l	1

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Haberacer		

		200020027	V V			
CAT	Analysis					
No.	Analysis Name	Method	Trial#	Date and Time	Analyst	Factor
00217	Kjeldahl Nitrogen	EPA 351.2	1	10/28/2002 17:51	Nicole M Kepley	i
00219	Nitrite Nitrogen	EPA 353.2	1	10/25/2002 17:59	Nicole M Kepley	1
00220	Nitrate Nitrogen	EPA 353.2	1	11/07/2002 15:10	Nicole M Kepley	1
00221	Ammonia Nitrogen	EPA 350.2	1	10/29/2002 15:00	Luz M Groff	1
.00226	Ortho-Phosphate as P	EPA 365.3	1	10/25/2002 19:15	Daniel S Smith	1
00345	Total Phosphorus as PO4 water	EPA 365.1	1	10/30/2002 22:07	Venia B McFadden	1
01460	Total Kjeldahl Nitrogen Digest	EPA 351.2	1	10/28/2002 08:12	James S Mathiot	ļ
08264	Total Phos as PO4 Prep	EPA 365.1	1	10/28/2002 08:30	James S Mathiot	1.

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Page 1 of 1

Lancaster Laboratories Sample No. WW 3927745

Collected:10/24/2002 11:35 by BS Account Number: 07802

Submitted: 10/25/2002 09:15 Kerr-McGee Corporation

Reported: 11/08/2002 at 17:04 P.O. Box 25861

Discard: 12/09/2002 Oklahoma City OK 73125 MA3-TG2-3-241002-06 Grab Water Sample

Moss American Superfund Site - Milwaukee, WI

32332 SDG#: KMA27-12

•				We received				
CAT	•		As Received	Method	•	Dilution		
No.	Analysis Name	CAS Number	Result	Detection Limit	Units	Factor		
00217	Kjeldahl Nitrogen	7727-37-9	1.8	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	0.46	mg/1	1		
	Sufficient sample volume was not available to perform a MS/MSD for this							
	analysis. Therefore, a LCS/LCSD accuracy at a batch level.	was performed	to demonstrate	precision and				
00226	Ortho-Phosphate as P	14265-44-2	N.D.	0.0066	mg/l	1		
00345	Total Phosphorus as PO4 water	14265-44-2	0.32	0.12	mg/l	1		

					•	
CAT			Analysis			Dilution
No.	Analysis Name	Method .	Trial#	Date and Time	Analyst	Pactor
00217	Kjeldahl Nitrogen	EPA 351.2	1	10/28/2002 17:52	Nicole M Kepley	1
00219	Nitrite Nitrogen	EPA 353.2	1	10/25/2002 18:01	Nicole M Kepley	1
00220	Nitrate Nitrogen	EPA 353.2	1	11/07/2002 15:11	Nicole M Kepley	1
00221	Ammonia Nitrogen	EPA 350.2	1	10/29/2002 15:00	Luz M Groff	1
00226	Ortho-Phosphate as P	EPA 365.3	1	10/25/2002 19:15	Daniel S Smith	1
00345	Total Phosphorus as PO4 water	EPA 365.1	1	10/30/2002 21:51	Venia B McFadden	1
01460	Total Kjeldahl Nitrogen Digest	BPA 351.2	1	10/28/2002 08:12	James S Mathiot	1
08264	Total Phos as PO4 Prep (water)	EPA 365.1	1	10/28/2002 08:30	James S Mathiot	1



Lancaster Laboratories Sample No. 3927746

Collected:10/24/2002 10:10

Account Number: 07802

Submitted: 10/25/2002 09:15 Reported: 11/08/2002 at 17:04 Kerr-McGee Corporation

Discard: 12/09/2002

P.O. Box 25861

Oklahoma City OK 73125

MA3-TG3-1-241002-01 Grab Water Sample

Moss American Superfund Site - Milwaukee, WI

SDG#: KMA27-13 31241

				As Received		
CAT			As Received	Method		Dilution
No.	Analysis Name	CAS Number	Result	Detection Limit	Units	Factor
00217	Kjeldahl Nitrogen .	7727-37-9	2.2	0.30	mg/l	1
00219	Nitrite Nitrogen	14797-65-0	N.D.	0.015	mg/l	1
.00220	Nitrate Nitrogen	14797-55-8	0.13	0.040	mg/l	1
00221	Ammonia Nitrogen	7664-41-7	0.83 J	0.46	mg/l	1
	Sufficient sample volume was not analysis. Therefore, a LCS/LCSD accuracy at a batch level.					
00226	Ortho-Phosphate as P	14265-44-2	N.D.	0.0066	mg/l	1
00345	Total Phosphorus as PO4 water	14265-44-2	0.12 J	0.12	mg/l	1

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CAT	Analysis					
No.	Analysis Name	Method	Trial#	Date and Time	Analyst	Factor
00217	Kjeldahl Nitrogen	EPA 351.2	1	10/28/2002 17:56	Nicole M Kepley	· 1
:00219	Nitrite Nitrogen	EPA 353.2	1	10/25/2002 18:02	Nicole M Kepley	1
00220	Nitrate Nitrogen	EPA 353.2	1.	11/07/2002 15:12	Nicole M Kepley	1
00221	Ammonia Nitrogen	EPA 350.2	1	10/29/2002 15:00	Luz M Groff	1
.00226	Ortho-Phosphate as P	EPA 365.3	· 1	10/25/2002 19:15	Daniel S Smith	1
. 00345	Total Phosphorus as PO4 water	EPA 365.1	1	10/30/2002 22:08	Venia B McFadden	1
01460	Total Kjeldahl Nitrogen Digest	EPA 351.2	1	10/28/2002 08:12	James S Mathiot	. 1
08264	Total Phos as PO4 Prep (water)	EPA 365.1	1	10/28/2002 08:30	James S Mathiot	1

Lancaster Laboratories Sample No. 3927747

Collected:10/24/2002 10:15

by BS

Account Number: 07802

Submitted: 10/25/2002 09:15

Kerr-McGee Corporation

Reported: 11/08/2002 at 17:04

P.O. Box 25861

Discard: 12/09/2002

Oklahoma City OK 73125

MA3-TG3-2-241002-02 Grab Water Sample

Moss American Superfund Site - Milwaukee, WI

2-002

SDG#: KMA27-14

				As Received	-	
CAT			As Received	Method .		Dilution
No.	Analysis Name	CAS Number	Result	Detection Limit	Units	Factor
00217	Kjeldahl Nitrogen	7727-37-9	1.7	0.30	mg/l	1
00219	Nitrite Nitrogen	14797-65-0	0.016 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	1.3	0.46	mg/l	1
•	Sufficient sample volume was not	available to	perform a MS/MSD	for this		
	analysis. Therefore, a LCS/LCSD accuracy at a batch level.	was performed	to demonstrate p	récision and		1
00226	Ortho-Phosphate as P	14265-44-2	N.D.	0.0066	mg/l	1
00345	Total Phosphorus as PO4 water	14265-44-2	0.23	0.12	mg/l	1

•		naboracory	CILLO	HICIC			
CAT		Analysis					
No.	Analysis Name	Method	Tṛial#	Date and Time	Analyst	Factor	
00217	Kjeldahl Nitrogen	EPA 351.2	1	10/28/2002 17:57	Nicole M Kepley	1	
00219	Nitrite Nitrogen	EPA 353.2	1	10/25/2002 18:03	Nicole M Kepley	1	
00220	Nitrate Nitrogen	EPA 353.2	1	11/07/2002 15:13	Nicole M Kepley	1	
00221	Ammonia Nitrogen	EPA 350.2	1	10/29/2002 15:00	Luz M Groff	1	
00226	Ortho-Phosphate as P	EPA 365.3	1	10/25/2002 19:15	Daniel S Smith	. 1	
00345	Total Phosphorus as PO4 water	EPA 365.1	. 1	10/30/2002 22:09	Venia B McFadden	1	
01460	Total Kjeldahl Nitrogen Digest	EPA 351.2	1	10/28/2002 08:12	James S Mathiot	1 .	
08264	Total Phos as PO4 Prep	ĖPA 365.1	1	10/28/2002 08:30	James S Mathiot	1	



Lancaster Laboratories Sample No. WW 3927748

Collected:10/24/2002 10:20 by BS Account Number: 07802

 Submitted:
 10/25/2002 09:15
 Kerr-McGee Corporation

 Reported:
 11/08/2002 at 17:05
 P.O. Box 25861

 Discard:
 12/09/2002
 Oklahoma City OK 73125

Discard: 12/09/2002 MA3-TG3-3-241002-03 Grab Water Sample

Moss American Superfund Site - Milwaukee, WI

31243 SDG#: KMA27-15

			-	As Received		
CAT			As Received	Method		Dilution
No.	Analysis Name	CAS Number	Result	Detection Limit	Units	Factor
00217	Kjeldahl Nitrogen	7727-37-9	2.3	0.30	mg/l	1
00219	Nitrite Nitrogen	14797-65-0	0.025 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	1.4	0.46	mg/l	1
	Sufficient sample volume was no	t available to	perform a MS/MS	D for this		
	analysis. Therefore, a LCS/LCSD accuracy at a batch level.	was performed	to demonstrate	precision and		
00226	Ortho-Phosphate as P	14265-44-2	N.D.	0.0066	mg/l	1
00345	Total Phosphorus as PO4 water	14265-44-2	0.29	0.12	mg/l	1
	•					

		Laboracory	CILLO	HICIC		
CAT	•			Analysis		Dilution
No.	Analysis Name	Method	Trial#	Date and Time	Analyst	Factor
:00217	Kjeldahl Nitrogen	BPA 351.2	1	10/28/2002 17:58	Nicole M Kepley	1
00219	Nitrite Nitrogen	EPA 353.2	1	10/25/2002 18:04	Nicole M Kepley	1
00220	Nitrate Nitrogen	EPA 353.2	1	11/07/2002 15:15	Nicole M Kepley	1
00221	Ammonia Nitrogen	EPA 350.2	1	10/29/2002 15:00	Luz M Groff	· 1
00226	Ortho-Phosphate as P	EPA 365.3	. 1 ·	10/25/2002 19:15	Daniel S Smith	1
00345	Total Phosphorus as PO4 water	EPA 365.1	1	10/30/2002 22:10	Venia B McFadden	1
01460	Total Kjeldahl Nitrogen Digest	EPA 351.2	1	10/28/2002 08:12	James S Mathiot	. 1
08264	Total Phos as PO4 Prep	EPA 365.1	1	10/28/2002 08:30	James S Mathiot	1





Lancaster Laboratories Sample No. 3927749

Collected:10/24/2002 12:35 Account Number: 07802

Submitted: 10/25/2002 09:15 Kerr-McGee Corporation Reported: 11/08/2002 at 17:05 P.O. Box 25861

Discard: 12/09/2002 Oklahoma City OK 73125

MA3-TG1-1-241002-07 Grab Water Sample Moss American Superfund Site - Milwaukee, WI

11247 SDG#: KMA27-16

				As Received		
CAT			As Received	Method		Dilution
No.	Analysis Name	CAS Number	Result	Detection Limit	Units	Factor
00217	Kjeldahl Nitrogen	7727-37-9	1.9	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.	0.46	mg/l	1
•	Sufficient sample volume was not	available to	perform a MS/MS	D for this	·	
	analysis. Therefore, a LCS/LCSD accuracy at a batch level.	was performed	to demonstrate	precision and		
00226	Ortho-Phosphate as P	14265-44-2	N.D.	0.0066	mg/l	1
00345	Total Phosphorus as PO4 water	14265-44-2	N.D.	0.12	mg/1	1

CAT			Dilution			
No.	Analysis Name	Method	Trial#	Date and Time	Analyst	Factor
.00217	Kjeldahl Nitrogen	EPA 351.2	1	10/28/2002 17:59	Nicole M Kepley	1
00219	Nitrite Nitrogen	EPA 353.2	1	10/25/2002 18:08	Nicole M Kepley	1
00220	Nitrate Nitrogen	EPA 353.2	1	11/07/2002 15:16	Nicole M Kepley	· 1
00221	Ammonia Nitrogen	EPA 350.2	1	10/29/2002 15:00	Luz M Groff	1
. 00226	Ortho-Phosphate as P	EPA 365.3	. 1	10/25/2002 19:15	Daniel S Smith	i
00345	Total Phosphorus as PO4 water	EPA 365.1	1	10/30/2002 21:57	Venia B McFadden	1 .
01460	Total Kjeldahl Nitrogen Digest	EPA 351.2	. 1	10/28/2002 08:12	James S Mathiot	. 1
08264	Total Phos as PO4 Prep	EPA 365.1	1	10/28/2002 08:30	James S Mathiot	1



Lancaster Laboratories Sample No. 3927750

Collected:10/24/2002 12:40

Account Number: 07802

Submitted: 10/25/2002 09:15 Reported: 11/08/2002 at 17:05

Kerr-McGee Corporation

P.O. Box 25861

Discard: 12/09/2002

Oklahoma City OK 73125

MA3-TG1-2-241002-08 Grab Water Sample

Moss American Superfund Site - Milwaukee, WI

SDG#: KMA27-17 12248

				As Received		
CAT			As Received	Method		Dilution
No.	Analysis Name	.CAS Number	Result	Detection Limit	Units	Factor
00217	Kjeldahl Nitrogen	7727-37-9	1.7	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	0.46	mg/l	1
•	Sufficient sample volume was no	t available to	perform a MS/MS	D for this		
	analysis. Therefore, a LCS/LCSD accuracy at a batch level.	was performed	to demonstrate	precision and		
00226	Ortho-Phosphate as P	14265-44-2	N.D.	0.0066	mg/l	1
00345	Total Phosphorus as PO4 water	14265-44-2	0.25	0.12	mg/l	1

		Tancia de la contra del la contra del la contra del la contra de la contra del la contra de la contra de la contra del la co	CILLO	111 <u>0</u> 10		
CÁT				Analysis		Dilution
No.	Analysis Name	Method	Trial#	Date and Time	Analyst	Factor
00217	Kjeldahl Nitrogen	EPA 351.2	1	10/28/2002 18:01	Nicole M Kepley	1
00219	Nitrite Nitrogen	EPA 353.2	1	10/25/2002 18:09	Nicole M Kepley	1
00220	Nitrate Nitrogen	EPA 353.2	1	11/07/2002 15:17	Nicole M Kepley	1
00221	Ammonia Nitrogen	EPA 350.2	1	10/29/2002 15:00	Luz M Groff	1
00226	Ortho-Phosphate as P	EPA 365.3	1.	10/25/2002 19:15	Daniel S Smith	1
00345	Total Phosphorus as PO4 water	EPA 365.1	1	10/30/2002.21:58	Venia B McFadden	1
01460	Total Kjeldahl Nitrogen Digest	EPA 351.2	1	10/28/2002 08:12	James S Mathiot	1
08264	Total Phos as PO4 Prep	EPA 365.1	1	10/28/2002 08:30	James S Mathiot	1



Lancaster Laboratories Sample No. 3927751

Collected:10/24/2002 12:45

Submitted: 10/25/2002 09:15 Reported: 11/08/2002 at 17:05 Discard: 12/09/2002

MA3-TG1-3-241002-09 Grab Water Sample

Moss American Superfund Site - Milwaukee, WI

2--09 SDG#: KMA27-18 Account Number: 07802

Kerr-McGee Corporation

P.O. Box 25861

Oklahoma City OK 73125

CAT			As Received	As Received Method		Dilution
No.	Analysis Name	CAS Number	Result	Detection Limit	Units	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/1	1
00221	Ammonia Nitrogen	7664-41-7	0.84 J	0.46	mg/l	1 .
,	Sufficient sample volume was not analysis. Therefore, a LCS/LCSD accuracy at a batch level.		_			
00226	Ortho-Phosphate as P	14265-44-2	N.D.	0.0066	mg/l	· 1
00345	Total Phosphorus as PO4 water	14265-44-2	0.29	0.12	mg/l	1

		Lanciacing	C+1.			
CAT				Analysis		Dilution
No.	Analysis Name	Method	Trial#	Date and Time	Analyst	Factor
00217	Kjeldahl Nitrogen	EPA 351.2	1	10/28/2002 18:02	Nicole M Kepley	1
00219	Nitrite Nitrogen	EPA 353.2	1	10/25/2002 18:11	Nicole M Kepley	i
00220	Nitrate Nitrogen	EPA 353.2	1	11/07/2002 15:21	Nicole M Kepley	1
00221	Ammonia Nitrogen	EPA 350.2	1	10/29/2002 15:00	Luz M Groff	1
00226	Ortho-Phosphate as P	EPA 365,3	1	10/25/2002 19:15	Daniel S Smith	1
00345	Total Phosphorus as PO4 water	EPA 365.1	1	10/30/2002 21:59	Venia B McFadden	1
01460	Total Kjeldahl Nitrogen Digest	EPA 351.2	1	10/28/2002 08:12	James S Mathiot	. 1
08264	Total Phos as PO4 Prep	EPA 365.1	1	10/28/2002 08:30	James S Mathiot	1

For Lancaster Laboratories use only Aca. # _7802

Sample # 3924453-

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	Project Name/#: Moss American Project Manager: Tom Graian Sampler: B. Schalfer, A. Grubb	PWSID #:			ible acheda	i G	tainers						//	/ · /	/ ·:/		SCR	# 2	amples:
(Name of state where samples were collected:	Quote #		O	Soll 1 Water © Pot	Other	iotal # of Cor		4 / (My C	97	* **/	402/h	/ 07/	//.	Remark	ks	•	lemperature of s upon receipt (if n
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	MAS-T65-2-231002-05		1520	X)		5	አ	X	Х	ス	x	×						
	MA3-T65-3-251002-06	\ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \	1525	X	×		5	አ	۴	/	۴	*	X						
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	Type III (NJ Red. Del.) Type IV (CLP) Internal Chain of Co				nea by:				<u> </u>) Dat	e	TITLE	Receive	-CONT	W	Nun (Som	1012/	9910

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Sample # 392,4463 -

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For Lancaster Laboratories use only 1805 - 1806 - 18

Sample # 3926463

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Lancaster Laboratories, Inc., 2425 New Holland Pike, PO Box 12425, Lancaster, PA 17605-2425 (717) 656-2800

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

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Hammond Division 544 Conkey Street Hannond, IN (219) 932-1770 INDIANA CERTIFICATION NUMBERS:

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CERTIFICATE OF ANALYSIS

Tom Graam Weston Solutions, Inc. 750 East Bunker Court Suite 500 Vernon Hills, IL 60061-1450 Date Reported: 11/20/02 P.O. Number: 0018581 Sample ID: 9946-00398 Date Received: 10/25/02

Time Received: 09:00

Permit Number

PARAMETERS	RESULTS	DATE	TECH	HETHOD
SUBJECT: HA3-TG3-1-241002-01, 10/24/02	4 10:10 by BS/AG			
Total Aerobic Bacteria	3,100. cfu/ml	10/25/02	NHC	9215B KODIFIED
f.Aerobic Degrader Bacteria	100. cfu/ml	10/25/02	NHC	9215B HODIFIED
SUBJECT: MA3-TG3-2-241002-02, 10/24/02	e 10:15 by BS/AG			
Total Aerobic Bacteria	6,400. cfu/ml	10/25/02	HHC	9215B HODIFIED
P.Aerobic Degrader Bacteria	430. cfu/ml	10/25/02	NHC	9215B HODIFIED
SUBJECT: MA3-TG3-3-241002-03, 10/24/02	e 10:20 by BS/AG			
Potal Aerobic Bacteria	2,010. cfu/ml	10/25/02	NHC	9215B-KODIFIBD
l'.Aerobic Degrader Bacteria	80. cfu/nl	10/25/02	NHĊ	9215B KODIFIED
SUBJECT: KA3-TG2-1-241002-04, 10/24/02	0 11:25 by BS/AG			
Fotal Aerobic Bacteria	450. cfu/ml	10/25/02	HKC .	9215B HODIFIED
P.Aerobic Degrader Bacteria	20. cfu/ml	10/25/02	NHC .	9215B HODIFIED
SUBJECT: KA3-TG2-2-241002-05, 10/24/02	0 11:30 by BS/AG		•	
Potal Aerobic Bacteria	1,220. cfu/ml	10/25/02	NKC	9215B KODIFIED
F.Aerobic Degrader Bacteria	80. cfu/ml	10/25/02	NHC	9215B MODIFIBI
SUBJECT: NA3-TG2-3-241002-06, 10/24/02	0 11:35 by BS/AG	•		
Total Aerobic Bacteria	4,600. cfu/ml	10/25/02	nhc	9215B NODIFIBI
T.Aerobic Degrader Bacteria	30. cfu/ml	10/25/02	RHC	9215B KODIFIED
SUBJECT: NA3-TG1-1-241002-07, 10/24/02	12:35 by BS/AG		•	
-	18,700. cfu/ml	10/25/02	NKC	9215B KODIFIED
T.Aerobic Degrader Bacteria	200. cfu/ml	10/25/02	NHC	9215B HODIFIE

Certificate Continues On Next Page





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CERTIFICATE OF ANALYSIS

Tom Graam Weston Solutions, Inc. 750 East Bunker Court Suite 500 Vernon Hills, IL 60061-1450 Date Reported: 11/20/02 P.O. Number: 0018581 Sample ID: 9946-00398 Date Received: 10/25/02 Time Received: 09:00

Permit Number

PARAMETERS	RESULTS	DATE	TECH	- KETHOD -
SUBJECT: HA3-TG1-2-241002-08, 10/24/0	•			
Total Aerobic Bacteria T.Aerobic Degrader Bacteria	9,800. cfu/ml 10. cfu/ml	10/25/02 · 10/25/02	nhc nhc	9215B KODIFIRD 9215B KODIFIRD
SUBJECT: NA3-TG1-3-241002-09, 10/24/0	2 @ 12:45 by BS/AG	· · · · · · · · · · · · · · · · · · ·		
Total Aerobic Bacteria T.Aerobic Degrader Bacteria	8,000. cfu/ml 17.0. cfu/ml	10/25/02 10/25/02	nnc nhc	9215B KODIFIBD 9215B KODIFIBD

This document has been reviewed and is electronically signed by:

Karen A. Ziolkowski Laboratory Director





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INDIANA CERTIFICATION NUMBERS: N-45-8 C-45-0

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CHEMISTRY • MICROBIOLOGY • FOOD SAFETY • CONSUMER PRODUCTS WATER • AIR • WASTES • FOOD • PHARMACEUTICALS • NUTRACEUTICALS

CERTIFICATE OF ANALYSIS

Tom Graam Weston Solutions, Inc. 750 East Bunker Court Suite 500 Vernon Hills, IL 60061-1450 Date Reported: 11/20/02 P.O. Number: 0018581 Sample ID: 9946-00384 Date Received: 10/24/02 Time Received: 10:00

Permit Number

PARAMETERS	RESULTS	DATE	TECH	KETHOD .
SUBJECT: MA3-TG6-1-231002-01, 10/23	/02 @ 14:05 by BS/AG			·
Total Aerobic Bacteria T.Aerobic Degrader Bacteria	11,000. cfu/nl 200. cfu/nl	10/25/02 10/25/02	nhc nhc	9215B KODIFIED 9215B KODIFIED
SUBJECT: HA3-TG6-2-231002-02, 10/23	· • • • • • • • • • • • • • • • • • • • • • • • • • •			•
Total Aerobic Bacteria T.Aerobic Degrader Bacteria	4,700. cfu/ml 100. cfu/ml	10/25/02 10/25/02	nkc nkc	9215B HODIFIED 9215B HODIFIED
SUBJECT: HA3-TG6-3-231002-03, 10/23				
Total Aerobic Bacteria T.Aerobic Degrader Bacteria	1.000. cfu/ml 40. cfu/ml	10/25/02 10/25/02	nhc nhc	9215B KODIFIED 9215B KODIFIED
SUBJECT: MA3-TG5-1-231002-04, 10/23	<u> </u>	•		·
Total Aerobic Bacteria T.Aerobic Degrader Bacteria	630. cfu/ml 20. cfu/ml	10/25/02 10/25/02	NHC NHC	9215B HODIFIED 9215B KODIFIED
SUBJECT: KA3-TG5-2-231002-05, 10/23	1/02 @ 15:20 by BS/AG	·. · · · · · · · · · · · · · · · · · ·		
Total Aerobic Bacteria T.Aerobic Degrader Bacteria	3,100. cfu/nl 300. cfu/nl	10/25/02 10/25/02	n'n c n n c	9215B KODIFIED 9215B KODIFIED
SUBJECT: NA3-TG5-3-231002-06, 10/23				·
Total Aerobic Bacteria T.Aerobic Degrader Bacteria	8,800. cfu/ml 170. cfu/ml	10/25/02 10/25/02	nuc nuc	9215B HODIFIED 9215B HODIFIED
SUBJECT: HA3-TG4-1-231002-07, 10/2	3/02 @ 16:35 by BS/AG			
Total Aerobic Bacteria T.Aerobic Degrader Bacteria	1,180. cfu/ml 30. cfu/ml	10/25/02 10/25/02	NHC NHC	9215B KODIFIED 9215B KODIFIED

*** Certificate Continues On Next Page ***

The data and other information contained on this, and other accompanying documents, represent only the sample(s) analyzed and is rendered upon the condition that it is not to be reproduced wholly or in part for advertising or other purposes without written approval from the laboratory.

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Hannond Division
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Hannond, IN 46324
(219) 932-1770

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CERTIFICATE OF ANALYSIS

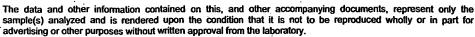
Tom Graam Weston Solutions, Inc. 750 East Bunker Court Suite 500 Vernon Hills, IL 60061-1450 Date Reported: 11/20/02 P.O. Number: 0018581 Sample ID: 9946-00384 Date Received: 10/24/02 Time Received: 10:00

Permit Number

PARAMETERS	RESULTS	DATE	TECH	NETHOD
SUBJECT: HA3-TG4-2-231002-08, 10/23/02 (Total Aerobic Bacteria T.Aerobic Degrader Bacteria	1 16:40 by BS/AG 4,300. cfu/ml 70. cfu/ml	10/25/02 10/25/02	NKC NKC	9215B KODIFIED 9215B KODIFIED
SUBJECT: NA3-TG4-3-231002-09, 10/23/02 (Total Aerobic Bacteria T.Aerobic Degrader Bacteria	! 16:45 by BS/AG 1,830. cfu/ml 40. cfu/ml	10/25/02 10/25/02	RMC RMC	9215B MODIFIED 9215B MODIFIED

This document has been reviewed and is electronically signed by:

Karen A. Ziolkovski Laboratory Director





MEMBER



Contact per								JAKT	<u>~</u> ,	17	· (>1400	1			Data	مغمضية	مام	المناه		/ \			
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Shipping Charge

*CEA: Comparative Enumeration Assay includes total heterotrophic and degrader populations

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*CEA : Comparative Enumeration Assay includes total heterotrophic and degrader populations

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APPENDIX C

DECEMBER 2002 GROUNDWATER SAMPLE ANALYTICAL RESULTS

Analytical Data Validation Report
Kerr-McGee Corporation
Moss American Superfund Site- Milwaukee, WI
SDG #: KMA37

I have reviewed the analytical data provided by Lancaster Laboratories for the Moss American Site in Milwaukee, Wisconsin upon the information that was provided by the laboratory.

Polynuclear Aromatic Hydrocarbons (PAHs by HPLC, U.S. EPA Method 8310) Moss American Site

SDG # KMA37

1.Samples:

Client Sample	Lab Sample		Date	Date	Date
Description:	Number	<u>Matrix</u>	<u>Collected</u>	Extracted	Analyzed
MA3-MW-29S-121202-02	3960658	Grab water	12/12/02	12/16/02	12/20/02
MA3-MW-29S-121202-02-MS	3960659	Grab water	12/12/02	12/16/02	12/20/02
MA3-MW-29S-121202-02-MSD	3960660	Grab water	12/12/02	12/16/02	12/20/02
MA3-MW-37S-121202-03-DP	3960661	Grab water	12/12/02	12/16/02	12/21/02
MA3-MW-37S-121202-03	3960662	Grab water	12/12/02	12/16/02	12/21/02
MA3-MW-31S-121202-04	3960663	Grab water	12/12/02	12/16/02	12/21/02
MA3-MW-36S-121202-01	3960664	Grab water	12/12/02	12/16/02	12/21/02
MA3-MW-30S-121202-05	3960665	Grab water	12/12/02	12/16/02	12/21/02
MA3-MW-5S-121202-06	3960666	Grab water	12/12/02	12/16/02	12/21/02
FB-02	3960667	Grab water	12/12/02	12/16/02	12/21/02

2. Holding Times:

The samples were extracted and analyzed within the required holding times. Only 3960667 was re-extracted past the required holding time. RE-3960667 results qualified as (J/UJ).

3. Method Blank:

Two method blanks SBLKWI3482, and SBLKWG3572 were associated with this SDG. SBLKWI3482 was analyzed with (3960658 thru 3960667) on 12/20/02. SBLKWG3572 was analyzed with (RE-3960667) on 12/30/02. Both method blanks results were free of contamination.

4. Surrogate:

The surrogate recoveries were coming from UV detector. The method blanks and the investigated samples had surrogate recoveries within the required quality control limits, except in 3960667. The re-extracted 3960667 had acceptable surrogate recoveries. However, RE-3960667 did not meet the required holding time and was qualified as (J/UJ). Therefore, report the 3960667 results from the initial extraction of the sample and qualify the results as (J/UJ).

5. Matrix Spike/Matrix Spike Duplicate Recovery:

The matrix spike and matrix spike duplicate was performed on sample 3960658. The MS/MSD recoveries were within the quality control limit. Also, the RPD% values were acceptable.

6. Laboratory Control Sample:

The LCS that associated with (3960658 thru 3960667) recoveries was within the acceptance quality control limits.

The LCS/LCSD that associated with (RE-3960667) recoveries was within the quality control limit. Also, the RPD% values were acceptable.

Analytical Data Validation Report
Kerr-McGee Corporation
Moss American Superfund Site- Milwaukee, WI
SDG #: KMA37

7. Retention Time:

All the retention time results were acceptable.

8. Initial and Continuing Calibration:

The initial calibration, and continuing calibration verification were all acceptable.

The retention time, initial and continuing calibration results that associated with (3960658 thru 3960667) were used in the calculation from two detectors: naphthalene, acenaphthylene, 1-methylnaphthalene, 2-methylnaphthalene, fluorene, phenanthrene, and anthracene were taken from ultraviolet detector, and acenaphthene fluoranthene, pyrene, benzo (a) anthracene, chrysene, benzo (b) fluoranthene, benzo (k) fluoranthene, benzo (a) pyrene, dibenzo (a, h) anthracene, benzo (g, h, i) perylene, and indeno (1, 2, 3-cd) pyrene were taken from fluorescence detector.

However, the retention time, initial and continuing calibration results that associated with (RE-3960667) were used in the calculation from two detectors: naphthalene, acenaphthene, acenaphthylene, 1-methylnaphthalene, 2-methylnaphthalene, fluorene, phenanthrene, and anthracene were taken from ultraviolet detector, and fluoranthene, pyrene, benzo (a) anthracene, chrysene, benzo (b) fluoranthene, benzo (k) fluoranthene, benzo (a) pyrene, dibenzo (a, h) anthracene, benzo (g, h, i) perylene, and indeno (1, 2, 3-cd) pyrene were taken from fluorescence detector.

Analytical Data Validation Report
Kerr-McGee Corporation
Moss American Superfund Site- Milwaukee, WI
SDG #: KMA37

BETX (U.S. EPA Method 8021B) SDG # MMA37

1.Samples:

Client Sample	Lab Sample .		Date	Date	Date
Description:	Number	<u>Matrix</u>	<u>Collected</u>	<u>Prepared</u>	Analyzed
MA3-MW-29S-121202-02	3960658	Grab water	12/12/02	12/17/02	12/17/02
MA3-MW-29S-121202-02-MS	3960659	Grab water	12/12/02	12/17/02	12/17/02
MA3-MW-29S-121202-02-MSD	3960660	Grab water	12/12/02	12/17/02	12/17/02
MA3-MW-37S-121202-03-DP	3960661	Grab water	12/12/02	12/17/02	12/17/02
MA3-MW-37S-121202-03	3960662	Grab water	12/12/02	12/17/02	12/17/02
MA3-MW-31S-121202-04	3960663	Grab water	12/12/02	12/17/02	12/17/02
MA3-MW-36S-121202-01	3960664	Grab water	12/12/02	12/17/02	12/17/02
MA3-MW-30S-121202-05	3960665	Grab water	12/12/02	12/17/02	12/17/02
MA3-MW-5S-121202-06	3960666	Grab water	12/12/02	12/17/02	12/17/02
FB-02	3960667	Grab water	12/12/02	12/17/02	12/17/02
TB-05	3960668	Grab water	12/12/02	12/17/02	12/17/02

2. Holding Times:

All samples were analyzed within the required holding times.

3. Method Blank:

The method blank BLK5669 was analyzed with (3960658 thru 3960668) on 12/17/02. The method blank results were free of contamination.

4. Matrix Spike/Matrix Spike Duplicate:

The matrix spike was performed on sample 3960658. The MS/MSD recoveries were within the quality control limits. Also, the RPD% values were acceptable.

5. Laboratory control Sample:

The LCS/LCSD recoveries were within the control limits. Also, the RPD% values were acceptable.

6. Surrogate:

The method blank and the investigated samples had surrogate recoveries within the required quality control limits.

7. Initial and Continuing Calibration:

All the initial calibration and continuing calibration results were within the quality control limits.

Please feel free to contact me at (847) 971-6800 with any question regarding these validation reports.

Sincerely
Tania Balikji-Shammo



ANALYTICAL RESULTS

Prepared for:

Kerr-McGee Corporation P.O. Box 25861 Oklahoma City OK 73125

405-270-2602

Prepared by:

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

SAMPLE GROUP

The sample group for this submittal is 834558. Samples arrived at the laboratory on Friday, December 13, 2002.

Client Description	Lancaster Labs Number
MA3-MW-29S-121202-02 Unspiked Grab Water Sample	3960658
MA3-MW-29S-121202-02 Matrix Spike Grab Water	3960659
MA3-MW-29S-121202-02 Matrix Spike Duplicate Grab	3960660
MA3-MW-37S-121202-03-DP Grab Water Sample	3960661
MA3-MW-37S-121202-03 Grab Water Sample	3960662 ⁻
MA3-MW-31S-121202-04 Grab Water Sample	3960663
MA3-MW-36S-121202-01 Grab Water Sample	3960664
MA3-MW-30S-121202-05 Grab Water Sample	3960665
MA3-MW-5S-121202-06 Grab Water Sample	3960666
FB-02 Grab Water Sample	3960667
TB-05 Trip Blank Water Sample	3960668

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	• '	 · · ·





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

Respectfully Submitted,

Christine M. Ratcliff
Sr. Chemist

Analysis Report

Units



Page 1 of 1

Dilution

Factor

Lancaster Laboratories Sample No. WW 3960658

Collected:12/12/2002 09:50 by BS

Submitted: 12/13/2002 09:10 Reported: 12/31/2002 at 13:43

Discard: 01/31/2003

MA3-MW-29S-121202-02 Unspiked Grab Water Sample

Moss American Site - WI

Account Number: 07802

Kerr-McGee Corporation

P.O. Box 25861

Oklahoma City OK 73125

As Received Method

Detection

Limit

MAS02 SDG#: KMA37-01BKG

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CAT			
No.	Analysis Name	•	

08213	BTEX (8021)		r	•		
00776	Benzene	71-43-2	N.D.	0.20	ug/l	1
00777	Toluene	108-88-3	N.D.	0.20 ·	ug/l	1 .
00778	Ethylbenzene	100-41-4	N.D.	0.20	ug/1 · ·	1
00779	Total Xylenes	1330-20-7	N.D.	0.60	ug/l	1
			•			

CAS Number

As Received

Result

00774	PAH's	in	Water	рy	HPLC	

00775	Naphthalene	91-20-3	N.D.	1.0	ug/l	1
00782	Acenaphthylene	208-96-8	N.D.	2.0	ug/l	. 1
.00783	Acenaphthene	83-32-9	N.D.	2.0 .	ug/l	1
00784	Fluorene	86-73-7	N.D.	0.20	ug/l	1
00785	Phenanthrene	85-01-8	N.D.	0.080	ug/1	1
00789	Anthracene	120-12-7	N.D.	0.040	ug/l	1
·00807	Pluoranthene	206-44-0	N.D.	0.040	ug/l	1
00811	Pyrene	129-00-0	N.D.	0.20	· ug/l	1
00812	Benzo (a) anthracene	56-55-3	N.D.	0.020	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/1	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

Labor	ratoi	cv Ch	ronicle

			Labor	acory	CITTO	ILLUIC .	• •	
CAT					•	Analysis		Dilution
No.	Analysis Name	. M	lethod		Trial#	Date and Time	Analyst	. Factor
08213	BTEX (8021)	S	W-846 8021B		. 1	12/17/2002 14:38	Melissa D Mann	1
00774	PAH's in Water by HPLC	S	W-846 8310	٠.	1	12/20/2002 21:08	Mark A Clark	.1
01146	GC VOA Water Prep	S	W-846 5030B	٠.	1	12/17/2002 14:38	Melissa D Mann	n.a.
03337	PAH Water Extraction	S	W-846 3510C		1	12/16/2002 09:30	Felix C Arroyo	· 1.
	•				• •			



Lancaster Laboratories Sample No. WW

Collected:12/12/2002 09:50 by BS Account Number: 07802

Submitted: 12/13/2002 09:10 Reported: 12/31/2002 at 13:43

Kerr-McGee Corporation

Discard: 01/31/2003

P.O. Box 25861

MA3-MW-29S-121202-02 Matrix Spike Grab Water

Oklahoma City OK 73125

Moss American Site - WI

MAS02 SDG#: KMA37-01MS

		•			As Received		••
C	ÀT			As Received	Method	•	Dilution
N	o.	Analysis Name	CAS Number	Result	Detection Limit	Units.	Pactor
0	8213	BTEX (8021)					
0	0776	Benzene	71-43-2	20	0.20	ug/l	1
0	0777	Toluene	108-88-3	22.	0.20	ug/l	1
. 0	077.8	Ethylbenzene	100-41-4	22.	0.20	ug/l	1
. 0	0779	Total Xylenes	1330-20-7	66	0.60	ug/l	1
. 0	0774	PAH's in Water by HPLC		•		. :	
0	10775	Naphthalene	91-20-3	150.	1.0	ug/1	1 .
0	0782	Acenaphthylene	208-96-8	150. _.	2.0	ug/l	1
0	0783	Acenaphthene	83-32-9	170.	2.0	. ug/l	1
. 0	0784 .	Fluorene	86-73-7	16.	0.20	ug/l	· 1
0	0785	Phenanthrene	85-01-8	5.0	0.080	ug/l	1 .
.0	0789	Anthracene .	120-12-7	2.7	0.040	ug/l	1
. 0	0807	Fluoranthene	206-44-0	3.0	0.040	: ug/l	1
0	0811	Pyrene	129-00-0	18.	0.20	ug/l	. 1
0	00812	Benzo(a) anthracene	56-55-3	1.4	0.020	ug/1	1
	00818	Benzo(b) fluoranthene	205-99-2	1.2	0.040	ug/l	i
0	00823	Benzo(a)pyrene	50-32-8	.1.5	0.020	ug/l	. 1
. • 0	0895	Dibenz (a, h) anthracene	53-70-3	. 3.0	0.040	ug/1	1 .
C	00898	Indeno(1,2,3-cd)pyrene	193-39-5	6.3	. 0.080	ug/l	1 .
	00907	Benzo(g,h,i)perylene	191-24-2	11.	0.10	ug/l	1
. (07409	Chrysene	218-01-9	5.7	0.080.	ug/l	1
(07410	Benzo(k) fluoranthene	207-08-9	1.2	0.020 .	ug/l	. 1

•••		·		Laborato	ry	Chro	nicle		
. (TA:	•	•	•			Analysis		Dilution
∴.1	io.	Analysis Name		Method		Trial#	Date and Time	Analyst	Pactor
(8213	BTEX (8021),		SW-846 8021B		1	12/17/2002 15:13	Melissa D Mann	1
•	0774	PAH's in Water by HPLC		SW-846 8310	•	1	12/20/2002 21:47	Mark A Clark	1
· (1146	GC VOA Water Prep	٠.	SW-846 · 5030B		1	12/17/2002 15:13	Melissa D Mann	n.a.
. (3337	PAH Water Extraction		SW-846 3510C		1	12/16/2002 09:30	Felix C Arroyo	1.



Lancaster Laboratories Sample No. WW 3960660

Collected:12/12/2002 09:50 by BS Account Number: 0780

Submitted: 12/13/2002 09:10 Reported: 12/31/2002 at 13:43

Discard: 01/31/2003

MA3-MW-29S-121202-02 Matrix Spike Duplicate Grab

Water Sample

Moss American Site - WI

MAS02 SDG#: KMA37-01MSD

• •	•
	Cornoration
Korr-Maccoo	Cornoration

Kerr-McGee Corporation P.O. Box 25861

Oklahoma City OK 73125

			• •			•
•				As Received	-	
CAT			As Received	Method		Dilution
No.	Analysis Name	CAS Number	Result	Detection Limit	Units	Factor
08213	BTEX (8021)					•
00776	Benzene	71-43-2	20.	0.20	ug/l	1
00777	Toluene	108-88-3	22.	0.20	ug/l ·	1
00778	Ethylbenzene	100-41-4	22.	0.20	ug/1 .	1 ·
00779	Total Xylenes	1330-20-7	. 66.	0.60	ug/l	. 1
00774	PAH's in Water by HPLC					
00775	Naphthalene	91-20-3	160.	1.0	ug/l	1
00782	Acenaphthylene	208-96-8	· 160.	2.0	ug/l	1
00783	Acenaphthene	83-32-9	180.	2.0	ug/l	· 1
00784	Fluorene	86-73-7	17.	0.20	ug/l	1 ·
00785	Phenanthrene	85-01-8	5.2	0.080	ug/l	1
00789	Anthracene ·	120-12-7	2.7	0.040	ug/l	1
00807	Fluoranthene	206-44-0	3.0	0.040	ug/l	1
00811	Pyrene	129-00-0	18.	0.20	. 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	1.5	0.020	ug/1 ·	1 .
00895	Dibenz(a,h)anthracene	53-70-3	3.0	0.040	ug/l	1.
00898	Indeno(1,2,3-cd)pyrene	193-39-5	6.3	0.080	ug/l	1
00907	Benzo(g,h,i)perylene	191-24-2	11.	0.10	ug/1	1
07409	Chrysene	218-01-9	5.6	0.080	ug/l	1
07410	Benzo(k) fluoranthene	207-08-9	1.2	0.020	ug/l	1.
			•			

			Labora	itory	Chronicl	e		:	
CAT		٠.		• •		alysis	•		Dilution
· No.	Analysis Name		Method		Trial# Date	and Time	Analyst	•	Factor
08213	BTEX (8021)		SW-846 8021B		1 12/17	7/2002 15:49	Melissa D Mann	٠.	1
00774	PAH's in Water by HPLC		SW-846 8310		1 12/20	/2002 22:25	Mark A Clark		1 .
01146	GC VOA Water Prep		SW-846 5030B		1 12/17	7/2002 15:49	Melissa D Mann		n.a.
03337	PAH Water Extraction		SW-846 3510C	• • •	1 12/16	5/2002 09:30	Felix C Arroyo		1



Lancaster Laboratories Sample No. WW 3960661

Collected:12/12/2002 09:55

Account Number: 07802

Kerr-McGee Corporation

Submitted: 12/13/2002 09:10 Reported: 12/31/2002 at 13:43

P.O. Box 25861

Discard: 01/31/2003

Oklahoma City OK 73125

MA3-MW-37S-121202-03-DP Grab Water Sample

Moss American Site - WI

SDG#: KMA37-02FD FDMAS

CAT No.	Analysis Name	CAS Númber	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
08213	BTEX (8021)		•		•	
00776	Benzene	71-43-2	N.D.	0.20	ug/l	1
00777	Toluene	108-88-3	NID.	0.20	ug/l ·	1
00778	Ethylbenzene	100-41-4	N.D.	0.20	. ug/l	1
00779	Total Xylenes	1330-20-7	N.D.	0.60	ug/l	1
00774	PAH's in Water by HPLC				· · ·	•
00775	Naphthalene	91-20-3	N.D.	1.0	ug/1 ·	1 .
00782	Acenaphthylene	208-96-8	N.D.	2.0	ug/l	. 1
00783	Acenaphthene	83-32-9	N.D.	2.0 .	ug/l	1
00784	Fluorene	86-73-7	N.D.	0.20	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.	0.20 🖫	ug/1	1
00812	Benzo (a) anthracene	56-55-3	N.D.	0.020	ug/l	ı
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/1	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/1	1

	•			Labora	tory	Chro	nicle			
	CAT				_	•	Analysis			Dilution
	No.	Analysis Name	·	Method		Trial#	Date and Time	Analyst	• •	Factor
•	08213	BTEX (8021)		SW-846 8021B		1	12/17/2002 16:24	Melissa D Mann	•	· 1
	00774	PAH's in Water by HPLC		SW-846 8310		1 .	12/21/2002 16:06	Mark.A Clark		· 1 ›
•	01146	GC VOA Water Prep		SW-846 5030B		. 1	12/17/2002 16:24	Melissa D Mann	٠.,	n.a.
	03337	PAH Water Extraction		SW-846 3510C		· 1	12/16/2002 09:30	Felix C Arroyo		1



Lancaster Laboratories Sample No. WW

Collected:12/12/2002 09:55 by BS Account Number: 07802

Submitted: 12/13/2002 09:10 Reported: 12/31/2002 at 13:43

Discard: 01/31/2003

MA3-MW-37S-121202-03 Grab Water Sample

Moss American Site - WI

37503 SDG#: KMA37-03

Kerr-McGee Corporation

P.O. Box 25861

Oklahoma City OK 73125

	CAT			As Received	As Received Method	•	Dilution
•	No.	Analysis Name	CAS Number	Result	Detection Limit	Units	Factor
	08213	BTEX (8021)		· .			•
	00776	Benzene	71-43-2	Ŋ.D.	. 0.20	ug/1	1
	00777	Toluene	108-88-3	N.D.	0.20	ug/l	1
•	.00778	Ethylbenzene	100-41-4	N.D	0.20	ug/l	1
	00779	Total Xylenes	1330-20-7	N.D.	0.60	ug/l	1
	00774	PAH's in Water by HPLC					
	00775	Naphthalene	91-20-3	N.D.	1.0	ug/l	. • 1
	00782	Acenaphthylene	208-96-8	N.D.	2.0	_ug/l	. 1
	.00783	Acenaphthene	83-32-9	N.D.	2.0	ug/l	1
•	00784	Fluorene	86-73-7	N.D.	0.20	ug/l	1
	00785	Phenanthrene e	85-01-8	N.D.	0.080	ug/l	1
• .	00789	Anthracene	120-12-7	N.D.	0.040	ug/1	1
	00807	Fluoranthene	206-44-0	N.D.	0.040	ug/l.	1
	.00811	Pyrene	129-00-0	N.D.	0.20	ug/l	1 .
	00812	Benzo (a) anthracene	56-55-3	N.D.	0.020	' ug/l	. 1 .
	00818	Benzo(b) fluoranthene	. 205-99-2	N.D.	0.040	.ug/1	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/1	1

		Daboracory	Curonicie		•
CAT .			Analysis		Dilution
No.	Analysis Name	Method	Trial#. Date and Time	Analyst	Pactor
08213	BTEX (8021)	SW-846 8021B	1 12/17/2002 16:59	Melissa D Mann	1
00774	PAH's in Water by HPLC	SW-846 8310	1 12/21/2002 16:45	Mark A Clark	1
01146	GC VOA Water Prep	SW-846 5030B	1 12/17/2002 16:59	Melissa D Mann	n.a.
03337	PAH Water Extraction	SW-846 3510C	1 12/16/2002 09:30	Felix C Arroyo	1

Analysis Report



Page 1 of 1

Lancaster Laboratories Sample No. WW 3960663

Collected:12/12/2002 11:15 by BS Account Number: 0780

Submitted: 12/13/2002 09:10 Reported: 12/31/2002 at 13:43

Discard: 01/31/2003

MA3-MW-31S-121202-04 Grab Water Sample

Moss American Site - WI

31S04 SDG#: KMA37-04

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Kerr-McGee Corporation

P.O. Box 25861

Oklahoma City OK 73125

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.	:0.20	ug/l	· 1
00777	Toluene	108-88-3	N.D.	0.20	ug/l	1
. 00778	Ethylbenzene .	100-41-4	N.D.	0.20	ug/1	.1
00779	Total Xylenes	1330-20-7	. N.D.	0.60	ug/l	1
00774	PAH's in Water by HPLC			•		•
00775	Naphthalene	91-20-3	N.D.	1.0	ug/1 ·	1.
00782	Acenaphthylene	208-96-8	N.D.	2.0	ug/l	1
00783	Acenaphthene	83-32-9	N.D.	2.0	.ug/1	1 .
00784	Fluorene .	86-73-7	N.D.	0.20	ug/1	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/1	. 1
00811	Pyrene	129-00-0	N.D.	0.20	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/1	1
00895	Dibenz(a,h)anthracene	53-70-3	Ņ.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/1	1 ·
07409	Chrysene	218-01-9	N.D.	0.080	ug/l :	· 1
07410	Benzo(k) fluoranthene	207-08-9	N.D.	0.020	ug/l	1

		Laboratory	Chronicle		
CAT		· · · · · · · · · · · ·	Analysis		Dilution
No.	Analysis Name	Method	Trial# Date and Time	Analyst	Factor
08213	BTEX (8021)	SW-846 8021B	1 12/17/2002 17:3	35 Melissa D Mann	1 .
00774	PAH's in Water by HPLC	SW-846 8310	1 12/21/2002 17:3	23 Mark A Clark	. 1
01146	GC VOA Water Prep	SW-846 5030B	1 12/17/2002 17:3	35 Melissa D Mann	n.a.
03337	PAH Water Extraction	SW-846 3510C	1 12/16/2002 09:	30 Felix C Arroyo	1



Lancaster Laboratories Sample No.

Collected:12/12/2002 09:45 by BS

Account Number: 07802

Submitted: 12/13/2002 09:10 Reported: 12/31/2002 at 13:44

Kerr-McGee Corporation

P.O. Box 25861

Discard: 01/31/2003

Oklahoma City OK 73125

MA3-MW-36S-121202-01 Grab Water Sample

Moss American Site - WI

SDG#: KMA37-05 36SQ1

•	•		•	As Received		
CAT	•		As Received	. Method	•	Dilution
No.	Analysis Name	CAS Number	· Result ·	Detection Limit	Units	Factor
08213	BTEX (8021)			•	•	
00776	Benzene	71-43-2	N.D.	0.20	ug/l	1 ·
00777	Toluene	108-88-3	0.27 J	0.20	ug/1	1
00778	Ethylbenzene	100-41-4	N.D.	0.20	ug/1	1
00779	Total Xylenes	1330-20-7	N.D.	0.60	ug/1	1 .
00774	PAH's in Water by HPLC	•				
00775	Naphthalene	91-20-3	N.D.	1.0	ug/l	1
00782	Acenaphthylene	208-96-8	N.D.	2.0	ug/l	1
00783	Acenaphthene	83-32-9	N.D.	2.0	ug/l	1 · ·
00784	Fluorene	86-73-7	N.D.	0.20	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.	0.20 .	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/1	1
00907	Benzo(g,h,i)perylene	191-24-2	N.D.	0.10	. ug/1	1
07409				•		
4	Chrysene	218-01-9	N.D.	0.080	' ug/l	1

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CÁ	T	٠.		12.				Analysis		·	Dilutio
No			Analysis Name	•	Method		Trial	Date and Time	Analyst '	. •	Pactor
. 08	213		BTEX (8021)	: * *	SW-846 80	021B ·	. 1	12/17/2002 18:10	Melissa D Mann		" 1
ÖØ	774		PAH's in Water by H	PLC .	SW-846 83	310	1	12/21/2002 18:02	Mark A Clark	•	-1
01	146	•	GC VOA Water Prep	. ·.	SW-846 50	030B	.1	12/17/2002 18:10	Melissa D Mann		n.a.
. 03	337	•	PAH Water Extractio	n	SW-846 35	510C	. 1	12/16/2002 09:30	Felix C Arroyo	, :	.1



Lancaster Laboratories Sample No. WW 3960665

Collected:12/12/2002 12:20 by BS

Submitted: 12/13/2002 09:10 Reported: 12/31/2002 at 13:44

Discard: 01/31/2003

MA3-MW-30S-121202-05 Grab Water Sample

Moss American Site - WI

30S05 SDG#: KMA37-06

Account Number: 07802

Kerr-McGee Corporation

P.O. Box 25861

Oklahoma City OK 73125.

			•			
CAT		· · · ·	As Received	As Received Method		Dilution
No.	Analysis Name	CAS Number	Result	Detection Limit	Units	Factor
08213	BTEX (8021)					
00776	Benzene	71-43-2	N.D.	0.20	ug/l	1
00777	Toluene	108-88-3	N.D.	0.20	. ug/1	1 '
00778	Ethylbenzene	. 100-41-4	N.D.	0.20	ug/1 [°]	1
00779	Total Xylenes	1330-20-7	N.D.	0.60	ug/l	1 .
. 00774	PAH's in Water by HPLC				· :	•
00775	Naphthalene	91-20-3	N.D.	1:0	ug/l	1
00782	Acenaphthylene	208-96-8	N.D.	2.0	. ug/1	· 1
00783	Acenaphthene ·	83-32-9	N.D.	2.0	ug/l	1
00784	Fluorene	86-73-7	N.D.	. 0.20	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.	. 0.20	ug/l	1.
00812	Benzo (a) anthracene	56-55-3	N.D.	0.020	ug/1 ·	. 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/1	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/1.	1.

	:		100		Labora	itory	Chro	nicle			•	
CAT	٠.						•	Analysis			, 1	Dilution
No.		Analysis Name		• .	Method		Trial#	Date and Ti	me ·	Analyst		Factor
08213		BTEX. (8021)	•		SW-846 8021B		1	12/17/2002	L8:45	Melissa D Mann	÷	1
00774		PAH's in Water l	by HPLC		SW-846 8310		1	12/21/2002	9:19	Mark A Clark	•.	1
01146		GC VOA Water Pro	ep ·		:SW-846 5030B	٠.	1	12/17/2002	L8:45	Melissa D Mann		n.a.,
03337		PAH Water Extra	ction	• .	SW-846 3510Ç.		1	12/16/2002	9:30	Felix C Arroyo		1



Lancaster Laboratories Sample No. WW 3960666

Collected:12/12/2002 12:25 by BS

Account Number: 07802

Submitted: 12/13/2002 09:10 Reported: 12/31/2002 at 13:44 Kerr-McGee Corporation

Discard: 01/31/2003

P.O. Box 25861

Discard: 01/31/2003

Oklahoma City OK 73125

MA3-MW-5S-121202-06 Grab Water Sample Moss American Site - WI

•

5SX06 SDG#: KMA37-07

			•	As Received			
CAT			As Received	Method		Dilution	
No.	Analysis Name	CAS Number	Result	Detection Limit	Units	Pactor	
08213	BTEX (8021)	•					
00776	Benzene	71-43-2	N.D.	0.20	ug/l	1	
.00777	Toluene	108-88-3	N.D.	0.20	ug/l	1	
00778	Ethylbenzene	100-41-4	N.D.	0.20	ug/l	1	
00779	Total Xylenes	1330-20-7	N.D.	0.60	ug/l	1 .	
00774	PAH's in Water by HPLC						
00775	Naphthalene	91-20-3	N.D.	1.0	ug/l	1	
00782	Acenaphthylene	208-96-8	N.D.	2.0	ug/l	1	
00783	Acenaphthene	83-32-9	N.D.	2.0	ug/l	1	
00784	Fluorene	86-73-7	N.D.	0:20	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.	0.20	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/1.	1	
00823	Benzo (a) pyrene	50-32-8	N.D.	0.020	ug/1	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	
			•		•		

		.•	Labor	ator	У	Chro	nicle		
CAT	• •		•		-	•	Analysis		Dilution
No.	Analysis Name		Method			Trial#	Date and Time	Analyst	Factor
08213	BTEX (8021)		SW-846 8021B			1 .	12/17/2002 19:20	Melissa D Mann	1
00774	PAH's in Water by HPLC		SW-846 8310			· 1	12/21/2002 19:57	Mark A Clark	1
01146	GC VOA Water Prep		SW-846 5030B			1	12/17/2002 19:20	Melissa D Mann	n.a.
03337	PAH Water Extraction		SW-846 3510C		٠	1	12/16/2002 09:30	Felix C Arroyo	1







Lancaster Laboratories Sample No. WW 3960667

Collected: 12/12/2002 13:00 by BS

Submitted: 12/13/2002 09:10
Reported: 12/31/2002 at 13:44

Reported: 12/31/2002 at 13:44 Discard: 01/31/2003 FB-02 Grab Water Sample Moss American Site - WI Account Number: 07802

Kerr-McGee Corporation

P.O. Box 25861

Oklahoma City OK 73125

FB02X SDG#: KMA37-08FB

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Pactor
08213	BTEX (8021)				•	•
00776	Benzene	71-43-2	N.D	0.20	.ug/1	1
00777	Toluene	108-88-3	N.D.	0.20	ug/l .	1
00778	Ethylbenzene	100-41-4	N.D.	0.20	ug/l	1
00779	Total Xylenes	1330-20-7	N.D.	0.60	ug/l	1
' '00774	PAH's in Water by HPLC					
00775	Naphthalene	91-20-3	N.D. UJ	1.0	ug/1	1
00782	Acenaphthylene	208-96-8	N.D.	2.0.	ug/l	. 1
00783	Acenaphthene	83-32-9	N.D.	2.0:	ug/l	1
00784	Fluorene	86-73-7	N.D.	0.20	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.	0.20	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/1 ·	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	и.р.	0.10	ug/l	1
07409	Chrysene	218-01-9	N.D.	0.080	ug/1	1
07410	Benzo(k) fluoranthene	207-08-9	и.D. 🤻	0.020	ug/1	1 2

Poor surrogate recoveries were observed for the HPLC PAH compounds. The analysis was repeated outside of the required hold time and surrogate recoveries met requirements. The results reported are from the initial extraction of the sample.

1BS

Lab	ora	tory	Chron	icle

CAT			• .	Analysis		Dilution
No.	Analysis Name	Method	Trial#	Date and Time	Analyst	- Factor
08213	BTEX (8021)	SW-846 8021B	1	12/17/2002 19:55	Melissa D Mann	1
00774	PAH's in Water by HPLC	SW-846 8310	1	12/21/2002 20:36	Mark A Clark	1
01146	GC VOA Water Prep	SW-846 5030B	1	12/17/2002 19:55	· Melissa D Mann	· n.a.
03337	PAH Water Extraction	SW-846 3510C	1	12/16/2002 09:30	Ferix C Arroyo	1
	•				1	





Page 2 of 2

Lancaster Laboratories Sample No. WW 3960667

Collected:12/12/2002 13:00 by BS

Submitted: 12/13/2002 09:10 Reported: 12/31/2002 at 13:44

Discard: 01/31/2003 FB-02 Grab Water Sample Moss American Site - WI

FB02X SDG#: KMA37-08FB Account Number: 07802

Kerr-McGee Corporation

P.O. Box 25861

Oklahoma City OK 73125



Lancaster Laboratories Sample No. WW 3960668

Collected:12/12/2002 11:10

Submitted: 12/13/2002 09:10 Reported: 12/31/2002 at 13:44

Discard: 01/31/2003

TB-05 Trip Blank Water Sample

Moss American Site - WI

Account Number: 07802

Kerr-McGee Corporation

P.O. Box 25861

Oklahoma City OK 73125

TB05T SDG#: KMA37-09TB*

Analysis Name		CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
BTEX (8021)	•					ā
Benzene		71-43-2	N.D.	0.20	ug/l	1
Toluene		108-88-3	N.D.	0.20	ug/l	1
Ethylbenzene		100-41-4	N.D.	0.20	_ug/l	1 .
Total Xylenes		1330-20-7	N.D.	0.60	. ug/l	1
	BTEX (8021) Benzene Toluene Ethylbenzene	BTEX (8021) Benzene Toluene Ethylbenzene	BTEX (8021) Benzene 71-43-2 Toluene 108-88-3 Ethylbenzene 100-41-4	### Analysis Name, CAS Number Result ###################################	Analysis Name CAS Number Result Detection Limit BTEX (8021) Benzene 71-43-2 N.D. 0.20 Toluene 108-88-3 N.D. 0.20 Ethylbenzene 100-41-4 N.D. 0.20	Analysis Name CAS Number Result Detection Limit BTEX (8021) Benzene 71-43-2 N.D. 0.20 ug/1 Toluene 108-88-3 N.D. 0.20 ug/1 Ethylbenzene 100-41-4 N.D. 0.20 ug/1

CAT Analysis Dilution					-,		<u> </u>	•
08213 BTEX (8021) SW-846 8021B 1 12/17/2002 21:40 Melissa D Mann 1	: CAT	_		-	-	Analysis	•	Dilution
	No.	Analysis Name	• •	Method	Trial#	Date and Time	Analyst	Factor
01146 GC VOA Water Prep SW-846 5030B 1 12/17/2002 21:40 Melissa D Mann n.a.	08213	BTEX (8021)		SW-846 8021B	. 1	12/17/2002 21:40	Melissa D Mann	· 1
	01146	GC VOA Water Prep	•	SW-846 5030B	1	12/17/2002 21:40	Melissa D Mann	'n.a.



Analysis Request/Environmental Services Chain of Custody



For Lancaster Laboratories use only

Acct. # 7807 Sample # 396068-68

8345SF

	Please pri	nt. Instru	ictions o	n revers	e side	corr	espor	nd witl	n circled	d nun	nbers.		•		٠.	•	ا فيستورو	garining (gr	}
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Project Name/#: Moss American								. ,		, . 		Τ,	/	/ /	/ /	/ <u>/</u>	SCR#		<u> </u>
Project Manager: Tom Graan				1.6		Jers		. /							; /		.; •		
Sampler: B. Schaefe, S. Meyer, M. Castille				aple	2	ntair		12	Ι.,	/·					/.		· ·		QUES.
Name of state where samples were collected:			© site	PO D	N.	tof Co			′	/.	/ · /	/ /	/ /	/		/	٠.		
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Turnaround Time Requested (TAT) (please circle): (Rush TAT is subject to Lancaster Laboratories approval and s		ush	Relinquis	-	0	,	74-		Date 12/12/	1	ime	Receive	d by:		`: ';:)	. 18.	Date_	Time
Date results are needed:			Relinquis	hed by:	Va	<u> </u>			Date		1500 Time	Receive	ed by:	<u></u>		· ·	· · · · · · · · · · · · · · · · · · ·	Date	Time
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ype II (Tier II) Other Site-specific QC requir	ed? Yes N	No ·						· · ·						<u> </u>					_
Type III (NJ Red. Del.) Type IV (CLP) Internal Chain of Cust	•		Relinquis	hed by:			•		Date	Y	ime	Receive	d		1	12		Date	Time

Analysis Request/Environmental Services Chain of Custody



Acct. # 7802 | Sample # 3960658 168

83455 \$

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Project Name/#: M645 American					e e					/ :	/ ,	Ι,	/ ,		/	/ /	/	SCR#		
Project Manager: Tom Graan		•			6		iers			•/	•/			· ./		./				10 2
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Type I (Tier II) GLP Site-specific QC require (If yes, indicate QC sample ar				* 1 - 1					· · · · · ·			֥	2	300		<u></u>	· · · · · ·			
Type III (NJ Red. Del.) Type IV (CLP) Internal Chain of Cust			Relinqu	Jished I	oy:	•				Da	te	Time	Receive	ji by. ISO	1 1	PH	DOM	1 D	Date / 3-72_1	Time ()910

Analysis Request / Environmental Services Chain of Custod

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	Lancasiei	Ladoratori	62
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For Lancaster Laboratories use only

Acct. # 1802 Group# 834558 Sample # 3466658 168 COC # 0006807

Client: Weston	Acct. #				Matri	X (4)	(5			第 A	ņalŷs	ës R	equi	stêd	WHEN !		or Lab Use	Only,
Project Name/#: Moss American		#:		39	¥ 8			. •	/	. /		/ .	/ ,	/.	/ ,	/ · /	\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \	SCR #: //_	1/24
Project Manager: Ton Graan					58		2	,	/	/ /	/ /	/			· /	·/ ;	/		
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ype III (NJ Red. Del.) Internal Chain of ype IV (CLP)	Custody requ	ured? Yes N	10	٠							+		1	/ / .	•	1/2		רחבעני	



Case Narrative

Client: Kerr-McGee Corporation

SDG: KMA37

LANCASTER LABORATORIES PAH by HPLC

SAMPLE NUMBER(S):

•	•	Matrix	
<u>LL#'s</u>	Sample Code	<u>Water</u>	Comments
3960658	MAS02	X	Unspiked
3960659	MAS02MS	X	Matrix Spike
3960660	MAS02MSD	X	Matrix Spike Dup
3960661	FDMAS	. X	•
3960662	37803	X	
3960663	31S04	X	
3960664	36S01	· X	
3960665	30805	X	
3960666	5SX06	Χ	
3960667	FB02X	X	Client Blank
3960667RE	FB02XRE	· X	Reextraction
LARORATORY	SUBMITTED OC:	•	

SBLKWI348	SBLKWI3482	· X		Method Blank
SBLKWG357	SBLKWG3572	Х		Method Blank
348WILCS	348WILCS2	X	<u>.</u>	Lab Control Sample
357WGLCS	357WGLCS2	- X		Lab Control Sample
357WGLCSD	357WGLCSD2	X		Lab Control Sample Dup

SAMPLE PREPARATION:

Due to insufficient sample, reduced volumes were used in the extraction of the following

Lancaster Laboratories • 2425 New Holland Pike, PO Box 12425, Lancaster, PA 17605-2425 Phone: 717-656-2300 • Fax: 717-656-2300 • http://www.LancasterLabs.com



1

Case Narrative (continued) SDG#: KMA37

Sample Code	<u>Volume</u>
FDMAS	995 mls
37\$03	985 mls
31S04	971 mls
30\$05	999 mls
5SX06	982 mls
FB02X	995 mls
FB02XRE	993 mls.

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

ANALYSIS:

The method used for analysis was SW-846 3510C.

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 FB02XRE. Therefore, a LCS/LCSD was performed to demonstrate precision and accuracy at a batch level.

Reextraction was required for FB02X due to unacceptable surrogate recoveries.

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

QUALITY CONTROL AND NONCONFORMANCE SUMMARY:

Due to surrogate recoveries outside QC limits, FB02X was reextracted. The reextraction was performed outside the method required holding time. All recoveries were within QC limits in FB02XRE. Both sets of data are included in this data package.

All other QC was within specifications.



7

Case Narrative (continued) SDG#: KMA37

DATA INTERPRETATION:

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

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

Sample Code File ID 02354.09 UV Column - Compound Indeno(1,2,3-cd)pyrene FL Column - Compound 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:



Case Narrative SDG# KMA37

Client : Kerr-McGee Corporation Project: Moss American Site - WI

Volatiles by GC - Water

IPLE ANALYSES

LL .	Sample	Matrix	•
imple #	Designation	Soil Water	Comments
3960658	MAS02	X	
~360659MS	MAS02	X	Matrix Spike
960660MSD	MAS02	X	Matrix Spike Dup
J960661	FDMAS	X.	
3960662	37803	X	
960663	31S04	X	•
960664	36S01	X	
3960665	30805	· x	: .
~960666	5SX06	X . ·	
1960667	FB02X	. X	
J960668	TB05T	x	
			•
JALITY CONTE	ROL ANALYSES		
•		•	

BLK5669		. X	Method Blank
		•	· .
LCS5669	•	X	Lab Control Sample
LDS5669		. X .	Lab Control Dup

SAMPLE PREPARATION

o sample preparation was necessary.

NALYSIS

The integration system reviews the chromatogram retention times, comparing them to the retention times in the ID window. A peak in the sample chromatogram with a cetention time within the ID window is identified as a "hit."

The method used for analysis was EPA Method SW-846 8021B. A J&W DB-VRX, $75m \times 0.45mm$ column was used for the analysis of all samples. The surrogate concentration was 30.0 UG/L.

No problems were encountered during analysis.

QUALITY CONTROL AND NONCONFORMANCE SUMMARY

Client submitted batch QC was referenced.

All QC was within specifications

DATA INTERPRETATION

No explanation is necessary for the data submitted.



Case Narrative SDG# KMA37

Client : Kerr-McGee Corporation Project: Moss American Site - WI

Volatiles by GC - Water

larrative reviewed and approved by:

la M. Kauffman, Group Leader

Date

Analytical Data Validation Report
Kerr-McGee Corporation
Moss American Superfund Site- Milwaukee, WI
SDG #: KMA35

I have reviewed the analytical data provided by Lancaster Laboratories for the Moss American Site in Milwaukee, Wisconsin upon the information that was provided by the laboratory.

Polynuclear Aromatic Hydrocarbons (PAHs by HPLC, U.S. EPA Method 8310) Moss American Site

SDG # KMA35

1.Samples:

Client Sample	Lab Sample		Date ·	Date	Date
Description:	<u>Number</u>	<u>Matrix</u>	<u>Collected</u>	Extracted	Analyzed
MA3-TG1-1-111202-01	3958874	Grab water	12/11/02	12/13/02	20,23,26
MA3-TG1-2-111202-02	3958875	Grab water	12/11/02	12/13/02	12/15/02
MA3-TG1-3-111202-03	3958876	Grab water	12/11/02	12/13/02	12/.15/02
MA3-MW-28S-111202-04	3958877	Grab water	12/11/02	12/13/02	12/15/02
MA3-MW-6S-111202-05	3958878	Grab water	12/11/02	12/13/02	12/15/02
MA3-MW-33S-111202-06	3958879	Grab water	12/11/02	12/13/02	12/15,23
MA3-MW-32S-111202-07	3958880	Grab water	12/11/02	12/13/02	12/20/02
MA3-MW-27S-111202-08	3958881	Grab water	12/11/02	12/13/02	12/20/02
MA3-MW-35S-111202-09	3958882	Grab water	12/11/02	12/13/02	12/20/02
MA3-MW-35S-111202-09-DUP	3958883	Grab water	12/11/02	12/13/02	12/20/02
MA3-MW-34S-111202-10	3958884	Grab water	12/11/02	12/13/02	12/20,23
MA3-MW-7S-111202-11	3958885	Grab water	12/11/02	12/13/02	12/20,23
MA3-MW-9S-111202-12	3958886	Grab water	12/11/02	12/13/02	12/20/02

2. Holding Times:

The samples were extracted and analyzed within the required holding times. However, the samples were re-extracted past the holding time. Therefore, all the re-extracting results qualified as (J/UJ). All the results reported from the initial extraction of the samples.

3. Method Blank:

Three method blanks SBLKWH3462, SBLKWH3532, and SBLKWC3542 were associated with this SDG. SBLKWH3462 was analyzed with (3958874 thru 3958886, 3958874DL, 3958874DL2, and 3958884DL) on 12/15/02. SBLKWH3532 was analyzed with the re-extracted samples (3958874 thru 3958885) on 12/26/02. SBLKWC3542 was analyzed with (RE-3958886) on 12/24/02. All the method blanks results were free of contamination.

4. Surrogate:

The surrogate recoveries were coming from UV detector. The method blanks and the investigated samples had surrogate recoveries within the required quality control limits, except nitrobenzene in 3958877RE, and triphenylene in 3958874, 3958874DL, 3958874DL2, 3958874RE, 3958884DL, and 3958884RE. The re-extracted samples were qualified for not meeting the required holding time. However, qualify the results in 3958874, 3958874DL, 3958874DL2, 3958884, and 3958884DL as (J/UJ).

Analytical Data Validation Report Kerr-McGee Corporation Moss American Superfund Site-Milwaukee, WI SDG #: KMA35

5. Matrix Spike/Matrix Spike Duplicate Recovery:

The matrix spike was performed on sample 3966074 from different SDG. The MS/MSD recoveries were within the quality control limit, except in naphthalene, acenaphthylene, and benzo (b) fluoranthene. However, no action was taken because the original sample was not submitted with this SDG. The RPD% values were acceptable.

6. Laboratory Control Sample:

The LCS/LCSD that associated with (3958874 thru 3958886) recoveries were outside the acceptance quality control limits, except in naphthalene. However, the RPD% values were acceptable. Therefore, qualify the results in 3958874 thru 3958886 as (J/UJ) except in naphthalene. The LCS that associated with (RE-3958874 thru 3958885) recoveries was outside the control limits, except in naphthalene, acenaphthylene, and in benzo (g, h, i) perylene. No action was applied because all the re-extracted samples were qualified above.

Also, the LCS that associated with the re-extracted (3958886) recoveries was within the control

7. Retention Time:

limits.

All the retention time results were acceptable.

8. Initial and Continuing Calibration:

The initial calibration, and continuing calibration verification were all acceptable.

However, the retention time, initial and continuing calibration results were used in the calculation from two detectors: naphthalene, acenaphthylene, 1-methylnaphthalene, 2-methylnaphthalene, fluorene, phenanthrene, and anthracene were taken from ultraviolet detector, and acenaphthene, fluoranthene, pyrene, benzo (a) anthracene, chrysene, benzo (b) fluoranthene, benzo (k) fluoranthene, benzo (a) pyrene, dibenzo (a, h) anthracene, benzo (g, h, i) perylene, and indeno (1, 2, 3-cd) pyrene were taken from fluorescence detector.

Analytical Data Validation Report Kerr-McGee Corporation Moss American Superfund Site-Milwaukee, WI SDG #: KMA35

BETX (U.S. EPA Method 8021B) SDG # MMA35

1.Samples:

Client Sample	Lab Sample		Date	Date	Date
Description:	Number	<u>Matrix</u>	Collected	<u>Prepared</u>	Analyzed
MA3-TG1-1-111202-01	3958874	Grab water	12/11/02	12/14/02	12/14/02
MA3-TG1-2-111202-02	3958875 ·	Grab water	12/11/02	12/14/02	12/14/02
MA3-TG1-3-111202-03	3958876	Grab water	12/11/02	12/14/02	12/14/02
MA3-MW-28S-111202-04	3958877	Grab water	12/11/02	12/14/02	12/14/02
MA3-MW-28S-111202-04-MS	3958877	Grab water	12/11/02	12/14/02	12/14/02
MA3-MW-6S-111202-05	3958878	Grab water	12/11/02	12/14/02	12/14/02
MA3-MW-33S-111202-06	3958879	Grab water	12/11/02	12/14/02	12/14/02
MA3-MW-32S-111202-07	3958880	Grab water	12/11/02	12/14/02	12/14/02
MA3-MW-27S-111202-08	3958881	Grab water	12/11/02	12/14/02	12/14/02
MA3-MW-35S-111202-09	3958882	Grab water	12/11/02	12/14/02	12/14/02
MA3-MW-35S-111202-09-DUP	3958883	Grab water	12/11/02	12/14/02	12/14/02
MA3-MW-34S-111202-10	3958884	Grab water	12/11/02	12/14/02	12/14/02
MA3-MW-7S-111202-11	3958885	Grab water	12/11/02	12/14/02	12/14/02
MA3-MW-9S-111202-12	3958886	Grab water	12/11/02	12/14/02	12/14/02
TB-03	3958887	Grab water	12/11/02	12/14/02	12/14/02 .
TB-04	3958888	Grab water	12/11/02	12/14/02	12/14/02

2. Holding Times:

All samples were analyzed within the required holding times.

3. Method Blank:

Two method blanks BLK5108, and BLK5109 were associated with this SDG. BLK5108 was analyzed with (3958875 thru 3958884, 3958886 thru 3958888, and MS) on 12/13/02. BLK5109 was analyzed with (3958874, and 3958885) on 12/14/02. Both method blanks BLK5108, and BLK5109 result were free of contamination.

4. Matrix Spike/Matrix Spike Duplicate:

Sufficient volume was not available to perform MS/MSD. Therefore, the laboratory performed only matrix spike on sample 3958877. The MS recoveries were within the quality control limits.

5. Laboratory control Sample:

The LCS/LCSD that associated with (3958874 thru 3958888) recoveries were within the control limits. Also, the RPD% values were acceptable.

6. Surrogate:

The method blanks and the investigated samples had surrogate recoveries within the required quality control limits.

Analytical Data Validation Report
Kerr-McGee Corporation
Moss American Superfund Site- Milwaukee, WI
SDG #: KMA35

Thursday, January 23, 2003

	7.	Initial	and	Contin	nuing	Calibr	ation:
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All the initial calibration and continuing calibration results were within the quality control limits.

Please feel free to contact me at (847) 971-6800 with any question regarding these validation reports.

Sincerely Tania Balikji-Shammo



ANALYTICAL RESULTS

Prepared for:

Kerr-McGee Corporation P.O. Box 25861 Oklahoma City OK 73125

405-270-2602

Prepared by:

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

SAMPLE GROUP

The sample group for this submittal is 834229. Samples arrived at the laboratory on Thursday, December 12, 2002.

Client Description	Lancaster Labs Number
MA3-TG1-1-111202-01 Grab Water Sample	3958874
MA3-TG1-2-111202-02 Grab Water Sample	3958875
MA3-TG1-3-111202-03 Grab Water Sample	3958876
MA3-MW-28S-111202-04 Grab Water Sample	3958877 .
MA3-MW-6S-111202-05 Grab Water Sample	3958878
MA3-MW-33S-111202-06 Grab Water Sample	3958879
MA3-MW-32S-111202-07 Grab Water Sample	3958880
MA3-MW-27S-111202-08 Grab Water Sample	3958881 ·
MA3-MW-35S-111202-09 Grab Water Sample	3958882
MA3-MW-35S-111202-09-DUP Grab Water Sample	3958883
MA3-MW-34S-111202-10 Grab Water Sample	3958884
MA3-MW-7S-111202-11 Grab Water Sample	3958885
MA3-MW-9S-111202-12 Grab Water Sample	3958886
TB-03 Grab Water Sample	3958887
TB-04 Grab Water Sample	3958888
•	-

METHODOLOGY

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

1 COPY TO	Kerr-McGee Corporation Weston Solutions, Inc.		··	Attn: Dr. Jeff Ostmeyer Attn: Mr. Tom Graan
1 COL 1 10	weston Solutions, the.	•		Attii. Mii. 10iii Giaali
1 CODY TO	Data Package Group			





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

Respectfully Submitted,

Michele A. Jarosick Senior Chemist



Lancaster Laboratories Sample No. WW 3958874

Collected:12/11/2002 09:15 by BS

Submitted: 12/12/2002 09:50 Reported: 01/03/2003 at 11:41

Discard: 02/03/2003

MA3-TG1-1-111202-01 Grab Water Sample

Moss American Superfund Site - Milwaukee, WI

Account Number: 07802

Kerr-McGee Corporation

P.O. Box 25861

Oklahoma City OK 73125

12111 SDG#: KMA35-01

				As Received		
CAT	•		As Received	Method		Dilution
No.	Analysis Name	CAS Number	Result	Detection Limit	Units	Factor
00217	Kjeldahl Nitrogen	7727-37-9	2.3 J	1.5	mg/l	1
	Due to interferences from the sa	mple matrix,	the reporting li	mit for	•	
	the total Kjeldahl nitrogen dete	ermination was	increased.			
00219	Nitrite Nitrogen	14797-65-0	0.019 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	1.5	0.46	mg/l	1
	Sufficient sample volume was not	available to	perform a MS/MS	D for this	_	
	analysis. Therefore, a LCS/LCSD accuracy at a batch level.	was performed	to demonstrate	precision and		
00226	Ortho-Phosphate as P	14265-44-2	N.D.	0.0066	mg/1	1
00235	Biochemical Oxygen Demand	n.a.	34.8	0.80	mg/l	. 1
00273	Total Organic Carbon	n.a.	17.3	0.500	mg/l	1
00345	Total Phosphorus as PO4 water	14265-44-2	0.30	0.12	mg/l	1
01553	Chemical Oxygen Demand	n.a.	148.	8.4	mg/1	5
08213	BTEX (8021)					
00776	Benzene	71-43-2	4.9 J	4.0	ug/1	20
00777	Toluene	1,08-88-3	N.D.	4.0	ug/l	20
00778	Ethylbenzene	100-41-4	36.	4.0	ug/l	20
00779	Total Xylenes	1330-20-7	57. J	12.	ug/l	20
· .	Sufficient sample volume was no analysis. However, a MS was per performed to demonstrate precis	formed. In add	dition, a LCS/LCS	SD was		

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		185	•		
00775	Naphthalene	91-20-3	8,900. 🎷	240.	ug/l	200
00782	Acenaphthylene	208-96-8	300.	32.	ug/1	20
00783	Acenaphthene	83-32-9	4,400.J	32.	ug/l	20
00784	Fluorene	86-73 <i>-</i> 7	3.400. T	36.	ug/l	200
00785	Phenanthrene	85-01-8	8,800. T	160.	ug/l	2000
00789	Anthracene	120-12-7	860. T	8.0	ug/l	200
00807	Fluoranthene	206-44-0	4,200. T	80.	ug/l	2000
00811	Pyrene	129-00-0	3,300. T	36.	Mug/l	200
00812	Benzo (a) anthracene	56-55-3	740. 7	4.0	jug/l	200
	•	•	. •		7	٠.

Analysis Report



Page 2 of 3

Lancaster Laboratories Sample No. 3958874

Collected:12/11/2002 09:15

Account Number: 07802

Submitted: 12/12/2002 09:50 Reported: 01/03/2003 at 11:41 Kerr-McGee Corporation

P.O. Box 25861

Discard: 02/03/2003

Oklahoma City OK 73125

MA3-TG1-1-111202-01 Grab Water Sample

Moss American Superfund Site - Milwaukee, WI

12111 SDG#: KMA35-01

	•			WR MACETAER			
CAT		•	As Received	Method		Dilution	
No.	Analysis Name	CAS Number	Result	Detection Limit	Units	Factor	
00818	Benzo(b)fluoranthene	205-99-2	280. 丁	8.0	ug/l	200	
00823	Benzo (a) pyrene	50-32-8	290. 丁	4.0	ug/l	200	
00895	Dibenz (a, h) anthracene	53-70-3	N.D.ŬT	0.80	ug/l	20	
00898	Indeno (1, 2, 3-cd) pyrene	193-39-5	N.D.UT	2.0	ug/l	20	
00907	Benzo(g,h,i)perylene	191-24-2	110.	2.0	ug/l	20	
07409	Chrysene	218-01-9	290.~	2.0	ug/l	20 .	
07410	Benzo(k) fluoranthene	207-08-9	160.J	4.0	ug/l	200 ·	

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 for many of the PAHs were outside QC limits in the LCS/LCSD associated with this sample. The sample was re-extracted outside of the method hold time. Comparable sample results were observed between the two extractions. The results reported are from the initial extraction of the sample.

TBS 24/03

Surrogate recoveries were also outside QC limits in the LCS/LCSD associated with this sample.

Due to the high concentration of non-target compounds, a dilution was necessary to perform the PAH by HPLC analysis. Therefore, the reporting limits for the HPLC PAH compounds were raised.

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

	· · · · · · · · · · · · · · · · · · ·	Laboratory	CILO	utcte		
CAT	1			Analysis	•	Dilution
No.	Analysis Name	Method .	Trial#	Date and Time	Analyst	Factor
00217	Kjeldahl Nitrogen	EPA 351.2	1	12/13/2002 17:59	Venia B McFadden	1
00219	Nitrite Nitrogen	EPA 353.2	1	12/12/2002 12:48	Nicole M Kepley	1
00220	Nitrate Nitrogen	EPA 353.2	1	12/17/2002 12:48	Ramona V Goss .	1
00221	Ammonia Nitrogen	EPA 350.2	1	12/13/2002 14:30	Luz M Groff	1
00226	Ortho-Phosphate as P	EPA 365.3	. 1	12/12/2002 23:00	Daniel S Smith	. 1
00235	Biochemical Oxygen Demand	EPA 405.1	1	12/12/2002 22:34	Nicole R Bushong .	1
00273	Total Organic Carbon	BPA 415.1	. 1	12/17/2002 11:48	Timothy M Petree	1.
00345	Total Phosphorus as PO4 water	BPA 365.1	1	12/24/2002 18:21	Venia B McFadden	ı
.01553	Chemical Oxygen Demand	EPA 410.2	. 2	12/19/2002 05:25	Susan A Engle	5

Analysis Report



Page 3 of 3

3958874 Lancaster Laboratories Sample No.

Collected:12/11/2002 09:15

Submitted: 12/12/2002 09:50 Reported: 01/03/2003 at 11:41 Discard: 02/03/2003

MA3-TG1-1-111202-01 Grab Water Sample

Moss American Superfund Site - Milwaukee, WI

Account Number: 07802

Kerr-McGee Corporation

P.O. Box 25861

Oklahoma City OK 73125

12111	SDG#: KMA35-01	•				•	
08213	BTEX (8021)	SW-846 8021B	•	1	12/14/2002 12:56	Martha L Seidel	20
00774	PAH's in Water by HPLC	SW-846 8310	•	1	12/20/2002 15:59	Mark A Clark	20
00774	PAH's in Water by HPLC	SW-846 8310		1	12/23/2002 22:22	Mark A Clark	200
00774	PAH's in Water by HPLC	SW-846 8310	٠.	1	12/26/2002 04:08	Mark A Clark	2000
01146	GC VOA Water Prep	SW-846 5030B		1	12/14/2002 12:56	Martha L Seidel	n.a.
01460	Total Kjeldahl Nitrogen Digest	RPA 351.2		1	12/13/2002 08:40	James S Mathiot	1
03337	PAH Water Extraction	SW-846 3510C	٠. ٠	1	12/13/2002 09:00	Jennytza L Marcano	. 1
· 08264	Total Phos as PO4 Prep (water)	EPA 365.1		1	12/13/2002 11:00	James S Mathiot	1





3958875 Lancaster Laboratories Sample No.

Collected:12/11/2002 09:20

Account Number: 07802

Submitted: 12/12/2002 09:50 Reported: 01/03/2003 at 11:42 Kerr-McGee Corporation

P.O. Box 25861

Discard: 02/03/2003

Oklahoma City OK 73125

As Received .

MA3-TG1-2-111202-02 Grab Water Sample

Moss American Superfund Site - Milwaukee, WI

12112 SDG#: KMA35-02

No. Analysis Name	CAT			As Received	Method		Dilution
Mitrite Nitrogen 14797-65-0 N.D. 0.015 mg/l 1 00220 Nitrate Nitrogen 14797-55-8 N.D. 0.040 mg/l 1 1 1 1 1 1 1 1 1	No.	Analysis Name	CAS Number	Result		Units	Factor
00220 Nitrate Nitrogen 14797-55-8 N.D. 0.040 mg/l 1 00221 Ammonia Nitrogen 7664-41-7 0.75 J 0.46 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. 0.0066 mg/l 1 00237 Sinchemical Oxygen Demand n.a. N.D. 4.4 mg/l 1 00237 Total Oxygen Carbon n.a. 12.3 0.500 mg/l 1 00345 Total Phosphorus as PO4 water 14265-44-2 0.45 0.12 mg/l 1 01553 Chemical Oxygen Demand n.a. 32.2 1.7 mg/l 1 00553 ETEX (8021) 00776 Benzene 71-43-2 N.D. 0.20 ug/l 1 00777 Toluene 108-88-3 N.D. 0.20 ug/l 1 00778 Sthylbenzene 100-41-4 0.50 J 0.20 ug/l 1 00778 Sthylbenzene 100-41-4 0.50 J 0.20 ug/l 1 00778 Sthylbenzene 1300-20-7 N.D. 0.60 ug/l 1 00779 Total Xylenes 1330-20-7 N.D. 0.60 ug/l 1 00770 Stficient sample volume was not available to perform a MSD for this analysis. However, a MS was performed. In addition, a LCS/LCSD was performed to demonstrate precision and accuracy at a batch level. 00774 PAH's in Water by HFLC 00775 Naphthalene 91-20-3 48.	00217	Kjeldahl Nitrogen	7727-37-9	•	0.30		1 ·
Namonia Mikrogen 7664-41-7 0.75 J 0.46 mg/l 1	00219	Nitrite Nitrogen	14797-65-0	N.D.	0.015	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. 0.0066 mg/l 1 00237 Total Organic Carbon n.a. N.D. 4.4 mg/l 1 00237 Total Organic Carbon n.a. 12.3 0.500 mg/l 1 00345 Total Phosphorus as PO4 water 14265-44-2 0.45 0.12 mg/l 1 00345 Total Phosphorus as PO4 water 14265-44-2 0.45 0.12 mg/l 1 00553 Chemical Oxygen Demand n.a. 32.2 1.7 mg/l 1 00776 Benzene 71-43-2 N.D. 0.20 ug/l 1 007776 Benzene 108-88-3 N.D. 0.20 ug/l 1 007777 Toluene 108-88-3 N.D. 0.20 ug/l 1 007778 Ethylbenzene 100-41-4 0.50 J 0.20 ug/l 1 00778 Ethylbenzene 1330-20-7 N.D. 0.60 ug/l 1 00778 Ethylbenzene 1330-20-7 N.D. 0.60 ug/l 1 00778 N.D. 0.60 ug/l 1 00778 W.S. Sufficient sample volume was not available to perform a MSD for this analysis. However, a MS was performed. In addition, a LCS/LCSD was performed to demonstrate precision and accuracy at a batch level. 00775 Naphthalene 91-20-3 48. 7	00220	Nitrate Nitrogen	14797-55-8	N.D.	0.040	mg/l	1
analysis. Therefore, a LCS/LCSD was performed to demonstrate precision and accuracy at a batch level. 00226 Otho-Phosphate as P 14265-44-2 N.D. 0.0066 mg/l 1 00235 Biochemical Oxygen Demand n.a. N.D. 4.4 mg/l 1 00273 Total Organic Carbon n.a. 12.3 0.500 mg/l 1 00345 Total Phosphorus as PO4 water 14265-44-2 0.45 0.12 mg/l 1 01553 Chemical Oxygen Demand n.a. 32.2 1.7 mg/l 1 01553 Chemical Oxygen Demand n.a. 32.2 1.7 mg/l 1 00776 Benzene 71-43-2 N.D. 0.20 ug/l 1 00777 Toluene 108-88-3 N.D. 0.20 ug/l 1 00777 Toluene 100-41-4 0.50 J 0.20 ug/l 1 00778 Ethylbenzene 100-41-4 0.50 J 0.20 ug/l 1 00779 Total Xylenes 1330-20-7 N.D. 0.60 ug/l 1 Sufficient sample volume was not available to perform a MSD for this analysis. However, a MS was performed. In addition, a LCS/LCSD was performed to demonstrate precision and accuracy at a batch level. 00774 PAH's in Water by HFLC 00775 Naphthalene 91-20-3 48. 1.0 ug/l 1 00783 Acenaphthylene 208-96-8 N.D. Ul 2.0 ug/l 1 00783 Acenaphthylene 208-96-8 N.D. Ul 2.0 ug/l 1 00784 Pluorene 86-73-7 14. 0.20 ug/l 1 00785 Phenanthrene 85-01-8 11. 0.000 ug/l 1 00786 Phenanthrene 85-01-8 11. 0.000 ug/l 1 00786 Phenanthrene 85-01-8 11. 0.000 ug/l 1 00787 Phuoranthene 206-44-0 2.2 0.040 ug/l 1 00807 Pluoranthene 206-44-0 2.2 0.040 ug/l 1 00807 Pluoranthene 206-44-0 2.2 0.040 ug/l 1 00801 Pyrene 129-00-0 1.4 0.20 ug/l 1 00811 Pyrene 129-00-0 1.4 0.20 ug/l 1 00812 Benzo(a)anthracene 56-55-3 0.070 0 0.040 ug/l 1 00813 Benzo(a)anthracene 56-55-3 0.070 0 0.040 ug/l 1 00813 Benzo(a)anthracene 56-52-8 N.D. 0.000 ug/l 1 00815 Dihens(a,h)anthracene 55-70-3 N.D. 0.040 ug/l 1 00895 Dihens(a,h)anthracene 55-70-3 N.D. 0.040 ug/l 1 00895 Dihens(a,h)anthracene 53-70-3 N.D. 0.040 ug/l 1 00895 Dihens(a,h)anthracene 53-70-3 N.D. 0.040 ug/l 1 00897 Benzo(b)Pyrene 193-39-5 N.D. 0.040 ug/l 1 00897 Benzo(b)Pyrene 193-39-5 N.D. 0.040 ug/l 1	00221	Ammonia Nitrogen	7664-41-7	0.75 J	0.46	mg/l	1.
accuracy at a batch level. 00225							,
00226 Ortho-Phosphate as P 14265-44-2 N.D. 0.0066 mg/l 1 00225 Biochemical Oxygen Demand n.a. N.D. 4.4 mg/l 1 00273 Total Oxganic Carbon n.a. 12.3 0.500 mg/l 1 00345 Total Oxpanic Carbon n.a. 12.3 0.500 mg/l 1 00345 Total Oxpanic Carbon n.a. 12.3 0.500 mg/l 1 01553 Chemical Oxygen Demand n.a. 32.2 1.7 mg/l 1 01553 Chemical Oxygen Demand n.a. 32.2 1.7 mg/l 1 00776 Benzene 71-43-2 N.D. 0.20 ug/l 1 00777 Toluene 108-88-3 N.D. 0.20 ug/l 1 00778 Toluene 108-88-3 N.D. 0.20 ug/l 1 00779 Total Xylenes 1330-20-7 N.D. 0.60 ug/l 1 00779 Total Xylenes 1330-20-7 N.D. 0.60 ug/l 1 00779 Total Xylenes 1330-20-7 N.D. 0.60 ug/l 1 00775 Naphthalene 91-20-3 48.			was performed	d to demonstrate	precision and		
00235 Biochemical Oxygen Demand n.a. N.D. 4.4 mg/l 1 1 1 1 1 1 1 1 1	00226	• •	14265-44-2	N.D	0 0066	mcr/1	1
00273 Total Organic Carbon							
00345 Total Phosphorus as PO4 water 14265-44-2 0.45 0.12 mg/l 1 01553 Chemical Oxygen Demand n.a. 32.2 1.7 mg/l 1 00553 Chemical Oxygen Demand n.a. 32.2 1.7 mg/l 1 00763 Chemical Oxygen Demand n.a. 32.2 1.7 mg/l 1 00776 Benzene 71-43-2 N.D. 0.20 ug/l 1 00777 Toluene 108-88-3 N.D. 0.20 ug/l 1 1 00777 Toluene 100-41-4 0.50 J 0.20 ug/l 1 00778 Ethylbenzene 100-41-4 0.50 J 0.20 ug/l 1 00779 Total Xylenes 1330-20-7 N.D. 0.60 ug/l 1 Sufficient sample volume was not available to perform a MSD for this analysis. However, a MS was performed. In addition, a LCS/LCSD was performed to demonstrate precision and accuracy at a batch level. 00774 PAH's in Water by HFLC 00775 Naphthalene 91-20-3 48. 7 1.0 ug/l 1 00782 Acenaphthylene 208-96-8 N.D. UJ 2.0 ug/l 1 00782 Acenaphthylene 83-32-9 32. J 2.0 ug/l 1 00784 Fluorene 86-73-7 14. J 0.20 ug/l 1 00785 Phenanthrene 85-01-8 11. J 0.080 ug/l 1 00785 Phenanthrene 85-01-8 11. J 0.080 ug/l 1 00789 Anthracene 120-12-7 1.5 J 0.040 ug/l 1 00807 Pluoranthene 206-44-0 2.2 J 0.040 ug/l 1 00807 Pluoranthene 206-44-0 2.2 J 0.040 ug/l 1 00811 Pyrene 129-00-0 1.4 J 0.20 ug/l 1 00811 Pyrene 129-00-0 1.4 J 0.20 ug/l 1 00812 Benzo(a) anthracene 56-55-3 0.070 J 0.020 ug/l 1 00818 Benzo(b) fluoranthene 50-32-8 N.D. 0.040 ug/l 1 00823 Benzo(a) pyrene 50-32-8 N.D. 0.040 ug/l 1 00895 Dihenz(a,h) anthracene 53-70-3 N.D. 0.040 ug/l 1 00895 Dihenz(a,h) anthracene 53-70-3 N.D. 0.040 ug/l 1 00895 Bideno(1,2,3-cd) pyrene 193-39-5 N.D. 0.080 ug/l 1 1 00907 Benzo(g,h,i) perylene 191-24-2 N.D. 0.10 Ug/l 1						— *.	
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Total Xylenes 1330-20-7 N.D. 0.60 ug/l 1 Sufficient sample volume was not available to perform a MSD for this analysis. However, a MS was performed. In addition, 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 48. 1.0 ug/l 1 00782 Acenaphthylene 208-96-8 N.D. UJ 2.0 ug/l 1 00783 Acenaphthylene 83-32-9 32. 1.0 ug/l 1 00784 Fluorene 86-73-7 14. 0.20 ug/l 1 00785 Phenanthrene 85-01-8 11. 0.080 ug/l 1 00789 Phenanthrene 85-01-8 11. 0.040 ug/l 1 0.0809 Phenanthrene	00777	Toluene	108-88-3	N.D.	0.20	ug/1	1
Sufficient sample volume was not available to perform a MSD for this analysis. However, a MS was performed. In addition, 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 48.	00778	Ethylbenzene	100-41-4	0.50 J	0.20	ug/l	1
analysis. However, a MS was performed. In addition, a LCS/LCSD was performed to demonstrate precision and accuracy at a batch level. 00774 PAH's in Water by HFLC 00775 Naphthalene 91-20-3 48. 7 1.0 ug/l 1 00782 Acenaphthylene 208-96-8 N.D. 0 2.0 ug/l 1 00783 Acenaphthene 83-32-9 32. 7 2.0 ug/l 1 00784 Fluorene 86-73-7 14. 7 0.20 ug/l 1 00785 Phenanthrene 85-01-8 11. 7 0.080 ug/l 1 00789 Anthracene 120-12-7 1.5 7 0.040 ug/l 1 00807 Fluoranthene 206-44-0 2.2 7 0.040 ug/l 1 00810 Pyrene 129-00-0 1.4 7 0.20 ug/l 1 00811 Pyrene 129-00-0 1.4 7 0.20 ug/l 1 00812 Benzo(a) anthracene 56-55-3 0.070 0 0.020 ug/l 1 00818 Benzo(b) fluoranthene 205-99-2 N.D. 0 0.040 ug/l 1 00823 Benzo(a) pyrene 50-32-8 N.D. 0 0.040 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 00898 Indeno(1,2,3-cd) pyrene 193-39-5 N.D. 0.080 ug/l 1	00779	Total Xylenes	1330-20-7	N.D.	0.60	ug/l	, 1
performed to demonstrate precision and accuracy at a batch level. 00774 PAH's in Water by HFLC 00775 Naphthalene 91-20-3 48.	•	-		-			
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00775 Naphthalene 91-20-3 48.		performed to demonstrate precis	sion and accur	acy at a batch 1	evel.		
00775 Naphthalene 91-20-3 48.	. 00774	PAH's in Water by HPLC					•
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00783 Acenaphthene 83-32-9 32. J 2.0 ug/l 1 00784 Fluorene 86-73-7 14. J 0.20 ug/l 1 00785 Phenanthrene 85-01-8 11. J 0.080 ug/l 1 00789 Anthracene 120-12-7 1.5 J 0.040 ug/l 1 00807 Fluoranthene 206-44-0 2.2 J 0.040 ug/l 1 00811 Pyrene 129-00-0 1.4 J 0.20 ug/l 1 00812 Benzo(a) anthracene 56-55-3 0.070 J 0.020 ug/l 1 00818 Benzo(b) fluoranthene 205-99-2 N.D. J 0.040 ug/l 1 00823 Benzo(a) pyrene 50-32-8 N.D. J 0.020 ug/l 1 00895 Dibenz(a,h) anthracene 53-70-3 N.D. J 0.040 ug/l 1 00898 Indeno(1,2,3-cd) pyrene 193-39-5 N.D. J 0.080 ug/l 1 00907 Benzo(g,h,i) perylene 191-24-2 N.D. J 0.10 </td <td>: 00782</td> <td>-</td> <td>•</td> <td>N.D. UT</td> <td></td> <td></td> <td></td>	: 00782	-	•	N.D. UT			
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00811 Pyrene 129-00-0 1.4	00807	Pluoranthene	206-44-0	2.2 😙	0.040	- -	
00812 Benzo (a) anthracene 56-55-3 0.070 (j) 0.020 ug/l 1 00818 Benzo (b) fluoranthene 205-99-2 N.D. (j) 0.040 ug/l 1 00823 Benzo (a) pyrene 50-32-8 N.D. (j) 0.020 ug/l 1 00895 Dibenz (a, h) anthracene 53-70-3 N.D. (j) 0.040 ug/l 1 00898 Indeno (1,2,3-cd) pyrene 193-39-5 N.D. (j) 0.080 ug/l 1 00907 Benzo (g, h, i) perylene 191-24-2 N.D. (j) 0.10 [jug/l 1	00811	Pyrene	129-00-0	1.4 🕆	0.20		
00818 Benzo (b) fluoranthene 205-99-2 N.D. (c) 0.040 ug/l 1 00823 Benzo (a) pyrene 50-32-8 N.D. (c) 0.020 ug/l 1 00895 Dibenz (a,h) anthracene 53-70-3 N.D. (c) 0.040 ug/l 1 00898 Indeno (1,2,3-cd) pyrene 193-39-5 N.D. (c) 0.080 ug/l 1 00907 Benzo (g,h,i) perylene 191-24-2 N.D. (c) 0.10 Ug/l 1	00812	Benzo (a) anthracene	56-55-3		0.020		
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	00818	Benzo (b) fluoranthene	205-99-2	м.D. ()	0.040	<u> </u>	
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	00823		50-32-8	7.0	0.020		
00898 Indeno(1,2,3-cd)pyrene 193-39-5 N.D. 0.080 ug/1 1 00907 Benzo(g,h,i)perylene 191-24-2 N.D. 0.10 ug/1 1	00895	_ 		•		_	
00907 Benzo(g,h,i)perylene 191-24-2 N.D. 0.10 Mug/l 1	00898			4			-
	00907		191-24-2	N.D. \			•
043/2	07409	- -		1.			
· ·		· .		-		1	_

TB\$ 24/03



Page 2 of 2

3958875 Lancaster Laboratories Sample No.

Collected:12/11/2002 09:20

Submitted: 12/12/2002 09:50 Reported: 01/03/2003 at 11:42

Discard: 02/03/2003

MA3-TG1-2-111202-02 Grab Water Sample

Moss American Superfund Site - Milwaukee, WI

Account Number: 07802

Kerr-McGee Corporation

P.O. Box 25861

Oklahoma City OK 73125

12112 SDG#: KMA35-02

CAT No.

As Received As Received Method

Dilution Analysis Name CAS Number Result Detection Factor . Benzo(k) fluoranthene 207-08-9 N.D. UJ 0.020 ug/l 07410

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 for many of the PAHs were outside QC limits in the LCS/LCSD associated with this sample. The sample was re-extracted outside of the method hold time. Comparable sample results were observed between the two extractions. The results reported are from the initial extraction of the sample.

Surrogate recoveries were also outside QC limits in the LCS/LCSD associated with this sample.

		Language	~	*****		
CAT		-		Analysis	-	Dilution
No.	Analysis Name	Method	Trial#	Date and Time	Analyst	Factor
00217	Kjeldahl Nitrogen	BPA 351.2	1	12/13/2002 18:00	Venia B McFadden	1
00219	Nitrite Nitrogen	EPA 353.2	1	12/12/2002 12:49	Nicole M Kepley	1
00220	Nitrate Nitrogen	EPA 353.2	1	12/17/2002 12:49	Ramona V Goss	. 1
00221	Ammonia Nitrogen	EPA 350.2	1	12/17/2002 18:30	Luz M Groff	. 1
00226	Ortho-Phosphate as P	EPA 365.3	1	12/12/2002 23:00	Daniel S Smith	1
Q0235	Biochemical Oxygen Demand	EPA 405.1	1	12/12/2002 22:34	Nicole R Bushong	1 .
00273	Total Organic Carbon	EPA 415.1	1	12/17/2002 12:12	Timothy M Petree	1
00345	Total Phosphorus as PO4 water	EPA 365.1	. 1	12/24/2002 18:21	Venia B McFadden	—- 1 ——
01553	Chemical Oxygen Demand	EPA 410.2	1	12/19/2002 05:25	Susan A Engle	1 .
08213	BTEX (8021).	SW-846 8021B	. 1	12/14/2002 01:59	Martha L Seidel	1
00774	PAH's in Water by HPLC	SW-846 8310	· 1 .	12/15/2002 19:01	Mark A Clark	. 1
01146	GC VOA Water Prep	SW-846 5030B	· 1	12/14/2002 01:59	Martha L Seidel	n.a.
01460	Total Kjeldahl Nitrogen Digest	BPA 351.2	1	12/13/2002 08:40	James S Mathiot	1
03337	PAH Water Extraction	SW-846 3510C	1	12/13/2002 09:00	Jennytza L Marcano	1
08264	Total Phos as PO4 Prep (water)	EPA 365.1	1	12/13/2002 11:00	James S Mathiot	· 1



Lancaster Laboratories Sample No. 3958876

Collected:12/11/2002 09:25

Account Number: 07802

Submitted: 12/12/2002 09:50

Kerr-McGee Corporation

Reported: 01/03/2003 at 11:42

P.O. Box 25861

Discard: 02/03/2003

Oklahoma City OK 73125

MA3-TG1-3-111202-03 Grab Water Sample Moss American Superfund Site - Milwaukee, WI

12113 SDG#: KMA35-03

	•			As Received		
CAT			As Received	Method		Dilution
No.	Analysis Name	CAS Number	Result	Detection Limit	Units	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	0.86 J	0.46	mg/l	1
	Sufficient sample volume was no	t available to	perform a MS/MS	D 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	0.0066	mg/l	1
00235	Biochemical Oxygen Demand	n.a.	И.D. ·	4.3	mg/l	1 ·
.00273	Total Organic Carbon	n.a.	9.99	0.500	mg/l	1
00345	Total Phosphorus as PO4 water	14265-44-2	0.44	0.12	mg/1	1
01553	Chemical Oxygen Demand	n.a.	28.1	1.7	mg/l	1
						•
08213	BTEX (8021)					
00776	Benzene	71-43-2	N.D.	0.20	ug/l	1
00777	Toluene	108-88-3	N.D.	0.20	ug/1	1
.00778	Ethylbenzene	100-41-4	N.D.	0.20	ug/l	1
00779	Total Xylenes	1330-20-7	N.D.	0.60	ug/l	1 ·
	Sufficient sample volume was no	t available to	o perform a MSD :	for this	- -	
•	analysis. However, a MS was per	formed. In ad	dition, a LCS/LC	SD was		
	performed to demonstrate precis	sion and accur	acy at a batch l	evel.		٠.
00774	PAH's in Water by HPLC				•	
. 00774	FAR B IN WACEL BY REDC					
00775	Naphthalene.	91-20-3	N.D.	1.0	ug/l	1
00782	Acenaphthylene	208-96-8	N.D.UJ	2.0	ug/l	1
00783	Acenaphthene	83-32-9	N.D.	2.0	ug/l	1
00784	Fluorene	86-73-7	и.р.	0.20	ug/1	1
00785	Phenanthrene	85-01-8	N.D.	0.080	ug/l	1
00789	Anthracene	120-12-7	И.Д.√	0.040	. ·ug/1	1 .
00807	Fluoranthene	206-44-0	0.055 (J)	0.040	ug/1	1
00811	Pyrene	129-00-0	и. р. Ј	0.20	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/1	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/1	1
00907	Benzo(g,h,i) perylene	191-24-2	N.D.	0.10 [.]	(ug/1	1
. 07409	Chrysene	218-01-9	и.р. ↓	0.080	ÿug/l	1
:			•		1	_





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Lancaster Laboratories Sample No. 3958876

Collected:12/11/2002 09:25

by BS

Account Number: 07802

Submitted: 12/12/2002 09:50 Reported: 01/03/2003 at 11:42

P.O. Box 25861

Discard: 02/03/2003

MA3-TG1-3-111202-03 Grab Water Sample

Moss American Superfund Site - Milwaukee, WI

Kerr-McGee Corporation

Oklahoma City OK 73125

12113 SDG#: KMA35-03

CAT

No.

As Received Method Dilution As Received Analysis Name CAS Number Result Detection Units **Factor** 207-08-9 ug/l 07410 Benzo (k) fluoranthene N.D.UT

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 for many of the PAHs were outside QC limits in the LCS/LCSD associated with this sample. The sample was re-extracted outside of the method hold time. Comparable sample results were observed between the two extractions. The results reported are from the initial extraction of the sample.

Surrogate recoveries were also outside QC limits in the LCS/LCSD associated with this sample.

		Haboracory	CILLO	IIICIE		
CAT	·	_	_		Dilution	
No.	Analysis Name	Method ·	Trial#	Date and Time	Analyst	Factor
00217	Kjeldahl Nitrogen	BPA 351.2	1 .	12/13/2002 18:01	Venia B McFadden	1
00219	Nitrite Nitrogen	EPA 353.2	· 1	12/12/2002 12:51	Nicole M Kepley	1
00220	Nitrate Nitrogen	BPA 353.2	.1	12/17/2002 12:51	Ramona V Goss	1
00221	Ammonia Nitrogen	RPA 350.2	' 1	12/17/2002 18:30	Luz M Groff	1
00226	Ortho-Phosphate as P	BPA 365.3	1	12/12/2002 23:00	Daniel S Smith	1
00235	Biochemical Oxygen Demand	BPA 405.1	1	12/12/2002 22:34	Nicole R Bushong	1
00273	Total Organic Carbon	BPA 415.1	1	12/17/2002 12:20	Timothy M Petree	1
00345	Total Phosphorus as PO4 water	EPA 365.1 .	. 1	12/24/2002.18:22	Venia B McFadden	1
01553	Chemical Oxygen Demand	EPA 410.2	1	12/19/2002 05:25	Susan A Engle	· 1
08213	BTEX (8021)	SW-846 8021B	1	12/14/2002 02:32	Martha L Seidel	1
00774	PAH's in Water by HPLC	SW-846 8310	1	12/15/2002 19:40	Mark A Clark	1
01146	GC VOA Water Prep	SW-846 5030B	1	12/14/2002 02:32.	Martha L Seidel	n.a.
01460	Total Kjeldahl Nitrogen Digest	BPA 351.2	1	12/13/2002 08:40	James S Mathiot	1
03337	PAH Water Extraction	SW-846 3510C	1	12/13/2002 09:00	Jennytza L Marcano	1 '
08264	Total Phos as PO4 Prep (water)	EPA 365.1	1	12/13/2002 11:00	James S Mathiot	1



Lancaster Laboratories Sample No. WW 3958877

Collected:12/11/2002 10:50 by BS Account Number: 07802

Submitted: 12/12/2002 09:50 Reported: 01/03/2003 at 11:42

Discard: 02/03/2003

MA3-MW-28S-111202-04 Grab Water Sample

Moss American Site - WI

.

Kerr-McGee Corporation P.O. Box 25861

Oklahoma City OK 73125

12114 SDG#: KMA35-04

			•	As Received		•
CAT			As Received	Method	•	Dilution
No.	Analysis Name	CAS Number	Result	Detection Limit	Units	Pactor
08213	BTEX (8021)					
00776	Benzene	71-43-2	N.D.	0.20	ug/l	1 .
00777	Toluene	108-88-3	N.D.	0.20	ug/l	1
00778	Ethylbénzene	100-41-4	n.D.	0.20	ug/l	1 .
00779	Total Xylenes	1330-20-7	N.D.	0.60	. ug/l	1
	Sufficient sample volume was	not available to	o perform a MSD i	for this		
	analysis. However, a MS was p	erformed. In add	dition, a LCS/LC	SD was		
	performed to demonstrate pred	ision and accura	acy at a batch le	evel.		
00774	PAH's in Water by HPLC					
	••••					
00775	Naphthalene	91-20-3	n.d. UFTBS n.d. UJ	1.0	ug/l	1
00782	Acenaphthylene .	208-96-8	N.D. 11 T	2.0	ug/1	. 1
00783	Acenaphthene	83-32-9	N.D.	2.0	ug/l	1
00784	Fluorene	86-73-7	N.D.	0.20	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/1	1
00807	Fluoranthene	206-44-0	N.D.	0.040	ug/l	1
00811	Pyrene	129-00-0	N.D.	0.20	ug/l	1 .
00812	Benzo (a) anthracene	56-55-3	N.D.	0.020	ug/l	1
00818	Benzo (b) fluoranthene	205-99-2	N.D.	0.040	ug/1	1
00823	Benzo (a) pyrene	50-32-8	N.D.	0.020	ug/1	1
00895	Dibenz (a, h) anthracene	53-70-3	Ń.D.	0.040	ug/1	1
00898	Indeno(1,2,3-cd)pyrene	193-39-5	N.D.	0.080	ug/1	1
00907	Benzo(g,h,i)perylene	191-24-2	и.D.	0.10	ug/1	1
07409	Chrysene	218-01-9	N.D.	0.080	ug/l	1 .
07410	- ,	207-08-9	N.D.	0.020	ug/l	1
	Sufficient sample volume was	not available t	o perform a MS/N	ISD for this	- - -	•
•	analysis. Therefore, a LCS/L		_		TÛ	35
• • • •	accuracy at a batch level.	•		<u>.</u>	. 1	24/03
					١.	271 -

The recoveries for many of the PAHs were outside QC limits in the LCS/LCSD associated with this sample. The sample was re-extracted outside of the method hold time. Comparable sample results were observed between the two extractions. The results reported are from the initial extraction

Surrogate recoveries were also outside QC limits in the LCS/LCSD

of the sample.

Analysis Report



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Lancaster Laboratories Sample No. 3958877

Collected:12/11/2002 10:50

by BS

Account Number: 07802

Submitted: 12/12/2002 09:50 Reported: 01/03/2003 at 11:42

Discard: 02/03/2003

MA3-MW-28S-111202-04 Grab Water Sample

Moss American Site - WI

Kerr-McGee Corporation P.O. Box 25861

Oklahoma City OK 73125

12114 SDG#: KMA35-04

CAT

As Received

As Received Method

Dilution

Analysis Name No.

CAS Number Result Detection Limit

Factor

associated with this sample.

CAT			-	Analysis		Dilution
No.	Ànalysis Name	Method	Trial#	Date and Time '	Analyst	Factor
08213	BTEX (8021)	SW-846 8021B	1	12/14/2002 03:05	Martha L Seidel	1
00774	PAH's in Water by HPLC	SW-846 8310	. 1	12/15/2002 20:18	Mark A Clark	1
01146	GC VOA Water Prep	SW-846 5030B	1	12/14/2002 03:05	Martha L Seidel	n.a.
03337	PAH Water Extraction	SW-846 3510C	1	12/13/2002 09:00	Jennytza L Marcano	1



Lancaster Laboratories Sample No. 3958878

Collected:12/11/2002 11:00 . Account Number: 07802

Submitted: 12/12/2002 09:50 Reported: 01/03/2003 at 11:42

Discard: 02/03/2003

MA3-MW-6S-111202-05 Grab Water Sample

Moss American Site - WI

12115 SDG#: KMA35-05

Kerr-McGee Corporation

P.O. Box 25861

Oklahoma City OK 73125

CAT		•	As Received	As Received Method	•	Dilution
No.	Analysis Name	CAS Number	Result	Detection Limit	Units	Factor
08213	BTEX (8021)		• . •			
00776	Benzene	71-43-2	N.D.	0.20 i	ug/1	1
00777	Toluene	108-88-3	N.D.	0.20	ug/l	1
00778	Ethylbenzene	100-41-4	- N.D.	0.20	ug/l	1
00779	Total Xylenes	1330-20-7	N.D.	0.60	ug/1	1
•	analysis. However, a MS was performed to demonstrate pro	-	•			
00774	'PAH's in Water by HPLC					
00775	Naphthalene	91-20-3	N.D.	1.0	ug/l	1
00782	Acenaphthylene	208-96-8	и.р. ИТ	2.0	ug/l	1 .
00783	Acenaphthene	83-32-9	N.D.	2.0	ug/l	1
00784	Pluorene	86-73-7	N.D.	0.20	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/1	1
00807	Fluoranthene	206-44-0	И.D.	0.040	ug/1	1
00811	Pyrene .	129-00-0	N.D.	. 0.20	ug/1	1
00812	Benzo (a) anthracene	56-55-3	Й.D.	0.020	ug/1	· 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/1	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/1	1
07410	Benzo(k) fluoranthene	207-08-9	и.р.↓	0.020	ug/l	1
	Sufficient sample volume wa		-		•	•
	analysis. Therefore, a LCS/	LCSD was performed	ed to demonstrate	e precision and	TBS	107
	accuracy at a batch level.		•		112	MIOS

The recoveries for many of the PAHs were outside QC limits in the LCS/LCSD associated with this sample. The sample was re-extracted outside of the method hold time. Comparable sample results were observed between the two extractions. The results reported are from the initial extraction of the sample.

Surrogate recoveries were also outside QC limits in the LCS/LCSD

Analysis Report



Page 2 of 2

Dilution

Factor

Lancaster Laboratories Sample No. WW 3958878

Collected:12/11/2002 11:00 by BS

Submitted: 12/12/2002 09:50

Reported: 01/03/2003 at 11:42

Discard: 02/03/2003

MA3-MW-6S-111202-05 Grab Water Sample

Moss American Site - WI

Account Number: 07802

Kerr-McGee Corporation

P.O. Box 25861

Oklahoma City OK 73125

As Received

12115 SDG#: KMA35-05

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CAT As Received Method

No. Analysis Name CAS Number Result Detection Units

associated with this sample.

CAT	•		-	Analysis		Dilution
No.	Analysis Name	Method	Trial#	Date and Time	Analyst	Factor
08213	BTEX (8021)	SW-846 8021B	1	12/14/2002 03:38	Martha L Seidel	1
00774	PAH's in Water by HPLC	SW-846 8310 ·	1	12/15/2002 20:57	Mark A Clark	· 1
01146	GC VOA Water Prep	SW-846 5030B	1	12/14/2002 03:38	Martha L Seidel	n.a.
03337	PAH Water Extraction	SW-846 3510C	1	12/13/2002 09:00	Jennytza L Marcano	1



Lancaster Laboratories Sample No. 3958879

Collected:12/11/2002 11:55

Account Number: 07802

Submitted: 12/12/2002 09:50

Kerr-McGee Corporation

Reported: 01/03/2003 at 11:42

P.O. Box 25861

Discard: 02/03/2003

Oklahoma City OK 73125

MA3-MW-33S-111202-06 Grab Water Sample

Moss American Site - WI

SDG#: KMA35-06 12116

CAT	•		As Received	As Received Method		Dilution
No.	Analysis Name	CAS Number	Result	Detection Limit	Units	Factor
08213	BTEX (8021)					
00776	Benzene	71-43-2	Ń.D.	2.0	ug/l	10
00777	Toluene	108-88-3	5.1 J .	2.0	ug/l	10 .
00778	Bthylbenzene	100-41-4	18.	2.0	ug/l	10 ·
00779	Total Xylenes	1330-20-7	62.	6.0	ug/l	10
•	Sufficient sample volume was not analysis. However, a MS was perperformed to demonstrate precise	formed. In add	lition, a LCS/LCS	D was		

Due to dilution of the sample made necessary by the high level of non-target compounds, normal reporting limits were not attained.

PAH's in Water by HPLC 00774

			•			
00775	Naphthalene	91-20-3	2,100.	12.	ug/l	10
00782	Acenaphthylene	208-96-8 [‡]	J. 34	2.0	ug/l	· 1
00783	Acenaphthene	83~32-9	170.7	2.0	ug/l	1
00784	Pluorene	86-73-7	59.~	2.0	ug/l	10
00785	Phenanthrene	85-01-8	7.40	0.080	ug/1	1
00789	Anthracene ·	120-12-7	0.18 (T)	0.040	ug/l	1
00807	Pluoranthene	206-44-0	N.D.UJ	0.040	ug/l	1
00811	Pyrene	129-00-0	N.D.	0.20	ug/1	1
00812	Benzo (a) anthracene	56-55-3 [°]	N.D.	0.020	ug/1	1
00818	Benzo (b) fluoranthene	205-99-2	N.D.	0.040	ug/1	1.
00823	Benzo (a) pyrene	50-32-8	N.D.	0.020	ug/1	1
00895	Dibenz (a, h) anthracene	53-70-3	N.D.	0.040	ug/1	· 1
00898	Indeno(1,2,3-cd)pyrene	193-39-5	N.D	0.080	ug/1	1
00907	Benzo(g,h,i)perylene	191-24-2	N.D.	0.10	ug/1	· 1
07409	Chrysene	218-01-9	N.D.	0.080	ug/l	1
. 07410	Benzo(k) fluoranthene	207-08-9	и.д.↓	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 for many of the PAHs were outside QC limits in the LCS/LCSD associated with this sample. The sample was re-extracted outside of the method hold time. Comparable sample results were not observed between the

Analysis Report



Page 2 of 2

Lancaster Laboratories Sample No. WW 3958879

Collected:12/11/2002 11:55

by BS

Account Number: 07802

Submitted: 12/12/2002 09:50

Reported: 01/03/2003 at 11:42

Discard: 02/03/2003 MA3-MW-33S-111202-06 Grab Water Sample

Moss American Site - WI

Kerr-McGee Corporation

P.O. Box 25861

Oklahoma City OK 73125

12116 SDG#: KMA35-06

As Received

CAT No.

Analysis Name

As Received

Method

Dilution

Units

Detection Limit

Pactor

two extractions. The results reported are from the initial extraction

of the sample.

Surrogate recoveries were also outside QC limits in the LCS/LCSD associated with this sample.

CAT					Analysis	•	Dilution
No.	Analysis Name	Method ·		Trial#	Date and Time	Analyst	Factor
08213	BTEX (8021)	SW-846 8021B		. 1	12/14/2002 10:45	Martha L Seidel	10
00774	PAH's in Water by HPLC	SW-846 8310		1	12/15/2002 21:36	Mark A Clark	1
00774	PAH's in Water by HPLC	SW-846 8310		1	12/23/2002 20:57	Mark A Clark	10
01146	GC VOA Water Prep	SW-846 5030B		1	12/14/2002 10:45	Martha L Seidel	n.a.
03337	PAH Water Extraction	SW-846 3510C	•	1	12/13/2002 09:00	Jennytza L Marcano	1



Lancaster Laboratories Sample No. 3958880

Collected:12/11/2002 12:00 . Account Number: 07802

Submitted: 12/12/2002 09:50 Reported: 01/03/2003 at 11:42

Discard: 02/03/2003

MA3-MW-32S-111202-07 Grab Water Sample

Moss American Site - WI

Kerr-McGee Corporation

P.O. Box 25861

Oklahoma City OK 73125

As Received

SDG#: KMA35-07 12117

	• •			As Kecelved			
CAT			As Received	Method		Dilution	
No.	Analysis Name	CAS Number	Result	Detection Limit	Units	Factor .	
08213	BTEX (8021)						
00776	Benzene	71-43-2	N.D.	0.20	ug/l	1	
00777	Toluene	108-88-3	N.D.	0.20	ug/l .	1	
00778	Ethylbenzene	100-41-4	N.D.	0.20	ug/l	1	
00779	Total Xylenes	1330-20-7	Ņ.D.	0.60	ug/l	1	
	Sufficient sample volume was	not available to	o perform a MSD :	for this			
	analysis. However, a MS was	performed. In ad-	dition, a LCS/LC	SD was			
	performed to demonstrate pre	cision and accur	acy at a batch l	evel.			
00774	PAH's in Water by HPLC						
00775	Naphthalene .	91-20-3	N.D.	1.0	ug/l	1 .	
00782	Acenaphthylene	208-96-8	N.D.UJ	2.0	ug/l	1	
. 00783	Acenaphthene	83-32-9	N,D.)	2.0	ug/1	1	
.00784	Pluorene	.86-73-7	N.D.	0.20	. 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.	0.20	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		191-24-2	N.D.	0.10	ug/1	1	
07409		218-01-9	N.D.	0.080	ug/l	1	
07410	• · · · · · · · · · · · · · · · · · · ·	207-08-9	N.D.	0.020	ug/l	1	
	Sufficient sample volume wa		•		-3, -	_	
	analysis. Therefore, a LCS/		-		-4	BS	
-		_		-	- 1	r)	

accuracy at a batch level.

The recoveries for many of the PAHs were outside QC limits in the LCS/LCSD associated with this sample. The sample was re-extracted outside of the method hold time. Comparable sample results were observed between the two extractions. The results reported are from the initial extraction of the sample.

Surrogate recoveries were also outside QC limits in the LCS/LCSD

Analysis Report



Page 2 of 2

Lancaster Laboratories Sample No. WW 3958880

Collected:12/11/2002 12:00

by BS

Account Number: 07802

Submitted: 12/12/2002 09:50

Reported: 01/03/2003 at 11:42

Discard: 02/03/2003

MA3-MW-32S-111202-07 Grab Water Sample

Moss American Site - WI

110000110 11011110011 0.001

Kerr-McGee Corporation P.O. Box 25861

Oklahoma City OK 73125

12117 SDG#: KMA35-07

CAT

No.

.

Analysis Name .

As Received

As Received Method

. Dilution

CAS Number Result

Detection Limit its Factor

associated with this sample.

CAT .			Analysis			
Analysis Name	Method	Trial#	Date and Time	Analyst	Pactor	
BTEX (8021)	SW-846 8021B	1	12/14/2002 07:27	Martha L Seidel	1	
PAH's in Water by HPLC	SW-846 8310	1	12/20/2002 10:51	Mark A Clark	1	
GC VOA Water Prep	SW-846 5030B	· 1	12/14/2002 07:27	Martha L Seidel	n.a.	
PAH Water Extraction	SW-846 3510C	. 1	12/13/2002 09:00	Jennytza L Marcano	1	
	BTEK (8021) PAH's in Water by HPLC GC VOA Water Prep	BTEX (8021) SW-846 8021B PAH's in Water by HPLC SW-846 8310 GC VOA Water Prep SW-846 5030B	BTEK (8021) SW-846 8021B 1 PAH's in Water by HPLC SW-846 8310 1 GC VOA Water Prep SW-846 5030B 1	Analysis Name Method Trial# Date and Time BTEX (8021) SW-846 8021B 1 12/14/2002 07:27 PAH's in Water by HPLC SW-846 8310 1 12/20/2002 10:51 GC VOA Water Prep SW-846 5030B 1 12/14/2002 07:27	Analysis Name Method Trial# Date and Time Analyst BTEX (8021) SW-846 8021B 1 12/14/2002 07:27 Martha L Seidel PAH's in Water by HPLC SW-846 8310 1 12/20/2002 10:51 Mark A Clark GC VOA Water Prep SW-846 5030B 1 12/14/2002 07:27 Martha L Seidel	



Lancaster Laboratories Sample No. 3958881

Collected:12/11/2002 12:05 by BS

Account Number: 07802

Submitted: 12/12/2002 09:50

Reported: 01/03/2003 at 11:42

Kerr-McGee Corporation P.O. Box 25861

Discard: 02/03/2003

MA3-MW-27S-111202-08 Grab Water Sample

Moss American Site - WI

Oklahoma City OK 73125

SDG#: KMA35-08 12118

	•			As Received		
CAT			As Received	Method		Dilution
No.	Analysis Name	CAS Number	Result	Detection Limit	Units	Factor
08213	BTEX (8021)				•	
00776	Benzene	71-43-2	N.D.	0.20	ug/1 ·	1
00777	Toluene	108-88-3	N.D.	0.20	ug/1	1 .
00778	Ethylbenzene '	100-41-4	N.D.	0.20	ug/1	1
·00779	Total Xylenes	1330-20-7	N.D.	0.60	ug/1	ı
	· Sufficient sample volume was	not available t	o perform a MSD :	for this		
	analysis. However, a MS was	performed. In ad	dition, a LCS/LC	SD was		•
•	performed to demonstrate pre	cision and accur	acy at a batch 1	evel.		
00774	PAH's in Water by HPLC					
00775	Naphthalene	91-20-3	N.D.	1.0	ug/l	1
00782	Acenaphthylene	208-96-8	ДU.a.и	2.0	ug/1	1
00783	Acenaphthene	83-32-9	N.D.	2.0	ug/l	1 .
00784	Pluorene	86-73-7	N.D.	0.20	ug/l	1 .
00785	Phenanthrene	85-01-8	N.D.	0.080	ug/1	1
00789	Anthracene	120-12-7	и.D.	0.040	ug/l	1 .
00807	Pluoranthene	206-44-0	N.D.	0.040	·ug/l	1
00811	Pyrene	129-00-0	₩.D.	0.20	<u>ug/l</u>	1
00812	Benzo (a) anthracene	56-55-3	N.D.	0.020	ug/1	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/1	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/1	1
	Sufficient sample volume wa	s not available	to perform a MS/N	MSD for this	_	
						_

analysis. Therefore, a LCS/LCSD was performed to demonstrate precision and accuracy at a batch level.

The recoveries for many of the PAHs were outside QC limits in the LCS/LCSD associated with this sample. The sample was re-extracted outside of the method hold time. Comparable sample results were observed between the two extractions. The results reported are from the initial extraction of the sample.

Surrogate recoveries were also outside QC limits in the LCS/LCSD



Page 2 of 2

Lancaster Laboratories Sample No. WW 3958881

Collected: 12/11/2002 12:05 by BS

Account Number: 07802

Submitted: 12/12/2002 09:50

Kerr-McGee Corporation

Reported: 01/03/2003 at 11:42

P.O. Box 25861

Discard: 02/03/2003

CAT

Oklahoma City OK 73125

MA3-MW-27S-111202-08 Grab Water Sample

Moss American Site - WI

12118 SDG#: KMA35-08

As Received

Limit

a received

As Received Method Dilution
Analysis Name CAS Number Result Detection Units Factor

associated with this sample.

CAT			•	Analysis	·	Dilution
No.	Analysis Name	Method	Trial#	Date and Time	Analyst	Factor
08213	BTEX (8021)	SW-846 8021B	1	12/14/2002 08:00	Martha L Seidel	1
·00774	PAH's in Water by HPLC	SW-846 8310	1	12/20/2002 11:30	Mark A Clark	1
01146	GC VOA Water Prep	SW-846 5030B	1	12/14/2002 08:00	Martha L Seidel	n.a.
03337	PAH Water Extraction	SW-846 3510C	1	12/13/2002 09:00	Jennytza L Marcano	1

Account Number: 07802

Oklahoma City OK 73125

As Received

P.O. Box 25861



Page 1 of 2

Lancaster Laboratories Sample No. 3958882

Collected:12/11/2002 14:55

Kerr-McGee Corporation

Submitted: 12/12/2002 09:50 Reported: 01/03/2003 at 11:42

Discard: 02/03/2003

Moss American Site - WI

MA3-MW-35S-111202-09 Grab Water Sample

12119 SDG#: KMA35-09

CAT			As Received	Method .		Dilution
No.	Analysis Name	CAS Number	Result	Detection Limit	Units	Pactor
08213	BTEX (8021)					
00776	Benzene	71-43-2	N.D.	0.20	ug/1	1
00777	Toluene	108-88-3	N.D.	0.20	ug/1	1
.00778	Ethylbenzene	100-41-4	N.D.	0.20	ug/1	1 .
. 00779	Total Xylenes	1330-20-7	Ň.D.	0.60	ug/1	1
	Sufficient sample volume was	not available t	o perform a MSD :	for this		
	analysis. However, a MS was	performed. In add	dition, a LCS/LC	SD 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.	1.0	ug/l	1
00782	Acenaphthylene _	208-96-8	N.D.VJ	2.0	ug/l	1
00783	Acenaphthene	83-32-9	и.D. (2.0	ug/l	1
00784	Fluorene	86-73-7	и.d. .	0.20	ug/1	1
00785	Phenanthrene	85-01-8	0.090 (J)	0.080	ug/1	1
00789	Anthracene	120-12-7	0.12 (T)	0.040	ug/l	1
00807	Fluoranthene	206-44-0	0.59 丁	0.040	ug/l	1
. 00811	Pyrene	129-00-0	0.35 🕤	0.20	ug/l	1
00812	Benzo (a) anthracene	56-55-3	0.027 (T)	0.020	ug/l	1
00818	Benzo(b) fluoranthene	205-99-2	N.D. HT	0.040	ug/l	1
00823	Benzo (a) pyrene	50-32-8	и.р. ј	0.020	ug/l	1
00895	Dibenz (a, h) anthracene	53-70-3	Ŋ.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	и.р.↓ .	0.020	ug/l	1
•	Sufficient sample volume wa	s not available t	o perform a MS/N	SD for this	- -	
	analysis. Therefore, a LCS/				•	
						170.S

accuracy at a batch level.

The recoveries for many of the PAHs were outside QC limits in the LCS/LCSD associated with this sample. The sample was re-extracted outside of the method hold time. Comparable sample results were observed between the two extractions. The results reported are from the initial extraction

Surrogate recoveries were also outside QC limits in the LCS/LCSD

Analysis Report



Page 2 of 2

Lancaster Laboratories Sample No. WW 3958882

Collected:12/11/2002 14:55 by B

BS Account Number: 07802

Submitted: 12/12/2002 09:50 Reported: 01/03/2003 at 11:42

1/03/2003 at 11:42 P.O. Box 2586

Discard: 02/03/2003

MA3-MW-35S-111202-09 Grab Water Sample

Moss American Site - WI

Kerr-McGee Corporation

P.O. Box 25861

Oklahoma City OK 73125

Limit

12119 SDG#: KMA35-09

As Received

CAT Analysis Name CAS Number Result Detection Units Factor

associated with this sample.

CAT	Analysis						Dilution
No.	Analysis Name	Method		Trial#	Date and Time	Analyst	Factor
08213	BTRX (8021)	SW-846 8021B	•	1	12/14/2002 08:33	Martha L Seidel	1
00774	PAH's in Water by HPLC	SW-846 8310		. 1	12/20/2002 12:08	Mark Á Clark	1.
01146	GC VOA Water Prep	SW-846 5030B	•	1	12/14/2002 08:33	Martha L Seidel	n.a.
03337	PAH Water Extraction	SW-846 3510C		. 1	12/13/2002 09:00	Jennytza L Marçano	1



Lancaster Laboratories Sample No. 3958883

Collected:12/11/2002 14:55

Account Number: 07802

Submitted: 12/12/2002 09:50

Kerr-McGee Corporation

Reported: 01/03/2003 at 11:42

P.O. Box 25861

Discard: 02/03/2003

Oklahoma City OK 73125

As Received

MA3-MW-35S-111202-09-DUP Grab Water Sample

Moss American Site - WI

12-9D SDG#: KMA35-10FD

	•			We received					
CAT		y	As Received	Method		Dilution			
No.	Analysis Name	CAS Number	Result	Petection Limit	Units	Factor			
08213	BTEX (8021)								
007.76	Benzene	71-43-2	N.D.	0.20	ug/l	1			
00777	Toluene	108-88-3	N.D.	0.20	ug/1	1			
00778	Ethylbenzene	100-41-4	N.D.	0.20	ug/l	1			
00779	Total Xylenes	1330-20-7	N.D.	0.60	ug/l	1			
	Sufficient sample volume was	Sufficient sample volume was not available to perform a MSD for this							
	analysis. However, a MS was	analysis. However, a MS was performed. In addition, a LCS/LCSD was							
	performed to demonstrate pro	ecision and accura	acy at a batch l	evel.					
00774	PAH's in Water by HPLC								
00775	Naphthalene	91-20-3	N.D.	1.0	ug/İ	1			
00782	Acenaphthylene	208-96-8 [°]	и.□.IJТ	2.0	ug/l	1			
00783	Acenaphthene	83-32-9	и.D. J	2.0	ug/1	1			
00784	Pluorene	86-73-7	N.D.V.	0.20	ug/l	1			
00785	Phenanthrene	85-01-8	0.11 (j)	0.080	ug/1	1 .			
00789	Anthracene	120-12-7	0.14	0.040	ug/l	ı			
00807	Fluoranthene	206-44-0	0.70 5	0.040	ug/l	1 .			
00811	Pyrene	129-00-0	0.42 <i>(</i> 5)	0.20	ug/l	1			
00812	Benzo(a)anthracene	56-55-3	0.031 (5)	0.020	ug/l	1			
00818	Benzo(b) fluoranthene	205-99-2	N.D.UT	0.040	ug/l	1			
00823	Benzo(a)pyrene	50-32-8	Ŋ.D. 1	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/1	1			
07409	Chrysene	218-01-9	N.D.	0.080	ug/l	1			
07410	Benzo(k) fluoranthene	207-08-9	и.D. ↓	0.020	ug/l	1			
	Sufficient sample volume wa	s not available t	co perform a MS/N	ASD for this					
	analysis. Therefore, a LCS/	LCSD was performe	ed to demonstrate	precision and		<u>م</u> (
		_	•		47	<i>(b)</i>			

accuracy at a batch level.

The recoveries for many of the PAHs were outside QC limits in the LCS/LCSD associated with this sample. The sample was re-extracted outside of the method hold time. Comparable sample results were observed between the two extractions. The results reported are from the initial extraction of the sample.

Surrogate recoveries were also outside QC limits in the LCS/LCSD

Analysis Report



Page 2 of 2

Lancaster Laboratories Sample No. 3958883

Collected: 12/11/2002 14:55

Account Number: 07802

Submitted: 12/12/2002 09:50

Reported: 01/03/2003 at 11:42

Discard: 02/03/2003

MA3-MW-35S-111202-09-DUP Grab Water Sample

Moss American Site - WI

Kerr-McGee Corporation .

P.O. Box 25861

Oklahoma City OK 73125

SDG#: KMA35-10FD 12-9D

CAT

· As Received

Analysis Name

CAS Number

As Received Result

Method Detection Dilution Factor .

Units

Limit

associated with this sample.

		1				
	•	_		Analysis		Dilution
Analysis Name	Method	•	Trial#	Date and Time	Analyst	Factor ·
BTEX (8021)	SW-846 8021B		1	12/14/2002 09:06	Martha L Seidel	1
PAH's in Water by HPLC	SW-846 8310		· 1	12/20/2002 12:47	Mark A Clark	1
GC VOA Water Prep	SW-846 5030B		1	12/14/2002 09:06	Martha L Seidel	· n.a.
PAH Water Extraction	SW-846 3510C		1	12/13/2002 09:00	Jennytza L Marcano	· · · 1
	BTEX (8021) PAH's in Water by HPLC GC VOA Water Prep	Analysis Name Method BTEX (8021) SW-846 8021B PAH's in Water by HPLC SW-846 8310 GC VOA Water Prep SW-846 5030B	BTEX (8021) SW-846 8021B PAH's in Water by HPLC SW-846 8310 GC VOA Water Prep SW-846 5030B	Analysis Name Method Trial# BTEX (8021) SW-846 8021B 1 PAH's in Water by HPLC SW-846 8310 1 GC VOA Water Prep SW-846 5030B 1	Analysis Name Method Trial# Date and Time BTEX (8021) SW-846 8021B 1 12/14/2002 09:06 PAH's in Water by HPLC SW-846 8310 1 12/20/2002 12:47 GC VOA Water Prep SW-846 5030B 1 12/14/2002 09:06	Analysis Name Method Trial# Date and Time Analyst BTEX (8021) SW-846 8021B 1 12/14/2002 09:06 Martha L Seidel PAH's in Water by HPLC SW-846 8310 1 12/20/2002 12:47 Mark A Clark GC VOA Water Prep SW-846 5030B 1 12/14/2002 09:06 Martha L Seidel



Lancaster Laboratories Sample No. 3958884

Collected:12/11/2002 15:00

Account Number: 07802

Submitted: 12/12/2002 09:50

Kerr-McGee Corporation P.O. Box 25861

Reported: 01/03/2003 at 11:43

Oklahoma City OK 73125

Discard: 02/03/2003

MA3-MW-34S-111202-10 Grab Water Sample

Moss American Site - WI

1234S SDG#: KMA35-11

CAT	•		As Red	ceived	As Received Method	•	Dilution
No.	Analysis Name	CAS Number	Resul	ŧ	Detection Limit	Units	Factor
08213	BTRX (8021)						
00776	Benzene	71-43-2	5.6	J	5.0	ug/l	25
00777	Toluene	108-88-3	N.D.		5.0	ug/l	25 .
00778	Ethylbenzene	100-41-4	22.	J	5.0°	ug/l	25
00779	Total Xylenes	1330-20-7	54.	J	15.	ug/l	25
	Sufficient sample volume was not available to perform a MSD for this analysis. However, a MS was performed. In addition, a LCS/LCSD was						

Due to dilution of the sample made necessary by the high level of non-target compounds, normal reporting limits were not attained.

performed to demonstrate precision and accuracy at a batch level.

00774 PAH's in Water by HPLC

00775	Naphthalene	91-20-3	5,300.	61.	ug/l	50
00782	Acenaphthylene	208-96-8	69. (J)	.8.0	ug/1	5
00783	Acenaphthene	83-32-9	310.T	8.0	ug/l	5
00784	Pluorene	86-73-7	170.T	0.90	.ug/1	5
00785	Phenanthrene	85-01-8	290.7	4.0	ug/1	. 50
00789	Anthracene	120-12-7	ر ۲.82	0.20	ug/l	· 5
00807	Fluoranthene	206-44-0	98.J	2.0	ug/l	50
00811	Pyrene	129-00-0	77. <u>T</u>	0.90	ug/1	5
00812	Benzo (a) anthracene	56-55-3	15. T	0.10	ug/1	5 ·
00818	Benzo(b) fluoranthene	205-99-2	5.3	0.20	ug/l	. 5
00823	Benzo (a) pyrene	50-32-8	5.6 📆	0.10	ug/l	5
00895	Dibenz (a, h) anthracene	53-70-3	0.92 (J)	0.20	ug/1	5
00898	Indeno (1, 2, 3-cd) pyrene	193-39-5	2.15	0.40	ug/l	5
00907	Benzo(g,h,i)perylene	191-24-2	2.3 (3)	0.50	ug/1	5.
07409	Chrysene	218-01-9	12.J	0.40	ug/l	5
07410	Benzo(k) fluoranthene	207-08-9	3.07	0.10	ug/l	5
	- cct-t				<i>-</i>	

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 for many of the PAHs were outside QC limits in the LCS/LCSD associated with this sample. The sample was re-extracted outside of the method hold time. Comparable sample results were observed between the

Analysis Report



Page 2 of 2

Lancaster Laboratories Sample No. 3958884

Collected:12/11/2002 15:00

by BS

Account Number: 07802

Submitted: 12/12/2002 09:50

Reported: 01/03/2003 at 11:43

Kerr-McGee Corporation P.O. Box 25861

Discard: 02/03/2003

MA3-MW-34S-111202-10 Grab Water Sample

Moss American Site - WI

Oklahoma City OK 73125

1234S

SDG#: KMA35-11

As Received

CAT No.

Analysis Name

As Received

Method

Dilution

CAS Number

Result

Detection Limit

Units

Pactor

two extractions. The results reported are from the initial extraction

of the sample.

Surrogate recoveries were also outside QC limits in the LCS/LCSD

associated with this sample.

Due to the high concentration of non-target compounds, a dilution was necessary to perform the PAH by HPLC analysis. Therefore, the reporting limits for the HPLC PAH compounds were raised.

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

•		Haboracor	y Circ	HILCIC		
CAT				Analysis		Dilution
No.	Analysis Name	Method	Trial#	Date and Time	Analyst	Factor
08213	BTEX (8021)	SW-846 8021B	1	12/14/2002 11:17	Martha L Seidel	25
00774	PAH's in Water by HPLC	SW-846 8310	. 1	12/20/2002 16:38	Mark A Clark	5
00774	PAH's in Water by HPLC	SW-846 8310	· . 1	12/23/2002 23:04	Mark A Clark	. 50
01146	GC VOA Water Prep	SW-846 5030B	1	12/14/2002 11:17	Martha L Seidel	n.a.
03337	PAH Water Extraction	SW-846 3510C	1 .	12/13/2002 09:00	Jennytza L Marcano	1



Lancaster Laboratories Sample No. WW 3958885

Collected:12/11/2002 15:05 by BS

Submitted: 12/12/2002 09:50 Reported: 01/03/2003 at 11:43

Discard: 02/03/2003

MA3-MW-7S-111202-11 Grab Water Sample

Moss American Site - WI

Account Number: 07802

Kerr-McGee Corporation

P.O. Box 25861

Oklahoma City OK 73125

12-7S SDG#: KMA35-12

CAT /	•		As Rece	ived	As Received Method		Dilution
No.	Analysis Name	CAS Number	Result		Detection Limit	Units	Pactor .
08213	BTEX (8021)						
00776	Benzene	71-43-2	N.D.		4.0	ug/l	20
00777	Toluene	108-88-3	N.D.		4.0	ug/1	20
00778	E thylbenzene	100-41-4	13.	J	4.0	ug/l	20
00779	Total Xylenes	1330-20-7	31.	J	12.	ug/l	20
	Sufficient sample volume was not	available to	pėrform	a MSD fo	r this		

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

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	2,800.	24.	ug/1	20
00782	Acenaphthylene	208-96-8	42. T	2.0	ug/l	1
00783	.Acenaphthene	83-32-9	66.5	2.0	ug/1	1
00784	Fluorene	86-73-7	11. J	0.20	ug/1	1
00785	Phenanthrene	85-01-8	0.30 (J)	0.080	ug/1	1
00789	'Anthracene	120-12-7	и.р.И	0.040	ug/1	1
00807	Fluoranthene	206-44-0	0.054 (J)	0.040	ug/l	1
00811	Pyrene .	129-00-0	и.d.UJ	0.20	ug/1	1
00812	Benzo (a) anthracene	56-55-3	и.D. (0.020	ug/1	1
00818	Benzo (b) fluoranthene	205-99-2	N.D.	0.040	ug/1	1
00823	Benzo (a) pyrene	50-32-8	N.D.	0.020	ug/1	1
00895	Dibenz (a, h) anthracene	53-70-3	N.D.	0.040	ug/1	1
00898	Indeno (1, 2, 3-cd) pyrene	193-39-5	N.D.	. O.080	ug/1	1
00907	Benzo(g,h,i)perylene	191-24-2	N.D.	0.10	ug/1	1
07409	Chrysene	218-01-9	N.D.	0.080	ug/1	1
07410	Benzo(k) fluoranthene	207-08-9	й.р. ₩	0.020	ng/1	7

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 for many of the PAHs were outside QC limits in the LCS/LCSD associated with this sample. The sample was re-extracted outside of the method hold time. Comparable sample results were observed between the

TBS 1/24/03

Analysis Report



Page 2 of 2

Lancaster Laboratories Sample No. 3958885

Collected:12/11/2002 15:05

by BS

Account Number: 07802

Submitted: 12/12/2002 09:50

Reported: 01/03/2003 at 11:43

Discard: 02/03/2003

MA3-MW-7S-111202-11 Grab Water Sample

Moss American Site - WI

Kerr-McGee Corporation

P.O. Box 25861

Oklahoma City OK 73125

12-7S SDG#: KMA35-12

As Received

CAT No.

Analysis Name

As Received

Method

Dilution

CAS Number Result Detection Limit

Unite

Pactor

two extractions. The results reported are from the initial extraction

of the sample.

Surrogate recoveries were also outside QC limits in the LCS/LCSD associated with this sample.

			. =====================================	~ ·			
	CAT	•			Analysis		Dilution
	No.	Analysis Name	Method	Trial#	Date and Time	Analyst	Factor
	08213	BTEX (8021)	SW-846 8021B	1	12/14/2002 13:29	Martha L Seidel	20
	00774	PAH's in Water by HPLC	SW-846 8310	1	12/20/2002 13:25	Mark A Clark	· 1
	00774	PAH's in Water by HPLC	SW-846 8310	1	12/23/2002 21:40	Mark A Clark	20
	01146	GC VOA Water Prep	SW-846 5030B	· 1	12/14/2002 13:29	Martha L Seidel '	n.a.
•	03337	PAH Water Extraction	SW-846 3510C	1	12/13/2002 09:00	Jennytza L Marcano	1

Oklahoma City OK 73125



Page 1 of 2

Lancaster Laboratories Sample No. WW 3958886

Collected:12/11/2002 16:35 by BS Account Number: 07802

Submitted: 12/12/2002 09:50 Kerr-McGee Corporation Reported: 01/03/2003 at 11:43 P.O. Box 25861

Discard: 02/03/2003

MA3-MW-9S-111202-12 Grab Water Sample

Moss American Site - WI

•

12-9S SDG#: KMA35-13

CAT			As Received	As Received Method		Dilutio
No.	Analysis Name	CAS Number	Result	Detection Limit	Units	Factor
08213	BTEX (8021)					
00776	Benzene	71-43-2	N.D.	0.20	`ug/1	1
00777 [.]	Toluene	108-88-3	N.D.	0.20	ug/l	1
00778	Bthylbenzene	100-41-4	N.D.	0.20	ug/l	1
00779	Total Xylenes	1330-20-7	N.D.	0.60	ug/l	1
	Sufficient sample volume was no analysis. However, a MS was per performed to demonstrate precis	formed. In add	dition, a LCS/LC	SD was		

00774	PAH's	in	Water	bv	HPLC
UU / / T	Erui O		MACCT	~ 7	***

00774	PAH'S IN WATER BY HPLC		•			
00555	Wankthal and	91-20-3	N.D.		/3	
00775	Naphthalene		· · · · · · · · · · · · · · · · · · ·	1.0	ug/l	-
00782	Acenaphthylene	208-96-8	n.d.VJ	2.0	ug/1 [.]	1
00783	Acenaphthene	83-32-9	N.D. \	2.0	ug/l	1
00784	Fluorene	86-73-7	N.D.	0.20	ug/l	1
00785	Phenanthrene	85-01-8	N.D.	0.080	ug/1	1
00789	Anthracene _	120-12-7	N.D.	0.040	ug/1	1
00807	Fluoranthene	206-44-0	N.D.	0.040	ug/1	1
00811	Pyrene .	129-00-0	N.D.	0.20	ug/l	1 .
00812	Benzo (a) anthracene	56-55-3	n.d.	0.020	ug/1	1
00818	Benzo(b) fluoranthene	205-99-2	N.D.	0.040	ug/1	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/1	1
07409	Chrysene	218-01-9	N.D.	0.080	ug/1	1
07410	Benzo(k) fluoranthene	207-08-9	N.D.	0.020	ug/l	1
			'	4		٠.

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 for many of the PAHs were outside QC limits in the LCS/LCSD associated with this sample. The sample was re-extracted outside of the method hold time. Comparable sample results were observed between the two extractions. The results reported are from the initial extraction of the sample.

Surrogate recoveries were also outside QC limits in the LCS/LCSD

0030



Page 2 of 2

Lancaster Laboratories Sample No. 3958886

Collected:12/11/2002 16:35

Account Number: 07802

Submitted: 12/12/2002 09:50

Reported: 01/03/2003 at 11:43

Discard: 02/03/2003

MA3-MW-9S-111202-12 Grab Water Sample

Moss American Site - WI

Kerr-McGee Corporation

P.O. Box 25861

Oklahoma City OK 73125

Limit

12-9S SDG#: KMA35-13

As Received

As Received Dilution CAT Method

No. Analysis Name CAS Number Result Detection Units Factor

associated with this sample.

CAT .	· .		_	Dilution		
No.	Analysis Name	Method	Trial#	Date and Time	Analyst	Factor
08213	BTEX (8021)	SW-846 8021B	1	12/14/2002 09:39	Martha L Seidel	1
00774	PAH's in Water by HPLC	SW-846 8310	. 1	12/20/2002 14:04	Mark A Clark	1 .
01146	GC VOA Water Prep	SW-846 5030B	1	12/14/2002 09:39	Martha L Seidel	n.a.
03337	PAH Water Extraction	SW-846 3510C	. 1	12/13/2002 09:00	Jennytza L Marcano	1



3958887 Lancaster Laboratories Sample No.

Collected:12/11/2002 15:35

Account Number: 07802

Submitted: 12/12/2002 09:50

Kerr-McGee Corporation

Reported: 01/03/2003 at 11:43 Discard: 02/03/2003

P.O. Box 25861

TB-03 Grab Water Sample Moss American Site - WI Oklahoma City OK 73125

SDG#: KMA35-14TB 12TB3

CAT			As Received	As Received Method		Dilution
No.	Analysis Name	CAS Number	Result	Detection Limit	Units	Factor
08213	BTEX (8021)		·			
00776	Benzene	71-43-2	N.D.	0.20	ug/l	1 .
00777	Toluene	108-88-3	N.D.	0.20	ug/1	1
00778	Ethylbenzene .	100-41-4	N.D.	0.20	ug/l	1
00779	Total Xylenes	1330-20-7	N.D.	0.60	ug/l	1 .
	Sufficient sample volume was no analysis. However, a MS was per	formed. In add	dition, a LCS/LC	SD waş		

Laboratory	Chronicle	
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CAT			Analysis									
No.	Analysis Name	Method	·	Trial#	Date and Time	Analyst	Factor					
08213	BTEX (8021)	SW-846 8021B		• 1	12/14/2002 06:22	Martha L Seidel	. 1					
01146	GC VOA Water Prep	SW-846 5030B		1	12/14/2002 06:22	Martha L Seidel	n.a.					



Lancaster Laboratories Sample No. WW 3958888

Collected:12/11/2002 16:30

Account Number: 07802

Submitted: 12/12/2002 09:50 Reported: 01/03/2003 at 11:43

Kerr-McGee Corporation

Discard: 02/03/2003
TR-04 Grab Water Sample

P.O. Box 25861

TB-04 Grab Water Sample Moss American Site - WI Oklahoma City OK 73125

12TB4 SDG#: KMA35-15TB

CAT			As Received	As Received Method		Dilution
No.	Analysis Name	CAS Number	Result	Detection Limit	Units	Pactor .
08213	BTEX (8021)					
00776	Benzene	71-43-2	N.D.	0.20	ug/1	1
00777	Toluene	108-88-3	N.D.	0.20	ug/l	1
00778	Bthylbenzene	100-41-4	N.D.	0.20	ug/l	1
00779	Total Xylenes	1330-20-7	Ń.D.	0.60	ug/l	1
	Sufficient sample volume was not	: available to	perform a MSD	for this		

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

Labora	tom	Chron	iale.

CAT		·	Analysis	Dilution
No	Analysis Name	Method	Trial# Date and Time Analyst	. Factor
.08213	BTEX (8021)	SW-846 8021B	1 12/14/2002 06:55 Martha 1	L Seidel 1
01146	GC VOA Water Prep	SW-846 5030B	1 12/14/2002 06:55 Martha	L Seidel n.a.

Analysis Request / Environmental Comics Claimot Costony

Lancaster Laboratories
Where quality is a science.

Acct. #: 7802

For Lancaster Laboratories use only

Group# 834229 Sample # 3958874-88

COC # 0008411

Please print, instructions on reverse side correspond with circled numbers. 6,95 20 For Lab Use Only Acct. #: SCR#: // 72/5 Project Name/#: Mass American Project Manager: Tom Graan P.O.#: Name of state where samples were collected: Samula danili e alon Remarks three product in sample # MA3-TG1-1-111202-01 12/11/02 × × X X: 欠 × X MA3-TG1-2-111202-02 0920 × MA3-MW-65-111202-05 6011 mA3-MW-275-111202-08 1205 MA3-MW-335-111202-06 1155 × MA3-MW-345-111202-10 500 MA3-MW-355- (11202-09 1455 × MA3-MW-355-111202-A-DA 1455 MAZ -MW-285-111202 -04 (050 Turnaround Time Requested (TAT) (please circle): Normal Time (9 Date Time Time Received by: Relinquished by: Date (Rush TAT is subject to Lancaster Laboratories approval and surcharge.) Date results are needed: Relinquished by: Date Time Received by: Date Rush results requested by (please circle): Phone Fax 1200 1002 Phone #: 847-918-4000 Fax #: 847-918-4055 Relinquished by: Date Received by: E-mail address: Date Time Time Data Package Options (please circle if required) SDG Complete? Type VI (Raw Data) PR QUOTE Date QC Summary Yes M3 Relinquished by: Date Time | Received by: Time Type I (Tier I) State-specific QC required? Yes Type II (Tier II) Other (If yes, Indicate QC sample and submit triplicate volume.) Relinguished by: Date Time | Received by: Date Time Type III (NJ Red. Del.) Internal Chain of Custody required? Yes No Type IV (CLP)

Analysis kequest, Environtiaent, Service. W.Lin J' & Toc



834229

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For Lancaster Laboratories use only

Acct. # 7802 Sample # 3958874-88

834229

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pe II (Tier II) Other	Site-specific QC require (if yes, indicate QC sample an	ed? Yes	No licate volume)				<u> </u>	>			ļ	<u> </u>		· 						<u> </u>	_
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Lancaster Laboratories is a subsidiary of Thermo TerraTech Inc., a Thermo Electron Company

Analysis Requesty Environmentus Services W.Lin J. Cuttoc



For Lancaster Laboratories use only
Acct. # 7802 Sample # 3958874-88

834229

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Analysis Requesi, Environmental Services C. Jin J. C. Joc,



For Lancaster Laboratories use only
Acct. # 7802 Sample # 3958874-88

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Lancatter Lahoratories is a subsidiary of Thermo TerraTech Inc., a Thermo Electron Company



Case Narrative
Client: Kerr-McGee Corporation
SDG: KMA35

LANCASTER LABORATORIES PAH by HPLC

SAMPLE NUMBER(S):

		Matrix	
LL#s	Sample Code	Water	Comments
3958874	12111	- X	20X Dilution
3958874DL	12111DL	X	200X Dilution
3958874DL2	12111DL2	X	2000X Dilution
3958874RE	12111RE	X /	Reextraction 20X Dilution
3958875	12112	X	
3958875RE	12112RE	\mathbf{X}_{\perp}	Reextraction
3958876	12113	X	
3958876RE	12113RE	X	Reextraction
3958877	12114	X	
3958877RE	12114RE	X	Reextraction
3958878	12115	X	·
3958878RE	12115RE	X	Reextraction
3958879	12116	X	
. 3958879DL	12116DL	X	10X Dilution
3958879RE	12116RE	X	Reextraction
3958880	12117	, X	
3958880RE	12117RE	X ;	Reextraction
3958881	12118	X	•
3958881RE	12118RE	X	Reextraction
3958882	12119	X	· .
3958882RE	12119RE	_ X	Reextraction
3958883	12-9D	X	•
3958883RE	12-9DRE	X	Reextraction
3958884	1234S	X	5X Dilution
3958884DL	1234SDL	X	50X Dilution
3958884RE	1234SRE	X	Reextraction 5X Dilution
3958885	12-7S	· X	
3958885DL	12-7SDL	X	20X Dilution
3958885RE	12-7SRE	X	Reextraction



Case Narrative (continued) SDG#: KMA35

SAMPLE NUMBER(S) continued:

•		Matrix	
LL #'s	Sample Code	Water	Comments
3958886	12-9S	$\overline{\mathbf{x}}$	
3958886RE	12-9SRE	X	Reextraction
			•
LABORATORY S	SUBMITTED QC:		
SBLKWH346	SBLKWH3462	· X	Method Blank
SBLKWH353	SBLKWH3532	X	Method Blank
SBLKWC354	SBLKWC3542	X	Method Blank
3966074	D6XXD	X	Unspiked ``
3966074	D6XXDDL	X	5X Dilution
3966075	D6XXDMS	X	Matrix Spike
3966076	D6XXDMSD	. X	Matrix Spike Dup
346WHLCS	346WHLCS2	X	Lab Control Sample
346WHLCSD	346WHLCSD2	X	Lab Control Sample Dup
353WHLCS	353WHLCS2	X	Lab Control Sample
353WHLCSD	353WHLCSD2	, X	Lab Control Sample Dup
354WCLCS	354WCLCS2	Χ.	Lab Control Sample
	·		

SAMPLE PREPARATION:

Due to insufficient sample, reduced volumes were used in the extraction of the following samples.

Sample Code	Volume
12111	999 mls
12111RE	974 mls
12113RE	.993 mls
12116	963 mls
12117	987 mls
12348	983 mls
1234SRE	995 mls



Case Narrative (continued) SDG#: KMA35

No other 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 organic extraction batches 02346WAH026 and 02353WAH026. Therefore, LCS/LCSD's were performed to demonstrate precision and accuracy at a batch level.

The following samples were analyzed at initial dilutions due to high concentrations of non-target compounds.

Sample Code	Dilution
12111	20X
1234S	. 5X

The following samples were analyzed at further dilutions due to target recoveries above calibration range.

Sample Code	Dilution	Compounds
12111	200X	a number of compounds
	2000X	phenanthrene, fluoranthene
12116	10X	naphthalene, fluorene
1234S	50X	naphthalene, phenanthrene, fluoranthene
12-78	20X	naphthalene

Reextractions were required for the samples in organic extraction batch 02346WAH026 due to unacceptable recoveries in the associated quality control samples.

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



Case Narrative (continued) SDG#: KMA35

QUALITY CONTROL AND NONCONFORMANCE SUMMARY:

In 12114RE the surrogate recoveries of nitrobenzene and triphenylene were outside QC limits.

The recoveries of naphthalene, acenaphthylene, and benzo(b)fluoranthene in D6XXDMS and D6XXDMSD were outside QC limits. All recoveries were within specifications in 354WCLCS2

A number of compounds had recoveries outside QC limits in 346WHLCS2 and 346WHLCSD2. Refer to the laboratory control sample/laboratory control sample duplicate recoveries form for the specific compounds outside QC limits.

A number of compounds had recoveries outside QC limits in 353WHLCS2 and 353WHLCSD2. Refer to the laboratory control sample/laboratory control sample duplicate recoveries form for the specific compounds outside QC limits.

All other QC was within specifications.

DATA INTERPRETATION:

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

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



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Case Narrative (continued) SDG#: KMA35

Sample Code	Compound
12111	triphenylene
12111DL	triphenylene, benzo(g,h,i)perylene
12111DL2	triphenylene
12111RE	naphthalene, acenaphthylene, phenanthrene, anthracene,triphenylene,
	dibenz(a,h)anthracene, benzo(g,h,i)perylene
12116	anthracene
1234S	triphenylene, dibenz(a,h)anthracene,
	benzo(g,h,i)perylene
1234SDL	naphthalene, triphenylene
1234SRE	acenaphthylene, phenanthrene, triphenylene,
	dibenz(a,h)anthracene, benzo(g,h,i)perylene,
•	indeno(1,2,3-cd)pyrene
12-7SRE	acenaphthylene
Lab file	indeno(1,2,3-cd)pyrene UV,
02354 level 5	indeno(1,2,3-cd)pyrene FL
Lab file	nitrobenzene, naphthalene UV,
02354B1-34R	acenaohthtlene, naphthalene FL
Lab file	acenaphthylene
02359-20R	·
Lab file	acenaphthylene ·
02359-28R	
Lab file	indeno(1,2,3-cd)pyrene UV,
02359-48R	indeno(1,2,3-cd)pyrene FL

No further interpretation is necessary for the data submitted.

Case Narrative Reviewed and Approved by:

Charles J. Neslund

Group Leader, GC/MS Semivolatiles

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Case Narrative SDG# KMA35

Client: Kerr-McGee Corporation Project: Moss American Site - WI

Volatiles by GC - Water

AMPLE ANALYSES

LL	Sample	Matrix	•
mple #	Designation	Soil Water	Comments
)58874	12111	x	DF 20
158875	12112	X	
3958876	12113	X	
3958877	12114	X	. •
)58877MS	12114	X	Matrix Spike
_ 358878	12115	. X	_
3958879	12116	X	DF 10
958880	12117	X	
958881	12118	X	
3958882	12119	X	
3958883	. 12-9D	. X	
958884	1234S	X	DF 25
958885	12-7S	X	DF 20
3958886	12-9S	X	
958887	12TB3	X	•
958888	12TB4	x	

IALITY CONTROL ANALYSES

BLK5108	· .	X	Method Blank
7LK5109		X	Method Blank
LCS5108		X X	Lab Control Sample Lab Control Dup

SAMPLE PREPARATION

ilutions were necessary for some samples as noted in the comments section above.

NALYSIS

The integration system reviews the chromatogram retention times, comparing them to the -etention times in the ID window column. A peak in the sample chromatogram with a etention time within the ID window is identified as a "hit."

The method used for analysis was EPA Method SW-846 8021B. A J&W DB-VRX, $75m \times 0.45mm$ column as used for the analysis of all samples. The surrogate concentration was 30.0 UG/L.

No problems were encountered during analysis.



Case Narrative SDG# KMA35

Client : Kerr-McGee Corporation Project: Moss American Site - WI

Volatiles by GC - Water

UALITY CONTROL AND NONCONFORMANCE SUMMARY

l re was no client submitted QC, so Lancaster Laboratories batch QC was referenced. ufficient sample volume was not available to perform an MSD for this analysis, therefore r LCS/LDS was performed to demonstrate precision and accuracy at a batch level.

all QC was within specifications.

)ATA INTERPRETATION

explanation is necessary for the data submitted.

: rative reviewed and approved by:

49 to 01

J. Stabinger, Group beader D

Analytical Data Validation Report
Kerr-McGee Corporation
Moss American Superfund Site- Milwaukee, WI
SDG #: KMA34

I have reviewed the analytical data provided by Lancaster Laboratories for the Moss American Site in Milwaukee, Wisconsin upon the information that was provided by the laboratory.

Polynuclear Aromatic Hydrocarbons (PAHs by HPLC, U.S. EPA Method 8310) Moss American Site

SDG # KMA34

1	.Sa	mp	les	:

Client Sample	Lab Sample		Date	Date	Date
Description:	Number	<u>Matrix</u>	Collected	Extracted	Analyzed
MA3-TG5-1-091202-01	3957167	Grab water	12/09/02	12/11/02	12/14/02
MA3-TG5-1-091202-01-DUP	3957168	Grab water	12/09/02	12/11/02	12/14/02
MA3-TG5-2-091202-02	3957172	Grab water	12/09/02	12/11/02	12/14/02
MA3-TG5-3-091202-03	3957173	Grab water	12/09/02	12/11/02	12/14/02
MA3-TG4-3-101202-06	3958168	Grab water	12/10/02	12/13/02	12/15/02
MA3-TG2-3-101202-12	3958169	Grab water	12/10/02	12/13/02	12/15/02
MA3-TG4-1-101202-04	3958170	Grab water	12/10/02	12/13/02	12/15/02
MA3-TG4-2-101202-05	3958171	Grab water	12/10/02	12/13/02	12/15/02
MA3-TG2-2-101202-11	3958172	Grab water	12/10/02	12/13/02	12/15/02
MA3-TG2-1-101202-10	3958173	Grab water	12/10/02	12/13/02	12/15/02
MA3-TG6-3-101202-03	3958174	Grab water	12/10/02	12/13/02	12/15/02
MA3-TG6-1-101202-01	3958175	Grab water	12/10/02	12/13/02	12/15/02
MA3-TG3-1-101202-07	3958176	Grab water	12/10/02	12/13/02	12/15/02
MA3-TG6-2-101202-02	3958177	Grab water	12/10/02	12/13/02	12/15/02
MA3-TG6-2-101202-02-MS	3958178	Grab water	12/10/02	12/13/02	12/15/02
MA3-TG6-2-101202-02-MSD	3958179	Grab water	12/10/02	12/13/02	12/15/02
FB-01	3958180	Grab water	12/10/02	12/13/02	12/15/02
MA3-TG3-2-101202-08	3958182	Grab water	12/10/02	12/13/02	12/15/02
MA3-TG3-3-101202-09	3958183	Grab water	12/10/02	12/13/02	12/15/02
MA3-TG2-2-101202-11-DUP	3958184	Grab water	12/10/02	12/13/02	12/15/02

2. Holding Times:

The samples were extracted and analyzed within the required holding times. The samples (3958168 thru 3958184) were re-extracted past the holding time. Therefore, all the re-extracting results qualified as (J/UJ). All the results reported from the initial extraction of the samples.

3. Method Blank:

Three method blanks SBLKWB3452, SBLKWG3462, and SBLKWF3532 were associated with this SDG. SBLKWB3452 was analyzed with (3957167, 3957168, 3957172, and 3957173) on 12/14/02. SBLKWG3462 was analyzed with (3958168 thru 3958180, 3958182 thru 3958184, and 3958199 thru 3958202) on 12/15/02. SBLKWF3532 was analyzed with the re-extracted samples (3958168 thru 3958180, 3958182 thru 3958184, 3958199 thru 3958202, 3958962, and 3958963) on 12/22/02. All the method blanks results were free of contamination.

Analytical Data Validation Report
Kerr-McGee Corporation
Moss American Superfund Site- Milwaukee, WI
SDG #: KMA34

4. Surrogate:

The surrogate recoveries were coming from UV detector. The method blanks and the investigated samples had surrogate recoveries within the required quality control limits.

5. Matrix Spike/Matrix Spike Duplicate Recovery:

The matrix spike was performed on sample 3958177. The MS/MSD recoveries were within the quality control limit. Also, the RPD% values were acceptable.

The re-extracting MS/MSD recoveries were acceptable. Also, the RPD% values were acceptable.

6. Laboratory Control Sample:

The LCS/LCSD that associated with (3957167, 3957168, 3957172, and 3957173) recoveries were within the acceptance quality control limits. Also, the RPD% values were acceptable.

The LCS that associated with (3958168 thru 3958180, 3958182 thru 3958184, and 3958199 thru 3958202) recoveries was within the control limits, except in dibenz (a, h) anthracene, and in indeno (1,2,3-cd) pyrene. Therefore, qualify the results as (J/UJ).

The LCS that associated with the re-extracted samples (3958168 thru 3958180, 3958182 thru 3958184, 3958199 thru 3958202, 3958962, and 3958963) recoveries was within the control limits.

7. Retention Time:

All the retention time results were acceptable.

8. Initial and Continuing Calibration:

The initial calibration, and continuing calibration verification were all acceptable.

However, the retention time, initial and continuing calibration results were used in the calculation from two detectors: naphthalene, acenaphthylene, 1-methylnaphthalene, 2-methylnaphthalene, fluorene, phenanthrene, and anthracene were taken from ultraviolet detector, and acenaphthene, fluoranthene, pyrene, benzo (a) anthracene, chrysene, benzo (b) fluoranthene, benzo (k) fluoranthene, benzo (a) pyrene, dibenzo (a, h) anthracene, benzo (g, h, i) perylene, and indeno (1, 2, 3-cd) pyrene were taken from fluorescence detector.

Analytical Data Validation Report Kerr-McGee Corporation Moss American Superfund Site- Milwaukee, WI SDG #: KMA34

BETX (U.S. EPA Method 8021B) SDG # MMA34

1.Samples:

Client Sample	Lab Sample		Date	Date	Date
Description:	Number	<u>Matrix</u>	Collected	Prepared	Analyzed
MA3-TG5-1-091202-01	3957167	Grab water	12/09/02	12/12/02	12/12/02
MA3-TG5-1-091202-01-DUP	3957168	Grab water	12/09/02	12/12/02	12/12/02
MA3-TG5-2-091202-02	3957169	Grab water	12/09/02	12/12/02	12/12/02
MA3-TG5-3-091202-03	3957170	Grab water	12/09/02	12/12/02	12/12/02
TB-01	3957171	Grab water	12/09/02	12/12/02	12/12/02
MA3-TG4-3-101202-06	3958168	Grab water	12/10/02	12/13/02	12/13/02
MA3-TG2-3-101202-12	3958169	Grab water	12/10/02	12/13/02	12/13/02
MA3-TG4-1-101202-04	3958170	Grab water	12/10/02	12/13/02	12/13/02
MA3-TG4-2-101202-05	3958171	Grab water	12/10/02	12/13/02	12/13/02
MA3-TG2-2-101202-11	3958172	Grab water	12/10/02	12/13/02	12/13/02
MA3-TG2-1-101202-10	3958173	Grab water	12/10/02	12/13/02	12/13/02
MA3-TG6-3-101202-03	3958174	Grab water	12/10/02	12/13/02	12/13/02
MA3-TG6-1-101202-01	3958175	Grab water	12/10/02	12/13/02	12/13/02
MA3-TG3-1-101202-07	3958176	Grab water	12/10/02	12/13/02	12/13/02
MA3-TG6-2-101202-02	3958177	Grab water	12/10/02	12/13/02	12/13/02
MA3-TG6-2-101202-02-MS	3958178	Grab water	12/10/02	12/13/02	12/13/02
MA3-TG6-2-101202-02-MSD	3958179	Grab water	12/10/02	12/13/02	12/13/02
FB-01	3958180	Grab water	12/10/02	12/13/02	12/13/02
TB-02	3958181	Grab water	12/10/02	12/13/02	12/13/02
MA3-TG3-2-101202-08	3958182	Grab water	12/10/02	12/13/02	12/13/02
MA3-TG3-3-101202-09	3958183	Grab water	12/10/02	12/13/02	12/13/02
MA3-TG2-2-101202-11-DUP	3958184	Grab water	12/10/02	12/13/02	12/13/02

2. Holding Times:

All samples were analyzed within the required holding times.

3. Method Blank:

Two method blanks BLK5553, and BLK5555 were associated with this SDG. BLK5553 was analyzed with (3957167 thru 3957170) on 12/12/02. BLK5555 was analyzed with (3958168 thru 3958184) on 12/13/02. Both method blanks BLK5553, and BLK5555 result were free of contamination.

4. Matrix Spike/Matrix Spike Duplicate:

The laboratory performed matrix spike/matrix spike duplicate on sample 3958177. The MS/MSD recoveries were within the quality control limits. Also, the RPD% values were acceptable.

5. Laboratory control Sample:

Two laboratories control samples were associated with this SDG. The LCS/LCSD that associated with (3957167 thru 3957170), and LCS/LCSD associated with (3958168 thru 3958184). Both LCS/LCSD recoveries were within the control limits. Also, the RPD% values were acceptable.

6. Surrogate:

The method blanks and the investigated samples had surrogate recoveries within the required quality control limits.

7. Initial and Continuing Calibration:

All the initial calibration and continuing calibration results were within the quality control limits.

Please feel free to contact me at (847) 971-6800 with any question regarding these validation reports.

Sincerely Tania Balikji-Shammo



ANALYTICAL RESULTS

Prepared for:

Kerr-McGee Corporation P.O. Box 25861 Oklahoma City OK 73125

405-270-2602

Prepared by:

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

SAMPLE GROUP

The sample group for this submittal is 833887. Samples arrived at the laboratory on Tuesday, December 10, 2002.

Client Description	Lancaster Labs Number
MA3-TG5-1-091202-01 Grab Water Sample	3957167
MA3-TG5-1-091202-01-DUP Grab Water Sample	3957168
MA3-TG5-2-091202-02 Grab Water Sample	3957169
MA3-TG5-3-091202-03 Grab Water Sample	3957170
TB-01 Water Sample	3957171
MA3-TG5-2-091202-02 Grab Water Sample	3957172
MA3-TG5-3-091202-03 Grab Water Sample	3957173

METHODOLOGY

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

1 COPY TO	Kerr-McGee Corporation			٠.		Attn: Dr. Jeff Ostmeyer
1 COPY TO	Weston Solutions, Inc.		•	٠.	•	Attn: Mr. Tom Graan
1 COPY TO	Data Package Group					







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

Respectfully Submitted,

Michele A. Jarostek
Sensor Chemist



Lancaster Laboratories Sample No. WW 3957167

Collected:12/09/2002 15:50 by BS

Submitted: 12/10/2002 09:20 Reported: 01/03/2003 at 11:40

Discard: 02/03/2003

MA3-TG5-1-091202-01 Grab Water Sample

Moss American Superfund Site - Milwaukee, WI

Account Number: 07802

Kerr-McGee Corporation

P.O. Box 25861

Oklahoma City OK 73125

20201 SDG#: KMA34-01

	•			As Received	•	
CAT			As Received	Method		Dilution
No.	Analysis Name	CAS Number	Result	Detection Limit	Units	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/î :	1
00220	Nitrate Nitrogen	14797-55-8	N.D.	0.040	mg/l	1
00221	Ammonia Nitrogen	7664-41-7	1.2	. 0.46	mg/l	1
	Sufficient sample volume was not	available to	perform a MS/MS	D 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	0.0161 J	0.0066	mg/1.	1
00235	Biochemical Oxygen Demand	n.a:	N.D.	2.6	mg/l	1
00273	Total Organic Carbon	n.a	4.75	0.500	mg/l	1
00345	Total Phosphorus as PO4 water	14265-44-2	0.27 .	0.12	mg/l	· 1
01553	Chemical Oxygen Demand	n.a.	10.3	1.7	mg/l	1 .
08213	BTEX (8021)					
00776	Benzene	71-43-2	N.D.	. 0.20	uq/l	1
00777	Toluene	108-88-3	N.D.	0.20°	uq/l	1 .
00778	Ethylbenzene	100-41-4	N.D.	0.20	ug/l	· 1
00779	Total Xylenes	1330-20-7	N.D.	0.60	ug/1	· 1
	Sufficient sample volume was no	t available to	perform a MSD i	for this		
: ·	analysis. However, a MS was per		-			•
	performed to demonstrate precis	•	•			
	FOLIATION 10 TOWNS 1	,			,	•
00774	PAH's in Water by HPLC			•		
• • • •		:	·			
00775	Naphthalene	91-20-3	N.D.	1.0	ug/1	1
00782	Acenaphthylene	208-96-8	N.D.	2.0	ug/1	1
00783	Acenaphthene	83-32-9	N.D.	2.0	ug/1	1
00784	Fluorene	86-73-7	N.D.	0.20	ug/1	1
00785	Phenanthrene	85-01-8	N.D.	0.080	ug/1	1
00789	Anthracene	120-12-7	N.D.	0.040	ug/l	
00807	Fluoranthene	206-44-0	N.D.	0.040	ug/1	
00811	Pyrene	129-00-0	N.D.	0.20	ug/1	1
00812	Benzo (a) anthracene	56-55-3	N.D.	0.020	ug/1	1
00818		205-99-2	N.D.	0.040	ug/l	•
	Banga(h) fluoranthana			~.~~		1
	Benzo (a) nurene					1
00823	Benzo (a) pyrene	50-32-8	N.D.	0.020	ug/1	1
00823 00895	Benzo(a)pyrene Dibenz(a,h)anthracene	50-32-8 53-70-3	N.D.	0.020 0.040	ug/1 ug/1	1 1
00823 00895 00898	Benzo(a) pyrene Dibenz(a,h) anthracene Indeno(1,2,3-cd) pyrene	50-32-8 53-70-3 193-39-5	N.D. N.D. N.D.	0.020 0.040 0.080	ug/1 ug/1 _ug/1	1 1 1
00823 00895	Benzo(a)pyrene Dibenz(a,h)anthracene	50-32-8 53-70-3	N.D.	0.020 0.040	ug/1 ug/1	1 1 1



Page 2 of 2

Lancaster Laboratories Sample No. WW 3957167

Collected: 12/09/2002 15:50 by BS

Submitted: 12/10/2002 09:20 Reported: 01/03/2003 at 11:40

Discard: 02/03/2003

MA3-TG5-1-091202-01 Grab Water Sample

Moss American Superfund Site - Milwaukee, WI

Account Number: 07802

Kerr-McGee Corporation

P.O. Box 25861

Oklahoma City OK 73125

20201 SDG#: KMA34-01

As Received CAT As Received Method Dilution Analysis Name CAS Number Result Detection Units **Factor** No. Limit 207-08-9 Benzo (k) fluoranthene N.D. 0.020 ug/l Sufficient sample volume was not available to perform a MS/MSD for this

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	Chro	nicie		•
CAT			-	Analysis		Dilution
Йo.	Analysis Name	Method	Trial#	Date and Time	Analyst	Factor
00217	Kjeldahl Nitrogen	EPA 351.2	1	12/20/2002 15:52	Venia B McFadden	1
00219	Nitrite Nitrogen	EPA 353.2	1	12/11/2002 10:41	Christian C Ehrhart	1
00220	Nitrate Nitrogen	EPA 353.2	· 1	12/12/2002 12:00	Ramona V Goss	1
00221	Ammonia Nitrogen	EPA 350.2	1	12/10/2002 15:00	Luz M Groff	1
00226	Ortho-Phosphate as P	EPA 365.3	1	12/10/2002 21:55	Daniel S Smith	1
00235	Biochemical Oxygen Demand	EPA 405.1	1	12/10/2002 22:43	Nicole R Bushong	1
00273	Total Organic Carbon	EPA 415.1	1	12/16/2002 17:07	Timothy M Petree	1
00345	Total Phosphorus as PO4 water	EPA 365.1	. 1	12/24/2002 16:57	Venia B McFadden	1
01553	Chemical Oxygen Demand	EPA 410.2	1	12/16/2002 05:50	Susan A Engle	1
08213	BTEX (8021)	SW-846 8021B	1	12/12/2002 15:09	Melissa D Mann	1
00774	'PAH's in Water by HPLC	SW-846 8310	1	12/14/2002 15:54	`Mark A Clark	. 1
01146	GC VOA Water Prep	SW-846 5030B	i	12/12/2002 15:09	Melissa D Mann	n.a.
01460	Total Kjeldahl Nitrogen Digest	EPA 351.2	2	12/17/2002 13:45	Nancy J Shoop	1. 1
03337	PAH Water Extraction	SW-846 3510C	1	12/11/2002 22:30	Sharon L Jones	1
08264	Total Phos as PO4 Prep (water)	EPA 365.1	1	12/13/2002 11:00	James S Mathiot	1



Lancaster Laboratories Sample No. WW 3957168

Collected: 12/09/2002 15:50 by BS

Submitted: 12/10/2002 09:20 Reported: 01/03/2003 at 11:41

Discard: 02/03/2003

MA3-TG5-1-091202-01-DUP Grab Water Sample Moss American Superfund Site - Milwaukee, WI Account Number: 07802

Kerr-McGee Corporation

P.O. Box 25861

Oklahoma City OK 73125

FD01- SDG#: KMA34-02FD

	_			As Received		
CAT	•		As Received	Method		Dilution
No.	Analysis Name	CAS Number	Result	Detection Limit	Units .	Factor
08213	BTEX (8021)					
00776	Benzene	71-43-2	N.D.	0.20	ug/l	1
[:] 00777	Toluene	108-88-3	N.D.	0.20	· ug/l	1
00778	Ethylbenzene	100-41-4	N.D.	0.20	ug/l .	1
00779	Total Xylenes	1330-20-7	N.D.	0.60	ug/l	1
	Sufficient sample volume wa	s not available to	o perform a MSD i	for this .		
	analysis. However, a MS was	performed. In add	dition, a LCS/LCS	SD was		
	performed to demonstrate pr	ecision and accura	acy at a batch le	evel.		
		•		·		•
. 00774	PAH's in Water by HPLC					
00775	Naphthalene	91-20 - 3	N.D.	1.0	ug/1	1
00782	Acenaphthylene	208-96-8	N.D.	2.0	ug/l	1
00783	Acenaphthene	83-32-9	N.D.	2.0	ug/l	1 .
00784	Fluorene	86-73-7	N.D.	0.20	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.	020	ug/1	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 1 · · ·
07410.	Benzo(k) fluoranthene	207-08-9	N.D.	0.020	ug/l .	1
	Sufficient sample volume wa	s not available t	o perform a MS/M	SD for this		
						•

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.

			٠.	٠.	٠.	٠.	
Labora					•		
I.anora	•	Δm	rnr	\sim n	•	\sim 1	_

AT		•	Analysis	<u> </u>
To	Analysis Name	Method	Trial# Date and Time	Æ.a
8213	BTEX (8021)	SW-846 8021B	1 12/12/2002 15:41	Mel
0774	PAH's in Water by HPLC	SW-846 8310	1 12/14/2002 16:33	Mar
•				·· 2

Malyst Jelissa D Mann Jark A Clark Dilution Factor 1





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n.a.

Lancaster Laboratories Sample No. WW 3957168

Collected:12/09/2002 15:50 by BS

Account Number: 07802

Submitted: 12/10/2002 09:20 Reported: 01/03/2003 at 11:41 Kerr-McGee Corporation

Discard: 02/03/2003

P.O. Box 25861

MA3-TG5-1-091202-01-DUP Grab Water Sample Moss American Superfund Site - Milwaukee, WI

Oklahoma City OK 73125

FD01- SDG#: KMA34-02FD

01146 GC VOA Water Prep SW-846 5030B 03337 PAH Water Extraction SW-846 3510C

SW-846 5030B 1 12/12/2002 15:41 Melissa D Mann SW-846 3510C 1 12/11/2002 22:30 Sharon L Jones

Analysis Report



Page 1 of 1

Lancaster Laboratories Sample No.

Collected:12/09/2002 16:00 by BS

Account Number: 07802

Submitted: 12/10/2002 09:20 Reported: 01/03/2003 at 11:41 Kerr-McGee Corporation

Discard: 02/03/2003

P.O. Box 25861

MA3-TG5-2-091202-02 Grab Water Sample

Oklahoma City OK 73125

Moss American Superfund Site - Milwaukee, WI

SDG#: KMA34-03 02-02

CAT		•.	As Received	As Received Method		Dilution
No.	Analysis Name	CAS Number	Result	Detection Limit	Units	Factor
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
08213	BTEX (8021)	٠				
00776	Benzene	71-43-2	N.D.	0.20	ug/l	1.
00777	Toluene	108-88-3	N.D.	0.20	ug/l	1
. 00778	Ethylbenzene	100-41-4	N.D.	0.20	ug/l	1
00779	Total Xylenes	1330-20-7	·N.D.	0.60	ug/l	1
·	Sufficient sample volume was no analysis. However, a MS was per		-		-	

performed to demonstrate precision and accuracy at a batch level.

			Laboratory	Chro	nicle		
CAT	•		_		Analysis	•	Dilution
No.	Analysis Name	•	Method	Trial#	Date and Time	Analyst	Factor
00219	Nitrite Nitrogen		EPA 353.2	1	12/11/2002 10:00	Christian C Ehrhart	1.
00220	Nitrate Nitrogen	. '	EPA 353.2	1	12/12/2002 12:01	Ramona V Goss	·1
08213	BTEX (8021)	• •	SW-846 8021B	1 .	12/12/2002 16:12	Melissa D Mann	·1
01146	GC VOA Water Prep		SW-846 5030B	. 1	12/12/2002 16:12	Melissa D Mann	n.a.

Analysis Report



Lancaster Laboratories Sample No.

Collected:12/09/2002 16:10

Account Number: 07802

Submitted: 12/10/2002 09:20 Reported: 01/03/2003 at 11:41 Kerr-McGee Corporation

P.O. Box 25861

Discard: 02/03/2003

Oklahoma City OK 73125

MA3-TG5-3-091202-03 Grab Water Sample

Moss American Superfund Site - Milwaukee, WI

SDG#: KMA34-04

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection	Units	Dilution Factor
00219	Nitrite Nitrogen	14797-65-0	N.D.	Limit 0.015	mg/1	1
00220	Nitrate Nitrogen	.14797-55-8	0.13	0.040 .	mg/l	1
08213	BTEX (8021)					
00776	Benzene	71-43-2	N.D.	0.20	ug/l	1
00777	Toluene	108-88-3	N.D.	0.20	ug/l	1
00778	Ethylbenzene	100-41-4	N.D.	0.20 .	ug/l	1 ·
00779	Total Xylenes	1330-20-7	·N.D.	0.60	ug/l	1
	Sufficient sample volume was no analysis. However, a MS was per performed to demonstrate precia	rformed. In add	dition, a LCS/LCS	SD was		•

CAT				_		Analysis		Dilution
No.	Analysis Name		Method	•	Trial#	Date and Time	Analyst	Factor
00219	Nitrite Nitrogen		EPA 353.2		1	12/11/2002 09:59	Christian C Ehrhart	· 1
00220	Nitrate Nitrogen	•	EPA 353.2		. 1	12/12/2002 12:05	Ramona V Goss	1
08213	BTEX (8021)		SW-846 8021B		1	12/12/2002 16:45	Melissa D Mann	1
01146	GC VOA Water Prep		SW-846 5030B		1	12/12/2002 16:45	Melissa D Mann	n.a.



Lancaster Laboratories Sample No. WW 3957171

Collected:12/09/2002 17:30

Account Number: 07802

Submitted: 12/10/2002 09:20 Reported: 01/03/2003 at 11:41 Kerr-McGee Corporation

Discard: 02/03/2003

P.O. Box 25861

TB-01 Water Sample

Oklahoma City OK 73125

Moss American Superfund Site - Milwaukee, WI

TBX01

SDG#: KMA34-05TB

				As Received		
CAT	•		As Received	Method		Dilution
No.	Analysis Name	CAS Number	Result .	Detection Limit	Units	Factor '
08213	BTEX (8021)		٠.		•	
00776	Benzene	71-43-2	N.D.	0.20 .	ug/l	· 1
00777	Toluene	108-88-3	N.D.	0.20	· ug/l	1
00778	Ethylbenzene	100-41-4	N.D.	0.20	ug/l	1
00779	Total Xylenes	1330-20-7	· N.D.	0.60	ug/1	1
	Sufficient sample volume was not	t available to	perform a MSD f	or this .		
	analysis. However, a MS was per	formed. In add	lition, a LCS/LCS	D was	,	
• .	performed to demonstrate precis	ion and accura	acy at a batch le	vel.		·

CAT	·		•	Analysis		Dilution
No.	Analysis Name	Method	Trial#	Date and Time	Analyst	Factor
.08213	BTEX (8021)	SW-846 8021B	. 1	12/12/2002 14:04	Melissa D Mann	1
01146	GC VOA Water Prep	SW-846 5030B	1	12/12/2002 14:04	Melissa D Mann	n.a.
	•		•		•	





Lancaster Laboratories Sample No. WW 3957172

Collected: 12/09/2002 16:00 by BS

Submitted: 12/10/2002 09:20 Reported: 01/03/2003 at 11:41

Discard: 02/03/2003

MA3-TG5-2-091202-02 Grab Water Sample

Moss American Superfund Site - Milwaukee, WI

Account Number: 07802

Kerr-McGee Corporation

P.O. Box 25861

Oklahoma City OK 73125

5-2-9 SDG#: KMA34-06

			•	As Received		
CAT			As Received	Method		Dilution
No.	Analysis Name	CAS Number	Result	Detection Limit	Units	Factor
00217	Kjeldahl Nitrogen	7727-37-9	0.75 J	0.30	mg/l	· 1
00221	Ammonia Nitrogen	.7664-41-7	0.70 J	0.46	mg/1	1
•	Sufficient sample volume was not	t available to	perform a MS/MS	D for this	• .	• • •
	analysis. Therefore, a LCS/LCSD accuracy at a batch level.	was performed	l to demonstrate	precision and		•
00226	Ortho-Phosphate as P	14265-44-2	0.0085 J	0.0066	mg/l	1 .
00235	Biochemical Oxygen Demand	n.a.	N.D.	2.5	mg/l	· 1 .
00273	Total Organic Carbon	n.a.	6.19	0.500	mg/l	1
00345	Total Phosphorus as PO4 water	14265-44-2	0.34	0.12	mg/i	1 ,
01553	Chemical Oxygen Demand	n.a.	14.8	1.7	mg/l	1 ·
00774	PAH's in Water by HPLC			,	•	·
00775	Naphthalene	91-20-3	N.D.	1.0	ug/l	1
00782	Acenaphthylene	208-96-8	N.D.	2.0	ug/1	1
00783	Acenaphthene	83-32-9	N.D.	2.0	ug/1	1
00784	Fluorene	86-73-7	N.D.	0.20	· 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/1	, 1
00807	Pluoranthene	206-44-0	0.075 J	0.040	ug/l	1
00811	Pyrene	129-00-0	N.D.	0.20	ug/l	· 1
00812	Benzo(a) anthracene	56-55-3 ·	N.D.	0.020	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/1	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 no	t available to	o perform a MS/M	SD for this		

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

analysis. Therefore, a LCS/LCSD was performed to demonstrate precision and



accuracy at a batch level.

0 0 2

Analysis Report



Page 2 of 2

Lancaster Laboratories Sample No. WW 3957172

Collected:12/09/2002 16:00 by BS

Submitted: 12/10/2002 09:20 Reported: 01/03/2003 at 11:41

Discard: 02/03/2003

MA3-TG5-2-091202-02 Grab Water Sample

Moss American Superfund Site - Milwaukee, WI

Account Number: 07802

Kerr-McGee Corporation

P.O. Box 25861

Oklahoma City OK 73125

5-2-9 SDG#: KMA34-06

CAT	•			Analysis	•	Dilution
No.	Analysis Name	Method	Trial#	Date and Time	Analyst	Factor
00217	Kjeldahl Nitrogen	EPA 351.2	1	12/20/2002 15:56	Venia B McFadden	1
00221	Ammonia Nitrogen	EPA 350.2	1	12/10/2002 15:00	Luz M Groff	1 .
00226	Ortho-Phosphate as P	EPA 365.3	1	12/10/2002 21:55	Daniel S Smith	1
00235	Biochemical Oxygen Demand	EPA 405.1	1 .	12/10/2002 22:43	Nicole R Bushong	1
00273	Total Organic Carbon	EPA 415.1	1	12/16/2002 17:15	Timothy M Petree	1
00345	Total Phosphorus as PO4	EPA 365.1	1	12/24/2002 16:58	Venia B McFadden	1
01553	Chemical Oxygen Demand	EPA 410.2	1	12/16/2002 05:50	Susan A Engle	1
00774	PAH's in Water by HPLC	SW-846 8310	1 .	12/14/2002 17:11	Mark A Clark	1
01460	Total Kjeldahl Nitrogen Digest	EPA 351.2	2	12/17/2002 13:45	Nancy J Shoop	1 .
03337	PAH Water Extraction	SW-846 3510C	1	12/11/2002 22:30	Sharon L Jones	1.
08264	Total Phos as PO4 Prep	EPA 365.1	1	12/13/2002 11:00	James S Mathiot	, 1

Account Number: 07802



Page 1 of 2

Lancaster Laboratories Sample No.

Collected:12/09/2002 16:10

Kerr-McGee Corporation

Submitted: 12/10/2002 09:20 Reported: 01/03/2003 at 11:41 P.O. Box 25861 Oklahoma City OK 73125 Discard: 02/03/2003

MA3-TG5-3-091202-03 Grab Water Sample

Moss American Superfund Site - Milwaukee, WI

35--2 SDG#: KMA34-07

CAT			As Received	As Received Method		Dilutio
No.	Analysis Name	CAS Number	Result	Detection Limit	Units	Factor
00217	Kjeldahl Nitrogen	7727-37-9	0.48 J	0.30	mg/l	1 .
00221	Ammonia Nitrogen	.7664-41-7	0.58 J	0.46	mg/l	· · 1
•	Sufficient sample volume was not	t available to	perform a MS/N	MSD for this		
•	analysis. Therefore, a LCS/LCSD accuracy at a batch level.	was performed	d to demonstrate	e precision and	•	
00226	Ortho-Phosphate as P	14265-44-2	0.0166 J	0.0066	mg/1 .	1
00235	Biochemical Oxygen Demand	n.a.	N.D.	2.8	mg/l	1
00273	Total Organic Carbon	n.a.	6.02	0.500 -	mg/l	1
00345	Total Phosphorus as PO4 water	14265-44-2	0.35	0,12	mg/l	1.
01553.	Chemical Oxygen Demand	n.a.	27:0	1.7	mg/l	1
00774	PAH's in Water by HPLC					
00775	Naphthalene	91-20-3	N.D.	1.0	ug/l	1
00782	Acenaphthylene	208-96-8	.N.D	2.0	ug/l	1
00783	Acenaphthene	83-32-9	N.D.	2.0	ug/l	1
00784	Fluorene	86-73-7	N.D.	0.20	ug/1	1
00785	Phenanthrene	85-01-8	N.D.	0.090	ug/l	· 1
.00789	Anthracene	120-12-7	N.D.	0.040	ug/l	1
00807	Fluoranthene	206-44-0	0.065 J	0.040	ug/1	1
00811	Pyrene	129-00-0	N.D.	0.20	ug/l	1.
00812	Benzo (a) anthracene	56-55-3	N.D.	0.020	ug/1	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.	0.090	ug/l	1
00907	Benzo(g,h,i)perylene	191-24-2	N.D.	0.10	ug/1	1
07409	Chrysene	· 218-01-9	N.D.	0.090	ug/1	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.

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



Lancaster Laboratories Sample No. WW 3957173

Collected:12/09/2002 16:10 by BS

10/10/2002 00:20

Submitted: 12/10/2002 09:20 Reported: 01/03/2003 at 11:41

Discard: 02/03/2003

MA3-TG5-3-091202-03 Grab Water Sample

Moss American Superfund Site - Milwaukee, WI

Account Number: 07802

Kerr-McGee Corporation

P.O. Box 25861

Oklahoma Citý OK 73125

35--2 SDG#: KMA34-07

CAT		· · · ·		Analysis	_	Dilution
·No.	Analysis Name	Method	Trial#	Date and Time	Analyst	Factor
00217	Kjeldahl Nitrogen	EPA .351.2	1	12/20/2002 15:59	Venia B McFadden	1
00221	Ammonia Nitrogen	EPA 350.2	1	12/10/2002 15:00	Luz M Groff	1
00226	Ortho-Phosphate as P	EPA 365.3	1	12/10/2002 21:55	Daniel S Smith	1
00235	Biochemical Oxygen Demand	EPA 405.1	1 .	12/10/2002 22:43	Nicole R Bushong	1 '
00273	Total Organic Carbon	EPA 415.1	1	12/16/2002 17:23	Timothy M Petree	· 1
::00345	Total Phosphorus as PO4 water	EPA 365.1	1.	12/24/2002 17:01	Venia B McFadden	1
.01553	Chemical Oxygen Demand	EPA 410.2	1	12/16/2002 05:50	Susan A Engle	1
00774	PAH's in Water by HPLC	SW-846 8310	1 .	12/14/2002 17:50	Mark A Clark	1.
01460	Total Kjeldahl Nitrogen Digest	EPA 351.2	2	12/17/2002 13:45	Nancy J Shoop	1
03337	PAH Water Extraction	SW-846 3510C	· 1	12/11/2002 22:30	Sharon L Jones	. 1
08264	Total Phos as PO4 Prep	EPA 365.1	1	12/13/2002 11:00	James S Mathiot	. 1







ANALYTICAL RESULTS

Prepared for:

Kerr-McGee Corporation P.O. Box 25861 Oklahoma City OK 73125

405-270-2602

Prepared by:

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

SAMPLE GROUP

The sample group for this submittal is 834101. Samples arrived at the laboratory on Wednesday, December 11, 2002.

Client Description	Lancaster Labs Number
MA3-TG4-3-101202-06 Grab Water Sample	3958168
MA3-TG2-3-101202-12 Grab Water Sample	3958169
MA3-TG4-1-101202-04 Grab Water Sample	3958170
MA3-TG4-2-101202-05 Grab Water Sample	3958171
MA3-TG2-2-101202-11 Grab Water Sample	3958172
MA3-TG2-1-101202-10 Grab Water Sample	3958173
MA3-TG6-3-101202-03 Grab Water Sample	3958174
MA3-TG6-1-101202-01 Grab Water Sample	3958175
MA3-TG3-1-101202-07 Grab Water Sample	3958176
MA3-TG6-2-101202-02 Unspiked Grab Water Sample	3958177
MA3-TG6-2-101202-02 Matrix Spike Grab Water	3958178
MA3-TG6-2-101202-02 Matrix Spike Dup Grab	3958179
FB-01 Grab Water Sample	3958180
TB-02 Grab Water Sample	3958181
MA3-TG3-2-101202-08 Grab Water Sample	3958182
MA3-TG3-3-101202-09 Grab Water Sample	3958183
MA3-TG2-2-101202-11-DUP Grab Water Sample	3958184

METHODOLOGY

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

1 COPY TO	Kerr-McGee Corporation
1 COPY TO	Weston Solutions, Inc.
1 COPY TO	Data Package Group

Attn: Dr. Jeff Ostmeyer Attn: Mr. Tom Graan



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

Respectfully Submitted,

Steven A. Skiles Sr. Chemist



Lancaster Laboratories Sample No. WW

Collected:12/10/2002 11:05 by BS

Submitted: 12/11/2002 13:30 Reported: 01/08/2003 at 11:58

Discard: 02/08/2003

MA3-TG4-3-101202-06 Grab Water Sample

Moss American Superfund Site - Milwaukee, WI

Account Number: 07802

Kerr-McGee Corporation P.O. Box 25861

Oklahoma City OK 73125

SDG#: KMA34-08 431--

		•		As Received		•
CAT			As Received	Method	•	Dilution
No.	Analysis Name	CAS Number	Result .	Detection Limit	Units	Factor
00217	Kjeldahl Nitrogen	7727-37-9	1.00 J	0.30	mg/l	` 1 '
00219	Nitrite Nitrogen	14797-65-0	0.029 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	0.64 J	0.46	mg/l	1 .
	Sufficient sample volume was no analysis. Therefore, a LCS/LCSD accuracy at a batch level.	was performed	to demonstrate	precision and		
00226	Ortho-Phosphate as P	14265-44-2	0.045	0.0066	mg/l	1
00235	Biochemical Oxygen Demand	n.a.	N.D.	2.5	mg/l	1 .
00273	Total Organic Carbon	n.a.	9.95	0.500	mg/l	1 .
. 00345	Total Phosphorus as PO4 water	14265-44-2	0.37.	0.12	mg/l	· 1
01553	Chemical Oxygen Demand	n.a.	24.3	1.7	mg/l	1 .
	· • • • • • • • • • • • • • • • • • • •	•				•
08213	BTEX (8021)	•		·		
00776	Benzene	71-43-2	N.D.	0.20	ug/l	. 1
00777	Toluene	108-88-3	N.D.	0.20	ug/1	1
00778	Ethylbenzene .	100-41-4	N.D.	0.20	ug/1	1
. 00779	Total Xylenes	1330-20-7	N.D.	. 0.60	ug/1	ī .
		•		• •		
00774	PAH's in Water by HPLC	. •	٠.			. •
00775	Naphthalene	91-20-3 ·	N.D.	1.0	ug/l	1
00782	Acenaphthylene	208-96-8	N.D.	2.0	ug/1	1
00783	Acenaphthene	83-32-9	N.D	2.0	· ug/1	1
.00784	Fluorene	86-73-7	N.D.	0.20	ug/l	1
00785	Phenanthrene	85-01-8	N.D.	0.080	ug/1	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.	0.20	ug/1	1
00812	Benzo (a) anthracene	56-55-3	N.D.	0.020	ug/1	1
00818	Benzo (b) fluoranthene	205-99-2	N.D.	0.040	ug/l	1
00823		50-32-8	N.D.	0.020	ug/1	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.O.	0.080	. ug/1	1
00907	Benzo(g,h,i)perylene	191-24-2	и.д.	0.10	ug/l	
07409	Chrysene	218-01-9	N.D.	0.080	ug/1	1
07410	Benzo(k) fluoranthene	207-08-9	N.D.	0.020		
4,410	The recoveries for dibenz(a,h)a				Ũ na∖ī	*
	outside QC limits in the LCS as			he sample was	0 3	185





Lancaster Laboratories Sample No. WW 3958168

Collected: 12/10/2002 11:05 by BS

Account Number: 07802

Submitted: 12/11/2002 13:30 Reported: 01/08/2003 at 11:58 Kerr-McGee Corporation

Discard: 02/08/2003

P.O. Box 25861

Discard: 02/08/2003

Oklahoma City OK 73125

MA3-TG4-3-101202-06 Grab Water Sample

Moss American Superfund Site - Milwaukee, WI

431-- SDG#: KMA34-08

As Received

CAT Analysis Name CAS Number Result Detection Units Factor

re-extracted outside of the method hold time. Comparable sample results were observed between the two extractions. The results reported are from the initial extraction of the sample.

	•	Haboracory	CILLO	HICIC .	•	•
CAT		•		Analysis	•	Dilution
No.	Analysis Name	Method	Trial#	Date and Time	Analyst.	Factor
00217	Kjeldahl Nitrogen	EPA 351.2	1	12/19/2002 15:03	Venia B McFadden	1
00219	Nitrite Nitrogen	EPA 353.2	1	12/11/2002 15:58	Venia B McFadden	1
00220	Nitrate Nitrogen	EPA 353.2	· 1	12/17/2002 11:13	Ramona V Goss	1
00221	Ammonia Nitrogen	EPA 350.2	1	12/12/2002 22:15	Luz M Groff	1
00226	Ortho-Phosphate as P	EPA 365.3	1	12/11/2002 20:10	Daniel S Smith	1
00235	Biochemical Oxygen Demand	EPA 405.1	1	12/11/2002 23:02	Nicole R Bushong	1
00273	Total Organic Carbon	EPA 415.1	1	12/16/2002 23:43	Timothy M Petree	1
00345	Total Phosphorus as PO4 water	EPA 365.1	1	12/24/2002 18:06	Venia B McFadden	1
01553	Chemical Oxygen Demand	EPA 410.2	. 1	12/16/2002 05:50	Susan A Engle	1
08213	BTEX (8021)	SW-846 8021B	1	12/13/2002 07:00	Linda C Pape	1
00774	PAH's in Water by HPLC	SW-846 8310	1:.	12/15/2002 04:52	Mark A Clark	1
01146	GC VOA Water Prep	SW-846 5030B	1	12/13/2002 07:00	Linda C Pape	n.a.
01460	Total Kjeldahl Nitrogen Digest	EPA 351.2	1	12/12/2002 09:10	Cheryl L Robinson	1
03337	PAH Water Extraction	SW-846 3510C	i	12/13/2002 10:20	Felix C Arroyo	1
08264	Total Phos as PO4 Prep (water)	EPA 365.1	. 1	12/13/2002 11:00	James S Mathiot	1



Lancaster Laboratories Sample No. WW 3958169

Collected:12/10/2002 15:10 by BS

Submitted: 12/11/2002 13:30 Reported: 01/08/2003 at 11:58

Discard: 02/08/2003

MA3-TG2-3-101202-12 Grab Water Sample

Moss American Superfund Site - Milwaukee, WI

Account Number: 07802

Kerr-McGee Corporation

P.O. Box 25861

Oklahoma City OK 73125

231-- SDG#: KMA34-09

				As Received		
CAT			As Received	Method		Dilution
No.	Analysis Name	CAS Number	Result	Detection Limit	Units	Factor
00217	Kjeldahl Nitrogen	7727-37-9	1.6	0.30	mg/l '	1
00219	Nitrite Nitrogen	· 14797-65-0	0,039 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	1.2	0.46	mg/l ·	1 .
•	Sufficient sample volume was not				•	
•	analysis. Therefore, a LCS/LCSD	was performed	to demonstrate	precision and		
	accuracy at a batch level.				•	•
00226	Ortho-Phosphate as P	14265-44-2	0.094	0.0066	mg/l	ļ
00235	Biochemical Oxygen Demand	n.a.	N.D	5.5	mg/l	1.
00273	Total Organic Carbon	n.a.	12.7	0.500	mg/l	1
00345	Total Phosphorus as PO4 water	14265-44-2	0.47	0.12	mg/l	1
01553	Chemical Oxygen Demand	n.a.	32.3	1.7	mg/l.	· 1
08213	BTEX (8021)	•				
00776	Benzene	71-43-2	N.D.	0.20	ug/l	1 .
0777	Toluene	108-88-3	N.D.	0.20	ug/l	1
0778	Ethylbenzene	100-41-4	N.D.	0.20	ug/1	1
00779	Total Xylenes	1330-20-7	N.D.	0.60	ug/l .	1 .
		:.	:	•		
00774	PAH's in Water by HPLC		• .		•	٠
					•	
00775	Naphthalene	91-20-3	N.D.	1.0	ug/l	1:
00782	Acenaphthylene	208-96-8	N.D.	2.0	ug/l	1
00783	Acenaphthene	83-32-9	N.D.	2.0	ug/l	. 1
00784	Fluorene	86-73-7	N.D.	0.20	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/1 ·	1
00811	Pyrene	129-00-0	N.D.	0.20	ug/l	ļ
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	и.р.0.Т	0.040	ug/l	1 .
00898	Indeno(1,2,3-cd)pyrene	193-39-5	N.D.UJ	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	gug/1	1
	The recoveries for dibenz(a,h)a			•	E1 -	



Lancaster Laboratories Sample No. 3958169

Collected:12/10/2002 15:10 by BS

Account Number: 07802

Submitted: 12/11/2002 13:30 Reported: 01/08/2003 at 11:58 Kerr-McGee Corporation

Discard: 02/08/2003

P.O. Box 25861

Oklahoma City OK 73125

MA3-TG2-3-101202-12 Grab Water Sample

Moss American Superfund Site - Milwaukee, WI

231--SDG#: KMA34-09

As Received

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

Limit re-extracted outside of the method hold time. Comparable sample results were observed between the two extractions. The results reported are from

the initial extraction of the sample.

	•					
CAT	•	_		Analysis ·		Dilution
No.	Analysis Name	Method .	Trial#	Date and Time	Analyst	Factor
00217	Kjeldahl Nitrogen	EPA 351.2	1.	12/19/2002 15:12	Venia B McFadden	1
.00219	Nitrite Nitrogen	EPA 353.2	. 1	12/11/2002 16:08	Venia B McFadden	1
00220	Nitrate Nitrogen	EPA 353.2	1	12/17/2002 11:14	Ramona V Goss	. 1
00221	Ammonia Nitrogen	EPA 350.2	1	12/12/2002 22:15	Luz M Groff	1
00226	Ortho-Phosphate as P	EPA 365.3	1	12/11/2002 20:10	· Daniel S Smith	1
00235	Biochemical Oxygen Demand	EPA 405.1	1	12/11/2002 23:02	Nicole R Bushong	1
00273	Total Organic Carbon	EPA 415.1	· 1	12/16/2002 23:51	Timothy M Petree	1 .
00345	Total Phosphorus as PO4 water	EPA 365.1	1	12/24/2002 18:07	Venia B McFadden	i
01553	Chemical Oxygen Demand	EPA 410.2	· 1	12/16/2002 05:50	Susan A Engle	. 1
08213 .	BTEX (8021)	SW-846 8021B	1	12/13/2002 07:33	Melissa D Mann	1
00774	PAH's in Water by HPLC	SW-846 8310	1	12/15/2002 05:31	Mark A Clark	.1
01146	GC VOA Water Prep	SW-846 5030B	1	12/13/2002 07:33	Melissa D Mann	n.a.
01460	Total Kjeldahl Nitrogen Digest	EPA 351.2	1	12/12/2002 09:10	Cheryl L Robinson	. 1
03337	PAH Water Extraction	SW-846 3510C	. 1	12/13/2002 10:20	Felix C Arroyo	1
08264	Total Phos as PO4 Prep	EPA 365.1	1	12/13/2002 11:00	James S Mathiot	1



Lancaster Laboratories Sample No. WW 3958170

Collected: 12/10/2002 10:45 by BS

Submitted: 12/11/2002 13:30 Reported: 01/08/2003 at 11:58

Discard: 02/08/2003

MA3-TG4-1-101202-04 Grab Water Sample

Moss American Superfund Site - Milwaukee, WI

Account Number: 07802

Kerr-McGee Corporation

P.O. Box 25861

Oklahoma City OK 73125

:411-- SDG#: KMA34-10

	•			As Received		
CAT	: •		As Received	Method		Dilution
. No.	Analysis Name	CAS Number	Result	Detection Limit	Units	Factor
00217	Kjeldahl Nitrogen	7727-37-9	0.79 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	0.61 J	0.46	` mg/l	1 .
	Sufficient sample volume wa					
• . •	analysis. Therefore, a LCS/	LCSD was performed	to demonstrate	precision and		
	accuracy at a batch level.					•
00226	Ortho-Phosphate as P	14265-44-2	0.055	0.0066	mg/l	1
00235	Biochemical Oxygen Demand	n.a.	N.D.	2.7	mg/l	1 ·
.00273	Total Organic Carbon	n.a.	8.09 .	0.500	mg/l	1
00345	Total Phosphorus as PO4 wa	ter 14265-44-2	0:36	0.12	mg/l	1
01553	Chemical Oxygen Demand :	n.a.	26.2	1.7	.mg/1	1
•	. •					
08213	BTEX (8021)			•		
:			•	•	٠.	
· 00776	Benzene	71-43-2	N.D.	0.20	.ug/1	. 1 ·
00777	Toluene .	108-88-3	N.D.	0.20	ug/l	· 1
00778	Ethylbenzene	. 100-41-4	N.D.	0.20	ug/l	1
00779	Total Xylenes	1330-20-7	N.D.	0.60	ug/1	. 1
00774	PAH's in Water by HPLC					
		·		•		•
00775	Naphthalene	91-20-3	N.D.	1.0	ug/l	1
00782	Acenaphthylene	208-96-8	N.D.	2.0	ug/l	· 1
00783	Acenaphthene	83-32-9	N.D.	2.0	ug/l	1
00784	Fluorene	86-73-7	N.D.	0.20	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/1	1
00811	•	129-00-0	N.D.	0.20	ug/l	1
00812	Benzo (a) anthracene	56-55-3	N.D.	0.020	ug/1	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.UT	0.040	ug/1	1
00898	Indeno (1, 2, 3-cd) pyrene	193-39-5	N.D.JT	0.080	ug/1	1
00907	Benzo(g,h,i)perylene	191-24-2	и.р.	0.10	ug/1	1
07409		218-01-9	N.D.	0.080	ug/1	ī
07410	Benzo(k) fluoranthene	207-08-9	N.D.	0.020	/1	. 1 .
	The recoveries for dibenz (a			•	0 ag/r	-
	outside QC limits in the LC				0	
	ogeniae Ac Timres Til elle IV	abbottacea with	· ciilo , campi.	p.c. was	3 75	35
					_ /~	102/07



Lancaster Laboratories, Inc. 2425 New Holland Pike PO Box 12425 Lancaster, PA 17605-2425 717-656-2300. Fair 717-656-7681

Ananysis Report



Page 2 of 2

Lancaster Laboratories Sample No. WW 3958170

Collected:12/10/2002 10:45 by BS

Account Number: 07802

Submitted: 12/11/2002 13:30 Reported: 01/08/2003 at 11:58

Kerr-McGee Corporation

Discard: 02/08/2003

P.O. Box 25861

Oklahoma City OK 73125

MA3-TG4-1-101202-04 Grab Water Sample

Moss American Superfund Site - Milwaukee, WI

SDG#: KMA34-10

As Received

CAT

As Received

Method

Dilution

No. Analysis Name CAS Number Result Detection Limit

Units Factor

re-extracted outside of the method hold time. Comparable sample results were observed between the two extractions. The results reported are from

the initial extraction of the sample.

	•		OLL O	***		
CAT				Analysis ·		Dilution
No	Analysis Name	Method ·	Trial#	Date and Time	Analyst	Factor
.00217	Kjeldahl Nitrogen	EPA 351.2	1	12/19/2002 15:13	Venia B McFadden	1
00219	Nitrite Nitrogen	EPA 353.2	1	12/11/2002 15:53	Venia B McPadden	1
00220	Nitrate Nitrogen	EPA 353.2	1	12/17/2002 11:16	Ramona V Goss	1 .
00221	Ammonia Nitrogen	EPA 350.2	1	12/12/2002 22:15	Luz M Groff	1
00226	Ortho-Phosphate as P	EPA 365.3	1	12/11/2002 20:10	Daniel S Smith	1
00235	Biochemical Oxygen Demand	EPA 405.1	1	12/11/2002 23:02	Nicole R Bushong	1
00273	Total Organic Carbon	EPA 415.1	1	12/16/2002 23:59	Timothy M Petree	1
00345	Total Phosphorus as PO4 water	EPA 365.1	1 '	12/24/2002 18:08	Venia B McFadden	1
01553	Chemical Oxygen Demand	EPA 410.2	1	12/16/2002 05:50	Susan A Engle	1
08213	BTEX (8021)	SW-846 8021B	1	12/13/2002 08:05	Melissa D Mann	`1
00774	PAH's in Water by HPLC	SW-846 8310	1	12/15/2002 06:10	Mark A Clark	. 1
01146	GC VOA Water Prep	SW-846 5030B	. 1	12/13/2002 08:05	Melissa D Mann	n.a.
01460	Total Kjeldahl Nitrogen Digest	EPA 351.2	1	12/12/2002 09:10	Cheryl L Robinson	1
03337	PAH Water Extraction	SW-846 3510C	1	12/13/2002 10:20	Felix C Arroyo	1
08264	Total Phos as PO4 Prep (water)	EPA 365.1	/ 1	12/13/2002 11:00	James S Mathiot	1



Lancaster Laboratories Sample No. WW 3958171

Collected:12/10/2002 10:55 by BS

Submitted: 12/11/2002 13:30 Reported: 01/08/2003 at 11:58

Discard: 02/08/2003

MA3-TG4-2-101202-05 Grab Water Sample

Moss American Superfund Site - Milwaukee, WI

Account Number: 07802

Kerr-McGee Corporation

P.O. Box 25861

Oklahoma City OK 73125

4-2-1 SDG#: KMA34-11

	•			As Received		•
CAT			As Received	Method .		Dilution
No.	Analysis Name	CAS Number	Result	Detection Limit	Units	Factor
00217	Kjeldahl Nitrogen	7727-37-9	1.2	0.30	mg/1	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	0.99 J	0.46	mg/l	1 .
	Sufficient sample volume was no	t available to	perform a MS/MS	D for this	•	
	analysis. Therefore, a LCS/LCSD	was performed	l to demonstrate	precision and		
	accuracy at a batch level.					
00226	Ortho-Phosphate as P	14265-44-2	0.072	0.0066 .	mg/l	1
00235	Biochemical Oxygen Demand	n.a.	N.D.	3.6	mg/l	1
00273	Total Organic Carbon	n.a.	11.5	0.500	mg/l	. 1
00345	Total Phosphorus as PO4 water	14265-44-2	0.32	0.12	mg/l	1
01553	Chemical Oxygen Demand	n.a.	26.6	1.7	mg/l	. 1
	·					•
08213	BTEX (8021) .		•			
	•	71 42 0			(7	
00776	Benzene Toluene	71-43-2 108-88-3	N.D.	0.20	ug/1	1
00777			N.D	0.20	ug/l	1
00778	Ethylbenzene	100-41-4	N.D.	0.20	ug/1	1 .
.00779	Total Xylenes	1330-20-7	N.D.	0.60	ug/l	.
00774	PAH's in Water by HPLC			•		٠.
	ini d in moce by mile	,			•	
00775	Naphthalene	91-20-3	N.D.	1.0	ug/l	1
00782	Acenaphthylene	208-96-8	N.D.	2.0	ug/1	1
00783	Acenaphthene	83-32-9	N.D.	2.0	ug/1	_ 1 .
00784	Fluorene	· 86-73-7	N.D.	0.20	ug/1	1
00785	Phenanthrene	85-01-8	N.D.	.0.080	ug/1	ī
00789	Anthracene	120-12-7	0.074 J	0.040	ug/1	. 1
00807	Fluoranthene .	206-44-0	0.22	0.040	ug/1	1
00811	Pyrene	129-00-0	N.D.	0.20	ug/l	1
00812	Benzo (a) anthracene	56-55-3	N.D.	0.020	ug/1	1
00818	Benzo (b) fluoranthene	205-99-2	N.D.	0.040	ug/1	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.WT	0.040	ug/l	1
00898	Indeno(1,2,3-cd)pyrene	193-39-5	и.D. UT	0.080	ug/l	1
00907	Benzo(g,h,i)perylene	191-24-2	и.р.	0.10	ug/l	i
07409	Chrysene	218-01-9	N.D.	0.080	ug/1.	1
. 07410	Benzo (k) fluoranthene	207-08-9	· N.D.	0.020	_ ug/l	1 .

The recoveries for dibenz(a,h)anthracene and benzo(g,h,i)perylene were outside QC limits in the LCS associated with this sample. The sample was

TB)



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

Analysis Report



Page 2 of 2

Lancaster Laboratories Sample No. 3958171

Collected:12/10/2002 10:55

Account Number: 07802

Submitted: 12/11/2002 13:30 Reported: 01/08/2003 at 11:58 Kerr-McGee Corporation

P.O. Box 25861

Discard: 02/08/2003

Oklahoma City OK 73125

MA3-TG4-2-101202-05 Grab Water Sample Moss American Superfund Site - Milwaukee, WI

SDG#: KMA34-11 4-2-1

As Received

CAT No.

Analysis Name

As Received Result

Method Detection

Dilution **Factor**

Units

Limit re-extracted outside of the method hold time. Comparable sample results

CAS Number

were observed between the two extractions. The results reported are from the initial extraction of the sample.

	_					
CAT	,			Analysis -		Dilution
No.	Analysis Name	Method	Trial#	Date and Time	Analyst .	Factor
00217	Kjeldahl Nitrogen	EPA 351.2	. 1 .	12/19/2002 15:14	Venia B McFadden	1
00219	Nitrite Nitrogen	EPA 353.2	1	12/11/2002 16:09	Venia B McFadden	1
00220	Nitrate Nitrogen	EPA 353.2	1	12/17/2002 11:17	Ramona V Goss	1
00221	Ammonia Nitrogen	EPA 350.2	1	12/12/2002 22:15	Luz M Groff	1
00226	Ortho-Phosphate as P	EPA 365.3	1 .	12/11/2002 20:10	Daniel S Smith	1
00235	Biochemical Oxygen Demand	EPA 405.1	1	12/11/2002 23:02	Nicole R Bushong	1
00273	Total Organic Carbon	EPA 415.1	. 1	12/17/2002 00:07 ⁻	Timothy M Petree	1
00345	Total Phosphorus as PO4 water	EPA 365.1	1	12/24/2002 18:09	Venia B McPadden	1
01553	Chemical Oxygen Demand	EPA 410.2 ·	1	12/16/2002 05:50	Susan A Engle	1
08213	BTEX (8021)	SW-846 8021B	. 1	12/13/2002 08:38	Melissa D Mann	. 1
00774	PAH's in Water by HPLC	SW-846 8310	. 1	12/15/2002 06:48	Mark A Clark	1
.01146	GC VOA Water Prep	SW-846 5030B	1	12/13/2002 08:38	Melissa D Mann	n.a.
01460	Total Kjeldahl Nitrogen Digest	EPA 351.2	. 1	12/12/2002 09:10	Cheryl L Robinson	1
03337	PAH Water Extraction	SW-846 3510C	1 .	12/13/2002 10:20	Felix C Arroyo	1.
08264	Total Phos as PO4 Prep (water)	EPA 365.1	1	12/13/2002 11:00	James S Mathiot	.1



Lancaster Laboratories Sample No.

Collected:12/10/2002 15:00

Submitted: 12/11/2002 13:30 Reported: 01/08/2003 at 11:59

Discard: 02/08/2003

MA3-TG2-2-101202-11 Grab Water Sample

Moss American Superfund Site - Milwaukee, WI

Account Number: 07802

Kerr-McGee Corporation

P.O. Box 25861

Oklahoma City OK 73125

2-2-1 SDG#: KMA34-12

			•	As Received		
CAT			As Received	Method		Dilution
No.	Analysis Name	CAS Number	Result	Detection Limit	Units	Factor
00217	Kjeldahl Nitrogen	7727-37-9	0.43 J	0.30	mg/l	. 1
00219	Nitrite Nitrogen	14797-65-0	0.034 J.	0.015	mg/l .	1 .
00220	Nitrate Nitrogen	14797-55-8	N.D.	0.040	mg/i	1 ·
00221	Ammonia Nitrogen	7664-41-7	0.49 J	0.46	mg/l	1
•	Sufficient sample volume was no	t available to	perform a MS/MS	ED for this		,
	analysis. Therefore, a LCS/LCSD	was performed	l to demonstrate	precision and		
	accuracy at a batch level.	-	• •		•	
00226	Ortho-Phosphate as P	14265-44-2	0.056	0.0066	mg/1 .	1
00235	Biochemical Oxygen Demand	n.a.	N.D	2.8	mg/l	· 1
00273	Total Organic Carbon	n.a	3.15	0.500	mg/l	1
.00345	Total Phosphorus as PO4 water	14265-44-2	0.26	0.12	mg/l	1
01553	Chemical Oxygen Demand	nia.	8.4	1.7	mg/l	1
	. •				•	
08213	BTEX (8021)		•	•		
00776	Benzene	71-43-2	N.D.	0.20	ug/l	\1
.00777	Toluene .	108-88-3	N.D.	0.20	· ug/l	1
00778	Ethylbenzene	100-41-4	N.D.	0.20	ug/1.	_. 1
00779	Total Xylenes	1330-20-7	N.D.	0.60	ug/l	1
				•		•
00774	'PAH's in Water by HPLC	•	•			
	•	•				
00775	Naphthalene	91-20-3	N.D.	1.0	ug/l	· 1
00782	Acenaphthylene	208-96-8	N.D.	2.0	ug/l	1
00783	Acenaphthene	83-32-9	N.D.	2:0	ug/l	1
00784	Fluorene	86-73-7	N.D.	0.20	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	0.046 J	0.040	ug/1 .	, 1 , "
00811	Pyrene	129-00-0	N.D.	0.20	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
. 0.0823	Benzo (a) pyrene	50-32-8	N.D.	0.020	ug/l	1
00895	Dibenz(a,h)anthracene	53-70-3	N.D.VJ	0.040	ug/l	1
00898	Indeno(1,2,3-cd)pyrene	193-39-5	N.D.UJ	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
	The recoveries for dibenz(a,h)a	anthracene and	benzo(g,h,i)per	ylene were	A	

outside QC limits in the LCS associated with this sample



Lancaster Laboratories Sample No. 3958172

Collected:12/10/2002 15:00

Submitted: 12/11/2002 13:30 Reported: 01/08/2003 at 11:59

Discard: 02/08/2003

MA3-TG2-2-101202-11 Grab Water Sample

Moss American Superfund Site - Milwaukee, WI

Account Number: 07802

Kerr-McGee Corporation

P.O. Box 25861

Oklahoma City OK 73125

SDG#: KMA34-12 2-2-1

· As Received

Dilution CAT As Received Method

Factor Units No. Analysis Name CAS Number Result Detection Limit

re-extracted outside of the method hold time. Comparable sample results were observed between the two extractions. The results reported are from

the initial extraction of the sample.

CAT		_		Analysis .	_	Dilution
No.	Analysis Name.	Method	Trial#	Date and Time	Analyst	Factor
00217	Kjeldahl Nitrogen	EPA 351.2	.1	12/19/2002 15:16	Venia B McFadden	1
00219	Nitrite Nitrogen	EPA 353.2	1	12/11/2002 16:06	Venia B McFadden	1
00220	Nitrate Nitrogen	EPA 353.2	1	12/17/2002 11:18	Ramona V Goss	1
00221	Ammonia Nitrogen	EPA 350.2	1	12/12/2002 22:15	Luz M Groff	1
00226	Ortho-Phosphate.as P	EPA 365.3	1	12/11/2002 20:10	Daniel S Smith	. 1
00235	Biochemical Oxygen Demand	EPA 405.1	1	12/11/2002 23:02	Nicole R Bushong	1
.00273	Total Organic Carbon	EPA 415.1	1	12/17/2002 00:32	Timothy M Petree	1
00345	Total Phosphorus as PO4 water	EPA 365.1	1	12/24/2002 18:10	Venia B McFadden	1 .
01553	Chemical Oxygen Demand	EPA 410.2	1	12/16/2002 05:50	[.] Susan A Engle	1
08213	BTEX (8021)	SW-846 8021B	. 1	12/13/2002 09:10	Melissa D Mann	1
00774	PAH's in Water by HPLC	SW-846 8310	1	12/15/2002 07:27	Mark A Clark	1
01146	GC VOA Water Prep	SW-846 5030B	1.	12/13/2002 09:10	Melissa D Mann	n.a.
01460	Total Kjeldahl Nitrogen Digest	EPA 351.2	. 1	12/12/2002 09:10	Cheryl L Robinson	1
03337	PAH Water Extraction	SW-846 3510C	1	12/13/2002 10:20	Felix C Arroyo	1
08264	Total Phos as PO4 Prep	EPA 365.1	1	12/13/2002 11:00	James S Mathiot	· 1



Analysis Report



Page 1 of 2

Lancaster Laboratories Sample No. WW 3958173

Collected:12/10/2002 14:50 by BS

Submitted: 12/11/2002 13:30 Reported: 01/08/2003 at 11:59

Discard: 02/08/2003

MA3-TG2-1-101202-10 Grab Water Sample

Moss American Superfund Site - Milwaukee, WI

Account Number: 07802

Kerr-McGee Corporation

P.O. Box 25861

Oklahoma City OK 73125

2-1-1 SDG#: KMA34-13

		•		As Received		•
CAT			As Received	Method		Dilution
No.	Analysis Name	CAS Number	Result	Detection Limit	Units	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	N.D.	0.46	mg/l	1
	Sufficient sample volume was not					
	analysis. Therefore, a LCS/LCSD	was performed	to demonstrate	precision and		
	accuracy at a batch level.					
00226	Ortho-Phosphate as P	14265-44-2	0.153	0.0066	mg/l	.1
00235	Biochemical Oxygen Demand	n.a.	N.D.	2.6	mg/l	1
00273	Total Organic Carbon	n.a.	2.59	0.500	mg/l	1
00345	Total Phosphorus as PO4 water	14265-44-2	0.20	0.12	mg/l	. 1
01553	Chemical Oxygen Demand	n.a.	6.8 J	1.7	mg/l	1
08213	BTEX (8021)		•		·	
00776	Benzene	71-43-2	N.D.	· 0.20	ug/l	1
.00777	Toluene	108-88-3	N.D.	0.20	ug/l	1
00778	Ethylbenzene	100-41-4	N.D.	0.20	ug/l [`]	1
00779	Total Xylenes	1330-20-7	N.D.	0.60	ug/l	1
•		•	•		•	
00774	PAH's in Water by HPLC	••	•	•		•
00775	Naphthalene	91-20-3	N.D.	1.0	ug/l	1
00782	Acenaphthylene	208-96-8	N.D.	2.0	ug/l	. 1
00783	Acenaphthene	83-32-9	N.D.	2.0	ug/l	1
.00784	Fluorene	86-73-7	N.D.	0.20	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.	0.20	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.UJ	0.040	ug/1	1
00898	Indeno(1,2,3-cd)pyrene	193-39-5	N.D. UT	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/1	1
	Benzo(k) fluoranthene	207-08-9	N.D.	0.020	ug/l	1



TB)

Analysis Report



Page 2 of 2

Lancaster Laboratories Sample No.

Collected:12/10/2002 14:50

Submitted: 12/11/2002 13:30 Reported: 01/08/2003 at 11:59

Discard: 02/08/2003

MA3-TG2-1-101202-10 Grab Water Sample

Moss American Superfund Site - Milwaukee, WI

Account Number: 07802

Kerr-McGee Corporation

P.O. Box 25861

Oklahoma City OK 73125

2-1-1 SDG#: KMA34-13

As Received CAT Method ·

Dilution Analysis Name CAS Number Detection **Factor** No.

re-extracted outside of the method hold time. Comparable sample results were observed between the two extractions. The results reported are from the initial extraction of the sample.

		naporacory	CILLO	HICIE .		
CAT				Analysis .		Dilution
No.	Analysis Name	Method	Trial#	Date and Time	Analyst	Factor
00217	Kjeldahl Nitrogen	EPA 351.2	1	12/19/2002 15:17	Venia B McFadden	1 -
00219	Nitrite Nitrogen	EPA 353.2	1	12/11/2002 16:05	Venia B McFadden	1
00220	Nitrate Nitrogen	EPA 353.2	1	12/17/2002 11:19	Ramona V Goss	1
. 00221	Ammonia Nitrogen	EPA 350.2	1.	12/13/2002 14:30	Luz M Groff	1
00226	Ortho-Phosphate as P	· EPA 365.3	1	12/11/2002 20:10	Daniel S Smith	1
00235	Biochemical Oxygen Demand	EPA 405.1	1	12/11/2002 23:02	Nicole R Bushong	. 1
00273	Total Organic Carbon	EPA 415.1	1	12/17/2002 00:40	Timothy M Petree	1
. 00345	Total Phosphorus as PO4 water	EPA 365.1	. 1	12/24/2002 18:10	Venia B McFadden	1
01553	Chemical Oxygen Demand	EPA 410.2	1	12/16/2002 05:50	Susan A Engle	. 1
08213	BTEX (8021)	SW-846 8021B	1	12/13/2002 09:43	Melissa D Mann	1
00774	PAH's in Water by HPLC	SW-846 8310	1	12/15/2002 08:44	Mark A Clark	1
01146	GC VOA Water Prep	SW-846 5030B	1	12/13/2002 09:43	Melissa D Mann	n.a.
01460	Total Kjeldahl Nitrogen Digest	EPA 351.2	1	12/12/2002 09:10	Cheryl L Robinson	1
03337	PAH Water Extraction	SW-846 3510C	1	12/13/2002 10:20	Felix C Arroyo	1
08264	Total Phos as PO4 Prep (water)	EPA 365.1	1	12/13/2002 11:00	James S Mathiot	· 1

Oklahoma City OK 73125



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Lancaster Laboratories Sample No. WW 3958174

Collected:12/10/2002 09:15 by BS Account Number: 07802

 Submitted: 12/11/2002 13:30
 Kerr-McGee Corporation

 Reported: 01/08/2003 at 11:59
 P.O. Box 25861

Discard: 02/08/2003 MA3-TG6-3-101202-03 Grab Water Sample

Moss American Superfund Site - Milwaukee, WI

3-101 SDG#: KMA34-14

				As Received		
CAT			As Received	Method		Dilution
No.	Analysis Name	CAS Number	Result	Detection Limit	Units	Factor
00217	Kjeldahl Nitrogen	7727-37-9	0.85 J	0.30	mg/1 .	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	0.46	mg/l	1
	Sufficient sample volume was no	t available to	perform a MS/MS	D for this		
•	analysis. Therefore, a LCS/LCSD	was performed	i to démonstrate	precision and		
•	accuracy at a batch level.	• • •	•			•
00226	Ortho-Phosphate as P	14265-44-2	0.042	0.0066	mg/l	· 1
00235	Biochemical Oxygen Demand	n.a.	N.D.	3.4	mg/l	1.
00273	Total Organic Carbon	n.a.	8.01	0.500	mg/l	1
00345	Total Phosphorus as PO4 water	14265-44-2	0.27	0.12	mg/l	1.
01553	Chemical Oxygen Demand	n.a.	19.4	1.7	mg/l	1
08213	BTEX (8021)		•			
					•	•
00776	Benzene	71-43-2	N.D.	0.20	ug/1	1
00777	Toluene	108-88-3	N.D.	0.20	ug/l	1
00778	Ethylbenzene ·	100-41-4	N.D.	0.20	ug/l	1
00779	Total Xylenes	1330-20-7	N.D.	0.60	. ug/1	1
٠.			• •			•
00774	PAH's in Water by HPLC	•		,	_	. *
		•		• •	:	٠,
00775	Naphthalene	91-20-3	N.D.	1.0	ug/1	1 .
00782	Acenaphthylene	208-96-8	N.D.	2.0	ug/1	1
00783	Acenaphthene	83-32-9	N.D.	2.0	ug/l	1
00784	Fluorene	86-73-7	· N.D.	0.20	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/1	1
00807	Fluoranthene	206-44-0	0.058 J	0.040	ug/1	1
00811	Pyrene	129-00-0	N.D.	0.20	ug/l	. 1
00812		56-55-3	N.D.	0.020	ug/l	1
00818	Benzo (b) fluoranthene	205-99-2	N.D.	0.040	ug/l	ī
00823	Benzo (a) pyrene	50-32-8	N.D.	0.020	ug/l	1
00895	Dibenz (a, h) anthracene	53-70-3	N.D.UT	0.040	ug/l	î
00898		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		218-01-9	N.D.	0.080		1
•	Benzo(k) fluoranthene	218-01-9	N.D.	0.020	ug/1	.1
07410			•		ug/l	19 46 1970 - 1980 - 1980 - 1980 - 1980 - 1980 - 1980 - 1980 - 1980 - 1980 - 1980 - 1980 - 1980 - 1980 - 1980 - 1980 -
• •	The recoveries for dibenz(a,h)			•	0	
•	outside QC limits in the LCS as	ssociated with	tnis sample. T	he sample was	a T	35
		: :			Ā	102/03



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



Lancaster Laboratories Sample No. WW 3958174

Collected:12/10/2002 09:15 by BS Account Number: 07802

Submitted: 12/11/2002 13:30 Reported: 01/08/2003 at 11:59

Discard: 02/08/2003

MA3-TG6-3-101202-03 Grab Water Sample

Moss American Superfund Site - Milwaukee, WI

Kerr-McGee Corporation

P.O. Box 25861

Oklahoma City OK 73125

As Received

3-101 SDG#: KMA34-14

CAT Analysis Name CAS Number Result Detection Units Factor

re-extracted outside of the method hold time. Comparable sample results were observed between the two extractions. The results reported are from the initial extraction of the sample.

· · ·	•	Laboratory	Chro	•	•	_12 - 1
CAT	•	•		Analysis		Dilution
No.	Analysis Name	Method	Trial#	Date and Time	Analyst ·	Factor
00217	Kjeldahl Nitrogen	EPA 351.2	1 .	12/19/2002 15:18	Venia B McFadden	1 .
00219	Nitrite Nitrogen	EPA 353.2	1	12/11/2002 15:52	Venia B McFadden	1
00220	Nitrate Nitrogen	EPA 353.2	1	12/17/2002 11:21	Ramona V Goss	1
00221	Ammonia Nitrogen	EPA 350.2	1	12/13/2002 14:30	Luz M Groff	1.
00226	Ortho-Phosphate as P	EPA 365.3	1	12/11/2002 20:10	Daniel S Smith	1
00235	Biochemical Oxygen Demand	EPA 405.1	1 .	12/11/2002 23:47	Nicole R Bushong	1
. 00273	Total Organic Carbon	EPA 415.1	1	12/17/2002 00:48	Timothy M Petree	1
00345	Total Phosphorus as PO4 water	EPA 365.1	1	12/24/2002 18:11	Venia B McPadden	1 .
01553	Chemical Oxygen Demand	EPA 410.2	1	12/16/2002 05:50	Susan A Engle	1
08213	BTEX (8021)	SW-846 8021B	1	12/13/2002 15:39	Melissa D Mann	1
00774	PAH's in Water by HPLC	SW-846 8310	1	12/15/2002 09:23	Mark A Clark	1
01146	GC VOA Water Prep	SW-846 5030B	1	12/13/2002 15:39	Melissa D Mann	. n.a.
01460	Total Kjeldahl Nitrogen Digest	EPA 351.2	· 1	12/12/2002 09:10	Cheryl L Robinson	1
03337	PAH Water Extraction	SW-846 3510C	1	12/13/2002 10:20	Felix C Arroyo	1
08264	Total Phos as PO4 Prep	EPA 365.1	1	12/13/2002 11:00	James S Mathiot	1 ·



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



Lancaster Laboratories Sample No. WW

Collected: 12/10/2002 08:55

Account Number: 07802

Submitted: 12/11/2002 13:30 Reported: 01/08/2003 at 11:59 Kerr-McGee Corporation

P.O. Box 25861

Discard: 02/08/2003

Oklahoma City OK 73125

MA3-TG6-1-101202-01 Grab Water Sample

Moss American Superfund Site - Milwaukee, WI

SDG#: KMA34-15 6-101

				'As Received		
. CAT	•		As Received	Method	•	Dilution
No.	Analysis Name	CAS Number	Result	Detection Limit	Units	Pactor
00217	Kjeldahl Nitrogen	7727-37-9	0.95 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	0.87 J	0.46	mg/l	1 '
	Sufficient sample volume was				• •	
	analysis. Therefore, a LCS/I accuracy at a batch level.	LCSD was performed	d to demonstrate	precision and	•	,
00226	Ortho-Phosphate as P	14265-44-2	0.051	0.0066	mg/l	1
	· Biochemical Oxygen Demand	n.a.	· N.D.	3.3	mg/1	i
00233	•	n.a.	8.82	0.500	mg/1	1
00345	Total Phosphorus as PO4 wat		0.36	0.12	mgj/1	1
01553	Chemical Oxygen Demand	n.a.	21.3	1.7	mg/1	1
08213	BTEX (8021)					
,00776	Benzene	71-43-2	N.D.	0.20	ug/l	1
00777	Toluene	108-88-3	N.D.	0.20	ug/1	. 1
00778	Ethylbenzene	100-41-4	N.D.	0.20	ug/I	î
00779	Total Xylenes	. 1330-20-7	N.D.	0.60	. ug/1	i
00774	PAH's in Water by HPLC		· · · · .			
00775	Naphthalene	91-20-3	N.D.	1.0	ug/l	1
00782	Acenaphthylene	208-96-8	N.D.	2.0	ug/l	1
00783	Acenaphthene	83-32-9	N.D.	2.0	ug/1	1
00784	Fluorene	86-73-7	N.D.	0.20	ug/l	1
00.785	Phenanthrene	85-01-8	N.D.	0.080	ug/l	
00789	Anthracene	120-12-7	N.D.	0.040	ug/l	1
00807	Fluoranthene .	206-44-0	N.D.	0.040	ug/l	ī
00811	Pyrene	129-00-0	N.D.	0.20	ug/1	1
00812	Benzo (a) anthracene	56-55-3	N.D.	0.020	ug/1	1
00818	Benzo (b) fluoranthene	205-99-2	N.D.	0.040	ug/l	11
00823	Benzo (a) pyrene	50-32-8	N.D.	0.020	ug/l	1
00895	Dibenz (a, h) anthracene	53-70-3	N.D.UT	0.040	ug/l	1
00898	Indeno(1,2,3-cd)pyrene	193-39-5	Т.О.О.И	0.080	ug/l	1
00907	Benzo(g,h,i)perylene	191-24-2	N.D.	0.10	ug/1	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
•	The recoveries for dibenz(a				0	



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

outside QC limits in the LCS associated with this sample.

Analysis Report



Page 2 of 2

Lancaster Laboratories Sample No.

Collected:12/10/2002 08:55 by BS

Account Number: 07802

Submitted: 12/11/2002 13:30 Reported: 01/08/2003 at 11:59 Kerr-McGee Corporation

P.O. Box 25861

Discard: 02/08/2003

Oklahoma City OK 73125

MA3-TG6-1-101202-01 Grab Water Sample

Moss American Superfund Site - Milwaukee, WI

6-101

SDG#: KMA34-15

As Received

CAT No. :

Analysis Name

As Received Result

Method Detection

Dilution Factor

Limit

re-extracted outside of the method hold time. Comparable sample results were observed between the two extractions. The results reported are from

the initial extraction of the sample.

•		Laboratory	CILLO	111010			
CAT	•	_		Analysis	• • •	Dilution	
No.	Analysis Name	Method	Trial#	Date and Time	Analyst	Factor	
.00217	Kjeldahl Nitrogen	EPA 351.2	1	12/19/2002 15:19	Venia B McFadden	1	
00219	Nitrite Nitrogen	EPA 353.2	1	12/11/2002 15:49	Venia B McPadden	1 .	
00220	Nitrate Nitrogen	EPA 353.2	ļ	12/17/2002 11:22	Ramona V Goss	1	
00221	Ammonia Nitrogen	EPA 350.2	1	12/13/2002 14:30	Luz M Groff	1	
00226	Ortho-Phosphate as P	EPA 365.3	1 '	12/11/2002 20:10	Daniel S Smith	1	
00235	Biochemical Oxygen Demand	EPA 405.1	· 1	12/11/2002 23:47	Nicole R Bushong	1	
00273	Total Organic Carbon	EPA 415.1	. 1	12/17/2002 00:56	Timothy M Petree	1	
.00345	Total Phosphorus as PO4 water	EPA 365.1	. 1	12/24/2002 18:12	Venia B McPadden	1 .	
01553	Chemical Oxygen Demand	EPA 410.2	1	12/16/2002 05:50	Susan A Engle	1	
08213	BTEX (8021)	SW-846 8021B	1	12/13/2002 04:50	Linda C Pape	. 1	
00774	PAH's in Water by HPLC	SW-846 8310	1	12/15/2002 10:01	Mark A Clark	1.	
.01146	GC VOA Water Prep	SW-846 5030B	1	12/13/2002 04:50	Linda C Pape	n.a.	
01460	Total Kjeldahl Nitrogen Digest	EPA 351.2	, 1	12/12/2002 09:10	Cheryl L Robinson	1	
03337	PAH Water Extraction	SW-846 3510C	1	12/13/2002 10:20	Felix C Arroyo	1	
08264	Total Phos as PO4 Prep (water)	EPA 365.1	1	12/13/2002 11:00	James S Mathiot	1.	



Lancaster Laboratories Sample No. 3958176

Collected:12/10/2002 13:45

Account Number: 07802

Submitted: 12/11/2002 13:30 Reported: 01/08/2003 at 11:59

Kerr-McGee Corporation

P.O. Box 25861

Discard: 02/08/2003

MA3-TG3-1-101202-07 Grab Water Sample

Oklahoma City OK 73125

Moss American Superfund Site - Milwaukee, WI

31101 SDG#: KMA34-16

·	•			As Received		
CAT	·		As Received	Method	•	Dilution
No.	Analysis Name	CAS Number	Result .	Detection Limit	Units	Factor
00217	Kjeldahl Nitrogen	7727-37-9	0.40 J	0.30	mg/l	` 1
. 00219	Nitrite Nitrogen	14797-65-0	0.036 J	0.015	mg/l	· 1
00220	Nitrate Nitrogen	14797-55-8	0.060 J	0.040	_ mg/l	1
00221	Ammonia Nitrogen	7664-41-7	0.46 J	0.46	.mg/l	1 .
•	Sufficient sample volume was no	t available to	perform a MS/MS	D 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	0.064	0.0066 .	mg/l	1 .
00235	Biochemical Oxygen Demand	n.a.	N.D.	2.9	mg/l	1
. 00273	Total Organic Carbon	n.a.	10.9	0.500	mg/l	1
00345	Total Phosphorus as PO4 water	14265-44-2	0.30	0.12	mg/l	1
01553	Chemical Oxygen Demand	n.a.	26.2	1.7	mg/l	1
· ·			•	•		
08213	BTEX (8021)			•		
					1 •	
.00776	Benzene	71-43-2	N.D.	· 0.20	. ug/l	1
00777	Toluene	108-88-3	N.D.	0.20	ug/l	1
00778	Ethylbenzene	100-41-4	N.D.	0.20	ug/1	1
00779	Total Xylenes	1330-20-7	. N.D.	0.60	ug/l	1 '
				•		
00774	PAH's in Water by HPLC					•
		• •				, .
00775	Naphthalene	91-20-3	N.D.	1.0	ug/l	1
00782	Acenaphthylene	208-96-8	N.D.	2.0	ug/l	1
00783	Acenaphthene	83-32-9 _.	N.D.	2.0	ug/l	1
00784	Fluorene	86-73-7	0.21 J	0.20	ug/1	. 1
00785	Phenanthrene	85-01-8	N.D:	0.080	ug/1	1
00789	Anthracene	120-12-7	N.D.	0.040	ug/l	1
00807	Pluoranthene •	206-44-0	0.044 J	0.040	ug/l	· 1
00811	Pyrene	129-00-0	N.D.	0.20	ug/l	· 1
00812	Benzo (a) anthracene	56-55-3	N.D.	0.020	ug/1	i i
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.UT	0.040	ug/l	1
00898	Indeno(1,2,3-cd)pyrene	193-39-5	N.D.UT	0.080	ug/1	· 1
00907		191-24-2	N.D.	0.10	ug/1	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
	The recoveries for dibenz(a,h)				0 -3/-	
	outside QC limits in the LCS as			he sample was	Ö	





Lancaster Laboratories Sample No. WW 3958176

Collected:12/10/2002 13:45 by BS

Submitted: 12/11/2002 13:30

Reported: 01/08/2003 at 11:59 Discard: 02/08/2003

MA3-TG3-1-101202-07 Grab Water Sample

Moss American Superfund Site - Milwaukee, WI

Account Number: 07802

Kerr-McGee Corporation

P.O. Box 25861

Oklahoma City OK 73125

31101 SDG#: KMA34-16

As Received

CAT Analysis Name CAS Number Result Detection Units Factor

re-extracted outside of the method hold time. Comparable sample results

were observed between the two extractions. The results reported are from the initial extraction of the sample.

			<i>1</i>			
CAT	•		-	Analysis		Dilution
No.	Analysis Name	'Method	Trial#	Date and Time .	Analyst	Pactor
00217	Kjeldahl Nitrogen	EPA 351.2	1	12/20/2002 15:47	Venia B McFadden	1
00219	Nitrite Nitrogen	EPA 353.2	. 1	12/11/2002 15:59	Venia B McFadden	1 .
00220	Nitrate Nitrogen	EPA 353.2	1.	12/17/2002 12:41	Ramona V Goss	1
00221	Ammonia Nitrogen	EPA 350.2	1	12/13/2002 14:30	Luz M Groff	1
00226	· Ortho-Phosphate as P	EPA 365.3	1	12/11/2002 20:10	Daniel S Smith	1
00235	Biochemical Oxygen Demand	EPA 405.1	1	12/11/2002 .23:47	Nicole R Bushong	1
00273	Total Organic Carbon	EPA 415.1	1	12/17/2002 01:04	Timothy M Petree	1 .
.00345	Total Phosphorus as PO4 water	EPA 365.1	1	12/24/2002 18:13	Venia B McFadden	1
01553	Chemical Oxygen Demand	EPA 410.2	1	12/16/2002 05:50	Susan A Engle	1 .
08213	BTEX (8021)	SW-846 8021B	1	12/13/2002 15:06	Melissa D Mann	. 1
00774	PAH's in Water by HPLC	SW-846 8310	1	12/15/2002 10:40	Mark A Clark	1
01146	GC VOA Water Prep	SW-846 5030B	1	12/13/2002 15:06	Melisşa D Mann	n.a.
01460	Total Kjeldahl Nitrogen Digest	EPA 351.2	1	12/12/2002 09:10	Cheryl L Robinson	1 .
03337	PAH Water Extraction	SW-846 3510C	1 .	12/13/2002 10:20	Felix C Arroyo	1
08264	Total Phos as PO4 Prep	EPA 365.1	1	12/13/2002 11:00	James S Mathiot	1



Lancaster Laboratories Sample No. WW 3958177

Collected:12/10/2002 09:05 by BS

Account Number: 07802

Submitted: 12/11/2002 13:30 Reported: 01/08/2003 at 11:59 Kerr-McGee Corporation

P.O. Box 25861

Discard: 02/08/2003

Oklahoma City OK 73125

MA3-TG6-2-101202-02 Unspiked Grab Water Sample Moss American Superfund Site - Milwaukee, WI

62101 SDG#: KMA34-17BKG

				As Received		m1341
CAT		ara washas	As Received	Method		Dilution
No.	Analysis Name	CAS Number	Result	Detection Limit	Units	Factor
00217	Kjeldahl Nitrogen	7727-37-9	0.74 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	0.58 J	0.46	mg/l	1 .
•	Sufficient sample volume was not				•	
	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	0.0066	mg/l	1
00235	Biochemical Oxygen Demand	n.a. ;	N.D.	3.0	mg/l	1 .
00273	Total Organic Carbon	n.a.	.7.22	0.500	mg/l	1
00345	Total Phosphorus as PO4 water	14265-44-2	0.23	0.12	mg/l	1
01553	Chemical Oxygen Demand	n.a.	17.5	1.7	mg/l	1 '
				•		
08213	BTEX (8021)					
	·					•
00776	Benzene	71-43-2	N.D.	0.20	ug/l	1
.00777	Toluene .	108-88-3	N.D.	0.20	ug/l	1
00778	Ethylbenzene	100-41-4	N.D.	0.20	ug/l	· 1 .
00779	Total Xylenes	1330-20-7	N.D.	0.60	ug/l	1
					• • • • • •	
00774	PAH's in Water by HPLC	•				
		• •				
00775	Naphthalene	91-20-3	N.D.	1.0	ug/l	··· 1
00782	Acenaphthylene	208-96-8	N.D.	2.0	.ug/1	.1
00783	Acenaphthene	83-32-9	N.D.	. 2.0	ug/l	1
00784	Fluorene	86-73-7	N.D.	0.20	ug/1	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	0.088 J	0.040	ug/l	. 1
00811	:Pyrene	129-00-0	N.D.	0.20	ug/l	· 1 .
00812	Benzo (a) anthracene	56-55-3	N.D.	0.020	ug/l	1
00818	Benzo (b) fluoranthene	205-99-2	N.D.	0.040	ug/l	1
00823	Benzo(a) pyrene	50-32-8	0.028 J	0.020	ug/l	1
00895	Dibenz (a, h) anthracene	53-70-3	0.095 🕤	0.040	. ug/1	i
00898	Indeno(1,2,3-cd)pyrene	193-39-5	0.11	0.080	ug/1	. 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/1	1
٠.	The recoveries for dibenz(a,h)a	nthracene and			0	

Analysis Report

Account Number: 07802



Pagė 2 of 2

Lancaster Laboratories Sample No. WW 3958177

Collected:12/10/2002 09:05

Kerr-McGee Corporation

Submitted: 12/11/2002 13:30 Reported: 01/08/2003 at 11:59 P.O. Box 25861 Oklahoma City OK 73125

Discard: 02/08/2003 MA3-TG6-2-101202-02 Unspiked Grab Water Sample Moss American Superfund Site - Milwaukee, WI

62101 SDG#: KMA34-17BKG

As Received

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

re-extracted outside of the method hold time. Comparable sample results were observed between the two extractions. The results reported are from the initial extraction of the sample.

CAT			-	Analysis		Dilution
No.	Analysis Name	Method	Trial#	Date and Time	Analyst	Factor
00217	Kjeldahl Nitrogen	EPA 351.2	1	12/20/2002 15:43	Venia B McFadden	1
00219	Nitrite Nitrogen	EPA 353.2	1	12/11/2002 15:50	Venia B McFadden	1
00220	Nitrate Nitrogen	EPA 353.2	1 ·	12/17/2002 12:42	Ramona V Goss	1
00221	Ammonia Nitrogen	EPA 350.2	1	12/13/2002 14:30	Luz M Groff	· 1
00226	Ortho-Phosphate as P	EPA 365.3	1	12/11/2002 20:10	Daniel S Smith	1
00235	Biochemical Oxygen Demand	EPA 405.1	1	12/11/2002 23:47	Nicole R Bushong	1
00273	Total Organic Carbon	EPA. 415.1	1	12/17/2002 01:12	Timothy M Petree	1
.00345	Total Phosphorus as PO4 water	EPA 365.1	1	12/24/2002 18:14	Venia B McFadden	. 1
·01553	Chemical Oxygen Demand	EPA 410.2	1	12/16/2002 05:50	Susan A Engle	1
08213	BTEX (8021)	. SW-846 8021B	1	12/13/2002 05:23	Linda C Pape	1
00774	PAH's in Water by HPLC	SW-846 8310	1	12/15/2002 02:57	Mark A Clark	.1
01146	:GC VOA Water Prep	SW-846 5030B	ì	12/13/2002 05:23	Linda C Pape	n.a. ·
01460	Total Kjeldahl Nitrogen Digest	EPA 351.2	1	12/12/2002 09:10	Cheryl L Robinson	1
03337	PAH Water Extraction	SW-846 3510C	1	12/13/2002 10:20.	Felix C Arroyo	1.
08264	Total Phos as PO4 Prep	EPA 365.1	1	12/13/2002 11:00	James S Mathiot	1.



Lancaster Laboratories Sample No. WW 3958178

Collected: 12/10/2002 09:05 by BS

Submitted: 12/11/2002 13:30 Reported: 01/08/2003 at 11:59

Discard: 02/08/2003

MA3-TG6-2-101202-02 Matrix Spike Grab Water

Sample

Moss American Superfund Site - Milwaukee, WI

62101 SDG#: KMA34-17MS

Account Number: 07802

Kerr-McGee Corporation

P.O. Box 25861

Oklahoma City OK 73125

•	_		As Received		
		As Received	Method		Dilutio
Analysis Name	CAS Number	Result	Detection	Ųnits	Pactor
			Limit	•	
BTEX (8021)				-	
·,··					
Benzene	71-43-2	22.	0.20	ug/l	1 .
Toluene	108-88-3	22.	0.20	ug/l	1
Ethylbenzene	100-41-4	23.	0.20	ug/l	1.
Total Xylenes	1330-20-7	68.	0.60	ug/l	. 1
		. •		<u>.</u> .	<
PAH's in Water by HPLC		•	•	•	
Naphthalene	91-20-3	160.	1.0	ug/l	1
Acenaphthylene	208-96-8	160.	2.0	ug/l	1
Acenaphthene	83-32-9	180.	2.0	ug/l	1 .
Fluorene	86-73-7	17.	0.20	ug/l	1
Phenanthrene	85-01-8	5.4	0.080	ug/l	1
Anthracene	120-12-7	2.8	0.040	ug/l	· 1
Fluoranthene	206-44-0	3.1	0.040	ug/l	~ 1 .
Pyrene	129-00-0	19.	0.20	ug/1	i
Benzo (a) anthracene	56-55-3	1.4	0.020	ug/l	1
Benzo(b) fluoranthene	205-99-2	1.1	0.040	ug/l .	1
Benzo(a)pyrene	50-32-8	1.5	0.020	ug/1	. 1
Dibenz (a, h) anthracene	53-70-3	2.9	0.040		1
Indeno (1, 2, 3-cd) pyrene	193-39-5	6.37	0.080		1 ·
Benzo(g,h,i)perylene	191-24-2	11.	0.10	ug/l	1
Chrysene	. 218-01-9	5.6	0.080 .		1
Benzo(k) fluoranthene	207-08-9	1.1	0.020	ug/l	1
	BTEX (8021) Benzene Toluene Ethylbenzene Total Xylenes PAH's in Water by HPLC Naphthalene Acenaphthylene Acenaphthene Fluorene Phenanthrene Anthracene Fluoranthene Pyrene Benzo(a) anthracene Benzo(b) fluoranthene Benzo(a) pyrene Dibenz(a,h) anthracene Indeno(1,2,3-cd) pyrene Benzo(g,h,i) perylene Chrysene	BEEX (8021) Benzene 71-43-2 Toluene 108-88-3 Ethylbenzene 100-41-4 Total Xylenes 1330-20-7 PAH's in Water by HPLC Naphthalene 91-20-3 Acenaphthylene 208-96-8 Acenaphthene 83-32-9 Fluorene 86-73-7 Phenanthrene 85-01-8 Anthracene 120-12-7 Fluoranthene 206-44-0 Pyrene 129-00-0 Benzo (a) anthracene 56-55-3 Benzo (b) fluoranthene 205-99-2 Benzo (a) pyrene 50-32-8 Dibenz (a, h) anthracene 53-70-3 Indeno (1,2,3-cd) pyrene 193-39-5 Benzo (g,h,i) perylene 191-24-2 Chrysene 218-01-9	### CAS Number Result #### Result ###################################	Analysis Name CAS Number Result Detection Limit BTEX (8021) Benzene 71-43-2 22. 0.20 Toluene 108-88-3 22. 0.20 Ethylbenzene 100-41-4 23. 0.20 Total Xylenes 1330-20-7 68. Naphthalene Acenaphthylene 208-96-8 Acenaphthene 83-32-9 Fluorene 86-73-7 Fluorene 86-73-7 Fluorene 86-73-7 Fluorene 85-01-8 Anthracene 120-12-7 Phenanthrene 120-12-7 Phenanthrene 206-44-0 Anthracene 120-12-7 Benzo(a) anthracene 56-55-3 Benzo(a) anthracene 56-55-3 Benzo(a) pyrene 50-32-8 Benzo(a) pyrene 50-32-8 Dibenz(a,h) anthracene 50-33-0 Benzo(g,h,i) perylene 191-24-2 11. 0.10 Chrysene 218-01-9 5.6 0.080	Analysis Name CAS Number Result Detection Limit Dinits ETEX (8021) Benzene 71-43-2 22. 0.20 ug/1 Toluene 108-88-3 22. 0.20 ug/1 Ethylbenzene 100-41-4 23. 0.20 ug/1 Total Xylenes 1330-20-7 68. 0.60 ug/1 PAH's in Water by HFLC Naphthalene 208-96-8 160. 2.0 ug/1 Acenaphthylene 208-96-8 160. 2.0 ug/1 Acenaphthene 83-32-9 180. 2.0 ug/1 Fluorene 86-73-7 17. 0.20 ug/1 Phenanthrene 85-01-8 85-01-8 5.4 0.080 ug/1 Anthracene 120-12-7 2.8 0.040 ug/1 Fluoranthene 206-44-0 3.1 0.040 ug/1 Fyrene 129-00-0 19. 0.20 ug/1 Benzo(a) anthracene 56-55-3 1.4 0.020 ug/1 Benzo(a) anthracene 56-55-3 1.4 0.020 ug/1 Benzo(a) pyrene 50-32-8 1.5 0.020 ug/1 Dibenz(a,h) anthracene 193-39-5 6.37 0.040 ug/1 Indeno(1,2,3-cd) pyrene 193-39-5 6.37 0.040 ug/1 Chrysene 218-01-9 5.6 0.080 ug/1 Chrysene

The recoveries for dibenz(a,h)anthracene and benzo(g,h,i)perylene were outside QC limits in the LCS associated with this sample. The sample was re-extracted outside of the method hold time. Comparable sample results were observed between the two extractions. The results reported are from the initial extraction of the sample.

TB 5

			Laboratory	CHLO	nicie '	•	
CAT					Analysis		Dilution
No.	Analysis Name	Method	l , .	Trial#	Date and Time	Analyst	Pactor
08213	BTEX (8021)	SW-846	8021B	· 1	12/13/2002 12:58	Melissa D Mann	1
00774	PAH's in Water by HPL	C SW-846	8310	1	12/15/2002 03:35	Mark A Clark	1
01146	GC VOA Water Prep	SW-846	5030B	. 1	12/13/2002 12:58	Melissa D Mann	n.a.
						.	
· . · · · · · · · · · · · · · · · · · ·						₹	•••



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



Lancaster Laboratories Sample No. WW 3958178

Collected:12/10/2002 09:05 by BS

Submitted: 12/11/2002 13:30 Reported: 01/08/2003 at 11:59

Discard: 02/08/2003

MA3-TG6-2-101202-02 Matrix Spike Grab Water

Sample

Moss American Superfund Site - Milwaukee, WI

62101 SDG#: KMA34-17MS

03337 PAH Water Extraction SW-846 3510C

Account Number: 07802

Kerr-McGee Corporation

P.O. Box 25861

Oklahoma City OK 73125

12/13/2002 10:20 Felix C Arroyo

-



Lancaster Laboratories Sample No.

Collected:12/10/2002 08:05

Account Number: 07802

Submitted: 12/11/2002 13:30 Reported: 01/08/2003 at 12:00 Kerr-McGee Corporation

P.O. Box 25861

Discard: 02/08/2003

Oklahoma City OK 73125

MA3-TG6-2-101202-02 Matrix Spike Dup Grab

Water Sample

Moss American Superfund Site - Milwaukee, WI

62101 SDG#: KMA34-17MSD

		•		As Received		•
CAT			As Received	Method		Dilution.
No.	Analysis Name	CAS Number	Result	Detection Limit	Units	Factor
08213	BTEX (8021)	:				• •
00776	Benzene	71-43-2	22.	0.20	ug/l	1
.00777	Toluene	108-88-3	23.	0.20	ug/l	1
00778	Ethylbenzene	100-41-4	23.	0.20	ug/l	1
00779	Total Xylenes	1330-20-7	70.	0.60	ug/l	1
00774	PAH's in Water by HPLC					
00775	Naphthalene	91-20-3	150.	1.0	ug/l	1
00782	Acenaphthylene	. 208-96-8	160.	2.0	ug/l	1 .
00783	Acenaphthene	83-32-9	180.	2.0	ug/l	1.
00784	Fluorene	86-73-7	17.	0.20	ug/1	ı
00785	Phenanthrene	85-01-8	5.4	0.080	ug/l	1
00789	Anthracene	120-12-7	2.8	0.040	ug/l	. 1
00807	Fluoranthene	206-44-0	3.1	0.040	ug/l	· 1
00811	Pyrene	129-00-0	19.	0.20	ug/l	1 .
.00812	Benzo (a) anthracene	56-55-3	1.5.	0.020	ug/1	1 ·
00818	Benzo (b) fluoranthene	205-99-2	1.2	0.040	ug/1	1
00823	Benzo (a) pyrene	50-32-8	1.5	. 0.020	ug/1	1
: 00895	Dibenz (a,h) anthracene	53-70-3	2.9 J	0.040	ug/1	1
00898	Indeno(1,2,3-cd)pyrene	193-39-5	6.45	0.080	ug/l	1
00907	Benzo(g,h,i)perylene	191-24-2	11.	0.10	ug/l	1
0.7409	Chrysene	218-01-9	5.7	0.080	ug/l	1.
07410	Benzo(k) fluoranthene	207-08-9	1.2	0.020	· ug/1	1

The recoveries for dibenz(a,h)anthracene and benzo(g,h,i)perylene were outside QC limits in the LCS associated with this sample. The sample was re-extracted outside of the method hold time. Comparable sample results were observed between the two extractions. The results reported are from the initial extraction of the sample.

			,0111 0111 0 1,0	
CAT		· -	Analysis	Dilution
No.	Analysis Name	Method	Trial# Date and Time	Analyst Factor
08213	BTEX (8021)	SW-846 8021B	1 12/13/2002 13:30	Melissa D Mann 1
00774	PAH's in Water by HPLC	SW-846 8310	1 12/15/2002 04:14	Mark A Clark 1
01146	GC VOA Water Prep	SW-846 5030B	1 12/13/2002 13:30	Melissa D Mann n.a.
			· ·	



Account Number: 07802

Kerr-McGee Corporation

Oklahoma City OK 73125

P.O. Box 25861



Page 2 of 2

Lancaster Laboratories Sample No. WW 3958179

Collected:12/10/2002 08:05 by BS

Submitted: 12/11/2002 13:30 Reported: 01/08/2003 at 12:00

Discard: 02/08/2003

MA3-TG6-2-101202-02 Matrix Spike Dup Grab

Water Sample

Moss American Superfund Site - Milwaukee, WI

SDG#: KMA34-17MSD 62101

Felix C Arroyo SW-846 3510C 12/13/2002 10:20 03337 PAH Water Extraction





Lancaster Laboratories Sample No. WW 3958180

Collected: 12/10/2002 15:35 by BS

Submitted: 12/11/2002 13:30 Reported: 01/08/2003 at 12:00

Discard: 02/08/2003 FB-01 Grab Water Sample

Moss American Superfund Site - Milwaukee, WI

Account Number: 07802

Kerr-McGee Corporation

P.O. Box 25861

Oklahoma City OK 73125

FBKER SDG#: KMA34-18FB

				As Received .		
CAT ·	•		As Received	Method		Dilution
No.	Analysis Name	CAS Number	Result	Detection Limit	Units	Factor
08213	BTEX (8021)	:	•	ı	• •	
00776	Benzene	71-43-2	N.D.	0.20	ug/1	1 .
00777	Toluene	108-88-3	N.D.	0.20	ug/l	1
00778	Ethylbenzene	100-41-4	N.D.	0.20	ug/l	1
. 00779	Total Xylenes	1330-20-7	N.D.	. 0.60	ug/l	1
		_		:		
00774	PAH's in Water by HPLC					
•						
00775	Naphthalene	91-20-3	N.D.	1.0	ug/l	1 3
00782	Acenaphthylene	208-96-8	N.D.	2.0	. ug/l	1
00783	Acenaphthene	83-32-9	N.D.	2.0	ug/l	. 1
00784	Fluorene	86-73-7	N.D.	0.20 ·	ug/l	1
.00785	Phenanthrene .	85-01-8	N.D.	0.080	.ug/1	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.	0.20	ug/l	1
00812	Benzo(a) anthracene	56-55-3	N.D.	0.020	ug/1	1
00818	Benzo(b) fluoranthene	205-99-2	N.D.	0.040	ug/l	1
00823	Benzo (a) pyrene	50-32-8	0.032 J	0.020	ug/l	1
00895	Dibenz(a,h)anthracene	53-70-3	N.D. VJ	0.040	ug/l	1
00898	Indeno (1, 2, 3-cd) pyrene	193-39-5	N.D. U.T	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/1	. 1
07410	Benzo(k) fluoranthene	207-08-9	N.D.	0.020	ug/l	1
	The recoveries for dibenz(a	.h)anthracene and	benzo(g.h.i)per	vlene were	_	

The recoveries for dibenz(a,h)anthracene and benzo(g,h,i)perylene were outside QC limits in the LCS associated with this sample. The sample was re-extracted outside of the method hold time. Comparable sample results were observed between the two extractions. The results reported are from the initial extraction of the sample.

TBS 1/23/03

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-		JLAL	CJLV			

CAT			Analysis		Dilu
No.	Analysis Name Metho	od : Trial#	Date and Time	Analyst	Pac
08213	BTEX (8021) SW-8	46 8021B 1	12/13/2002 12:25	Melissa D Mann	1
00774	PAH's in Water by HPLC SW-8	46 8310 1	12/15/2002 11:18	Mark A Clark	1
01146	GC VOA Water Prep SW-8	46 5030B 1	12/13/2002 12:25	Melissa D Mann	n.
. :				5	



Lancaster Laboratories Sample No. WW

Collected: 12/10/2002 15:35 by BS

Submitted: 12/11/2002 13:30 Reported: 01/08/2003 at 12:00

Discard: 02/08/2003 FB-01 Grab Water Sample

Moss American Superfund Site - Milwaukee, WI

SDG#: KMA34-18FB

FBKER PAH Water Extraction SW-846 3510C 03337

Account Number: 07802

Kerr-McGee Corporation

P.O. Box 25861

Oklahoma City OK 73125

12/13/2002 10:20 Felix C Arroyo





Lancaster Laboratories Sample No. WW 3958181

Collected:12/10/2002 16:05

Account Number: 07802

Submitted: 12/11/2002 13:30

Kerr-McGee Corporation

Reported: 01/08/2003 at 12:00 Discard: 02/08/2003

P.O. Box 25861

Oklahoma City OK 73125

TB-02 Grab Water Sample

Moss American Superfund Site - Milwaukee, WI

TBKER SDG#: KMA34-19TB

CAT No.	Analysis Name		CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor	
· 08213	BTEX (8021)				٠.		•	•
00776	Benzene		71-43-2	N.D.	0.20	ug/l	1 .	
00777	Toluene		108-88-3	N.D.	0.20	. ug/1	ı	
00778	Ethylbenzene		100-41-4	N.D.	0.20	ug/l	· 1	
00779	Total Xylenes	٠	1330-20-7	N.D.	0.60	<u>ug/1</u>	1	•

	Chron	

	Laboratory	O111 O111 O T O		
CAT	•	Analysis		Dilution
No. Analysis Name	Method ·	Trial# Date and Time	Analyst	Factor
.08213 BTEX (8021)	SW-846 8021B	1 12/13/2002 11:53	Melissa D Mann	1
01146 GC VOA Water Prep	SW-846 5030B	1 12/13/2002 11:53	Melissa D Mann	. n.a .

Analysis Report



Page 1 of 2

Lancaster Laboratories Sample No. WW 3958182

Collected:12/10/2002 13:50 by BS Account Number: 07802

Submitted: 12/11/2002 13:30 Kerr-McGee Corporation

Reported: 01/08/2003 at 12:00 P.O. Box 25861
Discard: 02/08/2003 Oklahoma City OK 73125

MA3-TG3-2-101202-08 Grab Water Sample
Moss American Superfund Site - Milwaukee, WI

..328-- SDG#: KMA34-20

				As Received		
CAT	•	•	As Received	Method		Dilution
No.	Analysis Name	CAS Number	Result	Detection Limit	Units	Factor
00217	Kjeldahl Nitrogen	7727-37-9	1.3	0.30	mg/1	1
.00219	Nitrite Nitrogen	. 14797-65-0	0.034 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	0.93 J	0.46	mg/l	1
•	Sufficient sample volume was not	t available to	perform a MS/MS	D for this	•	
	analysis. Therefore, a LCS/LCSD	was performed	d to demonstrate	precision and		
	accuracy at a batch level.					
00226	Ortho-Phosphate as P	14265-44-2	0.060	0.0066	mg/l	1
00235	Biochemical Oxygen Demand	n.a.	N.D.	5.6	mg/l	1
00273	Total Organic Carbon	n.a.	8.82	0.500	mg/l	1
00345	Total Phosphorus as PO4 water	14265-44-2	0.43	. 0.12	mg/l	1
01553	Chemical Oxygen Demand	n.a.	23:2	1.7	mg/l	, 1
· ·			•		•	
08213	BTEX (8021)		•			
:	•	•		•		
00776	Benzene	71-43-2	N.D.	0.20	ug/l	1
00777	Toluene	108-88-3	N.D.	0.20	ug/l	ļ
00778	Ethylbenzene	100-41-4	N.D.	0.20	ug/l	1
00779	Total Xylenes	1330-20-7	N.D.	0.60	ug/l .	ļ
00774	PAH's in Water by HPLC	•				•
· · .		•		•		
00775	Naphthalene	91-20-3	N.D.	1.0	ug/l	1
00782	Acenaphthylene	208-96-8	N.D.	2.0	ug/l	1
00783.	Acenaphthene	83-32-9	N.D.	2.0	ug/l	, 1 ,
00784	Fluorene	86-73-7	N.D.	0.20	ug/1	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	0.044 J	0.040	ug/l	1
00811	Pyrene	129-00-0	N.D.	0.20	ug/l	1
. 00812	Benzo (a) anthracene	56-55-3	N.D.	0.020	ug/1	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.UJ	0.040	ug/l	1
00898	Indeno (1,2,3-cd) pyrene	193-39-5	N.D. UT	0.080	ug/l	1
00907		191-24-2	N.D.	0.10	ug/l	1
07409		218-01-9	N.D.	0.080	ug/l	1
07410	Benzo(k) fluoranthene	207-08-9 .	N.D.	0.020	ug/1.	.1
	The recoveries for dibenz(a,h)	unthracene and	benzo(g,h,i)per	ylene were	0	•



1/23/03



Lancaster Laboratories Sample No. 3958182

Collected: 12/10/2002 13:50

Submitted: 12/11/2002 13:30 Reported: 01/08/2003 at 12:00

Discard: 02/08/2003

MA3-TG3-2-101202-08 Grab Water Sample

Moss American Superfund Site - Milwaukee, WI

Account Number: 07802

Kerr-McGee Corporation

P.O. Box 25861

Oklahoma City OK 73125

SDG#: KMA34-20

As Received

Method Dilution CAT As Received No. Analysis Name CAS Number Detection **Pactor**

re-extracted outside of the method hold time. Comparable sample results were observed between the two extractions. The results reported are from

the initial extraction of the sample.

CAT			•	Analysis ·	•	Dilution
No.	Analysis Name	Method	Trial#	Date and Time	Analyst	Factor
. 00217	Kjeldahl Nitrogen	EPA 351.2	· 1	12/20/2002 15:48	Venia B McFadden	1 .
. 00219	Nitrite Nitrogen	EPA 353.2	1	. 12/11/2002 16:00	Venia B McFadden	1
00220	Nitrate Nitrogen	EPA 353.2	1	12/17/2002 12:46	Ramona V Goss	1 .
00221	Ammonia Nitrogen	EPA 350.2	1.	12/13/2002 14:30	Luz M Groff	1
00226	Ortho-Phosphate as P	EPA 365.3	ľ	12/11/2002 20:10	Daniel S Smith	: 1
00235	.Biochemical Oxygen Demand	EPA 405.1	1	12/11/2002 23:47	Nicole R Bushong	1:
00273	Total Organic Carbon	EPA 415.1	. 1	12/17/2002 01:36	Timothy M Petree	1
00345	Total Phosphorus as PO4 water	EPA 365.1	. 1	12/24/2002 18:19	Venia B McFadden	1
01553	Chemical Oxygen Demand	EPA 410.2	1	12/16/2002 05:50	Susan A Engle	1
08213	BTEX (8021)	SW-846 8021B	. 1	12/13/2002 16:12	Melissa D Mann	. 1
00774	PAH's in Water by HPLC	SW-846 8310	· 1	12/15/2002 11:57	Mark A Clark	1
01146	GC VOA Water Prep	SW-846 5030B	. 1 .	12/13/2002 16:12	Melissa D Mann	n.a.
01460	Total Kjeldahl Nitrogen Digest	EPA 351.2	1	12/12/2002 09:10	Cheryl L Robinson	1
. 03337	PAH Water Extraction	SW-846 3510C	1	12/13/2002 10:20	Felix C Arroyo	1
08264	Total Phos as PO4 Prep	EPA 365.1	1	12/13/2002 11:00	James S Mathiot	1



Lancaster Laboratories Sample No. WW 3958183

Collected: 12/10/2002 13:55 by BS

Submitted: 12/11/2002 13:30 Reported: 01/08/2003 at 12:00

Discard: 02/08/2003

MA3-TG3-3-101202-09 Grab Water Sample

Moss American Superfund Site - Milwaukee, WI

Account Number: 07802

Kerr-McGee Corporation

P.O. Box 25861

Oklahoma City OK 73125

3309- SDG#: KMA34-21

is Name hl Nitrogen e Nitrogen e Nitrogen a Nitrogen cient sample volume was not is. Therefore, a LCS/LCSD cy at a batch level. Phosphate as P mical Oxygen Demand Organic Carbon Phosphorus as PO4 water cal Oxygen Demand	was performed 14265-44-2 n.a. n.a.	0.048 6.4	•	Units mg/l mg/l mg/l mg/l	Dilution Factor 1 1 1 1
hl Nitrogen e Nitrogen e Nitrogen a Nitrogen ient sample volume was not is. Therefore, a LCS/LCSD cy at a batch level. Phosphate as P mical Oxygen Demand Organic Carbon Phosphorus as PO4 water	7727-37-9 14797-65-0 14797-55-8 7664-41-7 t available to was performed 14265-44-2 n.a. n.a.	2.3 0.041 J N.D. 1.2 perform a MS/MS 1 to demonstrate 0.048 6.4	Limit 0.30 0.015 0.040 0.46 D for this precision and 0.0066	mg/l mg/l mg/l	1 1 1
e Nitrogen e Nitrogen a Nitrogen cient sample volume was not is. Therefore, a LCS/LCSD ccy at a batch level. Phosphate as P mical Oxygen Demand Organic Carbon Phosphorus as PO4 water	14797-65-0 14797-55-8 7664-41-7 t available to was performed 14265-44-2 n.a.	0.041 J N.D. 1.2 perform a MS/MS to demonstrate 0.048 6.4	0.015 0.040 0.46 D for this precision and	mg/1 mg/1 mg/1	1 1 11 1 1
e Nitrogen a Nitrogen cient sample volume was not is. Therefore, a LCS/LCSD ccy at a batch level. Phosphate as P cmical Oxygen Demand Organic Carbon Phosphorus as PO4 water	14797-55-8 7664-41-7 t available to was performed 14265-44-2 n.a.	N.D. 1.2 perform a MS/MS to demonstrate 0.048 6.4	0.040 0.46 D for this precision and 0.0066	mg/l mg/l	1
a Nitrogen cient sample volume was not cis. Therefore, a LCS/LCSD ccy at a batch level. Phosphate as P cmical Oxygen Demand Organic Carbon Phosphorus as PO4 water	7664-41-7 t available to was performed 14265-44-2 n.a. n.a.	1.2 perform a MS/MS to demonstrate 0.048 6.4	0.46 D for this precision and 0.0066	mg/l	. 1
ient sample volume was not is. Therefore, a LCS/LCSD cy at a batch level. Phosphate as P mical Oxygen Demand Organic Carbon Phosphorus as PO4 water	t available to was performed 14265-44-2 n.a. n.a.	perform a MS/MS to demonstrate 0.048 6.4	D for this precision and		_
is. Therefore, a LCS/LCSD cy at a batch level. Phosphate as P mical Oxygen Demand Organic Carbon Phosphorus as PO4 water	was performed 14265-44-2 n.a. n.a.	0.048 6.4	precision and	mg/l	1
cy at a batch level. Phosphate as P mical Oxygen Demand Organic Carbon Phosphorus as PO4 water	14265-44-2 n.a. n.a.	0.048 6.4	0.0066	mg/1	1
Phosphate as P mical Oxygen Demand Organic Carbon Phosphorus as PO4 water	n.a. n.a.	6.4		mg/l	1
mical Oxygen Demand Organic Carbon Phosphorus as PO4 water	n.a. n.a.	6.4		mg/l	1
Organic Carbon Phosphorus as PO4 water	n.a.		. 0.80		. .
Phosphorus as PO4 water			V.8V .	mg/l'	1
	14966 44 0	14.4	0.500	mg/l·	1 ·
al Oxygen Demand .	14265-44-2	0.51	0.12	mg/l	1
	n.a.	39.5	1.7	mg/l	1
			•	• •	
(8021)					
ie .	71-43-2	N.D.	0.20	ug/l	1
ne	108-88-3	N.D.	0.20	ug/l	1
penzene _.	100-41-4	N.D.	0.20	ug/l	1
Xylenes	1330-20-7	N.D.	0.60	ug/l	1
		•	•		· · · ·
in Water by HPLC		• •			
•					
nalene	91-20-3	N.D.	1.0	ug/1	1
ohthylene	208-96-8	N.D.	2.0	ug/l	ļ
ohthene	83-32-9	N.D.	2.0	ug/l	1
ene	•	N.D.		ug/l	1
nthrene :		0.11 J	0.080	ug/l	. 1
acene		N.D.	0.040	ug/l	1
anthene · •	206-44-0	0.061 J	0.040	ug/l	1
9	129-00-0	N.D.	0.20	∵ ug/1	1
(a) anthracene	56-55-3	N.D.	0.020	ug/l	1
(b) fluoranthene	205-99-2	N.D.	0.040	ug/l	1
(a) pyrene	50-32-8	N.D.	0.020	ug/l	1
z (a, h) anthracene	53-70-3	N.D.UJ	0.040	ug/l	1
o(1,2,3-cd)pyrene	193-39-5	и.D. 0 7	0.080	ug/l	, 1
(g,h,i)perylene	191-24-2	N.D.	0.10	ug/l	1
	218-01-9	N.D.	0.080	ug/l	1
ene	207-08-9	. N.D.	0.020	ug/1	1
	ene acene acene anthene (a) anthracene (b) fluoranthene (a) pyrene z(a, h) anthracene	ene 86-73-7 nthrene 85-01-8 acene 120-12-7 anthene 206-44-0 (a) anthracene 56-55-3 (b) fluoranthene 205-99-2 (a) pyrene 50-32-8 z (a, h) anthracene 53-70-3 o (1,2,3-cd) pyrene 193-39-5 (g, h, i) perylene 191-24-2 ene 218-01-9	## 86-73-7 N.D. ## 120-12-7 N.D. ## 120-12-7 N.D. ## 120-12-7 N.D. ## 120-00-0 N.D. ## 129-00-0 N	### ### ##############################	### ### ##############################

1/23/03

outside QC limits in the LCS associated with this sample.

Analysis Report



Page 2 of 2

Lancaster Laboratories Sample No. WW 3958183

Collected: 12/10/2002 13:55 by BS

Submitted: 12/11/2002 13:30 Reported: 01/08/2003 at 12:00

Discard: 02/08/2003

MA3-TG3-3-101202-09 Grab Water Sample

Moss American Superfund Site - Milwaukee, WI

Account Number: 07802

Kerr-McGee Corporation

P.O. Box 25861

Oklahoma City OK 73125

3309- SDG#: KMA34-21

As Received

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

re-extracted outside of the method hold time. Comparable sample results

were observed between the two extractions. The results reported are from the initial extraction of the sample.

	•	Laboratory	Cnro	uicie	•	•
CAT	Analysis					
No.	Analysis Name	Method '	Trial#	Date and Time	Analyst	Factor
00217	Kjeldahl Nitrogen	EPA 351.2	1	01/06/2003 16:43	· Venia B McFadden	1
00219	Nitrite Nitrogen	EPA 353.2	1	.12/11/2002 16:04	Venia B McFadden	1
00220	Nitrate Nitrogen	EPA 353.2	1	12/17/2002 12:47	Ramona V Goss	· 1
00221	Ammonia Nitrogen	EPA 350.2	1	12/13/2002 14:30	Luz M Groff	1
00226	Ortho-Phosphate as P	EPA 365.3	1	12/11/2002 20:10	Daniel S Smith	1
00235	Biochemical Oxygen Demand	EPA 405.1	· 1	12/11/2002 23:47	Nicole R Bushong	1
00273	Total Organic Carbon	EPA 415.1	1	12/17/2002 01:44	Timothy M Petree	1
00345	Total Phosphorus as PO4 water	EPA 365.1	1	12/24/2002 18:20	Venia B McFadden	1
01553	Chemical Oxygen Demand	EPA 410.2	1	12/16/2002 05:50	Susan A Engle	1
08213	BTEX (8021)	SW-846 8021B	1.	12/13/2002 17:51	Melissa D Mann	· 1
00774	PAH's in Water by HPLC	SW-846 8310	1	12/15/2002 12:35	Mark A Clark	1
01146	GC VOA Water Prep	SW-846 5030B	1	12/13/2002 17:51	Melissa D Mann	n.a.
01460	Total Kjeldahl Nitrogen Digest	EPA 351.2	· 2	12/17/2002 13:45	Nancy J Shoop	1
03337	PAH Water Extraction	SW-846 3510C	1	12/13/2002 10:20	Felix C Arroyo	. 1
08264	Total Phos as PO4 Prep (water)	BPA 365.1	1	12/13/2002 11:00	James S Mathiot	. 1





Lancaster Laboratories Sample No.

Collected:12/10/2002 15:00 by BS

Account Number: 07802

Submitted: 12/11/2002 13:30 Reported: 01/08/2003 at 12:00 Kerr-McGee Corporation

P.O. Box 25861

Discard: 02/08/2003

Oklahoma City OK 73125

MA3-TG2-2-101202-11-DUP Grab Water Sample Moss American Superfund Site - Milwaukee, WI

11FD-SDG#: KMA34-22FD*

		•		As Received			
CAT			As Received	Method		Dilution	
No.	Analysis Name	CAS Number	Result .	Detection Limit	Units .	Factor	
08213	BTEX (8021)				:		
00776	Benzene .	71-43-2	N.D.	0.20	ug/1	1	
00777	Toluene	108-88-3	N.D.	0.20	ug/l	1	
00778	Ethylbenzene	100-41-4	N.D.	0.20	ug/l	1	
00779	Total Xylenes	1330-20-7	N.D.	0.60	ug/l	1	
00774	PAH's in Water by HPLC						
00775	Naphthalene	91-20-3	N.D.	1.0	ug/l	1	
00782	Acenaphthylene	208-96-8.	N.D.	2.0	· ug/l	1	
00783	Acenaphthene	83-32-9	N.D.	2.0	ug/l	1.	
00784	Fluorene	86-73-7	N.D.	0.20.	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	0.046 J	0.040	ug/l	ı	
00811	Pyrene	129-00-0	N.D.	0.20	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.UJ	0.040	ug/l	1	
00898	Indeno (1,2,3-cd) pyrene	193-39-5	N.D.UT	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/1	· 1	
07410	Benzo(k) fluoranthene	207-08-9	N.D.	0.020	ug/l	1	
•	The majoration for dibonals	hismthesans and	hanna/a h 41	1	•	•	

The recoveries for dibenz(a,h)anthracene and benzo(g,h,i)perylene were outside QC limits in the LCS associated with this sample. The sample was re-extracted outside of the method hold time. Comparable sample results were observed between the two extractions. The results reported are from the initial extraction of the sample.

Laboratory Chronicle

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CAT			Analysis		•	Dilution
No.	Analysis Name	Method .	Trial# Date and Time	Analyst	•	Factor
08213	BTEX (8021)	SW-846 8021B	1 12/13/2002 18:23	A Melissa D Mann		1 .
00774	PAH's in Water by HPLC	SW-846 8310	1 12/15/2002 13:14	Mark A Clark		1
01146	GC VOA Water Prep	SW-846 5030B	1 12/13/2002 18:23	Melissa D Mann		n.a.
				6	•	



Lancaster Laboratories, Inc. 2425 New Holland Pike PO Box 12425 Lancaster, PA 17605-2425 717-656-2300 Fav. 717-656

Analysis Report



Page 2 of 2

Lancaster Laboratories Sample No.

Collected:12/10/2002 15:00 by BS

Submitted: 12/11/2002 13:30 Reported: 01/08/2003 at 12:00

Discard: 02/08/2003

03337

MA3-TG2-2-101202-11-DUP Grab Water Sample Moss American Superfund Site - Milwaukee, WI

SDG#: KMA34-22FD*

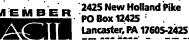
PAH Water Extraction · SW-846 3510C Account Number: 07802

Kerr-McGee Corporation

P.O. Box 25861

Oklahoma City OK 73125

12/13/2002 10:20 Felix C Arroyo



Lancaster Laboratories, Inc.

Analysis Request / Environmental Services Chain of Costoe



For Lancaster Laboratories use only Group# 833887 Sample # 3957167-73 COC # 0010993

Please print. Instructions on reverse side correspond with circled numbers. Client: Weston Analyses Requested 315 284 For Lab Use Only Acct. #: FSC: _____ Project Name #: Moss American SCR#: 7/7275 PWSID #: Project Manager: Tom Graan P.O.#: Sampler: B. Scharfer S. Mayer M. Cashilo Quote #:___ Name of state where samples were collected: **,ο**` Remarks sample destifications MA3-TG-5-1-091202-01 12/9/02 X MA3-TG5-1-091202-01-DUP x icco MA3- TG 5-2-091202-02 X × [boo MA3-TG5-3-091202-03 1610 < 1730 X 支援連続権 しょれ かいり AST THE TOWN OF THE Turnaround Time Requested (TAT) (please circle): Normal Time Received by: Relinquished by: Date Date Time 45-02 1245 Relinquished by: Date Time Received by Date Time Rush results requested by (please circle): Phone Fax Phone # 947-918-4000 Fax# 847-9184055 9/02 1815 Relinquished by: E-mail address: Time Received by: Date: Time Date Data Package Options (please circle if required) SDG Complete? QC Summary Type VI (Raw Data) PER QUOTE Yes Relinguished by: Received by: Date Time | Date Type I (Tier I) **GLP** State-specific QC required? Yes No Type II (Tier II). Other (if yes, indicate QC sample and submit triplicate volume.) Relinquished by: Time Received by: Date. Time **Bate** Type III (NJ Red. Del.) Internal Chain of Custody required? Yes No 0920 Type IV (CLP)

Lancaster Laboratories, Inc., 2425 New Holland Pike, PO Box 12425, Lancaster, PA 17605-2425 (717) 656-2300

2102 Rev. 7/1/02

Analysis Request / Environmental Services Chain of Costo



For Lancaster Laboratories use only Acct. # 1802 Group# 833880 sample # 3957167-73

COC # 0010994

Please print. Instructions on reverse side correspond with circled numbers. Client: West-For Lab Use.Only Acct. #: Project Name/#: Moss American SCR #: _ PWSID #: Project Manager: Tom Gragn P.O.#: Sampler: B. Schaefers. Meyer M. Cashilo Quote #: Name of state where samples were collected: Sample from the constant Collected. Remarks MA3-TG5-2-18091202-02 MA3-TG5-3-091202-03 12/9/02 1610 evip. eaself "Charle Sull Turnaround Time Requested (TAT) (please circle): Normal Rush Time Relinauished by: Received by: Time **Date** (Rush TAT is subject to Lancaster Laboratories approval and surcharge.) 1815 900 Date results are needed: STD TAT Received by: Relinquished by: Date Time Date Time: Rush results requested by (please circle): Phone Fax Phone #: 847-918-4000 Fax #: 847-918-4055 E-mail address: Relinquished by: Time Received by: **Date** Time Date Data Package Options (please circle if required) SDG Complete? QC Summary *** Type VI (Raw Data) ERQUITE NO. Time Yes Relinquished by: Date Time | Received by: Date Type I (Tier I) GLP State-specific QC required? Yes No Type II (Tier II) Other (If yes, Indicate QC sample and submit triplicate volume.) Date Time Relinquished by: Date Time Received by: Type III (NJ Red. Del.) Internal Chain of Custody required? Yes No Type IV (CLP)

> ancaster Laboratories, Inc., 2425 New Holland Pike, PO Box 12425, Lancaster, PA 17605-2425 (717) 656-2300 The -'-' copy should be retained by the client.

2102 Rev. 7/1/02

Analysis Kequest / Environmemor se

Lancaster Laboratories

For Lancaster Laboratories use only

Group# 83410) Sample # 3958 10 8 84

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Sampler: B. Schaele, S. Maye, M. Castil	O Quote	#:										• /	/ /		/ /	/ /		•	10	
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Analysis Request / Environmental Services Chain of Custody



Acct. # 1802

For Lancaster Laboratories use only

Group# 83401 Sample # 39581108 S4

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Analysis Request / Environmental Services Chair



For Lancaster Laboratories use only

Group# 8340 sample # 3958 168 -84

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Analysis Request / Environmental Services Chain of Cusioay

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For Lancaster Laboratories use only

Group#_83410 | Sample # 3968168-84 COC # 0010987

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Phone #: 847-918-4000 Fax #: 84	7-918-40	55	[·.		!		ļ. 	4						,,,,,		· 1. }	╀-
E-mail address:			—┪.	Relino	quishe	ed by:					Date	e T	Fime	Rec	eived	l by:	/			Date	Tim
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Anal, is Request / Environmental Se



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Acct: # 102 Group# 834/01/* Sample # 34681 68 - 84 COC # 0008412

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MA3-TG-2-101207-11-WP		1605	 				15	3	 				{					•		}
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E-mail address:		·	F	Relin	quishe	d by:		•			Date		me	/Rec	eive	d by:			Date	Time
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Analysis Request / Environmental Services Cham



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Group#________Sample # 3958168-84

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Project Manager: Fom Graan	P.O.#:						2			,	/ /	/: /	/ ,	/	/ ,	Γ,	/ / /-	: 1,	ry.	6
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Analysis Request / Environmenial Se



Acct. # 1802

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Group#

Sample # 3458168 - 84

被共享的政治和政治的是一个中国人

COC # 0010992

Please print. Instructions on reverse side correspond with circled numbers. Client: Weston waz Analysesi Requested a santo. For Lab Use Only 5 Acct. #: FSC: Project Name#: Moss Anenca SCR #: PWSID #: Project Manager: Tom Gragn Sampler B. Schaefer S. Meyer M. Castillo Quote #: Boy Name of state where samples were collected: Remarks MA3-76-6=1-101202-0100-110112/10/02 X. 0855 FB- of their at arrange and are 1535 X ح X MAS -TG2-2-61202-08 1350 X 6 × X MA3- TG3-1-101202-07 1345 × × to give a garage of the contract of the ·10 · endagarayan yer yer e JOVY YOSHRED - J'E. ... Service from the apparent estimates and Turnaround Time Requested (TAT) (please circle): Normal Time (9 Received by: Relinguished by: Date Time Date 12/10/02 (Rush TAT is subject to Lancaster Laboratories approval and surcharge.) 1800 Date results are needed: Received by: Relinquished by: Date Time Date_ Rush results requested by (please circle): Phone Fax E-mail Phone # 847-918-4000 Fax# 847-918-4055 0 E-mail address: Received by: Date Time Relinquished by: Date Time Data Package Options (please circle if required) SDG Complete? QC Summary Type VI (Raw Data) PER Q UST E Yes No Received by: Relinquished by: Date Time Date lTime Type I (Tier I) GLP State-specific QC required? Yes Type II (Tier II) (if yes, indicate QC sample and submit triplicate volume.) Relinquished by: Time Received by: Date/ Time Date Type III (NJ Red. Del.) Internal Chain of Custody required? Yes No Type IV (CLP)





Case Narrative Client: Kerr-McGee Corporation SDG: KMA34

LANCASTER LABORATORIES PAH by HPLC

SAMPLE NUMBER(S):

		Matrix	
LL #'s	Sample Code	Water .	Comments
3957167	20201	X	
3957168	FD01-	X	
3957172	5-2-9	· X	·
·3957173	352	X	
3958168	431	· X	•
3958168RE	431RE	X	Reextraction
3958169	231	X	
3958169RE	231-RE	χ . ,	Reextraction
3958170	411	. X *	·
3958170RE	411RE	. X	Reextraction
3958171	4-2-1	X	
3958171RE	4-2-1RE	X	Reextraction
3958172	2-2-1	· X	
3958172RE	2-2-1RE	X	Reextraction
3958173	2-1-1	X	
3958173RE	2-1-1RE	X	Reextraction
3958174	3-101	X	
3958174RE	3-101RE	X	Reextraction
3958175	6-101	X	
3958175RE	6-101RE	X	Reextraction
3958176	31101	X	
3958176RE	31101RE	X	Reextraction
3958177	62101	X	Unspiked
3958177RE	62101RE	X : :	Reextraction
3958178	62101MS	X	Matrix Spike
3958178RE	62101REMS	X	Matrix Spike Reextraction
•			

2

Case Narrative (continued) SDG#: KMA34

SAMPLE NUMBER(S) continued:

	` ' ,	Matrix	
LL #'s	Sample Code	Water	Comments
3958179	62101MSD	X	Matrix Spike Dup
3958179RE	62101REMSD	· X	Matrix Spike Dup Reextraction
3958180	FBKER	X	Client Blank
3958180RE	FBKERRE	X	Reextraction
3958182	328	X	•
3958182RE	328RE	X.	Reextraction Client Blank
3958183	3309-	X	
3958183RE	3309-RE	. X .	Reextraction
3958184	11FD-	X	
3958184RE	11FD-RE	X	Reextraction
• .			
LABORATORY SU	•		
SBLKWB345	SBLKWB3452	X	Method Blank
SBLKWG346	SBLKWG3462	\mathbf{X}_{\perp}	Method Blank
SBLKWF353	SBLKWF3532	X	Method Blank
345WBLCS	345WBLCS2	X	Lab Control Sample
345WBLCSD	345WBLCSD2	X	Lab Control Sample Dup
346WGLCS	346WGLCS2	X	Lab Control Sample
353WFLCS	353WFLCS2	X	Lab Control Sample

SAMPLE PREPARATION:

Due to insufficient sample, reduced volumes were used in the extraction of the following samples.

Sample Code	Volume
20201	998 mls
FD01-	985 mls
5-2-9	965 mls
35–2	900 mls
411-	984 mls
411RE	969 mls
231RE	962 mls
6-101	941 mls
328	976 mls
3309-	975 mls
:	

o O

3

Case Narrative (continued) SDG#: KMA34

No other 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 20201, FD01-, 5-2-9 and 35-2. Therefore, a LCS/LCSD was performed to demonstrate precision and accuracy at a batch level.

Reextractions were required for all samples on organic extraction batch 02346WAG026 due to unacceptable recoveries in the associated laboratory control sample.

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

QUALITY CONTROL AND NONCONFORMANCE SUMMARY:

The recoveries of dibenz(a,h)anthracene and benzo(g,h,i)perylene in 346WGLCS2 were below QC limits. Therefore, all samples on organic extraction batch 02346WAG026 were reextracted. The reextractions were performed outside of the method required holding time. Acceptable QC recoveries were observed in the reanalysis. Both sets of data are reported in this data package.

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#: KMA34

Sample Code File ID 02354.09 level 5

Compound Indeno(1,2,3-cd)pyrene

No further interpretation is necessary for the data submitted.

Case Narrative Reviewed and Approved by:

m. Ratchyl NED 507

Date: 1-2-03

Charles J. Neslund Group Leader, GC/MS Semivolatiles



Case Narrative SDG# KMA34

Client : Kerr-McGee Corporation
Project: Moss American Superfund Site
Milwaukee, WI
Volatiles by GC - Water

SAMPLE ANALYSES

LL _ample #	Sample Designation	Matrix Soil Water	Comments
95 716 7	20201	x	
957168	FD01-	X	·
3957169	02-02	X	
3957170	02-03	X .	
957171	TBX01	X	•
_958168	431	X	•
3958169	231	X	
958170	· 411	X	
958171	4-2-1	X	
3958172	2-2-1	X	
3958173	2-1-1	X	
958174	3-101	X	
1958175	6-101	X	
3958176	31101	. X	
3958177	62101	· X	Unspiked
3958178MS	62101	. X	Matrix Spike
3958179MSD	62101	X	Matrix Spike Dup
3958180	FBKER	X	
3958181	TBKER	X	•
3958182	328	X	•
3958183	3309-	X	
3958184	11FD-	· X	
		• "	

QUALITY CONTROL ANALYSES

BLK5553 BLK5555	٠		X X	Method Blank Method Blank
LCS5552 LDS5552			X X	Lab Control Sample Lab Control Dup
LCS5555 LDS5555		 •	X X	Lab Control Sample Lab Control Dup

SAMPLE PREPARATION

No sample preparation was necessary.



Case Narrative SDG# KMA34

Client : Kerr-McGee Corporation

Project: Moss American Superfund Site

Milwaukee, WI

Volatiles by GC - Water

LYSIS

line integration system reviews the chromatogram retention times, comparing them to the
retention times in the ID window. A peak in the sample chromatogram with a
retention time within the ID window is identified as a "hit."

The method used for analysis was EPA Method SW-846 8021B. A J&W DB-VRX, 75m x 0.45mm column used for the analysis of all samples. The surrogate concentration was 30.0 UG/L.

... problems were encountered during analysis.

ALITY CONTROL AND NONCONFORMANCE SUMMARY

Client submitted batch QC was referenced.

__l QC was within specifications.

TA INTERPRETATION

No explanation is necessary for the data submitted.

Narrative reviewed and approved by:

teve . Stabinger, Group Leader

Date



RECEIVEL

JAN - 8 2003

544 Conkey Street Hannond, IN 46324 (219) 932-1770 INDIANA CERTIFICATION NUMBERS:

N-45-8 C-45-02

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CERTIFICATE OF ANALYSIS

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

Date Reported: 12/31/02 P.O. Number: Sample ID: 9948-00191 Date Received: 12/12/02

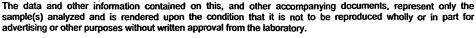
Time Received: 10:15

Permit Number

PARAMETERS	RESULTS	DATE	TECH	KETHOD
SUBJECT: HA3-TG1-1-111202-01, 12/11/	02 @ 09:15 by BG			•
Total Aerobic Bacteria	1,010. cfu/ml	12/13/02	NNC	9215B MODIFIED
T.Aerobic Degrader Bacteria	1,000. cfu/ml	12/13/02	· NMC	9215B HODIFIED
SUBJECT: MA3-TG1-1-111202-02, 12/11/0	32 @ 09:20 by BG			
Total Aerobic Bacteria	2,030. cfu/ml	12/13/02	HMC	9215B NODIFIED
T.Aerobic Degrader Bacteria	2,000. cfu/ml	12/13/02	инс	92158 MODIFIED
SUBJECT: NA3-TG1-1-111202-03, 12/11/0	02 € 09:25 by BG			
Total Aerobic Bacteria	2,160. cfu/ml	12/13/02	NKC	9215B KODIFIRD
T.Aerobic Degrader Bacteria	40. cfu/ml	12/13/02	HHC	9215B HODIFIED

This document has been reviewed and is electronically signed by:

Karen A. Ziolkowski Laboratory Director







544 Conkey Street Hannond, IN 46324 (219) 932-1770

INDIANA CERTIFICATION NUMBERS:

C-45-02

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CERTIFICATE OF ANALYSIS

Tom Graam Weston Solutions, Inc. 750 East Bunker Court Suite 500 Vernon Hills, IL 60061-1450 Date Reported: 12/31/02 P.O. Number: 0018581 Sample ID: 9948-00169 Date Received: 12/11/02

Time Received: 12,117

K-45-8

Permit Number

PARAMBTERS	RBSULTS	DATE	TECH	KETHOD
SUBJECT: MA3-TG6-1-101202-01, 12/10	7/02 # 08:55 by Client	•		
Total Aerobic Bacteria	1,360. cfu/ml	12/12/02	NHC	9215B KODIFIED
T. Aerobic Degrader Bacteria	30. cfu/nl -	12/12/02	HKC	9215B HODIFIED
SUBJECT: KA3-TG6-2-101202-02, 12/10	/02 @ 09:05 by Client	,		
Total Aerobic Bacteria	2,190. cfu/ml	12/12/02	BKC	9215B NODIFIED
T.Aerobic Degrader Bacteria	<10. cfu/ml	12/12/02	NKC	9215B HODIFIED
SUBJECT: KA3-T66-3-101202-03, 12/10	0/02 € 09:15 by Client		•	
Total Aerobic Bacteria	2.180. cfu/ml	12/12/02	RNC	9215B HODIFIED
T. Aerobic Degrader Bacteria	30. cfu/ml	12/12/02	HHC	9215B HODIFIED
SUBJECT: MA3-TG4-1-101202-04, 12/10	1/02 # 10:45 by Client	•		
fotal Aerobic Bacteria	750. cfu/ml	12/12/02	RHC	9215B NODIFIBD
Y: Aerobic Degrader Bacteria	30. cfu/ml	12/12/02	NHC	9215B KODIFIED
SUBJECT: MA3-TG4-2-101202-05, 12/1	0/02 @ 10:55 by Client		•	
Total Aerobic Bacteria	1,750. cfu/ml	12/12/02	NAC	9215B KODIFIED
f.Aerobic Degrader Bacteria	20. cfu/ul	12/12/02	RHC .	9215B HODIFIED
SUBJECT: MA3-TG4-3-101202-06, 12/10	0/02 # 11:05 by Client			
Total Aerobic Bacteria	1,930. cfu/nl	12/12/02	NKC	9215B MODIFIED
T. Aerobic Degrader Bacteria	<10. cfu/ml	12/12/02	RHC	9215B HODIFIED
SUBJECT: HA3-TG3-1-101202-07, 12/1	0/02 @ 13:45 by Client			
Total Aerobic Bacteria	75,000. cfu/ml	12/12/02	NKC	9215B MODIFIED
T.Aerobic Degrader Bacteria	2,200. cfu/ml	12/12/02	HKC	9215B NODIFIED

*** Certificate Continues On Next Page ***

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MEMBER



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INDIANA CERTIFICATION NUMBERS:

C-45-02

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CERTIFICATE OF ANALYSIS

Tom Graam Weston Solutions, Inc. 750 East Bunker Court Suite 500

Vernon Hills, IL 60061-1450

Date Reported: 12/31/02 P.O. Number: 0018581 Sample ID: 9948-00169 Date Received: 12/11/02 Time Received: 10:00

Permit Number

PARAMETERS	RESULTS	DATE	TECH	METHOD
SUBJECT: KA3-TG3-2-101202-08, 12/1	0/02 # 13:50 by Client		·	
Total Aerobic Bacteria	' 1,130. cfu/ml	12/12/02	nkc	9215B NODIFIED
T. Aerobic Degrader Bacteria	20. cfu/ml	12/12/02	NHC	9215B MODIFIED
SUBJECT: MA3-TG3-3-101202-09, 12/10	0/02 8 13.55 hv Client	÷		
Total Aerobic Bacteria	2,150. cfu/ml	12/12/02	RKC	9215B KODIVIED
P. Aerobic Degrader Bacteria	200. cfu/ml	12/12/02	NHC	9215B KODIFIED
: 				
SUBJECT: MA3-TG2-1-101202-10, 12/1	0/02 @ 14:50 by Client			,
Total Aerobic Bacteria	. 260. cfu/ml	12/12/02	NHC	9215B HODIFIED
T. Aerobic Degrader Bacteria	10. cfu/nl	12/12/02	, nnc	9215B HODIFIED
SUBJECT: NA3-TG2-2-101202-11, 12/10	0/02 @ 15:00 by Client			·
Total Aerobic Bacteria	500. cfu/ml	12/12/02	AKC	92158 HODIFIED
T.Aerobic Degrader Bacteria	20. cfu/ml	12/12/02	NAC	9215B HODIFIED
	0109 8 15 10 km 812	•	•	
SUBJECT: MA3-TG2-3-101202-12, 12/1 Total Aerobic Bacteria		12/12/02	NVA	AAIFR WARTERE
	1,750. cfu/ml	12/12/02	NKC	9215B HODIFIED
T.Aerobic Degrader Bacteria	20. cfu/ml	12/12/02	HHC	9215B HODIFIED

** Certificate Continues On Next Page ***





544 Conkey Street Hammond, IN 46324 {219} 932-1770

INDIANA CERTIFICATION NUMBERS:

45-8 C-45-02

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CERTIFICATE OF ANALYSIS

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

Date Reported: 12/31/02 P.O. Number: 0018581 Sample ID: 9948-00169 Date Received: 12/11/02

Time Received: 10:00

Permit Number

PARAMETERS RESULTS DATE TECH METHOD

This document has been reviewed and is electronically signed by:

Karen A. Ziolkowski Laboratory Director

The data and other information contained on this, and other accompanying documents, represent only the sample(s) analyzed and is rendered upon the condition that it is not to be reproduced wholly or in part for advertising or other purposes without written approval from the laboratory.





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CERTIFICATE OF ANALYSIS

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

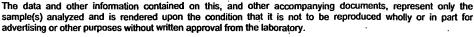
Date Reported: 12/31/02 P.O. Number: 0018581 9948-00129 Sample ID: Date Received: 12/10/02 Time Received: 10:15

Permit Number

PARAMETERS	RÉSULTS	DATE	TECH	KETHOD
SUBJECT: HA3-TG5-1-091202-01, 12/09/0	2 @ 15:50 by BS/SH/KC			
	3.000. cfu/ml	12/12/02	NKC	9215B KODIFIED
T.Aerobic Degrader Bacteria	1,000. cfu/ml	12/12/02	AKC .	9215B HODIFIRD
SUBJECT: MA3-TG5-2-091202-02, 12/09/0	2 @ 16:00 by BS/SN/NC	·	•	
Total Aerobic Bacteria	1,840. cfu/ml	12/12/02	NHC	9215B MODIFIED
T.Aerobic Degrader Bacteria	150. cfu/ml	12/12/02	NHC	9215B KODIFIED
SUBJECT: HA3-TG5-3-091202-03, 12/09/0	2 @ 16:10 .bv BS/SN/KC			•
Total Aerobic Bacteria	1,110. cfu/ml	12/12/02	NNC	9215B NODIFIED
T.Aerobic Degrader Bacteria	100. cfu/ml	12/12/02	NKC	9215B NODIFIED

This document has been reviewed and is electronically signed by:

Karen A. Ziolkowski Laboratory Director





Mic	cro	ba	ıC	

CHAIN OF CUSTODY RECORD

Microbac Laboratories, Inc. Seaway Industrial Laboratory Division 542-544 Conkey Street Hammond, Indiana 46324 219/932-1770 219/932-1721 Fax

COMPOSITE	BEGIN:	END:	TEMP
AUTOMATIC	DATE	DATE	TECH
DISCRETE FLOW PROPORTIONED	TIME	TIME	MLS/Sample
CONTINUOUS	FLOW	FLOW	# Samples
TIME TOTAL FLOW_		INTERVAL	

•	<u> </u> —	— ^{TIME} TOTAL	. FLOV	<i>'</i>						_ INTE	ERVAL								
P.O. #	CLIENT NAM ムル		·			in	CATION/PROJEC	WI	moss America		_/	The sun	$\overline{}$	ANAL	YSES	REQUE	STED		ENT
SAMPLERS (Signature)	arl			1		тто: ¬	Toin Grad	' ~				32							RETURN SAMPLES TO CLIENT
LAB I.D. # 9948-19	Sample	Chest	5	Sample Tem	p. at Lab	Method) 918 409 d of Shipment #2	30 X	····		\ \.\bar{\display}	7,	/ /	/	/ ,	/ ,		/ /	MPLES
9948-19	Chest To	emp_4	° C	4	c	Date	121207 ETYPE	Time	(015	/	1,Cm							REMARKS OBSERVATIONS	N SAI
SAMPLE LO	SAMPLE LOCATION COLLECTED DATE TIME COMP							NO. OF CONTAINERS	CONTAINER TYPE PRESERVATIVE	/ 4				/ .					RETUR
MA3-TG1-1-		12	11/50	915		×	Late	(b>Hle	>							-	LIST SPECIAL HAZARDS HERE Some free production Somple **	
MAS-TG1-Z	111252-0	2	\int	0920		×	1		boitle —	۲				-					
MAS-TG-3	- 1112e2-0	3 ,		0925		8		}	Ġ≈#le —	×									
		ŀ						ļ				·							
																		·	
Relinquished by: (Sign	ature)	iZ	Date 1452	Time 180	Re	ceived by	r: (Signature)		Relinquished	by: (Sig	gnature)		3	Date	Tin	ne	Received by: (Signature)	4
Relinquished by: (Sign		5	Date			,	r: (Signature)	ue.	Relinquished	by: (Sig	nature			7	Date	Tim	ne .	Received by: (Signature)	8
Relinquished by: (Sian	ature)	9	Date	7-7			ab by: (Signatu		Date 2/2	Time 1) (, Z	Τ						ge_	<u>'_ </u>	

Contact pers	ion Tom	Gyan	-	S	amr	North Sch	ae fe	ر در د	5.M	Lyp M. Castil	Ip	44	48-	16	9						
Project name	a Moss An	enican	Pr	oiec	31116 31 # .	JIGI 1,		/ .e			1		Rec	ueste	ed a	ınaly	/ses	(✓)	•	-	. 101
Project locat Site contami	e contaminant *													% air-filled pore sony	ty)	field capacity		Enume		1	
microbial popul	Lab use only	duct include	d? □ yes	1	() () ()	Sample depth	Jars	Vials (#)	Core.	Additional comments	CEA* (soilgw) see note	Standard nutrient panel (soling)	Particle size an	% air-filled pore snow	Soil m	Bulk do	Lo C	laige			
MA3-766-1-101202-01		12/10/02	0855	-	×		1										×				<u></u>
MA3-766-2-		1	0905		×		1			;						1	×	 	1		
maz-TG6-3- 101202-03			0915		×	_	Ī			i							X				
MA3-764-1- 101202-04			1045		X	-	١ ٠										×				
MA3-76-4-2-101202-05			1055.		x	_	1			i .				i			×				
MA3-TG-4-3- 101202-06			(105		×		1			<i>i</i> .			·		<u> </u>		ح				
MA7763-1-101202-67			1345	1_	X		1			· 						<u> </u>	<u>></u>		<u> </u>		
MA3-763-2-101202-08	· .	V	1350	1_	×	J							٠.				×		<u> </u>		
Relinquished by:	Sharf		12	te/time //o/2 te/time	n/ 18	<i>5</i> 0)		Comments:							Sample condition upon arrival: ☐ ☐ ○ On ice? 图/Yes, □ No					
Microbac HAMMOI 542-544 (Hammon 219-932-	ND DIVIS Conkey S d, Indian		Send results to: Name Tom Graan Company Wiston Address 750 E. Buker Cour Suit City Venon (f) 1/5 State Et Zip Phone B47-918-4000 Fax 347 91							500 500 KI 4055	Na Co Ad	me mpan dress _ /	у			State		7ln			

*CEA: Comparative Enumeration Assay includes total heterotrophic and degrader populations

2 - L al , 4.

Microbac

CHAIN OF CUSTODY RECORD ____

Microbac Laboratories, Inc.

Seaway Industrial Laboratory Division

542-544 Conkey Street Hammond, Indiana 46324

219/932-1770 219/932-1721 Fax

	4448-16	4	
COMPOSITE	BEGIN:	END:	TEMP 4
AUTOMATIC	DATE	DATE	TECH
DISCRETE FLOW PROPORTIONED	TIME	TIME	MLS/Sample
CONTINUOUS	FLOW	FLOW	# Samples

219/932-1//0 219/932-1/21 Pax									TIME TOTAL	. FLOW	/						_ INTE	RVAL		
P.O. #	CLIENT NAME				M	ilwa	N/PROJEC In Kee	WI /	noss Ancican			, ze /	7	ANALYSES REQUESTED						
SAMPLERS (Signature)	Salar	-	l		т то: ዋ	d~ (Sman					Here The								RETURN SAMPLES TO CLIENT
LAB I.D. #	Sample Ches		Sample Ter		Method	d of Shi	hipment				\ rt	/ /	/ /	'. . /	/ /	/ ,	/	/ /		APLES
	Chest Temp.	•c		°C	To Lab):		Time			/Pigen		./			/-			REMARKS	N SA
SAMPLE LO	CATION	СО	LLECTED		SAMPL	E TYPI	E	NO. OF CONTAINERS	CONTAINER TYPE	ي / [§ /		/						OBSERVATIONS	5
		DATE			. GRAB	M	ATRIX	CONTAINENS	PRESERVATIVE	\ <	_				_	_		LIST SPE	CIAL HAZARDS HERE	
MA3-TG-3-3		ľ	1355		×	ho	nter	1	-	þ										
MA7-TG2-1	-p1202-10		1450		×]	(>										
MA3-TGZ-2.	1012 62 71	ŀ	(500		×			ſ	~	۴										
MA3-TG2-3.	101202-12		(510		×			1	_	۴										
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		V					V													
Relinquished by: (Sign		1 2/	ate Tir	ne Re	eceived by	y: (Sign	ature)		Relinquished	by: (Si	gnature)		3	Date	Tin	ne	Received by: (5	Signature)	4
Relinquished by: (Sign	nature)	5 D	ate Tir	ne Ro	eceived by	y: (Sign	ature)		Relinquished	by: (Si	gnature)		7	Date	Tin	ne	Received by: (S	Signature)	8
Relinquished by: (Sign	nature)		Date Tir		•	r Lab b	y: (Signatu	ure)		Time 9:-c	-					1	je _			

•	Contact per Project nam	eye, M. Castill	Requested analyses (<)																		
	Project nam	e Moss An	nencan	Pro	ject	#	·	<u> </u>	· 	· /			٠.	-		naly	ses ((Y)	:		
	Project loca Site contami	tion <u>Million</u>	ensofe	Æ	:	(City)				(state) :	1 1	erobic, ic	m, available P.	Osieve only	(soil)	ntact of	core	36		1	
•	* If available, a s	(Used in test for cample of free pro- lations. Free pro-	degrader mic	red for use	as the c	e ratios if applicab arbon source for				•	(soil/gw)	D Microserophilic andard nutrient panel (soling)	to carbon, % my	hydrometer, i	(density)	re at field c	y (soli)	1 Enemember			
	Sample ID	Lab use only	Date	Time	(√)	Sample depth	Jars	Vials #)	Core	Additional comments	CEA-	Standard nutrient panel (soil	Particle Str	% air-filled pore confined only	Soil mois	Bulk densi	1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1	\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\			.
~ 93	7G5-1-891202.		12/09/02	1550.)		ſ										·×		: ; ,		
	-TG5-2-09/20	•		0891	7	-	(×				·
∟A	3-769-3-091202	-	1	[610	>	,	1				5						۴				
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	Relinquished by:	Ling	,		Date/1	9/02/1	81	5	٠,٠	Comments:					Samp	le coni	dition up	oon arri	val:		
	Received by:	·.		·	Date/t	me: /				:	<u> </u>		· :		On ic	e? C	l Yes,	□ No	·•		···
•	Microbac HAMMO 542-544 Hammon 219-932-	ND DIVI Conkey (d, Indian		Name Comp	pany WE	Bus	Ke/	(a	1917 1918 - Suith S 1918 - Star 188 -	500 506[4055	Na Co Ad Cit	me — mpan dress y — one —	·····					Zip_			

*CEA: Comparative Enumeration Assay includes total heterotrophic and degrader populations

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