7.0 QUALITY ASSURANCE/QUALITY CONTROL RESULTS

As established by the Mississippi Department of Environmental Quality (MDEQ) guidelines, all work related to the site characterization of the MSL and adjacent properties assessed during this investigation was performed in accordance with the *Environmental Protection Agency (EPA), Region IV "Environmental Investigations, Standard Operating Procedures and Quality Assurance Manual", May 1996* (EISOPQAM). Copies of relevant and applicable portions of the EISOPQAM were maintained on site during all field activities. All field personnel were trained in EISOPQAM implementation.

7.1 Site Characterization Assessment Objectives

BorgWarner, on behalf of KEC, engaged Martin & Slagle GeoEnvironmental Associates, L.L.C. to prepare a work plan for review and approval by the MDEQ to achieve the following general site characterization objectives using a phased approach:

1. Fill data gaps from previous site characterizations utilizing investigation and sampling methods (geophysical survey, truck-mounted rotary auger drilling, and test pits) that would allow for identification of fill material areas that contain significant quantities of debris. Determine potential soil sampling locations; determine the depth of debris and impacted media; analyze soils below 8 feet bgs; and visually identify the types of materials used as fill.

2. Conduct additional drilling and soil-sampling activities in the filled area of the MSL Property to depths that could not be successfully achieved during previous site assessment activities and determine the depth of debris and PCB impacted soils at depths greater than 8 feet bgs down to native soils.

3. Conduct soil and sediment sampling on the MSL Property and adjacent properties to the south and west utilizing Geoprobe™ direct push and hand augering to determine the potential for PCB migration and, if applicable, the extent of vertical and horizontal impacts.

Soil and sediment samples were collected by the field geologist at the locations and frequency described in Section 3 of the *Drainage Channel PCB Assessment Work Plan, dated August 2001,* approved by MDEQ in February 2004.

7.2 Analytical Methods

Samples were analyzed for PCBs by the on-site laboratory, Environmental Chemistry Consulting Services (ECCS) of Madison, Wisconsin. At least 10% of all samples were split and sent to an off-site laboratory, Paradigm Analytical Laboratories, Inc. (PAL) in Wilmington, North Carolina for analysis of PCBs. This measure was taken to confirm the results of the on-site laboratory analyses.

The on-site laboratory analyzed the soil samples using a mini-extraction procedure followed by gas chromatography based on EPA Method 8082 for PCBs. The procedure incorporates all the quality control rigors of the full 8082 method including quantification based on 6-point calibration with continuing calibration verification, surrogate method performance monitoring, method blanks, laboratory control samples (LCS), and matrix spike (MS)/matrix spike duplicate (MSD) samples.

The off-site laboratory analyzed all soil samples for PCBs using EPA Method 8082.

7.3 Key Personnel

The following is the list of key personnel dedicated to this project:

Project Manager:	Robert Martin, L.G. Martin & Slagle GeoEnvironmental Associates, L.L.C.
Duties:	Responsible for overall management of project including all field coordination efforts.
Field Manager:	Charles Peel, P.G. Peel Consulting, P.L.L.C.
Duties:	Overall management of field investigation and remedial activities. Collection of samples. Maintenance of all field logs and records.
Sr. Associate	Richard Beale, C.E.P, Martin & Slagle GeoEnvironmental Associates, L.L.C
Duties:	Field oversight of subcontractor activities. Sample collection. Maintenance of field logs and records. Report preparation.
On-site laboratory	
Manager:	Richard Johnson, Environmental Chemistry Consulting Services, Inc.
Duties:	Responsible for accepting custody of samples from the field personnel. Laboratory records maintenance. Sample analysis.
QA/QC Coordinator:	Christine Slagle, Martin & Slagle GeoEnvironmental Associates, L.L.C.

Duties: Review daily sample logs. Confirm that QC samples are collected and sampling protocols are met. Assure that data quality objectives are met.

7.4 Quality Assurance Objectives for Data

The data quality objectives were pre-defined for the ECCS data in that Mississippi considers all on-site lab data as screening level data. ECCS uses the same equipment and methodology as the off-site lab with the exception of the mini-extraction modification. Ten percent of the samples collected were split and submitted to Paradigm Analytical for confirmation analysis. Following this procedure, the data were qualified as screening data with definitive confirmation under EPA Region IV EISOPQAM guidelines.

Samples designated for further analysis by Paradigm were mixed thoroughly by the sample collectors (in a zip lock bag and/or stainless steel bowl) and delivered to the on-site lab where ECCS took its aliquot for analysis. After the analysis, ECCS reserved some sample for contingency purposes and sent the remainder to Paradigm for analysis. Paradigm therefore, analyzed the exact same sample as ECCS.

Equipment rinsates were collected for evaluation of cross-contamination potential. These were prepared by pouring distilled water over the sampling equipment after decontamination of equipment, and collecting, preserving, and analyzing the rinseate generated.

Field blanks were collected. These were prepared by filling sample containers, kept in the transition zone, with distilled water.

Blind duplicate soil samples were collected for analysis and sent to both labs. Blind duplicates were collected by homogenizing an aliquot of sample and splitting the

homogenized sample into 2 separate containers. After ECCS retained is aliquot of the sample, the remainder of the sample was sent to Paradigm for analysis.

7.5 Sample Control and Field Records

7.5.1 Sample Identification

Each sample was assigned a unique alphanumeric identifier, based on location and depth of collection point, that was clearly recognizable by both laboratories. Sample labels conformed to the labeling requirements under Section 3.2.1 of the EISOPQAM.

7.5.2 Chain of Custody Procedures

The field environmental scientist recorded the sample ID, date, and time sampled in the field logbook at the time of collection. Samples were placed on ice in a cooler and transferred, under proper Chain of Custody, to the on-site laboratory. Upon arrival at the lab, the samples were transferred to the ECCS laboratory manager who logged each sample on ECCS chain of custody forms. Each sample was assigned a unique ECCS internal ID number for tracking purposes. After analysis, the samples were transferred to a sample refrigerator in the on-site lab until they were either sent to Paradigm for confirmation analysis or disposed of. For samples sent to Paradigm, a new chain of custody was filled out prior to the sample transfer.

7.5.3 Field Records

Field records were kept in accordance with procedures specified in Section 3.5 of EISOPQAM.

7.6 Laboratory Quality Assurance/ Quality Control

QA/QC for both labs was identical. Summaries of each lab's procedures follow:

ECCS (On-site Lab):

- Continuing calibration standards analyzed every ten samples or less and at the end of a run.
- Blank and LCS samples analyzed every twenty samples or less with a minimum of one per day.
- MS/MSD samples analyzed every twenty samples or less with a minimum of one per day.

Paradigm (Off-site Lab):

- Continuing calibration standards analyzed at least once every 12-hour shift plus a minimum of every 20 samples.
- Blank and LCS samples analyzed every twenty sample or less with a minimum of one per day.
- MS/MSD samples analyzed every twenty samples or less with a minimum of one per day.

7.7 Data Review and Validation

All laboratory reports were reviewed for reporting accuracy and consistency with laboratory QA/QC protocols. The primary validation of data was accomplished through comparison of the data from the on-site laboratory versus the off-site laboratory. The relative percent difference (RPD) between the on-site and the off-site laboratory results for split samples was calculated for each pair of split samples and compared to a 100 % RPD acceptability threshold. The RPDs for duplicate samples analyzed by the on-site

and off-site laboratories were calculated and compared to a 50% acceptability threshold. A detailed discussion of the comparability of the on-site and off-site laboratory results and data validation calculations are included in Appendix 6.