Exhibit 17

Quality Assurance Project Plan (QAPP)
For
Southern Iowa Mechanical Site
3043 Pawnee Drive
Ottumwa, Iowa

Submitted to

USEPA Region VII
Iowa/Nebraska Remedial Branch
Superfund Division
901 North Fifth Street
Kansas City, Kansas 66101

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GES Project Coordinator	May 27, 2009 Date
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EPA Quality Assurance Manager	Date

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1.0 INTRODUCTION

1.1 General

This Quality Assurance Project Plan (**QAPP**) presents the requirements and guidelines developed to ensure compliance with the Quality Assurance (QA)/Quality Control (QC) criteria established by the United States Environmental Protection Agency (EPA) for the collection and analysis of samples for the Southern Iowa Mechanical Site (Site) in Ottumwa, Iowa.

This **QAPP** has been developed in accordance with the following EPA documents:

- "EPA Requirements for Quality Assurance Project Plans for Environmental Data Operations", (EPA QA/R-5), USEPA, March 20, 2001 (Reissued May 2006).
- "QA/QC Guidance for Removal Activities" (OSWER Directive 9360.4-01)(April 990)
- Environmental Compliance Branch Standard Operating Procedures and Quality Assurance Manual, USEPA, Region IV, Environmental Services Division, February 1, 1992 (ECBSOPQAM).
- "A Compendium of Superfund Field Operations Methods" EPA/540/P-87/001, OSWER Directive 9355.014, December 1987
- *Guidance for Quality Assurance Project Plans (G-5)*, December 2002, EPA/240/R-02/009.
- Guidance on Environmental Data Verification and Validation (QA/G-8), November 2002, EPA/240/R-02/004.

Guidance for this document was also obtained from the Quality Assurance Sampling for Environmental Response (**QASPER**), Version 4.0, which is a PC-based software package used to draft site-specific quality assurance plans and is based on the OSWER Directive 9360.4-01. Site-specific plans shall be coordinated with other contractors working on-site, such that one QA/QC plan is utilized for all site analytical activities.

Unless otherwise indicated in the text, all analytical methods referenced herein are taken from:

- "Test Methods for Evaluating Solid Waste: Physical and Chemical Methods", SW-846, 3rd Edition, USEPA, (Revision 6) November 2004. (http://www.epa.gov/epaoswer/hazwaste/test/main.htm)

1.2 Purpose

The primary purposes of this **QAPP** are to focus on the analytical methods and QA/QC procedures that will be used to collect and analyze samples throughout the various stages of work. This plan is also intended to ensure that all data generated are scientifically valid, defensible, and of known accuracy.

It is anticipated that analytical laboratory services will be required for confirmatory site soil sampling, as well as waste characterization for determination of disposal options. Data Quality Objectives (DQOs) for analytical methodologies that will be utilized for this project are discussed in **Section 2.0** of this **QAPP**.

The Quality Assurance Plan (**QAP**) of the subcontracted laboratory would normally be submitted as an attachment to augment this **QAPP**. For the purposes of this submittal, we have not attached the subcontract laboratory's **QAP**, but have referred to it as appropriate throughout this **QAPP**. Once selected the subcontract laboratory's **QAP** will be included as an attachment to augment this project-specific **QAPP**.

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2.0 PROJECT OVERVIEW

Greenleaf Environmental Services, LLC (GES) will perform the tasks and activities established in GES' Work Plan (WP) to address the cleanup measures for traces of Polychlorinated Biphenyls (PCBs) impacted adhesive areas identified on the metal beams at the Southern Iowa Mechanical Site (Site) in Ottumwa, Iowa. GES has been engaged by Mark Johnson of Stinson Morrison Hecker, LLP, whose clients are Dico, Inc. and Titan Tire Corporation (collectively Dico/Titan), to perform removal actions at the Site in accordance with the Unilateral Administrative Order (UAO) for Removal Response Activities issued by the United States Environmental Protection Agency (EPA) Region VII.

2.1 Site History and Background

Southern Iowa Mechanical (SIM) operates an industrial maintenance contracting business on the Site located at 3043 Pawnee Drive in Ottumwa, Iowa. The Site is situated on approximately 2.6 acres in an industrial park area where the surrounding land use is predominantly industrial. On May 16, 2008, EPA conducted an assessment at the Site. EPA alleged that it found PCB contamination present in the location of adhesion areas of old insulation on identified areas of the steel beams stockpiled on the property at concentrations exceeding the standards (1) applicable to non-liquid PCB contamination on non-porous surfaces in high occupancy areas per 40 CFR 761.61(a)(4)(ii) of 10 ug/100cm^2 (the low occupancy area standard is 100 ug/100cm^2); and (2) in one sample of site soils under the metal beam stockpile areas in excess of 1 mg/kg designated for high occupancy areas per 40 CFR 761.61(a)(4)(i)(A) (the low occupancy area standard is 25 mg/kg). In EPA's Quality Assurance Project Plan ("QAPP") for the May 16, 2008 assessment, EPA declared that the standards for "low occupancy areas" should be applied to the Site. *(Dico/Titan reserve their position that EPA's choice of the high occupancy standards is incorrect).* In June or July 2008 at the EPA's request, SIM installed a temporary fence to restrict access to the metal beam stockpile areas, which constitutes the only previous action taken at the Site.

EPA's current UAO requires removal of any visible insulation and adhesive residues and decontamination of portions of the metal beams where PCB is believed to be present from the use of adhesive to attach the old insulation backing that EPA tests allegedly showed a concentration exceeding 10 ug/100cm^2 (the high occupancy standard stated above) as specified in 40 CFR 761.79(b)(3)(i)(B), which is decontamination by scarification for "non-porous surfaces in contact with non-liquid PCBs." *(Dico/Titan reserve their position that EPA's choice of the non-liquid standard is incorrect)* In addition, the soil beneath the current metal beam stockpiles will be sampled to verify they do not exceed the 1 mg/kg PCB cleanup standard for bulk remediation waste in high occupancy areas as specified in 40 CFR 761.61(a)(4)(i)(B).

Dico/Titan desire to include the following disclaimer. Dico/Titan object to the EPA's letter of March 18, 2009, and to the EPA's actions in Dico/Titan letter of January 16, 2009, and previous correspondence, in the administrative record. Dico/Titan deny any liability and object to EPA's selection of the response action, and nothing herein shall be deemed an admission of any fact or a waiver of any right. Dico/Titan formally request that the Work Plan of February 13, 2009 and any subsequent revisions be included in the administrative record.

2.2 Overall Project Objectives and Scope

This QAPP provides the guidance and directives to ensure that GES performs sampling and analysis tasks in compliance with all EPA protocols throughout execution of tasks indicated in the Site Work Plan. GES sampling activities and laboratory analysis will be performed using methods and techniques developed or recognized by EPA, including sample collection, identification, preservation, chain-of-custody, shipping, and storage procedures. Analytical procedures, including quality control requirements, will be conducted as specified in the EPA reference methods employed.

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2.3 Areas of Concern

The current proposed action at the Site requires confirmatory sampling of metal beams that visual inspection reveals no indication of residual insulation or adhesive to verify PCB concentrations do not exceed 10 ug/100cm^2. In addition, the soil beneath the current metal beam stockpiles will be sampled to verify compliance with the PCB cleanup standard for bulk remediation waste in high occupancy areas of 1 mg/kg as specified in 40 CFR 761.61(a)(4)(i)(B).

2.4 Data Quality Objectives

At a minimum, the analytical data obtained during the implementation of this **QAPP** will conform to the QA2 objective. GES' off-site laboratory subcontracted for this project will provide data conforming to remedial action DQO Level 3, for all analyses with the exception of any field waste characterization, which will conform to QA1 objective and remedial action DQO Level 1. The attainment of the QA2 objective will involve the review of the following data quality indicators:

- Sample documentation;
- Chain-of-custody;
- Sample holding times;
- Initial and continuing instrument calibration data;
- Method blank, rinsate blank, trip blank data;
- MS/MSD and surrogate recoveries;
- Definitive identification of analytes using an EPA approved method; and
- Detection limits determination.

GES personnel will also perform a thorough data quality review and evaluation of all laboratory data. Preliminary data will be reported to the RPM upon receipt from the laboratory. Data quality evaluation will be performed as the results are received, in order to expedite the project schedule. Results of finalized data will be prepared upon completion of the work scope presented in the WP.

Data Quality Objectives (DQOs) are qualitative and quantitative statements that specify the quality of the data required to support remedial activities and are based on the end uses of the data to be collected. As such, different data uses may require different levels of data quality. There are five analytical levels that address various data uses and the QA/AC effort and methods required achieving the desired level of quality. These levels are:

- **Screening** (DQO Level 1)
  This provides the lowest data quality but the most rapid results. It is often used for health and safety monitoring at the site, preliminary comparison to applicable, or relevant and appropriate requirements (ARARs), initial site characterization to locate areas for subsequent and more accurate analyses, and for engineering screening of alternatives (bench-scale tests). These types of data include those generated on-site through the use of flame ionization detector/photoionization detector (FID/PID), combustible gas indicator (CGI), pH meter, conductivity meter, and other real-time monitoring equipment at the site.

- **Field Analyses** (DQO Level 2)
  This provides rapid results and better quality than in Level 1. This level may include mobile lab generated data depending on the level of quality control exercised.

- **Engineering** (DQO Level 3)

This provides an intermediate level of data quality and is used for site characterization. Engineering analyses may include mobile lab generated data and some analytical lab methods (e.g., laboratory data with quick turnaround used for screening but without full quality control documentation).

- **Confirmational** (DQO Level 4)
  This provides the highest level of data quality. These analyses require full Contract Laboratory Program (CLP) analytical and data validation procedures in accordance with EPA recognized protocol.

- **Non-Standard** (DQO Level 5)
  This refers to analyses by non-standard protocols, for example, when exacting detection limits or analysis of an unusual chemical compound is required. These analyses often require method development or adaptation. The level of quality control is usually similar to DQO Level 4 data.

For removal actions, three QA/QC objectives have been defined to provide useful and valid data for enforcement purposes, disposal and treatment options, responsible party identification, and cleanup verification. A detailed discussion of the information which follows can be found in the EPA document "Quality Assurance/Quality Control Guidance for Removal Activities" (EPA540/G-90/004, Interim Final, April 1990). These levels can be described as follows:

- **QA1 Level**
  QA1 is a screening objective that involves rapid, non-rigorous methods of analysis and quality assurance. QA1 is used to make quick, preliminary assessments of types and levels of pollutants and waste disposal profile acceptance.

- **QA2 Level**
  QA2 is a verification of objective used to verify analytical results. A minimum of 10% verification of results is required. QA2 is generally applied when qualitative or quantitative verification of a select portion of the data is desired, and the verification of a select percentage of the results gives a general determination of data quality for the data group as a whole.

- **QA3 Level**
  QA3 is definitive objective used to assess the accuracy of the concentration level as well as the identification of the compound(s) of interest. This objective requires a high degree of qualitative and quantitative accuracy for all findings. This level also involves the determination of analytical error on all samples defined as "critical" for decision-making purposes.

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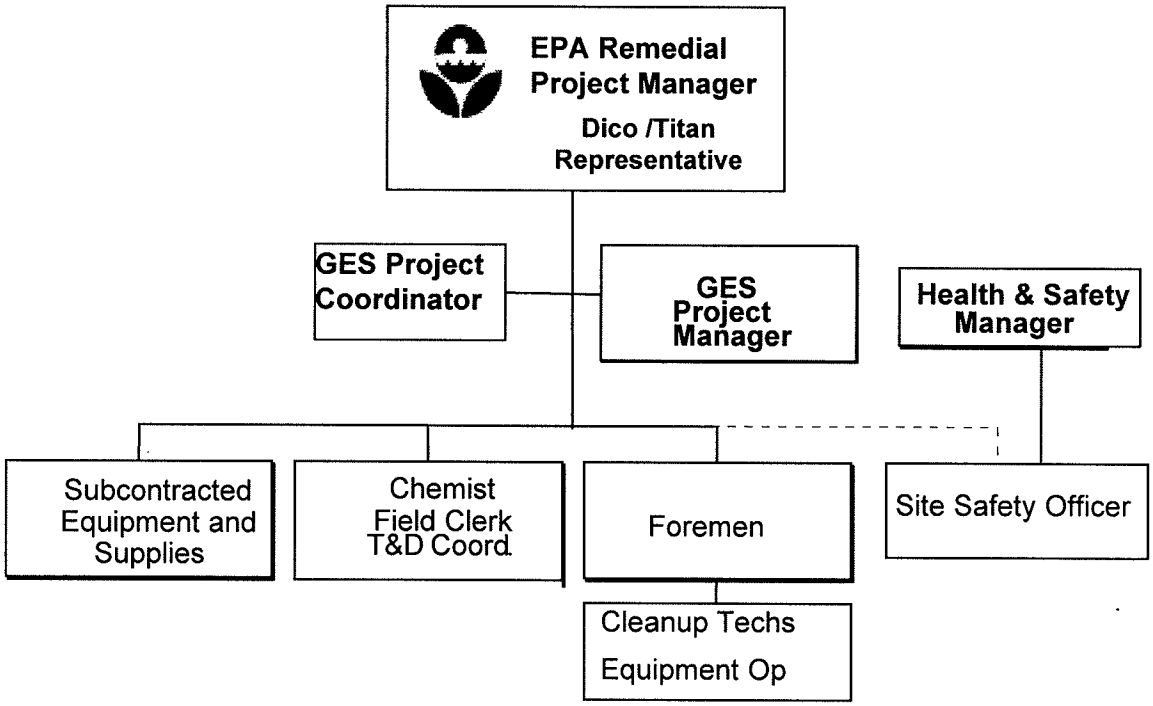
3.0 PROJECT ORGANIZATION AND RESPONSIBILITIES

This section addresses the project organization and team member responsibilities relative to the **QAPP**. QA/QC is not the responsibility of one individual or group, but encompasses every GES employee, subcontractor, and supplier throughout all project-related functions. GES has established a project team to ensure that work is effectively managed and consistently produces high-quality results. It is the responsibility of the project team management to ensure that QA/QC activities take place at all levels in the project organization, and that all personnel associated with the project have a high level of quality control awareness and commitment. Key personnel and job descriptions for the required chemical data acquisition are identified below and in the project organization chart, **Figure 3-1,** and in the subcontracted off-site laboratory.

FIGURE 3-1 GES PROJECT ORGANIZATION



3.1 GES Personnel

The GES QA Program begins with the establishment of a project team that is assigned to each project that GES undertakes. The key parties discussed below are those associated with the implementation, documentation, oversight, and management of acquiring chemical data in order to meet the requirements for this project. Their responsibilities are:

Project Coordinator: Responsible for overall program control and management.

Project Manager: Assists in the design, operations, scheduling, logistics, materials and supplies, data review, and report preparation. Coordinates all activities of the response effort under the direction of the RPM. Supervises all site personnel, manages equipment utilization, and approves all cost reporting.

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Site Safety Officer: Prepares and implements Site Health and Safety Plans, conducts safety meetings and audits.

Field Clerk: Tracks and records all daily costs using USEPA Form 1900-55. Conducts all site related procurement.

Foreman: Directs work crews in the completion of specific tasks.

Transportation and Disposal Coordinator: Prepares manifests and CERCLA off-site disposal report. Directs packaging and shipping of wastes in compliance with regulations.

Lead Chemist: The GES Chemist will be on site to direct sampling activities, perform waste characterization operations, and provide general technical support. The Chemist will also fill the role of QA/QC Supervisor under the direction of the Program QA Manager.

Other Team Personnel: All other personnel shown in **Figure 3-1** are responsible for performing field activities assigned to them; understanding and complying with the HASP and QAPP; and conducting themselves in a safe manner, mindful of the inherent hazards associated with work on this site.

3.2 Laboratory Personnel

Laboratory Project Manager: Ensures all resources of the laboratory are available as required and reviews final analytical reports.

Laboratory Operations Manager: Coordinates laboratory analyses; supervises in-house chain-of-custody; schedules sample analyses; oversees data review; oversees preparation of analytical reports; approves final analytical reports prior to submission to GES.

Laboratory Quality Assurance Officer: Oversees laboratory quality assurance; oversees QA/QC documentation; conducts detailed data review; decides laboratory corrective actions, if required; provides technical representation of laboratory QA procedures; prepares laboratory Standard Operation Procedures; approves the laboratory QAP.

Laboratory Sample Custodian: Receives and inspects the incoming sample containers; records the condition of the incoming sample containers; signs appropriate documents; verifies chain-of-custody and its correctness; notifies the laboratory manager and laboratory supervisor of sample receipt and inspection; assigns a unique identification number and customer number, and enters each into the sample receiving log; with the help of the laboratory manager, initiates transfer of the samples to appropriate lab sections; controls and monitors access/storage of samples and extracts.

The Laboratory Project Manager and QA Officer prior to release of all data to GES will provide Independent quality assurance for subsequent data quality review, evaluation and reporting.

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4.0 QA OBJECTIVES FOR MEASUREMENT DATA

The overall QA objective is to develop and implement procedures for field sampling, chain-of-custody, laboratory analysis, and reporting that will provide valid results. Specific procedures for sampling, chain of custody, laboratory instruments calibration, laboratory analysis, reporting of data, internal quality control, audits, preventive maintenance of field equipment, and corrective action are described in other sections of this **QAPP**. The purpose of this section is to address the specific objectives for precision, accuracy, representativeness, completeness, and comparability (PARCC).

4.1 Level of Quality Control Effort

Field blank, trip blank, duplicate and matrix spike samples will be analyzed to assess the quality of the data resulting from field sampling. Field and trip blanks, consisting of distilled water, will be submitted to the analytical laboratories to provide the means to assess the quality of the data resulting from the field sampling. Field blank samples are analyzed to check for procedural contamination at the site that may cause sample contamination. Trip blanks are used to assess the potential for contamination of samples due to contaminant migration during sample shipment and storage. Duplicate samples are analyzed to check for sampling and analytical reproducibility. Matrix spikes provide information about the effect of the sample matrix on the digestion and measurement methodology. All matrix spikes are performed in duplicate and are hence referred to as MS/MSD samples. One matrix spike/matrix spike duplicate will be collected for every 20 or fewer investigative samples. MS/MSD samples are designated/collected for all analysis types.

The general level of the QC effort will be one field duplicate and one field blank for every 10 or fewer investigative samples.

The QC level of effort for the field measurements used in hazard categorization (HAZCAT) is dictated by the specified field method and/or field kit manufacturer instructions.

4.2 Representativeness

Representativeness expresses the degree to which data accurately and precisely represents a characteristic of a population, parameter variations at a sampling point, a process condition, or an environmental condition. Representativeness is a qualitative parameter that is dependent upon the proper design of the sampling program and proper laboratory protocol. The sampling program will be designed to provide data representative of site conditions. During development of this program, consideration will be given to existing analytical data, physical setting and processes. Ensuring that the **QAPP** is followed, proper sampling techniques are used, proper analytical procedures are followed, and sample holding times are not exceeded in the laboratory will satisfy the representativeness objective. Representativeness will be assessed by the analysis of field duplicated samples.

4.3 Precision, Accuracy, and Sensitivity

The fundamental QA objective with respect to accuracy, precision, and sensitivity of laboratory analytical data is to achieve the QC acceptance criteria of the analytical protocols. The accuracy, precision, and sensitivity of the SW-846 analyses are specified in the laboratory **QAP**.

4.4 Completeness

Completeness is a measure of the amount of valid data obtained from a measurement system compared to the amount that was expected to be obtained under normal conditions. It is expected that the

laboratory will provide data meeting QC acceptance criteria for 95 percent or more for all samples tested. Following completion of the analytical testing, the percent completeness will be calculated by the following equation.

$$\% \ Completeness = \frac{Valid\ Data}{Expected\ Data} \ x \ 100$$

4.5 Comparability

Comparability expresses the confidence with which one data set can be compared with another. The extent to which existing and planned analytical data will be comparable depends on the similarity of sampling and analytical methods. The procedures used to obtain the planned analytical data, as documented in the **QAPP**, are expected to provide comparable data. These new analytical data, however, may not be directly comparable to existing data (if available) because of difference in procedures and QA objectives.

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5.0 SAMPLING LOCATIONS AND PROCEDURES

Advance notification of all site sampling activities will be provided so the EPA or the EPA authorized representative may be present. GES anticipates that site sampling will consist of the following elements described in this section and conducted in accordance with the sampling bulk PCB remediation waste procedures in 40 CFR 761.265(a).

5.1 Metal Surface Sampling

If visual inspection reveals no indication of residual insulation or adhesive, the metal beam will be sampled to verify PCB concentrations do not exceed 10 ug/100cm^2 in accordance with 40 CFR 761.123. Using the EPA's recommended wipe sampling method, an indiscriminate "grab" sample will be collected from ten (10) percent of the metal beams visually identified not to contain residual insulation or adhesives to verify PCB concentration do not exceed 10 ug/100cm^2.

5.1.1 Metal Sample Identification

Metal beams relocated to the sampling area will each receive a consecutive numeric number followed by an alphabetic number to indicate the top (T), bottom (B), right (R) and left (L) sides of each beam. Since the width and height of the beams is approximately 10 cm, the total length of each beam will be equally divided into 10 cm sections to create individual 100 cm^2 sample areas. For example, a 10' long beam would be approximately 304 cm long, which would create approximately thirty (30) sample grids along each side of the metal beam. Therefore a PCB wipe sample taken from beam number 1 on the top side, 5' from the labeled end would have the distinct sample identification: 1T15

5.2 Soil Sample Collection Points

Once exposed, the soils beneath the existing metal beam stockpile areas will be sampled to verify PCBs do not exceed the 1 mg/kg cleanup standard for the Site. Each former metal beam stockpile area will be divided into equal-sized grids, not to exceed 10 by 10 feet as specified in 40 CFR 761.265(a). A surface soil sample will be taken at each grid point and combined into composite samples in accordance with 40 CFR 761.283 (b)(3) and 40 CFR 761.289. Any grid areas where soils exceed the 1 mg/kg PCB cleanup standard will be excavated in 1" lifts and the confirmation sampling repeated until analysis verifies the remaining site soils do not exceed the 1 mg/kg PCB concentration.

5.2.1 Soil Sample Identification

Each former metal beam stockpile area will be identified by a capitalized alphabetic letter with the x and y axis of the sample grids identified by consecutive numeric numbers and consecutive lower case alphabetic letters, respectively. Therefore, a sample collected from the first former metal stockpile area on the grid point of the 3rd column and 3rd row would have the distinct sample identification: **A3c**

Grid point surface samples consolidated into composite samples for laboratory submission and subsequent confirmation analysis will be carefully documented in the site sampling log for tracking and clearance purposes. Composite samples submitted to the lab will be distinguished by the assigned capitol letter for the metal beam stockpile area and consecutive numeric numbers. Therefore, the first composite sample submitted from the first former metal beam stockpile area would have the distinct composite sample identification: **A1**

Table 5-0
Confirmation Sampling Requirements

ANALYSIS IDENTIFICATION	METHOD SW-846 unless noted	Container Type	Sample Preservation	Holding Time
PCB (Aroclors only)	8082A	Glass with PTFE cap	4° C	7 days before extraction 40 days after extraction

All samples to be shipped off site for analysis will be removed, stored, labeled, and shipped according to the protocols established in this **QAPP**. The sample jars will be placed in coolers for shipment to the State-certified laboratory for analysis. Prior to shipment, all samples will be logged in the site chain-of-custody logbook and copies of sample log records will accompany the samples to the laboratory.

5.3 Field Procedures

Once the exact location where the 100 square centimeter (cm^2) wipe sample will be taken is determined, the sample location may be marked or framed by a template. The sampler must be conscious of potential cross contamination during all stages of the wipe sampling activity. All surfaces should be wiped with as uniform pressure as possible to thoroughly wipe materials off the surface. Wiping proceeds from left to right in rows from the top to the bottom of the framed sampling area. The sampling area is wiped again with the same uniform pressure in columns from the top to the bottom from the left side to the right side of the entire framed area. The objective is to systematically, thoroughly, and consistently wipe the entire framed area twice, each time from a different direction and orientation. Once the area has been wiped, the sampling gauze is allowed to air dry and is replaced in the sample vial. The sample vial is then labeled, the chain of custody filled out, and the sample prepared/stored for shipping.

To minimize the need for sample equipment decontamination, samples will be collected with dedicated, disposable sampling equipment whenever possible. On the square-based grid system overlaid at each former metal stockpile area a surface soil sample will be taken at each grid point and combined into composite samples for laboratory submission.

The procedure for compositing samples collected at grid points in accordance with 40 CFR 761.283 (b)(3) allows for consolidation of a maximum nine individual samples with the maximum dimensions of the area enclosing a nine grid point composite being two grid intervals bounded by three collinear grid points. All samples in the composite will be taken at the same depth. The composite samples will be prepared using equal volumes of each grid point sample, mixed thoroughly and of sufficient weight and portion for the chemical analyst to measure the concentration of PCBs and still have sufficient analytical detection sensitivity to reproducibly measure PCBs.

If sampling of a specific medium is required and not addressed by procedures specified in this **QAPP**, sampling procedures outlined in "*Samplers and Sampling Procedures for Hazardous Waste Streams,*" (EPA 600/2-80-018) and "*Environmental Investigations Standard Operating Procedures and Quality Assurance Manual*", (EISOPQAM), USEPA Region IV, May 1996 (with March 1997 revisions) will be followed in the collection of samples from various media at the site. If modifications of the procedures provided herein or in the above referenced documents are required, the Project Manager and QA Manager will prepare written sampling procedures prior to collection of the sample and submit the procedures for approval to the RPM.

5.3.1 Field QA/QC Samples

GES will be responsible for the collection of field QA/QC samples for independent data quality evaluation. Two sets of splits or duplicates will be collected at a rate of 10 percent (%) of the

samples collected. One set of duplicates will be sent to an approved GES subcontracted laboratory for analysis (QC) and the other set of duplicates will be sent to an independent laboratory (QA) as designated by the RPM. The QA/QC measurements for the sampling program includes the requirements for trip blanks, field blanks, and duplicate and split samples, described in this **QAPP**.

5.3.1.1 Blank and Duplicate Sampling Procedures

The quality control procedures to be performed for this project require the sampling and analysis of specific types of quality control samples. The following procedures shall be used to obtain these samples.

Trip blanks are a sample of laboratory analyte-free water that accompanies sample containers to and from the sampling location, and are shipped along with the samples, to the laboratory for VOC analysis. Trip blanks will be prepared by the laboratory, and labeled and treated as separate sample.

Field blanks will be collected at a frequency of one for every ten analytical samples. Field blanks will be treated as a separate, individual sample for labeling and chain-of-custody purposes. Field blanks are collected using contaminant free distilled water as the sample medium. The distilled water is allowed to contact the decontaminated sampling equipment, for example, poured into the auger used for sample collection, and then is placed into the appropriate containers for shipment and analysis. Field blanks should be obtained and analyzed for all parameters that are applicable to the samples being taken.

Field duplicates will be collected at a frequency of one duplicate for every ten analytical samples. Field duplicates are collected, identified and analyzed as a separate analytical sample. Field duplicates are collected using the same methods as the analytical samples.

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6.0 SAMPLE CUSTODY AND PRESERVATION

6.1 Field Chain-of-Custody Procedures

The sample packaging and shipment procedures summarized below will ensure that the samples will arrive at the laboratory with the chain-of-custody intact. The protocol for specific sample numbering using case numbers and traffic report numbers, if applicable, and other sample designations are included in this **QAPP**.

6.1.1 Field Procedures

- The field sampler is personally responsible for the care and custody of the samples until they are transferred or properly dispatched. As few people as possible should handle the samples.
- All bottles will be tagged with sample numbers and locations.
- Sample tags are to be completed for each sample using waterproof ink unless prohibited by weather conditions. For example, a logbook notation would explain that a pencil was used to fill out the sample tag because the ballpoint pen would not function in freezing weather.
- The Chemist will review all field activities to determine whether proper custody procedures were followed during the fieldwork and decide if additional samples are required.

6.1.1.1 Sample Identification System

Metal beams relocated to the sampling area will each receive a consecutive numeric number followed by an alphabetic number to indicate the top (T), bottom (B), right (R) and left (L) sides of each beam. Since the width and height of the beams is approximately 10 cm, the total length of each beam will be equally divided into 10 cm sections to create individual 100 cm^2 sample areas. For example, a 10' long beam would be approximately 304 cm long, which would create approximately thirty (30) sample grids along each side of the metal beam. Therefore a PCB wipe sample taken from beam number 1 on the top side, 5' from the labeled end would have the distinct sample identification: 1T15

Each former metal beam stockpile area will be identified by a capitalized alphabetic letter with the x and y axis of the sample grids identified by consecutive numeric numbers and consecutive lower case alphabetic letters, respectively. Therefore, a sample collected from the first former metal stockpile area on the grid point of the 3rd column and 3rd row would have the distinct sample identification: **A3c**

Grid point surface samples consolidated into composite samples for laboratory submission and subsequent confirmation analysis will be carefully documented in the site sampling log for tracking and clearance purposes. Composite samples submitted to the lab will be distinguished by the assigned capitol letter for the metal beam stockpile area and consecutive numeric numbers. Therefore, the first composite sample submitted from the first former metal beam stockpile area would have the distinct composite sample identification: **A1**

A sample numbering system will be used to identify each quality control sample. The Lead Chemist or designee will maintain a logbook containing the sample identification listings. Sample type will be identified by a two or three letter code corresponding to the sample type.

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The location code will follow the sample type code. The location code consists of a two- to five-digit numeric or alphanumeric code that indicates the sample location. Trip blanks and field blanks will be included in the system. Duplicate samples will not be specifically identified as QC samples in the sample number but will have a different (sequential) number that will be noted in the sample logbook.

6.1.1.2 Initiation of Field Custody Procedure

All sampling events to be conducted by GES will be scheduled with the analyzing laboratory to ensure that the lab can accept the samples. If possible, the analyzing lab will be notified at least two weeks prior to any sampling event and informed of the approximate number of samples to be collected, the parameters to be analyzed for, and the anticipated date and time of sample arrival.

6.1.2 Field Logbooks/Documentation

Field logbooks will provide the means of recording data collecting activities performed. As such, entries will be described in as much detail as possible so that persons going to the site could re-construct a particular situation without reliance on memory.

Field logbooks will be bound, field survey books or notebooks. Logbooks will be assigned to field personnel, but will be stored in the document control center when not in use. The project-specific document number will identify each logbook.

The title page of each logbook will contain the following:

- Person to whom the logbook is assigned;
- Logbook number;
- Project name;
- Project start date; and
- End date.

Entries into the logbook will contain a variety of information. At the beginning of each entry, the date, start time, weather, names of all sampling team members present, level of personal protection being used, and the signature of the person making the entry will be entered. The names of visitors to the site, field sampling or investigation team personnel and the purpose of their visit will also be recorded in the field logbook.

Measurements made and samples collected will be recorded. All entries will be made in ink and no erasures will be made. If an incorrect entry is made, the information will be crossed out with a single strike mark. Whenever a sample is collected, or a measurement is made, a detailed description of the location shall be recorded. All equipment used to make measurements will be identified, along with the date of calibration.

Samples will be collected following the sampling procedures documented in this **QAPP**. The equipment used to collect samples will be noted, along with the time of sampling, sample description, depth at which the sample was collected, volume and number of containers. Sample identification numbers will be assigned prior to sample collection. Field duplicate samples, which will receive an entirely separate sample identification number, will be noted under sample description.

The equipment used to collect samples will be noted, along with the time of sampling, sample description, depth at which the sample was collected, volume and number of containers. Sample identification numbers will be assigned prior to sample collection. Field duplicate samples, which will receive an entirely separate sample identification number, will be noted under sample description.

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6.1.3 Transfer of Custody and Shipment Procedures

A properly completed chain-of-custody form must accompany all samples sent for off-site analyses. The sample numbers and locations will be listed on the chain of custody form. When transferring the possession of samples, the individuals relinquishing and receiving will sign, date, and note the time on the chain-of-custody form. The chain-of-custody form documents transfer of custody of samples from the sampler to another person, to a mobile laboratory, to the permanent laboratory, or to/from a secure storage area.

Samples will be properly packaged for shipment and dispatched to the appropriate laboratory for analysis, with a separate signed custody record enclosed in each sample box or cooler. Shipping containers will be locked and secured with strapping tape and EPA custody seals for shipment to the laboratory. The preferred procedure includes use of a custody seal attached to the front right and back left of the cooler. The custody seals are covered with clear plastic tape. The cooler is strapped shut with strapping tape in at least two locations.

A chain-of-custody record identifying the contents of each sample container will accompany each sample shipment. The original record will accompany the shipment. Copies will be retained at the site for inclusion in the site record.

If the samples are sent by common carrier, a bill of lading should be used. Receipts of bills of lading will be retained as part of the permanent documentation. If sent by mail, the package will be registered with return receipt requested. Commercial carriers are not required to sign-off on the custody form as long as the custody forms are sealed inside the sample cooler and the custody seals remain intact.

The evidence files for analytical data are maintained at the GES office in Buford, Georgia. The content of the evidence file will include all relevant records, reports, correspondence, logs, field logbooks, laboratory sample preparation and analysis logbooks, data package, pictures, subcontractor's reports, chain of custody records/forms, data review reports, etc. The evidence file will be under custody of the QA Manager in a locked, secured area.

6.1.3.1 Packaging and Shipment

The sampling team will prepare the samples for shipment to the laboratory. Following sample collection, the exterior of the sample containers will be decontaminated near the sampling location. Sample documentation and packaging will be performed in accordance with the procedures outlined in the "*Environmental Investigations Standard Operating Procedures and Quality Assurance Manual*", (EISOPQAM), USEPA Region 4, May 1996 (with March 1997 revisions). Samples should be packaged for shipment as follows:

- A sample tag is attached to the sample bottle.
- All bottles are taped closed with strapping tape. Liquid levels should be marked with a wax pencil if bottles are partially full.
- Each sample bottle is placed in a separate plastic bag, which is then sealed. As much air as possible is squeezed from the bag before sealing.
- A sample cooler will be used as a shipping container. In preparation for shipping samples, the drain plug should be taped shut from the outside. Approximately 1 inch of packing material is placed in the bottom of the cooler.
- The bottles are placed in the sample cooler.

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- Water samples for low-level organic analysis and low-level inorganic analysis must be shipped cooled to 4 °C with ice.

- The cooler is filled with packing material. Sufficient packing material should be used to prevent sample containers from making contact during shipment.

- The paperwork going to the laboratory is placed inside a plastic bag. The bag is sealed and taped to the inside of the cooler lid. A copy of the chain-of-custody form should be included in the paperwork sent to the laboratory. The last block on the chain-of-custody form should indicate the overnight carrier and air bill number. The air bill must be filled out before the samples are handed over to the carrier.

- The cooler is closed and taped shut with strapping tape.

- At least two signed custody seals are placed on the cooler, one on the front and one on the back. Additional seals may be used if the sampler or shipper thinks more seals are necessary.

- The cooler is handed over to the overnight carrier, typically Federal Express. A standard air bill is necessary for shipping low concentration samples.

6.2 Sample Containers

All sample containers used for sample collection and analysis for this project will be prepared according to the procedures contained in "*Specifications and Guidance for Obtaining Contaminant-Free Sample Containers*", USEPA, April 1990. This document specifies the acceptable types of containers, the specific cleaning procedures to be used before samples are collected, and QA/QC requirements relevant to the containers and cleaning procedures. The analyzing laboratory will supply containers and perform all the necessary QA/QC functions specified by the document.

6.3 Sample Preservation

Sample preservation techniques for individual off-site laboratory analyses are designated by the following codes, listed in **Table 6-1**. Requirements for on-site waste HAZCAT testing are not listed. These tests will be performed immediately (or as soon as possible) and the requirements for sample volume, container type, preservation and maximum holding time are presented, as applicable, in individual test procedures presented in **Section 5.0**

6.4 Sample Holding Times

Analytical holding times for Site specific analyses are listed in **Table 5-1**.

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7.0 ANALYTICAL PROCEDURES

Laboratory turnaround times are an important consideration in performing environmental projects and will vary depending on project requirements and data objectives. Most projects require accelerated turnaround times due to time constraints. The minimum turnaround achievable is three (3) days from the sampling date, with the allowance for shipping, a leaching, extraction or digestion procedure, and matrix analysis. In the case of shortened turnaround time there are always added costs, therefore if possible, priority turnarounds will be only used when absolutely necessary. Normal turnaround times expected from subcontracted laboratories will be approximately two weeks from date of laboratory receipt. All soil samples collected during field sampling activities will be analyzed by GES' subcontracted, EPA recognized, analytical laboratory.

7.1 Laboratory Analysis

All waste generated during decontamination activities will be containerized for offsite disposal at their original concentration. {40 CFR 761.79 (g)(2)}. GES will segregate and consolidate any waste samples for submission to an independent EPA-approved laboratory for waste disposal profiling as well as any testing related to PCB cleanup standards. A laboratory accredited under the National Environmental Laboratory Accreditation Program (NELAP) and approved by the EPA will perform analyses required for waste disposal profile approvals. These will include quantitative analyses of waste products, decontamination waste and any other waste generated from removal activities. GES will obtain RPM approval of all parameters to be measured by the off-site laboratory. Under time constraints, such as anticipated severe weather, laboratory cost minimization or meeting deadlines, GES will consider shipping the samples for disposal under a "worst case scenario" that has been discussed and approved by the EPA Remedial Project Manager.

- Testing parameters will be based on disposal methods (landfilling), or incineration, pending the original concentration of total PCB.
- Composite samples will be compiled the same day they are sent to laboratory.
- Data intended for use in characterizing wastes for disposal will meet the QA 1 requirements as specified in "QA/QC Guidance for Removal Activities" (OSWER Directive 9360.4-01)(April 990).
- Composite samples will be submitted for analytical testing required for soil disposal (SW846 - Method 8082A; Aroclors only).

Procedures to be used in the sample analyses described in this **QAPP** will be those practices, methods, protocols, and procedures set forth in:

- USEPA SW-846, "*Test Methods for Evaluating Solid Waste: Physical/Chemical Methods,*" Third Edition (April, 1998);
- ASTM *"Annual Book of ASTM Standards,"* Section 11, Water and Environmental Technology, (most recent version/edition);
- All laboratory procedures are documented in writing as standard operating procedures (SOP) or method procedures (MP) which are edited and controlled by the laboratory QA Officer. Internal quality control procedures for analytical services will be conducted by the laboratory in accordance with their standard operating procedures and the individual method requirements in a manner consistent with appropriate SOW for each project. Laboratory documentation will include (but not limited to):
    - Procedures for sample preparation;
    - Instrument start-up and performance check;
    - Procedures to establish the actual and required detection limits for each parameter;
    - Initial and continuing calibration check requirements;
    - Specific methods for each sample matrix type; and

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- Required analyses and QC acceptance limits for method blanks, trip blanks (as appropriate), field blanks, matrix spikes, matrix spike duplicates, and laboratory control samples (USEPA or National Institute of Standards and Technology (NIST) reference samples or laboratory prepared blank/spikes).

8.0 CALIBRATION PROCEDURES AND FREQUENCIES

8.1 Laboratory Instruments

Calibration procedures and frequency are specified in the laboratory **QAP**. Calibration of laboratory equipment will be based on approved written procedures. Records of calibration, repairs, or replacement will be filed and maintained by the designated laboratory personnel performing quality control activities. These records will be filed at the location where the work is performed and will be subject to QA audit. For all instruments, the laboratory will maintain a factory-trained repair staff with in-house spare parts or will maintain service contracts with vendors.

The records of calibration will be kept at the contract Laboratory as follows:

- All involved instruments will have record of calibration affixed with an assigned record number.
- A label will be affixed to each instrument showing manufacturer, model numbers, date of last calibration, by whom calibrated (signature), and due date of next calibration reports and compensation or correction figures will be maintained with instrument logs.
- A written calibration procedure will be available for each piece of test and measurement equipment.

9. DATA REDUCTION, VALIDATION, AND REPORTING

9.1 Field Measurements and Sample Collection

Raw data from field measurements and sample collection activities will be recorded in the appropriate field log book(s). If the data are to be used in the project reports, they will be reduced or summarized and the method of reduction will be documented in the report.

9.2 Laboratory Services

GES' subcontracted off-site laboratory will perform in-house analytical data reduction and validation under the direction of their laboratory QA Officer. The laboratory QA Officer is responsible for assessing data quality and advising of any data which were rated "preliminary" or "unacceptable" or other notations which would caution the data user of possible unreliability. Data reduction, validation, and reporting by the laboratory will be conducted as follows:

- Raw data produced by the analyst is turned over to the respective area supervisor.
- The area supervisor reviews the data for attainment of quality control criteria as outlined in established EPA SW-846 methods.
- Upon acceptance of the raw data by the supervisor, a computerized report is generated and sent to the laboratory QA Officer.
- The laboratory QA Officer will complete a thorough audit of reports at a frequency of one in ten, and an audit of every report for consistency.
- The QA Officer and area supervisors will decide whether any sample retesting is required.
- Upon acceptance of the preliminary reports by the QA Officer, final reports will be generated and signed by the laboratory Project Manager. The laboratory package shall be presented in the same order in which the samples were analyzed.

D0605

Data reduction reporting procedures will be those specified in the EPA SW-846 for inorganic and organic analyses. The laboratory will prepare and retain full analytical and QC documentation similar to that required by the Contact Laboratory Program (CLP). The laboratory will supply hard copy of the retained information as well as electronic versions of these documents. Laboratory analytical results will be reported in the same chronological order in which it is analyzed along with QC data. The laboratory will provide the following information to GES in each analytical data package submitted:

- Cover sheets listing the samples included in the report and narrative comments describing problems encountered in analysis.
- Tabulated results of inorganic and organic compounds identified and quantified.
- Analytical results for QC sample spikes, sample duplicates, initial and continuous calibration verifications of standards and blanks, standard procedural blanks, laboratory control samples and ICP interference check samples.
- Tabulation of instrument detection limits determined in pure water.
- Raw data system printouts (or legible photocopies) identifying date of analyses, analyst, parameters determined, calibration curve, calibration verifications, method blanks, sample dilutions, sample duplicates, spikes, and control samples.

For organic analyses, the data packages must include matrix spikes, matrix spike duplicates, surrogate spike recoveries, chromatogram(s), GC/MS spectra and computer printouts. A copy of the data package will be reported to the RPM for assessment in the reports specified in the WP for the site.

GES' assessment will be accomplished by the joint efforts of the QA Manager and Project Manager. The data assessment by the Project Manager will be based on the criteria that the sample was properly collected and handled according to the **QAPP**. The QA Manager will conduct a systematic review of the data for compliance with the established QC criteria based on the spike, duplicate and blank results provided by the laboratory. An evaluation of data accuracy, precision, sensitivity and completeness, based on criteria in **Section 4.0**, will be performed and presented in the reports specified in the WP for the site.

The data review should identify any out-of-control data points and data omissions and interact with the laboratory, to correct data deficiencies. Decisions to repeat sample collection and analyses may be made by the Project Manager, QA Manager and at the direction of the RPM based on the extent of the deficiencies and their importance in the overall context of the project.

D0606

10. INTERNAL QUALITY CONTROL CHECKS

10.1 Field Sample Collection

Quality control procedures for sample collection are described in **Section 5.0** of this **QAPP**. The assessment of field sampling precision and accuracy will be made through collection of field duplicates in accordance with the applicable procedures described in this **QAPP**.

10.2 Laboratory Analysis

Two types of quality assurance will be used by GES' subcontracted laboratory to ensure the production of analytical data of known and documented usable quality. These two types are detailed in this section.

10.2.1 QA Program

The subcontracted laboratory possesses a written **QAP** that provides rules and guidelines to ensure the reliability and validity of work conducted at the laboratory. Compliance with the QA/QC program is coordinated and monitored by the laboratory QA Officer, who is independent of the operations. The stated objectives of the laboratory QA/QC Program are to:

- Ensure that all procedures are documented, including any changes in administrative and/or technical procedures.
- Ensure that all analytical procedures are conducted according to sound scientific principles and that all procedures have been validated.
- Monitor the performance of the laboratory by a systemic inspection program and provide for a corrective action as necessary.
- Collaborate with other laboratories in establishing quality levels, as appropriate.
- Ensure that all data are properly recorded and archived.

All laboratory procedures are documented in writing as standard operating procedures (SOP) or method procedures (MP) which are edited and controlled by the laboratory QA Officer. Internal quality control procedures for analytical services will be conducted by the laboratory in accordance with their standard operating procedures and the individual method requirements in a manner consistent with appropriate SOW for each project.

10.2.2 Quality Control Checks

These specifications include the types of audits required (sample spikes, surrogate spikes, reference samples, controls, blanks), the frequency of each audit, the compounds to be used for sample spikes and surrogate spikes, and the quality control acceptance criteria for these audits.

The laboratory will document, in each data package provided that both initial and ongoing instrument and analytical QC functions have been met. The laboratory will reanalyze any samples analyzed in non-conformance with the QC criteria, if sufficient sample volume is available. It is expected that sufficient volume of samples will be collected for reanalysis.

D0607

11. PERFORMANCE AND SYSTEMS AUDITS

Performance and system audits of both field and laboratory activities will be conducted to verify that sampling and analysis are performed in accordance with the procedures established in the **QAPP**. The audits of field and laboratory activities include two separate independent parts: Internal and External audits.

11.1 Field Audits

The GES QC Supervisor and/or QA Manager will conduct internal audits of field activities (sampling and measurements). The audits will include examination of field sampling records, field instrument operating records, sample collection, handling and packaging in compliance with the established procedures, maintenance of QA procedures, chain of custody, etc. These audits will occur at the onset of the project to verify that all established procedures are followed. Follow-up audits will be conducted to correct deficiencies, and to verify that QA procedures are maintained throughout the remedial action. The audits will involve review of field measurement records, instrumentation calibration records, and sample documentation. U.S. EPA Region VII will conduct any external audits.

11.2 Laboratory Audits

The GES QA Manager and/or laboratory QA Officer may conduct the internal performance and system audits of the laboratory. The system audits, which will be done on an annual basis, will include examination laboratory documentation on sample receiving, sample log-in, sample storage, chain-of-custody procedure, sample preparation and analysis, instrument operating records, etc. The performance audits will be conducted on a semi-annual basis. Blind QC samples will be prepared and submitted along with project samples to the laboratory for analysis throughout the project. The QA Officer and GES QA Manager will evaluate the analytical results of these blind performance samples to ensure the laboratories maintain good performance.

D0608

12. PREVENTIVE MAINTENANCE

12.1 Laboratory Instruments

As part of their QA/QC Program, a routine preventative maintenance program is conducted by GES' subcontracted laboratory; to minimize the occurrence of instrument failure and other system malfunctions. All laboratory instruments are maintained in accordance with manufacturer's specifications and the requirements of the specific method employed. This maintenance is carried out on a regular, scheduled basis, and is documented in the laboratory instrument service logbook for each instrument. Emergency repair or scheduled manufacturer's maintenance is provided under a repair and maintenance contract with factory representatives.

Preventative maintenance is an organized program of actions (such as equipment cleaning, lubricating, reconditioning, adjustment, and/or testing) in the field or within the laboratory taken to maintain proper instrument and equipment performance and to prevent instruments and equipment from failing during use. An adequate preventative maintenance program increases reliability of a measurement system. A preventative maintenance program considers the following:

- Instruments, equipment, and parts thereof subject to wear, deterioration, or other change in operational characteristics without periodic maintenance;
- Spare parts that should be available within the laboratory to minimize downtime; and
- Frequency that maintenance is required.

D0609

13. SPECIFIC PROCEDURES TO ASSESS DATA PRECISION, ACCURACY, AND COMPLETENESS

13.1 Field Measurements

The Lead Chemist/QC Supervisor will assess Field data quality. This individual will review the field results for compliance with the established QC criteria that are specified in this **QAPP**. Accuracy of the field measurements will be assessed using (if applicable) daily instrument calibration, calibration check, and analysis of blanks. Precision will be assessed on the basis of reproducibility by multiple reading of a single sample. Data completeness will be calculated using the following equation.

$$\% \ Completeness = \frac{Valid\ Data}{Expected\ Data} \ x\ 100$$

13.2 Laboratory Data

Laboratory results will be assessed for compliance with required precision, accuracy, completeness and sensitivity as follows:

13.2.1 Precision

Precision of laboratory analysis will be assessed by comparing the analytical results between matrix spike/matrix spike duplicate (MS/MSD) for organic analysis, and laboratory duplicate analyses for inorganic analysis. The relative percent difference (%RPD) will be calculated for each pair of duplicate analysis using the following equation.

$$RPD = \frac{(X1\text{-}X2)}{[(X1 + X2)\ /2]} \ x\ 100$$

Where: X1 = First sample value (original or MS value)
X2 = Second sample value (duplicate or MSD value)

13.2.2 Accuracy

Accuracy of laboratory results will be assessed for compliance with the established QC criteria that are described in **Section 4.0** of the **QAPP** using the analytical results of method blanks, reagent/ preparation blank, matrix spike/matrix spike duplicate samples, field blank, and bottle blanks. The percent recovery (%R) of matrix spike samples will be calculated using the following equation.

$$R = (X - N / S)\ x\ 100$$

Where: X = The analyte concentration determined experimentally from the spiked sample.
N = the background level determined by a separate analysis of the unspiked sample.
S = the amount of the spike added.

D0610

13.2.3 Completeness

The data completeness of laboratory analyses results will be assessed for compliance with the amount of data required for decision making. The completeness is calculated using the equation in **Section 13.1**.

13.2.4 Sensitivity

The achievement of method detection limits depends on instrumental sensitivity and matrix effects. Therefore, it is important to monitor the instrumental sensitivity to ensure the data quality through constant instrument performance. The instrumental sensitivity will be monitored through the analysis of method blank, calibration check sample, and laboratory control samples, etc.

D0611

14. CORRECTIVE ACTION

Corrective actions may be required for two classes of problems, analytical/equipment problems and non-compliance problems. Analytical/equipment problems may occur during sampling and sample handling, sample preparation, laboratory instrumental analysis, and data review.

For non-compliance problems, a formal corrective action program will be determined and implemented at the time the problem is identified. The person who identifies the problem is responsible for notifying the Project Manager. If the problem is analytical in nature, information on these problems will be promptly communicated to the QA Manager. Implementation of corrective action will be confirmed in writing through the same channels. The Project Manager will inform the QA Manager and the RPM of any non-compliance problems and request approval of any changes to the WP or **QAPP** as long as the project schedule permits. Any non-conformance with the established quality control procedures in the **QAPP** will be identified and corrected to comply with the **QAPP**.

Corrective actions will be implemented and documented in the field record book. No staff member will initiate corrective action without prior communication of findings through the proper channels. If corrective actions are insufficient, the Project Manager, QA Manager, or RPM may stop work.

14.1 Sample Collection/Field Measurements

Technical staff and project personnel will be responsible for reporting all suspected technical or QA non-conformances or suspected deficiencies of any activity or issued document by reporting the situation to the Project Manager. This manager will be responsible for assessing the suspected problems in consultation with the QA Manager on making a decision based on the potential for the situation to impact the quality of the data. If it is determined that the situation warrants a reportable non-conformance requiring corrective action, then a nonconformance report will be initiated by the QA Manager. The Project Manager will be responsible for ensuring that corrective action for non-conformances are initiated by:

- Evaluating all reported non-conformances;
- Controlling additional work on non-conforming items;
- Determining disposition or action to be taken;
- Maintaining a log of non-conformances;
- Reviewing non-conformance reports and corrective actions taken; and
- Ensuring non-conformance reports are included in the final site documentation in project files.

If appropriate, the Project Manager will ensure that no additional work that is dependent on the non-conforming activity is performed until the corrective actions are completed. The Project Manager or his designee is responsible for all site activities. In this role, the Project Manager at times is required to adjust the site programs to accommodate site specific needs. When it becomes necessary to modify a program, the Project Manager notifies the Program Manager of the anticipated change and implements the necessary changes after obtaining the approval of the Program Manager and the RPM. Prior to implementing any changes to the WP, the Project Manager will notify the Program Manager and RPM. The change in the program will be documented. The Program Manager must approve the change in writing or verbally prior to field implementation, if feasible. If unacceptable, the action taken during the period of deviation will be evaluated in order to determine the significance of any departure from established program practices and action taken.

The Project Manager for the Site is responsible for the controlling, tracking, and implementation of the identified changes. Reports on all changes will be distributed to all affected parties, which include the RPM.

D0612

15. QA REPORTS TO MANAGEMENT

All quality assurance issues shall be incorporated into the reports that are submitted to the RPM as specified in the WP. Analytical and QC data will be included in the report that will discuss the validity of the results in the context of QA/QC procedures as well as a summation of all QA/QC activities. Other QA/QC issues that will be included in the reports shall include but not be limited to:

- Changes in the QA Project Plan;
- Results of technical systems and performance evaluation audits;
- Significant QA/QC problems, recommended solutions, and results of corrective actions;
- Data quality assessments in terms of precision, accuracy, representativeness, completeness, comparability, and method detection limit;
- Indications of whether the QA objectives were met, and;
- Limitations on use of the measurement data.

D0614