MISSISSIPPI DEPARTMENT OF ENVIRONMENTAL QUALITY

QUALITY MANAGEMENT PLAN

QMP-004-R2

September 19, 2019

Mississippi Department of Environmental Quality
Quality Management Plan

Concurrence and Approvals

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INTRODUCTION

This Quality Management Plan (QMP) documents the process the Mississippi Department of Environmental Quality (MDEQ) follows to plan, implement, and assess the effectiveness of its quality assurance and quality control (QA/QC) operations applied to environmental programs. The process of planning, implementing, and assessing these management systems is called quality management, and the product of this process is called the Quality System. The Quality Management Plan describes the Quality System of MDEQ. This document is intended for use by MDEQ managers and staff, as well as those organizations producing environmental data under a MDEQ external agreement (*i.e.*, contract, grant, cooperative agreement, or interagency agreement). This document provides a connection between Quality Assurance (QA) policy and its implementation in Mississippi.

The QMP is reviewed annually and updated as needed, but at least every five years. Upon approval by the Environmental Protection Agency (EPA), MDEQ plans to make this version of the QMP available electronically to MDEQ staff via the intranet and to stakeholders on the MDEQ website.

The QMP contains 10 sections organized to parallel federal guidelines and national standards for quality assurance:

- Management and Organization
- Quality System Components
- Personnel Qualifications and Training
- Procurement of Items and Services
- Documents and Records
- Computer Hardware and Software
- Planning
- Implementation of Work Processes
- Assessment and Response
- Quality Improvement

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ESSENTIAL DEFINITIONS

The following definitions are essential to understanding the roles, responsibilities, policies, and procedures outlined in this document:

- Data Administration - Concerned with the content of data. Sets effective and appropriate guidelines and standards for data maintained in database systems. Responsible for the content of the database. Responsible for creating standard procedures for data collection and entry, identifying and ensuring standard data formats, creating standard operating procedures for data collection and entry, verifying data integrity and identifying inconsistencies and redundancies within and between database systems, and coordinating with application programmers and analysts.

- Data Quality Objectives (DQOs) - A systematic planning system designed to produce qualitative and quantitative statements that clarify project objectives, define the appropriate type of environmental data, delineate the decision rules, and specify tolerable levels of decision error.

- Environmental Data - Information collected directly from measurements, produced from models, or compiled from other sources such as databases or literature, which are used for decision making purposes.

    - Internal Data - Data generated for MDEQ programs with MDEQ staff having primary responsibility for decision-making. MDEQ's quality assurance system requirements apply to these data. Contracts that produce environmental data fall into this category if MDEQ staff is the primary decision maker.

    - External Data - Data generated by organizations other than MDEQ that are funded by MDEQ through grants, contracts and/or interagency agreements.

- Environmental Technology - Pollution control devices and systems, waste treatment processes and storage facilities, and site remediation technologies that are used to remove contaminants from the environment or prevent contaminants from entering the environment.

- Graded Approach - The process of selecting the elements needed in a project-level planning document based on the complexity of the project or study undertaken and the degree of confidence needed in the environmental data, and the intended use of the results.

- Quality Assurance (QA) - An integrated system of activities including planning, implementation, and assessment to ensure that environmental data are of known and documented quality and that environmental technology produces the desired results.

- Quality Assurance Project Plan (QAPP) - A critical planning document for a project or task, describing how data collection activities are planned, implemented, and assessed. This is sometimes referred to as a Sampling and Analysis Plan (SAP).

- Quality Control (QC) - The overall system of technical activities that measure the performance of a process or item against defined standards to ensure that the process or item meets the pre-defined standards of the stakeholder.

- Quality System - A structured and documented management system describing the quality assurance policies and procedures for: (a) ensuring that environmental data are of known and documented quality; and, (b) that environmental technology is designed, constructed, and operated in a manner to produce the desired environmental results.

1. MANAGEMENT AND ORGANIZATION

1.1 Departmental Organization

MDEQ is organized into Offices. Offices are comprised of Divisions, which are managed by Division Chiefs. Divisions are composed of multiple Branches managed by Branch Chiefs, and Branches may be divided into one or more Sections. Sections are managed by Section Chiefs. MDEQ's organizational structure is shown in Appendix A. Appendix B further identifies MDEQ program roles and responsibilities by listing major program elements (data gathering activities) and the responsible Division/Branch. The role of each MDEQ program organizational unit covered by the QA requirements is briefly described below:

1.1.1 Office of Pollution Control (OPC)

The Office of Pollution Control is comprised of the following Divisions:

1.1.1.1 Air Division

The Air Division is responsible for the protection and maintenance of air quality throughout Mississippi. The division adopts rules and regulations that are needed to control and reduce air pollutant emissions, performs ambient air monitoring and develops air emission inventories to assess air pollution conditions, develops plans and strategies for needed air quality improvements, maintains compliance with National Ambient Air Quality Standards, and assists the Environmental Permits Division and the Environmental Compliance and Enforcement Division in the implementation of air pollution control rules and regulations. The Air Division also safeguards Mississippians from dangerous chemicals and toxic air emissions with the enforcement of accidental release prevention regulations, asbestos and lead-based paint control regulations, and other hazardous air pollutant regulations. Finally, the Air Division operates certification programs to ensure that individuals and companies performing asbestos and lead-based paint activities are trained professionals. Appropriate QA/QC measures are utilized for the activities performed by the Air Division. These measures include activity and data audits, laboratory and system audits, and use of Standard Operating Procedures (SOP) manuals, QAPP documents, sampling and data chain-of-custody procedures, and other procedures as warranted.

1.1.1.2 Environmental Compliance and Enforcement Division

The Environmental Compliance and Enforcement Division (ECED) implements and oversees the majority of MDEQ's air and water compliance and enforcement activities. ECED is responsible for regulating thousands of sites for compliance with applicable air and water permits and regulations. The goal is for continuous compliance with all applicable environmental laws, regulations, and standards. Staff assists Mississippi businesses, industries, and farms with compliance. When a site fails to comply with its permit(s) or regulations, appropriate enforcement action is taken to promptly return the site to compliance and to deter future noncompliance. ECED, in conjunction with the Field Services Division (FSD), is also responsible for responding to citizen complaints regarding air and water pollution issues.

1.1.1.3 Environmental Permits Division

The Environmental Permits Division (EPD) administers the air, wastewater, and stormwater environmental permitting programs in Mississippi. This includes the federally delegated Wetland Water Quality Certification (Section 401), National Pollutant Discharge Elimination System (NPDES), Pretreatment, Air Title V, and Air New Source Review and Construction permitting programs. Additionally, State authorized No-Discharge wastewater disposal permitting, and municipal sewer plan reviews are administered within EPD. EPD's roles include reviewing applications/submittals, developing permits, certifications, and approvals for the above listed programs; developing general permits for common activities in the state, updating appropriate permit self-reporting monitoring systems, and assisting with maintaining the accuracy of the Electronic Environmental Site Information System (enSite).

1.1.1.4 Waste Division

The Waste Division (WD) administers various programs related to the proper management and disposal of solid wastes. These programs include regulatory programs such as the nonhazardous solid waste program, the hazardous waste management program, and the Underground Injection Control (UIC) program. The Waste Division administers both the permitting and compliance portions of all of these programs. In addition, the Division is responsible for the adoption of regulations and policies for various sets of regulations governing the management of hazardous and nonhazardous Waste Regulations, the underground injection control portion of the State water pollution control regulations and is responsible for maintaining State Authorizations for both the Resource Conversation and Recovery Act (RCRA) Subtitle C and D and UIC. The Waste Division also oversees the annual reporting and electronic data management efforts for solid and hazardous wastes. The Division is responsible for investigating and resolving various complaints related to waste management in the state. Finally, the Division also manages a number of assistance programs including the state's recycling and waste reduction programs, the solid waste and waste tire assistance grants programs, corrective action funds for old landfills and waste tire sites, the household medical sharps collection program, and the

pollution prevention and the enHance environmental stewardship program.

1.1.1.5 Field Services Division

The Field Services Division (FSD) is the scientific and technical support of the Office of Pollution Control and is responsible for the physical/chemical/biological collections and assessments done by MDEQ. FSD includes a laboratory in Rankin County, an Assessment Section in Hinds County, three regional offices located in Lafayette (North Regional Office), Rankin (Central Regional Office) and Harrison (South Regional Office) Counties, and a statewide Operator Training Program.

The FSD Laboratory is a full-service environmental laboratory comprised of two branches (Chemistry and Biology) that provide the agency with accurate and timely analytical and biological analyses of pollutants and their effects. The staff solves analytical problems, provides expert witnesses in environmental litigation, and offers technical support and information to the programs, the regulated community, and the public.

A Laboratory Information Management System (LIMS) tracks all information and data associated with every sample logged in at the lab. Three different sections conduct analyses within the Chemistry branch of the Laboratory, Wet Chemistry/Micro, Metals/Asbestos, and Organics. Advanced instrumentation such as Flow Injection/Ion Chromatography, Inductively Coupled Plasma-Mass Spectrometry, and Gas Chromatography-Mass Spectrometry analytically determine a multitude of water quality parameters and environmental pollutants. The Laboratory QC Officer oversees the annual Laboratory proficiency testing, performs internal and external audits, validates sample data, and reviews section SOPs. The data produced at the Laboratory goes to serve the routine and special analytical needs of the agency including Ambient Monitoring Programs, Compliance Monitoring, Complaints, and Enforcement Action.

Two different sections entail the Biology branch of the Laboratory. The Surface Water Monitoring Section organizes, develops, and conducts biological and physical/chemical monitoring projects per EPA guidance in order to evaluate the condition of the state's waterways, and to support the objectives of protecting, maintaining, and improving water quality as set forth in the Clean Water Act. This Section is responsible for, but not limited to collections concerning:

1) Ambient Monitoring which addresses comprehensive water quality status and trends management questions in all potential water body types (*e.g*. streams, rivers, lakes, and coastal waters), and;

2) Program Support for short term monitoring of other regulatory programs within the agency *e.g*., NPDES permitting/compliance, Emergency Response, Non-Point Source (NPS), Basin

Management, Total Maximum Daily Load (TMDL), Wasteload Allocation (WLA), Water Quality Standards (WQS), and Natural Resource Damage Assessments (NRDA).

The Environmental Compliance and Enforcement Monitoring Section is responsible for fish kills and other complaint investigations, fish tissue contaminants, and toxicity studies. Staff conduct fish kill investigations according to standards published by the American Fisheries Society (AFS). They collect physical/chemical , and biological samples for analyses and provide the most recent monetary valuations of fish species to determine the economic value of recreational and environmental loss to the fishery.
Other complaints managed by this section range from Confined Animal Feeding Operations (CAFOs) runoff to potential Harmful Algal Blooms (HABs). Staff participate in EPA sponsored webinars on a regular basis to stay informed on current developments.

This section is also responsible for the collection of fish from the state's water bodies to provide information on tissue contaminants and toxicity studies. Analysis of tissue occurs at the MDEQ laboratory. Data generated are used for multiple purposes such as §305(b) reporting and consumption advisories.

The Water Quality Assessment Section of FSD is responsible for maintaining the surface water quality data warehouse enSPIRE (*en*vironmental Surface Water Portal for Information Repository and Exchange); the Assessment Database (ADB) which stores and moves water quality assessment information to EPA's Assessment, TMDL, Tracking and Implementation System (ATTAINS) and the database for storing biological community data, EDAS (Ecological Data Assessment System). This group is also charged with assessing all surface water quality data and information, making use support determinations, developing assessment methodologies, development and maintenance of biological indices and other assessment and management tools, compiling the §305(b) report, and supporting the development of the §303(d) List of Impaired Waterbodies. In addition to assessment and data management activities, this group also supports the development of monitoring plans, supports water quality criteria development, assists in the development of success stories, and provides grant management support for the Division.

The three regional offices (North, Central, and South) conduct field sampling, pre-permitting site inspections, compliance inspections, respond to complaints received through the complaint tracking system (CTS), and provide investigative, logistical, and limited analytical support for MDEQ's regulatory programs.

The Environmental Operators Training program provides instruction and technical assistance to municipal and domestic wastewater personnel and facilities. The training, provided at no cost to the operators, was initially associated with a voluntary certification program offered by the Mississippi Water and Pollution Control Operators' Association. Administration of the certification program came under the direction of MDEQ in 1987 when the State Legislature mandated certification of all municipal and domestic wastewater operators. The certification regulations include a requirement for continuing education during each three-year certification period.

The MDEQ Operators Training program staff collaborate with other agencies on behalf of the Mississippi Municipal League with the objective of increasing communication between operators and municipal officials. The training staff also provides onsite technical assistance to municipal, commercial, and industrial wastewater facilities. This assistance program is aimed at providing "no cost" technical assistance in returning to or maintaining compliance with their wastewater permit. In Fiscal Year 2018, MDEQ Operators Training staff conducted 360 technical assistance and outreach activities through either onsite visits or remotely.

1.1.1.6 Groundwater Assessment and Remediation Division

The Groundwater Assessment and Remediation Division (GARD) is responsible for ensuring that soil and groundwater at contaminated sites in Mississippi are assessed and remediated to a level that is protective of human health and the environment. Activities include soil, groundwater, surface water, soil gas, indoor air and ambient air monitoring at contaminated sites. Assessments and cleanups at Brownfields, uncontrolled sites, CERCLA sites, and federal facilities utilize the EPA Region 4 Field Branches Quality System and Technical Procedures. Quality Assurance Project Plans (QAPPs) are developed in a manner consistent with *EPA Requirements for Quality Assurance Project Plans* (EPA QA/R-5), EPA/240/B-01/003 (May 2006) or most recent edition. Assessments and cleanups at leaking underground storage tank sites utilize the MDEQ Underground Storage Tank (UST) Branch Standard Operating Procedure Manual when work is performed under the UST Trust Fund by Engineering Response Action Contractors. The UST Branch revises the MDEQ/UST SOP as needed. The UST Branch has a compliance section which performs inspections at UST facilities to ensure that the systems are in compliance with the UST regulations.

1.1.1.7 Surface Water Division

The Surface Water Division (SWD) leads MDEQ's water quality protection and restoration initiative. The SWD is responsible for dealing with issues related to the water quality of all intrastate, interstate, and coastal waters. The quality of these waters has a profound effect upon the health and welfare of citizens, wildlife, fish, and aquatic life, as well as domestic, agricultural, industrial, and recreational activities.
In order to effectively protect and restore Mississippi's surface water resources, the SWD, through its branches, oversees the following:

- Collection and assessment of data
- Development of water quality models and TMDLs
- Implementation of Mississippi's Basin Management Approach by building effective partnerships with government agencies, non-government organizations, and other stakeholders
- Provision of funding assistance and other support

- Development of water quality standards

The SWD is comprised of six branches as shown below:

- Basin Management Branch: Implements Basin Management Approach to help lead MDEQ's water quality protection and restoration initiative.
- Construction Branch: Administers Clean Water State Revolving Fund (CWSRF) Loan Programs for wastewater facilities and nonpoint source pollution control projects.
- Modeling and TMDL Branch: Develops water quality models and total maximum daily loads (TMDL) for water bodies not meeting their designated use.
- Nonpoint Source Management Branch: Administers both regulatory and non-regulatory programs to help reduce or eliminate polluted runoff that degrades water bodies in Mississippi.
- Water Quality Standards Branch: Assigns designated uses to Mississippi's surface waters and adopts criteria designed to protect those uses.
- Priority Framework

Appropriate QA/QC measures are utilized for the activities performed by the Surface Water Division. These measures include use of Calibration Logs, SOP manuals, QAPP documents, sampling and data chain-of-custody procedures, and other procedures as warranted.

1.1.1.8 Office of Information Technology

The Office of Information Technology (OIT) is responsible for the development, implementation, management and support of all electronic information management systems required by the OPC. The OIT is also responsible for the billing and collection of P2 (Pollution Prevention) fees for MDEQ.

The OIT has the primary administrative responsibilities for data maintained on entities of interest to MDEQ. These data administration responsibilities include the support of standards and reference table development and maintenance for OPCs electronic Environmental Site Information System (enSite). The OIT maintains the Standard Operating Procedures (SOPs) for quality assurance of the entities of interest.

The OIT has an in-house Geographical Information Systems (GIS) developer that develops and maintains web-based map applications (MGIS/CTS/enSPIRE Query), the web map services, and spatial database objects (connections/views/queries/tables). The OIT GIS developer works closely with a large cross section of OPC staff to supply maps for publication and produce query results. He serves as the single point to service requests of OPC MDEQ Spatial data and works with staff, agency wide, to provide map services, layers, data access, finished maps, map licenses, and ESRI application support.

The OIT supports the OPC's enterprise infrastructure, user workstations, routing and printing ensuring compliance with departmental standards and security requirements. The OIT administers and manages MDEQ's National Environmental Information Exchange Network (NEIEN) Node. The OIT works closely with EPA and environmental partners on the development and maintenance of data flows, data standards, schemas, protocols and specifications for the exchange of quality data over the NEIEN.

The OIT supports OPC's database and application server needs for multiple applications and uses. The OIT manages software for custom and purchased applications, as well as the Oracle databases and Windows application servers that serve as the infrastructure upon which the systems run. The OIT ensures the durability of the application and data through hardware redundancy and regular backups. OIT staff work closely with agency personnel, project managers, and other stakeholders to ensure that electronic data systems implement the appropriate business rules and best practices.

Additional applications supported by the OIT include:

- **Electronic Environmental Site Information System (enSite)**
  enSite is the system that supports OPC's regulatory business processes.

- **enSearch**
  enSearch is MDEQ's internal web portal reporting tool that extracts data from EnSite. enSearch displays data in a browsers format for export to Word, Excel and PDF formats the users can use for program management.
- **enSearch Online**
  enSearch is MDEQ's public web portal reporting tool that extracts data from EnSite. enSearch displays data in browsers and has a limited ability to create downloadable reports.
- **Complaint Tracking System (CTS)**
  MDEQ's web application that records and tracks the complaints received by OPC and Emergency Response from initial receipt till resolution.
- **Environmental Surface Water Portal for Information Repository and Exchange (enSpire)**
  MDEQ's web application for tracking programs projects, stations and lab analysis results for Water Quality in Mississippi. enSpire is the main repository for the Water Quality eXchange (WQX) data which is submitted to EPA every year through the NEIEN Node.
- **Data Assessment Module (DAM)**
  DAM is a statistical data analysis report module with user interfaces as a part of enSPIRE. DAM is primarily used in support of MDEQ Surface Water Quality biennial assessment as required by Section 305(b) of the Federal Clean Water Act.
- **Assessment Database (ADB)**
  ADB store Assessment process results that are calculated on a biennial basis. A semi-automated export is currently performed to report data in the format accepted by EPA.
- **Watershed Resources Management System (WRMS)**
  OIT configures, manages and supports the Nonpoint Source for Pollution (NPS) Branch application which is a guide to the establishment and documentation of the user SOPs
- **GICS /CDBG (Grant Information Control System)**
  GICS is the enterprise project management software which records, tracks, and reports the different programs and tasks which operate based on Grants, and Coastal Grants.
- **LICS (Loan Information Control System)**
  LICS is enterprise project management software which records, tracks, and reports the different programs and tasks which operate based on loans, and loan combinations.
- **STREAM (Stream Data Model for TMDL)**
  Total Maximum Daily Load (TMDL) is a regulatory term in the U.S. Clean Water Act. STREAM tracks this information for monitoring, compliance and reporting.
- **Mississippi Underground Storage Tanks Environmental Repository (MUSTER)**
- MUSTER tracks information on underground storage tanks by facility, tank(s) and owner(s) registered with MDEQ. The OIT provides maintenance, development and

support of this application as wells as ensures the interfaces with enSite and the accounting system BP2K.

- **Laboratory Information Management System (LIMS)**
  LIMS is the tracking system to manage the workflow, samples, results, quality assurance/control, and reporting activities that take place in the MDEQ laboratory. Quality assurance and quality control within LIMS are achieved by the application's enforcement of pre-defined best practices for sample collection, tracking, analysis, result validation, etc.
- **Toxic Release Inventory Node Flow**
  The OIT is also responsible for accepting Toxic Release Inventory (TRI) submissions from EPA through the NEIEN Node and transforming the submission to a printable report.

  In additional to application support, the OIT is responsible for facilitating the yearly submission of Beach Monitoring and Beach Notification data to EPA. The data is collected by the MDEQ South Regional Office personnel in Biloxi, MS. Data is delivered to OIT where it is transformed and transmitted to EPA through the NEIEN Node.

1.2 Departmental Quality Policy

MDEQ is strongly committed to sound science and quality assurance (QA) practices that will produce environmental data of appropriate quality to be used for decision making. This commitment is consistent with the goal of EPA's Quality Policy CIO 2105.0. It is the policy of MDEQ that there shall be sufficient QA activities conducted by the environmental programs to provide a reasonable assurance that all environmental data generated and processed will be scientifically valid, of adequate statistical quantity, of known precision and accuracy, of acceptable completeness, representativeness, and comparability and, where appropriate, legally defensible. Environmental data quality is the responsibility of all MDEQ staff who are directly or indirectly involved in the generation of internal data. The MDEQ policy is achieved by ensuring that adequate QA procedures are used throughout the entire process (*i.e*., from initial project planning through project assessment).

The Quality Assurance Manager (QAM) and the Quality Assurance Committee (QAC) are key to implementing this policy. The QAM and QAC members have access to all work areas and sufficient authority and organizational freedom to identify, initiate, recommend, and propose solutions to quality problems and to facilitate the implementation of solutions to problems. Although independent of the program areas, the approach to evaluation, corrective action, and continual improvement taken by the QAM is team-oriented. The QAM works with program area managers to build consensus and if there are disagreements about recommendations from QA staff, disputes are resolved at the lowest administrative level possible utilizing the existing management structure of Section Chiefs, Branch Chiefs, and Division Chiefs. Should agreement not be reached at this level, then the QAM and the management staff take the issue to the OPC Office Director for resolution. The Office Director shall have final dispute authority on all quality issues. The QA staff work with EPA Region 4 QA Manager and staff and rely on them for ongoing comment and training.

The oversight process of MDEQ contractor's activities for data collection, which is further described in Section 2 and Section 8, includes the requirement for a scope of services that must be approved prior to contract acceptance and/or initiation of work. Depending on the program, each contractor is either required to use procedures outlined in MDEQ standard operating procedures (SOPs) or must have an approved project plan and/or workplan. As part of the field data collection efforts, some activities may be observed by MDEQ personnel and final reports generated by the contractor reviewed by Departmental personnel. Quality Assurance staff including the QAM may participate in any of these activities as requested by the Division procuring the contractor or the QAM.

1.3 Quality Assurance Goals

The following are the MDEQ QA goals that serve to support the MDEQ QA policy:
The MDEQ QA Management System will comply with ANSI/ASQ E4-2004, *Specifications and Guidelines for Quality Systems for Environmental Data Collection and Environmental*

Technology Programs, (2014), with respect to planning, implementing, and assessing quality assurance activities. In addition, all environmental technology constructed by MDEQ for pollution prevention, control, or waste remediation will be designed, constructed, and operated according to pre-defined specifications.

The data quality objectives (DQOs) process, or a similar systematic planning process, shall be used to plan project or study goals and objectives as they relate to programmatic or regulatory requirements and needed environmental data quality prior to the initiation of data collection activities. *Guidance on Systematic Planning Using the Data Quality Objective Process*, (EPA QA/G-4), EPA/240/B-06/001 (February 2006) or most recent edition shall be used in the seven step process for developing DQOs. DQOs, or similar outputs from a systematic planning process, shall be documented in a Quality Assurance Project Plan (QAPP), or equivalent project-level planning document.

QAPPs or equivalent planning documents, however named, will be developed as planning documents and approved prior to collecting data to assure that data quality issues are addressed. QAPPs will incorporate project-specific DQOs. QAPPs will be developed using a graded approach consistent with the complexity of the project and the intended use of the data. QAPPs shall be developed according to *EPA Requirements for Quality Assurance Project Plans*, (EPA QA/R-5), EPA/240/B-01/003 (May 2006).

External organizations' quality assurance systems will be documented in approved Quality Management Plans (QMPs). QMPs shall be developed according to *EPA Requirements for Quality Management Plans*, (EPA QA/R-2), EPA/240/B-01/002, (May 2006).

MDEQ managers and staff will receive QA training as appropriate for their responsibilities related to data collection or environmental technology.

Communication on QA issues and activities will be maintained among the MDEQ Quality Assurance Manager, program managers, and staff.

Assessments will be performed to determine the effectiveness of MDEQ and external quality management systems.

QA processes will be designed in the most cost-effective manner without compromising data quality. Continuous improvements in the quality management system will be emphasized.

1.4 Assignment of Responsibilities

The following MDEQ managers and staff have the responsibilities described for the Quality System.

1.4.1 MDEQ Executive Director

The Executive Director has the overall responsibility for the development, implementation, and continued operation of the MDEQ QA Program that has been

delegated to the Director of the Office of Pollution Control. The responsibility for managing the QA activities within MDEQ is assigned to the MDEQ Quality Assurance Manager.

1.4.2 Director of OPC

The Director of OPC will supervise the QAM in implementing and managing MDEQ's QA program. The Director will, in coordination with the Executive Director, direct and allocate resources to support the Department's QA program.

1.4.3 Quality Assurance Manager (QAM)

The QAM, who reports directly to the Director of OPC, has the authority and responsibility for managing the QA activities within the Department. The QAM serves as chairman of the Quality Assurance Committee (QAC) and may recommend suspension of environmental data collection projects and request corrective action in the event that data collection or environmental technology QA activities do not meet Department QA policy or requirements. A role of the QAC is to evaluate a Program's data collection activities. In the event that the QAC believes that a Program's data collection activities do not meet departmental quality assurance policies or requirements, the QAM shall have the prerogative to meet with the Director of OPC if discussions with MDEQ senior management fail to resolve the issue(s). The responsibilities of the QAM are to:

Implement a QA system that provides MDEQ with sound, scientifically defensible data and decisions and satisfies EPA's requirements to sustain delegation and funding for the state's environmental programs.

- Serve as the official MDEQ contact for all QA matters within MDEQ.
- Provide a focus on quality to the staff and results in continuous improvement of information, services, and products within MDEQ.
- Chair the MDEQ Quality Assurance Committee (QAC).
- Prepare or update the MDEQ Quality Management Plan (QMP).
- Coordinate QA activities with quality assurance staff within the Divisions/Offices to ensure consistency, comparability, and coordination across MDEQ.
- Assist in development of internal MDEQ QA Project/Study Plans with MDEQ staff and managers. This includes participation in and/or review of the data quality objective process.
- Oversee the review and approval of QAPPs.
- Assist MDEQ programs in integrating EPA QA Program requirements into grants and into contract scopes of work.
- Assist grantees and contractors in the development and implementation of QMPs and QAPPs.
- Audit QA Project/Study Plans for internal and external MDEQ data operations (see Section 9). Review implementation of selected QA plans and adequacy of the data

generated.

- Respond to QA needs, resolve problems, and answer requests for guidance or assistance.
- Coordinate and/or conduct System and Performance Audits of selected environmental monitoring programs.
- Prepare or coordinate preparation of audit reports listing deficiencies and corrective actions.
- Review audit reports generated by program QA staff to ensure consistency, comparability, and completeness.
- Follow up to ensure that corrective actions are taken and documented.
- Continually review and implement more effective and efficient approaches for quality assurance and management, through training programs, client and public feedback, and new or revised EPA QA methods and procedures.
- Submit annual QA Status Report and Work Plan to Director of OPC.
- Participate with OPC Director in reviewing MDEQ QA activities.
- Serve as a Technical Evaluation Panel member for MDEQ procurements in excess of $500,000 where environmental data collection activities are involved.

1.4.4 MDEQ Managers

Division/Office Directors are responsible for ensuring that their internal and external data collection activities are conducted in accordance with MDEQ QA policy. Daily QA management is delegated to the appropriate managers (*e.g.*, Branch and Section Chiefs). Each manager is responsible for procedures within his/her area of responsibility to ensure the acceptability of data generated and processed and the suitability of environmental technology. The MDEQ Organizational Structure is shown in Appendix A. Key responsibilities of MDEQ managers are to:

- Establish planning policies to ensure that QA matters are reflected in monitoring budgets, program plans, and operating plans.
- Participate in the development of Data Quality Objectives (DQOs) for monitoring activities.
- Review and evaluate internal/external monitoring QA implementation and progress.
- Evaluate the quality of data generated by monitoring projects.
- Take corrective action as required by QA assessment or reviews.
- Oversee Project Managers' QA activities.
- Report data quality problems to QAM.
- Attend MDEQ QA training provided by or required by the QAM.

1.4.5 MDEQ Project Managers

Project Managers are responsible for specific internal and/or external MDEQ environmental data collection projects. Therefore, the Project Manager has the principal

responsibility for ensuring that project data quality objectives are met. Key responsibilities of the Project Manager are to:

- Prepare and/or direct the preparation of QA Project/Study Plan for each project and review/approve QA Project/Study Plans.
- Prepare or approve Data Quality Objectives, specifications, and acceptance criteria for the projects.
- Review/approve data quality generated from external projects.
- Participate in conducting QA system/performance audits of projects as requested by the QAM.
- Take corrective action that may be required by audit findings.
- Report data quality problems to MDEQ QAC representative and suspend data collection activities if QAPPs and SOPs are not being followed properly.
- Attend MDEQ QA training provided by or required by the QAM.

1.4.6 MDEQ Program Technical Staff

Most MDEQ Project Managers may also be considered members of the MDEQ Program Technical Staff. However, some MDEQ Programs have staff that deal with specific technical issues. This technical staff will support the QAM by providing technical assistance in their area of expertise if requested by the QAM. This will enhance the QA capabilities within MDEQ. The specific duties that will be assigned to the Technical specialists are as follows:

- Assist QAM with technical aspects of QA as related to their expertise in air, water, toxic substances, hazardous waste, engineering, chemistry, biology, microbiology, field operations, and data operations.
- Identify QA needs, resolve problems, and answer requests for guidance or assistance in their area of expertise.
- Conduct and/or participate in on-site field and laboratory system and technical audits.
- Inform QAM of need for new or improved methods.
- Participate in technical assistance and training of State/Tribal/local, and private laboratory personnel in EPA methods and QA requirements.

1.4.7 Quality Assurance Committee (QAC)

The QAC, along with the Quality Assurance Manager, has overall management responsibility for the MDEQ Quality Assurance program. The QAC is comprised of a cross-section of Programs within the Department. The QAC has the responsibility for developing the QA policies and procedures of the Department regarding specific programs, instrumentation, training, and analyses. The QAC ensures that specific QA reviews of selected external environmental monitoring are conducted and consistent with MDEQ QA Policy and Goals. The QAC may also conduct audits of MDEQ Programs. QAC members also serve as the QA contact persons for their Division, Office, and/or program. Each Division/Office director will appoint at least one manager or staff person

to serve on the QAC. Key responsibilities of the committee members are to:

- Be the official Division/Office contact for quality assurance matters pertinent to the monitoring activities of that Division/Office/Program.
- Attend meetings of the QAC to keep abreast of QA issues affecting MDEQ and communicate QA issues to Division/Office personnel.
- Oversee and coordinate quality assurance activities within the Division/Office and provide updates to the QAM. Advise the QAM on changes needed to the MDEQ QMP. Coordinate program input for the MDEQ QA Annual Report submitted by the QAM to the Executive Director.
- Once designated as a Designated Approving Official (DAO), approve all QAPPs assigned by the QAM for review and approval.
- Respond to quality control issues and problems, and respond to requests for guidance or technical direction.
- Work with their Division's staff to develop and maintain an effective QA program.
- Attend MDEQ QA training provided by the QAM.

2. QUALITY SYSTEM COMPONENTS

The MDEQ has a Quality System in place intended to support and ensure that its environmental programs produce the type and quality of results needed and expected. This system has been implemented for all programs listed in Appendix B. In order to effectively conduct environmental data collection, environmental technology activities, planning, implementation, and assessment of the activities is necessary.

Implementation of MDEQ's Quality System will be based on the principle of graded approach. This principle understands that quality system requirements will not always work for every program/project and that the level of effort should be based on the scope of the program/project. MDEQ's QAM or designee will maintain managerial control and determine application of the graded approach for internal and external project(s)/program(s) activities. MDEQ has sole approval authority for QMPs and QAPPs for programs/projects not funded by EPA. EPA will provide final approval for the MDEQ QMP, QAPPs or other planning documents when the data collection activities are funded by EPA.

2.1 Quality System Tools

The Quality System Tools described below are to be used for planning MDEQ environmental projects.

2.1.1 Quality Assurance Project/Study Plan Contents

MDEQ relies on Quality Assurance Project Plans (QAPPs) (commonly known as "Study Plans," "Work Plans," or "Sampling and Analysis Plans") coupled with detailed

SOPs to define specific project QA/QC requirements. This approach identifies the critical measurements to be performed, and discusses the QA activities to be conducted during the sampling, analytical, and validation phases of the project. The document entitled *EPA Requirements for Quality Assurance Project Plans*, (EPA QA/R-5), EPA/240/B-01/003 (May 2006) provides basic instructions for preparing QAPPs. The document entitled *EPA Guidance for Quality Assurance Project Plans*, (EPA QA/G-5), EPA/240/R-02/009, (December 2002) provides detailed information for developing a QAPP. The content of MDEQ QAPPs shall be consistent with the requirements of the most recent version of EPA/QA/R-5.

All MDEQ monitoring projects must have an approved QAPP prior to data collection. An exception to this requirement is those projects where immediate danger to human health or the environment is present or suspected. The QAM or designee shall review all QAPPs developed by MDEQ, provide input, recommend changes, and approve final plans. Upon request, technical staff shall peer review QAPPs with regard to their area of expertise. The appropriate Project Manager tracks QA activities.

2.1.2 Data Quality Objectives

The data quality objectives (DQOs) process is EPA's systematic planning process which uses a step-wise system of developing the technical, programmatic, and quality assurance requirements specific to a particular project or study. Detailed guidance for developing project or study-specific DQOs is provided in:

- *Guidance on Systematic Planning Using the Data Quality Objectives Process*, (EPA QA/G-4), EPA/240/B-06/001 (February 2006).
- *Data Quality Assessment: A Reviewer's Guide*, (EPA QA/G-9R), EPA/240/B-06/002 (February 2006).
- *Data Quality Assessment: Statistical Tools for Practitioners*, (EPA QA/G-9S), EPA/240/B06/003 (February 2006).

The DQO process is the preferred method of developing objectives for those projects requiring the collection of environmental data or the use of environmental technology. However, any systematic planning process may be used as long as it results in the development of a QAPP that meets EPA requirements for EPA funded projects.

Having identified the need for an environmental data collection effort, the decision maker/data user (*i.e.*, Division Director, Branch Chief, Program Manager, Project Manager, etc.) is responsible for initiating the DQO development process. During the early planning phase of the effort, the data user must clearly establish the intended use of the data, time and resource constraints, and the quality of data needed. The Project Manager is responsible for development of DQOs that will facilitate the generation of

sufficient data of the quality needed by the ultimate data user/decision maker. The DQO process requires meaningful interaction between the project manager, field and laboratory technical staff, QA staff, and data users as appropriate. The DQOs developed will be used for the detailed design of the investigation and preparation of the QAPP.

The QAM will be the focal point for providing guidance and review of DQO development. The QAM will consult with other MDEQ technical staff on DQO issues outside of his/her technical expertise. A rigorous treatment of the statistical hypotheses and decision error portion of DQOs may require consultation with a statistician. Tracking DQO development and implementation will occur as a part of the QAPP review process. MDEQ staff having questions related to the development of DQOs should consult with the MDEQ QAM.

2.1.3 Standard Operating Procedures

Standard Operating Procedures (SOPs) are documented methods for performing certain routine repetitive tasks. These tasks frequently involve such operations as sample tracking, analysis, instrument or method calibrations, preventive and corrective maintenance, internal quality control, and data reduction and analysis. The SOPs shall be prepared in document control format by the user as required and will be maintained on permanent file by the QAM. The following are considerations involved in the development and utilization of Standard Operating Procedures.

2.1.3.1 Standard Operating Procedures Objectives

- Adequate to establish traceability of standards, instrumentation, samples, and environmental data.
- Simple, so a user with basic education, experience and/or training can properly use them.
- Complete enough so the user/reader follows the directions in a systematic manner through the sampling, analysis, and data-handling process.
- Consistent with sound scientific/engineering principles.
- Consistent with current EPA regulations and guidelines.
- Consistent with the instrument manufacturers' specific instruction manuals.

2.1.3.2 Items to be addressed in Standard Operating Procedures

The following items will typically be addressed in SOPs; however, the specific items addressed in a SOP are dependent on the type and purpose of the SOP. For example, a SOP for a laboratory process may address different items than a SOP for a field process.

- General sampling design.
- Specific sampling site selection.
- Sampling and analytical methodology.

- Probes, collection devices, storage containers, and sample additives such as preservatives.
- Special precautions, such as holding times and protection from heat, light, reactivity, and combustibility.
- Federal reference, equivalent, and alternate test procedures.
- Instrumentation selection and use.
- Calibration and standardization.
- Preventive and remedial maintenance.
- Duplicate, spiked, blank samples, and analysis.
- Quality control procedures such as inter- and intra- field laboratory activities.
- Documentation, sample custody, transportation, and handling procedures.
- Safety.
- Data handling and assessment procedures.
- Precision, accuracy, completeness, representativeness, and comparability.
- Service contracts.
- Document control.

2.1.4 Preparation of Standard Operating Procedures

Individual Programs within MDEQ prepare and revise SOPs. This includes those associated with analytical procedures as well as field sampling. SOPs are dynamic documents that are reviewed at least annually and revised and approved as needed. Revisions may be made as the result of changes in regulations, changes or additions in instruments and equipment, or by inadequacies noted during implementation and/or audits. In some instances, MDEQ Programs may utilize SOPs established by EPA (*e.g.*, EPA Region 4 Field Branches Quality System and Technical Procedures). Each Program has a person designated as the focal point for preparation and revision of SOPs. The SOPs are reviewed by appropriate senior staff within the Program, the QAC, and at times by technical specialists in other Programs. The primary focus of the QAC review is to ensure consistency of SOPs within MDEQ. If procedures in a new or revised SOP are inconsistent with those in an existing SOP, the QAC will ask the preparer of the SOP to either conform the procedures to the existing SOP or to provide justification for deviating from the existing SOP. The QAM will maintain a record of all SOPs actively in use. All SOPs are prepared using "*EPA Guidance for Preparing Standard Operating Procedures*", (EPA QA/G-6), EPA/600/B-07/001 (April 2007).

2.1.5 Data Processing and Verification

Data processing includes collection, validation, storage, transfer, and reduction. Precautions shall be taken each time the data are reduced, recorded, calculated, and transcribed to prevent the introduction of errors and the loss of information. Data processing requirements are:

- Collection – Each SOP shall address the checks that must be used to avoid errors in the data collection process.

- Validation – Data validation is defined as "the process whereby data are accepted or rejected based on a set of criteria". Since this aspect of QA may include various forms of manual or computerized checks, criteria for data validation shall be specified in the applicable SOP.
- Storage – Each SOP, as appropriate, shall indicate how specific types of data will be stored.
- Transfers – Each SOP, as appropriate, shall describe procedures that shall be used to ensure that data transfer is error-free and that no information is lost in the transfer. Data transfer steps shall be kept to a minimum.
- Reduction – Each SOP, as appropriate, shall contain procedures for ensuring the correctness of data reduction processes. Data reduction includes all processes that change either the form of expression or quantity of data items. It is distinct from data transfer in that it entails a reduction in size (or dimensionality) of the data set. Each SOP, as appropriate, shall describe procedures for verifying the accuracy of the data reduction process.

2.1.6 Data Quality Assessment

Each QA Project Plan should include procedures for assessing the quality of all environmental data generated and processed for accuracy, precision, completeness, comparability, and representativeness. Detailed guidance for assessment may be found in EPA's:

- *Data Quality Assessment: A Reviewer's Guide*, (EPA QA/G-9R), EPA/240/B-06/002 (February 2006).
- *Data Quality Assessment: Statistical Tools for Practitioners*, (EPA QA/G-9S), EPA/240/B06/003 (February 2006).

2.1.7 Corrective Action

Each QA Project Plan shall include provisions for QA reporting or feedback to the management responsible to ensure that early and effective corrective action can be taken when data quality falls outside established data quality objectives (acceptance criteria). Each QA Project Plan shall also include provisions to keep management informed when corrective actions are necessary. Corrective actions shall relate to the overall QA management scheme to include:

- Who is responsible for taking corrective actions.
- When corrective actions are to be taken.
- Who follows-up to verify that corrective actions have been taken and that they have produced the desired result(s).

Corrective actions should be documented and a formal system of communicating these actions to key project personnel, senior level management, and EPA personnel

should be established by the data collection entity.

2.1.8 Information Management

The Mississippi Department of Information Technology Services (ITS) has established the hardware and software standards with which State of Mississippi agencies must conform. MDEQ managers and staff will comply with all such relevant hardware and software standards.

MDEQ's Office of Information Technology (OIT) is responsible for managing the hardware, software and communications components that form the foundation of MDEQ's technology infrastructure. OIT establishes MDEQ hardware and software policy in careful coordination with State policy, and in the event policy changes are required, OIT managers work with MDEQ managers to plan and implement appropriate modifications.

If MDEQ has a need to purchase (or develop) application software that is not on State contract, such software will be evaluated against written performance/capability standards developed by the OPC site coordinators and/or MDEQ system administrators prior to purchase or development. Both MDEQ OIT staff and OPC program staff are responsible for evaluating software to determine its performance capabilities and documentation.

2.2 Internal and External Data

Within MDEQ, QA data generation activities fall into three broad categories:

- Internal (data generation programs designed and operated by MDEQ staff).
- Grants (data generation under program grants, etc.).
- Contracts (dedicated MDEQ contracts, special contract studies, etc.).

A brief description of QA operations and review procedures in each of these categories follows:

2.2.1 Internal QA Operation

MDEQ Program Managers and/or Project Managers will be responsible for preparing QA Project/Study Plans. The QAM will be available to assist in the development of QA Project/Study Plans by discussing the requirements for QA plans but will not directly participate in writing the plan. The QAM or his/her designee shall review and approve all QA Project/Study Plans for internal data prior to data collection, unless such projects are of a routine nature (for example, Compliance Sampling Inspections) with sampling and data quality requirements established in the organization's Standard Operating Procedures (SOPs) and/or EPA regulations.

A Designated Approving Official (DAO) is an MDEQ or EPA staff person who has been delegated the authority to approve quality assurance project plans. When EPA monies are used for data collections, EPA always retains final approving authority for project plans. In order to be authorized as a DAO, the individual must meet the following requirements:

- When made available, attend EPA sponsored technical workshops and conferences and satisfactorily complete an 8-hour training course in QAPP requirements and review. Completion of this training shall be documented by the QAM with a certificate naming the individual as a DAO and shall be tracked by the QAM.
- Possess the necessary expertise in project management to review the QAPP.
- Have no direct conflict of interest. A project manager who writes a QAPP for a project under his/her direction cannot approve that QAPP.
- Document the QAPP review using a checklist. Refer to Appendix C for the checklist.

Standard Operating Procedures (SOPs) shall be reviewed by the QAC for consistency with other MDEQ SOPs.

The QAC Program Representative and/or the QAM shall review and evaluate the implementation of selected plans during the operational phase of the monitoring activity. Within resource constraints, selection of projects will depend on the following criteria: projects supporting litigation, high visibility projects, and requests from the Project Manager. Upon completion of the monitoring activity, the Program Manager and/or Project Manager shall assess the actual performance of the planned activities and subsequent results. The final project report shall contain the results of this assessment.

2.2.2 QA Operations for Grants

2.2.2.1 Grants from EPA

A substantial amount of environmental data required by EPA statutes and regulations is generated by state, local, and tribal agencies receiving continuing environmental program/project grants. To qualify for financial assistance, MDEQ will meet the QA specifications of 40 CFR Part 31.45, which require that the "grantee shall develop and implement quality assurance practices consisting of policies, procedures, specifications, standards, and documentation sufficient to produce data of quality adequate to meet project objectives...". This requirement is satisfied by MDEQ's submission of its Quality Management Plan (QMP) and subsequent approval of the QMP by the EPA Region 4 QA Manager and the appropriate Program Manager or Project Manager. In order for MDEQ's QMP to be approved, its QA System must include procedures for the development, review, and approval of Quality Assurance Project Plans for specific data collection projects. For any sub-awards (either sub-grants or procurement) that MDEQ may make under an assistance agreement from EPA, MDEQ will ensure that the sub-awards meet the quality assurance requirements of 40 CFR 31.45 and

30.54 as appropriate. EPA must provide the final approval for QAPPs or other planning documents when the data collection activities are funded by EPA. MDEQ recognizes that EPA retains QAPP approval authority in situations where a city or locality within the state receives funds directly from the EPA unless otherwise stated in the award.

2.2.2.2 Grants to External Parties

If the Project Manager determines that the grantee's project involves environmentally related measurements or data generation, the grantee shall develop and implement quality assurance practices consisting of policies, procedures, specifications, standards, and documentation sufficient to produce data of quality adequate to meet project objectives. This requirement is satisfied by the grantee's submission of a Quality Management Plan (QMP) and subsequent approval of the QMP by the MDEQ QAM and the appropriate Project Manager. However, EPA must provide the final approval for QAPPs or other planning documents when the data collection activities are funded by EPA. In order for a grantee's QMP to be approved, its QA System must include procedures for the development, review, and approval of QAPPs for specific data collection projects.

2.2.2.3 Quality Assurance Project Plan Approval

The MDEQ QAM and the appropriate Program Manager(s) or designee(s) will approve QAPPs. If EPA grant funds are used for the project, EPA Region 4 has final QAPP approval authority. It is recommended that QAPPs be approved prior to awarding of financial assistance. However, if the QAPP is not approved prior to award, then the assistance agreement will be conditioned to require an approved QAPP before data collection begins. If grantees make sub-awards (either sub-grants or procurement) under an assistance agreement, they must ensure that the sub-awards meet the quality assurance requirements of 40 CFR 31.45 and 30.54, as appropriate.

2.2.2.4 Quality Management Plan Requirements

It should be noted that this QMP stands as the single QMP for the Department although programs may have programmatic QAPPs. However, the following procedures will be followed by those organizations submitting QMPs to MDEQ for grants and cooperative agreements:

- The QMP must address the main topic areas covered in *EPA Requirements for Quality Management Plans*, (EPA QA/R-2), EPA/240/B-01/002 (March 2001) (or most recent edition).
- QMPs should include a description of review and approval process for specific QA Project/Study Plans covered by their grant. QMPs will be

reviewed by the QAM in consultation with the appropriate program staff. QAC members will coordinate the review of the QMP for their specific Division or program. QMPs shall be approved for a period of no more than five years. The QAM will provide the QAC with a listing of approved QMPs and their expiration dates.

- While external organizations are responsible for managing the QA programs under their grants, MDEQ retains overview responsibilities. The major overview functions are work plan reviews and quality assurance assessments. QA input for these overview functions includes QMP and/or QAPP review/approval and on-site QA audits of field and laboratory operations.

2.2.2.5 QA Operations for Contracts, Interagency, and Formalized Agreements

The originating Program Office shall notify the Program's representative on the QAC of all contracts and interagency/formalized agreements involving environmental data collection during the planning phase. The representative shall advise the QAC of the planned activities at the QAC's next regularly scheduled meeting. The Program/Project Manager shall ensure that all requests for proposals will contain an acceptable description of the QA requirements if the contracts require data collection. The Quality Management/Project Plans shall be reviewed, and as appropriate, approved by the Program/Project Manager. The Program/Project Manager shall review and evaluate the use of these Plans. Upon completion of the monitoring activities, the Program/Project Manager shall assess the data quality of the planned activity.

3. PERSONNEL QUALIFICATIONS AND TRAINING

3.1 General Policy

MDEQ personnel performing work on environmental programs shall be qualified to perform assigned work. Initial and ongoing personnel qualifications shall be determined, training needs shall be identified, access to appropriate training opportunities shall be provided as resources allow, and the acquisition of needed knowledge and skills should be evaluated.

3.2 Position Descriptions

The Mississippi State Personnel Board maintains the statewide classification plan, which is based upon objective analysis of the duties of each employment position. The assignment of a position to an occupational classification is based upon job analysis data, which includes the Job Content Questionnaire (JCQ) or the Role Description Questionnaire (RDQ) for Information Technology positions.

The JCQ and RDQ are types of position questionnaires, designed to collect data about the type of work performed in a position and the qualifications necessary to satisfactorily perform the

job. They are tools used to determine the essential functions of the position. The data each contains can be used for such important processes as developing training programs, interviewing job applicants, determining criteria for performance appraisals, determining position classifications, class specifications, and selection requirements. The JCQ and RDQ are maintained by MDEQ Human Resources (HR) staff.

The JCQ lists the job duties, the percentage of time devoted to each job duty, and the knowledge, skills, and abilities necessary to perform the job. The RDQ, for Information Technology positions, lists the purpose of the position, the major accountabilities, percentage of time devoted to each duty, the scope of the position, the organizational relationships of the position, major challenges or opportunities of the position, decision making requirements, team involvement, and the knowledge, skills, experience, and capabilities of the position.

3.3 Personnel Qualifications

Personnel that are hired by MDEQ must meet the specific requirements of the job classification. Each classification has minimum quality-related criteria including educational requirements, technical and non-technical knowledge and skills, certifications, professional experience, any required licenses, registrations or certifications necessary, and other requirements for entry-level and advanced positions within a series of related jobs (*e.g.*, environmental scientists and environmental engineers). The Mississippi State Personnel Board is responsible for establishing the qualifying criteria and ensuring that all personnel requirements are met prior to employment by MDEQ.

3.4 Employee Training Needs

It is the responsibility of each monitoring program manager to ensure that all personnel performing tasks and functions related to data quality have the necessary education, training, and experience. This includes laboratory scientists, analysts, maintenance technicians, supervisors, principal investigators, statisticians, project officers, and MDEQ QA staff. Training needs, including QA training, are determined on an individual basis by supervisors in consultation with employees. Training determinations are based on statutory requirements, management directives, audit findings, and mid-year/annual employee performance appraisals. The quality-related training needs are not static, but are a dynamic function of program requirements and are addressed on an as-needed basis by the program managers and the QAM. The QAM may, in consultation with senior management, require staff to participate in specific QA-related training as a result of an internal audit, significant modification to Departmental or program procedure, or other quality-related issues. In addition, senior management may request training assistance from the QAM.

3.5 Training Programs

Providing internal training is a priority to ensure that MDEQ staff retain and enhance their technical competence and perform their jobs efficiently. Notwithstanding funding limitations, MDEQ remains committed to training staff. Responsibility for coordination of MDEQ training lies within the individual Divisions. The responsibility for developing, planning, and conducting training is shared among Departmental supervisors and staff.

Management and staff should receive some Quality Systems training which helps ensure that programs produce and use quality data during the decision making process. Staff enhances their Quality System skills both in-house through QAM-coordinated instruction and externally, as resources allow, through classes, seminars, and conferences to learn both fundamental concepts and new procedures. Training may be formal or informal, mandatory or voluntary. Quality-related training may be obtained from:

- An external vendor (if available and Departmental resources permit).
- EPA.
- QAM or other MDEQ staff (if required expertise is available within the Department to allow internal development of the training).
- Other available sources.

The effectiveness of any QA-related training may be determined through course evaluations, testing, review of subsequent audits, and/or management reviews.

EPA Region 4 funded training classes provide important opportunities for Departmental staff to develop skills consistent with other states and EPA. Employees and supervisors also determine whether training programs and courses offered outside of MDEQ/EPA by educational institutions, professional associations, and other providers are useful for enhancing job performance or professional development. These programs and courses may include such activities as instructional courses, seminars, professional meetings, and workshops. Specific examples of training opportunities include:

- 40-Hour Hazardous Waste Safety Training and annual 8-hour updates.
- Laboratory Safety.
- Annual CPR and First Aid Certification
- Air Pollution Control Orientation.
- Air Pollution Source Inspection.
- Certified Public Manager Program (State Personnel Board).
- NPDES Permit Writing (EPA).
- Performance Audit Inspection Training (EPA).
- Supervisory Training (State Personnel Board).

3.6 Training Records

Training records are important for MDEQ employees for professional development. The Office of Administrative Services maintains an employee file with a list of training request the employee submitted for external training. Additionally, MDEQ maintains a training registration system for internally hosted training. Finally, employees maintain a list of their personal training.

4. PROCUREMENT OF ITEMS AND SERVICES

4.1 General

The procurement of items and services is controlled and documented to ensure conformance with specified requirements, (*i.e.*, that contracted and sub-contracted activities produce results of acceptable quality and products received meet the specified requirements). Requirements and specifications are included or referenced in procurement documents. The acceptability of purchased items and services are verified and documented.

4.2 Authority and Procedures

The Mississippi Department of Finance and Administration (DFA) has purchasing requirements that the Department must follow. These procedures ensure that State agencies procure goods and services efficiently and in accordance with State law. The DFA also establishes various commodity contracts with supplying vendors, which permit all agencies to buy goods in a legal, efficient, cost-effective manner without concern for local purchase authority. Contracts are awarded to the lowest responsible bidder meeting specifications and other conditions imposed in the call for bids. If an item is not available through a contract, then the item is purchased following procedures set forth in Section 31-7-13 of the Mississippi Code. Depending on cost, this may include an open competitive bid process. External agreements may include grants, cooperative agreements, and contracts. These requirements are described in more detail at the DFA website (http://www.dfa.ms.gov).

4.3 Procurement Documents

Program/Project Managers (PMs) have the primary responsibility for defining in writing the requirements for all procurements in one or more procurement documents (*e.g.*, purchase orders, invitations for bid, requests for proposals, procurement contracts, etc.). Purchase requests for goods and services should include adequate detail to specify the quality and performance expectations of the acquired items (ranging from specific catalog item number through bid specification). These documents specify tasks and/or products, as well as technical, quality, administrative, and other requirements. All procurements are reviewed and approved through the supervisory chain-of-command prior to issuance. MDEQ administrative staff review all procurement documents to assure that they follow applicable State and Federal procedures. Approval requirements vary depending on the nature and cost of the item or service being purchased.

4.3.1 Changes to Procurement Documents

Changes to procurement documents generally receive the same reviews and approvals as original procurement documents. Contract changes are approved based upon the type of change (*i.e.*, scope-of-work change, increase/decrease in contract amount, extension or renewal of contract end date).

4.4 Technical Requirements for Items and Services

Technical requirements are determined by PMs, or designees, and documented in procurement documents. Purchases of information technology products and services are also reviewed and approved by the Chief Information Officer (CIO) or designee. Project managers include technical and QA/QC requirements in the Scope-of-Services that is attached to the state contract. This Scope-of-Services document is reviewed and approved by the chain-of-command.

4.5 Solicitation Responses and Supplier Selections

Responses to solicitations are reviewed by Division Chiefs, or designees, using written evaluation sheets. These sheets specify technical, quality, and other criteria used to evaluate the adequacy of responses to solicitations, to qualify potential suppliers, and to select vendors.

4.6 Acceptance of Items and Services

PMs have the primary responsibility for determining that goods and services procured meet program/project deliverables are of sufficient quality to provide reliable and consistent performance. Items and services affecting quality received from suppliers are evaluated upon delivery against acceptance criteria (*i.e.*, task and product specifications and technical, quality, administrative, and other requirements) contained in procurement documents. PMs, or designees, determine whether acceptance criteria have been met and whether items and services are adequate and appropriate for use. Items and services that do not meet acceptance criteria are not accepted for use. Corrective actions are initiated in accordance with State purchasing procedures, contract provisions, and MDEQ procurement procedures. Corrective actions may range from repair or replacement of defective deliverables to re-award of procurements.

4.7 Quality Requirements

4.7.1 Equipment and Supplies

Quality requirements for procurement of equipment and supplies are determined by PMs, or designees, and delineated in procurement documents. These documents include or reference appropriate requirements necessary to assure adequate quality and, to the extent necessary, require suppliers and subcontractors to have quality assurance programs consistent with MDEQ requirements.

4.7.2 Grants, Cooperative Agreements, and Contracts to Produce Environmental Data

Some environmental data are generated by other agencies, organizations, and companies through grants, cooperative agreements, and/or contracts with MDEQ. These agencies and organizations must meet the QA specifications of 40 CFR Part 31.45, which require

that the "grantee shall develop and implement quality assurance practices consisting of policies, procedures, specifications, standards, and documentation sufficient to produce data of quality adequate to meet project objectives...". The originating Program Office should coordinate with the QAM regarding contracts and interagency/formalized agreements involving environmental data generation during the planning phase. The PM shall ensure that all requests for proposals contain an acceptable description of the QA requirements if the contracts require data generation. In addition, the PM shall ensure that a QA review has been completed. For interagency agreements, before environmental measurements or data collection activities begin, MDEQ and other involved agencies must have agreed upon and documented the QA requirements for the project. The PM, in consultation with the QAM, should ensure that QMP/QAPPs (see Sections 4.7.2.1 and 4.7.2.2) are acceptable prior to recommending award of the contract or interagency/formalized agreement. The PM shall review and evaluate the use of these plans. Upon completion of the data generation, the PM should conduct a data quality review.

4.7.2.1 Quality Management Plan (QMP)

QMPs are submitted to MDEQ by organizations for all grants, contracts, and cooperative agreements involving data-related activities. These documents must address the main topic areas covered in *EPA Requirements for Quality Management Plans*, (EPA QA/R-2), EPA/240/B01/002 (March 2001), or most recent edition, including procedures for the development, review, and approval of Quality Assurance Project Plans for data collection projects. External QMPs are reviewed by the appropriate program staff and may be reviewed by the QAM in consultation with these program staff.

4.7.2.2 Quality Assurance Program/Project Plan (QAPP)

Quality Assurance Program/Project Plans are submitted to MDEQ for all projects generating environmental data and must be reviewed by the appropriate PM(s) or designee(s) and approved by the QAM. QAPPs developed for Projects that are funded through EPA require EPA review and approval. QAPPs are developed using "*EPA Requirements for Quality Assurance Project Plans*," (EPA QA/R-5), EPA/240/B-01/003 (May 2006). QAPPs should be reviewed prior to award of the financial assistance. However, if the QAPP is not reviewed prior to award, then the assistance agreement should be conditioned to require an approved QAPP before the beginning of data collection. If grantees make sub-awards (either sub-grants or procurement) under an assistance agreement, they must ensure that the sub-awards meet the applicable quality assurance requirements as appropriate.

5. DOCUMENTS AND RECORDS

5.1 General

Documents that specify requirements and instructions affecting the quality of environmental programs shall be adequate for the intended purpose and shall be controlled. Quality assurance records should be produced, controlled, and maintained so as to reflect the achievement of the required quality for completed work and to fulfill statutory, regulatory, and contractual requirements. At present, the maintenance, storage, and retention schedules for documents differ depending upon the unique needs of each division. MDEQ stores hard copy project files and QA records in file folders sorted by project and date of collection for ease of future retrieval. These files are preserved under lock and key in a climate-controlled environment. Field forms, chain of custody, sample request, and QA forms are converted to PDF format and electronically sorted by project and stored on a shared network drive. Network drives are backed up daily and, based upon OIT schedules, converted to compact disks for long term storage. When documents are deemed obsolete and/or storage space becomes limited, these documents are transferred in an orderly, traceable manner to the Department of Archives and History for long term retention.

5.2 Confidential Documents

Pursuant to Miss. Code Ann. §§ 17-17-27 and 49-17-39, citizens and regulated entities providing information to MDEQ can request that the information be held confidential and not be made available for public inspection. This protection can be claimed properly, however, only for information that does not concern environmental protection. In order to satisfy these statutes, a request for confidentiality must be made in the following manner:

- The request must be made, in writing, no later than simultaneously with the submission of the information to MDEQ;

- The request must describe the information that the requestor would have treated as confidential and must explain the reason(s) why the information qualifies for confidential treatment;

- The request must allow disclosure of the confidential information "to authorized department employees and/or the United States Environmental Protection Agency (EPA)."

5.3 Identification of Quality-Related Documents

Quality-related documents and records that are outlined in the records retention policy, federal/state regulations, or identified by PMs are controlled. The quality-related documents listed below currently require control:

- Quality Management Plan (QMP).
- Quality Assurance Project Plans (QAPPs).
- Standard Operating Procedures (SOPs).

Any of the following may be controlled as required by the applicable QAPP:

- QA/QC Records.
- Audit Records.
- Calibration Records.
- Maintenance Records.

Quality documents valid for more than one year generally undergo an annual review process to ensure applicability and are revised as needed using the same peer and chain-of-command review process. Revisions to QAPPs and SOPs are tracked in the Change Tracking table in each document. Program/Project Managers are responsible for distributing QAPPs with critical revisions to each person listed in the QAPP Distribution List. SOPs with critical revisions, as well as new SOPs, are distributed by management as they are revised.

The PM is responsible for ensuring the appropriate use of quality-related documents by program/project staff and that these documents and records accurately reflect the completed work. The methods used to accomplish these activities are determined by the individual program/project managers.

The QAM is responsible for maintaining the QMP and maintaining a record of all SOPs actively in use. The current versions of QAPPs and signed SOPs are maintained by the appropriate staff that generates/uses the document. MDEQ plans to make the most current versions of these documents available to staff on the intranet. MDEQ will be working on this over the next year.

5.4 Quality Assurance Records

Quality assurance records are items that furnish objective evidence of the quality of items or activities that have been verified and authenticated as technically complete and correct. Quality assurance records may include photographs, drawings, forms, reports, and electronically recorded data.

The PM, in conjunction with the QAM, ensures that quality-related documents and records are in compliance with applicable statutory, regulatory EPA requirements, and that appropriate sample chain-of-custody criteria are implemented.

5.5 Official State Records

Each Division has assigned record keeping responsibilities in accordance with its functional responsibilities and duties. These responsibilities include what records and documentation must be created and maintained as well as the security and integrity of the records (whether hardcopy or electronic) from their creation to their final disposal. The records and information created, received, maintained, or acted upon shall be maintained in compliance with State Record Retention Schedules or EPA requirements, whichever is longer. MDEQ employees leaving the department must return all records to their manager prior to their severance from the Department.

Files, records, and information shall not be destroyed except in accordance with State Record

Retention Control Schedules and Procedures. The Mississippi Department of Archives and History is responsible for the implementation of the records management laws of the state and is the final disposition of all MDEQ records.

6. COMPUTER HARDWARE AND SOFTWARE

6.1 General

Information technology is critical to the performance of the mission of the Department. Computer systems are used to gather, store, analyze, retrieve, visualize, archive, and publish data for use by MDEQ staff, interested parties, and stakeholders. Computer software and hardware used to calculate or develop data for environmental programs included in the Quality Management System are managed to ensure that data are of acceptable precision and accuracy and that data are not corrupted or lost. Equipment and systems covered under this section include:

- Desktop hardware and software used by MDEQ staff.
- Server hardware and software used to store and access environmental data, e-mail, and documents.
- Communications hardware and software used to interconnect desktop and server equipment including local area networks (LANs), wide area networks (WANs), the Internet, and other remote networks.

6.2 Roles and Responsibilities

The Mississippi Department of Information Technology Services (ITS) has established the hardware and software standards with which the State of Mississippi government must conform. The Office of Information Technology (OIT) within MDEQ is responsible for managing the hardware, software and communications components that form the foundation of MDEQ's technology infrastructure. Additionally, OIT maintains the Agency's e-mail system, financial and personnel databases, and the Department's internet website, http://www.mdeq.ms.gov.

OIT works collaboratively with other MDEQ IT staff to develop standards and policies for computer hardware and software. MDEQ managers and staff will observe all hardware and software standards.

6.3 Developing Computer Hardware and Software Requirements

6.3.1 Computer Hardware

MDEQ will procure hardware and software that conform to MDEQ-wide information management structure. MDEQ IT staff will assess significant changes in MDEQ's hardware and software policy to determine the effect on MDEQ as a whole. In the event changes are required, MDEQ IT managers will plan and implement appropriate modifications. MDEQ utilizes two systems in order to track modifications and changes:

a standard helpdesk ticketing system for IT support requests to document the initial requests, as well as track overall progress, and a formal Change Management process (which includes all stakeholders) in order to authorize and document the implementation of the modifications. Both systems reside on the MDEQ network.

The specifications for computer hardware are determined by MDEQ IT staff taking into consideration the functional needs of Department staff. The suitability of particular hardware configurations for use by the Department, such as those available on State Contract, is determined through on-site testing of the hardware and/or through review of system specifications documentation. The following minimum requirements must be met:

- Able to utilize the Microsoft Windows family of operations systems (*e.g.*, Windows 7 and Windows 10, Windows Server 2016).
- Able to run the Microsoft Office suite.
- Compatible with all applications designed to run under the Microsoft Windows operating system.
- Must be capable of running the Department standard software packages (Windows, Office 365).

6.3.2 Computer Software

Computer software is developed on the basis of a vision/scope document that provides a top-level view of the desired application. The functional requirements described by the vision/scope document are used to develop an application requirements document. Both the vision/scope and application requirements documents are developed by a Systems Analyst in collaboration with the end users, management, and other stakeholders. The application requirements document provides a detailed overview of the required features and functions and may include a description of the desired user interface, database design/data dictionary, portability requirements, security requirements, reporting capabilities, accessibility requirements, and other features. Once agreement has been reached among the principals that the systems requirements document adequately describes the application, a project plan is developed. The project plan enumerates the priorities, sequence of tasks, and roles/responsibilities. The project plan may be formal or informal depending on the scope of the project. Actual application development takes place with iterative cycles of development and testing. Successful implementation of the project plan culminates with final application testing and debugging with the users-at-large and, finally, production implementation of the application.

6.4 Evaluating Purchased Hardware and Software

MDEQ IT staff are responsible for specifying, procuring, installing, and maintaining computer hardware and software so that they meet the needs of the Department's programs and are consistent with the policies and standards promulgated by the Mississippi

Department of Information Technology Services (ITS). PCs, Laptop/Tablets, and LCD displays are procured via a state-wide contract let by the Mississippi Department of Finance and Administration and utilized by agencies throughout the State. Specifications are updated at least annually to reflect the state of current technology. Operating system software (Microsoft Windows) and office productivity software (Microsoft Office suite) are obtained via an Enterprise Agreement which entitles the Department to updates. Standardized disk images that encompass the operating system, office productivity software, antivirus software, etc. are created for each client hardware platform and tested for proper operation and configuration. Once an operationally stable configuration is achieved, an image of the test system is created. All subsequent installations to that particular hardware platform utilize the standard image. Images are periodically updated to ensure that critical software updates are incorporated into the standard system image. System images are accessible only to authorized MDEQ IT staff responsible for deployment and maintenance. All operating system software and application software are installed from the MDEQ network where it is secured against unauthorized use or access.

6.5 Evaluating Hardware and Software Changes

6.5.1 General

If an MDEQ organization has a need to purchase or develop application software that is not on State contract, the software will be evaluated prior to purchase or during development. MDEQ IT staff and system users are responsible for evaluating software to determine its performance capabilities and documentation.

6.5.2 Client PC/Laptop Hardware/Software Testing

Client PC and Laptop systems are loaded with Operating System and Office Productivity software from standard disk images developed by MDEQ IT staff upon receipt of the hardware from the vendor. The systems are tested by MDEQ IT staff to ensure that they successfully run all Department standard software applications and are able to utilize the Departmental network. Information about concerns or problems is transmitted to MDEQ IT support staff. MDEQ IT staff is responsible for pushing critical software updates to all client systems connected to the Departmental LAN/WAN.

6.6 Data and Information Requirements and Standards

Responsibility for the quality of data produced from or collected by computers, computer systems, and/or databases lies with the related program staff and is subject to multiple layers of QA/QC, from point of collection to entry in the Assessment Database. Project QAPPs establish standards for accuracy and completeness. Project Managers, Quality Assurance Mangers and ultimately, Data Assessment personnel are responsible for certifying that these standards are met. Depending on the age and design of the database, the system may have fields within the data records documenting the conduct of applicable data review and validation processes. Guidance documents (SOPs and other operational documents) set forth the procedures and

means of managing data to ensure their quality during their useful life. User requirements for developed or purchased systems identify the requirements for data quality and the inspection and testing procedures needed to ensure that the delivered system meets those requirements. MDEQ IT staff and system users review requirements documents to assure that data quality requirements are met.

6.7 System Safeguards

Systems and data are protected against malicious and unintended loss and corruption through measures designed to restrict access, detect threats, and reduce the probability of loss.

6.7.1 System Access

Access to systems is administered by MDEQ IT staff. Users are set up to access only the systems they need to do their work. Access is controlled by user ID/password authentication both at the desktop level and program application level. Multi-factor authentication is used for accounts designated sensitive or targeted.

6.7.2 Endpoint Protection

Computer malware poses a significant threat to computer systems and the data stored on them. OIT maintains endpoint protection software on all client and server systems connected to the Departmental LAN/WAN. Updates are obtained daily or more frequently, if necessary. Additionally, the network is protected by Firewall, Intrusion Detection, and Content Filtering at the perimeter.

6.7.3 Backup and Recovery

In order to safeguard against data loss, MDEQ IT staff backs up its server-based operating configurations, software, and data on a regular basis and maintains multiple generations of media to support a roll-back to a prior version. Backups are scheduled, tested and media stored according to standardized procedures. Users are directed to store all non-volatile data on servers that are covered by the backup plan or to create and maintain a system with equivalent safeguards. Only temporary copies of data are to be stored on hard drives not covered by a backup plan.

7. PLANNING

7.1 General

Environmental data-generating programs shall be planned in accordance with State and Federal laws and rules, Department guidelines, and contractual requirements. Environmental programs and projects are planned through the development of the Departmental program plans/strategies and budgets, grant work plans, QAPPs, and contracts/cooperative agreements executed by MDEQ and external organizations. These documents translate requirements and expectations into measurable specifications, commitments, and performance criteria.

7.2 Planning

7.2.1 Program Planning

Planning is an integral part of each MDEQ program; however, the frequency and mode of the planning process varies between Divisions and programs. Many Division programs conduct planning as part of the annual grant continuation/commitment process or conduct ongoing program planning/strategy development sessions as part of their routine activities, while others have dedicated personnel whose primary focus is specifically on planning Division activities.

7.2.2 Systematic Project Planning

Projects involving the generation, acquisition, and use of environmental data should be planned using a systematic process. A systematic planning process such as the one outlined in the document, *Guidance on Systematic Planning using the Data Quality Objectives Process*, (EPA QA/G-4), EPA/240/B-06/001 (February 2006) or other comparable process, may be used for MDEQ programs or projects. Data Quality Objectives (DQOs) are qualitative and quantitative statements of the quality of data needed to support specific decisions or regulatory actions. The outputs of the systematic planning process are used for the detailed design of the program/project and preparation of the associated QAPP(s). These processes are described in more detail in Section 2.

These Planning activities are conducted to:

- Ensure that data collected are of the type and quality appropriate to their intended use, and therefore support decision-making, by defining the project goal(s) and objective(s).
- Generate the sampling design to include the type and quantity of data needed, a project schedule, resource requirements and availability, milestones, and any applicable requirements (*e.g.*, what, how many, when, where, and how to collect samples).
- Determine if existing data may be used to support decision-making and what, if any, sources of sample design, collection or analytical errors could contribute to total decision errors.
- Optimize the data collection efforts by ongoing evaluation of the program needs, data collection activities that support these program needs, and technology advancements available for generating data; and by promoting communication among all involved parties before, during, and after project completion. This method is also used to assess the effectiveness of the systematic planning process.

External QAPPs submitted to the applicable Departmental Program/Project Manager (PM) are initially reviewed by the program staff/managers. The PM coordinates review of these QAPPs and may submit them to the QAM for review/concurrence/approval.

8. IMPLEMENTATION OF WORK PROCESSES

8.1 General

All of the MDEQ environmental programs shall be performed to ensure that all information provided is done so in an accurate and timely manner and that all data is collected, analyzed, and assessed according to approved plans and procedures. These also include programs conducted by contractors. Any deviations from established and approved plans or procedures must be documented and communicated to the PM for the project. It will be the responsibility of the PM to notify all related QA personnel for that project as well as the MDEQ QAM.

8.2 Planning

Work processes are performed using approved QAPPs, SOPs, training, and performance assessments. Throughout this entire document each of these work processes are described in detail as part of the MDEQ Quality System.

8.2.1 Implementation of QAPPs

It is the responsibility of the PM to develop the project or program specific QAPP. Upon completion, the PM will submit the DRAFT version of the QAPP to the MDEQ QAM who will distribute it to a member(s) of the MDEQ QAC for internal review. Upon completion and approval of the internal review, all necessary approval signatures are secured. If approval is needed from EPA, the PM will send the necessary documentation to the Region 4 Project Officer for review. Upon the approval of EPA, the PM is responsible for distribution of the approved QAPP to project personnel and all those listed in the distribution list of the QAPP. The original shall be archived and maintained by the MDEQ QAM.

QAPPs submitted from outside MDEQ for MDEQ projects or programs will undergo the same requirements listed above.

Project specific QAPPs will be evaluated by the project QA manager on a yearly basis. If it is determined that revisions are needed, the PM will be notified and be responsible for providing those. Once revised, the process above starts over again. Program specific QAPPs will be evaluated based on the following criteria to determine whether a program QAPP requires revision:

- When the delegation status of a state's environmental program changes.
- Periodic audit findings indicate that changes should be made to the program QAPP.
- Significant changes in personnel or program operations dictate changes to the QAPP.
- Five years have passed since the last evaluation.

It is the responsibility of the PM to notify and provide all listed in the distribution list updated versions of project or program QAPPs.

QAPPs are discussed in more detail in Section 2, Quality System Components.

8.2.2 Standard Operating Procedures

All MDEQ personnel and contractors are required to adhere to the following implementation and practice policies:

- All sampling, analysis, and assessment activities that produce environmental data will be performed according to approved plans and SOPs. This includes not only MDEQ personnel but contractors as well.
- The activities will have management oversight that will include audits and performance evaluations.
- SOPs will be developed, documented, and implemented for all routine operations related to sampling, analysis, and assessment.

Please refer to Section 2 for further detail related to SOP objectives and preparation.

8.2.3 Training

Training related to work process implementation is discussed in Section 3, Personnel Qualifications, and Training.

8.2.4 Performance Assessments

Performance assessments related to work process implementation is discussed in Section 9, Assessment and Response.

9. ASSESSMENT AND RESPONSE

MDEQ will evaluate the performance of its environmental projects and the effectiveness of its Quality System by planning, implementing, and documenting its assessment activities. Assessments are planned, scheduled and carried out, audit results are reviewed, and corrective actions enacted to ensure that the environmental programs meet MDEQ's Quality System requirements.

It is MDEQ's policy that all assessment personnel shall have access to all work areas, documents, records, personnel, and Supervisors that are necessary to:

- Conduct an assessment to verify that plans, policies, and procedures are being followed.
- Identify and document quality problems and noteworthy practices.
- Communicate deficiencies to management.
- Determine if corrective actions have been implemented and are effective.

MDEQ evaluates the adequacy of its Quality System in relation to its environmental projects at least annually, which includes a review of the QMP and the effectiveness of its assessment/response

processes. The QMP is then revised as needed consistent with the *EPA Requirements for Quality Management Plans*, (EPA QA/R-2), EPA/240/B-01/002 (March 2001).

Routine assessment and monitoring are conducted by managers (or designees) to ensure the quality of products and services at MDEQ. This is accomplished by performing periodic checks to ensure processes are being followed. Audits are planned and coordinated by the MDEQ QAM and/or PMs (or designees).

9.1 Assessment Types

MDEQ uses four types of assessments including:

- System Audits.
- Technical Audits.
- Data Quality Assessments.
- Performance Planning and Reviews.

9.1.1 System Audits

Audits will be performed in all offices involved in data collection, generation, management, and use; the goal is to perform a system audit in at least one program (*i.e.* water permits, air quality assessments) annually. The system will qualitatively assess a program's organization and data collection procedures to determine if the management procedures are in place and are adequate to ensure the quality of the program data. The MDEQ QAM will work with the Project Management to coordinate audit activities. The MDEQ QAM will mentor audit teams from outside the evaluated program to conduct audits using *Guidance on Assessing Quality Systems*, (EPA QA/G-3), EPA/240/R-03/002 (March 2003). Results of system audits will be forwarded to the administrators upon completion of the review (but prior to a final written report). The Project Manager of the program reviewed is responsible for taking any necessary corrective actions and determining whether additional audit activities are required.

9.1.2 Technical Audits

All programs that employ environmental sample collection and analyses are subject to a Technical Audit. This audit involves a thorough review of the facilities, equipment, sampling, analysis and documentation procedures, data validation, management processes, training procedures, and the reporting aspects of the technical system for collecting or processing environmental data. These type audits also include laboratory audits as well as field sampling audits. Technical Audits can be routinely planned by the administrators, be specifically requested by a Division, Branch, Section, or the MDEQ QAM, or result from audit or review findings. The auditor, assigned by a manager, is responsible for scheduling the audit, assembling the audit team if necessary, and coordinating the audit. Audit results will be reported to the audited organization in the form of a written report. EPA guidance is available on how to conduct Technical Audits (*Guidance on Technical Audits and Related Assessments for Environmental Data Operations*, (EPA QA/G-7), EPA/600/R-99/080 (January 2000). As resources allow, contractors can provide auditing services and provide an independent assessment of various activities.

9.1.3 Data Quality Assessments (DQA)

Data will be evaluated for quality and integrity. Data review, data verification, and data validation procedures are documented in the appropriate QAPP and are typically performed within the program area. The procedures will document the decision process and factors used in arriving at the choice of the particular qualification method. Limitations on data use will be identified quantitatively to the extent practicable and will be fully documented. All data collected and analyzed must be qualified (for example, validated for use).

Data validation is used to determine if the verified data met the acceptable level of certainty required for a decision. Confidence levels may be stated in the QAPP as performance measures for the project. This process may include application of statistical methods during the data quality assessment process.

Environmental data generated outside of a quality assurance program or an approved QAPP and used in an environmental program will be qualified according to its intended use. The data and the methods used to qualify such data will be identified in the reports produced with the data. The suitability of the monitoring and measuring devices will also be identified and may include the accuracy and precision of the device.

Guidance documents are available to assist in determining appropriate data assessments and determining the usability of data including EPA quality system documents QA/G-3, QA/G-7, QA/G-8, QA/G-9R, and QA/G-9S (http://www.epa.gov/quality/qa_docs.html).

9.1.4 Performance Planning and Reviews (PPR)

It is the responsibility of all managers and/or supervisors to ensure that performance planning and reviews have the appropriate level of quality work product expectations planned and reviewed. This should be equal to their level of Quality System responsibilities. Managers and supervisors shall ensure that their staff is properly trained in selecting sampling locations, sampling and calibration techniques, and equipment usage. Any employee deficiencies shall be identified during the planning process and addressed prior to any sampling or analytical events.

9.2 Assessment Planning

Assessment plans and schedules will take into account such factors as public health and safety, budgets, results of prior assessments, grant/program coverage and continuity, complexity of work activities, management criteria, and existing commitments (for example, QAPPs). Scheduled assessments may be supplemented by unscheduled or unannounced assessments requested by managers or supervisors. EPA funded programs are subject to review at any time. Formal assessment of performance under EPA assistance agreements occurs as part of a comprehensive review and evaluation of MDEQ programs. Depending on the type audit and the program to be audited, auditors will be required to have appropriate training. Training activities are discussed further in Section 3, Personnel Qualifications and Training.

9.3 Assessment Implementation

Implementation of work processes shall include the routine measurement of performance against established technical and quality specifications. The work process shall be monitored to ensure continued satisfactory performance. The independence of personnel monitoring the work performance shall be proportionate with the nature and importance of the activity as determined by management.

The assessments will be planned and coordinated by the MDEQ QAM (or designee) and project management. Assessments will be led by an assessment leader and conducted by one or more individuals. The managers, with assistance from the MDEQ QAM and the assessment leader, will ensure that personnel conducting assessments are technically knowledgeable, have no real or perceived conflict of interest, and have no direct involvement or responsibility for the work being assessed.

An assessment leader shall forward a written assessment report to management and the MDEQ QAM within 30 calendar days of completing the on-site phase of an assessment. If an assessment report contains adverse findings, managers and supervisors of the affected projects shall forward written responses that describe appropriate corrective actions to the assessment leader and the MDEQ QAM within 30 calendar days of receiving the assessment report.

9.4 Suspension of Assessments

An assessment may be suspended if, in the judgment of the assessment leader, the objectives of an assessment cannot be achieved or a continuation of an assessment could jeopardize the health or safety of any member of the assessment team. The assessment leader shall notify the MDEQ QA Manager and Administrator(s) as soon as practical after suspending an assessment and shall describe the reasons for the suspension. The assessment will be rescheduled when the reasons for suspension have been addressed.

10. QUALITY IMPROVEMENT

10.1 General

Quality System deficiencies shall be prevented wherever possible. Identified deficiencies shall be documented and corrected in a timely manner. Corrective actions will be verified to ensure timely and effective implementation. Efforts will be made to improve quality systems continually. Systems, documents, and tools described in preceding sections summarize the approach taken by MDEQ to plan, organize, implement, monitor, and assess quality systems for environmental programs. All personnel working on environmental programs are encouraged to identify, plan, implement, and evaluate quality improvement activities for their areas of responsibility. Personnel should prevent quality problems wherever possible and report opportunities for improvement as well as quality problems as they are identified.

10.2 Quality System Implementation

The MDEQ Executive Director has the overall responsibility for the development,

implementation, and continued operation of the MDEQ Quality Management System (Section 1.4.1). The QAM has the authority and responsibility for managing the QA activities within the Department (Section 1.4.3). The QAM and the QAC have the overall responsibility for evaluating the effectiveness of the Department's Quality System. In addition, MDEQ PMs have the responsibility for continual monitoring of the effectiveness of their individual project's quality system.

10.3 Process for Continuous Improvement

The review timetables for SOPs and QAPPs specified in Section 2 promote a cycle of continuous improvement. Ongoing interaction with EPA Region 4 managers, along with annual EPA reporting requirements and periodic program reviews and audits performed at MDEQ by EPA also enable the Department to continue steady, long term improvement of its Quality System. Additionally, quality system issues detected during the real-time surveillance (inherent in the Department's operations and chain-of-command for review and approval) further ensures steady improvement of the Department's Quality System development, implementation, assessment, and improvement cycle.

10.4 Process for Preventing and Improving Conditions Adverse to Quality

10.4.1 Preventing Conditions Adverse to Quality

The Department's use of standard procedures/guidelines and a chain-of-command review and approval process serve to ensure quality work products and also help guarantee the effectiveness of existing and new quality system tools. Various internal and external quality training activities are used by the Department in preventing conditions adverse to quality. Specific quality training sessions will be developed in response to requests by Departmental programs or in response to needs as determined by internal or external audits. The QAM and QAC members have access to all work areas and sufficient authority and organizational freedom to identify, initiate, recommend, and propose solutions to quality problems and to facilitate the implementation of solutions to problems. Although independent of the program areas, the approach to evaluation, corrective action, and continual improvement taken by the QAM is team oriented. The QAM works with program area managers to build consensus and if there are disagreements about recommendations from QA staff, disputes are resolved at the lowest administrative level possible utilizing the existing management structure of Section Chiefs, Branch Chiefs, and Division Chiefs. Should agreement not be reached at this level, then the QAM and the management staff take the issue to the OPC Office Director for resolution. The Office Director shall have final dispute authority on all quality issues.

10.4.2 Identification of Conditions Adverse to Quality

The chain-of-command for review and approval also serves to detect problems with the Quality System. Any perceived decline in the quality of work products triggers a review of Quality System tools and methodologies. For example, if a work product does not meet established standards, it could be an indicator that management and staff should revisit and perhaps revise one or more of the written SOPs. The tools to ensure quality

work products – the QMP, QAPPs, and SOPs – are systematically put into place at MDEQ as a result of the Department's commitment to expanding the Quality System. These tools lead to standardization and help put widely accepted business practices into common use. Various assessments conducted by QA staff also keep Quality System development on track and help to identify problems or gaps in the Department's Quality System.

10.4.3 Correction of Conditions Adverse to Quality

The Department intends that any Quality System problems detected by the chain-of-command for review and approval process, QA staff assessments, or EPA Region 4 audits will be addressed in a timely manner. Corrective actions should be implemented by the affected program and tracked by the appropriate quality staff to ensure the effectiveness of Quality System tools (*i.e.*, SOPs and QAPPs) is addressed within a reasonable time after problems are detected and reported.

10.4.3.1 Deficiencies and Non-Conformances (Informal Corrective Actions)

Significant deficiencies and non-conformances to QAPPs, SOPs, or Department requirements observed outside of a formal audit or assessment process are reported by Department staff to supervisors. The MDEQ QAM and/or the project management as defined in the QAPP has authority to suspend or stop work upon detection and identification of an immediate adverse condition affecting quality or health and safety. The deficiency or non-conformance should be documented by the project manager. A formal Corrective Action Plan (CAP) may be required, and if so required, tracked until closure. Any documentation should be included in the project or program file(s) to ensure that future individuals involved with the project or activity are able to trace the evolution of procedural or policy change (including what was done, by whom, and why).

10.4.3.2 Formal Corrective Actions

When significant deficiencies and non-conformances to QAPPs, SOPs, or Department requirements are observed during a formal audit or assessment process, a corrective action system should be employed. Corrective actions may be immediate or long-term. Immediate corrective actions form part of normal operating procedures such as to correct data or repair nonconforming equipment. Long-term corrective actions may be required to eliminate the cause(s) of nonconformance through training, or development of, or revision to, an SOP. In either case, the occurrence of the problem, the corrective action employed, and the verification that the problem has been eliminated should be documented. In the event quality problems are identified, the quality staff, in consultation with the PM, or designee, determine whether attainment of acceptable quality requires either immediate or long-term actions, or both. The

steps comprising a closed-loop corrective action system typically include:

- Define the problem and any programmatic impact.
- Assign the responsibility for investigating the problem.
- Document the means by which corrective action completion is documented and verified.
- Investigate and determine the cause(s) of the problem.
- Determine a corrective action to eliminate the problem including action(s) needed to prevent recurrence.
- Estimate a timetable.
- Assign and accept responsibility for implementing corrective action.
- Establish effectiveness of the corrective action and implement the correction.
- Verify that the corrective action has eliminated the problem.

11. DEMONSTRATION OF LABORATORY COMPETENCY

11.1 General

To assure the quality of data generated by our Laboratory, MDEQ maintains a documented Quality System that complies with the requirements of the EPA Quality System as defined by EPA Policy CIO-2105.0. Demonstration of our competency is to address this policy that requires organizations that generate environmental data using EPA funds submit documentation of competency. MDEQ addresses the competency of all its programs/projects that use environmental data through its Quality Management Plan, project specific Quality Assurance Project Plans, NPDES testing requirements and Standard Operating Procedures (SOP) for monitoring activities.

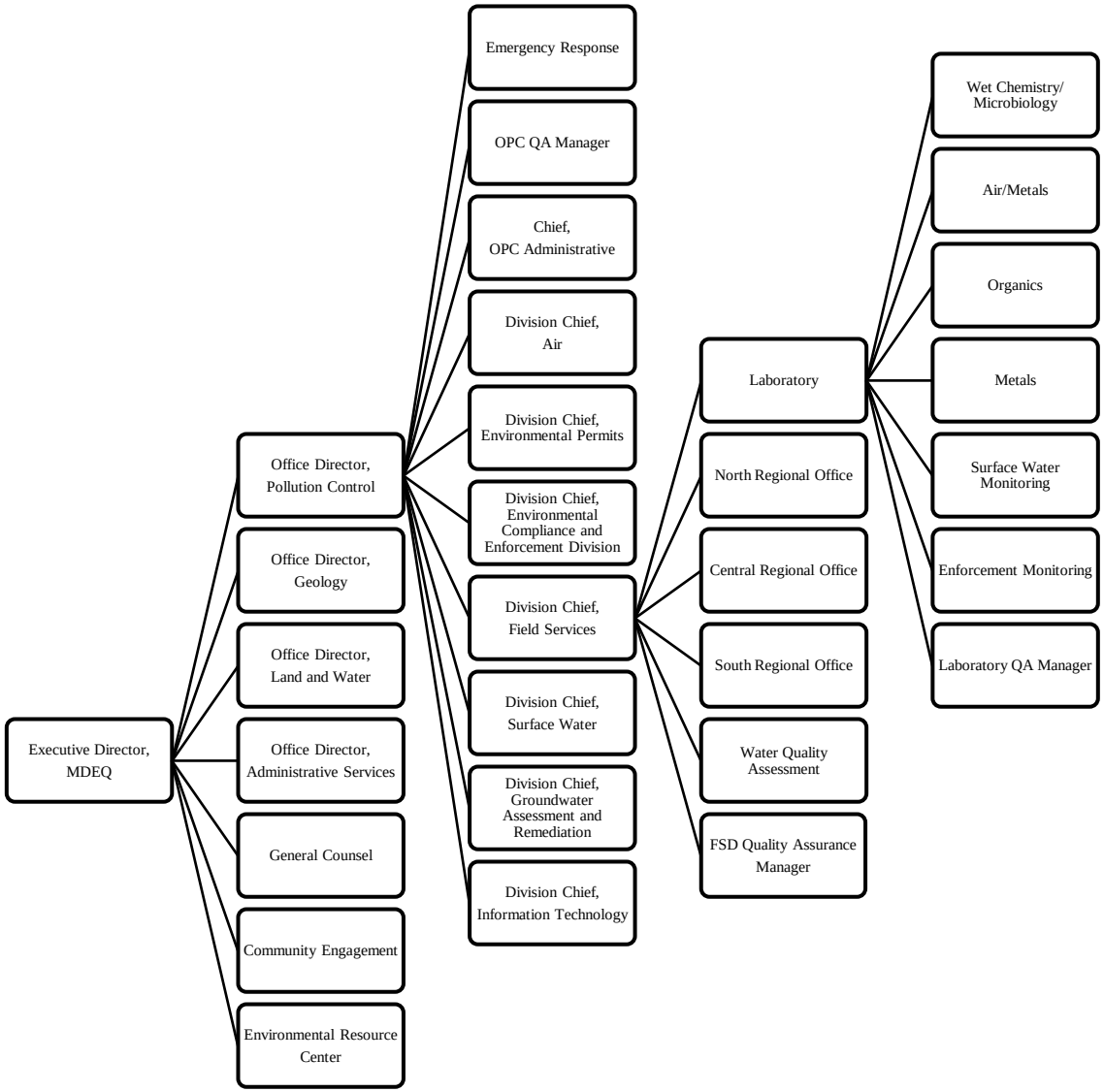
More specifically these competency requirements are addressed and documented through the following activities:

- Periodic independent audits for both laboratory and field activities by contractors as resources allow.
- Internal audits for both laboratory and field activities.
- Correction of deficiencies discovered during audits.
- Periodic staff training annually and can be specific to monitoring programs/projects.
- For new employees - formal supervisory training and observation.
- Strict adherence to both field and laboratory SOPs.
- Systematic planning of work based on holding times and program/project timelines.
- Laboratory validation/verification of method performance through the following:
    - Proficiency testing samples.
    - Laboratory duplicates.
    - Blanks.
    - Spikes.
    - Standard reference materials.

- Field sampling activities are verified and validated through the following activities:
  - Grab duplicate sampling and evaluation.
  - Field blanks preparation and evaluation.
  - Trip blanks.
  - Biological duplicates.
  - Biological replicates.
  - Accurate and complete meter calibrations verified and validated by meter calibration logs.
  - Demonstration of proficiency in sample collection and meter calibrations.

Appendix A - Organizational Chart

MDEQ Organizational Chart



Appendix B - Major Program Elements

ACTIVITY	APPLICABLE LAW/REGULATION	RESPONSIBLE DIVISION
Ambient Air Monitoring for Criteria Pollutants: Special studies (*i.e.*, Air Toxics)	CAA	AIR, FSD
Stationary Source Enforcement	CAA	AIR, ECED, FSD
Title V Permitting	CAA	EPD
PCB and Dioxin Cleanups	TSCA/MS Brownfield Regulations	GARD
Asbestos Inspections -- Overview of asbestos removal from schools and overview of renovation and demolition of buildings. Sampling and analyses are conducted by contractors	TSCA, CAA	AIR
Water Quality Monitoring -- Activities involve both fixed station networks and intensive studies	CWA	SWD, FSD
Water Quality Enforcement	CWA	ECED, FSD
Water Quality Certification	CWA	EPD
NPDES Permitting	CWA	EPD
Pretreatment Permitting	CWA	EPD
Animal Waste Permitting	CWA	EPD
Water State Operating Permit	CWA	EPD
Solid Waste Permitting	RCRA	WD
Hazardous Waste Permitting	RCRA	WD
RCRA -- This includes Hazardous Waste and Nonhazardous Solid Waste Programs	RCRA	ECED, GARD, WD
Investigations of Contaminated Sites	CERCLA/MS Brownfield Regulations	GARD
Underground Injection Control	SDWA	WD
Investigations of leaking Underground Storage Tanks	RCRA	GARD

Appendix C - QA Project Plan Checklist

QA PROJECT PLAN CHECKLIST

PROJECT TITLE:

Preparer: _____ **Date Submitted for Review:** _____

Reviewer: _____ **Date of Review:** _____

Note: A = Acceptable /U = Unacceptable/ NI = Not Included/ NA = Not Applicable

ELEMENT	A	U	NI	NA	PAGE # SECTION #	COMMENTS
PROJECT MANAGEMENT						
A1. Title and Approval Sheet						
Contains project title						
Indicates revision number, if applicable						
Indicates organization's name						
Dated signature of organization's project manager present						
Dated signature of organization's QA manager present						
Other signatures, as needed						
A2. Table of Contents						
Lists QA Project Plan information sections						
Document control information indicated						
A3. Distribution List						
Includes all individuals who are to receive a copy of the QA Project Plan and identifies their organization						

ELEMENT	A	U	NI	NA	PAGE # SECTION #	COMMENTS
A4. Project/Task Organization						
Identifies key individuals involved in all major aspects of the project, including contractors						
Discusses their responsibilities						
Project QA Manager position indicates independence from unit generating data						
Identifies individual responsible for maintaining the official, approved QA Project Plan						
Organizational chart shows lines of authority and reporting responsibilities						
A5. Problem Definition/Background						
States decision(s) to be made, actions to be taken, or outcomes expected from the information to be obtained						
Clearly explains the reason (site background or historical context) for initiating this project						
Identifies regulatory information, applicable criteria, action limits, etc. necessary to the project						
A6. Project/Task Description						
Summarizes work to be performed (i.e., measurements to be made, data files to be obtained, etc.), that support the project's goals						
Provides work schedule indicating critical project points, (*e.g*., start and completion dates for activities such as sampling, analysis, data or file reviews, and assessments)						
Details geographical locations to be studied, including maps where possible.						

ELEMENT	A	U	NI	NA	PAGE # SECTION #	COMMENTS
Discusses resource and time constraints, if applicable.						
A7. Quality Objectives and Criteria						
Step 1. State the Problem:						
Identify the planning team						
Define the problem						
Identify primary decision maker for the planning team						
Specify the available resources and relevant deadline						
Description of conceptual model of potential hazard						
Step 2. Identify the Goal of the Study						
Identify the principal study question						
Consider alternative outcomes or actions that can occur upon answering the question(s)						
For decision problems, develop decision statements, organize multiple decisions. **OR** For estimation problems, state what needs to be estimated and key assumptions						
Step 3. Identify Information Inputs						
Identify types and sources of information needed to resolve decisions or produce estimates						
Identify the basis of information that will guide or support choices to be made in later steps of the DQO process						
Select appropriate sampling and analysis methods for generating the information						

ELEMENT	A	U	NI	NA	PAGE # SECTION #	COMMENTS
Step 4. Define the study boundaries						
Define the target population of interest and its relevant spatial boundaries (Also refer to an attached Map or Figure)						
Define what constitutes a sampling unit (This is typically a table in Section B4)						
Specify temporal boundaries and other practical constraints associated with sample/data collection						
Specify the smallest unit on which decisions or estimates will be made						
Step 5. Develop the analytical approach						
Specify appropriate population parameters for making decisions or estimates						
For decision problems, choose a workable Action Level and generate an "If….. then…..else" decision rule which involves it						
For estimation problems, specify the estimator and the estimation procedure						
Step 6. Specify Performance or Acceptance Criteria						
For decision problems, specify the decision rule as a statistical hypothesis test, examine consequences of making incorrect decisions from the test, and place acceptable limits on the likelihood of making decision errors (Performance criteria for analytical data is typically referenced and included in tables in Section B5) **OR** For estimation problems, specify acceptable limits on estimation uncertainty						
Step 7. Develop a Detailed Plan for Obtaining Data						
Compile all information and outputs generated in Steps 1 through 6. Use this information to identify alternative sampling and analysis designs that are appropriate for your intended use						

ELEMENT	A	U	NI	NA	PAGE # SECTION #	COMMENTS
Select and document a design that will yield data that will best achieve your performance or acceptance criteria						
A.8 Measurement Performance Criteria						
Discusses precision						
Addresses bias						
Discusses representativeness						
Identifies the need for completeness						
Describes the need for comparability						
Discusses desired method sensitivity						
A9. Special Training/Certifications						
Identifies any project personnel specialized training or certifications						
Discusses how this training will be provided						
Indicates personnel responsible for assuring these are satisfied						
Identifies where this information is documented						
A.10 Documentation and Records						
Identifies report format and summarizes all data report package information						
Lists all other project documents, records, and electronic files that will be produced						
Identifies where project information should be kept and for how long						

ELEMENT	A	U	NI	NA	PAGE # SECTION #	COMMENTS
Discusses back up plans for records stored electronically						
States how individuals identified in A3 will receive the most current copy of the approved QA Project Plan, identifying the individual responsible for this						
DATA GENERATION AND ACQUISITION						
B1. Sampling Process Design (Experimental Design)						
Describes and justifies design strategy, indicating size of the area, volume, or time period to be represented by a sample						
Details the type and total number of sample types/matrix or test runs/trials expected and needed						
Indicates where samples should be taken, how sites will be identified/located						
Discusses what to do if sampling sites become inaccessible						
Identifies project activity schedules such as each sampling event, times samples should be sent to the laboratory, etc.						
Specifies what information is critical and what is for informational purposes only						
Identifies sources of variability and how this variability should be reconciled with project information						
B2. Sampling Methods						
Identifies all sampling SOPs by number, date, and regulatory citation, indicating sampling options or modifications to be taken						
Indicates how each sample/matrix type should be collected						

ELEMENT	A	U	NI	NA	PAGE # SECTION #	COMMENTS
If *in situ* monitoring, indicates how instruments should be deployed and operated to avoid contamination and ensure maintenance of proper data						
If continuous monitoring, indicates averaging time and how instruments should store and maintain raw data or data averages						
Indicates how samples are to be homogenized, composited, split, or filtered, if needed						
Indicates what sample containers and sample volumes should be used						
Identifies whether samples should be preserved and indicates methods that should be followed						
Indicates whether sampling equipment and samplers should be cleaned and/or decontaminated, identifying how this should be done and by-products disposed of						
Identifies any equipment and support facilities needed						
Addresses actions to be taken when problems occur, identifying individual(s) responsible for corrective action and how this should be documented						
B3. Sample Handling and Custody						
States maximum holding times allowed from sample collection to extraction and/or analysis for each sample type and, for *in-situ* or continuous monitoring, the maximum time before retrieval of information						
Identifies how samples or information should be physically handled, transported, and then received and held in the laboratory or office (including temperature upon receipt)						

ELEMENT	A	U	NI	NA	PAGE # SECTION #	COMMENTS
Indicates how sample or information handling and custody information should be documented, such as in field notebooks and forms, identifying individuals responsible						
Discusses system for identifying samples (*i.e*. numbering system, sample tags and labels), and attaches forms to the plan						
Identifies chain-of-custody procedures and includes form to track custody						
B4. Analytical Methods						
Identifies all analytical SOPs (field, laboratory and/or office) that should be followed by number, date, and regulatory citation, indicating options or modifications to be taken, such as sub-sampling and extraction procedures						
Identifies equipment or instrumentation needed						
Specifies any specific method performance criteria						
Identifies procedures to follow when failures occur, identifying individuals responsible for corrective action and appropriate documentation						
Identifies sample disposal procedures						
Specifies laboratory turnaround times needed						
Provides method validation information and SOPs for nonstandard methods						
B5. Quality Control						
For each type of sampling, analysis, or measurement technique, identifies QC activities which should be used (*i.e*., blanks, spikes, duplicates, etc.) and at what frequency						
Details what should be done when control limits are exceeded and how effectiveness of control actions will be determined and documented						

ELEMENT	A	U	NI	NA	PAGE # SECTION #	COMMENTS
Identifies procedures and formulas for calculating applicable QC statistics (*i.e*. precision, bias, outliers and missing data)						
B6. Instrument/Equipment Testing, Inspection, and Maintenance						
Identifies field and laboratory equipment needing periodic maintenance, and the schedule for this						
Identifies testing criteria						
Notes availability and location of spare parts						
Indicates procedures in place for inspecting equipment before usage						
Identifies individual(s) responsible for testing, inspection, and maintenance						
Indicates how deficiencies found should be resolved, re-inspections performed, and effectiveness of corrective action determined and documented						
B7. Instrument/Equipment Calibration and Frequency						
Identifies equipment, tools, and instruments that should be calibrated and the frequency for this calibration						
Describes how calibrations should be performed and documented, indicating test criteria and standards of certified equipment						
Identifies how deficiencies should be resolved and documented						
B8. Inspection/Acceptance for Supplies and Consumables						

ELEMENT	A	U	NI	NA	PAGE # SECTION #	COMMENTS
Identifies critical supplies and consumables for field and laboratory, noting supply source, acceptance criteria, and procedures for tracking, storing and retrieving these materials						
Identifies the individual(s) responsible for this						
B9. Non-Direct Measurements						
Identifies data sources (i.e. computer databases or literature files, or models that should be accessed and used)						
Describes the intended use of this information and the rationale for their selection (*i.e.*, its relevance to project)						
Indicates the acceptance criteria for these data sources and/or models						
Identifies key resources/support facilities needed						
Describes how limits to validity and operating conditions should be determined (i.e., internal checks of the program and Beta testing)						
B10. Data Management						
Describes data management scheme from field to final use and storage						
Discusses standard record-keeping and tracking practices, and the document control system or cites other written documentation such as SOPs						
Identifies data handling equipment/procedures that should be used to process, compile, analyze, and transmit data reliably and accurately						
Identifies individual(s) responsible for this						

ELEMENT	A	U	NI	NA	PAGE # SECTION #	COMMENTS
Describes the process for data archival and retrieval						
Describes procedures to demonstrate acceptability of hardware and software configurations						
Attaches checklists and forms that should be used						
ASSESSMENT AND OVERSIGHT						
C1. Assessments and Response Actions						
Lists the number, frequency, and type of assessment activities that should be conducted with the approximate dates						
Identifies individual(s) responsible for conducting assessments, indicating their authority to issue stop work orders and any other possible participants in the assessment process						
Describes how and to whom assessment information should be reported						
Identifies how corrective actions should be addressed and by whom, and how they should be verified and documented						
C2. Reports to Management						
Identifies what project QA status reports are needed and how frequently						

ELEMENT	A	U	NI	NA	PAGE # SECTION #	COMMENTS
Identifies who should write these reports and who should receive this information						
DATA VALIDATION AND USABILITY						
D1. Data Review, Verification, and Validation						
Describes criteria that should be used for accepting, rejecting, or qualifying project data						
D2. Verification and Validation Methods						
Describes process for data verification and validation, providing SOPs and indicating what data validation software should be used, if any						
Identifies who is responsible for verifying and validating different components of the project data/information (i.e., chain-of-custody forms, receipt logs, calibration information)						
Identifies issue resolution process, method, and individual responsible for conveying these results to data users						
Attaches checklists, forms, and calculations						

ELEMENT	A	U	NI	NA	PAGE # SECTION #	COMMENTS
D3. Reconciliation with User Requirements						
Describes procedures to evaluate the uncertainty of the validated data						
Describes how limitations on data use should be reported to the data users						

Final QAPP Disposition:

_____Approve, no comments.

_____Approved with comments, **Submit Revised QAPP to MDEQ within 30 days.**

_____Conditionally Approved, **Address Comments, Submit Revised QAPP to MDEQ within 30 days.**

_____Not Approved, **Address Comments, Submit Revised QAPP to MDEQ for Final Review and Approval.**

Appendix D - References

1. *EPA Guidance for Quality Assurance Project Plans* (EPA QA/G-5), EPA/240/R02/009 (December 2002).

2. CIO 2105.0 (May 5, 2000), formerly EPA Order 5360.1 (April 1984).

3. ANSI/ASQ E4-2004, "*Specifications and Guidelines for Quality Systems for Environmental Data Collection and Environmental Technology Programs*", 2014.

4. *EPA Requirements for Quality Assurance Project Plans*, (EPA QA/R-5), EPA/240/B01/003 (May 2006).

5. *Guidance on Systematic Planning Using the Data Quality Objectives Process*, (EPA QA/G-4), PA/240/B-06/001 (February 2006).

6. *Data Quality Assessment: A Reviewer's Guide*, (EPA QA/G-9R), EPA/240/B06/002 (February 2006).

7. *Data Quality Assessment: Statistical Tools for Practitioners*, (EPA QA/G-9S), EPA/240/B-06/003 (February 2006).

8. 40 CFR Part 31.45

9. 40 CFR Part 30.54

10. Miss. Code Ann. §§ 17-17-27

11. Miss Code Ann. §§ 49-17-39

12. *EPA Requirements for Quality Management Plans*, (EPA QA/R-2), EPA/240/B01/002 (May 2006).

13. *EPA Guidance for Preparing Standard Operating Procedures*, (EPA QA/G-6), EPA/600/B-07/001 (April 2007).

14. Mississippi Department of Finance and Administration (DFA) website: (http://www.dfa.ms.gov).

15. *Guidance on Assessing Quality Systems*, (EPA QA/G-3), EPA/240/R-03/002 (March 2003).

16. *Guidance on Technical Audits and Related Assessments for Environmental Data Operations*, (EPA QA/G-7), EPA/600/R-99/080 (January 2000).

17. *Guidance on Environmental Data Verification and Data Validation*, (EPA QA/G-8), EPA/240/R-02/004 (November 2002).

18. EPA quality system documents website: http://www.epa.gov/quality/qa_docs.html