Rhode Island Department of Environmental Management

Quality Management Plan

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Written by:

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Edited and Reviewed by the DEM Quality Team

Forward

Quality Management Plan Update

In 2010, DEM completed its seventh revision of the Quality Management Plan (QMP). The revisions of this year's QMP will be considered a comprehensive revision of the QMP and will meet EPA's comprehensive five-year revision requirement. DEM has modified this document yearly in an attempt to incorporate revisions resulting from deliberations of the DEM Quality Team. Therefore, this year's comprehensive revision is not a major overhaul, but one of incorporating all changes from the past year. Due to retirements and budget cuts, there have been reductions in DEM staffing levels. These changes have been noted in the office/division organization charts.

In addition, this update incorporates language from the recently developed DEM Quality System Management Oversight SOP (Appendix H of the 2010 QMP) into the document, especially Sections 8, 9, and 11. This SOP describes the procedures DEM uses to annually evaluate its Quality System.

The changes to the QMP were made to reflect the DEM Quality System as it exists in December 2010. The following are the major revisions to this document:

- Section 2 - Management and Organization - F. List of Key Personnel – The section was updated to reflect current staffing levels with respect to Quality Management System responsibilities.
- Section 4 - Personnel Qualification and Training Section 4 (C) (Personnel Qualifications and Training) was updated to reflect training opportunities.
- Section 5 – Procurement of Items and Services
- Section 7 – Computer Hardware and Software
- Section 8 – B Systematic Planning Process
- Section 9 - Implementation of Work Processes
- Section 11 - Quality Improvement
- Appendix A – Organization Charts
- Appendix B - Inventory of QAPPs updated
- Appendix C- Inventory of SOPs updated
- Appendix F – Guidance for Annual Self-assessment has been updated to reflect revisions made in 2009

DEM has participated in the Region I sponsored Quality Roundtables since 2001. This group of Quality Assurance Managers from the states and their counterparts from Region I EPA meet to discuss Quality issues. Because of this activity, DEM has been able to gather and share a wealth of information from the other states, especially New Hampshire and Maine. Many of the Standard Operating Procedures and information on assessments have been developed using the experience from these programs. DEM would like to express its appreciation to these organization for the assistance provided in revising this document, especially Malcolm Burson from Maine DEP, Vince Perelli and Bob Minicucci from New Hampshire DES and Steve DiMattei, the EPA Region I contact for Quality Assurance issues.

This document will be implemented through its Quality Team. Special thanks to Connie Carey and Bob Schmidt who provided extensive comments along with Steve DiMattei (EPA Region I), Elizabeth Lopes-Duguay, Ron Gagnon, Cynthia Gianfrancesco, Pat Hogan, Sofia Kaczor, Paul Kulpa, Barbara Morin, Ernie Panciera, Matt Puglia, and Heidi Travers for their review and for providing comments that were incorporated into the final document. Changes to Section 5 were made by Terrence Maguire. Changes to Section 7 were made by Warren Angel and Pam Galli of RI DOIT.

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Appendices

1. Introduction

The regulatory programs within the Rhode Island Department of Environmental Management are in a partnership with EPA. This relationship is documented in the EPA/DEM Performance Partnership Agreement and DEM's Annual Program Work Plan. This agreement details the way various environmental programs are implemented in Rhode Island. EPA provides partial funding for many of the state efforts to implement those programs through assistance agreements, or grants. One of the conditions to those assistance agreements specifically requires recipients to develop and implement a Quality Management Plan (QMP). Although the QMP may be a federal grant requirement, DEM believes that sound decision-making requires a system that ensures the underlying data that supports these policies. Therefore, the DEM Quality System has support from both management and agency staff who collect and use this information.

It has always been the policy of the Department to ensure that all environmental data generated and compiled is of known quality, adequate for its intended use, well documented, and is verifiable and defensible. The grant condition has prompted the Bureau of Environmental Protection to prepare this written QMP to formally communicate that commitment and establish a process to ensure it is met.

For purposes of this plan, environmental data include direct measurements or data generation, secondary data that may be a compilation of data from agents of DEM, literature or electronic media, and data supporting the design, construction, and operation of environmental technology. The QMP covers all of the data generation, data collection and management activities in the Offices of Air Resources, Compliance and Inspection, Water Resources, Waste Management, Customer and Technical Assistance and the Pesticide Management program in the Division of Agriculture. (For the purpose of this document, the words Division and Office can be used interchangeably.) Other programs may be included in the plan, if needed, in the future.

This document describes the quality program that has been developed and implemented and defines the management structures that will be used in its implementation. The QMP was developed in accordance with the requirements set forth in EPA Requirements for Quality Management Plans (QA/R-2) (http://www.epa.gov/quality1/qs-docs/r2-interim-final.pdf).

2. Management and Organization

A. DEM Mission Statement

The mission of the Department, working through its Bureaus and Offices is to:

1. Enhance the high quality of life for this and future generations by protecting, managing, and restoring the natural environment of our state, enhancing outdoor recreation opportunities, protecting public health, and preventing environmental degradation.
2. Achieve a sustainable balance between economic activity and natural resource protection.
3. Motivate RI's citizens to take responsibility for environmental protection and management, based on an understanding of their environment, their dependence on it, and the ways their actions affect it.

The DEM Quality Management Plan will work to support this stated mission, especially the first statement. Protecting, managing and restoring the natural environment in our state will necessitate the use of environmental data to support these objectives. The QMP will be the system that ensures the data used in decision-making will be of known and legally supportable quality.

B. DEM Quality Assurance Policy

It is DEM policy that all environmental data generated and compiled is of known quality and designed for its intended use. The QA system will establish acceptance performance or criteria, concerning the collection and documentation of data, that such information is verifiable and defensible. This goal can be achieved by ensuring adequate quality management steps and procedures are used throughout the entire process, from initial study planning through data usage. Data usage may include permitting, enforcement, planning and assistance activities.

The DEM Quality Assurance System is based on a decentralized approach to ensuring quality in environmental data. The many individual programs are responsible for oversight of the QA System to ensure that the goals of this QMP are being met. This QMP imposes a formal structure, across offices and programs, on how quality goals will be met. Resources used to implement the Quality System will continue to come from the programs. Quality Team members from the Offices/Division will have joint program and quality responsibilities. Based on further evaluation and implementation, the Bureau may, or may not, elect to centralize some functions in the future.

C. Organizational Charts

The following organizational charts are incorporated directly into this Quality Management Plan in Appendix A:

- Department of Environmental Management
- Office of Air Resources
- Office of Compliance and Inspection
- Office of Technical and Customer Assistance
- Office of Waste Management
- Office of Water Resources
- Division of Agriculture and Resource Marketing

D. Management Roles, Responsibilities & Authorities for Quality System

The Bureau of Environmental Protection (BEP) consists of the Office of Air Resources, the Office of Water Resources, the Office of Waste Management, the Office of Compliance and Inspection, and the Office of Technical and Customer Assistance. The Bureau regulates many diverse activities that affect the environment. Effective regulation protects public health, prevents further degradation, and supports the restoration of the environment where it has been adversely impacted by past activities. Effective regulation must include decision-making based on consistently sound data and information.

The BEP management team consists of the Assistant Director for Water Resources, the Assistant Director for Air, Waste and Compliance, and six Office Chiefs. The Assistant Directors are ultimately responsible for the supervision of the Quality System in the Bureau of Environmental Protection

The Bureau of Natural Resources (BNR) provides supervision of the Division of Agriculture that is responsible for the Pesticides Program in DEM.

DEM has named a Quality Assurance (QA) Manager. DEM will take a decentralized approach in implementing the Quality Management Plan. The QA Manager will work with members from the affected Offices, i.e., the Quality Team, in implementing the DEM Quality Program.

The bureau management teams, collectively, are responsible for quality through adherence to grant conditions, support of program policy and guidance, and through the development and revision of the QMP, review and concurrence of the annual QA System Status Report and adherence to Quality Assurance Project Plans (QAPPs) and Standard Operating Procedures (SOPs).

Office Chiefs, and in some cases Section Supervisors within Divisions, have had primary responsibility for implementation of their programs, including ensuring the quality of the data that they base their decisions on. A brief outline of the quality-related responsibilities for different positions in the Bureaus hierarchy is outlined below:

Assistant Director for Water Resources, Assistant Director for Air, Waste and Compliance and Associate Director for Natural Resources

Quality-Related Responsibilities: Provide policy definition, leadership, and oversight for the quality system throughout the Bureau and serve as the overall authority for directing activities in accordance with program policy. The QA Manager, however, will assist DEM in coordinating DEM's QMP efforts. Responsibilities, concerning quality, include:

- Serving as the final authority for resolving quality related issues,
- Advocating for the necessary training,
- Advocating for resources to support the quality approach, and
- Ensuring that the Quality Management Plan (QMP) is in place and functioning.
- Ensuring deficiencies noted in the Quality Assurance Status Report are added to the Office work plans for resolution.
- Signature authority for annual updates of the QMP, Annual QA System Status Report and Bureau-wide QAPPs and SOPs.

Quality Assurance Manager

Provides departmental focus for the development, revision and implementation of the QMP and responsible for:

- The development, revision and implementation of the QMP;
- Establish a training program to educate staff on the Quality System and instruct staff on proper QA and QC procedures;
- The coordination of System Management Reviews and Project and Program Assessments;
- Preparation of the Quality Assurance Status Report;
- Coordination of activities of the DEM's Quality Team;
- Updating the DEM QA intranet and internet sites; and,
- The DEM contact to EPA concerning questions in the DEM Quality System.

Office/Division Chiefs

Quality-Related Responsibilities: Provides policy definition, leadership, and oversight for their respective programmatic responsibilities and serve as the authority for directing activities in accordance with program policy. Responsibilities concerning quality include ensuring:

- Resources provided to their Offices are budgeted to support the quality approach;
- Staff attend necessary training;
- Grant commitments, program requirements, and grant conditions are met; and The Quality Management Plan (QMP) is in place and functioning in their Office.
- The naming and supporting a representative to the Quality Team.
- That deficiencies noted in the Quality Assurance Status Report are tracked and resolved.
- The review of and the signature authority for annual updates of the QMP, Annual QA System Status Report and Bureau-wide QAPPs and SOPs.

Section Supervisors (actual Job Titles may vary depending on program)

Quality-Related Responsibilities: Primary responsibility is coordinating staff activities to meet the duties and responsibilities of the section and meet the agreed upon outputs presented in the grant agreements. The section supervisors oversee the activities of the staff within their program and provide a program-wide focus on quality management. With respect to quality issues, responsibilities of the section supervisors include:

- Assure the overall quality and integrity of all data generated within their programs.
- Ensure their staff is knowledgeable of current program quality policy, requirements, and guidance;
- Establish that the quality policy is implemented within their program in coordination with management;
- Determine the acceptability of all QAPPs submitted for review and approval before implementation.
- Review all contracts and agreements to ensure that they conform to the generally accepted QA/QC procedures and all QA/QC requirements mandated by cooperative agreements with federal agencies.
- Are responsible for review of the appropriate QA documents, program self-assessments / project assessments.

Project Managers (typically staff-level positions where actual job titles may vary depending on program)

Quality-Related Responsibilities: The project managers are responsible for:

- The preparation of a quality assurance project plan (QAPP) for a specific site investigation, project or activity, if required;
- The development and review of QA documents prepared within the program;
- Establishing and implementing acceptance or performance criteria appropriate for the regulations involved during the planning of the project. (These acceptance or performance criteria will be noted in the QAPP, and will be used to define data quality requirements.)
- Ensuring the quality of the information generated meets the acceptance or performance criteria of the project throughout the implementation and assessment of the project;

- Supervising technical project staff that define project objectives and data quality requirements, develop work plans, review data, and develop and assess standard procedures;
- The review of all contracts and agreements to ensure that they conform to the generally accepted QA/QC procedures and all QA/QC requirements mandated by cooperative agreements with federal agencies;
- Providing oversight of all QA related field and laboratory functions;
- Coordinating the program self-assessments and project assessments;
- Implementing any changes that were noted in the Quality Assurance Status Report.
- Participation at Quality Team meetings, and,
- Providing, the overall quality and integrity of all data generated within their programs.

E. Programs That Generate or Use Environmental Data for Decision Making

Division of Agriculture

- Pesticide Enforcement Program – Staff may periodically conduct compliance sampling.
- Pesticide Water Monitoring Program – Staff randomly collect water samples for pesticide detection.

Office of Air Resources

Air Monitoring:

OAR conducts the following monitoring activities:

- Ambient Air Monitoring – OAR conducts or oversees the collection of ambient air quality data for federal criteria pollutants and state and federal air toxic pollutants.
- Air Pollution Inventory – OAR collects and maintains a database of criteria and air toxics pollution that is emitted from stationary sources.
- Mobile Source Emission Data – OAR works with the Division of Motor Vehicles and analyzes data that is collected from the state vehicular emission testing program.

Emergency Response Unit

- The Emergency Response unit maintains a staff of Emergency Responders on call 24-hours/day, 7-days/week to respond to threats from releases of oil or hazardous materials to the environment. Emergency Responders may conduct sampling to assess a situation or characterize materials under investigation.

Office of Compliance and Inspection

- Air Compliance Section- OC&I's air compliance program monitors exterior lead-paint removal projects and responds to air pollution related complaints regarding non-compliant operations as well as responding to odor complaints associated with non-compliant or unlicensed facilities.
- RCRA Compliance Section- RCRA inspection staff conducts compliance monitoring on regulated hazardous waste management facilities, generators, and transporters, as well as responding to complaints of improper disposal of hazardous waste. Staff may conduct sampling to characterize materials under investigation.
- Solid Waste Compliance Section- Solid waste inspection staff conducts compliance monitoring on regulated solid waste management facilities as well as responding to

complaints of improper disposal of solid waste. Staff may conduct sampling to characterize materials under investigation.

- UST Compliance – UST compliance staff inspects UST on a regular schedule to determine compliance with the regulation. If needed, program uses OWM staff to conduct sampling.
- Water Compliance Section - Water compliance inspection staff conduct investigations and compliance monitoring related to discharges to water bodies. Staff may conduct sampling to characterize materials under investigation.
- Water Compliance (Onsite Wastewater Treatment Systems Section) - Compliance inspection staff conduct investigations and compliance monitoring related to discharges from individual septic disposal systems. Staff may conduct sampling to characterize materials under investigation.

Office of Technical and Customer Assistance

- Pollution Prevention Environmental Results Program (ERP)- Staff assists businesses in investigating and evaluating opportunities to reduce pollution through product substitutions and/or process modifications. Staff may conduct sampling to characterize materials under investigation or evaluate the effectiveness of measures taken to prevent pollution.
- Dredging Program - Staff coordinates the review of dredging projects throughout the agency to ensure natural resource and water quality issues are properly addressed. Dredging proposal include extensive environmental data that needs to be reviewed and analyzed.

Office of Waste Management

- Leaking Underground Storage Tank Assessment and Remediation- Staff oversee the investigation and clean up of properties contaminated by releases from underground storage tanks. Staff may conduct sampling to characterize materials under investigation.
- Brownfields / Voluntary Cleanup / State Site Remediation Program - Staff oversee the investigation and clean up of properties contaminated by releases of hazardous materials under the jurisdiction of RI state authorities. Staff may conduct sampling to characterize materials under investigation.
- Targeted Brownfields Program- Staff oversee the investigation and clean up of properties contaminated by releases of hazardous materials that are proposed, or being prepared for, beneficial reuse. Staff may conduct sampling to characterize materials under investigation.
- Hazardous Waste Programs - (One Form C Submitted for these programs)
  - Manifests, RCRA and Medical Waste Permitting Section- RCRA staff conducts compliance monitoring on regulated hazardous waste and medical management facilities and transporters. Staff may conduct sampling to characterize materials under investigation.
  - Transportation, Storage and Disposal and Medical Waste Facility Permitting; Hazardous and Medical Waste Transporter; and Manifest Programs – Program reviews applications and submittals that include secondary data.
  - Septage Hauler Permitting Program- Program regulates sewage materials transported in vehicles by a permitting process.
- Solid Waste Permitting Section - Solid Waste staff conducts compliance monitoring on regulated solid waste management facilities, i.e., Open, Closed Landfills, Landfill Closure,

Compost Facilities and Transfer Stations. Staff may conduct and review environmental data in their permitting activities.

- Superfund NPL and DOD Programs - Staff oversee the investigation and clean up of properties contaminated by releases of hazardous materials under the jurisdiction of the federal Superfund and Department of Defense Programs. Staff may conduct sampling to characterize sites under investigation.
- Superfund Pre-Remedial Program - Staff oversee the investigation and clean up of properties contaminated by releases of hazardous materials under the jurisdiction of the federal Superfund Program. Staff may conduct sampling to characterize sites in the early stages of investigation.

Office of Water Resources

- Total Maximum Daily Loading (TMDL) Program - Staff oversees the investigation of surface water bodies and develops a response strategy for impacted areas. Staff may conduct sampling to characterize materials under investigation and evaluate the effectiveness of corrective measures.
- RI Ambient River Monitoring - Staff conducts sampling of rivers and oversees contracts for water chemistry analyses of these samples. The data is used to assess water quality status.
- Biomonitoring and Habitat Assessment of Wadeable Streams - Staff oversees contract for the collection and analyses of biological and habitat data from wadeable streams. The data is used to assess water quality status of these streams.
- Biomonitoring and Habitat Assessment of Non-wadeable Streams - Staff collects biological and habitat data from non-wadeable streams and oversees contracts for the analyses of data . The data is used to assess water quality status of these streams.
- Fixed Site Water Quality Monitoring Network – Staff collects water quality data via fixed buoys in various locations of Narragansett Bay. The data collected is used to assess water quality in these waterbodies and to provide information to the Bay Response Team.
- Lake Water Quality Monitoring - Staff oversees contract for monitoring and analysis of water quality in lakes and rivers around the state. Program contracts with University of Rhode Island, Watershed Watch Program, to conduct water quality monitoring and analyses. The data is used to assess water quality status of these lakes and rivers.
- Non-point Source Program – Works with watershed groups and collects water quality data on sources of non-point pollution.
- RIPDES Program – Staff may periodically conduct compliance sampling of permitted discharges to surface waters or municipal wastewater treatment facilities.
- Shellfish Area Monitoring Program - Staff conducts sampling of shellfish growing areas and potential pollution sources identified during shoreline surveys.
- User Fee Program – Staff conducts sampling of major RIPDES permittees to assess impacts to surface waters
- Wastewater Treatment Facilities Operations and Maintenance Program – Staff may periodically conduct compliance sampling of wastewater treatment facilities.
- UIC Program – Staff may collect samples from groundwater discharge points or from groundwater monitoring wells.
- Water Quality Certification Program – Staff may periodically conduct compliance sampling.

F. List of Key Personnel

All key personnel for the development and implementation of the QMP are located at DEM Headquarters, 235 Promenade Street. Providence, RI 02908. Key personnel include:

Department of Environmental Management

J. Michael Sullivan, Director
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(401) 222-2771

Bureau of Environmental Protection

Alicia M. Good, P.E., Assistant Director for Water Resources
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(401) 222-4700 X7200

Terrence D. Gray, P.E., Assistant Director for Air, Waste and Compliance
terry.gray@dem.ri.gov
(401) 222-4700 X2410

Bureau of Natural Resources

Larry Mouradjian Associate Bureau of Natural Resources
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(401)-222-7400 X2414

The DEM Quality Team consists of the following personnel / positions. The Quality Team will meet on an as needed basis, usually quarterly, to review issues of concern. Members of the Quality Team may include the following positions/personnel:

DEM Quality Team Members				
Office/ Program	Name	Title	E-mail	Phone Number
Quality Assurance Manager	Thomas D. Getz	Assistant to the Director	thomas.getz@dem.ri.gov	222-4700 X 2417
Emergency Response	James Ball, P.E.	Supervising Engineer	James.ball@dem.ri.gov	222-4700 X7124
	Jill Eastman	Oil & Hazardous Material Specialist I	jill.eastman@dem.ri.gov	222-4700 X 7150
Division of Agriculture	Ken Ayars	Chief	Ken.ayars@dem.ri.gov	222-4700 X4500
	Elizabeth Lopes-Duguay		liz.lopesduguay@dem.ri.gov	222-4700 X 4510
Office of Air Resources	Douglas McVay	Acting Chief	douglas.mcvay@dem.ri.gov	222-4700 X7010
	Barbara Morin	Supervising Env. Scientist (Air Toxics and Attainment Section)	barbara.morin@dem.ri.gov	222-4700 X7012

	Ted Burns,	Supervising Air Quality Specialist (Compliance Assurance Section)	ted.burns@dem.ri.gov	222-4700 X 7029
	Frank Stevenson,	Supervising Air Quality Specialist (Mobile Sources Section-)	Frank.stevenson@dem.ri.gov	222-4700 X 7019
Office of Compliance and Inspection	David Chopy, P.E.	Chief	David.Chopy@dem.ri.gov	222-4700 X7257
	Pat Hogan,	Water Compliance Section	Patrick.Hogan@dem.ri.gov	222-4700 X7119
Office of Customer and Technical Assistance	Ronald Gagnon, P.E.,	Chief	ron.gagnon@dem.ri.gov	222-4700 X7500
	Richard Enander	Associate Supervising Engineer	renander@dem.ri.gov	222-4700 X4411
Office of Waste Management	Leo Hellested, P.E.,	Chief	Leo.Hellested@dem.ri.gov	222-2797 X 7502
	Paul Kulpa	Principal Environmental Scientist - Superfund NPL and DOD Programs	Paul.Kulpa@dem.ri.gov	222-2797 X7111
	Sofia Kaczor	Senior Environmental Scientist - UST/LUST Programs	Sofia.Kaczor@dem.ri.gov	222-2797 X7121
	Robert Schmidt	Sanitary Engineer - Solid Waste & Landfill Closure Program	Robert.schmidt@dem.ri.gov	222-4700 X 7260
	Shelley Ducharme	Engineer, CERCLA/DOD Programs	Shelley.Ducharme@dem.ri.gov	222-2797 X 7158
Office of Water Resources / Groundwater, Wetlands Protection	Russell Chateauneuf, P.E.	Chief	russ.chateauneuf@dem.ri.gov	222-4700 X7700
	Ernie Panciera	Supervising Environmental Scientist	Ernie.panciera@dem.ri.gov	222-4700 X 7603
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	Elizabeth Scott	Deputy Chief -Total Maximum Daily Loading (TMDL) Program)	elizabeth.scott@dem.ri.gov	222-3961 X 7300
	Eric Beck, P.E.	Supervising Engineer (Section Supervisor- RIPDES)	Eric.Beck@dem.ri.gov	222-4700 X 7202
	Bill Patenaude	Principal Sanitary Engineer (Section Supervisor- Wastewater Treatment Facilities)	Bill.Patenaude@dem.ri.gov	222-4700 X7264
	Matthew Puglia	Junior Sanitary Engineer (Wastewater Treatment Facilities)	Matt.puglia@dem.ri.gov	222-4700 X 7131

(Program not covered by this QMP- they are covered by a USFDA QMP)	Joseph Migliore	Principal Environmental Scientist (Section Supervisor - Shellfish Area Monitoring)	Joseph.Miglior@dem.ri.gov	222-4700 X7258
	Connie Carey	Principal Environmental Scientist (Program Manager - Water Quality Standards)	connie.carey@dem.ri.gov	222-4700 X7239
	Heidi Travers PE,	Senior Engineer, TMDL Program	heidi.travers@dem.ri.gov	222.4700 X7613
	Alisa Richardson, P.E.	Principal Engineer (Section Supervisor Water Quality Certification Program)	alisa.richardson@dem.ri.gov	222-4700 X 7232

G. Coordination of QA/QC Activities

The system outlined in this Plan, through the efforts of the QA Manager, will coordinate the various Office QA programs. The QMP is intended to be a dynamic document and will continue to be revised to ensure that the quality system is effectively implemented throughout the Bureaus. This document will be posted on the DEM website and electronic copies of the document will be distributed to all appropriate program offices for their easy access and review. The Office Chiefs have direct access to both the program supervisors and project managers whenever specific QA problems arise. Chiefs will in turn adequately respond to identified program problems and needs (including resource aspects) and ensure their resolution. The QA manager will also coordinate regular meetings with the Quality Team to discuss specific issues that need to be resolved.

H. Delegation/Contracting of Programs and Technical Activities

The Department has had a decentralized approach for ensuring the quality of environmental data and information that is generated by outside entities under delegation agreements or contracts with the Department. Any scope of work specification is reviewed at the individual Office overseeing the project. Office Chiefs, and in some cases Section Supervisors within Divisions, who manage the work of outside entities have had primary responsibility for ensuring the quality of the data delivered under those agreements and contracts. The assessments and reviews employed by the QMP will also apply to these situations. Furthermore, the Office Chiefs, through the self-assessment process will certify to the QA Manager that the contracts and agreements conform to the generally accepted QA/QC procedures and requirements mandated by cooperative agreements with federal agencies.

3. Quality System Components

The DEM Quality System provides a framework for planning, implementing, documenting, and assessing work conducted by the Bureaus. The purpose of this system is to enable DEM to generate the type and quality of information required to fulfill our environmental mission.

The foundation of the Quality System is management's commitment to quality and our QMP. Our quality policy reflects management philosophy on quality and stands as a guiding principle for our environmental data collection activities. It states that all personnel have responsibility for quality and

with management support, will continually strive to build quality into work processes, products, and services.

Quality Assurance addresses the planning of environmental projects, implementation of work activities, assessment of the process, and the results and feedback to the process. Quality Control includes the scientific observations made and experimental results generated during the project.

Management provides policy definition, leadership, and oversight for the Quality System and allocates resources to implement this Quality Policy.

The Quality System for environmental monitoring, sampling, and measurement activities include the following components:

Component	Status
Quality Management Plan (QMP)	QMP approved by EPA in 9/05, but DEM performs annual updates. The latest is the February 2010 update.
Quality Planning	Ongoing through the regular meetings of the DEM Quality Team. Planning also is conducted at the program level.
Office Policies and Standard Operating Procedures (SOPs)	Compilation ongoing, Appendix C is the current compilation of DEM SOPs.
Quality Assurance Project Plans (QAPPs)	Appendix B is the current compilation of QAPPs.
Program Self-assessments	The QA Manager has finalized a self-assessment guidance document. The programs are scheduled to finish the fifth self-evaluation in September 2010.
Management Systems Reviews	2006 Quality Assurance System Status Report finalized. 2007 Quality Assurance System Status Report finalized. 2008 Quality Assurance System Status Report finalized. 2009 Quality Assurance System Status Report finalized. 2010 Quality Assurance System Status Report finalized.
Training Program	Training program is an on-going function and will be designed to meet the needs of departmental personnel.

These principal tools will be reviewed annually to address changes in the quality system. Suggestions for changes come from staff proposals for improvements and lessons learned from Division involvement in program activities.

A. Quality Management Plan

The QMP is an essential component of the quality system. It describes and documents the system, and is the plan used to implement the quality policy. It identifies the Bureaus/Offices responsibilities in quality management, and gives a rationale for why it is done. The QMP provides the basis for discussing changes and improvements to the quality system. All employees involved in environmental data generation activities will be required to read and be familiar with the QMP to ensure that they understand and are following the organization's quality management process. A copy of this plan will

be posted on the DEM website. It will be available to all employees in each program. Management also uses the QMP as a tool to gauge whether the quality system is being successfully implemented.

The QA Manager will be responsible for implementation of the QMP and reviewing the QMP at least annually to determine if it is up-to-date, accurately reflecting the DEM quality system, adequately ensuring quality throughout covered programs, and in compliance with current guidance and program requirements. Prior to the QMP being updated, it will be distributed to the Quality Team who will be given an opportunity to review and comment on the document. Once this review period is complete, and comments have been evaluated and addressed, the QMP will be approved by signature of the Assistant Director for Water Resources, the Assistant Director for Air, Waste, and Compliance, the QA Manager, and the Director (see Appendix I for Signature Page).

B. Quality Planning

In carrying out its mission, DEM relies upon many different types of data that enable it to better evaluate and measure existing environmental conditions, to identify and understand areas of concern, to assign responsibility for these areas, and to promote and enhance credible communication on environmental issues to a wide variety of audiences. The data DEM uses must be credible, and the quality of that data must be appropriate for its intended uses. The Department, through its Quality Assurance (QA) System is moving towards a more systematic approach to the management of data and overall quality assurance issues across DEM.

DEM's quality goal is to conduct environmental measurements that meet the objectives of the program and/or project, which vary. To this end, DEM has strengthened it processes to ensure that the information generated is based on scientifically sound data and is supported by legally defensible documentation by the adoption of a Standard Operating Procedure for the Review of Environmental Data. The data quality-planning process describes the procedures developed to ensure that the environmental measurement activities conducted will be of the quality and types required to support enforcement actions. Section 8 of the QMP outlines the process for Quality Planning at DEM.

DEM has developed procedures and guidance on how to conduct program Self-assessments. It is the goal of DEM to require all programs that generate environmental data to conduct yearly self-assessments by August 30. The DEM Quality Assurance Manager will prepare a Quality Assurance System Status Report by October 30. This review will summarize the program self-assessments and detail the opportunities to improve the DEM quality system. It will also summarize updates to the QMP and provide an update of department-wide QAPPs and SOPs.

C. Office Policies and Standard Operating Procedures (SOPs)

Each office has procedures, and in some cases written policies, designed to present general guidelines for planning investigations, site remediation, and collecting and developing admissible and defensible evidence in support of the environmental programs. DEM's current inventory of SOPs used in the programs is located in Appendix C. and also found posted on the DEM Internet site.

Offices often use SOPs developed by other environmental organizations and equipment monitoring manufacturers. The offices will identify the source of the SOPs when included in any QAPP that is developed.

The Quality Assurance Manager has developed a Standard Operating Procedure "DEM's Procedure for Developing and Approving SOPs" (DO-QM-1, Appendix D) for the development and approval of SOPs that will be used in the programs for any new SOPs that are developed Based on the program self-assessments, there may be a need to develop new SOPs to resolve an issue. In an event than an issue affects multiple programs, the Quality Team will consider if it is appropriate to develop a generic SOP that could be used by others.

Appendix E contains the current listing of policies and guidance that relate to quality management issues.

Management is responsible for monitoring program performance and evaluating the adequacy and completeness of the policies, typically with significant input from staff. Personnel suggesting the change or having expertise in the area typically draft suggested revisions. Management will review the final draft revision for approval before implementation.

D. Quality Assurance Project Plans (QAPP)

A QAPP is used to describe the acceptance or performance criteria and QA/QC activities associated with any site investigation conducted, including but not limited to soil, sediment, drinking water, groundwater and surface water monitoring, air sampling, discharge monitoring, or site investigation and remediation projects. These may be generic to cover all planned site activities at a given facility or written for only one site-specific project. A QAPP may also be used for a special research or monitoring project with a definable beginning and end, i.e., the study of air quality in neighborhoods around TF Green Airport. All elements of a QAPP must be addressed for such a project. Appendix B of this document contains an inventory of all DEM approved QAPPs.

Generic program QAPPs will be signed by appropriate personnel in the Office first, then by the DEM Quality Assurance Manager and will finally be sent to the Quality Officer in EPA Region I for approval. Once EPA signs the QAPP, the DEM Quality Assurance Manager will post the document on the DEM website.

Our goal is to ensure that all Quality Assurance Project plans will be reviewed based on the elements and information provided in the following guidance documents:

- EPA QA/R-5 EPA Requirements for Quality Assurance Project Plans (http://www.epa.gov/quality/qs-docs/r5-final.pdf), and,
- EPA QA/G-5 Guidance on Quality Assurance Project Plans (http://www.epa.gov/quality1/qs-docs/g5-final.pdf).
- EPA New England Quality Assurance Project Plan Program Guidance (http://dem/intranet/documents/qappguidance.pdf)

A project manager may develop a project-specific QAPP based on a generic program QAPP. In these situations, the project manager will create a supplement to the generic QAPP that addresses the specific requirements of the project. The supplement will be reviewed and approved by the program supervisor and maintained in the project file. Copies of the approved QAPP will be forwarded to the Quality Assurance Manager and will be posted on the DEM webpage. Once the project-specific QAPP

is approved, the project manager is then responsible for ensuring implementation of the plan in the field. Project implementation will include information required by the EPA approved QAPP, which may include the following information:

Custody Documents – Includes chain-of-custody forms, receipt for sample forms, and sample tags, when necessary.

Field Notes- A detailed record which may include when, where (including site maps), how, and who took each sample. The results of associated field measurements, field calibration results, and background-monitoring readings are recorded when necessary. Other factors that might affect sample quality or interpretation of results, such as ambient temperature and climatic conditions, may also be recorded in the logbook. In addition, a photographic log maybe maintained where appropriate.

Field Photographs – a visual record of site conditions, processes, samples and sample source.

Standard Operating Procedures – Procedures used for routine activities associated with sampling, field and analytical measurements. The project manager is responsible for ensuring that the procedures are understood and followed in the field, and that deviation from these procedures are approved and documented.

Data Quality Requirements and Sample Analytical Strategies – Acceptance or performance criteria that support the overall objective of the investigation or remediation project, are defined for monitoring, sampling, and analyses. The type and number of samples collected must be appropriate to achieve the level of accuracy required by the investigation or remediation. The sample preparation and laboratory analytical test methods, QC requirements, and data deliverables are approved and agreed to in writing before sampling. Data quality objectives should be developed consistent with the guidance provided in EPA's Guidance for the Data Quality Objectives Process (G-4) (http://www.epa.gov/quality1/qs-docs/g4-final.pdf).

Reporting Requirements – This may include interim sampling reports, lab results, and a final report.

It should be noted that all projects that involve the use of environmental data produced from models, compiled from secondary sources such as databases or literature or collected directly from measurements to describe environmental processes and conditions should have an approved QAPP before initiation of work.

E. Program Self-assessments

Since the DEM Quality System is decentralized, individual programs are responsible for ensuring that all elements of the QMP are being addressed.. One mechanism to address the integrity of the QA system is to conduct program self-assessments. Therefore, DEM has instituted a system of self-assessments that are conducted at the program level. This self-assessment is based on the DEM QMP and tests each program to determine conformance with DEM procedures, adequacy of existing quality assurance project plans, standard operating procedures (SOPs) and other applicable requirements. Additional details concerning the Program Self-assessments will be provided in Section 9 (Implementation of Work Processes) of the QMP.

F. Management Systems Reviews

DEM has established a process for a Management Systems Review of the DEM Quality System. This process will ensure that technical documents are reviewed and developed to meet pertinent QMP standards. After the program self-assessments are analyzed, the Quality Assurance Manager, with assistance from the Quality Team, will develop the Quality Assurance System Status Report. Other issues that will be addressed in the review will include those identified in the regularly scheduled Quality Team meetings. This report will constitute the DEM Management System Review assessment.

The annual Quality Assurance System Status Report will gauge whether or not the Quality System is being successfully implemented and to identify opportunities for improvement. This review identifies patterns or issues that can affect project commitments or performance quality. This review will also indicate updates to the QMP and provide an update of department-wide QAPPs and SOPs. Additional details will be provided in Section 9 (Implementation of Work Processes) of the QMP concerning the Management System Review.

G. Project Assessments

It should be noted that some programs already conduct elements of a project assessment and that would constitute a normal part of their project oversight responsibilities. In the future, this activity may be conducted in a systematic manner. Based on adequate resources, the section supervisors or project managers may perform project assessments. Assessments will be based on the following:

- Assessments of QAPPs – The program manager or designee will assess completed projects to evaluate the adequacy of facilities, equipment, supplies, personnel, and existing procedures to meet project objectives based on a schedule developed by the Quality Assurance Manager and the Quality Team. Findings of the assessment, including any deficiencies, inadequacies, or systematic problems will be forwarded to the Quality Assurance Manager and discussed with the project management. Department senior management, when appropriate, will collectively decide how to respond to the findings.
- Quality Control Indicators - During the project, members may use quality control indicators to identify problems with sampling and/or analytical procedures and to highlight anomalous results. Quality control indicators can include blanks, standard reference materials, QC check samples, replicates, spikes, and alternative methods. Problems that are identified are documented in the project file and should be discussed with the program supervisor. They may decide how to respond to the problems together, or after consultation with the Chief and/or appropriate Assistant Director.
- Data Assessments- The project team must assess data to determine its usability in meeting the project goals and objectives. This will be done based on the data quality objectives of the project and the data deliverables provided as specified in the QAPP for the investigation or remediation project. The project assessment must ensure that data is being assessed correctly, at a minimum in accordance with the guidelines specified in Section 8 (B) (vi.) of the QMP.

When a project is concluded, the project team must evaluate the work product for completeness, accuracy, and appropriateness to meet the project objectives. The procedures used and the documents generated are evaluated for adherence to policies and standard operating procedures. On an annual basis, the programs will conduct a self-assessment to ensure compliance with the Quality System.

H. Quality System Training Program

The QA Manager, with collaboration from the Quality Team, is responsible for developing a training program to inform and educate staff on the QMP and the QA system. Each office will be responsible for ensuring their staff is appropriately trained. The QA Manager will coordinate these activities to ensue that training resources are being efficiently used.

4. Personnel Qualification and Training

A. Personnel Qualifications

Towards assurance that all staff members are qualified and meet the required job specifications, DEM must follow and adhere to State's and Department's *Personnel Rules and Regulation,* as well as to union contracts. Personnel qualifications are established by the Position Classification Plan, which describes the job specifications and the education and /or experience necessary to fill that position. The qualifications of all job applicants are reviewed by the Department's Office of Human Resource to ensure applicants meet the minimum job requirements. Managers within the program, interview qualified applicants and assess their qualifications as it relates to that program. It is the responsibility of the Office Chiefs, or their designee, to ensure persons who need specialized training receive it.

B. Commitment to Training

In order to meet the Department's Commitment to Quality (outlined in Chapter 1 previously), DEM will strive to provide adequate training to key personnel in the applicable policies, procedures, and requirements of maintaining a quality system at all levels in the Bureaus. Training will at minimum be consistent with the role of the individual in the overall quality system and aim to be comprehensive. Although staff QA training is important, due to current budgetary constraints, DEM will strive creatively toward meeting these needs with limited resources.

C. Overall Description of Personnel Training

In years past, there have been more opportunities for staff to go to out of state training. However, due to the many budget pressures in the last few years, DEM has had to be creative in the ways training of employees is conducted. As mentioned above, the DEM QA Manager has developed a QA training module that is available on the DEM website. The training module provides an overview of the DEM Quality System and also provides links to web resources on quality assurance issues. The Quality Team has been working in the Offices to have appropriate personnel review this module. In some instances, the DEM QA Manager has provided instruction to groups of personnel from an office. In 2009, the Quality Team has been more active in providing employees with specialized QA training including:

- QA training in laboratory procedures;
- Providing access to webinars on QA issues and
- Planning QA training with EPA Region I

With respect to other job related training, the Offices currently arrange training primarily on an ad hoc basis dependent on need, funding and availability. Overall, availability of training is heavily dependent

on the availability of courses from EPA, Interstate Organizations (NEWMOA, NEIWPCC, NESCAUM, ASTSWMO, etc.), and, to a much lesser extent, private training companies.

The following is a sampling of courses that have been coordinated through some of these organizations:

DEM Quality Team

On-line Overview of DEM QA System
Laboratory QA Procedures
Measuring Volatile Organic Compounds In Soil Technology Update: SW 846 Method 5035A and Appendix A
Webinars sponsored by Private Lab on QA / Laboratory / Sampling Issues

ASTSWMO

RCRA Info National User Conference
Natural Resource Damage Workshop

EPA

Sampling for Hazardous Materials
Environmental Risk Assessment
Personnel Protection and Safety
Passive Diffusion Sampling Training
California Puff Model Training Course
National Association of Remedial Project Managers
RCRA State Authorization Workshop
Enforcement and Compliance Workshop
NPDES Permit Writers Course
EPA / NSSP Water Quality Monitoring Workshop
Pesticide Regulatory Educational Program (Prep Courses)
Pesticide Inspector In Residence Training (PIRT)
EPA Region-I Pesticide Inspectors Training Workshop
Visual Sampling Plan - EPA Region I Training

NEEP

Field Investigations training course

NESCAUM

Air Toxics workshop (co-sponsored with EPA)
Inspection of Gas Control Devices training
Air Pollution Meteorology
Introduction to Permitting
Smoke School
Ambient Air Monitoring
Dispersion Modeling Applications

NEWMOA
Annual Training and Technology Transfer Conference
Advanced Hazardous Waste Inspector training conference
In-Situ Chemical Oxidation Workshop
Vapor Intrusion in Commercial and Industrial Buildings: Assessment & Mitigation

NEIWPCC
Non-point Source Conference
Water Quality Standards Academy

OTC
Practical pathways to Energy and Environmental Coordination in the New England/Mid-Atlantic States

SERC
National Conference on Above Ground Storage Tanks

The primary mechanism for training staff on quality issues in our programs is through on-the-job training and informal education and mentoring from more experienced and/or senior staff members.

D. Roles, Responsibilities and Authorities for Assessing and Allocating Training

DEM has a decentralized approach to ensure quality in environmental data including training staff. Office Chiefs, and in some cases Section Supervisors within Divisions, have primary responsibility for implementation of access to Quality Assurance training in their programs. The QA Manager and the Quality Team members will be resources to the programs to set up training or to bring QA training opportunities to the programs.

5. Procurement of Items and Services

Procurement ranges from general supplies to highly sophisticated scientific equipment that directly affects the quality of environmental measurements. Within the Bureaus, identified equipment needs are submitted to Chiefs and/or Assistant Directors who evaluate, prioritize, and make decisions on items for proposed procurement in accordance with the need for the materials, the program budget, grant requirements and State purchasing system requirements. The Office of Management Services reviews each proposed purchase to check consistency with the Department's budget, grant requirements and State purchasing systems.

A. Description of State Procurement System

The Department of Environmental Management operates under statutory authority granted under the State purchasing law, chapter 37-2. This procurement statute, administered by the purchasing division in the Department of Administration, sets the standards for all state agencies for the procurement of goods and services. The legislation and regulations prohibit state agency administrators from committing funds or entering into agreements without the express written authorization of the Chief Purchasing Officer. Every State Agency Director must be familiar with the regulations and must indoctrinate personnel in their implementation.

DEM can make purchases under the master price agreement for goods and services without going to a formal bid process. Departments can also make purchases of up to $2,500 within the department. All purchases over $1,000 must have three written vendor quotations and be approved by DEM's Assistant Director of Finance. The Chief of the Division can directly authorize purchases of less than $250. Purchases over $250 to $1,000 need three telephonic quotations before a DPO can be issued.

In addition, any procurement over $5,000 needs state budget Officer approval before going to purchasing. Purchase of Technology related items require DOIT approval and any procurement of personnel and professional services require the state budget officer approval.

All invitations for bids and requests for Proposals (RFP) are governed by sections 42-11 and 37-2 of the general laws of RI. The law establishes requirements for vendors who wish to provide goods and services to the state. It pertains to both the suppliers of goods and contracted services.

The Division of Purchasing can also delegate authority to purchase to a department. Delegation allows the department to directly negotiate an agreement or contract with the federal government, other state or quasi state agencies or that the department has adequately addressed the issue of sole/single source procurement. All contracts with Universities or State Colleges must use the sole source justification before a purchase order is issued. All other contracts must follow a standard requisition and proposal and will be issued a purchase order by the State Controller after approval of Purchasing.

All Technical Proposals go through a review committee at the State Division of Purchasing.

B. Contracts

An Office may individually, or in coordination with other Offices, recommend that the Department (and the State) contract for certain work elements subject to the process outlined above. Examples of major contracts administered in the Bureau include:

- Emergency Response Services Contract (Office of Emergency Response)
- Analytical Laboratory Services Contract (Office of Waste Management)
- Technical Assistance Contract Services (Office of Waste Management)
- Agreement with Department of Health Laboratory to analyze air samples (Office of Air Resources)
- Agreement with Department of Health Laboratory to analyze water samples (Office of Water Resources)
- Agreement with URI on Ambient Water Quality Monitoring (Office of Water Resources)
- Agreement with USGS on Ambient Water Quality Monitoring (Office of Water Resources)

The Department of Environmental Management does not have its own laboratory and is almost completely reliant on the Department of Health lab and contract laboratories for analysis of samples. Laboratories are required to follow specific procedures outlined in applicable regulations, policies and/or standard operating procedures when analyzing these samples. These requirements often directly reference EPA protocols. This also includes analysis of split samples taken by DEM staff during inspections, investigations, or remediation.

When warranted, special analytical services and criteria, including data quality consistent with EPA's Contract Laboratory Program (CLP) can be specifically requested of a contract laboratory.

C. Ensuring the Quality of Items Purchased

Needs are identified and submitted to Chiefs and/or Assistant Directors who review, prioritize, and decide on the items for proposed procurement. The Office of Management Services reviews each proposed purchase to check consistency with the Department's budget, grant requirements and State purchasing systems. Once an item is approved and purchased, it is delivered to the program that initially submitted the request and checked against their needs and expectations. The equipment is then operated and maintained by that program, or their designee.

All Invitations for Bids (IFB), Requests for Proposal (RFP) and external agreements or contracts for goods or services, except contract between state agencies, will be governed by the provisions of the Rhode Island General Laws (RIGL) § 42 - 11, entitled Department of Administration and § 37-2, entitled State Purchases. These laws set requirements for vendors who wish to provide goods and services to the state and pertain both to suppliers of goods and suppliers of contracted services. Equipment is purchased in several ways. For many items, especially equipment and supplies such as office supplies that are routinely and frequently bought by state agencies, vendors bid on the contract and the selected vendor enter into master contracts for a period of time. State Agencies must purchase supplies from those vendors. For all other purchases, state agencies must follow the state bid process.

D. Ensuring the Quality of Work from Pass-Through Agreements, Grants, MOUs, etc.

As stated earlier, the Department has historically had a decentralized approach to ensuring quality in environmental data, including data generated by outside entities under delegation agreements or contracts with the Department for certain scopes of work. Office Chiefs, and in some cases Section Supervisors within Offices, oversee the work of that outside entity and have primarily responsibility for ensuring the quality of the data delivered under those agreements and contracts. The outside entities may include a consultant, contractor, citizen group or non-governmental organization. The degree and formality of oversight of those entities will be examined as this QMP is implemented but it is expected that the assessments and reviews defined later in this Plan will apply to these situations.

All Invitations for Bids (IFB), Requests for Proposal (RFP) and extramural agreements or contracts for pass-through agreements for services, except contract between state agencies, will be governed by the provisions of the Rhode Island General Laws (RIGL) § 42 - 11, entitled Department of Administration and § 37-2, entitled State Purchases. These set requirements for vendors who wish to provide goods and services to the state and pertain to both suppliers of goods and suppliers of contracted services, include those contracted for pass-through services.

The Department of Administration Office of State Purchase and State Property are charged with the procurement of services. All procurement quality control is the responsibility of the State Purchasing Office, although this Office relies heavily on input and comments from the initiating agency.

For analytical laboratory services, guidelines have been developed by the US EPA, which describes the minimum requirements of facilities, equipment, and personnel that must be met to conduct chemical

and microbiological analysis for compliance monitoring.

QA/QC provisions will be made a requirement of every IFB, RFP or any contract for goods or services, which will involve the creation, evaluation, or analysis of environmental data.

Proposals received in response to an IFB or RFP will be evaluated on the ability of the proposer to meet the established QA/QC requirements. No agreement will be entered into when the proposer or cooperating entity cannot meet the QA/QC provisions. QA/QC requirements will be made a provision of all contracts, MOUs, MOAs, and other final agreements, as appropriate. The project manager, under the oversight of the program supervisor, will monitor all work performed under a contract, MOU, MOA or other agreement to ensure that all QA/QC provisions are satisfied. Payment for goods and services will not be made if established QA/QC provisions have not been met.

6. Documentation and Records

A. Records Maintained by the Regulatory Programs

i. Background

Each program within DEM maintains a document and records system to suit its particular business practices. The system should produce accurate records that document all program activities. In general, the DEM program that generated the data, will retain it. The data are usually kept in the site/case file or electronic database, including spreadsheets.

The regulatory programs within DEM rely on many types of information to make decisions. The entire process is documented and maintained through the administrative files managed by each program. Examples of the types of records and documents stored and maintained in those files include records of complaints filed with the Department, custody documents, field notes, photographs, internal memoranda, field investigation and complaint response reports, correspondence both to and from the Department, site plans, sampling and investigation plans, site remediation plans, results of sample analysis, site-specific and/or project-specific quality assurance and quality control documents, and reports.

Files are typically maintained in the area adjacent to the various programs throughout their office space. Some files are stored in the Department's office-building basement, typically based on space constraints in the office space. Records must be kept in such a way that they can be retrieved. Each program will determine its own filing system, but ease of retrieval must be the goal. This applies to both paper and electronic files. If security is an issue, tools such as locks and passwords should be used. Hiding files is not proper security, and is not allowed. Keeping needless multiple copies of data is discouraged in the interest of saving space and paper. In general, each program should only have one copy of any data set with the exception of electronic data which should have a backup copy.

ii. Record Management Policy

The Department has developed a records management policy. This policy:

- Defines the records management responsibility of both management and employees throughout the agency.

- Defines what constitutes an official record.
- Establishes a clear policy for retention of records, which should address creation / collection, record maintenance and use and record disposition, i.e., storage, archiving and destruction of departmental records.
- Defines record retention schedules and protocols for the destruction of obsolete records.
- Establishes a training protocol that will be used to disseminate information and train designated divisional personnel in the management of records according to the DEM.

The DEM Records Management Policy is located on the following website:
http://www.dem.ri.gov/programs/ombuds/pdf/records.pdf

iii. Record Generation Procedure

DEM collects and processes data, generates and reviews documents in its course of normal business practices. Where applicable, DEM Offices should develop procedures for records that include the following:

a. The records shall clearly indicate the date of the field observation, sample collection, sample preparation, equipment calibration or testing, and other related activities.
b. The records shall include the identity of personnel involved in making observations, collecting field data, sampling, preparation, calibration, or testing.
c. The record-keeping system shall facilitate the retrieval of all working files and archived records for inspection and verification purposes.
d. Documentation entries shall be signed or initialed by responsible staff. The reason for the signature or initials shall be clearly indicated in the records such as “sampled by”, “prepared by”, or “reviewed by”.
e. All generated data except those that are generated by automated data collection systems, shall be recorded directly, promptly, and legibly in permanent ink.
f. Entries in records shall not be obliterated by methods such as erasure, overwritten files, or markings. All corrections to record-keeping errors shall be made by one line marked through the error and initialed.

These criteria also shall apply to electronically maintained and generated records, where applicable.

B. Key QA-Related Documents

The quality system for environmental monitoring, sampling, and measurement activities include the following components:

- Quality Management Plan (QMP)-Prepared and maintained by Quality Assurance Manager, and posted on the DEM website at: http://www.dem.ri.gov/pubs/qmp2003.pdf
- Office Policies and Standard Operating Procedures (SOPs)- Up to date inventory of QA related SOPs are prepared by the Quality Assurance Manager with input from the Quality Team. This information is an element of the DEM QA Status Report that is provided to EPA and the Bureau Chiefs. Copies of SOPs located on the DEM website at: http://www.dem.ri.gov/pubs/data.htm#sops
- Quality Assurance Project Plans (QAPPs), Sampling Plans and Work Plans-Prepared and maintained by project managers in the project file. An inventory of the QAPPs is prepared by the Quality Assurance Manager with input from the Quality Team. This information is an

element of the DEM QA Status Report that is provided to EPA and the Bureau Chiefs. Electronic copies of the documents are located on the DEM website located at: http://www.dem.ri.gov/pubs/data.htm#sops

- Program Self-Assessments- These documents are reviewed by the Quality Assurance Manager and are prepared under the direction of the project or program manager. The self-assessment report will document the assessment process, findings, and recommendations. Copies of the Program Self-assessments are maintained by the Quality Assurance Manager and are the basis of the DEM QA System Status Report. Programs will maintain a copy of the finalized self-assessments and should be maintained in the project file.
- Management Systems Reviews- The DEM QA Status System Report is the management systems review of the DEM quality system. It is prepared under the direction of, and maintained by, the Quality Assurance Manager and the Quality Team. The Assistant Directors and the Director are required to sign off on the report. The assessment of the management system review is a written report documenting the review process, findings, and recommendations. Copies of this report are provided to the appropriate Assistant Directors, and are maintained in the quality system files by the QA manager and are posted on the DEM internet site.
- EPA Quality System Assessment Reports – Every three years EPA is required to assess the DEM Quality System. The report provides an account of EPA's findings and observations about the DEM Quality System. Copies of the report are maintained by the Quality Assurance Manager, distributed to the Quality Team and is posted on the DEM QA intranet website.

C. Quality System Documents & Document Control

All controlled documents (i.e., those covered under the document control aspect of the DEM Quality System) related to DEM's quality system, including this QMP, will be posted on DEM's Internet websites, if available in electronic format. Controlled documents typically include the following:

1) The DEM QMP;
2) Various QA-related Guidance Documents;
3) All QAPPs and SOPs developed under the QMP,
4.) The Annual DEM Quality System Status Report, and
5.) EPA Quality System Assessment Reports

The reports of the individual programs' annual reviews are not considered controlled documents, and therefore will not be posted on the DEM Internet website. As experience and circumstances dictate, additional documents or classes of documents or records may be added to the list of controlled documents. Decisions regarding posting documents on the Intranet or Internet will be at the discretion of the QA Manager and the QA Team.

After drafting by program personnel, with assistance as needed by members of the QA Team, all controlled documents must be approved by the Office Chief or designee, and submitted to the QA Manager before use. The Office Chief or designee, and if necessary, the USEPA must approve the document when it is updated. The Program Manager will distribute the document after approval ensuring a revised document is sent to the Quality Assurance Manager. Appropriate staff distribution lists should be documented and maintained. The QA Manager has the responsibility of ensuring that the documents are posted on DEM's Internet website. Electronic distribution is encouraged. All previous, outdated versions of the document will be discarded, except that the QA Manager will retain

one electronic or hardcopy of all obsolete documents for archive purposes. It may also be appropriate for a copy of the previous documents to be kept in relevant project files, especially if it is needed to justify and / or clarify past sampling results.

The Program Manager also has the responsibility for ensuring that their staff uses the most recent documents. Obsolete documents must be removed and destroyed, except for the single copy kept by the QA Manager. Electronic document control is very useful in this regard; it should be used whenever possible.

All controlled documents will be marked with a revision date, and version number using footers at the bottom of each page of the document.

The QA Manager will retain copies of the annual QA System Status Reports and of the programs' annual reports. The QA Status Reports are posted on the DEM Intranet site.

The DEM record management policy details the elements of a record recovery plan. The policy outlines the procedures the department should follow in the event there is a disaster that would entail the significant loss of records. This plan is outlined in Appendix H and H1 of the record management policy.

D. Document Storage

DEM retains records in files that are maintained by the individual Offices and programs. Those Offices and programs have the discretion to archive files, or in some cases, dispose files based on space constraints and their own standard operating procedures based on the Office record retention schedule. The DEM retention schedules, in some cases, still need to be reviewed and approved by the RI Secretary of State's Office. Findings of assessments and chain-of-custody forms are maintained in the project files. As stated earlier, in some Offices, a file management system includes an inventory of documents, and provides check-in/check-out and file location information.

Custody tags, custody records, field notes, and analytical records are maintained in project files. The project manager is responsible for assuring that field and analytical records are in the project file.

E. Confidentiality Policy and Access to Public Records

Section 38-2-3 of the Rhode Island General Laws outlines the requirements for maintenance of, and access to, public records. The law can be reviewed on-line at http://www.rilin.state.ri.us/Statutes/TITLE38/INDEX.HTM.

F. Roles, Responsibilities and Authorities for Maintaining Records

Office Chiefs are responsible for developing standard operating procedures for the retention of records maintained in the individual Offices and programs. Draft retention schedules have been developed for all Offices in the Bureau of Environmental Protection and submitted to the Secretary of State for approval. The Offices of Compliance and Inspection and Air Resources have approved record retention schedules. The Office of Waste Management is actively working with the Secretary of State's Office to get their schedule approved. After the Secretary of State approves the retention schedules, the frequency for archiving files or disposing of files will be established.

7. Computer Hardware and Software

A. Hardware and Software Acquisition

Approximately 10 years ago the governor signed an executive order creating a centralized IT office (Division of Information Technology) to support all the executive level office. Prior to DEM establishing an MIS office and centralized IT, purchasing of computer hardware and software was decentralized. Information technology needs are now identified and submitted to Chiefs and/or Assistant Directors who review, prioritize, and evaluate the proposals. Each proposal must also be reviewed by the MIS Office to ensure consistency and compatibility with Department's systems as well as state hardware and software standards. The Office of Management Services also reviews these proposals to check consistency with the Department's budget, grant requirements and State purchasing systems. Once purchased, Office Chiefs, and in some cases Section Supervisors within Divisions, must work with staff from the MIS Office to install, develop and/or implementation the items.

B. Network Management, Data Back Up, Data Recovery Procedures, And Virus Protection

There are specific operating procedures in place to help minimize the loss of key electronic data across the many important databases throughout the DEM. These procedures include how frequently the back up functions should be performed and how the back up tapes and other data retrieval methods are to be handled, labeled, and stored, both on-site and off-site, all in an effort to have, within a worse case scenario, no more than one work day's worth of data loss. DEM has a multi-tiered approach to disaster recovery for data systems, including contingencies for both hardware and software failures due to power interruption and other scenarios. Finally, DoIT IT staff maintains aggressive computer virus and SPAM protection by employing both hardware appliances and software programs (utilizing the most up-to-date software) in order to keep all machines (servers, desktops, and laptops, and peripheral equipment) used by over 500 users, operating smoothly and safely and ensuring that key data and systems remain uncorrupted.

C. Disaster Recovery

The Rhode Island Department of Environmental Management relies on a robotic tape library system to backup all of its data, applications and servers. Tapes are taken offsite on a regular schedule to protect against loss of data in the event of a disaster. Current backups of data are also stored locally to allow for quicker recovery for routine data loss. DEM also has an enterprise application hosted at the State Data Center located in Johnston, RI. That system has an independent tape system and those tapes are routinely shipped offsite.

In addition, much of the Department's data is stored locally on staff PCs. As we continue to upgrade our backend storage systems and backup capability, we will be requesting users store their information on file servers to improve data security.

D. DEM Standards and Criteria

Since each proposal must also be reviewed by the MIS Office to ensure consistency and compatibility with Department's systems, they have established a set of standards and criteria for purchases of equipment related to information management and technology.

Minimum standards for desktop computers and laptops are updated on a regular basis and posted on the state purchasing website.

E Assessment of Databases

DEM and its' contractor, KPMG, conducted a comprehensive assessment of all databases used in the regulatory programs as part of the development of the permit and information tracking system. The findings of this evaluation are outlined in a comprehensive report titled "Permit Application Process Streamlining Study", Final Report, and July 30, 1997. This report is maintained in the MIS Office at DEM. The results of this analysis were used to evaluate the workflow in these programs and serve as a basis for the design of a more robust, multi-program system. Many of these databases were integrated into, and replaced by a comprehensive Oracle-based enterprise system developed by Kyran Associates, under contract to DEM. DEM has since phased out that system and migrated to a .NET architecture that is more cost effective, easier to maintain and provides a better end-user experience.

F. Maintenance of Data Integrity

The maintenance of data integrity is the responsibility of each office. Office Chiefs have designated at least one Data Steward for each Program who has the primary responsibility for ensuring data integrity within their programs. The Data Stewards and upper management work with the MIS unit to maintain and update the comprehensive permit streamlining system. Policies and procedures for ensuring data integrity are draft and data cleaning is ongoing.

8. Planning

A. Commitment to Systematic Planning

Planning and implementing environmental data collection operations must be done in a systematic way in order to ensure that data or information collected are of needed and expected quality for their desired use. Following such a process helps to ensure the ultimate success of any individual environmental data operation. Included in this chapter is guidance on processes that program managers must follow before and during data gathering or analysis.

Specifically, Chapter 8 presents an overview of the steps involved in the planning and implementation aspects of DEM's Quality System. It also provides detailed descriptions on how program staff should address:

i. Data quality objectives (DQOs), including when documents such as QAPPs are needed (Section 8.Bi);
ii. Sampling (Section 8.Bii);
iii. Field testing (Section 8.Biii);
iv. Split Samples (Section 8.Biv);

v. Analysis of Samples (Section 8.Bv)
vi. Data Assessment and Comparison of Results Against Established Criteria (Section 8.Bvi);
vii. Environmental Condition Description and Data (Section 8.Bvii);
viii. Review and Validation of Data (Section 8.Bviii)
ix. Reporting of Results (Section 8.B.ix)

In addition to planned and long-term routine environmental data operations, there are also instances where the immediate need for a data operation arises from an unplanned event or emergency. These events prevent DEM from meeting the requirements of the formal systematic planning process and the development and approval of QAPPs and similar internal documents as described below. Staff shall use their best judgment in determining the flexibility needed from the requirements of the following sections in these instances, and document the decision in a memo to the project file for that data operation.

The planning process will be primarily driven program data needs. The program self-assessments along with the Quality Assurance System Status Update will assist in documenting this process. The Quality Assurance System Status Update will gauge whether the quality system is being successfully implemented and to identify opportunities for improvement. This review provides an independent qualitative assessment to determine whether the program quality system, policies, procedures, and practices adequately address generating the type and quality of data required.

The second part of this chapter will address the development of Quality Assurance Project Plans.

B. Systematic Planning Process

The primary DEM documents used as planning inputs to the overall environmental management system include the DEM Quality Management Plan; the Generic Program or Project QAPPs, and approved SOPs. Other examples of planning processes include department-wide and office/division-wide work plans; budget documents; the Performance Partnership Agreement and Performance Partnership Grant, and various Cooperative Agreements with USEPA New England, and state, and federal rules and regulations. The key staff in the area of planning and implementing quality processes is members of the DEM Quality Team, the program managers and the project managers assigned to complete individual tasks.

The quality planning steps listed below apply to many work tasks, especially writing new SOPs, QAPPs and planning new work:

1. Identify (and involve) an individual project manager. Other parties must also be identified and involved as appropriate, such as the sponsoring organization (if apart from DEM) and their responsible officials, DEM project personnel, and other stakeholders such as legislators or other government agencies, scientific experts, community activists, etc. The intent is to identify all customers for and all suppliers of the data. The program manager is responsible for this step.

2. Describe the project goal, objectives, and questions and issues to be addressed in writing and communicate them to the parties identified in step 1.

3. Consider the potential uses of the data. The project manager is responsible for this step; the program manager reviews and approves it.

4. Identify the project schedule, required resources (including budget), milestones, and any applicable requirements (e.g., regulatory and contractual requirements). The project manager prepares this for the program manager's approval.

5. Identify the type and quantity of data needed and how the data will be used to support the project's objectives, and communicate this to relevant parties. This is the program manager's responsibility, but should be a collaborative process among parties identified in step 1. The data must meet the needs of the intended audience (*i.e.,* its "customers"). This is not to presuppose what the data will show but rather to ensure that the questions that need to be answered can be answered with the data to be gathered. In addition, this step can identify when work is not necessary – if there are no customers for the data, then the program manager should consider putting the resources to other uses.

6. Identify the performance criteria for measuring data quality, including any statistical methods proposed, and ensure that relevant parties understand the criteria. This is the program manager's responsibility, but should be a collaborative process among parties identified in Step 1.

7. Identify the QA/QC activities necessary to assess the quality performance criteria (*e.g.,* QC samples for both the field and laboratory assessments; technical assessments, performance evaluations, etc.) and ensure that relevant parties understand them. This is the project manager's responsibility, although he/she should consult with laboratory or other parties as needed.

8. Determine how, when, and where the data will be obtained (including existing data) and identify any constraints on data collection, and document these in writing. This is the project manager's responsibility. The use of existing data is strongly encouraged, provided its quality is known and is appropriate for the project; new data should be used to fill gaps in existing data or to determine if the situation described by the existing data has changed. When new data is to be generated, the sampling and analysis procedures must be documented. Design of a sampling and analysis program must explicitly include how it is anticipated that the program will meet the DQOs.

9. Consider whether it is appropriate to evaluate and qualify data from non-DEM sources, especially data gathered or analyzed by contractors, volunteers or other organizations such as universities or other research organizations. Information that will be used by DEM from these organizations should be collected using DEM approved QA procedures. Ideally, a QAPP should be received and reviewed from the organization that collected the data to insure the integrity of the data. The project and program managers share this oversight responsibility and should document their decisions. The QA Team member and program management must be involved as necessary to ensure proper relationships with the outside parties. This issue must receive special attention from the project and program managers to ensure that this class of data is usable and defensible. As noted in other chapters of this QMP, training, procurement of services, record keeping, and assessment and corrective actions are all areas that must be specifically addressed. When volunteers are used, training and oversight of the volunteers should be a focus. Volunteers are an

enormous resource to DEM, but program managers must ensure that volunteer-generated data remains useful to the program and not be vulnerable to criticism by potential data reviewers.

i. Data Quality Objectives

Before any sampling, monitoring, or testing is conducted, the program team members must determine, document, and communicate data quality objectives (DQOs) to the relevant program staff, participating organizations, and laboratory staff (EPA document G-4, *Guidance on Data Quality Objectives*). All sampling, testing, and recording of environmental data is done for a purpose. Data is not gathered for its own sake. The procedures used for the effort must be appropriate for the use of the data. The purpose of the sampling or testing must be recorded.

In order to determine DQOs, program managers must consider and document decisions regarding the following:

1) What decisions will be made using this data; i.e., how did the program determine its data quality needs or objectives
2) Does the data quality objectives communicate the intended program need?
3) Are decisions/actions based on data collected? Are there any exceptions used in the program. and
4) If there is nothing to be communicated by this data, is it necessary to gather the particular data.

DQOs should be discussed with program staff, participating organizations, and laboratory staff so that methods and detection levels can be agreed upon prior to sampling. The laboratory should also be included in any discussion of DQOs, detection limits, testing methods, time frame for sampling and numbers of samples so that laboratory capacity will be available to handle the influx of samples from a large project. These steps are imperative to assure the reliability of the data.

It may be necessary to develop a QAPP, which will be prepared in accordance with this QMP and with *USEPA Region 1 - New England Compendium of Quality Assurance Project Plan Requirements and Guidance, October 1999, Final,* or later edition, and *USEPA Requirements for Quality Assurance Project Plans, QA/R-5, March 2001,* or later edition.

ii. Sampling

Sampling is the collection of material to be tested or examined. The object of any DEM sample collection effort is to generate data that can be communicated and used to support DEM decisions and actions.

When sampling activities are necessary, they are focused toward meeting the regulatory and technical requirements defined during planning. Sample collection is designed to answer questions such as:

- What are the appropriate test methods to be used? EPA's ESC Analytical Test Methods Collection (http://www.epa.gov/reg3esd1/oasqlib/methods.htm) provides excellent information on EPA approved test methods
- How does the material compare to a regulatory threshold?
- Is a component/condition present?
- Are there trends or hot spots?

The sampling activities typically require:

- Coordinating field activities with laboratory activities.
- Maintaining sample integrity.
- Focusing on regulatory and program defined data quality requirements.

Planning activities should address these issues.

Each program manager is responsible for ensuring that sampling activities are defined, controlled to the extent required, verified, and documented. Written sampling procedures must be followed in all instances. Wherever feasible, sampling procedures written by others, such as *Standard Methods for the Examination of Water and Wastewater*, or various USEPA guidance documents, should be included or reference in the procedures. In those cases, the programs are responsible for ensuring the most up-to-date, approved edition is used. The written procedure must be a stand-alone document sufficient to allow staff to do the work to the required quality standard.

Where sampling procedures written by others are not available, the program manager must ensure that a program-specific procedure is produced and made available to staff. Existing procedures for similar testing should be used as models whenever possible. The program manager prepares the procedure. The QA Manager and Quality Team are available to assist with developing the procedure. The program manager reviews and approves the procedure.

The sampling procedure to be used must be reviewed and agreed upon before leaving for the sampling trip. This is necessary to avoid confusion in general, but especially to ensure that proper sampling containers and equipment are taken. When samples are to be returned to the laboratory, it is recommended to check with the laboratory's personnel before going on the sampling trip.

When deciding what procedure to use for any sampling effort, the following considerations must be factored in:

a) If the data will be used to support an enforcement case, documentation and adherence to procedures becomes even more important.
b) Sampling personnel must be trained in the use of the equipment, and records of the training may be kept if required.
c) Quality Assurance/Quality Control steps necessary to meet the DQOs must be established.
d) If the location is being sampled for the first time, be certain to record the location and mark it in the field as necessary. Whenever possible, sample locations should be recorded using the Global Positioning System (GPS).
e) When samples are to be taken at the same location again, be certain that the location is marked and accessible, or recorded using GPS. Careful notes should be taken to allow others to find the location.
f) How the samples will be transported to the testing or examination location must be established.
g) If other agencies or parties will be taking split samples, DEM should ensure the protocols used will meet the requirements of the DEM QA System.
h) If people living near the sampling location, or local authorities, are interested in the sampling effort, the program manager must make appropriate arrangements for communications with

any affected parties and the public. The decision regarding such communications should be recorded, and a log maintained for all communications.

When others do sampling, either by private parties (including volunteers) who are reporting results to DEM or by parties such as contractors working as DEM proxies, the same sampling procedure issues apply. It is the program manager's responsibility to ensure and verify that these parties are using appropriate written sampling procedures. This may include review and approval of the other party's procedure.

Sampling procedures, together with any required Health and Safety Plan, must include, when appropriate, information on choice of sampling equipment, decontaminating or discarding the sampling equipment, personal protective clothing or equipment needed, containers and preservation needed for the sample, any requirements related to transportation to the testing location, and field documentation requirements. Sampling procedures, training records and other documents described in this section, are subject to the requirements in Chapter 6 of this QMP, "Documents and Records."

As part of annual program self-assessments, program managers must review their sampling procedures, and the results of that review (with recommendations for improvements or other changes) must be forwarded to the QA Manager. This review must include checking to be sure that the QA/QC measures in the procedure are sufficient to meet the established DQOs. Where procedures produced by others are used, a review must also be done, but it can be limited to ensuring that the most recent guidance is still being used**.**

iii. Field-Testing

Samples may be tested or examined in the field, that is, in close proximity to the location where the sample was taken. The decision as to whether field or fixed laboratory testing is appropriate is the responsibility of the program manager. Program managers should be aware of technological advances that allow for higher quality field-testing than has been available in the past.

Where samples are examined or tested in the field, documentation must take place immediately upon testing, following established guidance for documentation. See Section 8.8 of this QMP for information on taking field notes. The field personnel must not rely on memory and record results later. When necessary, field-testing equipment must be calibrated per the manufacturer's recommendations, and calibration records must be kept. If calibration is done in the field, staff should keep this information with the field notes and may put a copy of these calibration records in the file.

When deciding what procedure to use for any field-testing effort, the following considerations must be factored in:

a) It must be known what compounds are being tested for, in what medium, and what detection limit is needed to produce meaningful results.
b) An estimate must be made of other compounds or conditions present that could interfere with the detection of the compounds being tested.
c) A decision must be made about the need to split some samples so that confirmatory testing can be done in a laboratory.

d) The environment in which the testing will take place, i.e., outdoors or in a truck or trailer must be considered. There may be special weather-related requirements for any piece of equipment such as a need to avoid low temperature or high humidity conditions.
e) The personnel doing the testing must have the proper training to run the testing equipment in question. Training records must be kept, when appropriate.

When others do field-testing, either by private parties (including volunteers) who are reporting results to DEM, or by parties such as contractors working as DEM proxies, the same procedure issues apply. The program manager must ensure that these non-DEM parties are using appropriate written procedures. This may include review and approval of the other party's own procedure. Reference to other standard procedures is encouraged.

Field testing procedures may include information on the choice of equipment, calibration of the equipment and calibration records, other QA/QC needed to ensure that DQOs are met, decontamination requirements, personal protective clothing or equipment needed, containers and preservation needed, and any requirements related to transportation to the testing location. Field-testing procedures, training records, and other documents described in this section, especially as regards recording of results and calibration records, are subject to the requirements in Chapter 6 of this QMP, "Documents and Records."

The testing procedure to be used must be reviewed and agreed upon before leaving for the testing trip. This is necessary to avoid confusion in general, but especially to ensure that proper containers and equipment are taken. It is recognized, however, that there may be unknown site conditions or circumstances, such as those associated with emergency response situations, which would preclude staff from being able to follow this strict guidance in all instances. In such situations, professional judgment and field staff experience would take precedence. After the incident, written documentation of any testing procedures conducted in the field, along with any relevant extenuating circumstances, must be provided.

The program manager must review field-testing procedures generated within DEM within context of the annual self-assessment, and send the results of that review, with recommendations for improvements or other changes, to the QA Manager. This review must include checking to be sure that the QA/QC measures in the procedure are sufficient to meet the established DQOs. Where procedures produced by others are used, a review must also be done, but it can be limited to ensuring that the most recent guidance is still being used. The QA Manager and Quality Team will evaluate the review and assist the program manager to implement the recommended changes.

iv. Multiple Samples

The term "Multiple Samples" includes duplicate, replicate or split samples taken to validate sampling and analytical procedures. This section provides a framework for field and laboratory personnel to define "multiple samples" at the beginning of a project. Since there are number of variations on these definitions, the discussion below is suggested guidelines for the use of these definitions.

Multiple samples at a given sampling point or location are frequently collected and analyzed for various purposes, including duplicate, replicate or spilt samples. For purposes of QA/QC, field

duplicate samples are two separate aliquots of the same sample, collected at the same time and sampling location under identical conditions. The two aliquots are sent to the same laboratory and treated the same throughout the laboratory processes, with one of the aliquots being given a coded sample identification so the laboratory does not know it is a duplicate of another sample. Replicate samples are two sample aliquots taken from the same container in the laboratory, then processed and analyzed as two separate samples, and treated the same throughout the laboratory processes.

Duplicate and replicate samples are maintained on the same chain of custody form and are analyzed for the same parameters using the same analytical method. Duplicate and replicate samples will give a good indication of variability and precision. This can be a means of determining false positives or negatives. Other controls for false positives and false negatives are laboratory QC data such as surrogates, matrix spikes, blanks, and laboratory control samples. Duplicate samples are frequently required and described by the QAPP or may be taken at the discretion of the project leader or management personnel based on the sensitivity and importance of the sampling event.

Split samples are duplicate samples that the sampler shares with another party, such as another agency, another program or a responsible party. The sample is divided into two aliquots after sample preparation process (i.e. pulverizing, mixing or sample composting) and the second aliquot give to a second party who has the sample analyzed independent of the first aliquot, usually at a different laboratory. The second aliquot can be analyzed for the same parameters or different parameters, depending on the purpose of the split sample. This can be a means of verifying the accuracy of the analysis, verifying that a sample has not been tampered with, or providing for analyzing results for additional or different parameter than the first sample.

v. Analysis of Samples

Sample analysis involves the characterization of materials based on chemical or physical properties. Analysis will result in generating raw data from instrumental analysis, chemical analysis, biological, or physical testing. The analytical methods used shall be specific and sensitive enough to answer the question posed by the project objectives and meet the data quality objectives. This will be assured by conformance to QAPPs and SOPs developed and approved according to the guidelines presented in this document.

Once results are received, the raw data is translated into qualitative identifications, quantitative determinations, and/or statements of condition, in other words, into useable information. This process will include arithmetic calculations and statistical evaluation of results for a sample or collection of samples. Translation of data will be performed in accordance to QAPPs and SOPs developed and approved according to guidelines presented in this document.

vi. Data Assessment and Comparison of Results against Established Criteria

Data must be assessed to determine its usability in meeting the project goals and objectives. This will be done based on the data quality objectives of the project and the data deliverables provided as specified in the QAPP for the investigation or remediation.

For groundwater sampling, the data would be assessed by the project manager based on historical trends from the facility and compared against standards listed in the Rules and Regulations for the Investigation and Remediation of Hazardous Materials Releases and/or the Groundwater Quality Regulations.

For drinking water sampling, the data would be assessed by the project manager and compared against standards listed in the Rhode Island Department of Health's Rules and Regulation Pertaining to Public Drinking Water, as amended.

For soil samples collected, a project manager will usually assess the data and compare it against standards listed in the Rules and Regulations for the Investigation and Remediation of Hazardous Materials Releases.

For surface water sampling, a project manager will usually assess the data and compare it against standards listed in the Water Quality Regulations.

For sediment samples collected, a project manager will usually assess the data and compare it against background sediment sample results collected during the same round of sampling, soil standards listed in the Rules and Regulations for the Investigation and Remediation of Hazardous Materials Releases, or appropriate established sediment standards as set by other federal or state agencies.

For air sampling, samples are compared to national standards for various air pollutants including, but not necessarily; limited to: National Emission Standards for Hazardous Air Pollutants (NESHAPS), National Ambient Air Quality Standards for ozone, and standards for carbon monoxide, nitrogen oxides, sulfur dioxide, lead and particulate matter.

For soil gas samples collected, samples can be collected via active soil gas survey or passive soil gas survey, and are compared to background concentrations or, for solid waste landfills, the Rules and Regulations for Composting Facilities and Solid Waste Management Facilities.

vii. Environmental Condition Descriptions and Data

Many DEM programs do not deal with environmental data in the sense of laboratory test results of some unit measure of a particular contaminant. For example, the Wetlands Program staff gathers information about environmental conditions, i.e., they describe conditions at a given location at a point in time. Personnel determine if the location is a wetland; has it been filled or dredged; how do conditions now compare to earlier conditions; and who and what is present. Other programs that conduct sampling in the more typical sense will also gather this environmental condition data as an adjunct.

This information is very important to DEM, and can be especially important for enforcement purposes. As with field sampling and testing, the purpose of the site visit or inspection must be understood in advance. Supervisors are responsible for ensuring that the field personnel, when taking measurements, know how to use the measuring tool in question. This can be quite simple in the case of a measuring tape, or equipment-specific training may be needed. If the latter is true, records of the training must be kept. Manufacturer's recommendations regarding use of the equipment must be followed.

For any field visit to inspect a site or to take samples or conduct field-testing, the visit must be recorded in a field book or on a form specific to the program. While the level of documentation will vary depending on the data use, recommendations regarding field documentation include the following:

a) The site name, location, date, time of arrival and departure, weather conditions (temperature can be estimated), and the identity of persons present must be recorded.
b) The purpose of the visit and any activities taking place must be recorded, including any personal protection being used. This note taking must be completed before leaving the site area. Notes added after leaving the site area should be marked as such.
c) Nothing is to be erased in a field book. When mistakes are made, the mistaken information is to be struck through with a single line so that it can still be read. The change is to be dated and initialed. In addition, all unused lines in the field book should be struck through and initialed.
d) Other events or conditions should be noted. Personnel should be liberal in applying this principle. Items that do not appear to matter often do. An example would be: While sampling groundwater at a contaminated site, personnel note that children are riding bicycles across the back lot. This might not be noted, since it has nothing to do with the sampling. However, this is important information to site managers and risk assessors – it is evidence that children may be at risk, which may not have been obvious. Contacts with people working at the site, the site owner, neighbors, local officials, representatives of utilities or other government agencies, or other interested parties must always be recorded.
e) DEM encourages the use of photographs and videotapes to record field conditions. Like the field notes, these visual records are public documents unless they become confidential as confidential business information or for enforcement purposes. Film photographs should be printed in duplicate. Prints and copies of videotapes or electronic photographs may be sent to members of the public (especially the site owner) or other agencies, but the photographic negative or the original of the videotape or digital photograph must remain with DEM unless specifically authorized by the program manager to be released. Programs, where applicable, should use the Standard Operating Procedure for Digital Photograph Record Collection and Storage SOP (SOP-OD-QM-4).
f) Prints of photographs and the outside of video tape cassettes should be marked identifying the date the picture was taken, the site or case, and the name of the person who took the pictures. For videotapes, the person taking the pictures should start the shot by introducing him/herself and the location being shot.
g) Where there may be enforcement issues, care must be taken when using digital photographs. The person who takes the picture should print out the image and attest that the picture accurately reflects the conditions at the time the image was captured. Programs should use

the guidance established in their Standard Operating Procedure for Digital Photograph Record Collection and Storage SOP SOP-OD-QM-4 in these instances.

h) As noted above, field notes or other field documentation must be considered in the public record. When requested, copies of the field documentation must be provided. The program manager and the DEM Office of Legal Services will make the decision as to whether a particular record is to be treated as confidential.

i) A professional standard must be kept in note taking. Snide, angry or sarcastic notes should never be recorded. Comments on any person's character must be avoided. A strictly factual style should be followed. If necessary, record "He/She/I became agitated…" Any page of any field book may have to be defended in court. The appearance of personal animus can ruin an otherwise tight enforcement case.

j) Handwritten notes taken in the field are not expected to show the best penmanship. However, they should be legible to persons other than the note-taker. If legibility may be an issue, a typed transcript should be prepared and placed in the relevant site/case file. Typed transcripts should show the date of the field visit, the date of the transcription and the name of the person who did the typing.

k) Personnel who are in the field often should keep their field book with them whenever they are on duty and out of the office. Field personnel who "just happened to be passing by" obtain important information. In this case, such observations should be recorded, and reported to authorities as necessary. Personnel should not attempt to make a full inspection without notifying a DEM office who have the proper training and equipment to address the situation at hand (*e.g.,* a septic system inspector who happens upon someone dumping hazardous waste should probably observe from a distance and report the situation to the office).

l) Field books remain in the possession of staff. Copies of the field book pages are placed in site/case files as needed. Program-specific field forms are placed in the site/case file. Photographic and/or video documentation is also placed in the site/case file.

viii. Review and Validation of Data

As a general rule, all data or information must be checked before it is released to the public or used for making decisions. As with any QA/QC effort, this check should not be done by the same person who generated the data, except when it can be demonstrated that an effective review and validation process can be carried out.

Data checks can take place at different levels; these are referred to as "Data Verification," "Data Validation," and "Data Usability Assessment." The definitions for these terms are provided below:

- Data Verification is a process of evaluating the completeness, correctness, and conformance or contractual compliance of a data set against the method standard, SOP, or contract requirements documented in the project QAPP. Data verification should be performed internally by the analytical group or fixed laboratory generating the data. Additionally, data can be checked by an entity external to the analytical group or fixed laboratory. Data verification may result in accepted, qualified, or rejected data.

- Data Validation is an analyte and sample-specific process that extends the qualification of data beyond method, procedural, or contractual compliance (i.e., data verification) to determine the analytical quality of a specific data set. Data validation criteria are based on the measurement performance criteria documented in the project QAPP. Data validation must be performed by an organization independent of the group that generates the data. Data validation results in accepted, qualified or rejected data.

- Data Usability Assessment is the process of evaluating validated data to determine if it can be used for the purpose of the project, (i.e., to answer the environmental question or to make the environmental decisions that must be made). Data usability includes the following sequence of evaluations:
  a. Individual data sets are evaluated to identify the measurement performance / usability issues/problems affecting the ultimate achievement of project quality objectives.
  b. An overall evaluation of all data generated for the project is performed.
  c. The project-specific measurement performance criteria and data validation criteria documented in the QAPP are evaluated to determine if they were appropriate for meeting project quality objectives.

DEM expects that in most cases, reviews that can be classified as "Data Usability Assessments" will be sufficient. In some cases however, more formal data verification and validation may be necessary. These more rigorous reviews are more desirable when:

a) A funding agency requires it.
b) There are serious public health and/or environmental impacts.
c) A matter is under litigation, enforcement or a court-ordered schedule, and therefore may be highly scrutinized.
d) A program is being implemented for the first time; or
e) The program has a research aspect.

When the program manager finds that formal data verification and/or validation are necessary, relevant RIDEM/USEPA guidance should be followed.

For the more ordinary forms of data review, at a minimum, supervisors should review the information. This is the most basic level of review, and is intended to cover the simplest issues. This review should cover:

a) Checking consistency and range issues - For instance, a pH of greater than 14 standard units in a fresh water sample should be flagged at this point. In addition, the result in question should be checked for consistency with past results at this location or, as appropriate, with similar locations.
b) Checking the completeness and appropriateness of the sampling and testing. Were the right locations/samples tested for the right parameters?
c) Checking that correct methods were used
d) Checking for transcription errors
e) Checking that the work was done in accordance with the plan, or if changes were necessary, that the changes were adequately documented.

If there is any doubt as to the validity of a certain data point, the first step is to re-sample and/or re-test.

Beyond issues that can be resolved by re-sampling, many factors can cause a data point or set to be invalid. The art and science of error analysis cannot be fully addressed in a document of this size, but if there are issues with a data point or a data set, the program manager should work with the Program Manager and Team and with program personnel to resolve the issue. The goals are to determine how, or indeed if, this particular data is incorrect; to obtain correct data; to record the decision, and ultimately, to ensure that the issue does not recur.

The DEM Quality Team developed a departmental SOP entitled "Summary Guidance for Reviewing Environmental Monitoring Data". This SOP is intended to serve as a primer on the procedures for reviewing environmental data and data reports for DEM programs. Depending on the needs of the program, the intended use of the final data and the degree of confidence required in the quality of the results; data review could be conducted at many levels. This document provides general guidance on verification and validation procedures and usability assessments and informs staff of available references to utilize. Data verification ensures that reported results accurately depict work performed. Data validation confirms that these verified results meet the overall quality requirements of the project. Usability assessments define acceptance criteria by which environmental data are evaluated for ultimate use in decision-making. Programs are going through the process of adopting or modifying this SOP to meet their particular data verification/validation needs.

ix. Reporting Results

When reporting the results of a measurement, test, or environmental condition, the object of the report is to clearly communicate the result to a specific audience. The following should be considered when reporting results:

a) Information should be included so that the person receiving the report will know that the data is of appropriate quality. QA/QC information must not obscure the data being reported.
b) When practical, data should not be obscured by technical jargon, therefore when preparing a report the audience must be considered. For reports to the public, greater clarity is needed, and including detailed QA/QC information may not be necessary. When reporting to technical staff, full QA/QC information should be included.
c) Reports must include the name of the sampler/tester and of the reviewer. Dates and sampling/test methods must be included or referenced. Raw data should be included as necessary.
d) To allow for clear communication, tables and graphs are encouraged. Where past results are part of that summary table or graph, the report should include enough information to allow interested people to find that past data. Including the date of the past sampling/testing, the location and parameter being sampled/tested, and the person/unit that did the testing will probably is sufficient to meet this goal.
e) Sampling and test results must be reported to the designated program person. For instance, the contract laboratory will report to the person doing the sampling, unless specifically instructed otherwise. The program manager is responsible for instructing staff to forward results to the proper parties.
f) Where samples are collected on private property, the property owner or other entity associated with the property should receive the results.

C. Quality Assurance Project Plan (QAPP)

The overall planning goal is to produce written documentation describing how the data will be acquired, analyzed, evaluated, and assessed against its intended use and the quality performance criteria. The form of this document can be program-specific. In some cases, memos to staff will suffice. However, it may be necessary for the program manager to develop more specific quality assurance documents. One such document is the QAPP, which is typically required in USEPA-funded activities. QAPPs will be prepared in accordance with this QMP and two relevant USEPA documents: a) USEPA Region I QAPP Program Guidance Revision 2, January 9, 2010 b) Guidance for Quality Assurance Project Plans (G-5) - December 2002, EPA/240/R-02/009. The QA Team and the Quality Assurance Manager are resources to program managers tasked with developing QAPPs and related documents. A QAPP should be considered when:

a) A funding agency requires it.
b) There are serious public health and/or environmental impacts.
c) A matter is under litigation, enforcement or a court-ordered schedule, and therefore may be highly scrutinized.
d) A program is being implemented for the first time; or
e) The program has a research aspect

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DEM programs may be required to develop QAPPs by EPA or other funding agencies. All draft QAPPs must be submitted to the DEM QA Manager prior to the time of submittal to EPA. The programs will forward a final copy of the QAPP to the QA Manager, in electronic format, when EPA approval is granted.

The Quality Team member, in cooperation with the relevant program managers, is responsible for tracking the development of any required QAPPs. The DEM QA Manager will coordinate and submit to EPA yearly updates of the DEM QAPP Inventory. This document includes a listing of all pending and completed QAPPs that DEM developing. The status of the various QAPPs developed, or requiring development, is listed in Appendix B of the QMP.

This planning task can be done at two different scales, which are described in terms of QAPPs; the Generic, or Program QAPP, and the Project-Specific QAPP. The Project-Specific QAPP is a single planning document that covers all the QA issues for a single, finite project. This has been the most commonly followed model.

However, a Generic or Program QAPP can be useful. The Generic QAPP is useful when a program knows it will be doing certain work tasks repeatedly. Groundwater sampling at Superfund sites is an example – the actual sampling and testing is similar at all sites, so the planning document is prepared once. This Generic QAPP can cover description of the program and its organization; general personnel information indicating the types of positions/titles that will be assigned various tasks; data quality objectives; documentation and record needs; data assessment and corrective action procedures; and monitoring and sampling procedures. The Generic QAPP is reviewed for appropriateness annually and has a five-year life span. Using Generic QAPPs can save a program much document preparation time when the program knows that similar work will be repeated.

QAPPs have been traditionally thought of as documents that are used for projects that determine environmental conditions at a site using sampling and analytical procedures. It is important to note that major DEM decisions are also made when environmental conditions are modeled. In many instances control programs are based on the results of modeling. Planning for modeling projects, therefore, is just as important as planning for traditional data collection projects. In order to be able to use model output for anything the model needs to be scientifically sound, and defensible. A modeling QAPP ensures this through the following elements:

- A systematic planning process including identification of assessments and related performance criteria;
- A peer reviewed theory and equations;
- A carefully designed life-cycle development process that minimizes errors;
- Documentation of any changes from the original model;
- Documentation of assumptions, theory, and parameters that is detailed enough so others can fully understand the model output;
- Input data and parameters that are accurate and appropriate for the problem;
- Output data that can be used to help inform decision making.

Approval of QAPPs and SAPs will need to follow the protocol outlined in the SOP (Appendix H) concerning QAPP development. The program manager will send QAPPs in development to the appropriate DEM personnel and the DEM Quality Assurance Manager for approval. Once the QAPP has been approved by DEM, the QA Manager will forward the QAPP to EPA Region I for approval. Copies of the approved QAPP shall be sent both in hard copy and electronically to the QA Manager. Approval of the planning document is required before the work described in the plan can be initiated. Final QAPPs will be posted on the DEM intranet by the QA Manager.

D. Standard Operating Procedures

DEM has developed a Standard Operating Procedure (SOP) for developing and approving standard operating procedures (Attachment G). SOPs help to assure consistency in common procedures and are encouraged for routine, standardized or special/critical operations. By establishing standardized methods for performing common repetitive tasks, the programs will improve their efficiency, consistency, verifiability, credibility, and ability to attain the highest levels of Quality Assurance, Quality Control, and Quality Improvement. This document describes the DEM's procedure for developing, formatting, approving, and distributing SOPs. Newly developed SOPs should use this format. QAPPs that use other previously developed SOP, e.g., those from environmental monitoring manufacturers, should identify the source of the SOP. All SOPs used by the programs that are in electronic format, should be forwarded to the QA Manager.

9. Implementation of Work Processes

A. Ensuring Work Performed Uses QMP Principles

In carrying out its mission, DEM relies upon many different types of data that enable it to better evaluate and measure existing environmental conditions, to identify and understand areas of concern, to assign responsibility for these areas, and to promote and enhance credible communication on environmental issues to a wide variety of audiences.

The data DEM uses must be credible, and the quality of that data must be appropriate for its intended uses. The Department, through its Quality Management Plan details a systematic approach to the management of data and overall quality assurance issues across DEM. There are two primary means of ensuring that work will be performed according to quality management practices, i.e. Program Assessments and Standard Operating Procedures.

B. Assessment Processes

Assessment in the DEM QA System may take place at the project level, program level and at the system level. This section will discuss DEM's involvement at these three levels of assessment. DEM is most actively involved at the program and system levels. The work done in the program assessments are factored into the annual system level assessment.

i. Program Self-assessments

The DEM Quality System is decentralized. Programs are responsible for ensuring program elements of the QMP are being addressed at that level. The programs that have been identified in Appendix F are responsible for conducting the self-assessment. The Quality Team member in the Office will be responsible to coordinate the self-assessments with the particular program/project manager. The program manager either will conduct the assessment or will work with other key program members to fill out the self-assessment form.

DEM has instituted a system of self-assessments that are conducted at the program level. This self-assessment is based on the DEM QMP and evaluates each program to determine conformance with DEM procedures, adequacy of existing quality assurance project plans, standard operating procedures (SOPs) and other applicable requirements. Other objectives of the self-assessments are the determination of the accuracy of data collection and management systems, identification of opportunities for program improvements, and verification of the effectiveness of the Department's QA programs. Other important benefits of assessing are cross-training, assurance that policies and procedures are current and are being followed by staff, and continuous improvement.

On a yearly basis, the QAM reviews the existing "Guidance for Annual Self-Assessments" (Guidance). The Guidance is modified to clarify issues for the upcoming annual self-assessment and will contain revisions (if needed) of Forms A, B and C which are used to conduct program assessments. This assessment is applicable to all programs listed in the Guidance. The QAM, the Quality Team and the Assistant Directors in the Bureau of Environmental Protection may use the previous year's QA System Status Report to identify and

prioritize assessment issues, develop annual assessment plans, and ensure that assessments conform to DEM guidance. The QAM then revises the Guidance document and presents a draft copy to the Quality Team in late spring. After the Guidance document is finalized by the Quality Team, the self-assessment forms are distributed to the programs to initiate the annual self-assessment process cycle.

Streamlined Program Self-assessment Form (Form A) is intended for all DEM programs whose operations using environmental data are whose activities and procedures may be described in one or more EPA-approved Quality Assurance Project Plans (QAPPs), or who have complete Quality Assurance Manuals. This streamlined form is intended for DEM programs whose operations have been previously described in one or more EPA-approved Quality Assurance Project Plans (QAPPs) or that currently utilizes Quality Assurance Manuals. This form also documents new or revised QAPPs and SOPs. Form A is filed in each of the two years following QAM approval of the more detailed Form B. The main purpose of subsequent self-assessments is to indicate any major QA initiatives in the program and to report progress the progress of mitigating issues raised in the more detailed Form B or C analysis.

The Detailed Program Self-assessment Form (Form B) is a self-assessment form that consists of a series of detailed questions, each of which are specific to particular topics that refers to a chapter or section of the DEM Quality Management Plan. This form is the mechanism to update the Quality Assurance Manager concerning changes with respect to new or revised QAPPs and SOPs. This form is used by new programs entering the DEM Quality System and is to be filled out by existing programs every three years.

Data Review Self-assessment Form (Form C) is a self-assessment form intended to be used by programs that only review data provided by others. Form C is based on a SOP entitled "Summary Guidance for Reviewing Environmental Monitoring Data" that was developed by the DEM Quality Team.

The Quality Team member of each applicable program will coordinate the self-assessment activities. A program may specify additional procedures or requirements for conducting assessments within that group. The annual draft self-assessment forms are scheduled for submittal by August 30. Upon completion, each program forwards an electronic copy to the QAM for an initial review. After all questions about the self-assessment have been resolved, each program's signed form will be submitted to the QAM.

The QAM will review each program self-assessment for completeness, appropriateness, clarity, and consistency with implementation of specific QAPPs and SOPs. The QAM will then summarize the results of the self-assessments on a spreadsheet or table for analysis which is valuable for later compilation of the Annual QA System Status Report

ii. Project Assessments

It should be noted that some programs already conduct elements of a project assessment that would constitute a normal part of their project oversight responsibilities. In the future, this assessment activity may be conducted in a systematic manner. It is anticipated, based on resource levels, that section supervisors or project managers could perform project assessments. Assessments will be based on the following:

- Assessments of QAPPs - The program manager or designee will assess completed projects based on a schedule developed by the Quality Assurance Manager and the Quality Team. The project assessment will also evaluate the adequacy of facilities, equipment, supplies, personnel, and existing procedures to meet project objectives. Findings of the assessment, including any deficiencies, inadequacies, or systematic problems will be discussed with the project management and the Quality Team at the quarterly meeting. The recommendations of the Quality Team will be reviewed and acted on by the Department senior management.
- Quality Control Indicators - During the project, personnel may use quality control indicators to identify problems with sampling and/or analytical procedures and to highlight anomalous results. Quality control indicators can include blanks, standard reference materials, QC check samples, replicates, spikes, and alternative methods. Problems that are identified are documented in the project file and should be discussed with the QA Officer designated on the QA Plan cover sheet and the program supervisor. They may decide how to respond to the problems together, or after consultation with the Chief and/or appropriate Assistant Director.
- When a project is concluded, the work product is evaluated for completeness, accuracy, and appropriateness to meet the project objectives. The procedures used and the documents generated are evaluated for adherence to policies and standard operating procedures.

iii. Quality Assurance System Status Review

The DEM relies on the collection and analysis of environmental data to support its decision-making processes. In carrying out its mission, DEM relies upon many different types of scientific data that enable it to better evaluate and measure existing environmental conditions, to identify and understand areas of concern, to assign responsibility for these areas, and to promote dialog among a diverse group of stakeholders on environmental issues.

The data DEM collects must be scientifically defensible, and the quality of that data must be appropriate for its intended uses. DEM, through its Quality Assurance System has developed a systematic approach in the management of data and overall quality assurance issues across the department. This QA System is described in the DEM Quality Management Plan and is frequently updated to highlight the evolving improvements to the system.

The DEM QA Manager will perform a management system review annually, with the assistance of the Quality Team, to test the DEM quality system. The review of the DEM Quality System is outlined in the DEM Quality System Management Assessment Standard Operating Procedure (Appendix H). The management system review will gauge whether the

quality system is being successfully implemented and to identify opportunities for improvement. This review identifies patterns or issues that can affect project commitments or performance quality.

DEM has used the program self-assessment as the basis of the Management Systems Review. The review of the self-assessments and other work of the DEM Quality Team will form the basis of the generation of a report called the Quality Assurance System Status Report. This report will constitute the Management Systems Review.

This report consists generally of four sections. The first section will address assessments of the DEM QA system that will be based on the yearly annual program self-assessments. The QAM will present a summation of the process. Included in this section will be a discussion of any EPA assessment of the DEM QA Program.

The second section of the report will discuss areas for improvement that should be worked on in the following year. This section will also touch on QA system challenges and vulnerabilities. The material from this section will generally be information provided in the program self-assessments.

The third section will discuss:

- Any issues concerning how information can be better communicated to departmental employees about changes to the DEM QA System.
- QA training efforts and needs for the coming year.
- Any QA best practices that have been instituted by any of the programs. This description will be used both to support the initiative of the programs that developed the best practice and to also allow others to consider adoption of these practices.

The fourth section will be a summary of the changes to the DEM Quality Management Plan with respect to new or revised QAPPs and SOPs implemented in the previous year.

This report will be drafted by the Quality Manager and be reviewed and approved by the Quality Team. The report will be signed off by Senior Management as a means of keeping them up to date on the DEM Quality System.

After completion of the DEM Programs Self-assessment Summary, the QAM prepares the draft QA System Status Report and provides it to the Quality Team prior to one of the fall meetings. The report is finalized based on comments of the Quality Team and then sent along with a summary memo to the Assistant Directors in the Bureau of Environmental Protection, the Associate Director of the Bureau of Natural Resources and the Director for review and concurrence. After the QA System Status Report has been finalized as an agency document, it is forwarded to EPA, Region I. The submission of the report is a requirement of the DEM/EPA Performance Partnership Agreement. The QA System Status Report will then be posted on the DEM intranet sites. An electronic copy of the document is sent to the Quality Team members who are requested to distribute the document to office/ division personnel.

10. Assessment and Response

A. Commitment to Assessment and Response

Meeting the Department's commitment to quality requires a commitment to continuously improve the quality system in the Department and respond quickly and effectively to any problems or shortcomings uncovered in the assessment processes. As explained earlier, DEM has developed and now maintains a planning process to ensure DEM's systems remain effective and meet current policies and requirements. This planning process will include the reviews and checks outlined in Chapter 3 previously and will strive to continuously improve our quality system.

The first step in developing and implementing a quality system throughout the regulatory programs within DEM was the establishment of this QMP. This chapter of the QMP describes the processes to be implemented to ensure that the Quality System is sustainable once it has been established.

B. Assessment Processes

As mentioned in the section above, DEM has instituted a system to test its Quality System. This is a decentralized approach and each environmental program will be required to perform yearly self-assessments of their quality system. Based on these yearly self-assessments, the Quality Assurance Manager will develop a report, with the Quality Team, that will constitute the Management Review of the DEM Quality System. Outstanding issues uncovered by the self-assessments or concerns raised by the Quality Team will be addressed in the next fiscal year.

On a yearly basis, the Quality Assurance Manager will provide Senior Management with the workplan of the Quality Team for their review and concurrence. Issues raise by the Quality Assurance System Status Report will be the basis of this workplan. It is anticipated that workplan elements will be included in the PPA and tracked by the DEM PPA report-tracking tool.

11. Quality Improvement

The final part of the quality management cycle is assuring that the actions taken to assess and correct deficiencies in the system are continuously fed back in to the planning process to change and improve the system and its outputs. Continuous process improvement is a core practice at DEM and the regular annual assessment process outlined below represents the minimum necessary to allow such continuous improvement to occur.

A. Roles and Responsibilities for Continuous Quality Improvement

The responsibility for implementation of Quality Improvement in the DEM is outlined in Section 2D (Management and Organization) of the QMP. One of the key issues of continuous quality improvement is the people who actually collect and analyze the information. For the system to work properly, program personnel need to be empowered to report QA problems/issues to their supervisors, who report to the program managers. To accomplish continuous Quality Improvement, every DEM staff member must understand how his or her activities affect data quality issues, and all staff must know what they have to do to help produce quality data. For this reason, the Quality Manager has

developed a simple training package on QA issues that can be reviewed by appropriate employees on the DEM intranet site.

B. Assessment Review

The QA Manager and the members of the Quality Team will be the focal point for providing information for the Management System Review, Program and Project Self-assessments, and development of QAPPs and SOPs. The procedures used to conduct Management System Reviews (Appendix H) and to review Project assessments and Program Self-assessments are outlined in Section 9B. Procedures to develop SOPs (Appendix D) and QAPPS (Appendix G) are outlined in the attached appendices.

C. Assessment Reporting

As noted previously, the QA Manager will evaluate the results of the annual reviews/self-assessments and other assessments of each program's quality system, investigate ways to assist program improvement, determine the causes for issues that result in corrective actions and work with the programs on corrective action plans. Once all the program self-assessments are collected, the Quality Assurance Manager, with assistance of the Quality Team, will produce a Quality Assurance Status Report. This report will be sent to senior staff. This Quality Assurance Status Report is the primary formal vehicle for communicating issues to DEM Senior Management. Deficiencies or gaps noted by the self-assessments will require a program to develop a corrective active plan. The implementation of elements of the corrective action plan and success of the quality management system will be tracked through the DEM PPA Reporting System.

The USEPA, in addition, will conduct periodic assessments of the DEM Quality. The results of USEPA's reviews will be communicated to the QA Manager and the affected programs. The QA Manager will communicate the results to the assessed program, who will implement appropriate recommended changes. The results of the USEPA assessment will be reported in the annual Quality Assurance System Status Report. If there is need for program changes, they will be tracked and reported in the annual program self-assessment.

D. Quality Improvement Summary

The overall goal at all steps of this continuous improvement process is to anticipate and prevent problems from arising wherever possible, and otherwise identify and correct them as quickly as possible.

DEM has instituted an annual Management Review of the DEM Quality System. The results of this review are documented in the QA Status Update Report that summarizes strengths and weaknesses of the DEM Quality System.

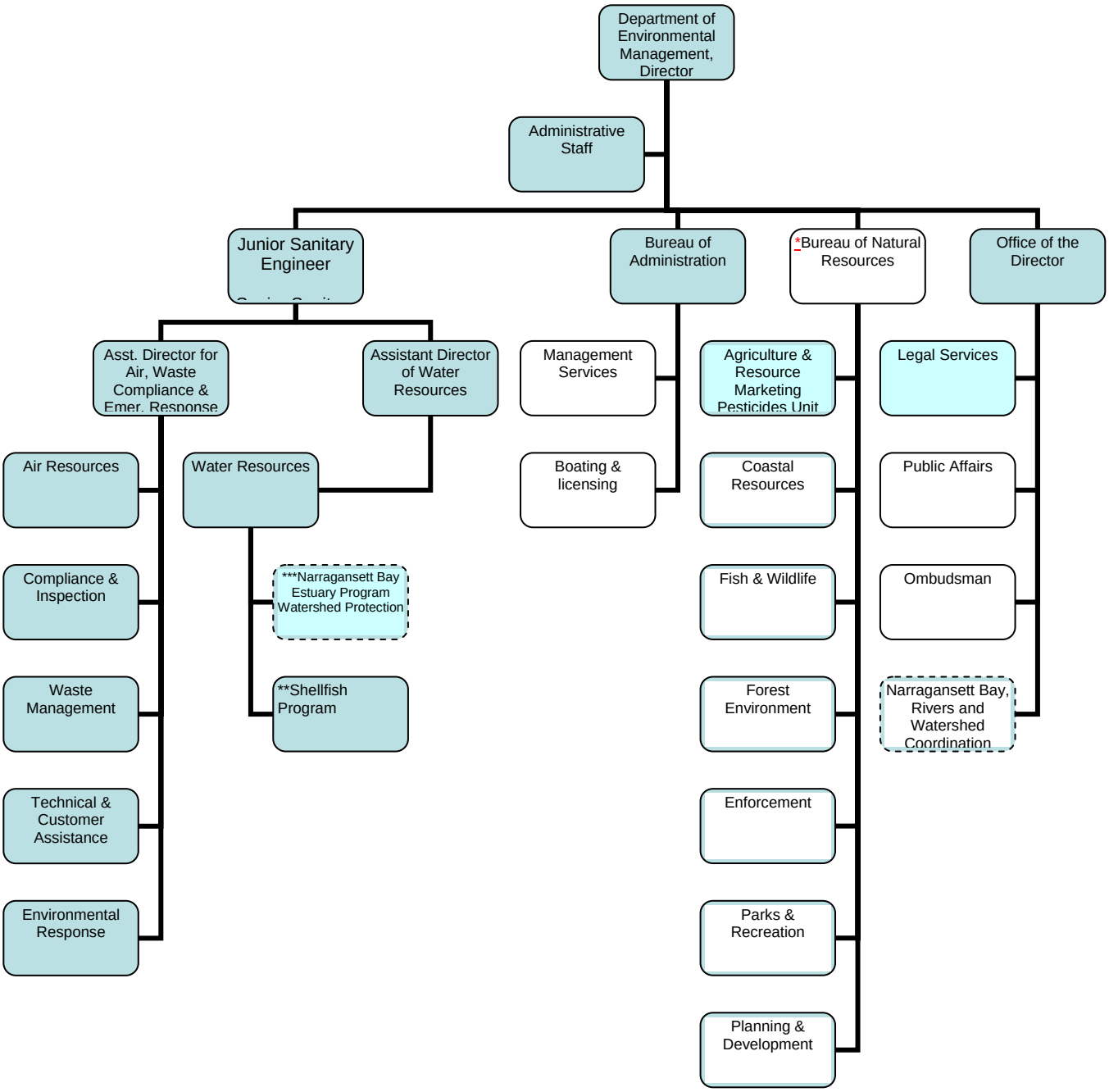
In addition, the QMP will be reviewed annually to ensure that all information contained within it is relevant and up-to-date. Any necessary QMP revisions will be made, and the revised document will be submitted to USEPA. It is the goal of the DEM Quality Assurance Manager to undertake a QMP review on a yearly basis to ensure improvements are of a continuous nature. In this way, the five-year review, as required by the USEPA, will not result in significant changes to the QMP.

Each environmental program at DEM will be notified that the approved QMP is posted on the DEM internet for ease of access by program managers and others. Program-specific quality documents will also be posted on the DEM intranet for staff use.

Appendix A Organizational Charts

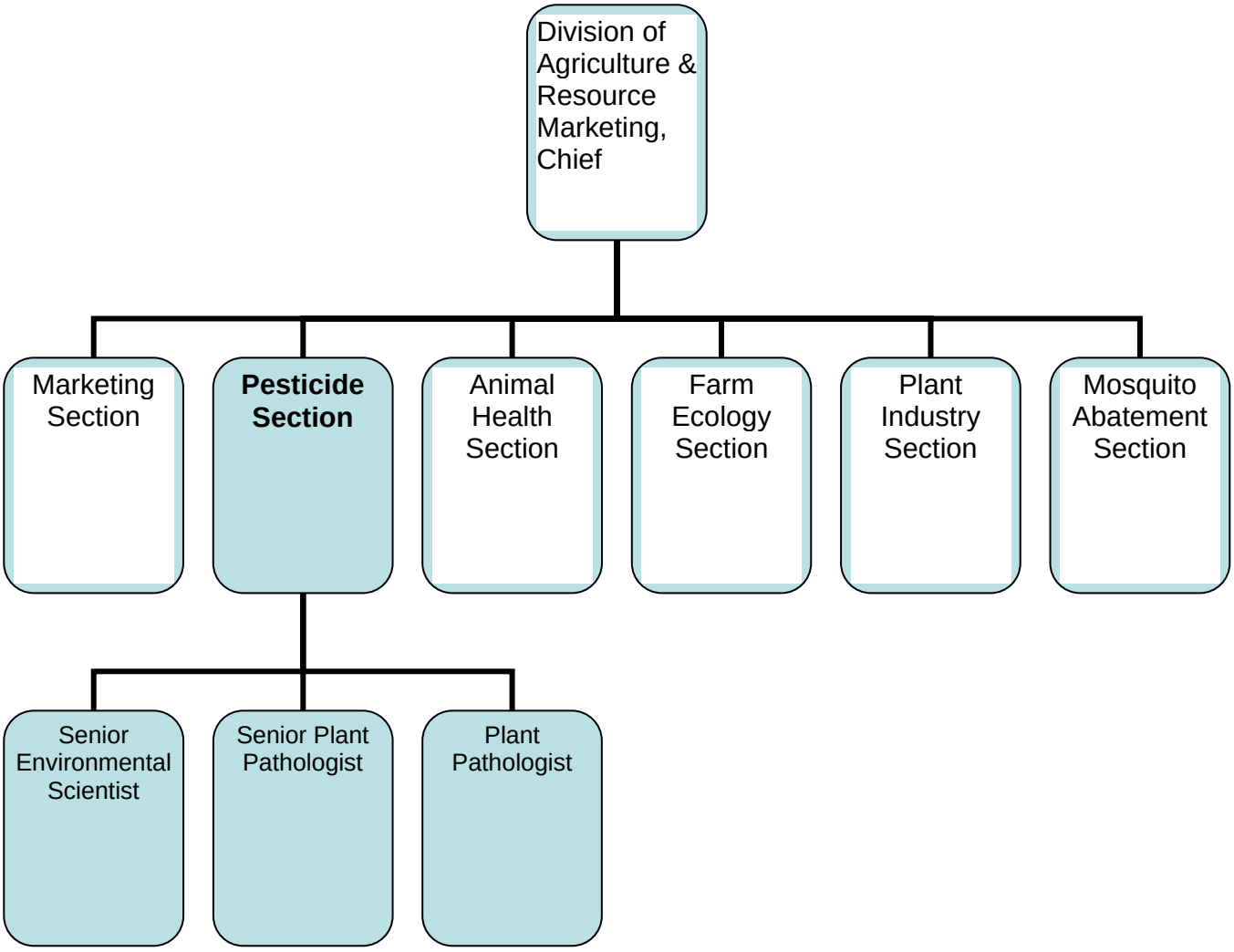
Appendix A-1 Department of Environmental Management

Department of Environmental Management Organizational Chart



*The Bureau of Natural Resources programs and programs that are not in colored boxes, are not funded through EPA, with the exception of the Pesticides unit within the Division of Agriculture & Resource Marketing.
**The Shellfish Program has federal QA oversight through the U. S. Food & Drug Administration and is not funded with EPA grants.
***The major part of the NB Estuary Program is not housed within DEM; but is affiliated with URI.
May 19, 2010

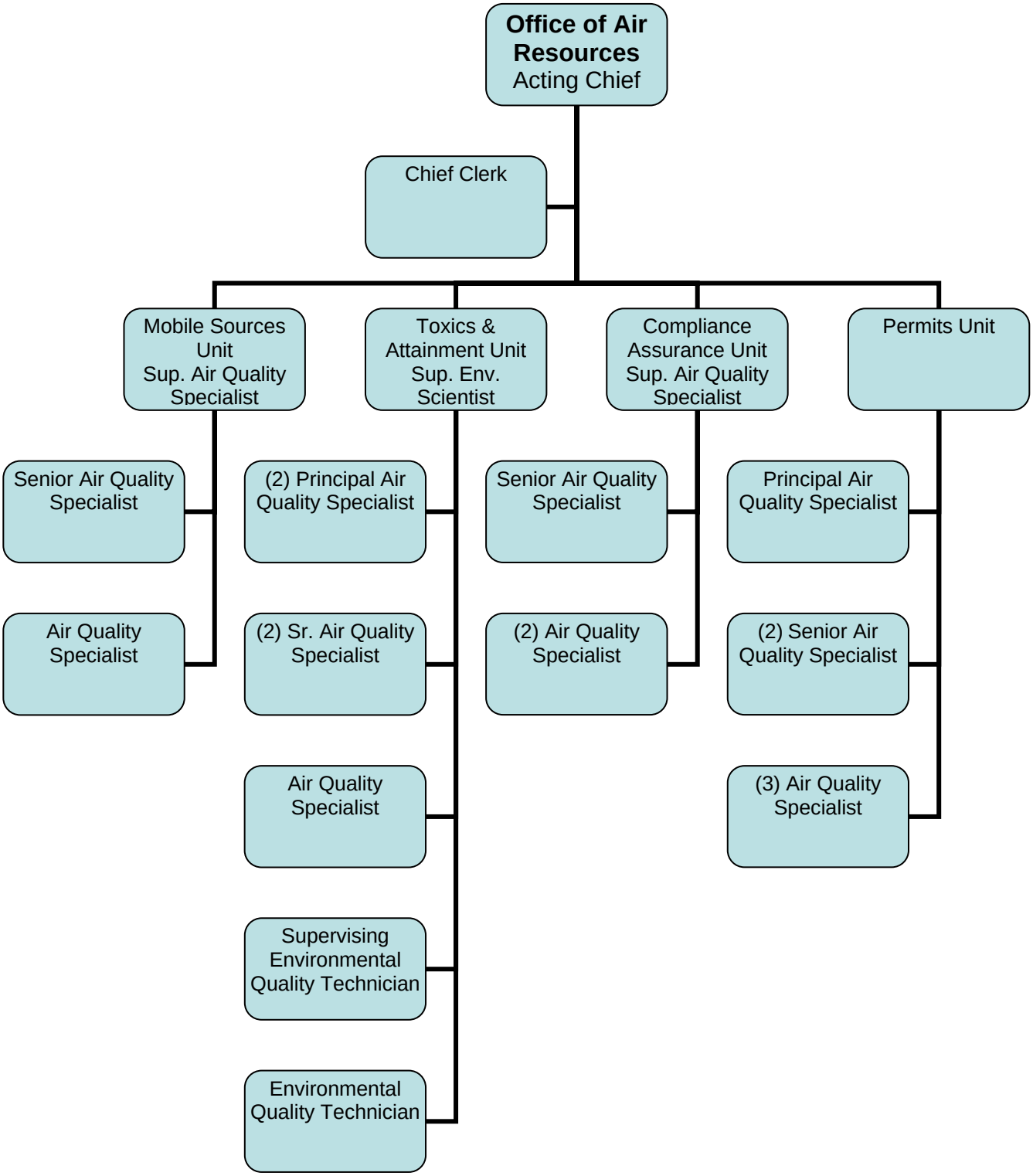
Appendix A-2 Division of Agriculture & Resource Marketing – Bureau of Natural Resources



The Pesticides Section in bold is the only program located in the Division of Agriculture & Resource Marketing that is covered by DEM QMP.

September 15, 2008

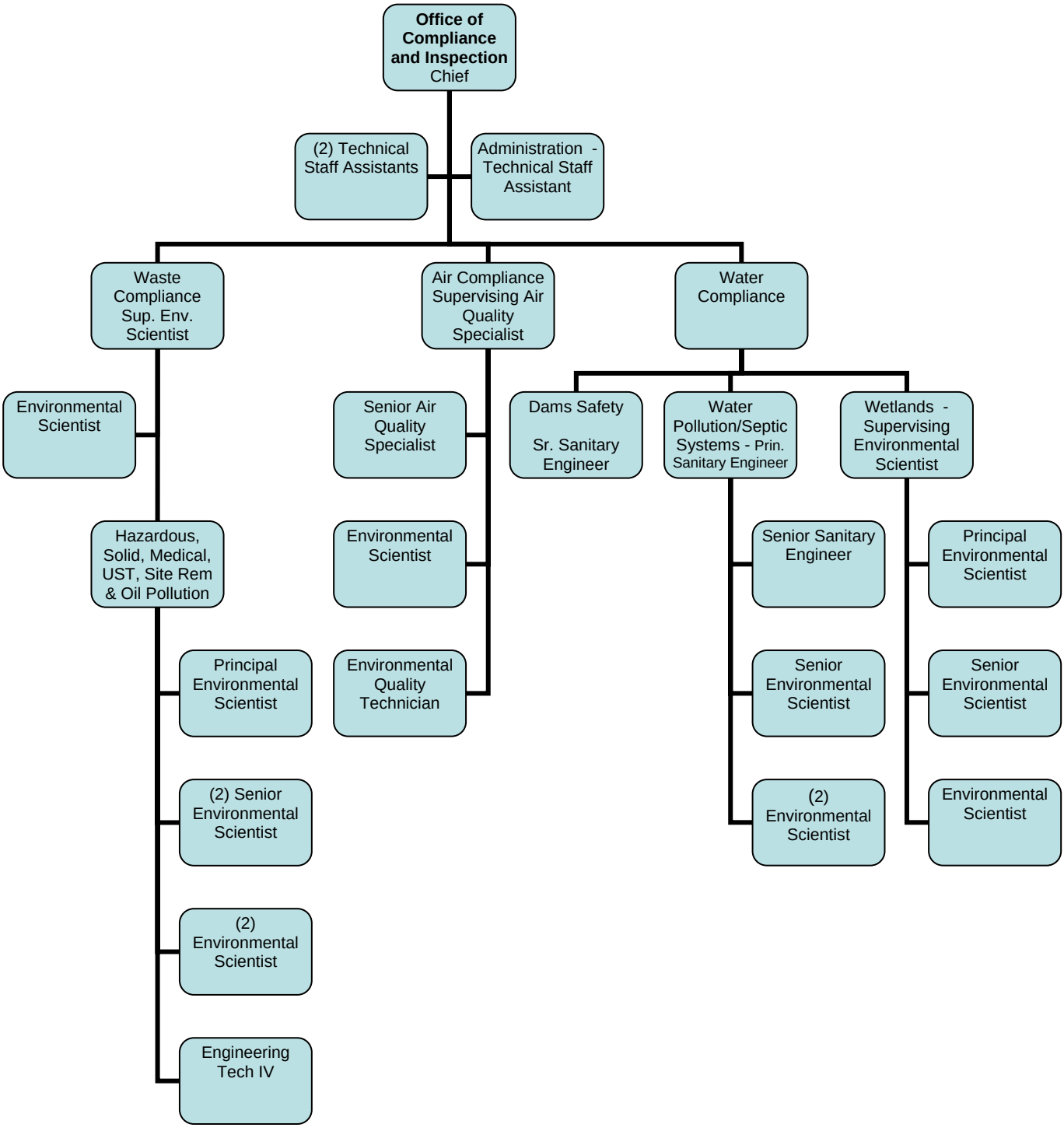
Appendix A-3 – Office of Air Resources



May 18, 2010

Appendix A-4 - Office of Compliance and Inspection

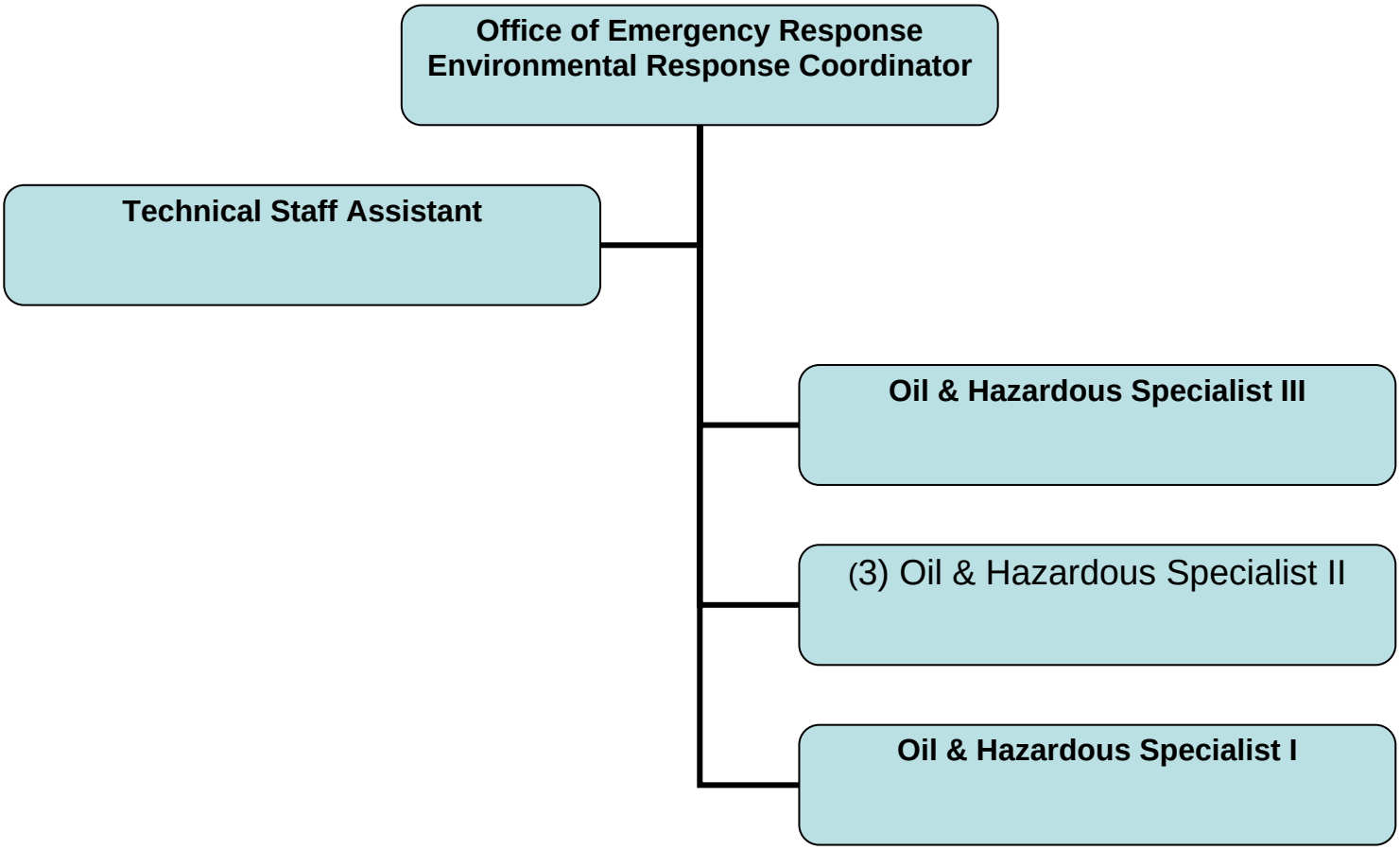
Office of Compliance and Inspection



November 5, 2009

Appendix A-5 Office of Emergency Response

Office of Emergency Response

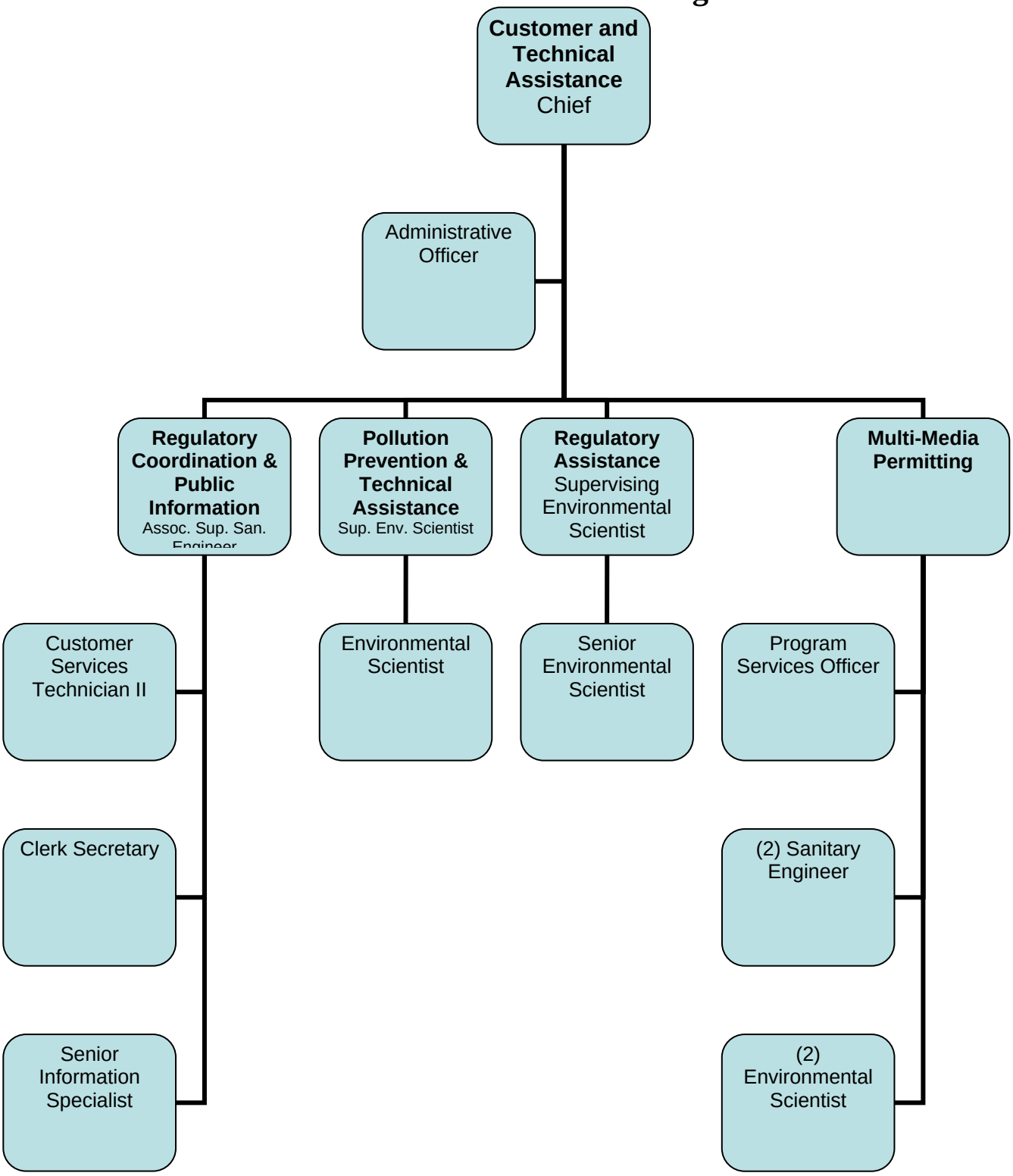


May 19, 2010

Appendix A-6 Office of Customer and Technical Services

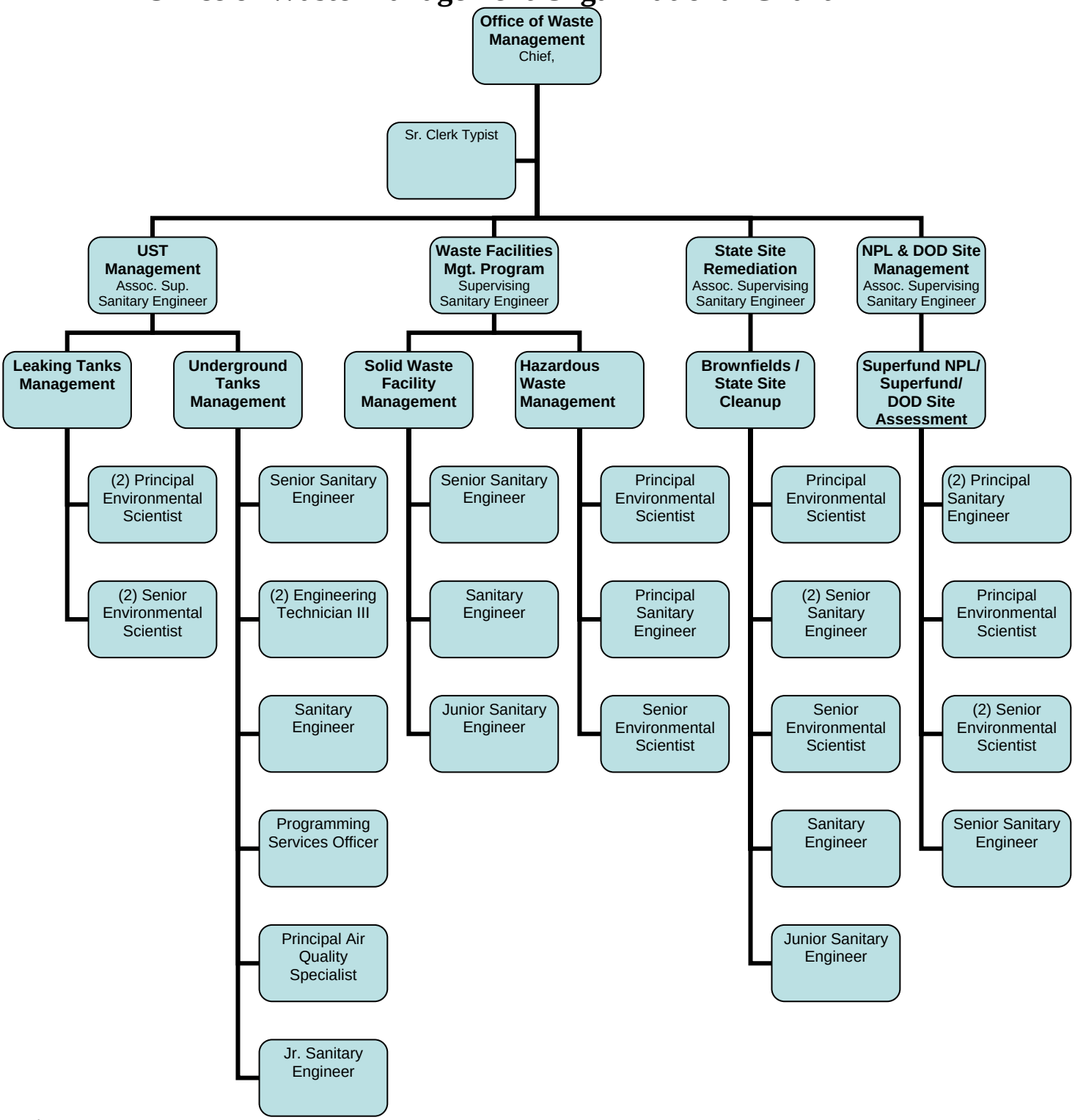
May 20, 2010

Office of Customer and Technical Services Organizational Chart



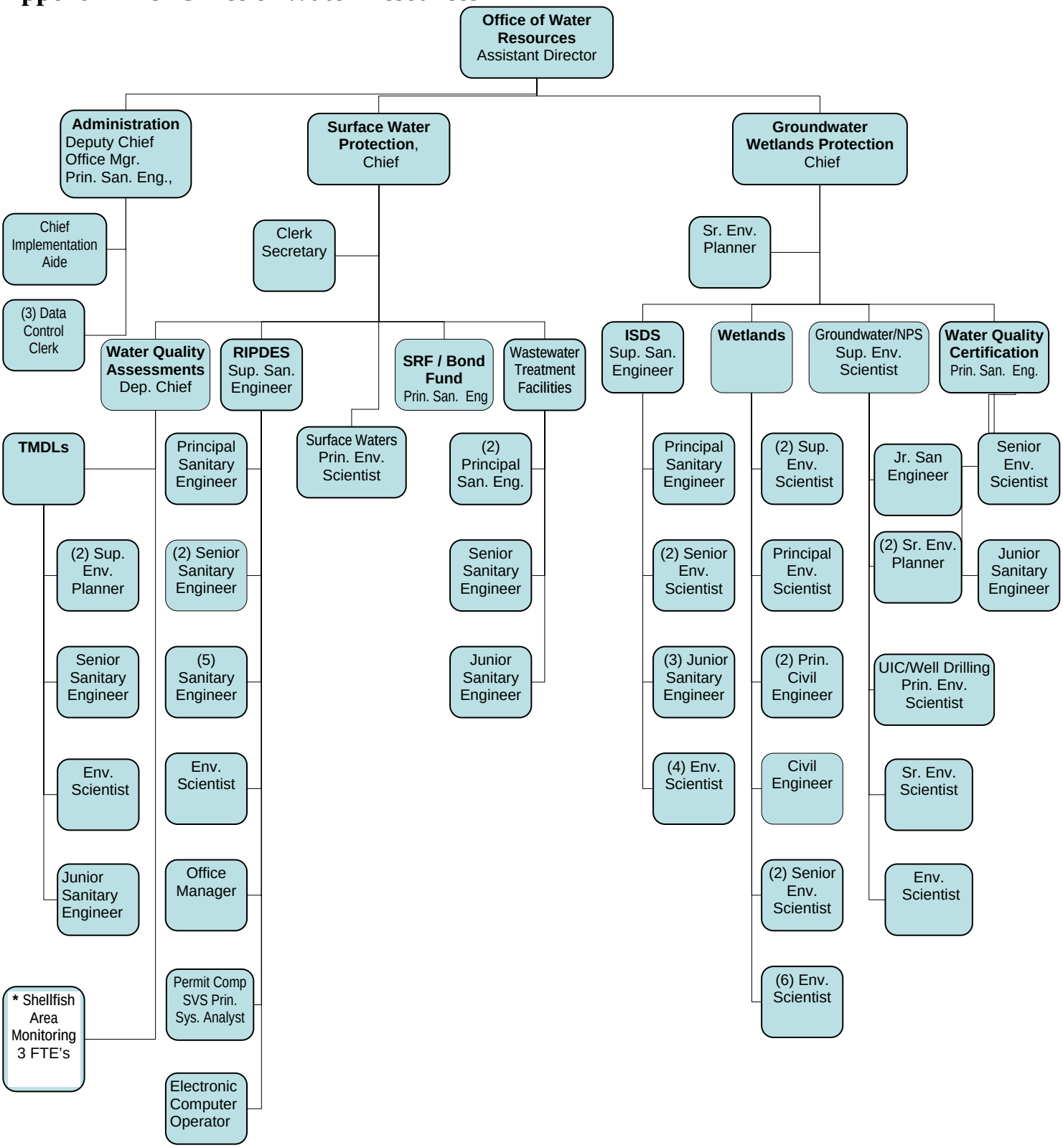
Appendix A-7 - Office of Waste Management

Office of Waste Management Organizational Chart



March 25, 2010

Appendix A-8 -Office of Water Resources



The DEM QMP does not cover the Shellfish Area Monitoring Program. It is covered by the QA procedures of the Food & Drug Administration.
May 21, 2010

Appendix B - Inventory of Quality Assurance Project Plans

Inventory of Quality Assurance Project Plans October 28, 2010						
Project/Program Name	**Division**	**Author**	**Contact Person**	**Last Submitted**	**Date Approved**	**Current Status**
Division of Agriculture						
Pesticide Sampling	Agriculture	Elizabeth Lopes-Duguay	Elizabeth Lopes-Duguay	1994	1994	Approved and in place
Pesticide formulation and residue & dilution sample analysis	Agriculture	Elizabeth Lopes-Duguay	Elizabeth Lopes-Duguay			QAPP with Mississippi State Chemical Lab-Outdated and needs to be updated.
QAPP Division of Agriculture Pesticide Enforcement Compliance Monitoring and Water Protection Monitoring Programs.	Agriculture	Eugene Pepper	Stephen Scandariato		04/06/08	Approved and in place
Office of Air Resources QAPPs						
Project/Program Name	**Office**	**Author**	**Contact Person**	**Last Submitted**	**Date Approved**	**Current Status**
Criteria Pollutants Including Particulates	Air Resources	(DOH Lab)	Barbara Morin	July 23, 2010	December 11, 2006	Under EPA Review
Fine Particulate Matter (PM 2.5) (QAPP is now combined with Criteria Pollutants QAPP)	Air Resources	(DOH Lab)	Barbara Morin	July 2006	August 1999	Approved and in place. Combined Criteria Pollutant/PM2.5 QAPP submitted July 2006
Air Toxics and Photochemical Assessment Monitoring (PAMS)	Air Resources	(DOH Lab)	Barbara Morin	July 23, 2010	September 21, 06	Under EPA Review
TF Green Airport Monitoring Study	Air Resources	(DOH Lab)	Barbara Morin	March 2005		
Office of Technical and Customer Assistance						
Project/Program Name	**Office**	**Author**	**Contact Person**	**Last Submitted**	**Date Approved**	**Current Status**
Auto Salvage Environmental Results Program	Technical & Customer Assistance	Thomas E. Armstrong	Richard Enander	7/9/04		Approved
Underground Storage Tanks—Alternative Inspection Programs	Technical & Customer Assistance	Ron Gagnon	Ron Gagnon		9/16/06	Approved
MS4 Construction Site Runoff Control Environmental Results Program	Technical & Customer Assistance	Ron Gagnon	Ron Gagnon	3/11/08	11/28/06	Approved

Inventory of Quality Assurance Project Plans
October 28, 2010

Office of Waste Management

Project/Program Name	Division	Author	Contact Person	Last Submitted	Date Approved	Current Status
RCRA C Program Generic	OCI/ Waste Management	T. Tyrell, S. Carney (OCI) / L Grandchamp, M. Dennen, Y.Li (OWM)/	T. Tyrell (OCI) / Laurie Grandchamp (OWM)/		July 6, 2009	QAPP approved and in place.
Superfund Pre-Remedial Program Generic	Waste Management		Cynthia Gianfrancesco		Dec. 1997	Approved and in place (needs to be revised)
Leaking Underground Storage Tank Program Generic	Waste Management	Sofia Kaczor	Sofia Kaczor	8/5/2008	12/21/2008	Approved and in place.
Lincoln Lace and Braid TBA	Waste Management	Fuss & O'Neill	Kelly Owens		07/17/2002	Approved & completed
Stillwater Mill-Clock Tower TBA	Waste Management	Lincoln Environmental	Kelly Owens		11/21/2003	Approved & completed
State Site Investigation & Voluntary Clean-up (State Program), Superfund Pre-Remedial, Superfund National Priority List (NPL), Department of Defense (DOD) Environmental Restoration, Solid Waste & Landfill Closure Programs	Waste Management	Cindy Gianfrancesco	Cindy Gianfrancesco		10/02/06	Approved & completed
Olneyville Family Resource	Waste Management	Kelly Owens	Kelly Owens		11/24/2003	Approved & Completed
Chepachet River Park	Waste Management	Fuss & O'Neill	Kelly Owens	5/3/10	02/14/05 05/08/06 5/17/10	Approved & Completed
Parkview Recreation Area	Waste Management	MacTec	Kelly Owens		1/05	Approved & Completed
Lister Mill	Waste Management	Fuss & O'Neill	Kelly Owens		9/03	Approved & Completed
Festival Pier	Waste Management	Lincoln Environmental Fuss & O'Neill	Cynthia Gianfrancesco	10/15/2009	1/05 11/17/2009	Approved & Completed Approved & Completed
Consolidated Auto Screen TBA	Waste Management	Fuss & O'Neill	Cynthia Gianfrancesco		5 April 2006	Approved & Completed
Compton Mills Raceway TBA	Waste Management	Fuss & O'Neill	Cynthia Gianfrancesco		December 2005	Approved & Completed
Dr. Golf TBA	Waste Management	Lincoln Environmental	Cynthia Gianfrancesco		3/06	Approved & Completed

Inventory of Quality Assurance Project Plans October 28, 2010						
Project/Program Name	**Division**	**Author**	**Contact Person**	**Last Submitted**	**Date Approved**	**Current Status**
Office of Waste Management QAPPs						
Jamiel Park TBA	Waste Management	Fuss & O'Neill	Cynthia Gianfrancesco		December 2005	Approved and completed.
Kenyon Piece Landfill TBA	Waste Management	MacTec Fuss & O'Neill	Cynthia Gianfrancesco	 4/21/2009	6/06 4/27/2009	Approved and completed. Approved and completed
Pawtuxet River Park TBA	Waste Management	Fuss & O'Neill	Cynthia Gianfrancesco		02/16/2006	Approved and completed.
Knowles Mills TBA	Waste Management	Fuss & O'Neill	Cynthia Gianfrancesco		10/17/06 9/25/07	Approved and completed
Town Center in the Valley TBA	Waste Management	Fuss & O'Neill	Cynthia Gianfrancesco		11/15/06 1/07 7/07	Approved and completed
West Warwick Senior Center TBA	Waste Management	Fuss & O'Neill	Cynthia Gianfrancesco		1/07	Approved and Completed
Union Lead Smelting	Waste Management	GZA	Cynthia Gianfrancesco		6/4/08	Approved & Completed
Harris Park	Waste Management	Louis Berger Group	Cynthia Gianfrancesco		6/17/08	Approved and completed
Brownfields Program (Uses Superfund Pre-Remedial Program)	Waste Management		Kelly Owens		Dec. 1997	Approved and in place (needs to be revised)
Rose Hill Regional Landfill Superfund Site	Waste Management	The Louis Berger Group, Inc	Matthew Destefano	January 2003	5/29/03	Approved and in place
West Kingston/URI Superfund Site	Waste Management	Woodard & Curran Inc	Matthew Destefano	August 2, 2002	12/31/02	Approved and in place
Sandy Acres TBA	Waste Management	Fuss & O'Neill	Cynthia Gianfrancesco	7/28/08 10/15/09 4/21/10	9/26/08 11/17/09 4/26/10	Approved and in place
Grotto Avenue TBA	Waste Management	Fuss & O'Neill	Cynthia Gianfrancesco	11/25/08 12/1/09	2/3/09 12/29/09	Approved and completed
Laurel Hill Playground TBA	Waste Management	Fuss & O'Neill	Cynthia Gianfrancesco	10/15/09	11/17/09	Approved and in place
Cranston Police Station TBA	Waste Management	Fuss & O'Neill	Cynthia Gianfrancesco	4/7/09 8/26/09 10/15/09	4/30/09 8/27/09 11/10/09	Approved and completed Approved and completed
Woonsocket Middle Schools Remedial Assistance	Waste Management	Fuss & O'Neill	Cynthia Gianfrancesco	10/09	10/16/09	Approved and in place
Standard Management Corporation	Waste Management	Fuss & O'Neill	Cynthia Gianfrancesco	11/12/09	12/9/09	Approved and in place
Paragon Mills – Manton	Waste Management	Woodard & Curran	Cynthia Gianfrancesco	7/21/09 11/12/09	9/11/09 12/9/09	Approved and completed

Inventory of Quality Assurance Project Plans
October 28, 2010

Project/Program Name	Division	Author	Contact Person	Last Submitted	Date Approved	Current Status
QAPP-Groundwater Remediation, Village of Pascoag, Burrillville RI	OWM	Beta Group, Inc.	Alan D. Hanscom, LSP		February 2010	Approved
George J. Peters School	Waste Management	Fuss & O'Neill	Cynthia Gianfrancesco	7/12/10	8/12/10	Approved and in place
RI Family Life Center	Waste management	Fuss & O'Neill	Cynthia Gianfrancesco	3/23/10	4/13/10	Approved and completed
Coventry Mill Workers House	Waste Management	Fuss & O'Neill	Cynthia Gianfrancesco	3/26/10	4/19/10	Approved and in place
Office of Water Resources						
Project/Program Name	**Office**	**Author**	**Contact Person**	**Last Submitted**	**Date Approved**	**Current Status**
Bissel Cove	Water Resources	Jason McNamee	Liz Scott			QAPP Approved. Project on hold.
Stafford Pond Follow-up Monitoring	Water Resources		Ken Ayers, Elizabeth Scott		10/30/01	QAPP Approved
Watershed Watch Analytical Lab Procedures	Water Resources	Linda Green URI, Watershed Watch	Sue Kiernan		6/05	QAPP Approved
Ambient Water Quality Monitoring of RI Lakes	Water Resources	Linda Green URI, Watershed Watch	Sue Kiernan		09/05	QAPP Approved
Narragansett Bay Fixed-Site Monitoring Network	Water Resources	Heather Stoffel/ Sue Kiernan	Heather Stoffel/ Sue Kiernan		1/06	QAPP Approved
Prioritizing Protection of Vulnerable Wetlands in the Queen's River Watershed	Water Resources	Frank Golet, Principal Investigator University of Rhode Island	Susan Kiernan		4/05/06	QAPP Approved
Little Narragansett Bay and Pawcatuck River Bacteria Sampling Plan	Water Resources	Heidi Travers	Heidi Travers		5/23/07	Dry weather sampling in Mastuxet Brook added. QA Addendum / annual update memo filed in July 2009. Data Report drafted.
Ten Mile	Water Resources	Brian Zalewsky	Liz Scott		6/7/07	Sampling continues. QA Addendum / annual update memos filed in June 2009 and June 2010.

Inventory of Quality Assurance Project Plans October 28, 2010						
Office of Water Resources						
Project/Program Name	**Office**	**Author**	**Contact Person**	**Last Submitted**	**Date Approved**	**Current Status**
Protecting Vernal Pools: Mapping & Linkages to State And Local Regulations	Water Resources	Carol Murphy	Carol Murphy		3/21/08	QAPP Approved
Taxonomic Identification of Benthic Macroinvertebrates - Biomonitoring for Wadeable Streams	Water Resources	Matt Laderwig, ESS Group, Inc	Katie DeGoosh		3/28/07	QAPP Approved
Evaluation Of Environmental Outcomes In the DEM Wetland Permitting Program In Rhode Island: Documenting Unauthorized Losses Associated With Permitted Sites	Water Resources	Carol Murphy	Carol Murphy		10/1/07	QAPP Approved
Nonpoint Source Grant Program QAPP	Water Resources	Ernie Panciera	Ernie Panciera		10/29/07	QAPP Approved
Buckeye Brook Biodiversity	Water Resources	Skip Viator	Skip Viator		07/16/2008	QAPP Approved One winter survey remains. QA Addendum filed in June 2009. Annual update filed in June 2009 and 2010.
Freshwater Wetland Monitoring and Assessment - Expanded Pilot Demonstration Project Work Plan for EPA QAPP Review – Year 3 Continuation	Water Resources	Carol Murphy	Carol Murphy		9/12/08	QAPP Approved
Rhode Island Ambient River Monitoring Program	Water Resources	Katie DeGoosh/ Connie Carey	Katie DeGoosh/ Connie Carey			Draft
Biomonitoring for Non-wadeable Streams	Water Resources	Carl Neilson ESS Group, Inc	Katie DeGoosh		10/8/08	QAPP Approved
Fish Sampling for in Rhode Island Rivers and Streams	Water Resources	V. Mason DEM Fish & Wildlife	V. Mason DEM Fish & Wildlife/ A. Richardson OWR		11/18/09	QAPP Approved
Freshwater	Water	Carol Murphy	Carol Murphy		4/09	QAPP Approved

Inventory of Quality Assurance Project Plans October 28, 2010						
Office of Water Resources						
Project/Program Name	**Office**	**Author**	**Contact Person**	**Last Submitted**	**Date Approved**	**Current Status**
Wetland Monitoring and Assessment - Expanded Pilot Demonstration Project Work Plan– Year 4 Continuation	Resources					
Freshwater Wetland Monitoring and Assessment - Expanded Pilot Demonstration Project Work Plan for EPA QAPP Review – Year 5 Continuation	Water Resources	Carol Murphy	Carol Murphy	10/29/10		Draft QAPP in EPA Review

2010 Inventory of Quality Assurance Project Plans October 28, 2010						
Office of Water Resources QAPPs (TMDL Program – Completed Projects)						
Project/Program Name	**Division**	**Author**	**Contact Person**	**Last Submitted**	**Date Approved**	**Current Status**
TMDL-Providence/ Seekonk River, 1995 – 1996	Water Resources	Chris Turner	Liz Scott	1995	6/25/95	Project Complete.
TMDL-Runnins River Dry Weather Coliphage, 1999	Water Resources	Al Basile (EPA)	Liz Scott	1999	1999	Project Complete.
TMDL-Kickemuit Reservoir Nutrients and Pathogens, 2000	Water Resources	Javier Velez (EPA)	Liz Scott	2000	2000	Project Complete.
TMDL-Barrington/ Palmer/ Warren Pathogens, 1996 including Belcher Stream – East, Wet Weather	Water Resources	Chris Turner	Liz Scott	4/2/01	9/10/01	Project Complete.
TMDL-Barrington/Palmer/ Runnins Wet Weather Pathogens, 1998	Water Resources	Chris Turner	Liz Scott	4/2/01		QAPPs Developed Using 1992 EPA Guidance- Project Complete.
TMDL-Barrington and Runnins River Dry Weather Pathogens, 1998 – 1999.	Water Resources	Chris Turner	Liz Scott	4/2/01		QAPPs Developed Using 1992 EPA Guidance. Sampling was incorporated into Barrington/Palmer/Runnins wet weather QAPP. Project Complete.
Narrow River Pathogens, 1999 – 2000	Water Resources	Kevin Bartlett	Liz Scott	4/10/01		QAPP developed using Runnins River (1999) QAPP as a Model. Project Complete.
Hunt River Pathogens, 1999	Water Resources	Brian Zalewsky	Liz Scott	4/10/01		Draft QAPP completed; using Runnins River (1999) QAPP as a Model Project Complete.
Saugatucket River Pathogens, 2000	Water Resources		Liz Scott	4/10/01		QAPP completed using Runnins River (1999) QAPP as a Model. Project Complete.
303(d) Supplemental Monitoring, 1998-1999	Water Resources		Liz Scott	4/6/01		QAPP developed using Runnins River (1999) QAPP as a Model. Project Complete.
Ninigret / Green Hill Ponds 1999-2000	Water Resources	Brian Zalewsky	Liz Scott	2000	6/5/01	Project Complete.

2010 Inventory of Quality Assurance Project Plans

October 28, 2010

Office of Water Resources QAPPs (TMDL Program – Completed Projects)

Project/Program Name	Division	Author	Contact Person	Last Submitted	Date Approved	Current Status
Crooked Brook	Water Resources	Jason McNamee	Liz Scott		6/18/01	Project Complete.
Optical Brightening Study Ninigret and Green Hill Ponds, Factory and Teal Brooks	Water Resources	Brian Zalewsky	Liz Scott		6/25/01	Project Complete.
Dry & wet weather WQ Sampling of Ninigret and Green Hill Ponds, Factory and Teal Brooks	Water Resources	Brian Zalewsky	Liz Scott		5/01?	Project Complete.
Greenwich Bay Wet Weather Pathogens, 2000 – 2001	Water Resources	Heidi Travers	Liz Scott	3/30/01	5/15/01	Annual updates for 2001 and 2002. Project Complete.
Indian Run Metals, 2001	Water Resources		Liz Scott		6/26/01	Project Complete
Sands Pond Nutrients, 2001	Water Resources		Liz Scott		7/10/01	Project Complete.
Woonasquatucket River metals and fecal coliform, 2001	Water Resources	Kevin Bartlett	Liz Scott		9/26/00	Project Complete.
2000 303(d) Supplemental Monitoring	Water Resources		Liz Scott		2/20/02	Project Complete.
Greenwich Bay Nutrients, 2000 – 2001	Water Resources	Applied Science Associates	Liz Scott		6/4/01	Project Complete.
Mashapaug Pond Nutrients, 2001 – 2002	Water Resources	Tetra Tech/ESS	Liz Scott		7/9/01	Approved. Project Complete.
Buckeye Brook and Sources, Pathogens	Water Resources	Skip Viator	Liz Scott		09/20/2006	Project Complete.
Mount Hope Bay and Kickemuit River Wet Weather Pathogens, 2006	Water Resources	Brian Zalewsky, Scott Ribas	Liz Scott		04/10/2006	Project Complete.
Blackstone River Various, 2001 – 2003	Water Resources	Louis Berger, Inc.	Liz Scott		02/2005	QA Plan modified in July 2005. Project Complete.

* Numbering system is noted on page nine in Procedure for Developing and Approving SOPs - DO-QM -1

Appendix C - Standard Operating Procedures Inventory

DEM Inventory of Standard Operating Procedures October 28, 2010						
No.	**SOP Name**	**SOP Status**	**Date Finalized**	**Format**	**# of Pages**	**Document Originator**
	Bureau of Environmental Protection					
BEP-WR-1	Summary Guidance for Reviewing Environmental Monitoring Data	Final	7/24/07	Electronic	15 Pages	C. Carey
BEP-OTCA/ WR-2	Checklist for RIDEM Review of a Habitat and Sediment Sampling Plan for Dredging Projects	Final	9/15/08	Electronic	5 Pages	A. Richardson / R. Gagnon
BEP-OTCA /OWR-3	Checklist for Review of Habitat and Sediment Sampling Results	Final	?	?	?	A. Richardson / R. Gagnon
	Quality Assurance Manager					
DO-QM–1	Procedure for Developing and Approving SOPs	Final	8/6/03	Electronic	9	T. Getz
DO-QM-2	DEM Standard Operating Procedure for Developing QAPPs and SOPs	Final	8/6/03	Electronic	4	T. Getz
DO-QM-3	Standard Operating Procedure for Developing and Approving Policies	Final	4/21/05	Electronic	7	T. Getz
DO-QM-4	Digital Photograph Record Collection and Storage SOP	Final	7/24/07	Electronic	3 Pages	R. Schmidt
DO-QM-5	Submission of Electronic Documents	Final	03/06/09	Electronic	5 Pages	T. Getz / T. Epstein
DO-QM-6	Quality System Management Assessment SOP	Final	12/31/10	Electronic	5	T. Getz
	Office of Emergency Response					
ER-1	Environmental Data Review SOP	Draft	9/24/08	Electronic	8	J. Eastman
	Office of Technical & Customer Assistance					

DEM Inventory of Standard Operating Procedures October 28, 2010						
No.	**SOP Name**	**SOP Status**	**Date Finalized**	**Format**	**# of Pages**	**Document Originator**
	Office of Waste Management					
WM-SF-1	Standard Operating Procedure for Civil Surveying at the Rose Hill Landfill	Draft	1/ 31/03	Electronic	10 pages	Louis Berger Group, Inc
WM-SF -2	Standard Operating Procedure for Surface Water, Leachate and Sediment Sampling at the Rose Hill Landfill,		1/03			Louis Berger Group, Inc
WM-SF -3	Standard Operating Procedure for Underground Utility Location at the Rose Hill Landfill, Rev. 4	Final	1/97	Electronic	2 pages	Louis Berger Group, Inc
WM-SF -4	Standard Operating Procedure for Soil Gas Survey and Evaluation at the Rose Hill Landfill, Rev. 1	Final	1/97	Electronic	21 pages	Louis Berger Group, Inc
WM-SF -5	Standard Operating Procedure for Visual-Manual Identification of Soil at the Rose Hill Landfill, Rev. 5, January 1997	Final	1/97	Electronic	18 pages	Louis Berger Group, Inc
WM-SF -6	Standard Operating Procedure for Test pitting and Soil Sampling at the Rose Hill Landfill, Rev. 3, January 1997	Final	1/97	Electronic	28 pages	Louis Berger Group, Inc
WM-SF -7	Standard Operating Procedure for Well Gauging Purging and Sampling at the Rose Hill Landfill, Rev. 5	Final	2/97	Electronic	29 pages	Louis Berger Group, Inc
WM-SF -8	Standard Operating Procedure for Disposal of Bailed Product at the Rose Hill Landfill, Rev. 4	Final	1/97	Electronic	2 pages	Louis Berger Group, Inc
WM-SF -9	Standard Operating Procedure for Well Rehabilitation at the Rose Hill Landfill, Rev. 1, January 1997	Final	1/97	Electronic	15 pages	Louis Berger Group, Inc
WM-SF -10	Standard Operating Procedure for Low Flow Purging and Sampling Procedures for the Collection of Water Samples from Monitoring Wells		1996		Unknown	EPA
WM-SF -11	Standard Operating Techniques – Drilling at Rose Hill Landfill	Final	1/97	Electronic	22 pages	Louis Berger Group, Inc
WM-SF -12	Standard Operating Techniques - Soil Gas Survey and Evaluation at Rose Hill Landfill	Final	1/97	Electronic	13 pages	Louis Berger Group, Inc
WM-SF -13	Standard Operating Techniques - Sampling of Surface Water and Water-Formed Deposits - Rose Hill Landfill	Final	1/97	Electronic	22 pages	Louis Berger Group, Inc
WM-SF -14	Standard Operating Procedure - Surface Water Sampling West Kingston Town Dump/ URI	Final	8/02	Electronic	2 Pages	Woodard & Curran, Inc.
WM-SF -15	Standard Operating Procedure for Soil and Sediment Sampling –W. Kingston Dump/ URI	Final	8/02	Electronic	2 Pages	Woodard & Curran, Inc.
WM-SF -16	Standard Operating Procedure for Equipment Decontamination –W. Kingston Dump/ URI	Final	8/02	Electronic	2 Pages	Woodard & Curran, Inc.

DEM Inventory of Standard Operating Procedures October 28, 2010						
No.	**SOP Name**	**SOP Status**	**Date Finalized**	**Format**	**# of Pages**	**Document Originator**
WM-SF -17	Standard Operating Procedure for Soil and Sediment Sampling –W. Kingston Dump / URI	Final	8/02	Electronic	2 Pages	Woodard & Curran, Inc.
WM-SF -18	Standard Operating Procedure - Air Monitoring at the W. Kingston Dump / URI	Final	8/02	Electronic	2 Pages	Woodard & Curran, Inc.
WM-SF -19	Standard Operating Procedure - Vapor Diffusion Sampling In Sediments (Volatile Organic Compounds) W. Kingston Dump/ URI	Final	8/02	Electronic	3 Pages	Woodard & Curran, Inc.
WM-SF -20	Standard Operating Procedure - Pore Water Sampling –W. Kingston Town Dump / URI	Final	8/02	Electronic	4 Pages	Woodard & Curran, Inc.
WM-SF -21	Standard Operating Procedure -Terrain Conductivity (Em-31) Method Sampling – W. Kingston Town Dump / URI	Final	8/02	Electronic	2 Pages	Woodard & Curran, Inc.
WM-SF -22	Standard Operating Procedure - Test Pit Sampling – W. Kingston Town Dump / URI	Final	8/02	Electronic	3 Pages	Woodard & Curran, Inc.
WM-SF -23	Standard Operating Procedure - Groundwater Sampling - W. Kingston Town Dump / URI	Final	8/02	Electronic	2 Pages	Woodard & Curran, Inc.
WM-SF -24	Standard Operating Procedure - Small Diameter Well Point Installation and Sampling – W. Kingston Town Dump / URI	Final	8/02	Electronic	3 Pages	Woodard & Curran, Inc.
WM-SF -25	Standard Operating Procedure - Seismic Refraction Method Sampling – W. Kingston Town Dump / URI	Final	8/02	Electronic	3 Pages	Woodard & Curran, Inc.
WM-SF -26	Standard Operating Procedure - Monitoring Well Installation – W. Kingston Town Dump/ URI	Final	8/02	Electronic	3 Pages	Woodard & Curran, Inc.
WM-SF -27	Standard Operating Procedure - Hydraulic Conductivity Testing – W. Kingston Town Dump / URI	Final	8/02	Electronic	1 Pages	Woodard & Curran, Inc.
WM-SF -28	Standard Operating Procedure - Tap Water / Residential Well Groundwater Sampling – W. Kingston Town Dump / URI	Draft	8/02	Electronic	2 Pages	Woodard & Curran, Inc.
WM-SF -29	Standard Operating Procedure – Preparation & Analysis of Dioxin and Furans Samples by USEPA Method 8290– W. Kingston Town Dump / URI	Final	6/ 5/02	Electronic (In adobe format)	60 Pages	Pace Analytical Labs

DEM Inventory of Standard Operating Procedures October 28, 2010						
No.	**SOP Name**	**SOP Status**	**Date Finalized**	**Format**	**# of Pages**	**Document Originator**
WM-1	Sampling Equipment Decontamination - SOP # 2006	Final	8/11/94	Electronic	11 Pages	EPA
WM-2	Drum Sampling - SOP # 2009	Final	11/16/94	Electronic	23 Pages	EPA
WM-3	Tank Sampling - SOP # 2010	Final	11/16/94	Electronic	15 Pages	EPA
WM-4	Chip, Wipe, and Sweep Sampling - SOP # 2011	Final	11/16/94	Electronic	4 Pages	EPA
WM-5	Waste Pile Sampling - SOP # 2017	Final	11/17/94	Electronic	9 Pages	EPA
WM-6	Soil Sampling - EPA SOP # 2012	Final	2/18/00	Electronic	13 Pages	EPA
WM-7	Soil Gas Sampling - EPA SOP # 2042	Final	6/1/96	Electronic	11 Pages	EPA
WM-8	Soil Sampling and Surface Geophysics - EPA SOP # 2159	Final	1/91	Electronic	6 Pages	EPA
WM-9	Surface Water Sampling - EPA SOP # 2013	Final	11/17/94	Electronic	7 Pages	EPA
WM-10	Sediment Sampling - EPA SOP # 2016	Final	11/17/94	Electronic	11 Pages	EPA
WM-12	Groundwater Well Sampling - EPA SOP # 2007	Final	1/29/95	Electronic	15 Pages	EPA
WM-13	Monitoring Well Installation - SOP # 2048	Final	3/18/96	Electronic	12Pages	EPA
WM-14	Water Level Measurement - EPA SOP # 2043	Final	2/11/00	Electronic	9 Pages	EPA
WM-15	Well Development - EPA SOP # 2044	Final	10/23/01	Electronic	8 Pages	EPA
WM-16	Controlled Pumping Test - EPA SOP # 2045	Final	10/04/94	Electronic	7 Pages	EPA
WM-17	Slug Test - EPA SOP # 2046	Final	10/03/94	Electronic	5 Pages	EPA
WM-18	HNu Field Protocol – EPA SOP # 2114	Final	10/06/94	Electronic	16 Pages	EPA
WM-19	Chain of Custody Procedures - No number	Final	Unknown	Paper	Unknown	EPA
WM-20	Site and Safety Considerations - No number	Final	Unknown	Paper	Unknown	EPA
WM-21	Removal Program Representative Sampling Guidance – Volume 1 - Soil	Final	Unknown	Paper	45 Pages	Unknown
WM-22	Residential Well Sampling (for chemical analysis) – Field Sampling SOP	Final	8/06	Electronic	4 Pages	C. Gianfrancesco
LUST-1	Standard Operating Procedures Manual for Field Sampling	Final	6/92	Electronic	62 Pages	EA Eng. Science and Technology

DEM Inventory of Standard Operating Procedures October 28, 2010						
No.	**SOP Name**	**SOP Status**	**Date Finalized**	**Format**	**# of Pages**	**Document Originator**
	Office of Water Resources					
WR-GNUWW-1	Groundwater, NPS, UIC, WQC and Well Drillers Program SOP for Environmental Data Review	Draft	10/17/08	Electronic	5 Pages	E. Panciera
WR-GNUWW-2	Summary Guidance for Reviewing Sediment Sampling Plans for Dredge Projects	Final	4/18/19	Electronic	7 Pages	A. Richardson / T. Walsh
WR-W-1	Bacteria Field Sampling SOP	Final	8/03	Electronic	1 Page	C. Turner
WR-W-2	Equipment Maintenance/Calibration - Current Meters - SOP	Final	8/03	Electronic	1 Page	C. Turner
WR-W-3	Fecal Coliform Sample Collection SOP	Final	8/03	Electronic	1 Page	C. Turner
WR-W-4	Field Data Sheet	Final	8/03	Electronic	1 Page	C. Turner
WR-W-5	Measuring Stream Discharge- Field Sampling SOP	Final	8/03	Electronic	1 Page	C. Turner
WR-W-6	Order of Activities - Sampling	Final	8/03	Electronic	1 Page	C. Turner
WR-W-7	Secchi Disk Measurements SOP	Final	8/03	Electronic	1 Page	C. Turner
WR-W-8	Rapid Bioassessment Protocol For Use In Streams And Wadeable Rivers: Benthic Macroinvertebrates	Final	11/01	Electronic (The cover page is only available in this format)	1 Page	C. Turner
WR-W-9	Measuring Culvert Stage & Flow-Field Sampling SOP	Final	8/03	Electronic	2 Pages	C. Turner
WR-W-10	Reading the Staff Gauge - Field Sampling SOP	Final	8/03	Electronic	1 Page	C. Turner
WR-W-11	Hand-Dip Sampling for the Collection of Surface Water for the Analysis of Volatile Organic Compounds	Final	8/03	Electronic	1 Page	C. Turner
WR-W-12	Total Phosphorous Sample Collection SOP	Final	8/03	Electronic	1 Page	C. Turner
WR-W-13	Installation and Operation of the Rainew Tipping Bucket Rain Gauge Field Sampling SOP	Final	8/03	Electronic	3 Pages	C. Turner
WR-W-14	Temperature, Specific Conductance, Dissolved Oxygen, Salinity Field Sampling SOP	Final	8/03	Electronic	1 Page	C. Turner
WR-W-15	Chain of Custody Form – Watershed Watch	Final	8/03	Electronic	1 Page	C. Turner
WR-W-16	Deep Ponds: Weekly And Biweekly Water Monitoring SOP	Final	8/03	Electronic	3 Pages	C. Turner
WR-W-17	Shallow Ponds: Weekly And Biweekly Monitoring SOP	Final	8/03	Electronic	2 Pages	C. Turner

DEM Inventory of Standard Operating Procedures October 28, 2010						
No.	**SOP Name**	**SOP Status**	**Date Finalized**	**Format**	**# of Pages**	**Document Originator**
WR-W-18	Shallow Ponds: Tri-season Water Monitoring And Collection SOP	Final	8/03	Electronic	2 Pages	C. Turner
WR-W-19	Deep Ponds: Tri-season Water Monitoring And Collection SOP	Final	8/03	Electronic	3 Pages	C. Turner
WR-W-20	Chlorophyll and Nutrients Sample Collection SOP	Final	8/03	Electronic	5 Pages	C. Turner
WR-W-21	Shellfish Growing Area Monitoring Program	Final	01/08	Electronic	29 Pages	J. Migliore
WR-W-22	Standard Operating Procedure for the Collection of Low Level Metals Ambient Water Samples	Final	05/21/07	Electronic	14 Pages	EPA North Chelmsford Lab
WR-W-23	Field Sampling – Sediment Total Organic Carbon (FSOP-BB1)	Final	07/08	Electronic	1 Page	S. Viator
WR-W-24	Field Sampling with Bottles not containing Preservatives (FSOP-BB2)	Final	07/08	Electronic	1 Page	S. Viator
WR-W-25	Field Sampling with Preserved Bottles (FSOP-BB3)	Final	07/08	Electronic	1 Page	S. Viator
WR-W-26	Water Quality Field Procedures (SOP 3) Chlorophyll Sampling, Profiling, DCP/ Buoy Maintenance, Sonde Swap, Field Notes, Toolbox & Field box Setup	Final		Electronic	35 Pages	H. Travers
WR-W-27	Field SOP URI Watershed Watch Ambient and Field Assays	Final	05/05	Electronic	32 Pages	Linda Green
WR-W-28	Digital Photograph Record Collection and Storage SOP for the TMDL, Shellfish, and DEM Ambient Monitoring programs	Final	09/05/08	Electronic	5 Pages	H. Travers
WR-W-29	LI-1400 Data Logger PAR Field Measurements SOP	Final	07/09	Electronic	4 Pages	B. Zalewsky
WR-WRR-1	User Fee Program – Priority Pollutant Monitoring SOP	Draft		Electronic	5 Pages	J. Birchell
WR-RIPDES-1	ERP for Construction Activity	Final	6/10	Electronic	5 Pages	B. Lafaille
WR-RIPDES-2	Construction Activity GP Fast Track Notice of Violation Referral	Final	6/10	Electronic	3 Pages	B. Lafaille
WR-RIPDES-3	ERP for MS4 Enforcement Audit	Final	4/10	Electronic	7 Pages	J. Stout
WR-RIPDES-4	Formal Enforcement Referral Process	Final	11/09	Electronic	Pages	S. Kaplan
WR-RIPDES-5	ERP for DMR Non-receipt	Final	5/10	Electronic	2 Pages	S. Kaplan
WR-RIPDES-6	DMR Instructions - < MDL Policy	Final	7/10	Electronic	3 Pages	J. Haberek
WR-WWTFO&M-31	Digital Photograph Record Collection and Storage	Final	10/17/08	Electronic	5 Pages	M. Puglia
WR-WWTFO&M-32	Guidance for Reviewing WWTF Monitoring Data/Reports	Final	10/17/08	Electronic	32 Pages	M. Puglia

* Numbering system is noted on page nine in Procedure for Developing and Approving SOPs - DO-QM -1

Appendix D- Standard Operating Procedure for SOP Development

Procedure for Developing and Approving Standard Operating Procedures (DO-QM-1)

1. **APPLICABILITY.** This Standard Operating Procedure (SOP) applies to all programs in the Rhode Island Department of Environmental Management (DEM). This Procedure applies to all staff involved in any task that is appropriate for, or has an established, SOP.

2. **PURPOSE.** Establishing standardized methods for performing common repetitive tasks improves the DEM's efficiency, consistency, verifiability, credibility, and our ability to attain the highest levels of Quality Assurance, Quality Control, and Quality Improvement (QA/QC/QI). This document describes the DEM's procedure for developing, formatting, approving, and distributing standard operating procedures (SOPs).

3. **DEFINITIONS**

3.1 Director - Refers to the Director of the Rhode Island Department of Environmental Management.

3.2 Originator - Refers to the individual primarily responsible for the development of a SOP, including drafting, review, finalization, and distribution.

3.3 Quality Assurance Manager (QAM) - Refers to the individual at DEM who is the primary point of contact for quality issues and the Quality Management Team (Team).

3.4 Quality Management Team (Team)- The DEM organizes and oversees agency-wide QA/QC/QI functions with a Team. Team members represent the regulatory programs within the DEM.

3.5 Senior Management – Refers to the group of individuals existing at any point in time that oversee the DEM environmental programs.

3.6 Standard Operating Procedure (SOP) – Is the description of a prescribed method that must be used by DEM staff to complete certain routine or repetitive operations, analyses, or actions. SOPs do not establish policy and are not appropriate to describe procedures or requirements that apply to members of the public, other than persons acting as agents of, or under contract with, the DEM.

4. **RESPONSIBILITIES**

4.1 COMPLIANCE - All staff engaged in operations, analysis or actions subject to or appropriate for the application of a SOP are responsible for becoming familiar, and complying, with the contents of this procedure prior to drafting or revising a SOP. Supervisors are responsible for ensuring that staff is familiar with and adhere to the SOPs affecting their program functions. Any SOP in place before this document's effective date must be scheduled for annual review and periodic renewal by a responsible individual. At the time of any revision after the effective date of this SOP, an existing SOP must be brought into conformance with the provisions of this document. Until revision or renewal occurs, no changes are required to bring currently effective SOPs into conformance with this SOP.

4.2 DEVELOPMENT - The Originator is responsible for initial development. Initial development includes word processing and distribution for review.

4.3 APPROVAL - The Originator is responsible for obtaining preliminary and final approval of a proposed SOP.

4.4 DISTRIBUTION - After all approval signatures have been obtained, the Originator is responsible for distributing the SOP to any affected parties, as evidenced by a completed distribution list on the Coversheet. Members of the Quality Team and the Quality Assurance Manager (QAM) should receive all final SOPs.

4.5 MAINTENANCE - An individual, typically the Originator, will be assigned responsibility for ensuring that a SOP reflects current needs and standards. Consistent with DEM's Quality Management Plan, the responsible individual will annually evaluate SOPs to ensure current needs are being met; likewise, all SOPs will be renewed every five years.

5. GUIDELINES AND PROCEDURES

5.1 ORIGINATION - A staff member, a contractor or an agent of the Department may originate a draft or a concept for a draft SOP for any appropriate procedure or process.

5.2 CONTENTS – All new SOPs developed by DEM should include the following contents in the order outlined below. SOPs that are developed by contractors or agents of DEM shall include the following contents. The DEM project officers shall have the flexibility to waive the order of the contents if the contractor or agent is using a SOP that has been previously developed.

5.2.1 APPLICABILITY - The first section of a SOP contains a brief statement identifying the scope of the SOP and indicates the individuals and programs that are affected by the SOP.

5.2.2 PURPOSE - The second section of a SOP contains a brief statement explaining the objective of the procedure. It indicates what organization, documentation, and/or activities are involved or affected by the procedure, and a concise background description.

5.2.3 DEFINITION - The third section of a SOP lists the meaning of words or groups of words not commonly known to the potential user of the SOP. For example, technical terms and/or acronyms are described in this section.

5.2.4 RESPONSIBILITY - The fourth section of a SOP lists all the individuals or groups responsible for implementing the procedure or performing certain tasks associated with the procedure and their duties.

5.2.5 GUIDELINES AND PROCEDURES - The fifth section of SOP lists, in detail, all the steps required to perform the particular job task.

5.2.6 REFERENCES - The final section of a SOP lists any written reference materials used in compiling the procedure.

5.3 FORMAT

5.3.1 CONFORMANCE TO STANDARD - All SOPs must at least include the *Page Header Contents* information as detailed in Section 5.3.2 of this SOP. If a contractor or agent of DEM develops the SOP, it will not be required to contain the DEM logo.

All other information shall be included in the header. The standard text format detailed in FIGURE 2 of this SOP is required for SOPs that apply DEM-wide. The format is recommended, but not required, for bureau- or program-specific SOPs.

5.3.2 PAGE HEADER CONTENTS. Each page, including the coversheet, shall include a header containing the Department logo in the upper left corner, and a document identifier in the upper right hand corner that contains the following information in nine (9) point bolded type, Arial: SOP No ,Effective Date, Revision No, Last Revision Date, and page number.

5.4 SOP DEVELOPMENT AND APPROVAL PROCESS - The SOP approval process consists of a preliminary draft cycle and a final approval cycle.

5.4.1 PRELIMINARY DRAFT DEVELOPMENT - In the preliminary draft cycle, the originator contacts their direct supervisor to gain approval for going forward with drafting a proposed SOP, or one that is being drafted by a contractor or agent of DEM. Upon approval to proceed, the originator should work with appropriate staff to prepare a draft. "Appropriate staff" should include a representative group of individuals who will be affected by the SOP. Any staff member who makes a request to review a draft SOP should be provided that opportunity.

5.4.2 PRELIMINARY DRAFT APPROVAL - The signatures required for preliminary draft approval should correspond to the scope and applicability of the SOP. SOPs applying to a discrete unit within an Office, at a minimum, need a sign-off from the project and program manager. The preliminary draft must first be submitted to the Originator's project or program manager for comment and approval to proceed with the review process. Upon receiving approval to proceed, if other supervisors on the same management level as the Originator's supervisor have staff affected by provisions in the draft SOP, the draft should then be circulated to them for review and comment. Reviewers are free to use their judgment to include additional individuals and groups whose input they believe would be valuable to the process. All required reviewers must submit a response to the Originator, indicating approval or changes necessary to obtain their approval.

5.4.3 COMMENT RECONCILIATION - The Originator of the draft SOP will resolve any issues raised in comments during the draft review cycle. Upon resolution of the comments, the Originator must obtain approval signatures on the Draft Approval Routing Sheet from any unit supervisor and Division Director whose staff will be affected by the SOP. The completed Draft Approval Routing Sheet should be retained in a file created during the SOP drafting process.

5.4.4 FINAL APPROVAL - As with preliminary draft approval, the signatures necessary for final approval should be commensurate with the SOPs scope and applicability.

(A) PROGRAM SPECIFIC SOPs. Preliminarily approved drafts of program specific SOPs must receive final approval from the relevant Office Chief and sign off from the DEM's QAM. Only these two (2) signatures should be on the SOP Coversheet.

(B) MULTI-PROGRAM / BUREAU SOPs. Preliminarily approved drafts of multi-program SOPs must receive final approval from the appropriate Bureau and Assistant Directors and a sign off from the QAM.

6. REFERENCES

6.1 DEM QUALITY MANAGEMENT PLAN (February 8, 2010)

I. SAMPLE

FIGURE 1 – SAMPLE COVERSHEET

COVERSHEET
STANDARD OPERATING PROCEDURE
APPROVALS:

Quality Team Chair:

_____ _____ Date: _____
Print Name Signature

Assistant Director of Water Resources

_____ _____ Date: _____
Print Name Signature

Assistant Director of Air, Waste and Compliance

_____ _____ Date: _____
Print Name Signature

If Appropriate,
Associate Director of Natural Resources

_____ _____ Date: _____
Print Name Signature

DISTRIBUTION:

( ) Office of Air Resources ..... By: _____ Date: _____
( ) Division of Agriculture ..... By: _____ Date: _____
( ) Office of Waste Management ..... By: _____ Date: _____
( ) Office of Compliance and Inspection ..... By: _____ Date: _____
( ) Office of Technical and Customer Assistance ..... By: _____ Date: _____
( ) Groundwater and Wetlands Protection ..... By: _____ Date: _____
( ) Surface Water Protection ..... By: _____ Date: _____
( ) Water Quality and Standards ..... By: _____ Date: _____
( ) Office of the Director ..... By: _____ Date: _____
( ) Quality Management Team ..... By: _____ Date: _____

Title:
Originator Name:

FIGURE 2 – FORMAT SENARIOS

1. SECTION HEADING. Section Text. (see 4.4.2)

1.1 SUB-SECTION HEADING. Subsection text. (see 4.4.3)

1.1.1 PARAGRAPH HEADING. Paragraph text. (see 4.4.4)

(A) SUB-PARAGRAPH HEADING. Sub-paragraph text (see 4.4.5)

The following description establishes the standard format and is required for all DEM-wide SOPs and suggested for any bureau- or program-specific SOPs.

TYPEFACE - All type, except the header, shall be 11 point, Arial.

PAGE MARGINS - Margins will be 1-inch top and bottom, and 1-inch left and right.

COVERSHEET CONTENTS - Each SOP must have a coversheet that contains the following information: (1) the page header described in section 4.3.2 of this SOP; (2) title; (3) Originator's name; (4) approval sign-off; and (5) a distribution check-off (see FIGURE 1, appended).

DRAFT APPROVAL SHEET - A SOP Draft Approval Sheet is used to track the review and approval of preliminary SOP drafts (see FIGURE 3, appended).

SECTIONS - The first level of written division in a SOP document is referred to as a "section". Single digit numbers are used to identify a section. The heading of a section must have the "SOP SECTION HEADING" *character style* applied to it and the text of the section, including its heading must have the "SOP Section Text" *paragraph style* applied to it. By applying these *styles* to the heading and body, each will automatically be formatted and indented to its appropriate position. A tab between the section number and heading activates the hanging indent, and two spaces between header title and any paragraph text are used to separate the heading from the body.

SUB-SECTIONS - The second level of written division in a SOP document that is part of, but separate from, a section is referred to as a "sub-section". Two numbers, separated by a period, identify a sub-section. The numbers and words in the heading of a sub-section must have the "SOP SUB-SECTION HEADING" *character style* applied to it, and the text of the sub-section, including its heading, must have the "SOP Sub-section Text" *paragraph style* applied to it. By applying these *styles* to the heading and body, each will automatically be formatted and indented to its appropriate position. A tab between the sub-section number and heading activates the hanging indent, and two spaces between end of the header title and beginning of any sub-section text are used to separate the heading from the body.

PARAGRAPHS - The third level of written division in a SOP document that is part of, but separate from, a sub-section is referred to as a "paragraph". Three numbers, separated by periods, identify a paragraph. The numbers and words in the heading of a paragraph must have the "SOP PARAGRAPH HEADING" *character style* applied to it, and the text of the paragraph, including its heading, must have the "SOP Paragraph Text" *paragraph style* applied to it. By applying these *styles* to the heading and body, each will automatically be formatted and indented to its appropriate position. A tab between

the paragraph number and heading activates the hanging indent, and two spaces between end of the heading title and beginning of any paragraph text are used to separate the heading from the body.

SUB-PARAGRAPHS - The fourth and final level of written division used in a SOP document is part of, but separate from, a paragraph is referred to as a "sub-paragraph". An uppercase letter enclosed in parentheses identifies a sub-paragraph. The letter and any words in the heading of sub-paragraph must have the "SOP SUB-PARAGRAPH HEADING" *character style* applied to it, and the text of the sub-paragraph, including its heading, must have the "SOP Sub-paragraph Text" *paragraph style* applied to it. By applying these *styles* to the heading and body, each will automatically be formatted and indented to its appropriate position. A tab between the subparagraph letter and heading activates the hanging indent, and two spaces between end of the heading title and beginning of the sub-paragraph text are used to separate the heading from the body.

TABLES AND FIGURES - The inclusion of illustrative tables and figures is appropriate in SOPs. Since the format of these items will vary, no prescribed method is established herein. All tables and figures must be identified with a number and title that will have the "SOP Tables and Figures Id." *paragraph style* applied to it. By applying this *style* to the number and title, it will automatically be formatted and centered to its appropriate position.

FIGURE 3 – DRAFT APPROVAL ROUTING FORM

DRAFT APPROVAL ROUTING FORM
STANDARD OPERATING PROCEDURE
Date in Process:
Operation Title:
Identification No.:
Revision No.:
Originator Name:
****

The attached draft is forwarded for your evaluation and comment. Suggested changes should be concise and reasons specific. Return to sender.
Supervisor:

_____ q redraft based on comments q OK
Print Name Initials Date
Office Director:

_____ q redraft based on comments q OK
Print Name Initials Date

FIGURE 4 – IDENTIFICATION AND CODING SYSTEM

Office of the Director (OD)
OD-QM..... Quality Assurance Manager
Bureau of Environmental Protection (BEP)
BEP-AWC ..... Air, Waste & Compliance
BEP-WR..... Water Resources

Agriculture (AG)

AG-P …… Pesticides

AIR Resources (A)

A-A..... Administration
A-I..... Inspection
A-M ..... Monitoring
A-MS..... Mobile Sources
A-P ..... Permitting
A-T ..... Toxics

Legal Services (LS)

Waste Management (WM)

WM-B..... Brownfields
WM-FF..... Federal Facilities
WM-MW..... Medical Waste
WM-SR..... Site Remediation
WM-SW..... Solid Waste
WM-SF..... Superfund
WM-LUST……. Leaking Underground Storage Tanks
WM-UST ……. Underground Storage Tanks

Water Resources (WR)

WR-GWC..... Ground Water Certification
WR-GNUWW…… Groundwater, Nonpoint Source, UIC, Water Quality Certification & Well Drillers Programs
WR-RIPDES..... RIPDES Program
WR-W ..... Watersheds TMDL
WR-WQC ..... Water Quality Certifications
WR-WRR ..... Water Resource Regulation
WR-WWTFO&M…. Wastewater Treatment Facilities – Operation & Maintenance

Appendix E – Inventory of Quality Management Guidance and Policy

DEM Inventory of Quality Management Guidance and Policy

September 16, 2005

No.	Guidance or Policy Description	Status	Date Finalized	Format	# of Pages	Document Originator
OD-QM-5	Guidance for Annual Program Self-Assessments	Final	June 30, 2009	Electronic	18 pages	T. Getz
WM-1	Removal Program Representative Sampling Guidance – Volume 1 - Soil		Unknown	Paper	45 pages	Unknown
WM-LUST-1	Leaking Underground Storage Tank Program Guidance Document	Final	October 2000	Electronic	28 pages	
WM-LUST 1	Closure In Place (CIP) Policy		June 15, 1998	Electronic	3 pages	T. Gray
WM-UST-1	UST Closure Assessment Guidelines		October 1998	Electronic	8 pages	
WM-UST-2	Instructions For Permanent Closure Application for Underground Storage Tank(s)			Electronic	6 pages	

Appendix F- Guidance for Annual Self-assessments

Rhode Island Department of Environmental Management

Guidance for 2010 Annual QA Program Self-assessments

June 11, 2010

This document is intended to help program managers fulfill the Annual QA Program Self-Assessment requirements as outlined in the DEM Quality Management Plan.

Table of Contents

1. Purpose. The purpose of this procedure is to ensure an effective assessment program in the Rhode Island DEM, including implementation of an assessment plan, assessment program, and assessment training.

1.1 Assessments will be conducted at many levels in DEM to determine conformance with department procedures, quality assurance project plans, standard operating procedures (SOPs) and other applicable requirements. Other objectives of assessments are to determine the accuracy of data collection and management systems, identify opportunities for program improvements, and to verify the effectiveness of Department programs. Other important benefits of assessing are cross training, assurance that policies and procedures are current and being followed by staff, and continuous improvement.

1.2 DEM will initiate annual program self-assessments. In the future, when there is expertise developed in the department, the guidance may be expanded to include 2nd and 3rd party assessments.

2. Definitions

2.1 Assessment -A systematic examination to determine whether quality activities and related results comply with planned arrangements and whether the arrangements are implemented effectively and are suitable to achieve objectives.

2.2 Assessment Protocols - Refers to written documents, data systems, checklists, procedures or guides that define the assessment scope, to assist the assessor with completing the required elements of the assessment plan, and to assist the assessor in preparing for the assessment.

2.3 Assessment, 1st Party - An assessment conducted by members of the organization being assessed. The annual self-assessments currently required in the DEM Quality Management Plan are 1st party assessments.

2.4 Assessment, 2nd Party - An assessment conducted by individuals from within the organization being assessed, but who are not entirely independent of the organization. These are generally considered superior to 1st party assessments due to a higher degree of separation. An assessment of a program's quality system by the DEM QA Team is an example of a 2nd party assessment.

2.5 Assessment, 3rd Party - An assessment conducted by individuals from an organization that is entirely independent from the organization being assessed. ISO 9000 and 14001 registration assessments, and assessments of DEM by EPA are examples of 3rd party assessments.

2.6 Corrective Action Plan – A plan that is developed after a program identifies a deficiency or issue that needs to be addressed as a result of a program self-assessment. The plan will be submitted with the program self-assessment and will outline the way the deficiency will be corrected or addressed. The plan will include the timeframe needed to address the deficiency or issue.

2.7 **Deficiencies** – Any deviation or issue identified by the program self-assessment that indicates the program is not materially complying with or meeting the procedures or processes outlined in the approved Quality Management Plan.

2.8 **Documented Procedure -** A written document that details the method for an operation, analysis, or action with thoroughly prescribed techniques and steps, and that is officially approved as the method of performing certain routine or repetitive tasks. This procedure is often in the form of a memo. This memo may simply cite reliance on a standard reference.

2.9 **Program** - A functional unit of the DEM responsible for the administration of an environmental issue as defined in statute(s) or otherwise, for example in the DEM Work Plan. This administrative function is found within the Bureau / Office level. Appendix A is a listing of the programs coved by this guidance.

2.10 **Program Manager** - The person responsible for supervising a specific DEM environmental program. This program management function is vested in staff at different administrative levels within DEM.

2.11 **Project Manager** - The person that has direct knowledge and/or responsibility at the project or site-specific level.

2.12 **Quality Management Plan –** This is a document describing DEM's quality system developed jointly by the Quality Assurance Manager and the DEM Quality Team. This document identifies the policy and procedures, the organizational structure, details the responsibilities of management and staff and its processes for planning, implementing, documenting, and assessing all activities conducted under the organization's quality system.

2.13 **Records** - All documents, papers, letters, maps, books, tapes, photographs, films, sound recordings, magnetic or other tapes, electronic data processing records, computer stored data, electronic mail messages, and/or other material regardless of physical form or characteristics made or received pursuant to law or ordinance or in connection with the transaction of official business by an agency to ensure adequate and proper documentation of the organization, functions, policies, decisions, procedures, and essential transactions of the agency and to maintain and furnish the information necessary to protect the legal rights of the government and of the persons directly affected by agency's activities.

3. RESPONSIBILITY

3.1 This assessment procedure is applicable to all program activities defined in the Rhode Island DEM's Quality Management Plan. A program may specify additional procedures or requirements for conducting assessments within that group. The Quality Assurance Manager and the Assistant Directors in the Bureau of Environmental Protection will identify and develop annual assessment plans, and ensure that assessments conform to this procedure.

3.2 The Assistant Directors in the Bureau of Environmental Protection are responsible for:

- Either approving or approving with modifications, an annual assessment plan prepared by the Quality Assurance Manager, submitted for their Offices;
- Prioritizing assessment issues,
- Receiving assessment findings, and
- Ensuring timely implementation of appropriate corrective actions.

3.3 The Quality Assurance Manager is responsible for management of the assessment program, including but not limited to the following functions:

- Developing a general annual assessment plan.
- Approving (and revising as needed) assessment procedures.
- Receiving reports of assessment findings and communicate specific findings to appropriate levels of management.
- Generally monitoring overall implementation of corrective actions from assessments.
- Evaluating the assessment program annually (and develop evaluation criteria and methodology).

3.4 The Office/Division Chiefs are responsible for providing support for quality team members during the assessment process and to implement actions that will ensure conformance with internal policies, adopted standards and defined procedures, and to ensure that necessary corrective action are made in a timely manner.

3.5 Program managers are responsible for assisting the quality team members in the self-assessment and are charged with the development and implementation of a Correction Action Plan on issues uncovered by the self-assessment. Elements of the Correction Action plan shall be included in the QA section of the Performance Partnership Plan to ensure follow up. In the event if the program manager is the member of the DEM Quality Team, the supervisor of the position should be used to assist in the self-evaluation. Due to the small size of DEM programs there may not additional supervisory assistance. In this instance, the person assessing the program may need to work directly with the Office Chief.

3.6 It is the responsibility of the assessment team leaders, usually members of the DEM Quality Team, to plan, schedule and conduct assessments according to the predefined scopes.

3.7 It is the responsibility of all employees to be familiar with, participate in and support the Bureau's policies and procedures affecting their work.

4. ASSESSMENT PROCEDURE

4.1 **Program Requirements** - This document has been prepared especially to assist assessment team leaders with QA System Program Self-Assessments. Assessments will be completed by August 30 or based on the schedule agreed upon by the Quality Team at a regularly scheduled meeting.

4.2 DEM will conduct 1st party assessments in the programs.

4.3 Self-assessments are to be conducted annually, finalized and submitted to the DEM QA Quality Manager no later than by August 30 of each year.

4.4 Quality team members, in consultation with program managers within the Office/ Division, are responsible to explicitly assess, at least annually, whether the work went as expected, what problems were encountered, whether procedures still meet program needs, and where improvements can be made.

4.5 The Quality Team member in the Office will initiate a meeting with appropriate members of the program being requested to fill out a self-assessment form.

4.6 The program manager will be given a copy of the self-assessment form prior to the meeting. This purpose of this meeting is to review the self-assessment form, to set a schedule for completing the form and to answer any questions concerning the self-assessment procedure.

4.7 The assessment step must address the *root cause* of any deficiencies identified, wherever this is possible, so that procedures can be continuously improved. It is important to understand that the purpose of the self-assessment process is to identify areas for improvement, not finding fault.

4.8 A self-assessment form is the tool that should be used when conducting an assessment. The form will be used to record and communicate the results of the self-assessment. DEM will use three forms.

4.8.1 Program Self-assessment Form A (Streamlined Form) – An annual update to the QAM concerning changes in the program's QA effort including new or revised QAPPs and SOPs. This ***streamlined form*** is intended for DEM programs whose operations have been previously described in one or more EPA-approved Quality Assurance Project Plans (QAPPs), or who currently utilize Quality Assurance Manuals. This form also documents new or revised QAPPs and SOPs. Form A is filed in each of the two years following QAM approval of the more detailed Form B

4.8.2 Program Self-assessment Form B (Detailed Form) – Form B is used by new programs entering the DEM Quality System, and consists of a series of detailed questions specific to particular topics referred to in the QMP. Programs file this detailed form every three years to determine if there are any changes in the QA program. Form B also documents new or revised QAPPs and SOPs.

4.8.2 Program Self-assessment Form C - Restricted to programs that only review data provided by others, Form C is based on an SOP developed by the DEM Quality Team entitled "Summary Guidance for Reviewing Environmental Monitoring Data.".

5. ASSESSMENT REPORTING AND CORRECTIVE ACTION FOLLOW-UP

5.1 The project or program manager will review the draft self-assessment form prepared by the Quality Team member. If necessary, the quality team member and the program manager will fill in the Corrective Action section of the self-assessment form.

5.2 The draft self-assessment form will be sent to the Quality Manager for initial review. After review by the QAM, the assessment will be sent back to the program for comment and finalization. A Corrective Action Report, if applicable, will be incorporated in the draft self-assessment. The self-assessment will detail all deficiencies or issues raised by the self-assessment and will propose ways to identify areas for improvement. A draft Corrective Action Plan, if necessary, will be included in the draft self-assessment.

5.3 Copies of the final self-assessment will be forwarded by the Quality Team Member to the Office / Division Chief for the project / program that were assessed.

5.4 The self-assessments should be signed by the program manager or their supervisor if the generator of the assessment is the program manager, but may be prepared by other staff, as the program manager decides.

5.5 The Office / Division Chief will review the self-assessment. The final self-assessment report will be submitted to the Quality Assurance Manager.

5.6 The Assistant Directors of the Environmental Protection Bureau will require the office to add any appropriate corrective action plans elements found during the self-assessment, into the Office's/Division's work plan.

5.7 The Quality Team member will provide the follow-up to any corrective actions in the next year's self-assessment.

QA System Annual Program Self-Assessment – Streamlined Program Self-assessment Form (Form A)

Calendar Year 2010

(*Note: Please fill out one Self-Assessment Form per program including information in the footer.*)

Name of DEM Program: _____

Bureau and Division of DEM Program: _____

Name of Person(s) Conducting the Review:_____

1. **The Program has a QAPP (Yes☐ No ☐)**
   a. **Has the Program modified the QAPP or has any QAPP Addendums been approved under generic Program QAPPs? Yes ☐ No ☐**
   b. **What was the last date the QAPP was approved by EPA/approving organization?**
   c. **When was the QAPP modification/addendum approved? _____**
   (Please provide an electronic copy of the QAPP modification/addendum and a summary of the revisions with this form.)
2. ☐ **The Program has completed a self-assessment using Form B in 2008 or 2009 and is not due for a detailed self-assessment until 2011 or 2012.** Fill out the Streamlined Program Self-assessment Form if the program had filled out a Detailed Program Self-assessment Form in 2008 or 2009. (The Streamlined Self-assessment Form A can be used in the two years following approval of a Detailed Self-assessment Form.)
3. **The Program has a QA Manual (Yes ☐ No ☐)**
   Title of QA Manual: _____
   Date of last approval of the manual: _____
   Has it been approved by EPA, ☐ Other organization/person – Yes ☐ No ☐
   Name of approval person and agency: _____
   Please attach a copy of cover and signature pages.
4. ☐ **Other – Draft under review, not approved yet.**

5. Corrective Actions

This section should be used to discuss any deficiencies or issues raised during the assessment process and to indicate the steps taken in the past year to correct issues raised in previous self-assessments.

a. Were there any deficiencies / issues identified in the prior year's self-assessment? (Yes ☐ No ☐)

i. If yes, please provide a list of the non-conformances / issues identified in the Calendar Year 2008, 2009 review, and a description of how they were resolved or are being addressed;

_____

_____

b. Were there any deficiencies / issues in the 2010 self-assessment? (Yes ☐ No ☐)

i. If yes, provide a list of deficiencies or issues identified in this year's review, and a brief discussion of how they will be addressed. Note: When listing your deficiencies, please use the following convention: Year/Non-deficiency Number – 2010-01, 2010-02, 2010-03, etc.

2010-01

_____

_____

6. New or Revised SOPs or QAPPs approved / implemented this year for this program:

SOP Name	Division	Author	Contact Person	Date Approved	Last Approved	Current Status	Number of Pages
QAPP Name							

7. Special questions for this year:

- Indicate the names of the people who have taken the DEM Quality Systems Awareness Training module in 2009. The module is located at: http://dem/intranet/slides/qmptrain.ppt

  _____

- Indicate the QA training needs you need in the upcoming year. Indicate the number of people who need to be trained

  _____

  _____

- Indicate if the program has conducted any program assessments of the quality system assessments of other organizations, i.e., external assessments that your organization has conducted on other organizations' quality systems; private laboratories used by the program; technical assessments; or project and data reports assessed. Yes ☐ No ☐

If yes, attach a summary of the assessment to this form.

_____

I certify that the DEM program under my supervision is participating in the DEM Quality Assurance System and that the above accurately reflects the Annual Self-Assessment of this program's QA System.

Program Manager Signature: _____

Printed Name: _____

Division / Office Chief Signature: _____

Printed Name: _____

Date: _____

QA System Annual Program Self-Assessment – Detailed Program Self-assessment Form (Form B)

Calendar Year 2010

(*Note: Please fill out one Self-Assessment Form per program, including information in the footer.*)

Name of DEM Program: _____

Bureau and Division of DEM Program: _____

Name of Person(s) Conducting the Review: _____

I certify that the DEM program under my supervision is participating in the DEM Quality Assurance System and that the above accurately reflects the Annual Self-Assessment of this program's QA System.

Program Manager Signature: _____

Printed Name: _____

Office / Division Chief: _____

Printed Name: _____

Date: _____

---

1. The program has a QAPP (Yes ☐ No ☐) covering the program. (This form should be used every three years to test your QAPP / QA Manual against the DEM QMP. Form A can be used in the second and third year of the review cycle).
   a. **Has the Program modified the QAPP or has any QAPP Addendums been approved under generic Program QAPPs since 2009? Yes ☐ No ☐**
   b. **What was the last date the QAPP was approved by EPA/approving organization? _____**
   c. **Have any QAPP modification/addendum been approved in the last year? If so, identify them.**

      _____

      (Please provide an electronic copy of the QAPP modification/addendum and a summary of the revisions to this form.)

2. Every year, your program's QA efforts must be reviewed and updated, as necessary. This is your report of the results of that review.

3. Corrective Actions

This section should be used to discuss any deficiencies or issues raise during the assessment process and to indicate the steps taken in the past year to correct issues raised in previous self-assessments.

a. Were there any deficiencies / issues in prior year's self-assessment? (Yes ☐ No ☐)

i. If yes, please provide a list of the deficiencies / issues identified in the Calendar Year 2008, and 2009 reviews, and a description of how they were resolved or are being addressed;

b. Were there any deficiencies / issues in the 2010 self-assessment? (Yes ☐ No ☐)

i. If yes, provide a list of deficiencies or issues identified in this year's review, and a brief discussion of how they will be addressed. Note: When listing your deficiencies, please use the following convention: Year/Deficiency Number – 2010-01, 2010-02, 2010-03, etc.
2010-01

_____
_____
_____

2010-02

_____
_____
_____

Note: When asked to "show/provide" documentation, a copy should be attached, unless the document in question is both a) book-length *and* b) readily available, (*e.g.* EPA guidance documents, but reference these documents by date and page number).

4. The program has QA Manual (Yes ☐ No ☐) covering the program.

---

a. Title of QA Document: _____

b. Date of last approval of the document: _____

c. Has it been approved by EPA, ☐ Other organization/person – Yes ☐ No ☐

d. Name of approval person and agency: _____

Please attach a copy of cover and signature pages.

When filling out the form below, write N/A within a section or at the top of a page that doesn't apply to your program and provide a brief description why it does not apply.

---

1. Background Information

a) What data do you gather/use/compile?	
b) What decisions are made using these data?	
c) What is the audience for the data?	
d) Have there been any changes in the personnel in the Programs QA System. If yes, please describe.	
e) Describe how information from the Quality Team is disseminated to the personnel in the Program.	

2. Data Quality Objectives (DQOs) **Ref: DEM QMP Sec 8Bi**

a) Show/provide documentation on how you determine your data quality needs or objectives. If none documented, describe them	
b) Do the data quality objectives communicate the intended program need?	
c) Are decisions/actions based on data collected? Are there any exceptions used in the program. If there are exceptions, explain.	
d) Does the program use outside laboratories for analytical work? If yes, explain how the program communicates DQOs, detection limits, testing methods, laboratory turn-around times, lab capacity etc. to an outside laboratory.	

3. Sampling **Ref: DEM QMP Sec 8Bii**

a. Show/provide/reference written sampling procedures used by the program. If none documented, describe them.	
b) How do you field-modify sampling procedures? Show/provide approval procedures. How are changes approved? How are changes recorded? Provide documentation of field-modification guidance/procedures.	
c) How are people conducting sampling trained? Are sampling protocols reviewed by the supervisor prior to sampling? Are training records kept? Show/provide documentation	
d) How is equipment calibrated?	
e) How are calibration records kept?	
f) How do you ensure that your sampling methods and procedures meet your data quality objectives?	
g) Explain how the program's sampling methods maintain sample integrity.	
h) Does the program use other agents to collect samples? If yes, describe the protocols used to ensure the DEM QA system is being met.	

Field Testing Ref: DEM QMP Sec 8Biii

a) Does the program conduct field testing? If yes, answer the questions below. Show/provide/reference written field testing procedures, and especially data recording procedures. If none documented, describe them	
b) How do you field-modify testing procedures? If not documented, describe them. How are changes approved? How are changes recorded? Provide documentation of field-modification guidance /procedures	
c) How is staff trained in procedures?	
d) How are training records kept?	
e) How is equipment calibrated?	
f) How are calibration records kept?	
g) What field records are generated? Show/provide copy of guidance/procedure.	
h) What procedures are used to determine if you use, and the number of split, replicate or duplicate samples taken at a site?	
i) How are records kept in the office? Show/provide copy of procedure/guidance	
j) How do you ensure that your sampling methods and procedures meet your data needs?	
k) Describe the QA/QC procedures used by contractors/agents of DEM who conduct field testing as part of their contracted services.	

5. Multiple Samples

a) Explain the process or procedure used by the program when collecting multiple samples, i.e., duplicate, replicate or split.	
b) Explain the process or procedure for utilizing surrogates, matrix spikes, blanks and laboratory control samples.	

6. In-house Testing Ref: DEM QMP Sec 8Bv

Note: This is intended for DEM programs that do at least some of their own testing. It is also *not* intended for programs or persons who take water or other samples and brings them to the DOH Laboratory for testing.

a) What type of in-house testing do you conduct?	
b) What methods are used?	
c) How do you ensure that protocols are up to date?	
d) How do you check in-coming sample material?	
e) How are data handled when a test is not run per specification?	
f) How is staff trained? How are training records kept?	
g) Show/provide copy of procedure for recording test results.	
h) Show/provide copy of procedure for communicating results to the data user.	

7. Data Assessment and Comparison of Results against Established Criteria Ref: DEM QMP Sec 8Bvi

a) What are the established criteria that sampling / testing data are compared against?	
b) How is the established criteria communicated to staff, EPA, or laboratories.	

8. Environmental Conditions Descriptions & Data Ref: DEM QMP Sec 8Bvii

a) How do you decide what information to record? Provide documentation of decision.	
b) How is the information recorded? If forms are used, provide copies.	
c) Show/provide copy of procedures for taking field notes? If none documented, describe them.	
d) Show/provide copy of procedures or guidance for photo-documentation. If none documented, describe them.	
e) How is staff trained on the recording of field notes? How are training records kept?	
f) How are deviations from procedures handled? Before the fact? After the fact?	
g) How are changes to procedures made? Who approves? How are they communicated to staff? Show/provide example document. Is there a procedure for this process?	

9. Review & Validation of Data Ref: DEM QMP Sec. 8Bviii

a) Show/provide any written guidance you have to describe how you verify, validate or conduct a usability assessment of data. If none documented, describe them.	
b) Show/provide any written guidance you have to describe how you address non-conforming data. If none documented, describe them.	
c) Does the program use modeling in the permitting or decision-making processes? If yes, does the program utilize a Modeling QAPP?	
d. Describe how the suitability of models to resolve the application needs will be evaluated. Discuss the following: • Mapping model attributes to problem statements • Degree of certainty needed in model outputs • Amount of reliable data, available resources and technical expertise	
e) Explain how projects that involve the use of environmental data produced from models, compiled from secondary sources such as databases or literature or collected directly from measurements to describe environmental processes and conditions is reviewed? Do you have a generic QAPP or SOP that explains the review procedures?	

10. Reporting Results **Ref: DEM QMP Sec. 8Bix**

a) Who do you send data to? *Note: "Send" refers to anyone outside of the program, whether elsewhere in DEM, or external to DEM*	
b) Show/provide written guidance on reporting formats. If none documented, describe them.	
c) How do you decide who is responsible for signing the data reports? Show documentation of decision.	
d) When reporting to different audiences, do you vary the form or type of report? How is this decision made? How is QA/QC issues handled for different audiences?	
e) How is staff informed of proper reporting methods? Provide example documentation	

11. Retention of Data **Ref: DEM QMP Sec. 6Aii**

a) Show/provide record retention schedules that have been finalized or is in draft. If none documented, describe them.	
b) Do you keep back-up copies of any data? How do you decide what to back-up? Show/provide copy of procedure.	
c) Show/provide procedures for securing files. If none documented, describe them.	
d) How long do you retain data? Show/provide copy of data retention decision. Include data removal/ destruction decision.	

12. System Reviews & Assessments **Ref: DEM QMP Chapters 9 & 10**

a) Do you *periodically* review your data quality system to see that it is up to date and appropriate? Show/provide documentation for the last review. Note: This does not refer to ad hoc adjustments.	
b) How do you document and correct non-conformances?	
c) Has the program conducted any program assessments of the quality system assessments of other organizations, i.e., external assessments that your organization has conducted on other organizations' quality systems; private laboratories used by the program; technical assessments; or project and data reports assessed?	
d) If the answer is yes, indicate who was assessed and provide a summary of the review. (Summary can be attached to the form.)	

1. New or Revised SOPs or QAPPs approved / implemented this year:

SOP Name	Division	Author	Contact Person	Date Approved	Last Approved	Current Status	Number of Pages
QAPP Name							

2. Special questions for 2010:

a. Indicate the names of the people who have taken the DEM Quality Systems Awareness Training module in 2010. The module is located at: http://dem/intranet/slides/qmptrain.ppt

_____
_____
_____
_____

b. Indicate the QA training needs you need in the upcoming year. Indicate the number of people who need to be trained

_____
_____
_____

c. Indicate if the program has conducted any program assessments of the quality system assessments of other organizations, i.e., external assessments that your organization has conducted on other organizations' quality systems; private laboratories used by the program; technical assessments; or project and data reports assessed. Yes ☐ No ☐

d. If yes, attach a summary of the assessment to this form.

QA System Annual Program Self-Assessment
Data Review Self-assessment Form (Form C)

This form is to be used by programs that do not generate environmental data and only review submitted data. This form should be used in the first year of the three year self-assessment cycle. Use the Streamlined Form (Form A) in the second and third year of the cycle.

Calendar Year 2010

(*Note: Please fill out one Self-Assessment Form per program, including information in the footer.*)

Name of DEM Program: _____

Bureau and Division of DEM Program: _____

Name of Person(s) Conducting the Review: _____

I certify that the DEM program under my supervision is participating in the DEM Quality Assurance System and that the above accurately reflects the Annual Self-Assessment of this program's QA System.

Program Manager Signature: _____
Printed Name: _____
Division / Office Chief Signature: _____
Printed Name: _____
Date: _____

Every year, your program's QA efforts must be reviewed and updated, as necessary. This is your report of the results of that review. Please attach the following:

1. Corrective Actions

This section should be used to discuss any deficiencies or issues raise during the assessment process and to indicate the steps taken in the past year to correct issues raised in previous self-assessments.

a. Were there any deficiencies / issues in prior year's self-assessment? (Yes ☐ No ☐)

i. If yes, please provide a list of the deficiencies / issues identified in the Calendar Year 2008, 2009 review, and a description of how they were resolved;

b. Were there any deficiencies / issues in the 2010 self-assessment? (Yes ☐ No ☐)

i. If yes, provide a list of deficiencies or issues identified in this year's review, and a schedule describing how you intend to address them. Note: When listing your deficiencies, please use the following convention: Year/Deficiency Number – 2010-01, 2010-02, 2010-03, etc.
2010-01

_____
_____
_____

Note: When asked to "show/provide" documentation, a copy should be attached, unless the document in question is both a) book-length *and* b) readily available, (*e.g.* EPA guidance documents).

Write N/A within a section or at the top of a page that doesn't apply to your program and provide a brief description why it does not apply.

2010 Self-Assessment

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1. Background Information

a) What data do you gather/use/compile?	
b) What decisions are made using these data?	
c) What is the audience for the data?	
d) Have there been any changes in the personnel in the Programs QA System. If yes, please describe.	

2. Data Quality Objectives (DQOs) Ref: DEM QMP Sec 8Bi

a) Show/provide documentation on how you determine your data quality needs or objectives. If none documented, describe them	
b) Do the data quality objectives communicate the intended program need?	
c) Does a prospective decision remain the same regardless of what the data shows?	
d) Does the program use outside laboratories for analytical work? If yes, explain how the program communicates DQOs, detection limits, testing methods, laboratory turn-around times, lab capacity etc. to an outside laboratory.	

3. Data Assessment and Comparison of Results against Established Criteria Ref: DEM QMP Sec 8Bvi

a) What are the established criteria that sampling / testing data are compared against?	

4. Environmental Conditions Descriptions & Data **Ref: DEM QMP Sec 8Bvii**

a) How do you decide what information needs to be recorded? Provide documentation of decision.	
b) How is the information recorded? If you require forms, provide copies.	
c) Show/provide copy of procedures for taking field notes? If none documented, describe them.	
d) Show/provide copy of procedures or guidance for photo-documentation. If none documented, describe them.	
e) How is staff trained on the recording of field notes? How are training records kept?	
f) How are deviations from procedures handled? Before the fact? After the fact?	
g) How are changes to procedures made? Who approves? How are they communicated to staff? Show/provide example document. Is there a procedure for this process?	

4. Review & Validation of Data **Ref: DEM QMP Sec. 8Bviii**

a) Show/provide any written guidance you have to describe how you verify, validate or conduct a usability assessment of data. If none documented, describe them.	
b) Show/provide any written guidance you have to describe how you address non-conforming data. If none documented, describe them.	
c) Does the program use modeling in the permitting or decision-making processes? If yes, does the program utilize a Modeling QAPP?	
d. Describe how the suitability of models to resolve the application niche will be evaluated. Discuss the following: • Mapping model attributes to problem statements • Degree of certainty needed in model outputs • Amount of reliable data, available resources and technical expertise	

6. Reporting Results **Ref: DEM QMP Sec. 8.Bix**

a) Who do you send data to? *Note:"Send" refers to anyone outside of the program, whether elsewhere in DEM, or external to DEM*	
b) Show/provide written guidance on reporting formats. If none documented, describe them.	
c) How do you decide who is responsible for signing the data reports? Show documentation of decision.	
d) When reporting to different audiences, do you vary the form or type of report? How is this	

decision made?	
e) How is staff informed of proper reporting methods? Provide example documentation	

7. Retention of Data **Ref: DEM QMP Sec. 6Aii**

a) Show/provide filing procedures. If none documented, describe them.	
b) Do you keep back-up copies of any data? How do you decide what to back-up? Show/provide copy of procedure.	
c) Show/provide procedures for securing files. If none documented, describe them.	
d) How long do you retain data? Show/provide copy of data retention decision. Include data removal/ destruction decision.	

8. System Reviews & Assessments **Ref: DEM QMP Chapters 9 & 10**

a) Do you *periodically* review your data quality system to see that it is up to date and appropriate? Show/provide documentation for the last review. Note: This does not refer to ad hoc adjustments.	
b) How do you document and correct non-conformances?	
c) Has the program has conducted any program assessments of the quality system assessments of other organizations, i.e., external assessments that your organization has conducted on other organizations' quality systems; private laboratories used by the program; technical assessments; or project and data reports assessed.	
d) If the answer is yes, indicate who was assessed and provide a summary of the review. (Summary can be attached to the form.)	
e) Explain the procedures used to verify the data quality of the data being reviewed? Do you use a secondary data QAPP or written review guideline?	

9. New or Revised SOPs or QAPPs approved / implemented this year:

SOP Name	Division	Author	Contact Person	Date Approved	Last Approved	Current Status	Number of Pages
QAPP Name							

10. Special questions for 2010:

- Indicate the names of the people who have taken the DEM Quality Systems Awareness Training module in 2010. The module is located at: http://dem/intranet/slides/qmptrain.ppt

  _____

  _____

  _____

- Indicate the QA training needs you need in the upcoming year. Indicate the number of people who need to be trained

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Addendum A - Programs Covered

- Division of Agriculture
    - Division of Agriculture is responsible for enforcing state laws and regulations developed to protect people from poisonings and to prevent environmental degradation that might result from improper use of pesticides on farms, in yards, and inside homes. Through this program, commercial pesticide applicators are trained, tested, and licensed to achieve a level of competence in the pesticide application industry. Programs covered are:
        - Pesticide Compliance Enforcement Program
        - Water Resources Protection Program
- Office of Air Resources
    - Ambient Air Monitoring – OAR conducts or oversees the collection of ambient air quality data for federal criteria pollutants and state and federal air toxic pollutants.
    - Air Pollution Inventory – OAR collects and maintains a database of criteria and air toxics pollution that is emitted from stationary sources.
- Bureau of Environmental Protection
    - Emergency Response- DEM maintains a staff of Emergency Responders on call 24-hours/day, 7-days/week to respond to threats from releases of oil or hazardous materials to the environment. Emergency Responders may conduct sampling to assess a situation or characterize materials under investigation.
- Office of Compliance and Inspection
    - Air Compliance- OC&I's air compliance program monitors exterior lead paint removal projects and responds to air pollution related complaints regarding non-compliant operations as well as responding to odor complaints associated with non-compliant or unlicensed facilities.
    - RCRA and Medical Waste Compliance Section- RCRA inspection staff conducts compliance monitoring on regulated hazardous waste management facilities, generators, and transporters, as well as responding to complaints of improper disposal of hazardous waste. Staff may conduct sampling to characterize materials under investigation.
    - Solid Waste Compliance Section- Solid waste inspection staff conducts compliance monitoring on regulated solid waste management facilities as well as responding to complaints of improper disposal of solid waste. Staff may conduct sampling to characterize materials under investigation.
    - UST Compliance – UST compliance staff inspects UST on a regular schedule to determine compliance with the regulation. If needed, program uses OWM staff to conduct sampling.
    - Water Compliance- Water compliance inspection staff conduct investigations and compliance monitoring related to discharges to water bodies. Staff may conduct sampling to characterize materials under investigation.
    - Water Compliance- Onsite Wastewater Treatment Systems compliance inspection staff conduct investigations and compliance monitoring related to discharges from individual

septic disposal systems. Staff may conduct sampling to characterize materials under investigation.

- Office of Technical and Customer Assistance

    - Pollution Prevention Environmental Results Program (ERP)- Staff assists businesses in investigating and evaluating opportunities to reduce pollution through product substitutions and/or process modifications. Staff may conduct sampling to characterize materials under investigation or evaluate the effectiveness of measures taken to prevent pollution.
    - Dredging Program - Staff coordinates the review of dredging projects throughout the agency to ensure natural resource and water quality issues are properly addressed. Dredging proposal include extensive environmental data that needs to be reviewed and analyzed.

- Office of Waste Management

    - Leaking Underground Storage Tank Assessment and Remediation- Staff oversee the investigation and clean up of properties contaminated by releases from underground storage tanks. Staff may conduct sampling to characterize materials under investigation.
    - Brownfields / Voluntary Cleanup / State Site Remediation Program - Staff oversee the investigation and clean up of properties contaminated by releases of hazardous materials under the jurisdiction of RI state authorities. Staff may conduct sampling to characterize materials under investigation.
    - Targeted Brownfields Program- Staff oversee the investigation and clean up of properties contaminated by releases of hazardous materials that are proposed, or being prepared for, beneficial reuse. Staff may conduct sampling to characterize materials under investigation.
    - Hazardous Waste Programs (One Form C Submitted for these programs)
        - Manifests, RCRA and Medical Waste Permitting Section- RCRA staff conducts compliance monitoring on regulated hazardous waste and medical management facilities and transporters. Staff may conduct sampling to characterize materials under investigation.
        - Transportation, Storage and Disposal and Medical Waste Facility Permitting; Hazardous and Medical Waste Transporter; and Manifest Programs – Program reviews applications and submittals that include secondary data.
        - Septage Hauler Permitting Program- Program regulates sewage materials transported in vehicles by a permitting process.
    - Solid Waste Permitting Section- Solid Waste staff conducts compliance monitoring on regulated solid waste management facilities, i.e., Open, Closed Landfills, Landfill Closure, Compost Facilities and Transfer Stations. Staff may conduct and review environmental data in their permitting activities.
    - Superfund NPL and DOD Programs - Staff oversee the investigation and clean up of properties contaminated by releases of hazardous materials under the jurisdiction of the federal Superfund and Department of Defense Programs. Staff may conduct sampling to characterize sites under investigation.
    - Superfund Pre-Remedial Program - Staff oversee the investigation and clean up of properties contaminated by releases of hazardous materials under the jurisdiction of the

federal Superfund Program. Staff may conduct sampling to characterize sites in the early stages of investigation.

- Office of Water Resources

    - Total Maximum Daily Loading (TMDL) Program- Staff oversee the investigation of surface water bodies and develop a response strategy for impacted areas. Staff may conduct sampling to characterize materials under investigation and evaluate the effectiveness of corrective measures.
    - Biomonitoring and Habitat Assessment of Wadeable Streams - Staff oversees contract for the collection of biological and habitat data from wadeable streams. The data is used to assess water quality status of these streams.
    - Biomonitoring and Habitat Assessment of Non-wadeable Streams - Staff oversees contract for the collection of biological and habitat data from non-wadeable streams. The data is used to assess water quality status of these streams.
    - Lake Water Quality Monitoring - Staff oversees contract for monitoring and analysis of water quality in lakes and rivers around the state. Program contracts with University of Rhode Island, Watershed Watch Program to conduct water quality monitoring and analyses. The data is used to assess water quality status of these lakes and rivers.
    - RI Ambient River Monitoring - Staff conducts sampling of rivers and oversees contracts for water chemistry analyses of these samples. The data is used to assess water quality status of these rivers.
    - Fixed Site Water Quality Monitoring Network – Staff collects water quality data via fixed buoys in various locations in Narragansett Bay. The data collected is used to assess water quality in these waterbodies and to provide information to the Bay Response Team.
    - User Fee Program – Staff conducts sampling of major RIPDES permittees to assess impacts to surface waters
    - Shellfish Area Monitoring Program - Staff conducts sampling of shellfish growing areas and potential pollution sources identified during shoreline surveys.
    - RIPDES Program – Staff may periodically conduct compliance sampling of permitted discharges to surface waters or municipal wastewater treatment facilities.
    - Wastewater Treatment Facilities Operations and Maintenance Program – Staff may periodically conduct compliance sampling of wastewater treatment facilities.
    - UIC Program – Staff may collect samples from groundwater discharge points or from groundwater monitoring wells.
    - Water Quality Certification Program – Staff may periodically conduct compliance sampling.
    - Non-point Source program – Works with watershed groups and collects water quality data on sources of non-point pollution.

Appendix G - DEM Standard Operating Procedure for Developing QAPPs and SAPs DEM-QM-02

1. APPLICABILITY

This Standard Operating Procedure (SOP) applies to all environmental programs and programs that are funded by the USEPA in the Rhode Island Department of Environmental Management (DEM).

2. PURPOSE

This SOP specifies the process and procedures to be followed by DEM for reviewing and approving Quality Assurance Program / Project Plans (QAPPs) required for environmental data activities.

3. DEFINITIONS

3.1. Quality Assurance Program / Project Plan (QAPP)

A Quality Assurance Program / Project Plan describes in comprehensive detail the necessary Quality Assurance (QA) policies and Quality Control (QC) and technical activities that must be implemented to ensure the results of work performed, particularly for environmental data operations, will satisfy the stated performance criteria. QAPPs document the results of certain systematic planning processes (see Rhode Island Quality Management Plan, Section III.D). QAPPs may apply to specific projects/data operations, or to a program area responsible for a number of different specific projects / operations.

3.2. Sampling and Analysis Plan (SAP)

A Sampling and Analysis Plan, also referred to as a Work Plan, documents the project-specific objectives, data quality measures, schedules, locations, field and analytic protocols, personnel, and related information needed to apply a program-level QAPP to a particular project or series of related activities.

4. RESPONSIBILITIES.

4.1. QAPP DEVELOPMENT

Each DEM program area involved in planning and implementing environmental data operations is responsible for assuring that QAPPs and SAPs are developed in sufficient time prior to the beginning of data gathering to allow for review, comment, revision, and approval. The project manager, in consultation with the program manager, is responsible for determining the extent of review (*e.g.,* internal or external; EPA-NE parallel review; degree of technical complexity) necessary for a particular QAPP, and thus how much time to allow.

4.2. OVERSIGHT

The program manager is responsible for assuring that necessary review and approval processes are scheduled and completed before the beginning of data operations.

4.3. ARRANGING REVIEW

The Project Manager is responsible for:

- Developing the QAPP,
- Identify persons to review the QAPP, and arrange for their participation, .

- Coordinating any required EPA-NE participation in the review/approval process, such as parallel review, technical assistance, etc.,
- Reporting the results of the review and approval process to the EPA-NE Quality Assurance Manager; and
- Forwarding DEM and ultimately approved QAPPs to the EPA-NE Office of Environmental Measurement and Evaluation and to the DEM Quality Assurance Manager

4.4. REPORTING

The QA Manager is responsible for:

- Maintaining records of the status of all QAPPs for which DEM has responsibility.
- Posting approved QAPPs on the DEM Internet and intranet.

5. PROCEDURES.

5.1. The QA Manager should be notified whenever a Program Manager begins work on, or contracts for the external development of, a QAPP. An expected date of completion of the initial draft should be set at this point. The Program Manager should consult on the expected levels of review that may be required, the participation of EPA-NE or an external reviewer, etc. The signatures required on the cover page of the document shall indicate the necessary level of review.

5.2. At least two weeks before the expected completion of the draft, or submission to DEM of a QAPP developed by an outside party, the Program Manager will convene a review team, if necessary. Review team members shall be selected on the basis of professional expertise relevant to the content of the QAPP. Once the review team is selected, the Program Manager, in consultation with the DEM review team leader, and any outside reviewers, will specify a date by which initial review and comment will be completed.

5.3. QAPP review may be comprised of two steps: i.e., Level I QAPP Completeness Check, and Level II Technical QAPP Review.

Both levels of review shall use EPA QA/R-5, "Requirements for Quality Assurance Project Plans" as their standard of acceptability.

5.3.1. Level I Completeness may be carried out by any person nominated by the Program Manager on the basis of familiarity with the standards of EPA QA/R-5.

5.3.2. One or more persons who are professionally competent to evaluate the methods, procedures, and protocols in the QAPP and who ideally are not subject to the QAPP shall carry out level II Technical Review. A QAPP reviewer may have been involved in developing a portion of the QAPP, provided s/he is not the reviewer of that section. *Example:* someone who consulted on the development of the QAPP field operations protocols may review the analytic protocols.

5.3.3. The Program Manager and the DEM Office/Division Chief in whose Office/Division the QAPP is to be used shall determine the degree of independence (*e.g.,* involvement in developing the QAPP; different program area, unit, division,

etc.) required of each reviewer. Where there is doubt regarding the possible independence of the reviewer, the next degree of independence shall automatically be required.

5.4. Each separate reviewer, and the review team acting as a whole, shall document their comments in writing. Initial review comments shall be given to the author for inclusion in any revision of the QAPP. The review team leader specifies how any response to comments should be managed, and arranges an agreed date by which a revised QAPP will be returned for further review or final approval.

5.5. On receipt of the revised QAPP, the review team leader shall arrange for further review by both Level I and Level II reviewers, and set a date for an approval meeting.

5.6. If an approval meeting is required, the review team shall make a determination as follows:

Approved:
Activities specified in the QAPP may begin immediately;
Conditionally Approved:
Activities specified in the QAPP may begin subject to restrictions related to further required changes. *Example:* A revised field procedure incorporating a requested change must be filed with the Program Manager before that procedure is implemented in the field. The review team leader shall verify successful completion of approval conditions before signature by the Program Manager.
Deferred:
Activities specified in the QAPP may not begin until required changes are submitted, and the full review team approves.

The determination shall be documented in the records of the review team, and communicated to the person responsible for the QAPP as soon as possible.

5.7. A QAPP subject to the parallel approval process referred to above (4.3) must be Approved, or Conditionally Approved, by both DEM and EPA-NE before activities specified in the QAPP begin.

5.8. SAPs are considered part of the QAPP under which site or project specific activities are carried out. Generic or programs QAPPs shall specify within their main text the procedures for the submission, review, approval, maintenance, and tracking of SAPs.

5.9. Generic QAPPs will be developed using the procedures outlined above. Once a generic QAPP has been developed, project Managers only need the approval of the Program Manager to use a project specific QAPP based on the generic QAPP.

6. REFERENCES

Rhode Island Department of Environmental Protection, *Quality Management Plan* (2009 Revisions – February 8. 2010),

EPA Requirements for Quality Assurance Project Plans for Environmental Data Operations (EPA QA R/5) Final, March, 2001.

Appendix H - DEM Quality System Management Oversight SOP

DEM Quality System Management Assessment SOP OD-QM-6

1. **APPLICABILITY.** This Standard Operating Procedure (SOP) applies to all programs in the Rhode Island Department of Environmental Management (DEM) that collect, produce, review or use environmental information and other data in the course of their business functions and that have been also been identified by the Director as being required to participate in the DEM Quality Management Plan (QMP). The DEM Quality Assurance (QA) System monitors the data collection functions of many of the agency programs, and is also a requirement of the United States Environmental Protection Agency's (EPA) funded programs. In addition, this SOP applies to all staff, especially the DEM Quality Team, when assisting in QMP implementation.

2. **PURPOSE.** This SOP details the process used by DEM to ensure that the data collection process and its utilization are guided by acceptable quality standards and supports sound agency decision-making. With the assistance of the Quality Team, the DEM Quality Assurance Manager (QAM) performs annual reviews of the Quality System. These reviews gauge whether the Quality System is being successfully implemented and may identify opportunities for improvement such as patterns or issues that can affect project commitments or performance quality.

Each review of the DEM Quality System will be summarized in the Annual QA System Status Report. The six (6) main elements of the DEM Quality System discussed in this SOP are:

(1) Quality Management Plan (QMP)
(2) Annual Program Self-assessments
    a) QA Project Plan (QAPP)
    b) Standard Operating Procedure (SOP)
    c) QMP revisions
(3) Quality Assurance System Status Report
(4) Input from regular meetings of the Regional QA Roundtable
(5) Quality Team Meetings
(6) EPA Assessments of DEM's QA Program

3. **DEFINITIONS**

3.1 Program Self-assessment – An annual process where program instituted quality assurance procedures are evaluated and compared to the DEM Quality Management Plan. Each self-assessment will include progress made towards resolution of any issues discussed in the prior years' document, new or revised SOPs & QAPPs and training activities. Programs provide updates to the QAM concerning their QA System through the applicable Self-assessment form identified in Sections 3.2, 3.3 and 3.4.

3.2 Program Self-assessment Form A (Streamlined Form) – An annual update to the QAM concerning changes in the program's QA effort including new or revised QAPPs and SOPs. This streamlined form is intended for DEM programs whose operations have been previously described in one or more EPA-approved Quality Assurance Project Plans (QAPPs) or that currently utilizes Quality Assurance Manuals. This form also documents new or revised QAPPs and SOPs. Form A is filed in each of the two years following QAM approval of the more detailed Form B (See 3.2).

3.3 Program Self-assessment Form B (Detailed Form) – Form B is used by new programs entering the DEM Quality System, and it consists of a series of detailed questions specific to particular topics referred to in the QMP. Established programs also file this detailed form every three years to determine if there are any changes in the QA program including documentation of new or revised QAPPs and SOPs.

3.4 Program Self-assessment Form C - Restricted to programs that only review data provided by others, Form C is based on an SOP developed by the DEM Quality Team entitled "Summary Guidance for Reviewing Environmental Monitoring Data."

3.5 Quality Assurance Manager (QAM) – Responsible for overseeing the QA activities of the decentralized DEM Quality System, the QAM develops, revises and implements the QMP. Roles include: coordination of System Management Reviews and Project and Program Assessments, preparation of the annual Quality Assurance System Status Report, updating of the DEM Quality Assurance website, establishing a training program to educate and instruct staff on the DEM Quality System and leadership of the DEM's Quality Team.

3.6 Quality Assurance Project Plan (QAPP) - A formal document describing in comprehensive detail, the necessary quality assurance procedures, quality control activities, and other technical activities that need to be implemented, to ensure that the results of the work performed, will satisfy the stated performance or acceptance criteria. Major revisions to QAPPs are reported in the annual Program Self-assessments. All QAPPs should be reviewed at a minimum, every five years to determine if program operations have changed or if addenda from previous versions have been incorporated into a revised QAPP. Changes that are incorporated into a QAPP should be reported in the yearly program self-assessment.

3.7 Quality Assurance System Status Report (QASSR) – An annual assessment that summarizes the state of the DEM Quality Assurance System to determine how it is functioning and if there is any need for system element improvement or training. The update provides an overview of the annual self-assessments, updates of the Quality Management Plan and new or revised Quality Assurance Project Plans and Standard Operating Procedures.

3.8 Quality Management Plan (QMP) - The document which describes DEM's quality system. The QMP identifies the policy and procedures, organizational structure, functional responsibilities of management and staff, lines of authority, and its processes

for planning, implementing, documenting, and assessing activities that take place in DEM's quality system.

3.9 Quality System - A structured and documented management system describing the policies, objectives, principles, organizational authority, responsibilities, accountability, and implementation plan of an organization, towards ensuring consistent quality in its work processes, products, and services. The quality system provides the framework for planning, implementing, and assessing work performed by the organization and for carrying out quality assurance procedures and quality control activities.

3.10 Quality Team – The group of DEM representatives who are responsible for QA activities within their respective programs. These individuals provide input to the DEM QA program by coordinating QA activities such as annual self-assessments, commenting on QA documents prepared by team members and by their attendance at regularly scheduled meetings.

3.11 Standard Operating Procedure (SOP) – The description of a prescribed method that is used by DEM staff to complete certain routine operations, analyses, or actions. SOPs do not establish policy and are not appropriate to describe procedures or requirements that apply to members of the public, other than persons acting as agents of, or under contract with, the DEM.

4. RESPONSIBILITIES

4.1 The DEM QA System is a decentralized system. The following is a breakdown of the responsibilities of the major QA System elements:

4.1.1 The Quality Assurance Manager (QAM) is responsible for coordinating the DEM decentralized QA System through scheduling Quality Team meetings, preparing agendas and providing meeting notes. Technical documentation duties include: QMP revisions, generation of QA System Status Reports, Program revisions to the annual QA Self-assessment Guidance, and DEM Intranet/Internet site maintenance. Staff assistance services provided include QA education coordination and Intranet QA training module updates.

4.1.2 The Quality Team members are primarily responsible for:

a. Commenting on all drafts of the QMP, QA System Status Report, Program Self-assessment Forms and all documents that are discussed at the Quality Team meetings.
b. Initiation of QA issues that need to be discussed and coordinated at the program level.
c. Preparation of the draft and final program self-assessments.
d. Coordination of QA Training within the program.
e. Updating the DEM Workplan Reporting System on their QA activities.

4.1.3 Upon being informed by management of applicability to their position, DEM employees are responsible for becoming familiar and complying with the contents of the DEM Quality Management Plan and how it relates to their job.

4.1.4 Program / Office Chiefs are primarily responsible for:

a. Providing support and being a conduit at appropriate meetings for discussion of QA issues with the QA team member and others in the program.
b. Signature authority for approving SOPs, QAPPs, revisions to the QMP and Program/Office Self-assessments.

4.1.5 Assistant Directors are responsible for providing policy definition, leadership, and oversight for the quality system throughout the Bureau and serve as the overall authority for directing activities in accordance with program policy. Responsibilities, concerning quality, include:

a. Serving as the final authority for resolving quality related issues,
b. Advocating for the necessary training,
c. Advocating for resources to support the quality approach,
d. Ensuring that the Quality Management Plan (QMP) is in place and functioning,
e. Ensuring that deficiencies noted in the Quality Assurance System Status Report are added to the Office work plans for resolution, and
f. Signature authority for approving Bureau wide SOPs, QAPPs, the QMP and Annual QA System Status Reports.

4.1.6 The Director is responsible for:

a. Ensuring that the DEM QA System has adequate resources to assure that all environmental data that is collected, generated and compiled by DEM and its agents is of known quality and adequate for its intended use.
b. Providing QA System support within the Bureaus, and
c. Reviewing and approving the revised Quality Management Plans and annual QA System Status Reports.

5. GUIDELINES AND PROCEDURES

5.1 Quality System Overview – There are six (6) primary areas where the DEM QA Manager is responsible for oversight of the DEM QA System. The following section will provide guidance in the procedures used to complete these program elements.

5.1.1. Quality Management Plan (QMP)

The QMP is required by EPA to undergo a comprehensive review every five years. The DEM QMP was last approved in 2005. Future comprehensive reviews are therefore due in years divisible by five. The current QAM has taken the approach that the QMP should be more of a living document and should therefore be incrementally updated on a yearly basis. In this manner, policies and procedures that have been worked on within a year can be incorporated into the QMP for use by DEM employees when the changes are made.

Changes to the QMP will be the result of topics discussed and approved in Quality Team meetings including incorporation of policies of the Regional QA Roundtable. Typical yearly updates of the QMP include revisions to SOPs, QAPPs and Sampling Analytical Plans (SAPs) approved by the programs, summary of training activities, changes in personnel active on the QA Team, and discussion of the significant findings of the yearly Program Self-assessments and EPA program assessments.

The Quality Management Plan is updated in the fall of the year in conjunction with the annual Program Self-assessments. The QAM is responsible for drafting the changes to the QMP and presenting the proposed changes to the Quality Team for comment. Approved comments are then incorporated and the document is sent, with a summary memo, to the Assistant Directors in the Bureau of Environmental Protection, the Associate Director of the Bureau of Natural Resources and the Director for review and concurrence. After the QMP has been finalized as an agency document, it is forwarded to the Rhode Island contact in Region I for EPA review and approval. The EPA contact in Region I has historically been a member of the DEM Quality Team and is should be aware of any significant changes in the document. After EPA approval, the QMP is posted on the DEM Internet and Intranet sites. An electronic copy of the document is also sent to the Quality Team members who shall distribute the document to appropriate office/division personnel.

5.1.2. Annual Program Self-assessments

The DEM Quality System is decentralized; therefore individual programs are responsible for ensuring program elements of the QMP are being addressed at each level. One mechanism to address the integrity of the QA system is to conduct program assessments.

DEM has instituted a system of self-assessments that are conducted at the program level. This self-assessment is based on the DEM QMP and evaluates each program to determine conformance with DEM procedures, adequacy of existing quality assurance project plans, standard operating procedures (SOPs) and other applicable requirements. Other objectives of the self-assessments are the determination of the accuracy of data collection and management systems, identification of opportunities for program improvements, and verification of the effectiveness of the Department's QA programs. Other important benefits of assessing are cross-training, assurance that policies and procedures are current and are being followed by staff, and continuous improvement.

On a yearly basis, the QAM reviews the existing "Guidance for Annual Self-Assessments" (Guidance). The Guidance is modified to clarify issues for the upcoming annual self-assessment and will contain revisions (if needed) of Forms A, B and C which are used to conduct program assessments. This assessment is applicable to all programs listed in the Guidance. The QAM, the Quality Team and the Assistant Directors in the Bureau of Environmental Protection may use the previous year's QA System Status Report to identify and prioritize assessment issues, develop annual assessment plans, and ensure that assessments conform to

DEM guidance. The QAM then revises the Guidance document and presents a draft copy to the Quality Team in late spring. After the Guidance document is finalized by the Quality Team, the self-assessment forms are distributed to the programs to initiate the annual self-assessment process cycle.

The Quality Team member of each applicable program will coordinate the self-assessment activities. A program may specify additional procedures or requirements for conducting assessments within that group. The annual draft self-assessment forms are scheduled for submittal by August 30. Upon completion, each program forwards an electronic copy to the QAM for an initial review. After all questions about the self-assessment have been resolved, each program's signed form will be submitted to the QAM.

The QAM will review each program self-assessment for completeness, appropriateness, clarity, and consistency with implementation of specific QAPPs and SOPs. The QAM will then summarize the results of the self-assessments on a spreadsheet or table for analysis which is valuable for later compilation of the Annual QA System Status Report.

5.1.3. Annual Quality Assurance System Status Report

The DEM relies on the collection and analysis of environmental data to support its decision-making processes. In carrying out its mission, DEM relies upon many different types of scientific data that enable it to better evaluate and measure existing environmental conditions, to identify and understand areas of concern, to assign responsibility for these areas, and to promote dialog among a diverse group of stakeholders on environmental issues.

The data DEM collects must be scientifically defensible, and the quality of that data must be appropriate for its intended uses. DEM, through its Quality Assurance System has developed a systematic approach in the management of data and overall quality assurance issues across the department. This QA System is described in the DEM Quality Management Plan and is frequently updated to highlight the evolving improvements to the system.

On a yearly basis, DEM assesses the Quality System to determine functionality and any need for system element improvement. In general, the QA System Status Report will have the four main elements as described below.

The first section will address assessments of the DEM QA system that will be based on the yearly annual program self-assessments. The QAM will present a summation of the process. Included in this section will be a discussion of any EPA assessment of the DEM QA Program.

The second section of the report will discuss areas for improvement that should be worked on in the following year. This section will also touch on QA system challenges and vulnerabilities. The material from this section will generally be information provided in the program self-assessments.

The third section will discuss:

- Any issues concerning how information can be better communicated to departmental employees about changes to the DEM QA System.
- QA training efforts and needs for the coming year.
- Any QA best practices that have been instituted by any of the programs. This description will be used both to support the initiative of the programs that developed the best practice and to also allow others to consider adoption of these practices.

The fourth section will be a summary of the changes to the DEM Quality Management Plan with respect to new or revised QAPPs and SOPs implemented in the previous year.

After completion of the DEM Programs Self-assessment Summary, the QAM prepares the draft QA System Status Report and provides it to the Quality Team prior to one of the fall meetings. The report is finalized based on comments of the Quality Team and then sent along with a summary memo to the Assistant Directors in the Bureau of Environmental Protection, the Associate Director of the Bureau of Natural Resources and the Director for review and concurrence. After the QA System Status Report has been finalized as an agency document, it is forwarded to EPA, Region I. The submission of the report is a requirement of the DEM/EPA Performance Partnership Agreement. The QA System Status Report will then be posted on the DEM intranet sites. An electronic copy of the document is sent to the Quality Team members who are requested to distribute the document to office/ division personnel.

5.1.4. Input from Regular Meetings of the Regional QA Roundtable

EPA Region I, Chelmsford Lab, organizes three meetings a year with their QA personnel and the Quality Assurance Managers of the six New England states. The purpose of these meetings is to provide a forum to discuss QA issues that need to be resolved in the state's program. Each meeting also allows the states to be alerted to future activities of the EPA that will have an impact on the state's QA program. Information from the QA Roundtable is discussed at the DEM Quality Team meetings. When appropriate, DEM program guidance may result from a discussion of these issues and may be included in the QMP.

5.1.5. Quality Team Meetings

Since DEM's QA Program is a decentralized system, the QAM convenes regular meetings of representatives from the major programs within the EPA Performance Partnership Agreement programs. Meetings are scheduled for the second Tuesday of the month. The group meets on an as-needed basis anywhere from three to six times a year, depending on the issues that need to be discussed. The QA Manager develops meeting agendas and notes. All final agendas and meeting notes will be posted on the DEM intranet site.

5.1.6. EPA Assessments of DEM's QA Program

EPA Region I conducts assessments of the Rhode Island QA System every three years. The QA Manager will work with EPA and the Quality Team to determine the nature of the EPA assessment. The assessment can either be an in-depth assessment of the DEM QA System or an assessment of any number of DEM Programs. Once the direction of the assessment has been finalized, the QA Manager will work with the EPA's Assessment Team to develop the general format of the program assessments. The QA Manager coordinates the EPA assessment with the programs and is the point of contact for DEM's comments on EPA prepared Draft Assessment Report. The QAM will provide copies of the Draft Assessment to the programs and appropriate Associate/Assistant Directors. The QAM will provide the final copy of the EPA Assessment Report to the Director, the appropriate Associate/Assistant Directors, Division/Office Chiefs of the assessed programs, members of the Quality Team. The final assessment will be posted on the DEM website under Quality Assurance.

6. REFERENCE DOCUMENTS

6.1.1. DEM Quality Management Plan – February 8, 2010
6.1.2. Annual QA Program Self-assessments Guidance – June 30, 2010
6.1.3. Annual Quality Assurance System Status Report – January 19, 2010

DEM Quality System Management Oversight SOP - OD-QM-6

Originator:

Thomas Getz	Thomas Getz	Date: 12/14/10
Print Name	Signature	

APPROVALS:

Assistant Director of Water Resources

Alicia Good	Alicia Good*	Date: 12/17/10
Print Name	Signature	

Assistant Director of Air, Waste and Compliance

Terry Gray	Terry Gray*	Date: 12/17/10
Print Name	Signature	

Associate Director of Natural Resources

Larry Mouradjian	Larry Mouradjian*	Date: 12/20/10
Print Name	Signature	

DEM Director

W. Michael Sullivan	W. Michael Sullivan*	Date: 12/22/10
Print Name	Signature	

* Copy of the signed page is held by the DEM QA Manager.

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(x) Quality Management Team ..... by: e-mail Date: 1/11/11
(x) DOA MIS Liaison ..... by: TDG Date: 1/11/11

Appendix I

Acceptance of 2010 DEM Quality Management Plan

_W. Michael Sullivan*_____ 12/22/2010
Director, RI Department of Environmental Management Date
W. Michael Sullivan

_Terrence Gray*_____ 12/17/2010
Assistant Director for Air, Waste and Compliance, RIDEM Date
Terrence Gray

_Alicia Good*_____ 12/17/2010
Assistant Director for Water Resources, RIDEM Date
Alicia Good

_Larry Mouradjian*_____ 12/20/2010
Associate Director for Natural Resources Bureau Date
Larry Mouradjian

_Steve DiMattei*_____ 01/06/2011
EPA Region I, RI Quality Assurance Contact/ Date
Steve DiMattei

_Thomas Getz*_____ 12/14/2010
DEM Quality Assurance Manager Date
*DEM QA Manager has a copy of the original signed Appendix I.

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(X) Quality Management Team ..... By: TDG _ Date: 2/24/11

** Final Quality Management Plan Was Distributed Electronically

Title: DEM Quality Management Plan Revision 7

Originator Name: Thomas Getz DEM Quality Assurance Manager/Quality Team