Attachment A

RHODE ISLAND
DEPARTMENT OF ENVIRONMENTAL MANAGEMENT
235 Promenade Street, Providence, RI 02908-5767 TDD 401-222-4462

Title and Approval Page

Title: Final Quality Assurance Program Plan

Programs: State Site Investigation & Voluntary Clean-up Program (State Program), Superfund Pre-Remedial Program, Superfund National Priority List (NPL) Program, Department of Defense (DOD) Environmental Restoration Program, Solid Waste & Landfill Closure Program, Targeted Brownfields Assessment Program

Organization: Rhode Island Department of Environmental Management
Office of Waste Management (RIDEM/OWM)

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Approval Signatures:

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Paul Kulpa, Senior Scientist Quality Assurance (QA) Coordinator and DOD Program QA Manager RIDEM/OWM	Date
Robert Schmidt, Engineer Solid Waste & Landfill Closure Program QA Manager, RIDEM/OWM	Date
Kelly Owens, Supervisor State Program QA Manager, RIDEM/OWM	Date
Cynthia Gianfrancesco, Prin. Environmental Scientist CERCLA Program and Target Brownsfield Assessments Program QA	Date

Manager, RIDEM/OWM	
Robert Shewack Project Officer. USEPA	Date
Steven DiMattei QA Chemist, USEPA Region I	Date

Table of Contents

Tables

Figures

Attachments

1.0 Distribution List

Upon approval and implementation of this Quality Assurance Program Plan (QAPP), the original shall be kept with the Quality Assurance (QA) Coordinator. The RIDEM/OWM Program Staff will be required to review this QAPP within 360 days of implementation. New staff hired by the RIDEM/OWM will be required to review this QAPP within 90 days of the hiring date. Once staff has reviewed the QAPP, he/she will be required to sign the "QAPP Distribution List" found in Attachment A. The QA Coordinator will maintain the distribution list. A copy of the approved QAPP will be available on the RIDEM internet website.

2.0 Introduction

The United States Environmental Protection Agency (USEPA) requires that all environmental monitoring and measurement efforts mandated or supported by USEPA have in place a centrally managed QAPP. As stated in USEPA's QA/R5 document, *"Organizations must ensure that data collected for the characterization of environmental processes and conditions are of the appropriate type and quality for their intended use and that environmental technologies are designed, constructed, and operated according to defined expectations."*

Any party generating data under this program has the responsibility to implement minimum procedures to assure that the precision, accuracy, completeness, comparability and representativeness of its data are known and documented. All Quality Assurance/Quality Control (QA/QC) procedures must be in accordance with applicable professional technical standards, USEPA requirements, government regulations and guidelines, and specific project goals and requirements.

This QAPP presents the standard operating policies and procedures of the Rhode Island Department of Environmental Management/Office of Waste Management (RIDEM/OWM) as well as a description of the RIDEM/OWM activities. This document will describe:

1. The RIDEM/OWM functional statement and organization;

2. The basic flow of project activities, including preparation of study plans, report preparation, and peer review;

3. RIDEM/OWM procedures for obtaining analytical support; and;

4. The RIDEM/OWM basic safety program.

3.0 Quality Assurance Statement

It is the goal of the RIDEM/OWM to implement a QAPP for all the environmental activities that generate data. The QAPP is a management tool that will help guarantee that data is of sufficient known quality to withstand scientific and legal challenge relative to the use for which the data is obtained. The elements of a QAPP should be reviewed annually and updated every five years to reflect any operational changes in the organization per the Department's Quality

Management Plan.

All data gathering field activities performed by the RIDEM/OWM personnel will require adherence to this QAPP and the development of a site specific SAP. The majority of the sampling activities performed by the RIDEM/OWM will not require the development of a site specific QAPP.

Consultants retained by the Department to perform projects funded by the USEPA such as National Priority List (NPL) sites, sites which are to be nominated to the NPL, Targeted Brownfield's Site Assessments (TBAs) and the Brownfield's Cleanup Revolving Loan Fund are required to submit a site specific QAPP based on USEPA QA/R-5, for USEPA and State review and approval prior to engaging in site activities. Elements that are not addressed in the QAPP are included in the SAP if a SAP is generated for the project. RIDEM Procedures for Developing QAPPs and SAPs is further described in SOP OD-QM-2.
(http://www.dem.ri.gov/pubs/sops/qm2.pdf)

3.1 Quality Assurance Management

The RIDEM/OWM regulates and conducts the investigation and clean up of hazardous materials and petroleum releases to the environment. There are approximately 1896 sites in the RIDEM/OWM inventory of which approximately 851 are active projects.

The State Program Supervisor: Kelly Owens; the Superfund Program Deputy Chief: Matthew DeStefano; and the Solid Waste Program Supervisor: Laurie Grandchamp will direct staff engaged in site investigations. The management of the Quality Assurance Program for these sections has been assigned to Paul Kulpa. An organizational chart for these sections within the Office of Waste Management is shown on Figure 3-1.

3.2 Organization

The investigation and cleanup of hazardous materials and petroleum releases is primarily performed under one of four sets of regulations listed below.

1. The Rules and Regulations for the Investigation and Remediation of Hazardous Material Releases DEM-DSR-01-93 as amended (Remediation Regulations) - for releases of hazardous materials. (http://www.dem.ri.gov/pubs/regs/index.htm#WM). A summary of the State Site Remediation Process is provided in Figure 3-2.

2. The Rules and Regulations for Composting Facilities and Solid Waste Management Facilities DEM-OWM—SW04-01 (Solid Waste Regulations)-for Solid Waste Landfills, Transfer Stations and Collection Stations, Incinerators and Resource Recovery Facilities, Waste Tire Storage and Recycling Facilities, Petroleum Contaminated Soil Processing Facilities, Facilities that Process Construction and Demolition Debris and Solid Waste Composting Facilities. (http://www.dem.ri.gov/pubs/regs/index.htm#WM)

3. The Oil Pollution Control Regulations- For above ground petroleum facility releases,

under the Office of Compliance & Inspection (OC&I). OC&I coordinates with other RIDEM offices including RIDEM-OWM for investigation of complaints and suspected violations of environmental laws and regulations. OC&I's Emergency Response program responds to releases of oil or hazardous materials 24-hours per day, 7-days per week and ensures clean up of the environment as a result of these spills or releases. (http://www.dem.ri.gov/programs/benviron/compinsp/index.htm)

4. The Underground Storage Tank Regulations DEM-DWM-UST05-93 as amended - For leaking underground storage tanks. Note that the UST Program has a separate QAPP.

RIDEM/OWM also works with two Federal Programs as a support agency, the USEPA and the Department of Defense (DOD).

The USEPA program includes:

a. Targeted Brownfields Assessments are funded by USEPA and performed by environmental consultants under contract with the State and/or DEM personnel. Public or Non-Profit organizations (that partner with a public entity) that are acting as a voluntary party and have redevelopment plans for a Brownfield site are eligible for USEPA funding. The environmental consultants will have EPA approved Generic QAPPS and will submit a site-specific QAPP for USEPA and RIDEM review and approval.

b. The Superfund Pre-Remedial program provides management assistance for assessments performed by USEPA's contractor and conduct investigations of sites listed on the Comprehensive Environmental Response, Compensation and Liability Act of 1980 (CERCLA), as amended, commonly referred to as Superfund. Assessments conducted by USEPA's contractor or by RIDEM are submitted to USEPA for review and approval and include Site Discovery (SD), Preliminary Assessments (PA), Site Inspection (SI), Site Reassessments (SR) and Expanded Site Inspections (ESI).

   Site Investigations that are performed by RIDEM personnel are conducted in accordance with a Multi-Site Cooperative Agreement between RIDEM and USEPA, and technical specifications provided to USEPA. Fieldwork is performed by RIDEM personnel, the Department's Field Investigation and Remediation Support Team (FIRST) or through the Technical Assistance Contract (TAC), further described in Section 3.6.

c. The Superfund National Priority List (NPL) remediates hazardous material releases. The RIDEM ensures that the State requirements are met as part of that process. This program is most effective on large complicated sites and extremely burdensome on small and less complicated sites.

The Department of Defense (DOD) Environmental Restoration program investigates active federal facilities and formerly used defense sites by conducting Site Investigations, Remedial

Investigations and Feasibility Studies to evaluate alternative methods of clean up and determine the most feasible remedial alternative for the site. The RIDEM ensures that the State requirements are met as part of that process.

The Department has developed a Landfill Closure Program for the closure of inactive or abandoned Solid Waste Landfills that are not currently being evaluated under another State or Federal Program. A summary of the Landfill Closure Process is provided in Figure 3-3.

Other responsibilities of the RIDEM are to track and act as a repository for information pertaining to hazardous materials and petroleum releases to the environment.

Since RIDEM/OWM oversees the clean up of resources regulated by other RIDEM programs, it is necessary to work closely with those programs. They include the Office of Freshwater Wetlands, Office of Water Resources and Office of Air Resources. In addition RIDEM/OWM coordinates activities with other State and quasi-state agencies (i.e. Rhode Island Department of Transportation, Rhode Island Department of Health, Coastal Resource Management Council, and Narragansett Bay Commission, Rhode Island Commerce Corporation,).

Soil and groundwater clean up criteria, necessary for compliance with this QAPP are provided in the above-listed regulations and are consistent with the land use. These criteria however, are not applicable to actual or potential impacts to surface water or sediments, or ecological concerns. There is a provision within the Remediation Regulations for the development of a site-specific risk assessment. An ecological risk assessment must be performed if there is an actual or potential impact to surface water, sediments, or ecological concerns.

3.3 Personnel Qualifications

There are several job titles within the RIDEM/OWM including the following titles: Environmental Scientist, Jr. Sanitary Engineer, Sanitary Engineer, Senior Sanitary Engineer, Senior Environmental Scientist, Senior Electronic Computer Programmer, Senior Clerk Typist, Principal Sanitary Engineer, Principal Environmental Scientist, Fiscal Clerk, Electronic Computer Operator, Engineering Technician IV, Deputy Chief, Chief, Assistant Administrative Officer, Supervising Sanitary Engineer, Associate Supervising Sanitary Engineer and Senior Word Processing Typist. The job descriptions for the following titles are included in Attachment B and updated periodically on the web (http://hrwebsrvr.doa.state.ri.us/hr1/HR1.home).

Figure 3-1 shows the organizational hierarchy of the RIDEM/OWM. The QA Manager(s) will receive specific QA/QC training to ensure that the QA Manager(s) are qualified to perform the tasks relating to the QAPP. This training will include attending conferences and training classes provided by private industry or USEPA.

It shall be the policy of the Department to provide resources to allow for RIDEM/OWM personnel to receive training related to environmental assessment and remediation, such as site assessment, data gathering, sample collection, groundwater contamination, corrective action technologies and health and safety issues

3.4 Assignment of Responsibilities

The Office Chief shall designate the QA Coordinator and QA Manager(s) for the RIDEM/OWM. The current QA Coordinator is a Senior Environmental Scientist and the QA Manager(s) are listed below.

The Office Supervisors, Deputy Chief and Chief are responsible for seeing that RIDEM/OWM personnel whose responsibilities include the collection or supervision of the collection of field data, such as any site investigations, environmental measurements and/or monitoring, receive adequate training in order to provide the required QC for all environmental monitoring and/or measurement. In addition, supervisory staff may periodically observe the employees, from their respective sections, under actual field operating conditions to insure that the Standard Operating Procedures (SOPs), as outlined in this document, are being followed.

Each Section within the RIDEM/OWM will be responsible for addressing the specific QC aspects covered by this QAPP and relevant to the respective Section. Each of the Office Sections are responsible for managing records in accordance with RIDEM's Records Management Policy and Section 5.0 of this QAPP. Each of the Office Sections is responsible for distributing data and reports to site owners and/or operators and the public.

RIDEM/OWM personnel conduct a variety of inspections, investigations, and contractor oversight activities. These activities include field oversight and work product overview of contractors (including overview of responsible party clean-up activities). Project managers are responsible for reviewing QA/QC material generated for all sampling projects and notifying the QA Manager and the appropriate Section Supervisors of any observed problems. QAPPs developed by outside contractors shall be reviewed and approved by a USEPA QA/QC staff person and the State site project manager. The project manager will review all active QAPPs periodically as necessary and document this review, including any changes to the work plan. Any QAPP review (e.g., for technical validation) by a person other than the RIDEM project manager will likewise be documented.

Program Manager

Name: Andrew Manca
Title: Chief Program Development
Phone: (401) 222-4700 ext. 2022

Responsibilities:

- Assist Department managers in efforts to resolve problems or improve on programs, policies and regulations,

- Assist the Department in improving its effectiveness, efficiency and accountability, and to increase both external and internal support,

- Facilitate resolution of complaints in coordination with Department staff and management,

and shall make recommendations to the Director on matters that cannot be resolved through such coordination, and

§ Oversees and leads Quality Assurance Team.

Quality Assurance (QA) Coordinator

Name: Paul Kulpa
Title: Senior Environmental Scientist, RIDEM/OWM
Phone: (401) 222-2797 ext. 7111

Responsibilities:

§ Serves as the official state point of contact with USEPA for all QA-related matters, which are pertinent to RIDEM/OWM,

§ Serves as a member of the Quality Assurance Team for the Department,

§ Management of the quality assurance program for the RIDEM/OWM,

§ Ensures that corrective actions occur as effectively as possible,

§ Reviews and approves the RIDEM/OWM QAPP and revisions generated within this program, and

§ Ensures that the specific quality control (QC) procedures outlined in this QAPP are followed and tracking and recording the results of specific QC programs.

Quality Assurance (QA) Manager(s)

Name	**Title**	**Phone**
Robert Schmidt	Engineer	(401) 222-2797 ext. 7260
Paul Kulpa	Scientist	(401) 222-2797 ext. 7111
Cynthia Gianfrancesco	Scientist	(401) 222-2797 ext. 7126

Responsibilities:

§ Reviews and approves the RIDEM/OWM QAPP and revisions generated within this program,

§ Annual updates of the RIDEM/OWM QAPP to reflect operational changes of the organization and changes/additions to sampling procedures, policies and guidance, and

§ Ensure that the site project manager generates the proper documentation for all data collection activities and forwards them to the appropriate people.

3.5 Communications

The Quality Assurance (QA) Coordinator will maintain all files and reports describing the QA activities within the RIDEM/OWM. Private laboratories will be required to maintain their own files and reports describing these respective QA activities.

The award official for all RIDEM/OWM Program grants, cooperative agreements, contract and interagency agreements should communicate to the QA Coordinator. Guidance and information of particular value is available in the following documents, as updated:

"USEPA Requirements for Quality Management Plans", March 2001, USEPA QA/R-2

"USEPA Requirements for Quality Assurance Project Plans", March 2001, USEPA QA/R-5

3.6 Facilities & Services

Facilities include:

1. RIDEM/OWM contract laboratories. The contract laboratories are selected every four years through the State vendor bidding process and as part of the bidding process the lab must provide documentation stating they can meet all of the RIDEM/OWM needs and QA/QC requirements. A copy of the current laboratories Quality Manuals are included in Attachment C.

   Prior to RIDEM/OWM awarding a contract to a laboratory it must submit a package that describes the laboratory and its procedures and capabilities. This package must include specific methods and detection limits. Also, the laboratory must submit a copy of their most recent Quality Manual and specific the SOPs upon request. Laboratory facilities shall be adequate to perform the necessary analysis and the laboratory shall be provided with the proper services to maintain satisfactory lighting, temperature, humidity, ventilation and safety. All laboratories listed on RIDEM's master price agreement (MPA) must provide Rhode Island Department of Health (HEALTH) drinking water certification and be accredited by a National Environmental Laboratory Accreditation Program (NELAP) accrediting authority for the RCRA fields of testing for groundwater, soils, sediment, sludge, waste and/or other solid matrices. All test procedures must follow the methodology in USEPA SW-846 (Test Methods for Evaluating Solid Waste, Edition II) or for those analyses not included in USEPA SW-846, other USEPA test methods or those in Standard Methods for the Examination of Water and Wastewater. The specific test method used must be listed according to reference and method number. Any modifications made to these methods by the laboratory must be noted and described.

2. The Department's Technical Assistance Contract (TAC). The TAC is a four-year contract. The TAC provides expert consulting, project evaluation, field investigation

services and oversight on sites and projects being investigated, remediated or considered by the RIDEM. For projects where field investigation services are conducted through the TAC, the contractor will provide select SOPs for sample collection and field equipment.

3. The Department's Field Investigation and Remediation Support Team (FIRST). FIRST maintains and calibrates all equipment, including the Department's GeoprobeÒ, in accordance with the UST Program's QAPP and SOP Manual. Additional information and process for requesting and scheduling field work is available to RIDEM/OWM on a user shared drive (Z:\WASTE\SITEREM\FIRST GROUP).

The contract laboratories and TAC are updated on the Rhode Island Vendor Information Program (RIVIP) website as noted below:

1. Technical Assistance Contract: MPA #309 website:
http://www.purchasing.ri.gov/MPA/MPASearch.aspx

2. Analytical Laboratory Services: MPA #48 website:

http://www.purchasing.ri.gov/MPA/MPAAwards.aspx?MPANumber=48&MPADesc=Analytical%20Laboratory%20Services

4.0 Quality Objectives and Criteria

Several programs exist in the Office of Waste Management. It is the overarching goal of these Programs to ensure that investigations and remedial activities are conducted in a consistent manner that adequately protects human health and the environment and which are also consistent with the likely usage of the resource after the remedy. The RIDEM/OWM is involved with the clean up of resources that involve other programs, including the Offices of Freshwater Wetlands, Water Resources and Air Resources and works closely with these programs.

Consideration of data quality should be such that the Program Objectives, described below, will be met using appropriate analytical methods (Section 6.3).

State Site Investigation, Voluntary Clean-up & Targeted Brownfields Assessment Program

This program was established under State authorities and is Federally funded through the USEPA Section 128(A) (subtitle C) grant program. The goal of the program is to provide fair, comprehensive and consistent regulation of the investigation and remediation of hazardous waste and hazardous material releases consistent with federal program, yet implemented in a more timely and cost-effective manner. The State program is designed to determine if a site poses a threat to human health and the environment and efficiently determines a remedy that is effective but not overly burdensome to the parties involved.

This program also supports the redevelopment and reuse of contaminated sites through the Brownfields program. Sites are identified, evaluated, and cleaned up, both in a reactive and proactive manner, and brought back to beneficial reuse in Rhode Island communities.

This program is more cost effective, less of a burden and quicker than the federal program.

Program Purpose

To regulate and provide technical oversight for the investigation and remediation of releases of hazardous waste or hazardous material to the environment; to ensure that those investigations and remedial activities are conducted in a consistent manner that adequately protects human health and the environment; and to enforce regulations regarding the proper disposal of abandoned hazardous waste.

Program Objectives

- To support the reuse and redevelopment of contaminated sites through the Brownfields program;
- To provide a protective, efficient and cost-effective program as an alternative to the federal process and the stigma associated with it;
- To encourage voluntary responses to contamination discovered on properties within the State;
- To characterize and evaluate the impacts from releases of hazardous material to the environment;
- To determine whether remedial action is warranted under the program;
- To require and oversee the implementation of remedial actions designed to minimize, or eliminate, the impacts from releases of hazardous materials; and
- To effectively track the progress and report the level of effort expended completing tasks under this program.

Superfund Pre-Remedial Program

The Superfund Pre-Remedial program is administered under CERCLA as amended by the Superfund Amendments and Reauthorization Act (SARA) of 1991. The purpose of the program is to assess and cleanup sites of federal interest to uses desired by the surrounding community in a manner protective of human health and the environment. USEPA is authorized to use a trust fund to pay for this work and to pursue recovery of USEPA expenditures from parties potentially responsible for the contamination.

Program Purpose

To conduct an increasingly complex series of evaluations of federally-listed suspected hazardous waste sites in order to determine if those sites pose sufficient threats to human health and the environment to be listed on the National Priorities List and become eligible for federally funded investigation and clean-up under Superfund.

Program Objectives

- To recommend listing of suspected hazardous waste disposal sites on the federal inventory, CERCLA, when the Department has determined that the responsible parties are unwilling or unable to sufficiently investigate and clean-up the site under the State program;

- To conduct, or evaluate, preliminary assessments of suspected hazardous waste disposal sites to determine if further action is warranted under the program;

- To conduct, or evaluate, site investigations of suspected hazardous waste disposal sites, including determining actual and potential impacts from those sites, to judge whether further action is warranted under the program;

- To conduct, or evaluate, numerical evaluations and rankings of sites using the federal Hazard Ranking System to determine if those sites should be listed on the National Priorities List and become eligible for further investigation and clean-up under Superfund; and

- To effectively track and report the level of effort expended completing tasks under this program for compliance with grant conditions and effective program management.

Superfund National Priority List Sites and Department of Defense Environmental Restoration Program

This section is responsible for fulfilling the Department's obligations relating to Superfund National Priority List sites, which are the sites posing the greatest threats to human health and the environment as ranked through a national process. There are currently 12 NPL sites in Rhode Island.

This section is also responsible for fulfilling the Department's obligations and objectives under programs addressing DOD-lead investigations and remedial actions at two federal-facility Superfund sites, which are comprised of approximately fifteen distinct individual sites, and approximately fifty federal-lead FUD site investigations at which the State has sole enforcement oversight. Recent decisions by the federal government to down-size the military has resulted in the creation of a third DOD program known as the Base Realignment and Closure (BRAC) Program.

Program Purpose

The nature and extent of contamination at Department of Defense (DOD) sites, both currently active Federal Facilities and formally used defense sites (FUDs), by conducting Remedial

Investigations; to evaluate alternative methods of clean-up documented in a Feasibility Study to determine the most feasible remedial alternative for the site. At the active Federal Facility sites, the Department has entered into a three party agreement with the Navy and the USEPA to facilitate cooperation towards achieving remediation.

Program Objectives

§ To ensure that the environmental impacts associated with the past and present activities at NPL sites are thoroughly investigated and to ensure that the appropriate Remedial Action is taken to protect human health and the environment;

§ To ensure that the environmental impacts associated with the past and present activities at DOD sites are thoroughly investigated and to ensure that the appropriate Remedial Action is taken to protect human health and the environment;

§ To review and evaluate Remedial Investigation plans, Feasibility Studies and Records of Decisions for corrections to ensure that they are technically sound and in compliance with State laws and regulations; and

§ To participate with the DOD and the USEPA in the accelerated clean up of closing military bases (Naval Construction Battalion Center, Davisville, RI) for rapid reuse by the local community, while protecting human health and the environment.

Waste Facility Management Program

Program Purpose

The goal of Waste Facility Management (Hazardous/Solid/Medical) is to reduce waste and conserve energy and natural resources. This Program includes licensing and permitting components of the hazardous and solid/medical waste management programs. License and permit applications are reviewed by program staff, decisions are rendered on such applications, and inspections of licensed and permitted facilities are conducted to ensure compliance with permit conditions and applicable laws and regulations.

Hazardous waste and medical waste management programs are overseen by Ms. Yan Li, who reports to the Solid Waste Program Supervisor. Hazardous Waste follows the Office of Compliance and Inspection's QAPP. Solid waste management facilities, which include compost facilities, transfer stations, C&D processing facilities and solid waste landfills, are overseen by Mr. Daniel Russell, who reports to the Solid Waste Program Supervisor.

Program Objectives

§ To assure compliance with waste management regulations.

§ To review and respond timely to license and permit applications.

- To perform compliance inspections at licensed and permitted facilities.

- To design and implement programs that are consistent with new waste management technologies.

- To reduce the risks to exposure to communicable diseases through the proper management of medical waste.

- To assure the proper tracking of hazardous waste.

Landfill Closure Program

Program Purpose

The ultimate goal of the Landfill Closure Program is to work with municipalities to minimize any environmental risks associated with these landfills and to streamline the processes involved with the investigation and closure of municipal landfills.

Program Objectives

- To address actual or potential human heath and environmental risks which may have resulted from abandonment or incomplete closure of landfills.

- To satisfy all applicable State and Federal regulations regarding solid waste facilities and remediation of contaminated sites in a single coordinated review process.

- To facilitate potential limited reuse of the landfill property, once adequate investigation, risk assessment, and remediation have been completed at the site.

5.0 Documents & Records

"Public record" or "public records" has been derived from two RI statutes: the Access to Public Records Act (RIGL §38-2-2) and the State Archives statute (RIGL §42-8.1-17) and shall mean:

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 the agency's activities.

Document control is a systematic procedure for ensuring that all sampling/monitoring documents are properly identified and accounted for during and after the completion of investigations and project reports. Document control will encompass the following:

1. Document inventory and assignment record; and

2. Document file repository

The term document control, as it applies to RIDEM/OWM inspections and investigations, refers to the maintenance of inspection, investigation and report project files. The appropriate project manager shall maintain all project files. All documents as outlined below shall be kept in project files. RIDEM/OWM personnel may keep their own files, however, all official and original documents relating to inspections and investigations shall be placed in the official project files. The following documents shall be placed in the project file:

1. A copy of the study plan;

2. Original Chain-Of-Custody Records;

3. All records obtained during the investigation

4. A complete copy of the analytical data reports and memorandums transmitting analytical data

5. QAPP, Work Plans, Health and Safety Plans (HASPs) and SAPs

6. All official correspondence received by or issued by the RIDEM/OWM relating to the investigation including records of telephone calls;

7. One copy of the sampling plan;

8. One copy of the final report and transmittal memoranda; and

9. Any other relevant documents related to the original investigation/inspection or follow-up activities related to the investigation/inspection.

5.1 Field Inspections & Photo documentation

The inspectors are instructed to document factual observations; under no circumstances are any personal opinions or irrelevant information to be filed in the official project files. Professional observations are placed either in field notebooks, in the attached field inspection report (Attachment D-Reserved) or in a program-specific field inspection report. The project manager shall review the file at the conclusion of the project to ensure that it is complete.

Photo documentation will be stored in the project file and will include at a minimum, the date and time of the investigation, site name, site location, personnel present and description of the photograph. When a field investigation report has been created referencing digital photographs, RIDEM/OWM personnel may use OWM Standard Procedures for Storage of Digital Photographs (Attachment D-Reserved). Or digital pictures may be stored on a separate CD

including the minimum information necessary as outlined above. In the future, digital photographs can be stored in a site directory subfolder on the network server, once capacity is available.

5.2 Confidential Records

The following records shall not be deemed public:

1. Trade secrets and commercial or financial information obtained from a person, firm, or corporation, which is of a privileged or confidential nature;

2. Preliminary drafts, notes, impressions, memoranda, working papers, and work products;

3. The contents of real estate appraisals, engineering or feasibility estimates and evaluations made for or by RIDEM/OWM relative to the acquisition of property or to prospective public supply and construction contracts, until such time as all of the property has been acquired or all proceedings or transactions have been terminated or abandoned; provided the law of eminent domain shall not be affected by this provision;

4. All investigatory records of public bodies pertaining to possible violations of statute, rule, or regulation other than records of final actions taken provided that all records prior to formal notification of violations or noncompliance shall not be deemed public;

5. Any SI Worksheets developed as part of USEPA's Pre-Remedial assessments, and;

6. Records, reports, opinions, information, and statements required to be kept confidential by federal or state law, rule, rule of court, or regulation or by state statute.

5.3 Databases

Databases include information regarding enforcement actions generated by RIDEM/OWM inspections and investigations, as well as significant routine environmental activities performed. The Office's electronic computer operator/data manager shall maintain all databases. The electronic computer operator/data manager will provide document accountability to the appropriate data users and to those who will use the data results to make decisions. At the conclusion of the environmental data gathering activities all documents will be cataloged, categorized, and have a unique identifier. The database will provide the name of the specific site, its location, reports which are completed, and status of the project (active, inactive, or closed).

RIDEM/OWM is exploring the implementation of EQuIS and STORET systems as a means of storing, sharing and verifying RIDEM's environmental data.

5.4 Record Retention/Archives

RIDEM/OWM archives are catalogued for efficient file storage and retrieval using a computer database and are stored in the Foundry Basement. Scanning of the original document or conversion to microfilm is also used for record retention and archiving public records.

6.0 QA Project Plan (QAPP) & Sampling and Analysis Plan (SAP)

The SAP (aka Site-Specific QAPP) is a single document that integrates the project objectives and QAPP into a coherent plan for collecting defensible data that is of known quality and adequate for the data's intended use. If a SAP cannot contain all QA information then a separate QAPP will be generated. The SAP will include reference by number to the SOPs to be followed.

The SAP is a formal investigation document that provides the detailed site-specific objectives, specifications and procedures needed to conduct a successful field investigation. This document will define the proper procedures to be followed in the collection, preservation, identification, and documentation of environmental samples and field data. The SAP must detail the QA/QC goals and protocols for data collection activities to ensure that the data generated by these activities are of a quality commensurate with their intended use. This includes a sampling design for obtaining environmental data of sufficient quantity and quality to satisfy the project objectives, as well as, the action levels and/or reporting levels for the specific analytical parameters. During the implementation phase of the data collection life cycle, the SAP is executed and the samples are collected and analyzed.

A SAP must be prepared for each site where environmental data collection activities will take place. The SAP should be updated (amended) when the scope of work changes significantly from the scope of work described in any previous plan. All sites investigated by RIDEM/OWM personnel require the development of a SAP (Attachment E).

It is assumed and expected that field samplers and analytical laboratories will follow approved methods and adhere to generally accepted “good laboratory practices”.

It should be mentioned that occasionally certain quality assurance requirements cannot be met. In such cases, the reason for the deviation should be stated in the SAP along with the expected or observed impact on the data.

In order to insure the generation of data of acceptable quality, the SAP and/or the QAPP must include components that will guarantee that project objectives are met.

Data collection efforts will involve:

1. Determination if a QAPP and/or SAP is appropriate

2. Design of a sampling and analysis plan (SAP) to meet the DQOs;

3. Implementation of the SAP; and

4. Assessment of the data to determine if the project objectives are met.

6.1 Sampling Methods

The Standard Operating Procedures for sampling and other related environmental field activities for RIDEM/OWM SAPs are listed in Table 6-1 and included in Attachment F. Depending on circumstances and needs, it may not be possible or appropriate to follow these procedures exactly in all situations due to site conditions, equipment limitations, and limitations of the standard procedures. Whenever these procedures cannot be followed as written, they may be used as general guidance with any and all modifications fully documented in either the SAP or the final report of results. Any changes in SOPs should be approved by the QA Manager. In cases when a SOP for a particular sampling methodology or field activity is not be listed in the generic QAPP, RIDEM/OWM and/or RIDEM's consultant will either develop a site specific SOP, and/or utilize the consultants SOP which has been previously approved under the QAPP process. The SOPs should be controlled documents and revisions should be indicated on each page in the right hand corner along with the revision date.

6.2 Sample Handling and Custody

Chain of Custody procedures and a sample chain of custody are included in Attachment F. The following will apply to field documentation:

1. Entries made in logbooks, field records and forms, sample labels and tags, and chain of custody documents shall be made only with waterproof ink and/or grease pencils. If lead pencils or other writing instruments are used, note the reason in the logbook,

2. Correct errors by drawing a single line through the error and enter the correct information. Corrections should be signed and dated by the person making the correction. That person's signature should be recorded the for reference,

3. Initial and date all corrections (a list of names and initials should be part of the written record) and

4. Use bound logbooks and field record overview checklists.

6.3 Analytical Methods

The State, RIDEM/OWM's contractor, or the potentially responsible party (PRP) must use USEPA methodology while conducting activities that generate environmental data. Use of these methodologies and QC procedures is preferred since these procedures would simplify review of QAPPs, ensure uniformity to the remedial program and facilitate data audits. The RIDEM/OWM approved USEPA laboratory methods, as updated, are listed in Appendix B of the Remediation Regulations.

The Quality Assurance Manuals for RIDEM's contract laboratories are included in Attachment C. If a required analysis is not documented in the generic QA Manual, a copy of the lab's SOP will be requested and attached to the site-specific SAP. The following analytical methods

apply to most of the samples that are submitted to or collected by RIDEM/OWM personnel for analysis:

In Rhode Island, laboratories must be certified by the State or USEPA. The requirements of the Rhode Island (RI) Laboratory Certification Program is described in the Rhode Island Rules and Regulations for Certifying Analytical Laboratories (R23-16.2A/LAB), dated September 2007. These regulations apply to in-state and out-of-state laboratories analyzing potable and non-potable water samples. The RI Rules and Regulations are based on the USEPA Manual for the Certification of Laboratories Analyzing Drinking Water; USEPA 815-R-05-004, dated January 2005, USEPA Supplement 2 to the Fifth Edition of the Manual for the Certification of Laboratories Analyzing Drinking Water dated November 2012, , the 40 CFR Part 136 (non-potable water) and 40 CFR Part 141 (potable water).

Potable Water

Approved methods, which include the 500 series, are listed in 40 CFR Part 141. Recommended methods for secondary contaminant monitoring are listed in 40 CFR Part 143. A listing of in state and out of state laboratories certified by the RI Department of Health (HEALTH) for potable water is available on-line.
[http://www.health.ri.gov/labs/instate.php]

Non-Potable Water

Laboratories testing services of non-potable water (wastewater and other types of water excluding drinking water) must be certified by the State for the analytes and methods for the project. Approved methods are listed in 40 CFR Part 136 and include the 600 series, standard methods and ASTM methods. A listing of in state and out of state laboratories certified by HEALTH for non-potable water is available on-line.
[http://www.health.ri.gov/labs/instate.php]

RCRA Fields of Testing

The SW-846 test methods for evaluating solid waste were written for the analysis of environmental samples in the solid or liquid phase, including groundwater, soil, sludge, multiphase samples, etc. The target compound lists include the Priority Pollutants and many additional organics. All test procedures must follow the methodology in USEPA SW-846, Test Methods for Evaluating Solid Waste, Edition II, as updated or for those analyses not included in USEPA SW-846, other USEPA test methods or those in Standard Methods for the Examination of Water and Wastewater. The specific test method used must be listed according to reference and method number. Any modifications made to these methods by the laboratory must be noted and described.
[http://www.epa.gov/SW-846/sw846.htm]

CLP Program

The USEPA Contract Laboratory Program (CLP) provides for analyses of all types of media for hazardous substance list organic compounds and priority pollutant inorganic compounds. CLP is currently used for sampling conducted in all Pre-Remedial and most RI/FS activities; however, CLP may not be required for all RI/FS activities. CLP analyses are typically used for risk assessment and to obtain highly documented data. CLP equivalent data, capable of being fully validated (meet the USEPA data validation requirements) is collected by RIDEM personnel for the Pre-Remedial CERCLA Program, at sites investigated using USEPA funding.

All other environmental measurements which are not classified as water quality measurements, and that are performed by RIDEM/OWM will have to be collected and analyzed in accordance with QA requirements. Equipment necessary for these measurements must be adequate and the project managers and QA Manager must be knowledgeable of equipment capabilities and proper equipment operation.

6.4 Quality Control

Guidelines for QA/QC samples for field sampling programs are outlined in Table 6-3.

Corrective action procedures are defined in Table 6-2, (Data Assessment) and in each laboratory's QAPP. Corrective action may be required and in some cases, resampling may be requested (i.e. the deviation significantly impacts the stated DQOs) if:

- Samples submitted to the laboratory are unable to be analyzed due to missing labels, broken bottles/seals or insufficient sample volume;

- Elevated reporting limits or unusual change in reporting limits;

- Quality Control requirements for the project are not met.

If additional data collection is not possible, the usability of the available data will be discussed.

6.5 Instrument/Equipment Maintenance

All equipment shall be routinely maintained and calibrated according to the service and instruction manuals. Table 6-4 summarizes field equipment calibration and corrective action procedures. FIRST maintains and calibrates all equipment, including the Department's GeoprobeÒ, in accordance with the UST Program's QAPP and SOP Manual.

For projects where field investigation services are conducted through the TAC, the contractor will maintain and calibrate all equipment and provide select SOPs for sample collection and field equipment.

6.6 Non-Direct Measurements

A number of factors relate to the quality of data and its adequacy for use in the assessment process including the following considerations:

1. Source of the data,
2. Age of the data,
3. Analytical methods used,
4. Detection limits of methods, and
5. QA/QC procedures and documentation.

Methods used for sample collection are as important to consider as the methods used for sample analysis. Those considerations fall into two broad categories: statistical and standard operating procedures (SOPs). The statistical considerations relate to the representativeness of the data and the level of confidence that may be placed in conclusions drawn from the data. Following SOPs ensures sample integrity and data comparability and reduces sampling and analytical error. Typical issues to consider include the following:

1. Sampling objective and approach,
2. Sample collection methods,
3. Chain of custody documentation,
4. Sample preservation techniques,
5. Sample shipment methods, and
6. Holding times.

7.0 Assessment & Oversight

All non-routine reports and study plans generated by the RIDEM/OWM shall be peer reviewed. The project manager shall consider all comments from reviewers. Appropriate changes/corrections shall be made and the entire document shall be resubmitted for peer review.

Periodic assessments of the QAPP may take place in the following ways:

1. Performance Evaluation

   Performance evaluation studies can be used to measure the performance of the laboratory on unknown samples. Performance evaluation samples are typically submitted to the laboratory as blind samples by an independent outside source. The results are compared to predetermined acceptance limits. Performance evaluation samples can also be submitted to the laboratory as part of the QA function during internal assessment of laboratory performance. The laboratory should maintain records of all performance evaluation studies. Problems identified through participation in performance evaluation studies should be immediately investigated and corrected. Laboratories that are accredited by NELAP contain criteria for proficiency testing (PT).

2. Internal Assessment

Personnel responsible for performing field and laboratory activities are responsible for continually monitoring individual compliance with the QAPP and SAP. This includes review of field logbooks, sampling equipment calibration, chain of custody and sampling handling procedures. The SAP includes contact information for communicating field problems, which is part of field corrective action. The QA Manager reviews procedures, results and calculations to determine compliance with the QAPP and SAP. The results of this internal assessment are reported to the QA Coordinator with suggestions and/or recommended requirements for a plan to correct observed deficiencies.

3. External Evaluation

   Personnel external to the RIDEM/OWM may review the field and laboratory activities. Such an assessment is an extremely valuable method for identifying overlooked problems. The result of the external assessment should be submitted to QA Manager with suggestions and requirements for a plan to correct observed deficiencies.

Annually, the RIDEM/OWM QA Coordinator submits the QA System Annual Program Self-Assessment to the Program Manager. A copy of the Self Assessment form can be found in RIDEM's Quality Management Plan (http://www.dem.ri.gov/pubs/qmp2007.pdf http://www.dem.ri.gov/pubs/sops/qm6.pdf).

8.0 Data Review, Verification, Validation

Section 6.4 and Table 6-2 summarizes the data assessment process and includes corrective action for the data that does not meet the acceptance criteria. Once the data has been assessed, the results can now be compared to the project's data quality objectives (DQOs).

The uncertainty associated with each data measurement activity should be considered when data is evaluated. Although data may be validated analytically, the level of precision of a particular data point may not provide sufficient certainty for use in a decision.

It is important to recognize the distinction between uncertainties associated with a measurement activity and uncertainty associated with a decision during development of DQOs. The uncertainty associated with a measurement activity is a function of the statistical distribution of errors for each reported concentration value. At a typical site, many measurement activities are performed and much data is obtained. Decisions are made after analyzing and summarizing the data. The uncertainty associated with a decision is a function of the statistical distributions of the factors that were used in reaching the decision. Assessment of data adequacy, then, has two steps. The first step is data validation. The second step is determining if the data is sufficient to reduce the uncertainty surrounding a decision to an acceptable level.

8.1 Verification & Validation Methods

Given that analytical procedures are not perfect, it is commonplace to find that the reported concentration and actual concentration are not identical. The difference between the reported concentration and the actual concentration of a sample is the analytical error. Without knowledge of the potential magnitude of the analytical error it is impossible to judge the significance of a reported concentration. The level of assurance will vary depending on the use of the program and the use of the data. In other words, all data uses do not require the same quality of data, what is required, however, is that all data collected be of known and documented quality.

Precision

The precision required for a particular study will depend upon the difference between background levels and the action level. Measurements of chemicals that have a very low action level (low ppb) will require much greater precision than would measurements of a chemical with the action level in the ppm range. The amount of preparation that samples undergo prior to analysis will also greatly influence the precision of the measurement process.

Laboratory precision, referred to also as analytical precision, is only one part of the total precision of the measurement process leading from sample collection through data reporting. Selection of an acceptable precision level should not be based solely on what is attainable in the laboratory. Once the sample is submitted to the laboratory much of the sample-to-sample variation has already been introduced into the sample by activities in the field.

A key factor to remember when making a decision on the desired level of precision is that the selection should be based on risk of exposure if protection of public health and the environment is the principle matter of concern. The detection limits, the sampling methods and the sample handling procedures must then be specified on the basis of the levels of pollutants judged harmful by the risk assessment. Where litigation is a key factor and costs are high, the choice of techniques for assuring adequate precision becomes important.

Normally precision is measured by the standard deviation of the data set, however, the range can also be used. Replicate QC samples are submitted from the field to provide a means of determining the precision of the measurement process. Two types of samples should be used for this purpose. Routine samples should be submitted as either splits or collocated samples. In addition to the routine samples, field audit samples also should be submitted on a regular basis.

Since the precision data quantify the scatter of results about a mean value, a lower precision value means less scatter. The relative percent difference (RPD) is further described in Table 6-2, Data Assessment. The following formula can be used to measure precision from field duplicate samples:

Relative Percent Difference:

$$\%RPD = \frac{|X1 - X2|}{\frac{X1 + X2}{2}} \times 100\%$$

RPD = Relative Percent Difference

X1 = Original Sample Result
X2 = Duplicate Sample Result

Accuracy

Accuracy is controlled primarily by the laboratory and is reported as bias. Accuracy is most frequently reported as percent recovery, or percent bias. A 100 % recovery indicates a completely accurate measurement. Bias reports the difference of the measured result from the true value. A completely accurate measurement would have zero percent bias; the lower the percent bias, the more accurate the measurement.

Analysis of known concentrations should be within 80-120% recovery for water and 70-130% recovery for solids unless specified otherwise in the analytical method and is commonly determined by laboratory using the following equation:

$$\% \text{ Recovery Accuracy/Bias} = \frac{\text{Spiked Sample Conc.} - \text{Unspiked Sample Conc.}}{\text{Spiked Conc. } \mathbf{Added}} \times 100$$

The data user must keep the level of concern and the end use of the data in mind when reviewing precision and accuracy information. In some cases, even data of poor precision and/or accuracy may be useful. For example, if all the results are far above the level of concern, the precision and accuracy are much less important. However, close to the level of concern, precision and accuracy are quite important and should be carefully reviewed. If results are precise but not accurate, it may be acceptable to correct the reported results using the percent recovery or percent bias data. A data user with appropriate technical expertise should make that judgment. Measures of accuracy/bias are listed in Attachment G.

Representativeness

Representativeness is the degree to which the samples collected reflect the conditions at a particular site. For example, a sample of soil screened from a rubble pile does not represent the conditions at that site, but only provides a measure of a small fraction of material that happens to fall within the screened particle size range.

Sensitivity

Sensitivity is the ability of the test method or instrument to detect the contaminant of concern at the concentration level of interest. Sensitivity may be expressed in terms of project action limit, for example and as further described in Attachment G. The following factors may be considered:

Contaminants of concern

At some sites it may be clear which contaminants are of concern because they have known adverse impacts to human health and/or the environment. In such cases, the appropriate standards, action levels or benchmarks can be used to set levels of concern.

The appropriate remedial objectives for all hazardous substances in all impacted media at a contaminated-site shall be consistent with the requirements listed in Section 8.0 of the Remediation Regulations.

Level of concern

The level of concern specifies a concentration range above which some action may need to be taken. The level of concern is intimately linked with the action level, which defines the level of cleanup for remedial activities. Determination of levels of concern is a site-specific activity. The decision makers and data users (toxicologists, geologists and engineers) must meet to determine the appropriate action level range for the site. The Remediation Regulations state specific notification requirements in Section 5.0.

Required detection limit

The level of concern selected directly affects data quality requirements. The sampling and analysis methods used must be accurate at the level of concern. Since sampling accuracy is hard to evaluate or control, it is extremely important that the analytical technique chosen has a detection limit well below the level of concern.

Completeness

Completeness is the number of valid measurements divided by the number of samples taken. Almost no historical data on the completeness achieved by individual methods exists, however, the CLP data has been found to be 80-85% complete on a nationwide basis. RIDEM has set a completeness goal of $\geq$ 80%. For single location sampling events, at least 90% completeness may be required. If completeness falls below 80%, a more rigorous validation process will occur. Incompleteness may be caused by inability to collect samples due to time constraints in the field, insufficient sample volume, field collection errors and laboratory quality errors. Corrective action for analytical error may include that the QA Manager request the laboratory to review all raw data, including calibration, and that all QC samples be submitted to RIDEM for independent review on a site by site basis. As noted in Section 6.4 (Quality Control), resampling may be requested for unusual lab or field errors.

$$\%Completeness = \frac{number\ of\ valid\ measurements}{total\ number\ of\ measurments} 100$$

Comparability

Comparability is a qualitative parameter expressing the confidence with which one data set can be compared with another. Sample data should be comparable with other measurement data for similar samples and sample conditions. This goal is achieved through the use of standard techniques to collect and analyze representative samples and reporting analytical results in appropriate units. Comparability is limited to the other PARCC parameters because only when precision and accuracy are known can data sets be compared with confidence.

Comparability can also be a quantitative measurement. How much data compares between RIDEM and a PRP cleanup contractor is a direct measurement of the validity of the PRP data. Comparability of present and historical data is very important for evaluation of environmental trends and fate and transport of contamination.

Measures of comparability may include the following, as noted in Attachment G:

Comparability Calculation for Split sampling analysis

$$\% \text{ Difference (Split Sampling)} = \frac{C_1 - C_2}{(C_1 - C_2)/2} \times 100$$

C_1 = Conc. Determined by Oversight (USEPA or RIDEM)
C_2 = Conc. Determined by PRP or other performing party (Federal, State)

For split samples, the measure of comparability will be done on a site by site basis and the criteria will be provided in a site specific QAPP and/or SAP. In general, acceptance criteria of a split sample will include verifying that the analytical parameters identified are the same and quantitatively within the same order of magnitude.

Comparability Calculation for Confirmatory Analyses

$$\% \text{ Difference (Confirmatory Analysis)} = \frac{|C_1 - C_2|}{C_1} \times 100$$

C_1 = Conc. Determined by Confirmatory Analysis
C_2 = Conc. Determined by Field Screening Analysis

For confirmatory samples (compared to field samples), the measure of comparability will be done on a site by site basis and the criteria will be provided in a site specific QAPP and/or SAP.

8.2 Data Usability

Corrective actions must be taken immediately when field procedures or analytical data are of questionable quality. These corrections may range from modifying certain procedures to reconducting part of or an entire field investigation. The QA Manager or project manager shall notify the QA Coordinator of any suspected problems. A Corrective Action Plan shall be developed when necessary in cooperation with the QA Manager.

Corrective action procedures during field activities will be addressed in the QAPP, SAP or Field Investigation Report/Trip Report. These should include identification of the individual responsible for initiating the corrective action and the individual responsible for approving the corrective action, if necessary. The need for corrective action in the field may be identified by an internal assessment (Section 7.0) or by standard QC procedures (Tables 6-1 to 6-4).

Analytical data submitted to the project manager should include the results, a quality control section and explanation in the Narrative Summary. The project manager determines whether the quantity and quality of the data is acceptable using best professional judgment and standard QC procedures (Tables 6-1 to 6-4). Laboratories accredited by NELAP contain criteria for proficiency testing (Section 7.0).

9.0 Implementation Requirements

The adequate implementation of a QAPP will ensure that the data is of quality that is defensible. Audits are an integral part of the quality assurance process and are vital for assuring that program procedures are being implemented. These audits are performed to document the implementation of the QAPP and SAP and associated operational protocols.

Three types of audits can be to determine adequacy of the analytical measurement system, adequacy of the data collection system, completeness of the documentation of data collection activities, and the document whether required data collection and data quality objectives are being met. These audits are commonly referred to as System Audits, Performance Audits, and Data Quality Audits.

System Audits are qualitative on-site field audits that evaluate the technical aspects of field operations (e.g., sampling methods) against the requirements of approved QA plans and protocols. System audit reports note problems and recommend or allow corrective actions to be taken to protect the validity of the collected data.

Data Quality Audits are evaluations of the documentation associated with data quality indicators of measurement that are used to verify that the generated data are of known and documented quality. This is an important part of the validation of data packages showing that the methods and SOPs designated in the SAPs were followed and that the resulting data set is a functional part of satisfying the established DQOs. The results are vital to decisions regarding the legal defensibility of the data should it be challenged in litigation.

Performance Audits are generally based on Performance Evaluation (PE) samples. Samples having known concentrations may be tested as unknowns in the laboratory or a sample may be analyzed for the presence of certain compounds. Performance audits are used to determine objectively whether an analytical measurement system is operating within established control limits at the time of the audit. The performance of personnel and instrumentation are tested by the degree of accuracy obtained.

10.0 List of Acronyms

CERCLA	Comprehensive Environmental Response, Compensation and Liability Act
CLP	Contract Laboratory Program
DOD	Department of Defense
DQO	Data Quality Objectives
ESI	Expanded Site Investigation
FS	Feasibility Study
FIRST	Field Investigation & Remediation Support Team
HEALTH	Rhode Island Department of Health
LUST	Leaking Underground Storage Tank
MPA	Master Price Agreement
NELAP	National Environmental Laboratory Accreditation Program
NPL	National Priority List
OC&I	Office of Compliance and Inspection
PA	Preliminary Assessment
PRP	Potential Responsible Party
QA	Quality Assurance
QA/QC	Quality Assurance/Quality Control
QAPP	Quality Assurance Program Plan
QAPP	Quality Assurance Project Plan
RI	Remedial Investigation
RIDEM/OWM	Rhode Island Department of Environmental Management/Office of Waste
SAP	Sampling & Analysis Plan
SD	Site Discovery
SI	Site Investigation
SOP	Standard Operating Procedures
SR	Site Reassessment
TAC	Technical Assistance Contractor
TBA	Targeted Brownfields Assessment
USEPA	United States Environmental Protection Agency

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