UTAH DEPARTMENT of
ENVIRONMENTAL
QUALITY

QUALITY MANAGEMENT PLAN
Utah Department of Environmental Quality
Revised
December 2017

DEQ Authority and Concurrence

This QMP has been authorized by the Executive Director as the quality policy and quality management plan for specific programs within the Utah Department of Environmental Quality.

Alan Matheson, UDEQ Executive Director — Date: Dec. 19, 2017

Paul R. Harding, UDEQ Quality Process Coordinator — Date: 12/19/2017

EPA Approval

This QMP satisfies the quality system documentation requirements of 40 CFR parts 31 and 35 as conforming to the American National Standard ANSI/ASQC E4-1994, *Specifications and Guidelines for Quality Systems for Environmental Data Collection and Environmental Technology Programs.*

Gerard A. Bulanowski, Region 8 Utah PPA State Program Manager — Date: 01/10/2018

Linda Himmelbauer, Region 8 Quality Assurance Director — Date: 01/10/2018

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QUALITY MANAGEMENT PLAN

SECTION 1. ORGANIZATION AND MANAGEMENT

1.1 Document Purpose

This Quality Management Plan (QMP) describes UDEQ quality management processes that are used to maintain a Quality System (QS). Its purpose is to provide a management strategy that assures that environmental data developed by, or submitted to, UDEQ are of a high quality, sufficient quantity, are appropriately documented, and scientifically and legally defensible.

1.2 Statement of UDEQ Quality Assurance Policy

1.2.1 Definition of QA and QC

Quality Assurance (QA) is an integrated system of management activities involving planning, implementation, assessment, reporting, and quality improvement to ensure that a process, item, data, or service is of the type and quality needed and expected by the decision makers and the public.

QA is implemented through:

- delineated responsibilities;
- Quality Assurance Project Plans (QAPPs);
- Training.

Quality Control (QC) is the overall system of technical activities that measures the attributes and performance of a process, item, or service against defined standards to verify that the process meets the stated objectives and/or requirements. QC is typically implemented on a project-by-project basis through the alignment with program QAPPs.

1.2.2 Importance of QA and QC

UDEQ goals regarding environmental contaminants are to:

- identify the presence of contaminants in areas of potential exposure to humans and the environment;
- determine impacts on human health and ecosystems;
- determine whether, how, and by whom such impacts should be remediated; and,
- monitor compliance with environmental regulations.

The data quality ensures the scientific credibility of the information upon which decisions are based. Proper QA enhances proper planning, reducing the likelihood of duplicate or repetitive sampling and thereby reduces costs.

1.2.3 Objectives of QA and QC

Environmental data collected by UDEQ are generally intended for input to a decision process. Because our mission is to protect human health and the environment, it is imperative that decisions be supported by environmental data of high quality and sufficient quantity, be appropriately documented, and be scientifically and legally defensible.

The Quality System is designed to encourage, monitor, and assure that environmental activities are well planned and address the project needs and objectives. It also seeks to ensure that environmental data produced are of known quality and of the type, quantity, and quality needed for their intended use.

The objectives of this QMP are to:

- encourage the use of QA and QC principles in the management of environmental projects;
- facilitate the timely identification, improvement, and/or correction of problems and QA systemic weaknesses;
- identify UDEQ staff training needs; and,
- provide for continuous improvement in project operations.

1.3 Organization and Responsibilities

1.3.1 DEQ Organization and Data Generation

UDEQ is organized as follows:

Executive Director's Office (EDO)

- Legislative and Government Affairs (LGA)
- District Engineers (DE)
- Human Resources (HR)
- Information Technology Services (ITS)
- Planning and Public Affairs (PPA)
- Office of Support Services (OSS)

Division of Air Quality (AQ)
Division of Drinking Water (DW)
Division of Environmental Response and Remediation (ERR)
Division of Waste Management and Radiation Control (WMRC)
Division of Water Quality (WQ)

As illustrated in Figure 1 and at https://documents.deq.utah.gov/admin/all-division-org-charts.pdf, each Division and Office is headed by a Director who reports to the Executive Director. Each Division organizes staff into programs.

The Executive Director's Office is responsible for oversight of the Quality System as described in this QMP. The Divisions of Air Quality, Waste Management and Radiation Control, and Water Quality, and the Superfund and Tank Programs within the Division of Environmental Response and Remediation have QAPPs, developed in accordance with the requirements presented in this QMP. Each is responsible for its QAPP preparation, implementation, and assessment.

Environmental data is any measurement or information that describe environmental processes, location, or conditions; ecological or health effects and consequences; or the performance of environmental technology. For EPA, environmental data include information collected directly from measurements, produced from models, and compiled from other sources such as data bases or literature.

UDEQ may contract for environmental services in fulfillment of duties delegated by State Law. In such circumstances, the requirements presented in this QMP also apply to those acquired contractual services.

1.3.2 Position and Authority of Quality Process Coordinator, Quality Assurance Committee

The Quality Process Coordinator (QPC) responsibilities are assigned to the Environmental Scientist position located in the Executive Director's Office. (See Figure 1 and https://documents.deq.utah.gov/admin/all-division-org-charts.pdf) The QPC operates independently of direct environmental data generation and model and technology development. The QPC works directly with a representative from each Division or program with a QAPP to form a Quality Assurance Committee (QAC). Ideally, those serving on the QAC will have been involved in drafting the QAPP for their program or Division. This reporting relationship provides the QAC with sufficient authority to assure independent oversight. The Executive Director has delegated the QPC with the authority for final approval of individual QAPPs following their successful review by the QAC. The Executive Director will be provided written notification of QAPP approvals.

The minimum qualifications of the QPC position and for those serving on the QAC are a Bachelor's degree in physical, environmental, chemical, or biological sciences or engineering and five years experience in the environmental health field, two years of which involves environmental field testing or laboratory analyses and/or equivalent combinations of education and experience which indicates a thorough knowledge of UDEQ requirements and testing and QA/QC procedures.

1.3.3 Management and Staff Responsibility for QA

The primary responsibility for QA resides with each staff member, particularly those who are assigned as Designated Project Managers (DPMs). QC, the oversight and improvement of QA implementation and performance, is vested with DPMs, Section and Branch managers, and Division Directors.

In the case of grants, cooperative agreements, and similar instruments in which UDEQ awards money to a second party for the performance of environmental work, the DPM who has oversight shares responsibility for implementation of a QS with the award official.

Program managers report to the director of the Division in which they are located, and generally provide leadership and supervision to staff. Program Managers are responsible for identifying environmental projects for which QA and QC are needed.

The DPM is the staff member responsible for a specific project and has immediate managerial or technical control of that project. The DPM is responsible for specifying the quality of the data required for each project. The DPM may also be a program manager.

1.3.4 Resources

Program managers, together with DPMs, must determine the resources needed to assure that an adequate level of QA and QC is achieved for all projects within their respective programs. Division directors assure adequate resources in their management and budgeting strategies.

1.4 Types of Activities Specifically Covered by QMP

This QMP applies to all activities that are covered by a Division or Program QAPP and that generate or obtain data that characterize or assess environmental media, effluents, and waste. Certain data collection activities are not covered. These are listed in Section 1.4.4.

Whenever these activities are performed by UDEQ personnel or contractors, the DPM has full responsibility for ensuring that all QA and QC requirements are met. When such activities are performed with UDEQ funds, the DPM is responsible for ensuring that the receiving organization complies with all relevant requirements.

For activities performed by members of the regulated community that do not use UDEQ funds, DPMs are encouraged to include UDEQ QA and QC requirements as part of any negotiated agreement in the absence of regulatory requirements that would take precedence.

Section 2 of this document identifies the specific UDEQ QS applicable to each of the identified categories. The environmental activities included in each category are discussed in the sections that follow.

1.4.1 Data Generated by Field Sampling and Laboratory Analysis

Environmental media samples for chemical, physical, or biological analyses are commonly collected and analyzed to accomplish the following goals:

- Confirm the presence or absence of pollutants or contaminants.
- Determine concentration levels of various sample components.

- Delineate the horizontal and vertical distribution of various sample components.
- Evaluate rate and direction of transport of various sample components.
- Determine eventual fate of the identified pollutants.
- Determine the baseline and background concentrations of various sample components.
- Determine the effectiveness of treatment strategies.
- Identify pollution and contamination sources.
- Establish temporal and spatial trends.
- Monitor change.
- Evaluate progress.
- Evaluate compliance with environmental regulations.

Covered activities may include the generation of environmental data, including field work for the purpose of collecting samples for later chemical, physical, or biological analyses; the collection of in situ measurements; field work for site reconnaissance; and compliance inspections.

Sampling activities may be conducted for site characterization, for ongoing monitoring projects, or during remediation and removal activities.

Data may be collected for risk screening and/or assessment calculations incorporating exposure to humans, ecosystems, and the environment. Such risk calculations may be used in any UDEQ program as appropriate or required by regulation or policy. Data collection activities conducted must be adequately addressed in a QAPP, which includes data quality objectives (DQOs). The required elements for QAPPs are discussed in Section 3.1 of this document, and suggested additional elements are listed in Chapter 8.0.

1.4.2 Data Generated Through Computer Modeling

UDEQ decision makers may use data generated from computer models of environmental behavior that have been developed internally and/or by outside sources. The QS for control of model generated data is discussed in Section 3.

1.4.3 Data Collected from Outside Sources and Databases

UDEQ decision makers may use information and data from outside sources or databases. Examples of such data include - but are not limited to - toxicological, historic stream characteristics and flows, climatological, meteorological, and exposure data, emissions inventories, and field data collected by a regulated party.

When data from outside sources are used, staff are encouraged, whenever possible, to obtain and review the QA and QC practices that were followed during the original data generation. In addition, any data used for purposes other than originally intended must also be reviewed to ensure suitability for the new application.

1.4.4 Activities Not Covered

The environmental sampling or data collection activities which are not covered by this QMP are:

- data collected only for safety or workplace regulations;
- collection of employee monitoring data; and,
- data generated by regulated entities outside of the oversight and/or funding of UDEQ.

1.5 Policy on Cooperative Projects and Sites

UDEQ, on occasion, uses external entities for the collection and analysis of environmental samples and data that are later used for decision making. The activities of these entities are managed through grants, cooperative agreements, interagency agreements, or contracts.

Examples of external entities include - but are not limited to - potentially responsible parties, state and local agencies, and UDEQ contractors. Oversight may be conducted through periodic reviews by UDEQ staff.

Specific requirements for environmental sampling or data collected by outside entities that receive UDEQ funding are:

- Agreements and contracts with State agencies, universities and academic institutions, tribes, and communities shall require that SOPs for environmental sampling be prepared.
- If work by a private party is required under an enforcement agreement, the enforcement agreement should detail the QA and QC roles of UDEQ and the party.
- If work by a private party is voluntary (no formal or enforcement agreement) and will be provided to UDEQ for acceptance, UDEQ review and approval of the work's QA is suggested to avoid misunderstandings of the work's goal and data usage. The private party has the right to proceed without such approval, but UDEQ can decide not to use the data, if the data are judged as not adequate to support the proposed use.

1.6. Document Distribution

This QMP will be posted on the UDEQ website and available to DEQ employees. Posting it on the website will also make it accessible by interested members of the public.

1.7. EPA Competency Demonstration

Data requirements of this QMP are supplied by the Utah State Health Laboratory which participates in ongoing EPA audit/assessment of proficiency, external proficiency testing and round robin programs when requested. If data is submitted by a laboratory other than the State Health Laboratory, that laboratory shall meet the Utah Certification requirements of R444-14 of Utah Administrative Code.

SECTION 2.0 QUALITY SYSTEM AND DESCRIPTION

2.1 General Quality System

This QMP reflects relevant provisions of *EPA Requirements for Quality Management Plans, EPA QA/R-2, EPA/240/B-01/002, March 2001* (Reissued May 2006); and related provisions of the Quality Management Plan for the US Environmental Protection Agency Region 8, issued December 6, 2012 (http://www.epa.gov/sites/production/files/2016-02/documents/region_8_qmp_approved_20130129_active.pdf)

UDEQ QS is coordinated by the Executive Director's Office (EDO) and described in this QMP. EDO is responsible for maintaining and updating the QMP. This QMP will be reviewed annually by UDEQ QAC and adjusted, if appropriate, in content and applicability. Division Directors and direct supervisors are responsible for assuring that staff understands the QS as described in this QMP. All QAPPs must be consistent with standards described in Section 3.0.

2.2 Team Approach

Each DPM has access to technical experts for assistance in quality objectives development, evaluation of project work plans, and associated QA documents. Within UDEQ, specialists include scientists and engineers with backgrounds in air quality, water quality, drinking water, radiation control, underground tanks, hazardous waste, solid waste, and Superfund. Each project team leader or DPM should involve the appropriate specialist relevant to site or project issues.

The DPM has the primary responsibility to ensure the environmental data collected are of the type and quality required to meet the objectives of the project.

2.3 Scope of Application

UDEQ QS applies to projects during which environmental samples are taken for the purpose of performing chemical, physical, or biological tests and generating environmental data. It applies to activities that are conducted directly by UDEQ personnel, activities performed under UDEQ contracts, agreements or grants, when resulting environmental data are intended for use in UDEQ funded projects. QA requirements for data acquired from other sources are covered under Section 3.

UDEQ shall negotiate QA requirements and reference the QS as a model in all negotiated agreements, consent decrees, etc., in which UDEQ directs or requests that another party, such as another State agency or regulated entity, perform data collection activities for use in UDEQ programs.

2.4 Components of the Quality System

The QS consists for the following components:

Quality Assurance Project Plans	Section 3.0
SOPs	Section 3.3
Personnel Qualifications and Training	Section 4.0
Procurement of Items and Services	Section 5.0
Records	Section 6.0
Computer Hardware and Software	Section 7.0
Planning	Section 8.0
Work Processes	Section 9.0
Quality Assessment and Improvement	Section 10.0

2.5 Components of a Quality-Based QA Project Plan

- provides documentation of the outcome of the systematic planning process;
- is developed using a process designed to minimize errors;
- documents the standard operating procedure to be followed;
- documents the data sources, format, and status of the existing data to be used in the project;
- is frequently updated as new information becomes available or as changes in methodology are requested; and
- provides the documentation of any changes from the original plan.

SECTION 3.0 QUALITY ASSURANCE PROJECT PLANS

3.1 QAPPs

Each Division or program QAPP developed must be consistent with the QMP. QAPPs must be developed as specified in *EPA Requirements for Quality Assurance Project plans, EPA QA/R-5, EPA/240/B-01/003, March 2001* (Reissued May 2006.) The QAC is responsible for reviewing the completeness of the QAPPs.

The following 24 elements must be adequately addressed:

Project Management

A1	Title and Approval Sheet
A2	Table of Contents
A3	Distribution List
A4	Project/Task Organization
A5	Problem Definition/Background
A6	Project/Task Description
A7	Data Quality Objectives (DQO) and Criteria
A8	Special Training/Certification

Measurement/Data Acquisition

B1	Sampling Process Design (Experimental Design)
B2	Sampling Methods
B3	Sample Handling and Custody
B4	Analytical Methods
B5	Quality Control
B6	Instrument/Equipment Testing, Inspection, and Maintenance
B7	Instrument/Equipment Calibration and Frequency
B8	Inspection/Acceptance of Supplies and Equipment
B9	Non-direct Measurements (Secondary Data)
B10	Data Management

Assessment/Oversight

C1	Assessments and Response Actions
C2	Reports to Management

Data Validation and Usability

D1	Data Review, Verification, and Validation
D2	Verification and Validation Methods
D3	Reconciliation with Data Quality Objectives and User Requirements

Because the level or degree of QA/QC activities needed for each Division or program differ, UDEQ believes the graded approach should be employed in planning the work. As such, one or more of the 24 elements may not apply, or it may be more appropriate to combine one or more elements into a single item. In that case, a reference to the combined items should be made.

3.2 Control of Data Collection Activities

Certain practices are required to control environmental data collection activities. These include the following:

- Development and approval of a QAPP.
- Development of DQOs.
- Production of a report documenting reconciliations with DQO.
- Satisfaction of minimum analytical QA and deliverable requirements.

3.2.1 Approved QAPPs

Division QAPPs should be technically adequate and comply with the QMP. The QAC member submitting the draft QAPP for their associated program should first guarantee there is program consensus on the draft prior to its submission to the QAC. Any disagreements within programs concerning elements of the draft QAPP should be resolved prior to its distribution to the QAC. The QPC and other members of the QAC may be consulted as a resource to help resolve any program conflicts. When the draft is submitted to the QAC for review it should be accompanied by a memo with the signature of the program director indicating the draft has been reviewed and approved by appropriate staff within the program. The QAPP should also be submitted with a copy of the EPA assessment tool identifying the critical elements and the associated page number within the draft as a resource both to confirm the completeness of the QAPP prior to submitting it to the QAC and to assist in more efficient and timely reviews once submitted.

Division QAPPs submitted to the QAC for review will first be assigned to a member of the QAC for a peer review using the EPA assessment tool. In no circumstance will a person be assigned to do a peer review of a QAPP for their own program or Division. Upon completion of the review, the member submitting the QAPP to the QAC for review will be provided the completed assessment form and associated feedback by the reviewer. If the QAPP is complete or is revised to the reviewer's satisfaction it will be distributed to the full QAC with the associated EPA assessment and comments. Each member will review the QAPP, the EPA assessment tool and any other supporting material or comments. Following a full QAC review, all members of the QAC will email the QPC and indicate approval of the QAPP or reject the QAPP and identify the elements that must be added or revised. If the full QAC votes unanimously to approve the QAPP it will forwarded to the QPC for approval and signatures. If the QAPP is rejected but it is revised to correct for objections it will be redistributed to the full QAC and approved following a unanimous vote by the QAC.

At any point after the initial review of the QAPP if there is not consensus to approve the QAPP, either following the initial QAC review or after the full QAC review, the member submitting the QAPP for the program can request a meeting to discuss the QAPP directly with the QAC. All QAC members with objections will also present this information for consideration. Following the discussion a vote will be taken to approve the QAPP. Approval will be recommended if a simple majority of all QAC members vote to approve the QAPP. The QAPP will be rejected and revisions requested if it fails to get a majority of votes. The QPC has final approval authority for QAPPs as authorized by the Executive Director but will not approve a QAPP without the consent of a majority of all QAC members. Once approved, the QPC will send a notice to the Executive Director and to EPA Region 8's Quality Assurance Office.

Project-specific QAPPs will be approved as outlined in Division or Program QAPPs and will not be sent to the QAC.

3.2.2 Data Quality Objectives

DQOs are intended to accomplish the following:

- Clarify the study objectives.
- Define the most appropriate types of environmental samples or data to collect.
- Determine the most appropriate conditions for collecting the environmental samples or data.
- Specify the level of uncertainty that is acceptable as the basis for establishing the quantity and quality of the data needed.

For many projects, DQOs may be a simple statement of why data are being collected and what data outputs will be considered significant.

3.2.3 Documentation of DQOs Reconciliation

Elements D1, D2, and D3 of Section 3.1 require that QAPPs identify data assessment procedures. These elements specifically include items on how data will be reviewed, validated, and quantified. Element D3 requires reconciliation with stated DQOs and user requirements. An assessment of the usability and limitations of the field and analytical data collected, with respect to the original DQOs, must be documented after completion of all data collection activities.

3.2.4 Minimum Analytical QA and Deliverable Requirements

All analytical work must be performed as specified in the approved QAPP and must meet minimum standards as defined in the Utah Certification Rules (R444-14). Available on the web at https://rules.utah.gov/publicat/code/r444/r444-014.htm Failure to comply with these requirements may result in rejection of data and, where applicable, nonpayment for the defective products.

3.3 Standard Operating Procedures

UDEQ staff is encouraged to incorporate the use of a SOP whenever a task is to be repeated frequently. The use of SOPs promotes reproducible work products and consistency in and among UDEQ project operations. An SOP may be prepared by any staff member whenever such SOP is desirable. SOPs are then approved by the program manager. QAPPs may include SOPs.

3.4 Quality System for Data Collected from Modeling, Electronic, and Database Sources

3.4.1. Computer Modeling Data

UDEQ staff frequently makes use of mathematical and computer based environmental models for the prediction of certain environmental events and effects. The reliability of the outputs of such modeling efforts is dependent upon the accuracy of the input data, on the suitability of the model, and on the accuracy of the modeling process. UDEQ staff should use well known or established models which employ best engineering practices and/or those recommended by EPA.

When computer models are used to predict events or effects, certain documentation of the input data and the model used is required. Within the project documentation, the DPM must indicate the name, source, and identification information for the model used, including version number, if appropriate. In addition, the DPM must indicate whether the data used as model input were collected by UDEQ under the applicable provisions of this document or whether the data were obtained from a "secondary" source such as an agency, industry, a database, or a publication. If a secondary source was used and more than one source or appropriate secondary data was available, the DPM must explain why that particular source was selected.

A description of the computer hardware and software that are used by UDEQ is contained in Section 7.0.

3.4.2 Environmental Database Systems

Each Division is responsible for verifying the accuracy and validity of its environmental database system.

3.4.3 Secondary Data and Modelling

UDEQ staff may use data and information collected or generated by sources outside of UDEQ. These sources are frequently referred to as "secondary" data sources. There are numerous possible sources including – but not limited to – toxicological data used in risk assessments, climatological and meteorological data, emissions inventories, historic stream flow and monitoring data collected by other federal and State agencies, new technological and scientific issues covered in the scientific literature, and data collected by other parties without the use of UDEQ funds.

If the DPM determines a project-level QAPP is necessary for a project relying on secondary data, the project QAPP shall include:

- A clearly stated purpose.
- Clearly stated project objectives.
- The secondary data needed to satisfy the project objectives.
- The planned approach for evaluating project objectives.
- The limitation on use of data.
- The responsibilities of all project participants including evaluating and qualifying data.

In addition, the required source or sources of the secondary data must be specified and the rationale for selecting the source discussed. Quality requirements of the secondary data must be specified and be appropriate for their intended use. Accuracy, precision, representativeness, completeness, and comparability need to be addressed, if applicable. If no quality requirements exist, this shall be documented.

When using secondary data, it may not be possible for UDEQ to validate or review all of the data. In this situation, UDEQ requires that the DPM assure that project files and records indicate the source of the data and any efforts that may have been taken to review or validate the data. If multiple sources of the same or similar information are available, the project records should indicate why the source used was chosen.

"Environmental Data" may also include information generated from models. Models used by UDEQ staff need to be chosen and assessed following documented procedures. Modeling used by UDEQ should be empirically based and checked against real-world results whenever possible.

3.5 Quality System for Remediation Systems

3.5.1 Construction Quality Assurance Plan

UDEQ may require the preparation of a Construction Quality Assurance Plan (CQAP) when UDEQ funds are used to design, construct, or operate a remediation system. A remediation system is any system intended for storage, handling, or treatment of wastes or contaminated media prior to discharge to the environment. These systems may include facilities constructed as a surface impoundment, waste pile, landfill, waste isolation system, artificial wetlands, treatment facility, or similar system. This requirement is not to be applied to actions conducted in response to a true emergency or as a time-critical response.

The CQAP must be reviewed and approved by the DPM with authority over the site or grant. A CQAP must address the following elements:

- Responsibilities and authorities of organizations and key personnel involved.
- Personnel qualifications.
- Inspection activities.
- Sampling strategies and corrective actions.
- Documentation.

The preparation of a CQAP is required of regulated entities using UDEQ funds as part of negotiated agreements for projects that involve performance monitoring. A CQAP may be requested in negotiated agreements as appropriate for projects not receiving UDEQ funds. An explanation of each component of the CQAP is provided in the following sections.

3.5.2 Responsibilities and Authorities

All organizations involved in the design, construction, and operation of the system shall be identified. To the extent known, key personnel should also be identified. A discussion of authorities and responsibilities of the organizations, as they relate to the plan, shall be included. Responsibilities of key personnel, such as the Construction QA Manager and the DPM, shall also be included.

3.5.3 Personnel Qualifications

Qualifications of key project personnel, such as the Construction QA Manager and the construction inspector, will be presented in the CQAP.

3.5.4 Inspection Activities

The CQAP shall present the observations, tests, and inspections which will be used to assure that the installation meets or exceeds all design criteria, plans, and specifications. Schedules or periodic frequencies for these activities shall also be established. Any system which is designed to treat or remediate waste material or a waste stream must also include tests to measure the efficiency of the waste treatment/reduction process or show that effluents are in compliance with appropriate State or federal regulations. Typically, inspection activities will be visual observations, field testing and measurements, laboratory testing and evaluation of test data. Most often these will be associated with:

- Inspection of materials used to certify that design criteria is met.
- Construction Quality Control to measure conformance with project plans, specifications, and design criteria.
- Construction Quality Assurance to determine final product quality and conformance with project specifications. For larger products, it is recommended that periodic inspections be conducted at the completion of various phases rather than waiting until final completion.
- Regulatory Inspections performed to ensure compliance with all applicable codes, regulations, and permits.

3.5.5 Sampling Strategies and Corrective Actions

The CQAP must address sampling methods, sample size, methods for determining sample locations, frequencies of sampling, test methods, and acceptance and rejection criteria for compliance with design specifications. The corrective actions to be taken due to failed tests must be addressed in the CQAP.

3.5.6 Documentation

This portion of the CQAP will describe what QA reports are to be made during various phases of design and construction and also those produced while the system is in operation. It shall include a discussion of the content of the report, the frequencies of the reports, responsibility for production of the reports, and to whom the reports are to be directed.

SECTION 4.0 PERSONNEL QUALIFICATIONS AND TRAINING

4.1 Qualifications and Training

UDEQ participates in the State employee classification system administered by the Utah Division of Human Resource Management. All job positions at UDEQ are classified and each class has a written description of general duties, required education or training, and applicable experience.

UDEQ employs staff with engineering and science specialties that relate to or include environmental testing, information analysis, media sampling, and data interpretation. A significant portion of the technical staff have 10-plus years of experience doing related work and are well versed in State and federal laws, rules, and guidelines of assigned programs. This experience provides a strong foundation for QAPP and/or SOP implementation.

4.2 Training

The responsibility to distribute and implement the Utah QMP rests with all DEQ staff and managers involved in the generation or use of environmental data. Associated management shall understand the requirements of this QMP. Ensuring that technical staff understand the requirements of this QMP and relevant QAPPs and are properly trained is the responsibility of immediate supervisors. This is done through informal assessment based on regular interaction and through annual performance reviews. Training occurs in a number of ways: mentoring by senior staff; program-specific technical training offered by EPA, contractors, or academic institutions; and sharing of published technical articles from credible sources.

4.3 EPA Supplemental Training

UDEQ staff will participate in EPA Quality Assurance training when such training is scheduled. In particular, the following training themes are recommended:

- Regional QS Strategies.
- Data Quality Objectives.
- QA Project Plans and SOPs.

4.4 Training Documentation

Training should be provided to management and project personnel, as needed, to ensure that staff has the necessary skills, knowledge, and proficiency to meet the project quality requirements associated with the Program QAPP. Training should also emphasize the requirements of this QMP and the specific requirement to ensure that project QAPPs are approved and implemented accordingly prior to data collection. The current QMP will be electronically distributed to senior and middle managers annually by program QA Managers. All UDEQ employees involved with environmental data are, at a minimum, expected to read and become familiar with the requirements set forth in this QMP.

Training and qualification shall be evaluated and reviewed annually to determine if training efforts meet UDEQ and program needs. Training shall be provided when needed improvements or other issues are identified. Records of completed training shall be established and maintained by Program QA Managers with summaries provided to the QAC annually. These records shall include the attendance sheets and a description of course content, including the date of training and the name of the instructor.

SECTION 5.0 PROCUREMENT OF ITEMS AND SERVICES

5.1 Procurement of Supplies

Common office supplies are ordered by requisition (DP-1s) through the Office of Support Services. Some sampling supplies are purchased from retail hardware outlets and lab equipment suppliers.

5.2 Selection of Contractors

Contractors are chosen by open competition and are evaluated based on both their abilities to provide services and the fees they charge. (See Figure 3 outlining the purchasing bid process.) QA and QC services are typically included in these contracts. Prime contractors choose their subcontractors and are responsible for oversight of the performance of these subcontractors, which often includes QA and QC functions. It is the responsibility of DEQ DPM to verify that products, services, and contracts meet the quality requirements specified in this QMP and the project QAPP. Project staff will ensure that any procured items and services received are of acceptable quality and satisfy project requirements or contractual obligations and when appropriate include all required quality documentation as specified by the QMP and project QAPPs. Project QAPPs may be prepared by either UDEQ or contracted but must be reviewed and approved by the DPM.

5.3 Evaluation of Deliverables

Deliverables received from contractors are reviewed by the DPM to ensure the objectives of the work are met and recommendations justified and documented. Written approval by the DPM is required before work is accepted and the contractor paid. If unsatisfactory work is received that cannot be rectified through revisions or re-sampling, the contracting officer and/or project officer is notified. Contractual requirements addressing the QA and QC requirements are generally based on the project QAPP.

SECTION 6.0 RECORDS

6.1 Documentation and Handling

It is UDEQ policy to adequately document its organization, functions, policies, decisions, procedures, and transactions. This policy is guided by the records retention and archival policies of the Utah Public Records Management Act (Utah Code Ann. §. 63G-2-101 seq.), available on the web at https://le.utah.gov/xcode/Title63G/Chapter2/63G-2.html and any applicable record retention requirements of delegated federal EPA environmental laws. All documents in Utah are subject to the Utah Government Records Access and Management Act (Utah Code Ann. § 63G-2-101 et seq.) Each Director, Program Manager or DPM is responsible for records relevant to his or her Division, programs, or projects.

6.2 Confidential Documents

Some documents collected, received, or generated may be, by nature and content, documents which require special handling procedures. Documents of this category may be, but are not limited to, enforcement sensitive/enforcement confidential, attorney/client, or confidential business information (CBI). Each project that works with documents of this nature has specific handling procedures which are overriding. Documents that are classified as CBI are handled as required by project specific CBI requirements. Only UDEQ staff may see documents classified as enforcement confidential. All confidential documents must fit one of the exceptions enumerated in the Utah Government Records Access Management Act. (Utah Code Ann. § 63G-2-101 et seq.)

6.3 Document Preparation

Planning documents and project reports are prepared by staff members at multiple levels. UDEQ also allows contractor personnel to prepare drafts of documents, whenever that task is within the purview of the contract.

Revisions of any document that requires an approval must also be approved in the same fashion as the original document. It is the responsibility of the DPM to maintain revision control as well as ensure that all parties using the document have the current version. Removal of obsolete and superseded documents should be accomplished in the same manner.

Staff are encouraged to incorporate the use of SOPs whenever a task is to be repeated frequently. The use of SOPs promotes reproducible work products and long-term consistency in operations. SOPs may be prepared by any staff member whenever it is felt that the existence of such SOPs is desirable. SOPs and related documents are the responsibility of the Program Manager and/or DPM.

6.4 Requirements for Field Documentation

Documentation of field activities establishes procedures, identifies written records, enhances and facilitates sample tracking, standardizes data entries, and identifies and establishes authenticity of the sample data collected. Proper documentation ensures that all essential and required

information is consistently acquired and preserved. Timely, correct, and complete documentation establishes the chain-of-custody, a requirement for data intended for use to provide evidence for court proceedings.

Field records shall be generated and stored as specified in project specific QAPPs and SOPs. Guidance for field records is provided in EPA CIO 2105.0-P-02, EPA QA Field Activities Procedure. (*http://www.epa.gov/sites/production/files/2015-03/documents/2105-p-02.pdf*)

6.5 Quality System Documents and Document Control

Controlled documents include the following:

- The Utah QMP;
- Related Department Level QA policy and guidance documents;
- All Division/Program QAPPs; and
- Other Division/Program Monitoring, Sampling and Analysis Plans, Site Specific Plans, and SOPs developed under the QMP at the program level.

The current version of the QMP and all current versions of Division/Program QAPPs approved under the QMP will be posted on Internet at:
https://deq.utah.gov/Admin/Planning/EPA_QMP.htm
The QPC has the responsibility of ensuring that the documents posted at:
https://deq.utah.gov/Admin/Planning/EPA_QMP.htm are the most current version. Programs may also post QAPPs on their own program pages with the Program QA Managers responsible to verify the current version.

Controlled documents including the QMP and all QAPPs must be approved by the QPC and QAC before use. Program SOPs and SAPs being approved under Program QAPPs are primarily reviewed and approved by program managers at the program level. These program-level SAPs and SOPs may also be reviewed by the Utah QPC and the QAC upon request and as appropriate. Program or Division QAPPs shall provide a process for the independent review and approval of SAPs. When a document is updated, following approval of the updated document by the QPC, and if necessary, by USEPA Region 8 QA staff, the most recent copy of the document is distributed to program staff. Electronic distribution is encouraged. All previous versions of the document will be discarded, except that the QPC and the Program QA Manager may retain one electronic or hardcopy (for each person) of all obsolete documents for archive purposes. The Program QA Manager has the responsibility for distributing updated documents including SOPs and SAPs within the program. Appropriate staff distribution lists are documented and maintained. The Program QA Manager also has the responsibility for ensuring that their staff uses the most recent documents. All controlled documents will be reviewed annually. Current versions will be verified and should be marked with a revision date, and revision or version number.

SECTION 7.0 COMPUTER HARDWARE AND SOFTWARE

7.1 Computer Hardware

UDEQ runs on a Local Area Network (LAN). Access onto the LAN and its data is through validation via an ID security password. All users are required to change their passwords every 90 days. All users are required to annually complete online security awareness training. The State's Department of Information Technology Services (DTS) maintains the network. The data on LAN servers are backed-up and checked daily for computer viruses by the UDEQ computer system administrator. Real-time virus checking is also employed. UDEQ's IT services are located with EDO.

DTS establishes policies and standards for purchasing network hardware and network software. Personal computers used by UDEQ staff are procured and maintained by DTS staff assigned to UDEQ.

UDEQ annually prepares an information technology plan for budgeting and planning purposes. An Information Technology Service Level Agreement between UDEQ and DTS determines how each Division is supplied with adequate and appropriate hardware and software technology.

7.2 General Computer Software

Computer software for completing basic office tasks is available through the LAN and is maintained by UDEQ system administrators. Applications are centrally administered and controlled through an application launcher. This launcher provides word processing, database, programmatic-specific applications, and internal communication functions. UDEQ has a steering committee which recommends policies relating to hardware, software, and data standards. These recommendations are then approved or modified and approved by UDEQ Quality Council.

7.3 Electronic Document Management Systems (EDMS)

UDEQ environmental project documents are being scanned and stored in an EDMS called eDocs. This system is a Department-wide approach to give all UDEQ employees access to all department documents. This approach will allow employees to have a cross-media view of environmentally regulated facilities and sites. The end goal of this project is to allow all public documents to be viewable from the GIS based application on the UDEQ webpage.

7.4 Environmental Database Systems

Environmental data base systems are maintained by UDEQ. Each system is fully backed up every Wednesday. There are incremental back-ups which occur on other days. Access is controlled by the responsible Database System Administrator.

A list of software used by UDEQ to supply EPA with data and information or to locally archive data follows:
Laboratory Services:

Chemistry	Northwest Analytical LIMS
Microbiology	StarLIMS version 9.0
Drinking Water	SDWIS version 2.3
Surface Water 319 Watershed Projects	GRTS Database (direct entry)
Surface Water	WQX
Sample Identification Database (SID)	Access 2003
Ecological Data Application System (EDAS)	Access 2003
Assessment Database (ADB)	Access 2003
Water Quality	ICIS
Air Quality	Tempo
UST and LUST programs	UST
Hazardous Waste	RCRAInfo
Asbestos Control	ACTS version

Documentation, development and training are provided by the respective Database Systems Administrators in each Division/Program.

7.5 Specialized Computer Models

The specific QS for control of electronic data are contained in Section 3 of this document.

Computer modeling is used to predict outcomes, based on the current conditions and on extrapolations or measurements of previous conditions. Modeling programs have been developed to predict migration routes and rates, and estimate contaminant distribution and concentrations for use with several fluid media, including ground water and air. Such models are prepared with site-specific parameters, and are calibrated using known data before predictions are attempted.

Briefly, a model's suitability can be ascertained based on:

- the suitability of model's conceptual approach;
- the logic of a model's simplifying assumptions;
- the presence of well-defined, understandable limitations;
- data needs and data quality needs consistent with the project objectives;
- EPA peer review and/or stakeholder acceptance of model output; and,
- compliance with relevant guidance.

7.51 Requirements for Modeling Efforts

UDEQ uses mathematical models to make systematic regulatory assessments and environmental decisions; determine environmental fate and transport, and estimate pollutant loadings; develop protection zones; assess exposure, hazards, damage, and health risk; and to make projections and predictions. For these reasons UDEQ must assure itself of the quality of all modeling systems. All information regarding the suitability of a model and its outputs must be documented in writing and contained in the project records. The use of SOPs is recommended for:

- the selection of a model for use; and
- the assessment of results for all environmental model data generated.

7.5.2 Responsibilities, Authorities, and Personnel Qualifications

Individual DPMs with direct or oversight authority for any project are responsible for assuring the suitability of all models and data received by UDEQ.

To the extent possible, DPMs should be familiar with the qualifications of all contractor or grantee personnel conducting modeling efforts. All personnel conducting modeling exercises must have the education and experience appropriate for the job.

SECTION 8.0 PLANNING

The planning document for the generation and acquisition of environmental data is the QAPP. A complete QAPP contains several topical elements, including DQOs (See Section 3.1). Additional topical elements that should be included in the QAPP, when appropriate, are:

1. Project Customers.
2. Schedule and Critical Milestones.
3. Applicable Laws and Rules.
4. Applicable SOPs.
5. Existing Information or Data.
6. Documentation of the QAPP's Implementation.
7. Assessment of the QAPP.
8. Project Budget.

SECTION 9.0 WORK PROCESSES

9.1 Pre-sampling Requirements

Development and implementation of a sampling plan is required for all projects that produce environmental information or data. The sampling plan must align with the approved Division or Program QAPP. Sampling plans are typically approved by designated levels of Division management and by EPA counterparts, when applicable. An exception to this may be a "classic emergency" and a time-critical agenda. The sampling plan of a regulated party may be used if it meets the requirements of a Division or Program QAPP.

The DPM is responsible to ensure that those implementing the approved plan are briefed and/or trained on approved procedures.

All laboratory analyses are performed using methodologies approved and published by EPA or other accepted entity such as the ASTM.

9.2 Laboratory Coordination

UDEQ has two routine options for obtaining laboratory services:

- Use of the Utah Department of Health Division of Laboratory Services under a yearly sampling allocation provided by an ongoing inter-departmental agreement; or
- Procurement of services by a private commercial laboratory following of Division Purchasing rules and regulations.

All analytical work must be performed as specified in the approved QAPP and must meet minimum standards as defined in the Utah Certification Rules (R444-14).

9.3 Documentation

Any deviation in an SOP when obtaining samples of environmental media, holding samples or, analysis of samples must be documented and explained (See Section 6.4).

SECTION 10.0 QUALITY ASSESSMENT AND IMPROVEMENT

10.1 Quality System Reviews

UDEQ QAC will conduct an annual overall assessment of UDEQ quality system. All QAPPs shall be reviewed annually. Each Program QAPP will be reviewed by the program QA Manager and any relevant Division staff to ensure continued relevancy and will be revised, as needed. The program QA Manager shall document the findings and submit a summary the QPC for review. The program QA Manager will also submit the annual report to program management and include a copy of the current QMP and the current program QAPP. Annually, the QPC will issue a report to the Executive Director and to the EPA Region 8 Quality Assurance Office utilizing the current Region 8 reporting template.

10.2 UDEQ Project QC

Division Directors, Program Managers, DPMs, or individual staff members are responsible for assessing the quality of the work done under their own auspices. There are several ways this can be done, as appropriate to the specific project and the budget. Examples include:

- Third party observation of the work in progress for an independent assessment.
- A field audit by qualified UDEQ staff.
- A laboratory audit by qualified UDEQ staff.
- Data validation of selected data sets, using UDEQ or contractor staff.
- Internal audits performed by the contractor themselves.
- Performance Evaluation Audits conducted quarterly by EPA contractors.

When deficiencies or non-conformances have been identified, program managers consult with staff to determine and document the following:

- The nature and scope of the problem.
- Where possible, the root cause(s) of the problem.
- The programmatic impact.
- Required corrective action(s).
- The individual(s) responsible for corrective actions.
- Action(s) needed to prevent recurrence.
- The time frame for corrective actions to be implemented and completed.
- The method of assessing and verifying the effectiveness of the corrective action.
- The corrective actions should be taken as quickly as possible, but all corrective actions are recorded and reported to the QPC and QAC

Any QC improvement needs will be addressed at the staff level with the DPM or Program Manager. Issues that cannot be resolved at this level shall be brought to the Division Director's attention and, if need be, the QPC or QAC who will make recommendations to the Executive Director. Appropriate changes in plans shall be made and documented that will result in improved quality.

10.3 UDEQ Dispute Resolution

When quality assurance issues are in dispute, resolution will first be sought at the lowest management level possible. Such disputes may occur in situations involving technical issues (e.g., audits, data quality assessments) and management issues (e.g., QMP reviews, QAPP reviews, and quality system assessments).

All parties will make every effort to resolve disputes through discussion and negotiation. Disagreements will be resolved at the lowest administrative level possible. Should agreement not be reached at this level, the issue shall be brought to the Division Director's attention and, if need be, the QPC or QAC who will make recommendations to the Executive Director who has final dispute authority on all quality issues.

ACRONYMS

AQ	Division of Air Quality
CBI	Confidential Business Information
CLP	Contract Laboratory Program
CQAP	Construction Quality Assurance Plan
DE	District Engineers
DP-1	Department Purchasing form
DPM	Designated Project Manager
DTS	Department of Technology Services
DW	Division of Drinking Water
DQO	Data Quality Objective
EDO	Executive Director's Office
EPA	U.S. Environmental Protection Agency
ERR	Division of Environmental Response and Remediation
GIS	Geographical Information System
HR	Human Resources
IT	Information Technology
LAN	Local Area Network
LIMS	Laboratory Information Management System
OSS	Office of Support Services
OPPA	Office of Planning and Public Affairs
QA	Quality Assurance
QAC	Quality Assurance Committee
QAPP	Quality Assurance Project Plan
QC	Quality Control
QMP	Quality Management Plan
QO	Quality Objective
QPC	Quality Process Coordinator
QS	Quality System
QSR	Quality System Review
SAP	Sampling and Analysis Plan
SOP	Standard Operating Procedures
UDEQ	Utah Department of Environmental Quality
WMRC	Waste Management and Radiation Control
WQ	Division of Water Quality

Figure 1.

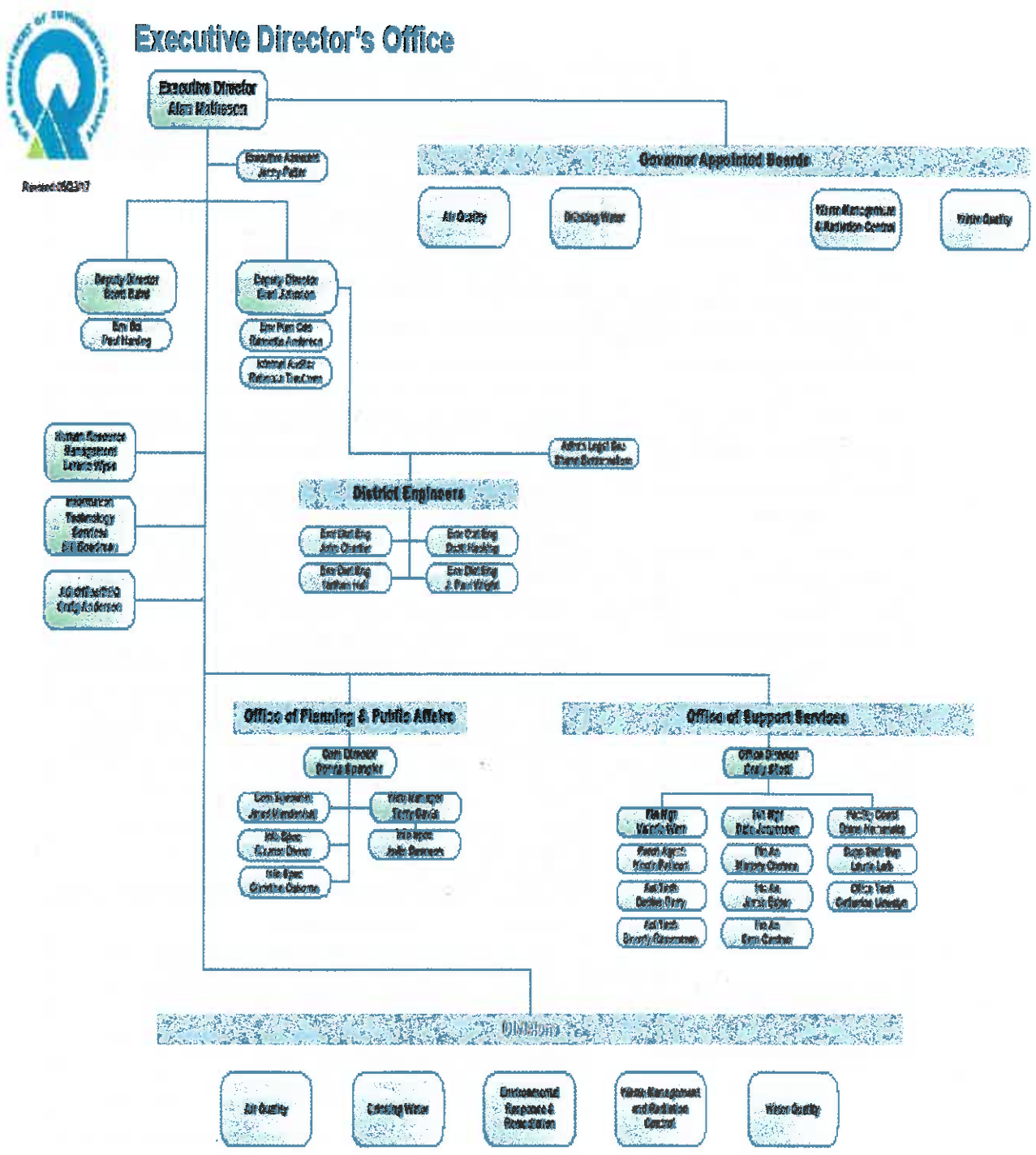
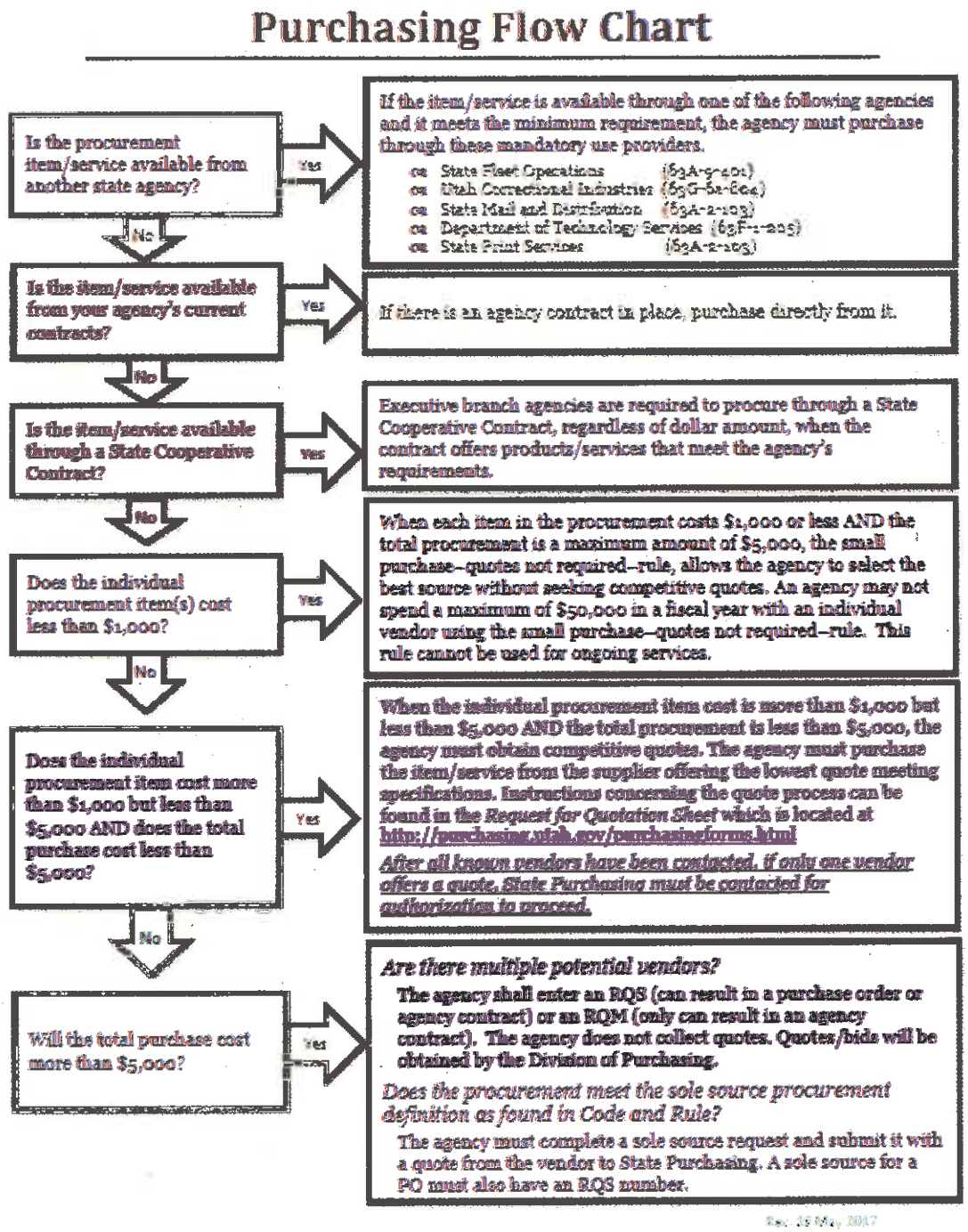

Executive Director's Office
Executive Director
Alan Matheson
Governor Appointed Boards
Air Quality
Drinking Water
Waste Management & Radiation Control
Water Quality
Deputy Director
Scott Baird
Deputy Director
Brad Johnson
District Engineers
Office of Planning & Public Affairs
Office of Support Services
Divisions
Air Quality
Drinking Water
Environmental Response & Remediation
Waste Management and Radiation Control
Water Quality

Figure 2


Purchasing Flow Chart
Is the procurement item/service available from another state agency?
Yes
If the item/service is available through one of the following agencies and it meets the minimum requirement, the agency must purchase through these mandatory use providers.
or State Fleet Operations (63A-9-401)
or Utah Correctional Industries (63G-6a-604)
or State Mail and Distribution (63A-2-103)
or Department of Technology Services (63F-1-205)
or State Print Services (63A-2-103)
No
Is the item/service available from your agency's current contracts?
Yes
If there is an agency contract in place, purchase directly from it.
No
Is the item/service available through a State Cooperative Contract?
Yes
Executive branch agencies are required to procure through a State Cooperative Contract, regardless of dollar amount, when the contract offers products/services that meet the agency's requirements.
No
Does the individual procurement item(s) cost less than $1,000?
Yes
When each item in the procurement costs $1,000 or less AND the total procurement is a maximum amount of $5,000, the small purchase--quotes not required--rule, allows the agency to select the best source without seeking competitive quotes. An agency may not spend a maximum of $50,000 in a fiscal year with an individual vendor using the small purchase--quotes not required--rule. This rule cannot be used for ongoing services.
No
Does the individual procurement item cost more than $1,000 but less than $5,000 AND does the total purchase cost less than $5,000?
Yes
When the individual procurement item cost is more than $1,000 but less than $5,000 AND the total procurement is less than $5,000, the agency must obtain competitive quotes. The agency must purchase the item/service from the supplier offering the lowest quote meeting specifications. Instructions concerning the quote process can be found in the Request for Quotation Sheet which is located at http://purchasing.utah.gov/purchasingforms.html
After all known vendors have been contacted, if only one vendor offers a quote, State Purchasing must be contacted for authorization to proceed.
No
Will the total purchase cost more than $5,000?
Yes
Are there multiple potential vendors?
The agency shall enter an RQS (can result in a purchase order or agency contract) or an RQM (only can result in an agency contract). The agency does not collect quotes. Quotes/bids will be obtained by the Division of Purchasing.
Does the procurement meet the sole source procurement definition as found in Code and Rule?
The agency must complete a sole source request and submit it with a quote from the vendor to State Purchasing. A sole source for a PO must also have an RQS number.

Appendix A- GUIDANCE DOCUMENTS

Subject to any interpretations, limitations, and exceptions described elsewhere in this document, the UDEQ is committed to developing, implementing, and maintaining a quality system that meets the standards, requirements, and guidelines contained in the documents listed below:

U.S. Environmental Protection Agency, EPA Quality Manual for Environmental Programs, CIO 2105-P-01-0 (formerly EPA Manual 5360 A1), (May 2000).

U.S. Environmental Protection Agency, EPA Requirements for Quality Management Plans, EPA QA/R-2, (latest version).

U.S. Environmental Protection Agency, EPA Requirements for Quality Assurance Project Plans, EPA QA/R-5, (latest version).
_____, Guidance for the Data Quality Objectives Process, EPA QA/G-4, (latest version).
_____, Guidance for Quality Assurance Project Plans, EPA QA/G-5, (latest version).
_____, Guidance for the Preparation of Standard Operating Procedures (SOPs), EPA QA/G-6, (latest version).

POLICY TO ASSURE THE COMPETENCY OF ORGANIZATIONS GENERATING ENVIRONMENTAL MEASUREMENT DATA UNDER AGENCY-FUNDED ASSISTANCE AGREEMENTS
Agency Policy Directive Number FEM-2012-02
Revision 1; Approved: March 13, 2013