

Quality Management Plan

South Dakota Department of
Environment and Natural Resources


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Quality Management Plan Approval Page




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Executive Summary

The South Dakota Department of Environment and Natural Resources (DENR) Quality Management Plan (QMP) serves to document quality management practices conducted by environmental programs. DENR has quality management practices that address the following types of data collection activities:

- 1) Data generated by DENR during field sampling;
- 2) Data generated by laboratory analysis;
- 3) Data generated through modeling efforts; and
- 4) Data acquired from sources outside of DENR (databases, publications, contractual projects).

The primary goal of the DENR Quality System is to ensure that data generated or used by DENR is of acceptable quality, is accurate and reproducible, may be used for its intended purpose, and may be applied to other uses with confidence. Data collection and analysis procedures must be sufficiently documented to ensure data is scientifically and legally defensible.

The DENR Quality System uses a number of quality management tools for the purpose of assessing data quality and demonstrating quality system compliance. These tools include: conducting program quality audits, field audits, and oversight activities; personnel training; review of laboratory quality control results; review of Quality Assurance Project Plans (QAPP), the QMP, and Standard Operating Procedures (SOPs).

Management and Organization

Policy Statement and Organizational Aspects

Quality management is a crucial component of DENR environmental programs and plays a vital role in assuring data quality objectives are met. For this reason, DENR will allocate resources to ensure the quality system is effective in its role. Data is typically collected by DENR for project specific assessments, pilot studies, routine monitoring purposes, or as part of a complaint investigation. However, this data is often reviewed and interpreted for use in research projects and the permit writing process, and may be used in enforcement actions or as evidence in legal matters.

Regardless of the use, it is critical that data generated or used by DENR be of high quality. A graded approach based on the importance and scale of the project/program and available resources is used to determine the level of effort necessary to produce quality data. It is a goal of the DENR quality system that quality activities result in accurate and defensible data that are suitable for their intended purpose.

Policy Statement

It is the policy of DENR that quality assurance activities conducted within all department program areas be sufficient to ensure all data acquired, generated, or compiled is scientifically valid, of known precision and accuracy, appropriately documented, and legally defensible.

Specifically, it is DENR policy that:

1. All environmental data will be of known and acceptable quality. Information pertaining to data collection, analysis, and manipulation will be documented and available for review/assessment;
2. The intended use of data will be defined before the collection efforts begin. Consequently, appropriate quality assurance/quality control (QA/QC) measures will be applied to ensure data of a quality commensurate with project objectives. When possible, the potential data quality needs of known secondary users will also be considered when determining data quality objectives. The required level of data quality, the specific QA/QC activities necessary, and the data acceptance criteria will be explicitly described in the QAPP;
3. Quality assurance activities will be designed in the most reasonable and cost-effective manner possible without compromising data quality objectives;
4. Procurement procedures for USEPA funded monitoring projects managed by DENR will be designed to ensure that acceptable QA/QC activities are performed and implemented;
5. DENR programs funded by USEPA and responsible for acquiring, generating, or compiling environmental data will develop QAPPs. These plans will identify procedures required to assure quality data and will specify the mechanisms by which timely corrective action will be taken when data quality undergoes degradation.

The Air Quality Program, Surface Water Quality Program, Ground Water Quality Program, Geological Survey, and the Water Resources Assistance Program perform data collection and/or acquisition and have developed plans to ensure DENR Quality System compliance.

As necessary, other DENR programs may develop QAPPs and participate in the quality system.

6. Technical and administrative authority for all quality matters will be assigned to a Quality Assurance Officer (QAO). The QAO will review, comment, and concur on all program QAPPs. The QAO will be the contact person for interaction between USEPA Regional QA Program and DENR quality management activities.
7. All applicable projects will adhere to the requirements and specifications stated in individual program QAPPs.

Organizational Aspects

DENR is comprised of two divisions (Figure 1), the Division of Environmental Services and the Division of Financial and Technical Assistance. Each division is comprised of programs; each program contains teams of personnel, led by a team leader. Each program also employs a quality manager who is responsible for ensuring quality activities are conducted within their respected program. The DENR QAO is responsible for ensuring quality system compliance within DENR and provides oversight and guidance to program quality managers. The program quality managers and DENR QAO are often independent from data generating activities; however, if they become directly involved in data generating activities, the team leader will assume the quality management responsibilities.

Team members report directly to a team leader. Team leaders report directly to a program administrator or to a division director. The program administrators report directly to a division director. The division director reports to the secretary of the department. It should be noted that while the DENR QAO is a team member in the Surface Water Quality Program, direct communication with administrators of other programs and division directors will occur when quality issues arise that impact other DENR teams, programs, or divisions.

Individual team members play an essential role in quality management as they typically are responsible for generating, manipulating, and interpreting data. Each program quality manager has the primary responsibility of ensuring quality activities are completed and maintaining quality system compliance.

The DENR QAO has responsibility for quality management activities and compliance within DENR. To ensure quality compliance, the DENR QAO provides oversight activities to each applicable program. Senior staff may become involved to resolve difficult quality issues that cannot be handled by the DENR QAO and team leaders.

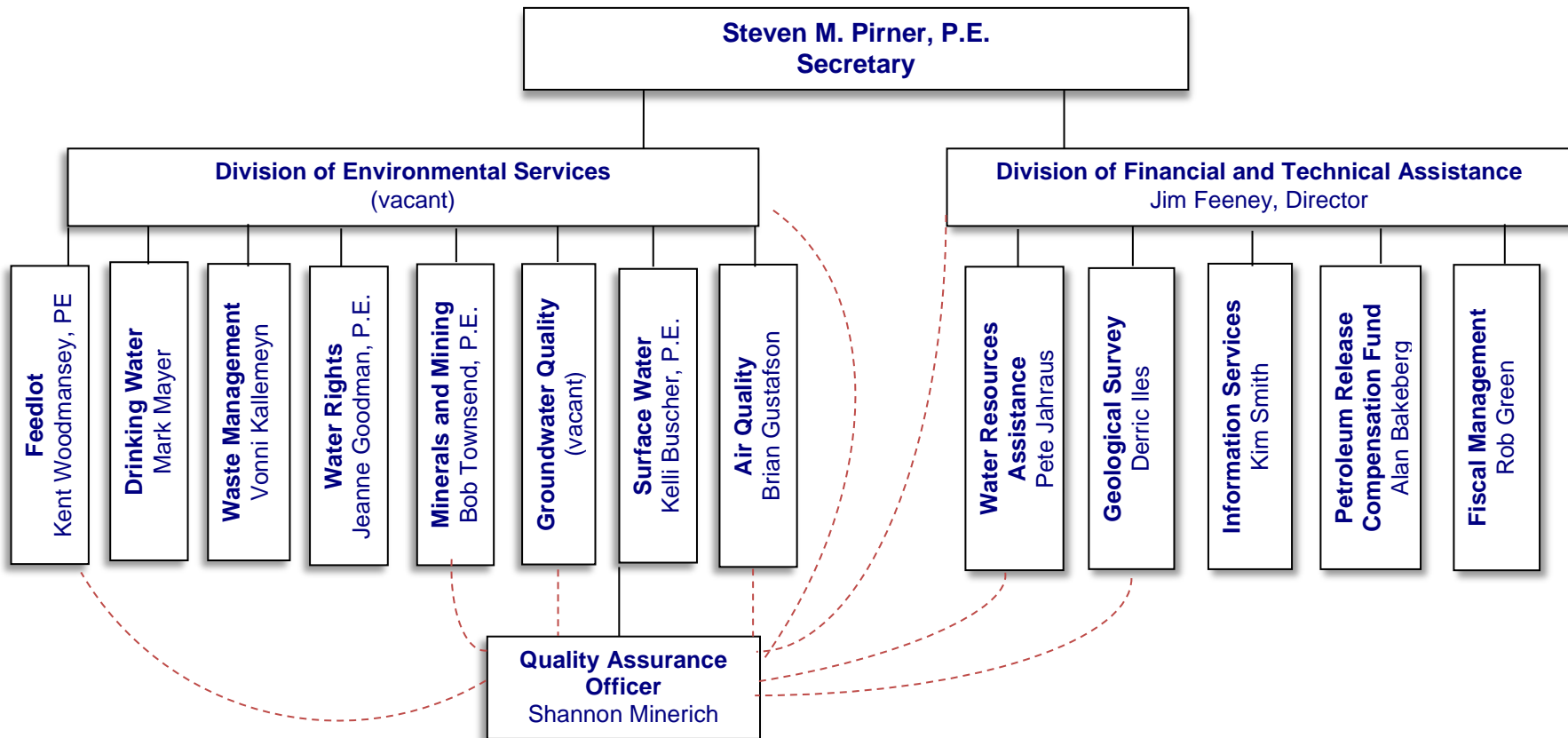
The specific responsibilities of the QAO are:

1. The DENR QAO will serve as the official contact for quality management. The DENR QAO will serve as liaison between the USEPA, DENR programs, and other environmental monitoring agencies when it comes to quality management related matters;
2. The DENR QAO will be responsible for identifying and responding to quality management needs, problems, and requests from within DENR programs. The QAO provides technical quality assistance or obtains technical assistance from the USEPA Regional Quality Assurance Management Office as necessary. This will include assistance in preparing detailed quality plans, contract or other external procurement packages requiring quality measures, designing quality management programs for new studies, etc.;

3. The DENR QAO will review and approve program QAPPs;
4. The DENR QAO will work with program quality managers, individuals who manage projects, and DENR senior staff to correct quality management related problems as needed; and
5. The DENR QAO will prepare and submit an annual quality report to the DENR program administrators, division directors, and the department secretary. Senior staff will have an opportunity to review the report and discuss plan updates. A copy of the final report will be submitted to the USEPA Region VIII Quality Assurance Officer for review.

Figure 1

DEPARTMENT OF ENVIRONMENT AND NATURAL RESOURCES
ORGANIZATIONAL CHART



Quality System Components

The DENR quality system is comprised of the following elements:

- 1) Quality Management Plan (QMP);
- 2) Management Systems Reviews;
- 3) Quality Assurance Project Plans (QAPP);
- 4) Data Quality Objectives (DQO);
- 5) Standard Operating Procedures (SOP);
- 6) Technical Assessments; and
- 7) Data Quality Assessments.

The following is a summary describing these elements and how they apply to data generation and use.

Quality Management Plan

The Quality Management Plan (QMP) provides senior management an opportunity to document basic quality management elements necessary for good quality data. The plan describes DENR staff organization and responsibilities and the role of the DENR QAO. The importance of all department staff in the quality management effort is also acknowledged.

The DENR QAO is responsible for the development, implementation, and maintenance of the QMP. The DENR QAO, program administrators, division directors, and the department secretary will review and approve this document to ensure it represents DENR policy. The QMP is reviewed annually and updated as necessary. The document is reviewed and approved by DENR senior management and the USEPA Region VIII Quality Assurance Officer. USEPA approval is valid for a maximum of five years.

Management Systems Reviews

Annual reviews of DENR QAPPs, the QMP, and the Quality System are performed by program quality managers and the DENR QAO. Compliance with quality system requirements is assessed, and areas needing improvement are identified. The results of the annual reviews are provided to DENR program administrators, division directors, the department secretary, and the USEPA Region VIII Quality Assurance Officer.

Quality Assurance Project Plan

A QAPP is developed for each EPA-funded DENR program that performs data collection, generation, or acquisition activities. Each QAPP must be developed as specified in the latest approved version of EPA QA/R-5 "EPA Requirements for Quality Assurance Project Plans for Environmental Data Operations." In some department programs, the QAPP also serves as the Sample Analysis Plan (SAP) for specific assessment projects.

Each program QAPP is prepared and/or maintained by the program quality manager. The DENR QAO reviews and approves the document based on EPA-established quality requirements. The program quality manager, program team leaders, and the program administrator review and approve the document based on content. An additional, independent quality review of the Surface Water Quality Program QAPP is completed by team leaders prior to review and approval by the DENR QAO. A copy or electronic version of each program QAPP

is provided to the team leaders for distribution to team personnel, contractors, and other involved parties as outlined in the QAPP distribution list.

Each program QAPP describes in detail required quality management elements for each activity. Major elements of a QAPP include: project management, data generation and acquisition, assessment and oversight, and data validation and usability. In the QAPP, the project purpose is discussed, quality activities are described, and data quality objectives are defined.

Each program QAPP is reviewed annually and updated as necessary to maintain accuracy. QAPPs are updated when a review of the document reveals that significant changes to quality objectives have occurred. A current copy of each program QAPP is maintained by the respective program and electronic copy is also on file with the DENR QAO. The DENR QAO maintains a list that identifies current revision levels for each program QAPP. This list is distributed to program administrators at the time of the annual review.

Data Quality Objectives

Data quality objectives (DQOs) are developed by program quality managers, team leaders, and project officers (the team member responsible for the project) to address the quality needs of projects and are documented in the program QAPP. DQOs must be developed and documented prior to any data generating activity. During data generating activities, DQOs and results must be reviewed periodically to ensure the data sampling effort produces reliable data and acceptable results. The DENR QAO and program quality managers review work plans developed by team members to ensure quality management elements are incorporated.

Existing data and/or data compiled from other sources is subject to DQOs documented in program QAPPs and is assessed by reviewing available quality control data and documentation. In addition, the Quality Manual from the organization that collected the external data is reviewed by the project officer to ensure an adequate quality system is in place. DENR will only use external data from sources that have an adequate quality system in place or have followed methods and procedures consistent with project requirements.

Standard Operating Procedures

Standard Operating Procedures (SOPs) are a set of procedures or methods team members must follow when conducting field, laboratory, and office work associated with the generation of data. These written procedures are made available and may be used by contractors, field samplers, or department personnel. SOPs may describe the maintenance of commonly used equipment, include instructions for operation and calibration of instruments, describe the proper procedure for performing field measurements, and describe proper sample handling, storage, and custody requirements.

Each program maintains SOPs and guidance documents. Copies of these documents are available to individuals who are responsible for collecting samples and upon request. SOPs are modified by the program quality manager or team leader as needed, such as when sampling procedures are changed or when new or different sampling equipment is acquired.

Technical Assessments

Technical assessments of field sampling, laboratory activities, standard operating procedures, recordkeeping, data validation, and/or data management are conducted on an annual basis by

program quality managers. Results of the review are reported to the DENR QAO, team leader, and program administrator. Deficiencies and corrective actions must be addressed by the appropriate team members. The program quality manager must follow-up with the team member to ensure the deficiencies have been corrected. Repeated or uncorrected quality deficiencies by DENR personnel will reflect poorly and, at the discretion of the program administrator, may negatively influence employee performance reviews.

DENR does not conduct laboratory quality audits; however, program quality managers, team leaders, and/or project officers review laboratory QA/QC information related to project samples analyzed by the laboratory. In addition, the DENR QAO maintains current copies of laboratory quality management plans. Any quality issues are discussed with the laboratory manager. Additional laboratory assessments are accomplished by DENR through use of field duplicates, blanks, split samples, and spikes. In general, each data generating activity will be required to collect at least 10% duplicate samples. Sample blanks, splits, and spikes are done on a quarterly basis or as deemed necessary by the program quality manager.

Data Quality Assessments

The project officer is responsible for examining data and project design as the project progresses, with oversight from the program quality manager and/or team leader. The project officer will also review results of quality control samples to determine if the data collected will meet project objectives. Unexplained or unexpected results may indicate a deviation from approved SOPs, incorrect laboratory analysis, or inappropriate project design.

Electronic data manually entered or automatically imported into database systems are routinely verified for accuracy by comparing laboratory data sheets against database exports. When deficiencies are discovered, corrections are made. If the deficiency was caused by an error in an electronic file, the laboratory and DENR will work together to correct the issue. For the purpose of improved data quality, the department is working with laboratories to encourage submittal of data in an electronic form in addition to paper. Submittal of electronic data should reduce data input errors.

It is the responsibility of each project officer to ensure data generated or used is of acceptable quality and is sufficient to support completion of assigned work duties and project goals.

Personnel Qualifications and Training

Basic minimum requirements, including statutory, regulatory, and/or professional certifications, in addition to necessary knowledge, skills, and abilities, have been identified by DENR and the Bureau of Personnel to ensure qualified individuals are hired. Job descriptions, written in compliance with South Dakota Codified Law (SDCL) 3-6A, the Career Services Act, list these minimum qualifications and help the department to identify and hire qualified individuals.

It is recognized that DENR personnel may need additional training to perform specific job duties. Training may also become necessary as new regulations are enacted and as new scientific or engineering research and technology becomes available.

Basic training needs are usually determined by an employee's team leader or program administrator. An employee may also request permission to attend training courses. Team leaders meet with their respective team members on an annual basis for a performance review. During these sessions, training needs are often identified and discussed; however, training needs may be discussed at any time. These training needs may be satisfied by either "in-house" training or off-site training outside of DENR. In-house training is usually performed by team leaders or by other employees who have knowledge specific to certain job related activities. Off-site training, including quality-related training, requires prior approval from senior staff. Approval is based upon budgetary considerations and the necessity of the training as it relates to employee job function. DENR does not set aside specific funds for training but has the flexibility to accommodate training needs.

Quality training is provided to DENR team leaders and staff by each program's quality manager. The training typically focuses on the results of audits conducted by the DENR QAO or the program quality manager.

Quality assurance responsibilities are only a portion of the duties assigned to the DENR QAO and each program quality manager. These positions are hired through the normal hiring process described above. However, experience and knowledge of the principles of quality management, experimental design, sampling, and data analysis are critical qualifications for quality-related positions.

Procurement of Items and Services

Pursuant to SDCL Chapter 5- 18A, items/equipment may be purchased directly from a vendor if the cost is less than \$1000.00. The state has contracts with various companies for supplying certain items. If a contract exists, and if the item can be supplied in a timely manner, the item should be purchased as per the contract. If an item costs more than \$ 500.00, a minimum of three cost estimates or bids must be obtained from vendors. The item will be purchased from the vendor with the lowest bid. DENR ensures equipment purchased in this manner is suitable by describing in detail the minimum required equipment performance specifications.

DENR uses many types of equipment for environmental data collection purposes. The need for specific equipment is usually established by personnel responsible for the data collection activities. These employees usually have hands-on experience and have discussed equipment performance with manufacturers and other individuals who perform sampling/analysis work.

The DENR selects laboratories based upon a combination of factors including price, proximity (due to short sample holding times), analytical services available, and data quality. The DENR does not have to go through a formal procurement process when selecting a laboratory. If a written contract is not required and data quality issues arise, the department may immediately switch to a different laboratory.

Contractors hired by DENR go through a similar process. Individual firms provide information as to their capabilities and DENR evaluates their ability to complete a desired task. DENR personnel consider a firm's work history, review project proposals, and review cost estimates to determine if the promised product can be produced. Contracts outline the responsibilities of the contractor and the obligations of DENR. A rigorous technical, legal, and financial review is performed by DENR senior staff before the contract is signed. The DENR QAO, program quality manager, or project officer will review project work plans to ensure quality elements are consistent with state and USEPA requirements and verify the firm has an acceptable quality manual.

Oversight of a contractor is typically the responsibility of the project officer assigned to the project. This individual periodically reviews the project deliverables and determines if the contractor is meeting expectations. Quarterly, semi-annual, or annual project reports, as well as meetings with the contractor are often used to assess progress. If the scope of the project changes and requires contract alterations, review and approval by senior staff is necessary.

Final payment is dependent upon timely submittal of a final report or other services as outlined in the contract and upon verification of the deliverables. The project officer is responsible for reviewing the final report or services. If problems arise, senior staff may become involved to resolve those issues.

Documents and Records

All documents and records produced by DENR or its contractors are official records of the department. Other forms of information produced by DENR, such as photographs, microfilm, emails, field notebooks, laboratory analytical results, computer discs or files, audiotapes, etc., are also considered official records. These records serve as documentation of DENR activities and must be managed to ensure the information is available and in useful form and condition.

Document Control

Quality-related documents that require document control are identified by each program and included in program QAPPs.

Quality system documents are prepared by the DENR QAO or the program quality manager. Other quality-related documents, such as Sampling and Analysis Plans or Project Implementation Plans, are typically prepared by the project officer. During document development, revision, and approval reviews, the document may be reviewed by other team members, the team leader, and possibly senior staff. Additional team members may become involved in the review process based on their expertise.

Department planning documents typically are reviewed by a team leader, a program administrator, and a division director. These reviews ensure compliance with all statutes, contractual requirements, and assistance agreement requirements.

All quality assurance documents will display a revision number and date as a form of document control. All draft quality assurance documents routed through the department for review are marked as “draft.” Only current revisions of a quality document may be used; obsolete revisions should be discarded or marked as “obsolete.”

Document Storage

DENR maintains paper or electronic files for active documents and extensive microfilm collections for historic documents. It is the responsibility of each employee to correctly file materials according to program guidance. Some programs maintain large centralized filing systems and/or separate files for each program member based upon document accessibility needs. These separate files are typically incorporated into the main program document archives/microfilm files when they are no longer active.

Some documents maintained by DENR are confidential. Pursuant to South Dakota law (SDCL 1-27-3), records can be held confidential only where specifically provided for by law. Confidential documents and other forms of information are stored in secured files. Confidential files include items such as signed complaint forms, enforcement related materials, attorney/client documents, personnel matters, and any other information deemed by law to be sensitive in nature. Chain of custody procedures for evidentiary records are discussed in program QAPPs.

Documents that will be stored for long periods of time may be archived with the Office of Records Management. The documents are stored according to the department’s Records Destruction Manual. Destruction occurs according to timelines set forth in the manual unless there are legal reasons for keeping documents for a longer period of time. Employees who frequently use certain documents as reference material may keep copies at their desks rather

than sending them to records management to be archived. Confidential documents are not sent to Records Management for storage.

Documents intended for public use are made available through the South Dakota State Library and the DENR website. However, paper copies of most documents may also be obtained directly from DENR. A copying fee may be charged depending upon document size and the number of documents requested per firm/individual per year.

Computer Hardware and Software

Computer hardware and software are purchased, installed, maintained, updated, and controlled by the South Dakota Bureau of Information and Telecommunications (BIT). BIT is responsible for evaluating and testing computer hardware and most software. The provided software has capabilities allowing for word processing, database creation and manipulation, mapping and geographical information systems (GIS), statistical analyses, and other functions. At the recommendation of DENR, specific computer software may be required to allow DENR staff to fully complete job duties. Examples include software for field meters, EPA databases, and other program specific applications.

BIT periodically conducts audits of software and files stored at individual workstations. Any issues are brought to the attention of senior staff. BIT also has a “Help Desk” that DENR personnel can access for help with computer problems. Training for operation of some software programs is available from BIT. Occasionally, special training sessions are available from the software company or from other individuals who are trained to operate particular software.

Computer hardware and software needs are determined by BIT and DENR personnel. BIT policy and documentation regarding purchasing, installing, maintaining, updating, and controlling computer hardware and software is available at <http://bit.sd.gov/services/>. BIT reviews software products to ensure compatibility with the state system. DENR personnel also review computer hardware and software purchases to ensure the product is sufficient to meet expectations.

Planning

Environmental programs within DENR are often formed as a result of federal or state legislation. In response to legislation, DENR division directors and the department secretary determine the need for new environmental programs. The new workload may be incorporated into an existing program or a new program may be created. Cost and scheduling constraints, including personnel needs, are considered.

New and existing environmental programs at DENR operate under the authority and intent provided by South Dakota law. The environmental data operations conducted by these programs follow established program goals or activities. The data operation processes and details are further defined in DENR approved QAPPs, SAPs, PIPs, partnership agreements, and/or contracts.

All DENR programs requiring the collection, generation, acquisition, or compilation of environmental data that are funded by EPA grants maintain DENR approved QAPPs. Each program QAPP outlines quality requirements associated with data collection, generation of exiting data, and compilation of data from external sources. All data collected, generated, compiled, or otherwise used by DENR will conform to quality requirements and appropriate state standards as identified in individual program QAPPs. DENR will only use data that meets quality requirements, project requirements, and state standards. Any exceptions will be at the discretion of the project officer and quality manager, and a written justification will be included in the project report. QAPP preparation, maintenance, and elements are described and/or referenced in the "Quality System Components" section of this document.

DENR uses a number of methods to inform all parties that might be affected or have interest in environmental programs and projects. Public meetings, mailings, DENR website, and small interested party meetings are used to disseminate information and solicit comments. As necessary, plans may be altered in response to comments received. Once final, the plan is submitted for review and approval by appropriate authorities.

Implementation of Work Processes

Work performed by DENR staff is reviewed by team leaders to ensure the task was properly completed according to approved plans. Quarterly, semi-annual, or annual project reports and annual performance appraisals may be used by team leaders or program administrators. Team leaders also track staff activities and report to program administrators during weekly meetings.

DENR implements standard operating procedures (SOPs) for process or activities that are critical to data collection, generation, and compilation to ensure the results meet the required quality for the intended use. Team leaders and quality managers from each program identify processes or activities that require standardization during internal quality assessments. The DENR QAO may also identify procedures during routine program audits.

Each applicable program has a QAPP that is approved by the DENR QAO. QAPP contents define document control, distribution, and revision. Any changes or additions to the QAPP or SOPs are reviewed by the quality manager, technical staff, team leaders, and program administrators. Obsolete procedures are deleted from SOPs and QAPPs during annual internal QAPP and SOP reviews conducted by each program. Staff are instructed to remove obsolete procedures from work areas when new revisions are released.

Assessment and Response

DENR QA/QC activities are assessed by all DENR personnel. Each team member is responsible for conducting QA/QC activities for their own work or project. Program quality managers are responsible for reviewing quality activities for their program and ensuring quality activities meet program quality goals. The DENR QAO is responsible for overseeing DENR quality activities and ensuring programs comply with DENR's quality management policy. On an annual basis, each program quality manager submits a summary of QA activities to the DENR QAO. In turn, the DENR QAO submits a summary of DENR QA activities; QAPP, SOP, and QMP status; and DENR quality system review results to the USEPA.

Assessment Planning, Implementation, Documentation, and Reporting

Assessments are planned according to the scope of the assessment, budget constraints, management priorities and criteria, and grant/program coverage.

The principal tools for determining the effectiveness of the quality system include assessments and activities outlined in the Quality System Components section of this document. A management system review is performed on an annual basis by the QAO and program quality managers. This review is aimed at determining the effectiveness of management controls in meeting DENR's quality policy. Reviews of QAPPs and SOPs are also performed on an annual basis by the program quality manager to determine if procedures, methods, requirements, and objectives remain appropriate. Technical assessments, performed by the program quality manager are also performed on an annual basis or as necessary. The purpose of technical assessments is to review data, sampling procedures, and other associated documentation; and/or observe field sampling procedures to ensure staff are following SOPs. Data quality assessments are performed on a continual basis by all program staff to ensure that data quality objectives are met. Program quality managers may conduct QA/QC activities on projects when they are the project manager, but should remain independent during program technical assessments. The team leader may assume technical assessment duties as needed to ensure the program quality manager's independence from the work being assessed.

When quality associated problems or issues requiring discussion or department action are noted, a written report documenting significant problems or changes to quality assurance activities will be prepared by the program quality manager and provided to team leaders and the DENR QAO. Program administrators, division directors, and the department secretary will be involved as necessary.

Response and Corrective Action

When quality related deficiencies are discovered, a corrective action or correction is issued by the quality manager or DENR QAO, depending on who conducted the quality assessment. The corrective action may require immediate action or the program may be issued a compliance schedule with completion dates. Corrective actions and compliance schedules are also reported to team leaders and the program administrator. The DENR QAO, team leader, program quality manager, and/or program administrator will monitor the timeliness of the corrective action to ensure it is completed within the specified time frame. Follow-up audits are typically scheduled and conducted by the program quality manager or DENR QAO for verification of corrective actions.

The quality manager from each program has the authority to conduct quality assessments within the program and has full access to documents, data, and records. Each program quality manager reports quality issues directly to the program administrator. The DENR QAO may also become involved in quality conflict resolution as necessary. The DENR QAO has the authority to conduct quality assessments with applicable programs and has access to necessary information. The DENR QAO reports quality issues directly to the applicable program administrator. In the event of conflict, the DENR QAO may report to program administrators, division directors, or the department secretary as necessary.

Quality Improvement

Quality improvement begins by using the methods outlined in this document: following written procedures, conducting appropriate quality activities, and issuing corrective actions as necessary. By following these methods, DENR staff ensure that sampling procedures and data collection, manipulation, and management methods are consistent, which results in the improvement of DENR's quality system. Problems arise on occasion and DENR makes every effort to correct these problems and prevent them from occurring in the future.

There is a high level of communication between team members and senior staff. DENR personnel are aware of QA/QC expectations and their possible consequences to the regulated community. Data quality errors may result in an incorrect interpretation of the data which may lead to mistakes that are either unnecessarily costly or adversely impact human and environmental health. For this reason, data quality is a priority for DENR. It is the responsibility of all DENR personnel to prevent quality related problems, detect data quality reliability issues, document and implement corrective actions, and track changes to ensure problems have been remedied.