

**Quality Assurance Management Plan**

**For the**

**Division of Water**

**New York State**

**Department of Environmental Conservation**

**August 2020- March 31, 2025**


**Abstract:** This Quality Assurance Management Plan (QAMP) documents the activities and details for successful implementation of the New York State Department of Environmental Conservation (NYSDEC), Division of Water's (DOW) Quality System. The purpose of this QAMP is to establish Division wide consistency in the application of quality assurance and quality control policies, and procedures. DOW programs<sup>1</sup> that generate, fund or use environmental data are to follow this QAMP for field, laboratory or environmental data applications.

Environmental data includes, but is not limited to, information collected directly from analytical or physical measurements or tests, produced from calculations, scientific observations, mapping, models, or compiled from other sources, such as databases or reports. Environmental data may also include assessments of the performance of environmental technologies by DOW, its grantees, permittees or contractors.

All organizations conducting environmental programs funded by the United States Environmental Protection Agency (USEPA) are required to establish, implement and document a Quality System (EPA Order 5360.1). In meeting Federal regulation (2C.F.R. § 1500.11) this document has been prepared according to the USEPA publication *EPA Requirements for Quality Management Plans* dated March 2001 (QA/R-2).

<sup>1</sup> The term 'program' refers to Division or Bureau, long term efforts and single objective activities

## Approval Signatures



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DOW QAMP Revision History

Prepared/Revised By:	Date:	Revision No:	Summary of Changes:
Jason Fagel / Rose Ann Garry	03/ 2014		Added Demonstration of Competency component to meet EPA Guidance
Rose Ann Garry	03/18/2021		Document Reformatted to meet EPA Guidance including additional content for QA Training, Computer Technology, Quality Planning Implementation and Evaluation. Clarification of roles and responsibilities including delegation authority for review and approval of QAPPs and SOPs. Updated all date references and DOW organization charts.

*'No substantive changes' include updating references, correcting typographical errors, and clarifying certain language to make the document more useful and effective*

## Acronyms, Abbreviations and Definitions

ANSI	American National Standard Institute
ASQ	American Society for Quality
CSLAP	Citizen Statewide Assessment Program
DOH	Department of Health
DOW	Division of Water
DQOs	Data Quality Objectives
DUAR	Data Usability Assessment Report
ELAP	Environmental Laboratory Approval Program
FLLOWPA	Finger Lakes - Lake Ontario Watershed Protection Alliance
PPG	Performance Partnership Grant
QA	Quality Assurance
QAMP	Quality Assurance Management Plan
QAPP	Quality Assurance Program/Project Plan
QC	Quality Control
SOP	Standard Operating Procedure
USEPA	United States Environmental Protection Agency
WAVE	Water Assessments by Volunteer Evaluators

*Data Usability Assessment Report (DUAR):* The evaluation of data based upon the results of data validation and verification for the decision(s) being made. Reviewers assess whether the process execution and resulting data meet data quality objectives based on the data quality criteria stated given in the program QAPP.

*Direct Measurement Data (primary data):* Data that is collected/originated with the data users/researchers for a specific program, project, or purpose.

*Environmental Data:* Any measurements or information that describe environmental processes, location, or conditions; ecological or health effects and consequences; or the performance of environmental technology. Environmental data includes information collected directly from measurements, produced from models, and compiled from other sources, such as databases or literature (U.S. EPA Quality Policy CIO 2106.0; 10/20/08). This includes programs that involve the investigation of chemical, biological, physical constituents, development evaluation, and use of computer or mathematical models and demonstration of environmental technology.

*Environmental Laboratory:* Any facility that examines or is available for the examination of samples or specimens including, but not limited to: air, stack emissions, water, wastewater, surface water, ground water, recreational waters, swimming pools, leachate, land runoff, solid waste, hazardous waste, soil, sediments and vegetation, as well as any substance that could contribute to the pollution of or that could be contaminated by material contained in such samples or specimens (NYS Public Health Law §502).

*Environmental Test(ing):* The detection and/or quantitation of the biological, chemical, radiochemical or physical factors or characteristics of a parameter derived from a data collection activity, investigation, examination measurement, observation, calculation or test. This includes analytical methods, analyses, measurements, or test procedures.

*Existing Data (secondary data):* Refers to data that is collected by an entity other than the data user. Data that was previously collected and analyzed/processed.

*Parameter:* The physical, chemical, biological or radiological measurable factors/properties that may affect water quality. Including but not limited to analytes, constituents, contaminants, environmental samples, specimens, substances, pollutants or elements.

*Program/Project:* Either a long-term effort (program) as designated by Division and/or Bureau objectives or a single Division/Bureau activity (project).

*Quality Assurance (QA) Documents:* Refers to SOPs, QAMPs, QAPPs, Audits and DUARs. See individual definitions.

*Quality Assurance Program/Project Plan (QAPP):* Documentation of the application of quality assurance and quality control processes to activity-specific efforts to help ensure that results of the work performed will satisfy the stated performance criteria. Required to be approved prior to initiating environmental data collection and structured on guidance provided by the United States Environmental Protection Agency.

*QA Staff:* Refers to the group of DOW staff who have been designated by DOW and have received quality assurance training to implement DOW's Quality System including but not limited to review, approval and archival of QA documents. The QA Staff is comprised of the Quality Assurance Officer (QAO), Assistant Quality Assurance Officers (AQAOs) and Quality Assurance Reviewers/Auditors (QARAs).

*Quality System:* The framework that prescribes the policies, management, responsibilities and activities to consistently achieve an organizations quality related goal. The standards, methodologies and resources required are documented in a Quality Assurance Management Plan.

*Standard Operating Procedure (SOP):* Documentation that details the method for performing an operation, analysis, or action with specific sequentially prescribed techniques and steps. Required to be approved as the accepted method for performing certain tasks.

## DISTRIBUTION LIST

These individuals must receive a copy of the approved Quality Assurance Management Plan (QAMP) to complete their role in the DOW Quality System.

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## 1. INTRODUCTION

### 1.1 Purpose

This QAMP:

- Supports DOW's commitment to scientifically defensible data.
- Documents DOW's quality assurance policies, organizational responsibilities, management and technical practices and reporting requirements.
- Fulfills the quality assurance requirements of DOW's USEPA PPG agreement.

### 1.2 Background

The USEPA requires non-EPA organizations performing work supporting environmental programs either funded by or on their behalf, to participate in a Quality System (CIO Order 2105.0 May 2000) that follows the consensus standard, ANSI/ASQ E4. Implementing a Quality System is also required by Title 40 of the Code of Federal Regulations Parts 31 and 35.

### 1.3 Quality Assurance Goal

DOW relies on environmental data to support scientific, regulatory, and administrative decisions. Therefore, the primary goal of DOW's quality system is to ensure the scientific integrity of environmental data generated, funded, or used by the Division's programs is sufficient to carry out its mission.

### 1.4 Quality Assurance Policies

- DOW's quality system follows federal and state laws and regulations for the collection, funding and use of environmental data.
- Incorporating by reference the definitions, principles, and procedures found in EPA's "Policy to Assure the Competency of Organizations Generating Environmental Measurement Data under Agency-Funded Assistance Agreements" (March 13, 2013) and complying with the NYS Public Health Law §502 helps ensure competency among DOW staff, cooperators and contracted laboratories.
- It is DOW quality assurance policy that all work involving environmental data whether generated, funded, or employed by the Division comply with ANSI/ASQ E4 guidance and USEPA systematic planning guidance (*EPA QA/G-4, February 2006*).
- DOW Management staff, and the DOW QA Officer are responsible for ensuring that these QA policies and this QAMP are implemented.

## **2. MANAGEMENT AND ORGANIZATION**

### **2.1 Organization Structure and Responsibilities**

All DOW personnel have a responsibility for ensuring environmental data generated, funded or used by the Division are:

- Of known precision and accuracy
- Representative
- Comparable
- Complete
- Transparent
- Reproducible
- Unbiased
- Defensible
- Documented.

DOW management will ensure that these elements of scientific data integrity are accomplished by promoting competence, systematic planning, and documentation of processes and procedures for all programs from initial study planning through data usage.

USEPA Region 2 in approving the guidance as set out in this DOW QAMP delegates QAPP approval authority to the QAO or their designee.

## 2.2 DOW Organization Structure

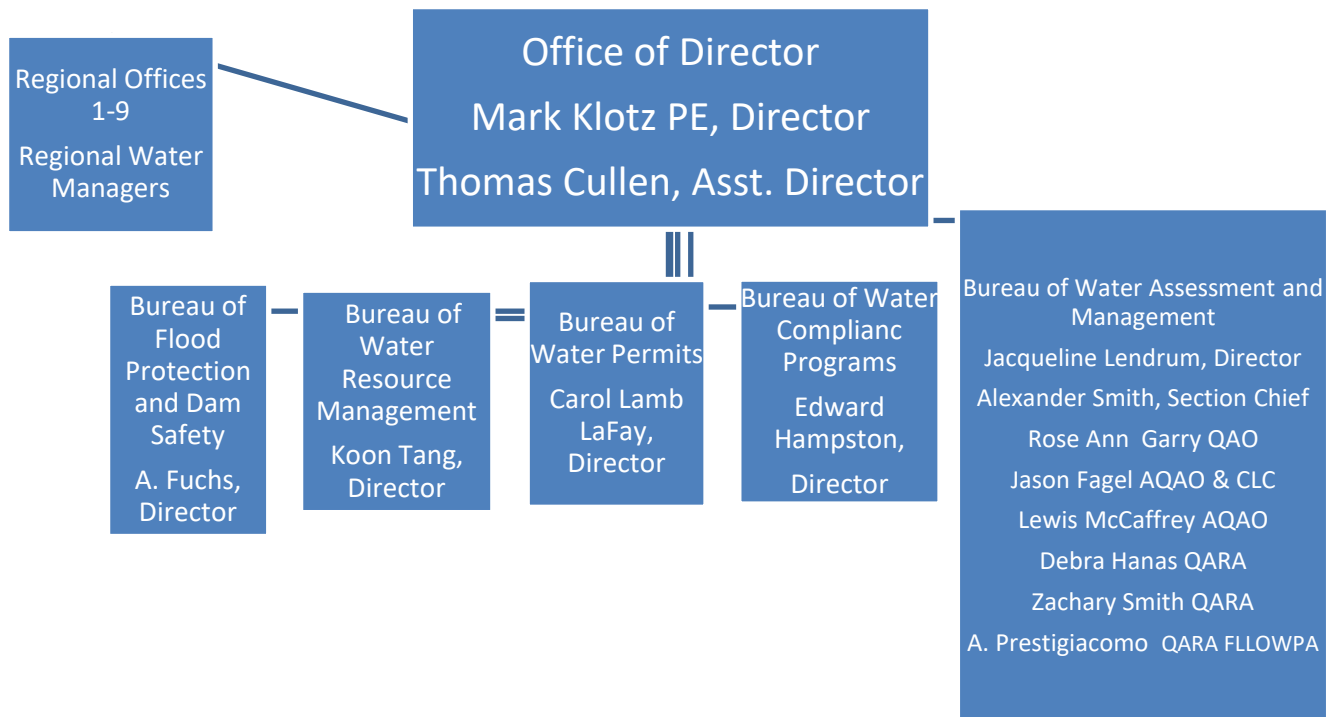


Figure 1. DOW Organizational Chart – See Appendix 2 for additional Bureau descriptions.

## 2.3 Roles and Responsibilities

The Division Director has ultimate responsibility of ensuring DOW's quality system is considered in all divisional environmental data related programs. QA management activities are delegated to the DOW QAO.

This section describes the general quality responsibilities of DOW management, the specific QA responsibilities of DOW staff directly involved in the generation, funding or use of environmental data, and individual responsibilities of the DOW QA Staff.

### 2.3.1 DOW Management

#### **Director, Division of Water**

Responsibilities, regarding QA:

- Serves as the final authority in resolving any quality related issues.
- Ensure DOW staff have access to technical and quality training.
- Ensure resources are available to support the Division's quality system.
- Ensure the DOW QAMP is in place and functioning.

#### **Bureau Directors, Division of Water**

Responsibilities regarding QA:

- Ensure resources are available for staff to follow Division's quality system.
- Ensure Bureau staff are aware of and follow the guidance in the DOW QAMP.

#### **Section Chiefs, Division of Water**

Responsibilities regarding QA:

- Supervise staff activities to meet the QA duties and responsibilities of the section.
- Ensure resources are available to support the Division's quality system.
- Ensure Section staff are aware of and follow the guidance in the DOW QAMP.

#### **Regional Water Managers**

The Department operates nine regional offices located across the State to provide a more direct link to local issues and needs. The Regional Water Managers have the same QA responsibilities as described above for Sections Chiefs.

### 2.3.2 DOW Staff Involved with Environmental Data Programs

**Program Managers (PM):** All DOW environmental data related programs will have a designated Program Manager. Responsibilities regarding QA:

- Identify program data generation/acquisition, assessment and data validation and usability objectives.
- Determine level of data quality, specific QA/QC activities, and data acceptance criteria to ensure data quality is consistent with program objectives.
- Ensure QAPP and SOP requirements, including those for new initiatives and external activities, are addressed in a timely, consistent and technically appropriate manner.

- Ensure staff are appropriately trained to accomplish assigned tasks.
- Review and revise existing QAPPs and SOP to meet evolving objectives and methodologies.
- Ensure allocation of staff and resources meet the quality objectives of programs.
- Bring QA training needs to the attention of the QAO.

**Program Quality Control Officer (PQCO):** Each DOW environmental data related program will have an assigned DOW staff person knowledgeable but not directly involved in the conduct of the program. Responsibilities regarding QA:

- Assist the PM in ensuring the QA/QC activities are adequate for the intended program and are explicitly documented in the associated program QAPP.
- Coordinate with program staff to help ensure all required elements of QA documents are satisfied.
- Perform and/or coordinate the validation and verification checks as required by the approved QAPP.
- May advise and train staff involved in the assigned programs.
- May conduct field/technical reviews/evaluations of assigned programs to help ensure QC activities are being followed.

**DOW Central and Regional Office Program Staff:** This title captures all DOW staff that do not fit into the roles defined above. Responsibilities regarding QA:

- Follow procedures and practices of the Division's QAMP.
- Annually affirm having read and understood all program relevant QA documentation using the DOW QA Self Certification process.
- Perform assigned duties as outlined in specific QAPPs, cited SOPs, workplans and/or guidance materials.
- Document and notify Program Manager of any deviations from prescribed procedures.

### 2.3.3 DOW QA Staff

**DOW Water Quality Standards and Analytical Support Section Chief:** The Section Chief is a full-time position within the Bureau of Water Assessment & Management. Responsibilities related to oversight of the Division's Quality System include:

- Supervision of the QAO, AQAOs and other members of the QA Staff.
- Secure and maintain resources to fulfill DOW's Quality System requirements and retain USEPA delegated authority to review and approve QAPPs.

**DOW Quality Assurance Officer (QAO):** The QAO is a full-time position within the Bureau of Water Assessment & Management. The QAO has technical and administrative authority for the coordination of all QA matters within the Division. The QAO together with the DOW Water Quality Standards and Analytical Support Section Chief and concurrence from the Bureau Director of Water Assessment &

Management may designate qualified staff to assist in carrying out the tasks and objectives of the DOW's quality system.

- Shall be independent from operations directly implementing environmental programs.
- Serve as the principal QA liaison with USEPA Region 2 Quality Assurance
- Prepare and maintain the Division's Quality Assurance Management Plan (QAMP, this document).
- Identify and respond to Division QA needs and requests. Including advising on the design and development of QA protocols for new DOW initiatives.
- Review and approve environmental data related program QA documents per SOPs 812 *Review, Approval and Archival of QA Documents* and 813 *Development and Approval Process of DOW QA Documents*.
- Provide technical expertise in support of DOW programs including but not limited to analytical methodology selection, demonstration of competency, and alternate test procedure requests.
- Provide technical support to DOW staff on questions regarding sampling procedures, and sample result submission/data reporting issues.
- Provide training and assignment of QA activities to DOW QA staff.
- Ensure QA Staff responsibilities and requirements are met, including review, approval and archival of QA documents, program evaluations, and QA training.
- Provide QA training to DOW staff as needed.

**DOW Assistant Quality Assurance Officer(s) (AQAOs):** The AQAOs are part-time positions within DOW. Responsibilities regarding QA:

- Assist the QAO in meeting the objectives of the DOW quality system.
- Review and approve QA documents at the direction of the QAO.
- Track, review, revise, approve, and archive QA documents per SOPs 812 *Review, Approval and Archival of QA Documents* and 813 *Development and Approval Process of DOW QA Documents*.
- Notify the QAO of any issues or concerns that require corrective action to eliminate nonconformity to the Division's QA documents or Quality System.
- At the direction of the QAO, respond to requests from Program Managers on QA issues.
- At the direction of the QAO, perform environmental laboratory analytical sample data package validations.
- Assist QAO and Program Managers to ensure the design and development of DOW programs meet the Division's QA requirements.
- Be independent from the direct implementation of the program operations outlined in QA documents they are assigned to review and/or approve.

**DOW QA Reviewers and Auditors (QARAs):** The QARAs are part-time positions within the Division of Water. QARAs assist the QAO and AQAOs in carrying out the QA tasks. Responsibilities regarding QA:

- Perform cursory review of QA documents to ensure use of appropriate QA templates, inclusion of all QA elements, and consistent formatting.
- Address initial QA document development or review process questions/issues.
- Conduct audits/assessments of program activities.

**DOW Contract Laboratory Coordinator (CLC):** The CLC is a part-time position within the Bureau of Water Assessment & Management. Responsibilities regarding DOW's environmental laboratory contracts:

- Ensure management of environmental laboratory contracts follow applicable state regulations and guidance covering awards, oversight and payment.
- Ensure work products delivered by contract laboratories comply with all federal and State regulations.
- Prepare and update the NYSDEC's "*Prescribed Analytical Protocols*," October 2016 (PAP).
- Ensure environmental laboratory contracts meet the requirements of the NYSDEC's "*Prescribed Analytical Protocols*", October 2016 (PAP).
- Assign and track the Divisions analytical resources and services including the fiscal budget.
- Work to resolve environmental laboratory questions or issues identified by the Division's monitoring programs.
- Conduct annual environmental laboratory audits in consultation with the QAO. Including subcontract and special-purpose cooperating laboratories not under direct contract with the Division.
- In consultation with the QAO and PMs, perform analytical data reviews on contract environmental laboratory data packages. Including subcontract and special-purpose cooperating laboratories not under direct contract with the Division.

#### 2.3.4 DOW Health & Safety

**DOW Health and Safety (H&S) Coordinator:** The DOW H&S Coordinator is a part-time position within the Bureau of Water Assessment & Management. The DOW H&S coordinator serves as a liaison between DOW staff and the Agency Health and Safety Unit. Responsibilities related to H&S:

- Manage the Division's Health and Safety Program SOP and Water Boating Safety Program SOP.
- Arrange H&S training for DOW personnel.
- Procure DOW Personal Protective Equipment (PPE).
- Perform safety assessment of sampling/monitoring conditions.
- Maintain the Chemical Inventory for the Division's Central Office Sample Preparation space.
- Assist DOW Regional staff in following and maintaining required health and safety documentation as required for their respective sampling preparation space.

### 3. QUALITY SYSTEM DESCRIPTION

This QAMP establishes the overarching framework of the DOW quality system by applying the cyclic process of planning, implementation, and evaluation. Qualified and trained staff, review and approval of QA documents, and evaluations for continuous improvement help support the Division's environmental data-based decisions.

All DOW staff shall follow the Division's quality system and uphold the quality assurance and quality control requirements. This includes DOW scientists, engineers, and managers, as well as contractors, grantees, or volunteers responsible for completing activities associated with environmental data generated, funded, or used by the Division.

#### 3.1 Quality Objectives and Criteria

QA for environmental data is the overall process of systematic planning, review and approval of QA documents, training and evaluating effectiveness of procedures.

To quantify and document if measurement systems meet predetermined requirements of data integrity, technical activities of quality control are applied from planning through evaluation stages of a program. Observation of "out of control" conditions require re-evaluation of quality assurance practices.

DOW conducts a wide variety of environmental data programs with distinct objectives. Therefore, program quality specifications are flexible to match specific needs. In determining the QA/QC requirements for a program, evaluation of key elements include but are not limited to: duration, scope, complexity, unique concerns, consequences of potential decision errors and available resources.

#### 3.2 QAPPs

QAPPs define program goals, scope, quality objectives, and activities in sufficient detail to ensure program outcomes. Following an approved QAPP promotes the quality, utility and cost-effectiveness of programs.

DOW's quality system requires QAPPs be in place prior to the start of environmental data programs generated, funded or used by the DOW. This includes programs involving analytical and physical measurements, tests, calculations, scientific observations, mapping, modeling, or assessments of environmental technologies.

#### 3.3 SOPs

SOPs document tasks routinely conducted to accomplish either a technical or administrative activity. By ensuring proper and consistent performance of a task, SOPs support the quality and integrity of an activity.

The DOW quality system employs the use of SOPs to:

- Document DOW accepted methodology.
- Promote consistency across programs.
- Support comparable and reproducibl outcomes.
- Maintain a historical record.
- Serve as a reference and training aid.
- Maintain a comprehensive structure of SOPs.



- Assist management in evaluating and meeting program objectives.

### **3.4 Audits, Assessments, Reviews**

Opportunities for continuous quality improvement are provided through evaluations. Utilizing a systematic and objective approach, audits, assessments and reviews of programs, and QA documents provide an independent evaluation of documented quality activities and their implementation.

Evaluations by the QAO or designee follow the *Guidance on Technical Audits and Related Assessments for Environmental Data Operations (QA/G-7) EPA/600/R-99/080 May 2006*.

Evaluations are scheduled into the DOW Annual QA Work Plan and may be conducted at the discretion of:

- USEPA Region 2 QA Officer
- DOW Managers
- Program Managers
- DOW QAO

Corrective actions may take the form of enhanced documentation, training or a change in process or procedures. Results of audits are summarized in an audit report, distributed to the PMs and immediate supervisory staff. Assessments and reviews may be communicated by e-mail or within a Microsoft Teams® post.

## **4. QUALIFICATIONS, TRAINING AND CERTIFICATIONS**

### **4.1 DOW Personnel Qualifications**

All personnel associated with DOW environmental data programs will possess the minimum level of qualifications necessary to meet NYS Civil Service job titles frequently used by DOW. These include but may not be limited to: Environmental Program Specialist, Engineer, Geologist, Engineering Technician, and Research Scientist. Personnel may be state-employed or on assignment to NYSDEC DOW through the Intergovernmental Personnel Act or similar staffing agreement. In addition, personnel will have a working knowledge of computer software and databases utilized by the Division, environmental science and QA/QC fundamentals.

DOW environmental data related programs cover a diverse range of subjects that may require specialized qualifications and/or training. Therefore, staff may be required to meet additional qualifications as identified in specific programs.

#### **4.1.1 DOW QA Assigned Personnel**

DOW staff responsible for managing the Division's quality assurance program, including but not limited to, providing technical support regarding water quality sampling and analysis and selecting, requiring and/or approving analytical tests or methods shall:

- have a bachelor's degree with a minimum of fifteen (15) semester credit hours in chemistry;
- five-years of experience, 1 year of which within DOW, in environmental programs including water quality measurement and data review;

- be familiar with and understand the requirements and protocols outlined in this guidance and DOW QA SOPs;
- have a working knowledge of quality assurance, including traceability, reproducibility, demonstration of capability and measurement uncertainty;
- be familiar with and understand the principles of data quality objectives including selectivity and sensitivity;
- authorized by the Director of the Bureau of Watershed Assessment and Management.

DOW staff serving on the QA Staff in positions other than QAO or AQAO shall meet the minimum qualifications described in Section 4.1 above “DOW Personnel Qualifications.”

#### **4.1.2 DOW Sample Collectors and Laboratory Personnel**

DOW staff assigned to conduct water quality sampling or laboratory analysis shall have the technical, mechanical, and physical skills necessary to safely operate monitoring or sample processing/analysis equipment and utilize associated software and databases.

##### **4.1.2.1 Volunteers/Interns**

Volunteers or interns, such as students in environmental sciences or related fields, may participate in environmental data related programs provided they receive training, work as part of a team with experienced DOW personnel and have a completed an approved volunteer application on file at NYSDEC in the Personnel office. Certain programs administered by DOW , including CSLAP, WAVE, and FLOWPA, require participants to also complete a waiver/release of claims form. These completed forms are is maintained on file as prescribed in the specific program QAPPs.

#### **4.2 Training**

To adequately perform their assigned tasks DOW Staff are encouraged to engage in continuing educational opportunities to maintain an understanding of the advances in conceptual or technological understanding of environmental data. Training may include general webinars, professional continuing education courses, vendor presentations on innovative technologies and products, DOW Staff presented topic related seminars /presentations and mentoring.

Program managers ensure staff implementing QAPPs and SOPs are familiar with their responsibilities under this QAMP, their specific QAPP and SOPs, and have the appropriate level of training and understanding to manage their assigned responsibilities.

##### **4.2.1 DOW QA Staff**

New DOW QA Staff members are trained by the QAO on:

- the requirements and protocols outlined in this guidance and DOW QA SOPs;
- QA, including traceability, reproducibility, demonstration of capability and measurement uncertainty;
- principles of data quality objectives, including selectivity and sensitivity.

Training consists of presentation and discussion, review of QA resources including USEPA guidance documents listed under Section 10. References and practice review of program QA documents.

All QA Staff members are to engage in continuing education opportunities in quality assurance practices, analytical methods, and sample collection.

#### **4.2.2 QA/QC Training**

Training occurs via Division-wide communication, presentations, and as required for their specific duties.

DOW Staff are introduced to DOW QA Staff and accessibility to QA resources, including the DOW QAMP, QAPPs, SOPs, and templates, and key components of DOW's quality system.

Refresher QA training may be offered to DOW staff when:

- a significant revision to QA documents occurs;
- requested by DOW management;
- there are new program initiatives;
- there are multiple incidents requiring corrective actions.

The QAO or designee may provide one-on-one QA training to PMs or PQAOs as needed.

As resources and work priorities allow, all DOW personnel are encouraged to participate in quality assurance training and presentations.

#### **4.2.3 Field Measurements and Sample Collection**

Training in environmental measurement and/or sample collection methods are directed by DOW programs and may be offered via:

- In-person as resources and conditions allow.
- Virtually in a synchronous format, instructor led.
- Virtually in an asynchronous format, self-paced videos and slide presentations.
- One-on-one mentoring. New field staff are matched with experienced field personnel. Staff work in tandem to facilitate the transfer of knowledge of DOW water quality monitoring activities.
- Additional relevant trainings and refreshers as are needed and available.

NYSDOW staff not permanently assigned field monitoring activities may assist in these efforts, after they receive the appropriate training as defined in specific program QAPPs.

Partners and other outside agency staff participating in sampling must provide documentation that they have read and understood all relevant quality assurance documents for the specific program on which they are working.

#### **4.3 Annual Self Certification and Tracking**

The DOW internal QA web page maintains a self-certification form that allows for electronic self-certification that an individual has read and understood procedures outlined in QA documents associated with their specific program.

The QA self-certification form and database are managed by the DOW QA Staff. PMs and or Section Chiefs are notified when staff have submitted a self-certification form.

Training records related to QA are tracked by the QA Staff and maintained on the Division's Microsoft Teams®.

Professional development activities offered or endorsed by the Agency training unit are tracked thru Statewide Learning Management System (SLMS). DOW staff are responsible for maintaining a record of any other training they've received.

#### **4.4 Safety**

All DOW staff are required to

- Operate under the principle that safety is more important than the assigned task.
- Follow Agency Health and Safety protocols.
- Follow the Division of Water Health and Safety Program guidance.
- Follow the DOW Boat Safety Program guidance as appropriate.
- File a Float Plan with their immediate supervisor or designee when traveling/working on water in a paddled or engine powered ship, boat or craft.

### **5. COMPUTER TECHNOLOGY**

#### **5.1 Hardware & Software**

DOW computer hardware and software are coordinated through the Agency and DOW Information and Technology Services (ITS) units. DOW staff are to abide by the purchasing and use requirements established by State of New York's IT Office.

#### **5.2 Security**

QA documents are stored electronically on secure DOW network drives which are part of the Storage Area Network (SAN) in NYSDEC's data center. The SAN is a redundant array of drives that is backed up each night to tape. Tape sets are rotated once a week to a secure off-site storage. Electronic card-key locks restrict physical access to the Department's data center.

Network access is restricted to Department employees with individual user accounts, each being password protected. Mandatory employee Cyber Security training and required quarterly password changes establish and maintain password security.

Access to specific information/files on the DOW drives are limited through permissions granted by Program Managers and managed by the DOW's System Administrator's application of read or write only authorization

#### **5.3 Data Management**

Environmental measurement data is currently stored in Environmental Data Management Systems independently administered by both the DOW Lake and Stream Monitoring and Assessment Sections. Environmental measurement data is verified and validated against program quality objectives and retained on secure DOW drives.

Environmental monitoring program PMs are expected to track QC performance and alert their respective immediate supervisors of deviations from historical norms or failure to comply with established data performance criteria.

Environmental measurement data (and metadata) manually entered into DOW computer databases are examined and verified by at least one other DOW employee familiar with the database.

Staff transferring data either manually or electronically shall:

- Examine and verify a random, representative subset of transferred data.
- Correct and document data entry errors.
- Report issues requiring further investigation and/or persistent problems to appropriate supervisory and QA staff to determine corrective actions.

Mathematical, statistical, geographical and graphical software or models shall be tested before and during application. The reliability of calculations shall be tested by:

- comparison to other computer programs;
- manual calculations on randomly selected data;
- other appropriate means.

Program specific QA documents will define verification details including:

- specifying the reviewer;
- percentage of data to review;
- schedule and method of review;
- performance criteria.

## **6. DOCUMENTATION AND RECORDS**

### **6.1 Development, Review and Approval**

The process for developing/revising, reviewing, and approving QA documents is outlined in the DOW's QA SOP 813 *Development and Approval of DOW Quality Assurance Documents* and SOP 812 *The Review and Archival of DOW Quality Assurance Documents*.

All activity related to the development, revision, review, and archival of QA documents is centralized through the Division's Microsoft Teams® QA channels.

### **6.2 Document Version Control**

Document version control allows documents to be uniquely identifiable, easily retrievable and minimizes potential for referencing incorrect copies. Version control elements for QA documents are defined in the header of the document, follow the DOW QA SOP 812 *The Review and Archival of DOW Quality Assurance Documents* guidance and include at a minimum; Program Title, Version Identifier #, Date, and Page x of y.

### **6.3 Document Storage**

- Oversight of DOW QA document management, including current and historical versions, will be the responsibility of DOW QA staff.

- Final approved QA documents will be retained as a “read only” PDF file on the Division’s Centralized Electronic Document Repository (CEDR) database located on a secure DOW shared network drive.
- The DOW QA officer or designee is solely authorized to make non-substantive (typographical error) approved changes to the CEDR document within 96 hours of approval of the final QA document. All other modifications/changes will be addressed as revisions and will follow the protocol per SOP 813 *Development and Approval of DOW Quality Assurance Documents* and SOP 812 *The Review and Archival of DOW Quality Assurance Documents*.
- DOW staff will have access to current and working copies of QA documents thru the Division’s QASAP Microsoft Teams® channel.
- The DOW’s quality system requires hard copy versions of QA documents in situations where staff have limited access to DOW network drives. In these instances, staff are to have QA documents readily available in either hard copy form or stored locally on electronic field ready equipment.

#### **6.4 Distribution**

The distribution of program specific QA documents to staff directly involved in the program will be the responsibility of PM.

Distribution and availability of new or revised SOPs or DOW QA guidance documents; including templates and checklists will be managed by DOW QA Staff and achieved thru:

- electronic communication (email) to all DOW staff;
- posting on the internal DOW QA webpage;
- storage in the DOW’s CEDR database.

The DOW utilizes standard language in all external QAPPs that prohibits environmental data; measured, generated, or developed under an award/grant/contract from being released, published or cited without the express authorization by DOW.

#### **6.5 Forms**

DOW Staff will have access to the following resources via the internal DOW QA webpage.

- QA Document Templates
- QA Documents Review Checklists
- Chain of Custody Document Template
- Sample identification label Template

#### **6.6 Record Retention**

Records and documents are maintained to ensure compliance with all applicable statutory and regulatory requirements as specified by the Department’s Records Retention Documents.

Generally, retention schedules require records be maintained for 10-years from completion of a program. Specific programs may specify additional record retention/archiving requirements and schedules.

## **6.7 QA Tracking**

QA activities including document development, review, approval and archival as well as training are documented and tracked through the Division's Microsoft Teams® platform utilizing the Microsoft Planner application.

## **7. BUDGET AND PROCUREMENT OF ITEMS AND SERVICE**

### **7.1 Budget / Fiscal Information**

The Division receives funding for environmental data programs through the USEPA PPG agreement, other USEPA Grants, the NYS Environmental Protection Fund, and State budget allocations.

### **7.2 Procurement of Items**

DOW's Fiscal Planning and Management Section, in the Bureau of Water Compliance ensures procurement of supplies, equipment and services are conducted in accordance with New York State (NYS) procurement requirements and federal procurement requirements when federal funds are used. DOW staff are to abide by the procurement, inventory tracking and surplus requirements established by the Division of Operations, Property Management Section's *Property Management System Handbook* (January 2020), the DOW Property Management Coordinator and their respective Bureau.

Responsibility for inventory tracking and maintenance of equipment and supplies rests with the purchasing Bureau/Region. The Division's Property Management Coordinator will be notified of all property transactions; tag or surplus requests, or transfer of property.

Use of long and short term storage of water quality measurement equipment whether for Central Office or Regional use must meet the guidelines for use as determined by DOW management, building requirements and be compatible with the care and maintenance and storage requirements of the equipment.

Supplies and disposable/consumable material provided or specifically purchased for a program/ are the responsibility of the PM and immediate supervisory staff. Quantities are to be maintained and replenished as needed so that work quality or productivity is not compromised.

### **7.3 Environmental Laboratory Contract Services**

- Contractual services involving the acquisition or analysis of environmental data shall be planned and controlled to ensure services meet applicable technical, QA, and fiscal requirements.

- The CLC works with DOW's Fiscal Planning and Management Section to ensure environmental laboratory contract agreements meet DOW and NYSDEC Division of Management and Budget Services approvals.
- The CLC follows the NYSDEC's *Prescribed Analytical Protocols (PAP)* October 2016 to ensure environmental tests accurately quantify concentrations and characterize parameters; and are performed in such manner that demonstrates competency to generate environmental data.
- The PAP requires laboratory adherence to specified analytical methods and quality control practices to help ensure the integrity and utility of environmental measurement data.
- The CLC maintains a comprehensive list of criteria contained within the NYSDEC PAP including but not limited to standard methods, turn-around time, quality control, and data deliverables.
- If a laboratory is not covered by the PAP or there are planned deviations to PAP specifications, the QAPP must specify analytical quality criteria.
- The type and quantity of QC samples required to characterize the quality of environmental data and/or to identify any issues will be specified in the QAPP.
- All costs and services will be documented through vouchers and/or receipts and submitted for payment following Division prescribed procedures.

## **8. PROGRAM WORK PROCESS**

### **8.1 Planning**

The DOW quality system, and subsequently all DOW programs involving environmental data, rely on systematic planning and documentation to support outcomes and decisions with the degree of confidence necessary to address potential consequences.

Matching the level of details with the type and quantity of quality information needed begins with defining clear and concise program and data quality objectives (DQOs).

DOW environmental data programs are to follow the systematic planning process as described in *USEPA Guidance on Systematic Planning using the Data Quality Objectives Process (QA/G-4)* and consistent with the DOW QAMP.

This QAMP, program specific QAPPs and SOPs are the core quality assurance documents utilized by DOW to describe QA/QC processes and responsibilities.

#### **8.1.1 QAMP**

This current version of the DOW QAMP retains previous version attributes with minor changes to reflect recent quality improvements to address issues identified in previous reviews and audits and current DOW organizational changes and follows the guidance presented in *EPA Requirements for Quality Management Plans (EPA QA/R-2)*.

The DOW QAMP is required as part of the Division's PPG agreement and, although primary responsibility for its preparation rests with the QAO, input from DOW staff in documenting QA processes is considered essential.



### **8.1.2 QAPPs**

A QAPP shall be developed for each special study, monitoring program, complaint track down, modeling or mapping project, environmental technology assessment or environmental data collection effort conducted by the Division, in cooperation with the Division, or for use by the Division.

The QA Staff will work with program staff to ensure the design of QAPPs are in accordance with *EPA Requirements for Quality Assurance Project Plans (EPA QA/R-5)*, *EPA Guidance for the Preparation of Quality Assurance Project Plans (EPA QA/G-5)* and DOW SOP 813 *Development and Approval Process of DOW QA Documents* in the preparation of QAPPs.

The DOW enlists the use of DOW drafted QAPP templates and checklists to ensure critical elements of scientific data integrity including selectivity and sensitivity are addressed in the interest of efficiency and effectiveness in the development of QAPPs.

A DOW Short Form Monitoring QAPP is pre-populated with standardized sampling and quality control language. Based on the best professional judgment of quality assurance staff this short form may be used with minimal refinements to meet specific program goals in some circumstances. It is recognized that unusual or emergency situations may require immediate response by DOW staff. In these situations, the QAO will help expedite the development, review and approval process.

### **8.1.3 SOPs**

DOW administrative and technical SOPs shall be developed to describe methods or processes in enough detail to ensure the quality and integrity of the activity outcomes. If a program uses a published procedure and/or SOP with modifications, these modifications are to be detailed in the text of the QAPP and/or SOP.

Preparation of DOW administrative and technical SOPs follows DOW SOP 802 *SOP on SOPs*, DOWSOP 813 *Development and Approval Process of DOW QA Documents* and USEPA's *Guidance for Preparing Standard Operating Procedures*, USEPA QA/G-6.

DOW SOPs may be developed or modified by:

- A PM or assigned technical staff in concurrence with DOW staff with knowledge and experience in the related subject matter.
- Program staff at the request of the QAO as part of the review and approval of a QAPP.
- Technical staff aware of a process, procedure, or analysis that would improve the efficiency and effectiveness of an activity when applied consistently across DOW Bureaus/Regions or programs.

## **8.2 Implementation**

The implementation of this DOW QAMP is the responsibility of DOW Management in cooperation with all DOW staff. The quality and usefulness of the environmental data generated, funded or used by the Division reflects the willingness of DOW staff to ensure requirements of this QAMP are fulfilled by qualified personnel in an efficient and cost-effective manner without compromising stated QA objectives.

### 8.2.1 Identification of Programs

To establish the DOW Annual QA Work Plan and identify programs requiring formal QA documentation, the QA Staff will:

- Request Bureau Directors and Regional Water Managers notify QA Staff of planned environmental data related programs.
- Review DOW's primary work planning documents including but not limited to the annual DOW budget, the PPG agreement with USEPA Region 2, and work plans associated with other state or federal grants/agreements to determine which programs may require QA documentation.
- Review the DOW QA Annual Report.
- Review past year's evaluations for pending corrective actions.
- Review status of DOW's approved SOPs.
- Meet with Bureau representatives to discuss new initiatives and/or continuing programs.

### 8.2.2 QAPPs

The QAO or designee is responsible for reviewing and ensuring a QAPP contains the appropriate content and level of detail to meet the stated data quality objectives.

By the USEPA Region 2 QA delegated authority the QAO or their designee will approve QAPPs meeting the prescribed requirements as outlined in this QAMP and associated DOW QA SOPs.

PM are responsible for facilitating distribution and implementation of an approved QAPP prior to the start of any work efforts.

For external environmental data programs conducted for use by the DOW, for example a regulated entity performs additional water quality monitoring in support of a permit modification, the QAO or designee in concert with the associated DOW program lead may review and *accept* the associated QAPP.

DOW's USEPA Region 2's QAPP approval delegation only extends to DOW programs. Therefore, programs funded through the Great Lakes Restoration Initiative (GLRI) Capacity Grant will be reviewed and approved by USEPA Region 2 QA. For GLRI DOW specific programs the DOW QAO will approve in concurrence with USEPA QA.

### 8.2.3 SOPs

SOPs are reviewed and approved for conformance with DOW organizational and technical policies, priorities, and procedures by the associated DOW supervisory. The QAO or designee reviews and approves SOPs for conformance with applicable QA requirements.

Divisional Health and Safety SOPs require review and approval by the Division Director or designee.

## 8.3 Assessment and Oversight

The DOW quality system includes periodic evaluations to ensure achievement of expressed QA objectives and to identify opportunities for improvement.

The nature and frequency of these evaluations are determined by the QA activity and are conducted either on a scheduled basis or initiated in response to an identified issue. Evaluations consist of reviews, assessments and audits that incorporate the basic principles of an independent evaluation of documented quality activities.

### **8.3.1 DOW Quality System and QAMP Review**

- With input from DOW staff, the QAO will conduct an annual internal review of the QAMP to ensure documentation reflects current policies and practices. DOW staff's active participation in this review is vital to a robust quality system because DOW staff carry out the provisions of the QAMP.
- Non-substantive changes; updating references, correcting typographical errors, and clarifying language to improve the usefulness of the document are subject to the review and approval of the QAO and the DOW Water Quality Standards and Analytical Support Section Chief.
- Major revisions, reflecting changes in policy or procedures require the review and approval of the QAO, DOW Water Quality Standards and Analytical Support Section Chief, DOW Bureau of Water Assessment and Management Bureau Director, DOW Division Director, and USEPA Region 2 QA Manager.
- The QAMP shall be submitted to the USEPA Region 2 QA Manager for a comprehensive review and approval every five years.
- Evaluations of DOW's overall quality system are performed by a USEPA Region 2 QA Manager every 3 years or at the discretion of the USEPA Region 2 QA Manager as part of the Division's PPG Agreement and in support of the Division's QAPP review and approval delegation.

### **8.3.2 QAPPs and SOPs Reviews**

#### **8.3.2.1 Prior to Program Implementation**

Program Managers and DOW QA Staff follow the guidance set out in DOW SOP 813 *Development and Approval Process of DOW QA Documents* and SOP 812 *The Review and Archival of DOW Quality Assurance Documents* for the review and approval of QAPPs and SOPs. Conformance with organizational and technical work policies, priorities, procedures, and QA requirements are affirmed by signature.

#### **8.3.2.2 During the Program**

- Any deviation from approved procedures shall be documented and reported to the PQAO and PM. Determination of necessary adjustments or corrective actions will be made by the PM and PQAO in consult with technical and QA staff.
- Quality control indicators are also used to identify issues and are documented per the associated QAPP/SOP guidance.
- The PM and/or supervising Section Chief together with the PQAO will implement corrective actions required to prevent further problems and improve the quality of the program.

- Corrective actions are to be tracked and documented. When a corrective action fails to improve the quality of the program, the PM's supervisor and the QAO are to be consulted.
- Recurrences of corrective actions will elevate the corrective response to consider modifying policies described in this QAMP and associated QA documents and/or requiring additional training.
- When revisions to DOW SOPs are identified prior to the biennial review, DOW staff will notify QA staff and follow the guidance set out in DOW SOP 813 *Development and Approval Process of DOW QA Documents* accordingly.

### **8.3.2.3 Routine Review**

QA Staff provide a level of independent management oversight by reviewing DOW environmental data related QA documents with PMs and DOW staff with knowledge and experience in related subject matters.

These reviews provide an independent qualitative assessment to determine whether the program procedures and practices adequately address generating the type, quality and quantity of data required in addition to a qualitative assessment of the Division's quality system.

QA documentation for DOW ongoing programs are reviewed annually and DOW SOPs are reviewed biennially.

### **8.3.3 Technical Assessments/Audits**

Technical assessments/audits determine if a program is implemented successfully. These evaluations consider whether the program is accurately documented, staff are familiar with and understand their roles and responsibilities and identifies opportunities for improvement. The evaluation may identify patterns or issues that may need to be addressed either by clarifying QA documentation language, revising procedures/protocols, and/or additional training.

Technical evaluations are either formally (audits) performed by the DOW QA Staff, PM, PQA or other designated staff whose education level, knowledge, and work experience are shown to be appropriate for the task. Additionally, informal evaluations (assessments) by program staff while performing their assigned tasks, including but not limited to "calibration days" serve as an ongoing assessment of program implementation. Items of minor concern discovered during these assessments are communicated to the PM and PQA. Major deficiencies are elevated to the QAO for further investigation and/or corrective action. Necessary corrective actions are documented and reported to the PM. Corrective actions are tracked to determine their effectiveness and whether modifications/revisions to associated QA documents is appropriate.

Work in progress may have to be halted if an issue cannot be corrected. Work would not resume until an effective solution is attained.

## **8.4 Analytical Laboratories and Environmental Testing**

### **8.4.1 Implementation**

Environmental testing must meet Federal and State requirements; be protective of the State's water resources; be scientifically valid and sufficiently selective and sensitive to accurately

quantify concentrations and characterize parameters; and performed in such manner that demonstrates competency to generate environmental measurement data.

Programs involving the analysis of parameters for which NYSDOH ELAP issues a certificate, must be analyzed by a NYSDOH ELAP accredited laboratory per NYS Public Health Law §502. This applies to all environmental laboratory analysis whether the program is directly conducted by the Division, funded by the Division or the environmental data is used by the Division.

For parameters not covered under NYSDOH ELAP, laboratories whether by contract or special-purpose cooperation, will follow standardized criteria found in TOGS 1.3.7 ) to meet demonstration of competency to generate environmental data requirements.

#### **8.4.2 Audits**

For analytical laboratories performing analysis on parameters which NYSDOH ELAP issues a certificate for, laboratory audits will be under the authority of NYSDOH and evaluated by NYSDOH professional staff. These audits are required for a laboratory to maintain NYSDOH ELAP accreditation.

The CLC will conduct annual environmental laboratory audits to verify analytical contract laboratories are following the requirements of NYSDEC's PAP. Special-purpose cooperating laboratories will be reviewed against statement of work agreements. These annual audits are not a substitute for nor replace the environmental laboratory audits required under the NYSDOH ELAP.

The CLC will seek to remedy identified analytical contract laboratory deficiencies through corrective actions sought in cooperation with the analytical laboratories.

The CLC will provide a written summary of the audit to the QAO. Reports will be stored per SOP 812 *Review, Approval and Archival of QA Documents*.

#### **8.4.3 Performance Samples**

The Division's analytical contracts are procured on a 5-year cycle. As part of the procurement process, each eligible bidder is required to analyze a performance evaluation (PE) sample. The results submitted by each laboratory for the PE sample are scored by the Division based on requirements for accuracy, sensitivity, and proper reporting format. The bidder must pass the PE scoring to maintain their eligibility for contract award.

#### **8.4.4 Analytical Data Reviews**

- The CLC will perform analytical data package reviews received from environmental laboratories either directly or subcontracted with the Division and special-purpose cooperating laboratories.
- This process may range in scope from spot-checking questionable data items to full data verification and validation. Approximately 5% of the all data packages received through the DOW contact environmental laboratory process are to be reviewed. Specific data packages may be requested to be reviewed by either the QAO or a PM.
- Any issues related to an analytical data package will be summarized and forwarded on to the QAO and PM.

- The CLC will seek to remedy identified data issues through corrective actions sought in cooperation with the analytical laboratory.
- A report of the issues and the corrective action taken will be managed using Microsoft Teams® and stored on a secure network drive maintained by the Division.
- Evaluation of the usability of the analytical data is determined by the PM with input from their supervisor and the PQAO and in consultation with the CLC and QAO.

#### **8.4.5 Data Validation and Usability**

A usability assessment is the final step of an environmental data QAPP. It determines if the program outcomes can be used as intended. DOW environmental data programs are evaluated by assessing performance against the QAPP specified data quality criteria. Assessments to verify the scientific data integrity of the information generated are performed by the PQAO and/or qualified staff. DOW uses assessments to evaluate program outcomes to define the quality and utility of the information generated. These assessments require an independent evaluation of methods, models, technology, and statistics used in reporting program outcomes.

If a DOW program uses environmental data generated by external source, a data usability assessment report (DUAR) shall be used to evaluate the acceptability of the data supplied in the context of the environmental decisions to be made. A DOW Secondary Data Evaluation QA template has been developed as a guide in the assessment of external environmental data.

#### **8.5 Quality Improvements**

QA staff will meet with PMs and Bureau Chiefs annually to review and discuss QA initiatives, training/resource needs, assessments, corrective actions, and other issues relevant to the DOW quality system. Outcomes from these meetings will be incorporated into the QA Staff Annual Work Plan as work priorities and resources allow. Issues critical to the work of the Division will be elevated to Division management for response determination.

Program managers are expected to meet with technical staff on a regular basis to obtain feedback on QA/QC issues. Resolution of identified issues may include consultation with QA staff.

Open communication is a key component to the DOW's quality system as it drives the entire planning, implementation, and evaluation cycle. Therefore, DOW staff are encouraged to communicate any QA/QC issues and recommendations to the QAO.

This investment of communication by DOW staff will support an effective DOW quality system.

### **9. REPORTS TO MANAGEMENT**

#### **9.1 DOW Quality System Reports**

- The QAO is responsible for reporting quality concerns to Division Management.
- Reporting is accomplished through the semi-formal hierarchal weekly reporting process and utilizing Division management's open-door policy to communicate directly with the Division Director's Office.
- Formally, the QAO will provide reports of quality assurance issues through audit reports that document program technical evaluations and are distributed to PMs and supervisory staff.

The QAO will prepare the Division's Annual QA Report documenting QA activities, performance objectives achieved, and identified issues and resolutions for submission to the DOW Water Quality Standards and Analytical Support Section Chief and US EPA Region 2 QA Manager.

- Annually the QAO will prepare for submission to USEPA Region 2 QA, a QA Workplan outlining proposed goals and milestones for the upcoming year.
- The DOW QAMP will be submitted to USEPA Region 2 QA per dates as defined in the Division's USEPA PPG agreement.

## 10. QA DOCUMENT REPORTS

Environmental data programs are recommended to compile annual or end of year summary reports, to assess data usability based on the verification and validation processes outlined in the specific program QAPP.

A Data Usability Assessment Report (DUAR) is recommended for environmental data submitted to the Division with the intent for inclusion in any decision-making effort. It is recommended that DUARs include a certification statement that all work was completed under the supervision of the certifying professional and was conducted in accordance with an QAPP.

## 11. REFERENCES

*American National Standard Institute Quality (ANSI) American Society for Quality (ASQ) Quality systems for environmental data and technology programs- Requirements with guidance for use E4 -2004/2014*

*Data Quality Assessment: A Reviewer's Guide (QA/G-9R) EPA/240/B-06/002 February 2006*

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

*Guidance on Assessing Quality Systems EPA QA/G-3 EPA/240/R-03/002 March 2003*

*Guidance for Developing Quality Systems for Environmental Programs (QA/G-1) EPA/240/R-02/008 January 2008*

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

*Guidance for Quality Assurance Project Plans (QA/G-5) EPA/240/R-02/009 December 2002*

*Guidance on Quality Assurance for Environmental Technology Design, Construction, and Operation EPA QA/G-11 EPA/240/B-05/001 January 2005*

*Guidance for Geospatial Data Quality Assurance Project Plans (QA/G-5G) EPA/240/R-03/003 March 2003*

*Guidance for Quality Assurance Project Plans for Modeling (QA/G-5M) EPA/240/R-02/007 December 2002*

*Guidance on Choosing a Sampling Design for Environmental Data Collection (QA/G-5S) EPA/240/R-02/005 December 2002*

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

*Guidance on Technical Audits and Related Assessments for Environmental Data Operations (QA/G-7)  
EPA/600/R-99/080 May 2006*

*Guidance on Environmental Data Verification and Data Validation (QA/G-8) EPA/240/R-02/004  
January 2008*

*Guidance on Quality Assurance for Environmental Technology Design, Construction and Operation  
(QA/G-11) EPA/240/B-05/001 January 2005*

*Guidance for Developing a Training Program for Quality Systems (QA/G-10) EPA/240/B-00/004 May  
2006*

*NYSDEC, 2009. Hardware & Software Recommendations For GPS and Field GIS Operations DEC  
Enterprise GIS - Mobile Mapping Team July 17, 2009*

*NYSDEC, Prescribed Analytical Protocols. Division of Water,*

*New York State Department of Environmental Conservation, 625 Broadway, Albany, New York, April  
2016.*

*NYSDEC, Division of Water Technical and Operational Guidance Series 1.3.7 Analytical Detectability  
and Quantitation Guidelines for (Selected) Environmental Parameters, February 2021*

*New York State Public Health Law (PHL) § 502, Environmental laboratories; examinations; certificates  
of approval.*

*Overview of the EPA Quality System for Environmental Data and Technology EPA/240/R-02/003  
November 2002*

*Requirements for Quality Assurance Project Plans (QA/R-5) EPA*

*Title 40 -Protection of Environment, Chapter 1- Environmental Protection Agency Subchapter D – Water  
Programs Part 136 Guidelines Establishing Test Procedures for the Analysis of Pollutants  
(August 2017) 40 Code of Federal Regulation Part 136*



## 12. APPENDIX 1 - DOW STANDARD OPERATING PROCEDURES

Listed in numerical order of "SOP ID."

SOP ID	Title of SOP	Latest Revision	Owner
101-19	Sample Handling, Transport, and Chain-of-Custody	04/09/19	Streams and Lakes
102-19	Data Handling and Archival	11/20/2019	Streams and Lakes
103-19	Equipment Cleaning	04/02/2019	Streams and Lakes
104-07	Reporting of Water Quality Results to USEPA STORET	07/10/07 <sup>1</sup>	
105-19	Sample Preparation Room	07/07/19	QA Staff
106 -	Invasive Species - Disinfection	In Development	Lakes
107-	Environmental Information Management System (EIMS)	In Development	Streams and Lakes
108-	Calculations	In Development	QA Staff
109- 18	Winter Sampling Safety	10/02/2018	FL Hub
110-	Data Validation	In Development	Streams and Lakes
201-19	Ambient Water Quality Samples	04/09/2019	Streams
202-09	Toxic Organic Platform Sampler – TOPS	05/20/09 (not in use)	
203-19	Lake Water Quality Samples	12/06/2019	Lakes
204-09	Passive In-situ Concentration Extraction Sampler – PISCES	05/19/09 (not in use)	
205-09	Agricultural and Other Nonpoint Sampling for Phosphorous	05/19/09 (not in use)	
206-19	Ambient Ground Water Sampling of Residential Wells	04/08/2019	Water Resources
207-19	Collection of Sediment Samples	03/11/2019	Sediment Unit
208-19	Stream Biomonitoring	04/02/2019	Streams
209-19	Groundwater Sampling of Non Residential Wells	04/08/2019	Water Resources
210-19	Collection of Water Column Samples for the Rotating Integrated Basin Studies (RIBS) Project	04/09/19	Streams
211-19	Use, Calibration, Maintenance and Storage of Multi-probe Meters	03/25/19	Streams and Lakes

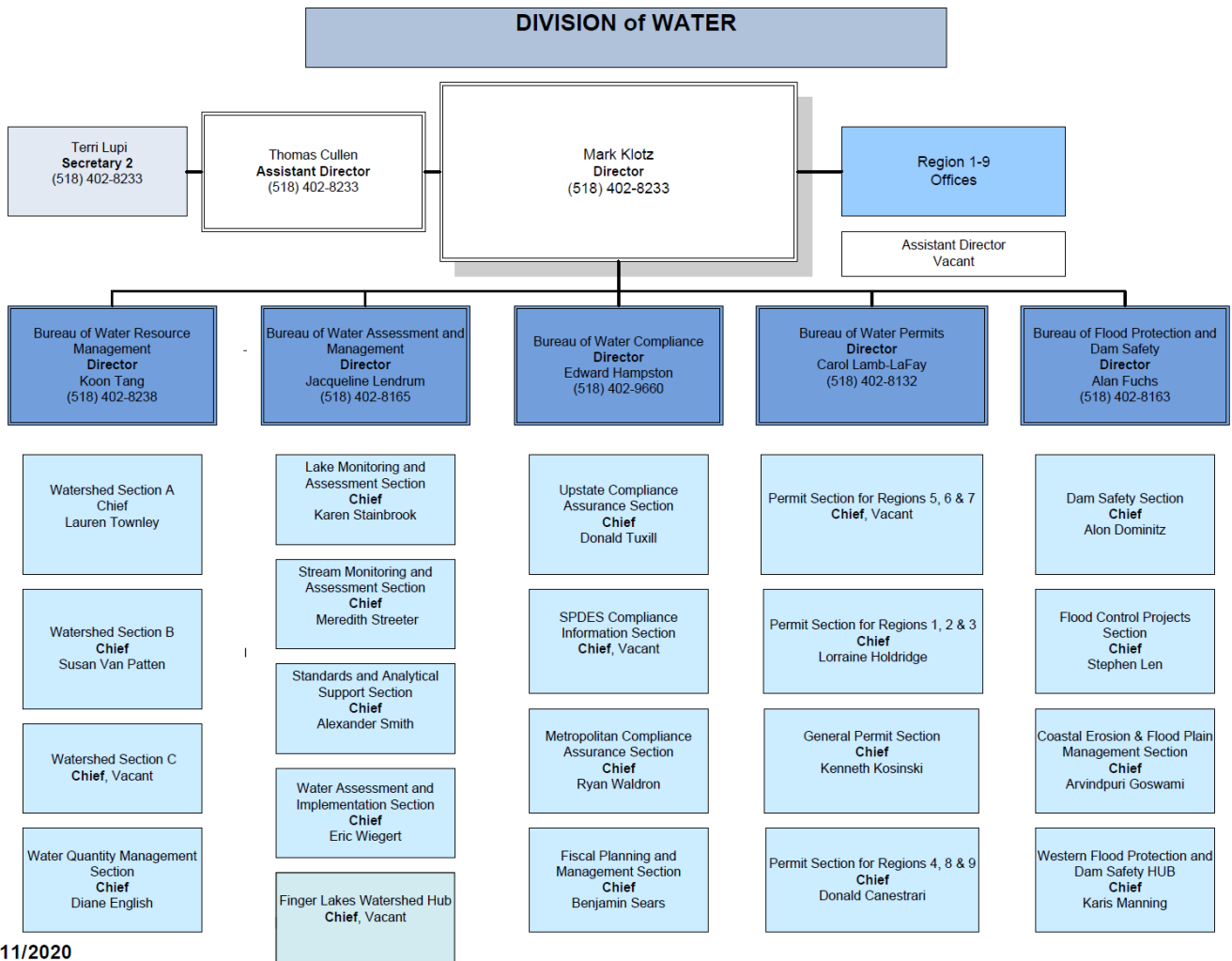
SOP ID	Title of SOP	Latest Revision	Owner
212 -19	HABS Sample Collection	04/05/2019	Lakes
213	Microbiological Sampling	In Development	QA Staff
214	Bathymetry	In Development	Lakes
215-19	Automatic Samplers	08/08/2019	FL Hub
216	Stream Flow Measurements	In Development	Streams
222-19	CECs Sample Collection	10/18/2019	Streams
301-19	Wastewater Sample Collection	01/23/19	Compliance
401-16	Chronic TIE	02/12/16 (not in use)	
402-18	<i>Ceriodaphnia dubia</i> Seven-day Chronic Screening Test for Toxicity of Ambient Water Samples	04/18/18	Tox Unit
403-18	Microtox WET Test for Porewater, Sediments and Effluents	04/18/18	Tox Unit
501-09	Low Level Mercury Sampling	05/14/09	not in use <sup>2</sup>
502-19	Assessment & Management of Sediments & Dredged Material	In Development	Sediment Unit
603-20	COVID Field Health & Safety	04/24/2020	DOW H&S
604 -	Drainage Basin Reclassification	In Development	Standards
801-18	QAPP Short Form	07/02/2018	QA Staff
802-19	SOP on SOPs	03/29/2019	QA Staff
803-19	Field Audits	12/06/2019	QA Staff
808-20	Analytical Detectability for Selected Parameters	In Development	QA Staff
809-20	Procedures for Reviewing SOPs	In Development	QA Staff
810-20	Procedures for Reviewing QAMPs	In Development	QA Staff
811-20	Procedures for Reviewing QAPPs	In Development	QA Staff
812-20	Review, Approval and Archival of QA Documents	August 2020	QA Staff
813-20	Development and Approval Process of DOW QA Documents	August 2020	QA Staff
N/A	Division of Water Health and Safety Program	June 2019	DOW H&S
N/A	Division of Water Boating Safety Program	June 2019	DOW H&S
N/A	Toxic Organic Platform Sampler – Boundary Waters	09/24/07	not in use

<sup>1</sup> A Data Modernization effort has been underway since 2007 – The internal process of how DOW manages data continues to be a work in progress.

<sup>2</sup> All low- level mercury sampling techniques currently employed by the Division are captured in SOP# 210-19.

### 13. APPENDIX 2 DOW ORGANIZATION CHART

DOW Organization Chart



8/11/2020