# DIVISION OF ENVIRONMENT
# QUALITY MANAGEMENT PLAN

## PART II:

## BUREAU OF WATER
## QUALITY ASSURANCE MANAGEMENT PLAN

Revision 16
4/18/18

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# Table of Contents

# Section 1
# INTRODUCTION

## 1.1 PURPOSE OF DOCUMENT

This document represents the Bureau of Water's (BOW's) contribution to Part II of the Division of Environment Quality Management Plan or "QMP." It establishes quality assurance (QA) goals, policies, procedures, organizational responsibilities, and program evaluation and annual reporting requirement applicable to all environmental monitoring programs administered BY bow. The document also serves as a foundation for the Bureau's program-level QA management plans presented in Part III of the QMP.

## 1.2 HISTORICAL BACKGROUND

The Division of Environment began development of a comprehensive quality management plan in 1983. This document served as a standard for the Bureau of Water as well as other bureaus. The document was approved by the Environmental Protection Agency (EPA) on February 6, 1984 and served as the Bureau's quality assurance document. It became apparent that the old document with its shortcomings was no longer adequate, especially in light of the many and varied types of sampling required by new water supply and wastewater regulations. The next major revision to all parts of the QMP was completed in July 1995 and approved by EPA. Part I of the QMP was again revised in October 2004 and approved by EPA in May 2005 for a five-year period. This update of the Bureau of Water Part II QMP was prepared under the auspices of the Part I QMP dated September 7, 2010.

## 1.3 CURRENT QUALITY ASSURANCE OBJECTIVES

The objective of the QMP is to ensure that all environmental monitoring programs within the Bureau produce data of known and acceptable quality and to support, in a scientifically defensible manner, the informational needs and regulatory functions of the Kansas Department of Health and Environment (KDHE).

# Section 2

# GENERAL BUREAU DESCRIPTION

## 2.1 MISSION STATEMENT

The explicit mission of BOW is "to protect and improve the health and environment of Kansans through wise regulation of water of the state."

## 2.2 HISTORICAL OVERVIEW

In 1885, the Kansas Board of Health was created. In 1907, water supply and pollution control legislation were passed. The agency at that time was the Kansas Board of Health and the operating department was called the Division of Sanitation and was based in Lawrence. Later, the Division was named Division of Environmental Health Services and included water supply and wastewater treatment, occupational health and radiation, air quality and general sanitation (including solid wastes). In 1974 the agency went from a board structure to a cabinet level department and was renamed the Kansas Department of Health and Environment. The new agency was divided into two main divisions and some support divisions. The Division of Environment was set up with a bureau for water programs, air programs, solid and hazardous waste, general sanitation, and radiation.

The water bureau was originally known as the Bureau of Water Protection and had public water supply, water pollution control and water quality monitoring sections. The BOW section previously known as the Technical Services Section was the parent section of BOW field staff until the Bureau of District Operations, now Bureau of Environmental Field Services (BEFS), was formed in 1993. The Bureau of Water underwent a reorganization in 2012 that expanded the Watershed Planning section to incorporate Water Quality Standards and the BEFS field staff responsible for monitoring activities back in to the bureau as part of the Watershed Planning, Monitoring and Assessment section. The remaining portion of the Technical Services Section was brought under the Bureau Administration as the Technical Support Unit. The Bureau has been reorganized many times in the ensuing years and from 2012 through 2017 had eight sections that included Industrial Programs, Municipal Programs, Watershed Management, Livestock Waste Management, Public Water Supply, Geology & Well Technology, Watershed Planning, Monitoring and Assessment, and Administration. In 2016, the position of Assistant Bureau Director was formed, directed to report to the bureau director and given charge over the Industrial Programs Section, the Municipal Programs Section, the Watershed Planning, Monitoring and Assessment Section and the Technical Support Unit. In 2018 the Livestock Waste Management and the Watershed Management Sections were moved under the umbrella of BEFS.

## 2.3 CONTEMPORARY GOALS

(1) Every Kansas public water supply will provide water always safe to drink.
(2) Improve bureau decision making through strategic planning, public participation, data collection, analysis and management with emphasis on watershed management.
(3) Rivers and lakes will support their identified use including healthy communities of fish, plants, and other aquatic life, and use for recreation and drinking water supply. Groundwater quality will be protected.

## 2.4 ORGANIZATION AND RESPONSIBILITIES

The Bureau of Water Organizational Chart can be found on the KDHE intranet at: http://hewwebint2/appnet/ops/orgchart/

Table 2.4.1 (below) illustrates section and unit work responsibilities within the Bureau of Water.

**Table 2.4.1** Bureau of Water Section (gray boxes) and Unit (bold, underlines, italicized) work responsibilities.

| **KANSAS DEPARTMENT OF HEALTH AND ENVIRONMENT<br>Division of Environment<br>Bureau of Water** | | | |
|---|---|---|---|
| **ADMINISTRATION** | **MUNICIPAL PROGRAMS** | **PUBLIC WATER SUPPLY** | **INDUSTRIAL PROGRAMS** |
| Bureau Budget Preparation | ***State Revolving Loan Unit*** | ***PWS Administration*** | ***Pretreatment Unit*** |
| Accounts/Records | Clean Water - State Revolving Fund Program Management | Operator Certification Program | Develop Local Programs |
| Cash Flow Projections | CW-SRF Priority System, IUP, Annual Report, Audit | EPA Liaison | Monitor Local Programs |
| Grants Administration | CW-SRF Project Engineering | PWS Supervision Program Oversight | Conduct POTW Audits/PCIs |
| Building Services | CDBG Block Grant Review | ***Engineering & Permits Unit*** | Permit Development & Administration |
| Program Support | KDFA Coordination | Water Supply Permits | Conduct Industrial Inspections |
| Time Accounting | ***Permits, Sewers, & Stormwater Unit*** | PWS Minimum Standards of Design | Monitor Industrial Compliance |
| Water Pollution Abatement | Engineering Reports | Plans & Specifications | Enforcement/ Administrative Actions |
| Liaison w/ Bureau of Environmental Field Services | Plans & Specifications | SRF Engineering Review | Reg./Admin Program Assistance |
| ***Technical Support Unit*** | O&M Manuals | Cross Connections | Permit Coordination |
| Record Keeping | Special Problem/Investigation | Emergency Response | Program Support |
| Complaint/Investigation Assistance | Wastewater Minimum Standards of Design | Troubleshooting/Special Problems | Pretreatment Program Technical Assistance |

| **ADMINISTRATION** *continued* | **MUNICIPAL PROGRAMS** *continued* | **PUBLIC WATER SUPPLY** *continued* | **INDUSTRIAL PROGRAMS** *continued* |
|---|---|---|---|
| Emergency Coordination | Inspection/Operator Assistance | ***Capacity Development Program*** | ***Industrial Unit*** |
| Water/Sewer Technical Assistance | Program Support | PWS Enforcement | Minimum Standards of Design |
| In-House Training & Technical Assistance | Sewer Extension Permits | PWS Enforcement Reports | Engineering Reports |
| Management/Asst/ Program Support | Enforcement, Administrative Permit Actions | Sanitary Survey Tracking | Plans & Specifications |
| ***Permits & Compliance Unit*** | **WATERSHED PLANNING, MONITORING & ASSESSMENT** | Capacity Development Contract Management | Permit Development/Admin |
| Technical Permit Review | ***Planning & Standards Unit*** | Capacity Development Implementation | Enforcement/ Administrative Actions |
| NPDES & State Permit Issuance & Renewals | Total Maximum Daily Loads | PWS Monitoring & Compliance Tracking | Inspection/Operator Assistance |
| Program Support | Technical Support for 319 WRAPS | PWS Technical Assistance | Site Appraisals |
| ICIS-NPDES System | Interpretation of WLA/NPDES Permit | PWS Regulation Development | Special Problems/ Investigation |
| Discharger Monitoring Review | Triennial Reviews | AWOP Implementation | Stormwater Permitting |
| Directives/Orders | Water Quality Standards Development | ***Compliance & Data Management Unit*** | Program Support |
| Legal Office Coordination | Permit Limit Development | PWS Monitoring & Compliance Tracking | |
| Hearings | Permit Certification | Compliance Assistance | |
| EPA Liaison | Criteria Research | PWS Database Development & Maintenance | |
| ***Industrial Stormwater Data/Support Unit*** | Administer 303(d) Impaired Waters List | PWS Compliance & Violation Reports | |
| Permit Issuance | ***Assessment & Information Unit*** | PWS Statistical Reports | |
| Permit Administration and Tracking | 303(d) List Development | ***DW & CW SRF Unit*** | |
| Collect/Process Annual Permit Fees | Integrated Report – 305(b) | PWS Needs Survey | |
| Direct to & Retrieve Files from Record Center | Surface Water Register | SRF Project Planning | |
| Outreach, Information & Education | Compliance Monitoring | SRF Program Reports | |
| **GEOLOGY & WELL TECHNOLOGY** | UAAs | SRF – PWS Priority List | |
| UIC (Class I, III, IV,V) Injection Wells | Stream Probabilistic Monitoring | PWS Web Master | |
| LPG Storage | Environmental GIS Coverages & Databases | PWS ImageNow Coordination | |

| **GEOLOGY & WELL TECHNOLOGY** ***continued*** | **WATERSHED PLANNING, MONITORING & ASSESSMENT** ***continued*** | **PUBLIC WATER SUPPLY** ***continued*** |
|---|---|---|
| Natural Gas Storage | ***Monitoring & Analysis Unit*** | SRF Program Implementation |
| Permit Development/Issuance/Administration | Stream Chemistry Monitoring | CDBG Program Coordination/Review |
| Operator Support | Lake & Wetland Monitoring | |
| Environmental Geology Support | KS Surface Water Atlas | |
| Inspections | Fish Tissue Contaminant Monitoring | |
| Water Well Licensing | Fish Consumption Advisories | |
| Water Well Database | Stream Biological Monitoring | |
| Technical Support | | |
| Brine Spreading on Public Roads | | |
| LPG Storage Brine Spill Response/Remediation | | |
| UIC Database | | |
| UHS Database | | |
| KOLAR | | |
| Technical Permit Review | | |
| Enforcement/ Administrative Actions | | |
| Compliance Tracking | | |
| Monitoring Report Review | | |
| Outreach, Information, and Education | | |
| KDHE's Representative on Boards/Workgroups | | |
| Project Proposal Review | | |

# Section 3

# QUALITY ASSURANCE POLICIES

## 3.1 GENERAL BUREAU POLICIES

The Bureau relies on environmental monitoring data to support regulatory and administrative decision. In addition, monitoring data is necessary for process control at water supply and wastewater treatment facilities, for information necessary for enforcement actions, for the development of Total Maximum Daily Loads, and assisting in targeting watersheds for restoration and protection. Therefore, efforts to document and improve the quality of monitoring and sampling data are extremely important. All monitoring and sampling activities performed within the Bureau (intramural) and by independent contractors and consultants (extramural) are expected to comply fully with the following policies:

(1) The objectives and tolerable levels of data uncertainty of any environmental monitoring project shall be determined prior to the implementation of collection activities. This determination shall be made in the planning stage of the project so that appropriate procedures will be incorporated into the project and the resulting data will meet stated objectives.

(2) A QA program plan (QAPP), describing how the activity will achieve the stated objectives, shall be developed but the project manager and approved by the appropriate Section Chief, and by the Bureau QA Officer prior to the initiation of data collection.

(3) All QA and quality control (QC) measures shall be integrated into environmental monitoring programs in the most cost-effective manner possible without compromising data quality.

(4) Sample collection and analysis activities and data management activities shall be subjected to periodic evaluation to identify and correct deficiencies and enhance the overall credibility of the Bureau's programs/

(5) Measures shall be instituted to ensure that the quality of environmental monitoring data collected by the Bureau is carefully and permanently documented.

## 3.2 ACTIVITIES SUBJECT TO POLICIES

The Bureau of Water administers several environmental sampling programs including the Lake and Wetland Monitoring Program, the Stream Chemistry Monitoring Program, the Stream Biological Monitoring Program, the Fish Tissue Contaminant Program, the Probabilistic Monitoring Program, the Sub-Watershed Monitoring Program and the Compliance Monitoring

Program. Data are routinely gathered on concentrations of contaminants in water, sludge and other media.

Drinking water program sampling categories can be broken down into compliance sampling and operational control. Compliance monitoring includes raw water, point of entry, distribution system, and water treatment plant samples. Samples for operations control include any samples collected for the purpose of determining or verifying chemical feed rates.

Wastewater program sampling categories can be broken down into compliance, operational control and pretreatment samples. Compliance samples include samples from the plant outfall, sludge samples, soil samples, synthetic membrane liner leak detection systems, groundwater, and stream samples. Samples for operational control include any samples collected for the purpose of determing or verifying various operational control parameters.

Pretreatment samples are those samples taken from the premises of an industrial discharger for the purpose of determining compliance with pretreatment ordinance and/or pretreatment permits.

The requirements of the QMP are applicable to all environmental monitoring and measurement activities performed within, or on behalf of, the Bureau. However, it is recognized that unusual or unprecedented emergency situations may require immediate responses based on best professional judgment of staff rather than the provisions of preapproved workplans or project plans. To the extent practicable, such responses should be based on established procedures and protocols. All such deviations must be carefully documented and described in end-of-year program evaluations submitted through the bureau QA representatives to the divisional QA officer (see section 9.4).

# Section 4

# QUALITY ASSURANCE ORGANIZATION

## 4.1 ROLE OF BUREAU DIRECTOR

The Bureau Director reviews development and revision and oversees implementation of the bureau-level QA management plan. With the assistance of the Bureau QA Representative and Section Chiefs, the Bureau Director ensures that the requirements of the plans are fulfilled in the most cost-effective manner possible without sacrificing the quality of the environmental monitoring data. The Bureau Director reviews proposals for the training and continuing education needs of staff and develops funding proposals to accommodate these needs as necessary.

## 4.2 ROLE OF BUREAU QA REPRESENTATIVE

The Bureau QA Representative is directly responsible for reviewing and approving quality assurance project plans (QAPPs) and standard operating procedures (SOPs) administered by the Bureau. The Bureau QA Representative also provides guidance to program/project managers involved in the preparation and implementation of these documents. The Bureau QA Representative operates under a degree of autonomy which allows independent assessment of QA performance and the need for corrective action. The Bureau QA Representative analyzes QA evaluation reports and related information submitted by Section Chiefs and Program/Project Managers. The Bureau QA Representative works with these staff and the Divisional QA officer in the resolution of identified QA problems and concerns.

## 4.3 ROLE OF SECTION CHIEFS

The Section Chiefs generally are responsible for more than one environmental monitoring program and may supervise other, frontline supervisors such as program managers and unit chiefs. They oversee the QA aspects of the environmental monitoring programs on a day-to-day basis, identify QC deficiencies within their respective programs, track the QC performance of staff, and assist in the periodic review and revision of the bureau-level and program-level QAPPs and SOPs. The Section Chiefs coordinate closely with their program managers to ensure that all QA and QC requirements are routinely implemented.

## 4.4 ROLE OF THE PROGRAM MANAGER AND UNIT LEADERS

Program managers and Unit Leaders work closely with non-supervisory staff to ensure that the requirements of the program-level QA management plans and associated SOPs are implemented in a timely, consistent and reliable fashion. Together with the Section Chiefs, the program managers and unit leaders strive to improve the precision and accuracy of all environmental monitoring data through the effective day-to day allocation of staff and other resources. They also bring the QC training needs of staff to the attention of their Section Chiefs, develop program-level QAPPs and SOPs for new monitoring initiatives, and periodically review and revise existing QAPPs and SOPs to meet the evolving informational needs of the Bureau.

## 4.5 STAFF RESPONSIBILITIES

Staff directly involved in the collection and analysis of environmental monitoring data play an important role in the implementation of the Bureau QMP. The quality and usefulness of the data ultimately reflect the willingness of staff to abide by the SOPs and to participate constructively in the ongoing review and revision of the QAPPs and SOPs. Because they carry out the provisions of these plans and procedures on a routine basis they often develop an understanding of the technical strengths and weaknesses of the monitoring programs. Program managers and administrative staff are expected to solicit input from these employees when developing new or revised QAPPs or SOPs.

# Section 5

# INTRAMURAL QUALITY ASSURANCE DOCUMENTATION

## 5.1 QUALITY ASSURANCE PROJECT PLANS

Intramural monitoring programs include all routine water monitoring programs and special studies performed by Bureau staff. Pursuant to Bureau policy, Quality Assurance Project Plans (QAPPs) must be developed by the manager of each program and approved by the Section Chief involved, and the Bureau QA Representative prior to initiation of data collection. All program-level QAPPs must be prepared using a standardized document control format in which the report section number, revision number, date of revision, and page number appear in the upper right-hand corner of each page. Program-level QAPPs shall contain the following elements unless the reviewing Bureau QA Representative determines that a given element falls outside the technical scope of the program/project:

(1) Title page identifying program/project, Bureau/office, division and agency;
(2) Approval page with blocks for appropriate signatures and dates;
(3) Table of contents, including a list of any appendices;
(4) overview of program/project, including statement of purpose, developmental history, and any relevant statutory and regulatory requirements;
(5) description (or chart) of organizational hierarchy with accompanying list of participating staff positions and statement of staff responsibilities;
(6) description of data performance criteria expressed in terms of data precision, accuracy, completeness, comparability and representativeness for each parameter of interest;
(7) description of, and rationale for, intended sampling frequency, sampling network design and monitoring site selection criteria;
(8) description of sampling equipment and associated decontamination procedures (reference SOPs, as appropriate);
(9) description of field procedures, including sample collection, analysis, preservation, transport and chain-of-custody procedures and accompanying safety protocols (reference SOPs, as appropriate);
(10) list of laboratory parameters and sample holding times and accompanying description of laboratory analytical and safety protocols (note: SOPs adopted by the Kansas Division of Laboratories or other cooperating laboratories may be adopted by reference, provided they contain the informational elements stipulated in section 5.4, below);
(11) description of data validation, storage, transfer, reporting and backup requirements and any special documentation requirements (reference SOPs, as appropriate);

(12) description of equipment testing, calibration and preventative maintenance procedures (reference SOPs, as appropriate);
(13) description of inspection procedures and acceptance requirements for purchased equipment and supplies (reference SOPs, as appropriate);
(14) description of procedures (including statistical procedures) used to evaluate data precision, accuracy, completeness, representativeness and comparability, including a detailed characterization of internal QC procedures and external performance audit requirements;
(15) description of procedures used to evaluate and enhance utility of environmental monitoring data including, but not necessarily limited to, procedures and assumptions applied in the identification and treatment of (a) outliers and other anomalous data, (b) nonlinear data requiring statistical transformation, and (c) values reported as "less than" or "greater than" established reporting limits;
(16) description of corrective action procedures for out-of-control situations;
(17) description of procedures for determining the quality of ancillary data acquired from external sources not subject to the provisions of the divisional QMP (e.g., meteorological, hydrological, geological, chemical and/or biological data obtained from other state and federal agencies); and
(18) description of program/project deliverables (electronic databases, summary statistics, illustrative materials, interim and final reports, etc.) and schedule for completion.

## 5.2 SAMPLE CHAIN OF CUSTODY

Employees collecting and transferring samples to the Kansas Health and Environmental Laboratories for analysis shall complete a chain-of-custody form and submit the appropriate completed form, along with the samples, to appropriate laboratory personnel. Copies of sample submission forms shall be maintained in the custody of the program managers or their designees.

## 5.3 DATA CUSTODY, MANAGEMENT AND REPORTING

Bureau of Water and program-level QAPPs shall contain provisions which ensure the proper validation, transfer, storage and backup of environmental monitoring data. Data reporting procedures shall be specifically addressed within the QAPPs and/or the accompanying SOPs. Where practical, the plans shall provide mechanisms for reporting and permanently documenting the quantitative precision and accuracy of the data. At a minimum, all plans must contain provisions for reporting and documenting data completeness, representativeness and comparability in qualitative terms.

## 5.4 STANDARD OPERATING PROCEDURES

Standard operating procedures document the protocols involved in the collection, preservation, transport, transfer and analysis of environmental samples and validation, storage/retrieval, transfer and backup of environmental data. These procedures are a critical component of all program-level QAPPs. They facilitate consistency among staff and provide a written record of the methods used to obtain and preserve environmental monitoring data. All SOPs are prepared according to a standardized written format, in which the report section number, revision number, date of revision, and page number appear in the upper right-hand corner of each page, and are approved by the program manager and the Bureau QA Representative.

All SOPs must be scientifically rigorous and meet the precision and accuracy expectations of their respective program-level QAPPs. They must also be written in a clear and straightforward fashion so that they may be readily understood and implemented by all users. The SOPs augment information provided in the program-level QAPPs by providing the following information, where applicable:

(1) title page with appropriate blocks for approval signatures/dates;
(2) table of contents including a list of any appendices;
(3) introductory statement describing intended application of SOP and providing overview of procedure;
(4) statement of minimal technical qualifications for participating staff;
(5) an inventory of applicable field, laboratory and safety equipment;
(6) instructions for calibrating field instruments and performing associated troubleshooting procedures;
(7) instructions for collecting, preserving and handling environmental samples and/or performing environmental measurements, emphasizing health and safety considerations and highlighting any steps requiring special attention, patience or care;
(8) instructions for collecting and analyzing duplicate or replicate samples and for preparing field blanks, spikes and split samples, emphasizing health and safety considerations and highlighting any steps requiring special attention, patience or care;
(9) instructions for preparing and analyzing samples in the field and performing related troubleshooting procedures, emphasizing health and safety considerations, steps requiring special attention, patience or care, and possible interferences jeopardizing data quality;
(10) instructions for transporting, transferring and storing environmental samples and accompanying field data and records (e.g., notes, logs, photographs, audio tapes, audiovisual tapes), emphasizing chain-of-custody procedures, health and safety considerations, and steps requiring special attention, patience or care;
(11) description of data acquisition, storage, retrieval, transfer, verification, backup and analysis procedures, long-term data/records management procedures, and enabling computer hardware and software;
(12) glossary of technical terms and acronyms employed in SOP (often included as appendix); and

(13) checklist of applicable field equipment and supplies (often included as appendix).

Quality assurance project plans for larger monitoring programs may contain several SOPs. Again, QAPPs may adopt previously existing SOPs by reference, provided the referenced SOPs meet the minimum informational requirements identified above.

## 5.5 IMPLEMENTATION REQUIREMENTS

Environmental monitoring operations shall be implemented by qualified personnel based on approved QAPPs and SOPs. In the event of unforeseen contingencies, any deviation from approved procedures shall be documented and reported by the program manager to the supervising Section Chief and Bureau QA Representative. The significance of the deviation, and any needed adjustments or corrective actions, shall be determined by the Section Chief and Bureau QA Representative with input from the program manager and non-supervisory staff actually performing the work. Staff and supervisory expectations in the event of a departure from approved procedures shall be addressed in the approved QAPP.

# Section 6

# EXTRAMURAL QUALITY ASSURANCE DOCUMENTATION

## 6.1 MINIMUM EXPECTATIONS FOR CONTRACTORS

Outside entities in environmental monitoring activities under contractual agreement with the Bureau must develop QAPPa and SOPs consistent with BOW QA/QC plans. These plans and SOPs must be approved by the program manager serving as technical advisor on the project, by the appropriate Section Chief and the Bureau QA Representative prior to the initiation of fata collection activities. Contracts, workplans, and QAPPs must contain provisions which ensure that the contractor will prepare and submit the final project report to the Bureau within a prescribed time frame.

Quality assurance documents associated with contractual monitoring activities must be maintained in an up-to-date condition. Minor changes in the work performed under a contract, workplan, or QAPP must be reviewed and approved by the appropriate program manager and supervising Section Chief prior to implementation. Substantial revisions or addendums to the original documents must be reviewed and approved in the same manner as the original documents.

## 6.2 MINIMUM EXPECTATIONS FOR REGULATED FACILITIES

Municipal, industrial, and agricultural facilities regulated by the Bureau are often required to monitor contaminant releases into the environment. On occasion, they are required to perform more comprehensive pollutant transport, fate and environmental impact studies. Because these facilities are subject to specific federal statutes and regulations, binding generalizations regarding QA requirements are inappropriate. However, standardized QAPPs and accompanying SOPs shall be prepared in a format compatible with the Bureau QAPP for use by the regulated entity. These standardized plans shall be prepared by a designated program Manager and are subject to review by the supervising Section Chief, and Bureau QA Representative.

# Section 7

# MONITORING SITE SELECTION AND DOCUMENTATION

## 7.1 MINIMUM SITING REQUIREMENTS

Sampling and monitoring sites must be selected to meet the following criteria: (1) representative samples, (2) reasonable access, (3) ability to document location, and (4) safety. The samples collected must be representative to be of any value; accordingly, the site must be chosen with this in mind at the outset. The sample collector must be able to collect samples at the site, safely. Information on the date, time and exact location of the sampling site is required by EPA and Kansas Regulations; therefore, it is important that the sample collector be able to identify the site.

## 7.2 DOCUMENTATION OF GEOGRAPHICAL LOCATION

Criteria must be developed in each program or activity with regard to the accuracy of location of the sample site. For some purposes identification of the site may be adequate to the nearest ten acres; at most sites however, it is important to locate the site to within 50 or 100 feet. Various means exist for identification of the sampling site including global positioning system (GPS) location, legal descriptions, or reference to known sites which can be identified from maps. The criteria must be developed to meet Bureau QA/QC criteria and approved by the Project Manager, the appropriate Section Chief and the Bureau QA Representative.

## 7.3 NARRATIVE DESCRIPTION AND PHOTOGRAPHIC DOCUMENTATION

In cases involving fish kills, contaminant spills, unauthorized discharges of pollutants or discharges where legal action may be necessary, it is imperative that the sample and sampling site be documented correctly, and coordination of sampling efforts with BEFS be undertaken. A narrative description of the sampling site along with other facts about the site must be recorded. Photographic documentation shall accompany the narrative whenever possible. Form 7.3-1, below, shall be used for narrative and photographic documentation purposes. In cases where digital photographs are utilized, Form 7.3-1 may be modified to incorporate the digital photographs. Any modified form shall include all information fields on Form 7.3-1.

**KANSAS DEPARTMENT OF HEALTH AND ENVIRONMENT**
**DIVISION OF ENVIRONMENT**
**Bureau of Water**
**Form 7.3-1 Photo Mounting Sheet**

**Name of Site:**_____ **Legal:**_____ **Permit:**_____
**Location:**_____ **County:**_____ **By:**_____
**Date:** _____ **Time:**_____**Type of camera**: _____ **Weather Condition:**_____

Picture #:
General Direct. Facing:

Comments:

Picture #:
General Direct. Facing:

Comments:

# Section 8

# EQUIPMENT AND SUPPLIES

## 8.1 PROCUREMENT AND INVENTORY REQUIREMENTS

The Bureau and program QA/QC documents shall establish requirements for equipment procurement and inventory requirements. This policy shall conform to KDHE guidelines when applicable. Program managers and Section Chiefs shall be responsible for following purchasing and inventory guidelines.

## 8.2 EQUIPMENT MAINTENANCE AND CALIBRATION REQUIREMENTS

Equipment maintenance and calibration requirements shall be the responsibility of the program manager and/or the Section Chief. Guidelines for equipment maintenance and calibration shall be documented in the Bureau's SOPs.

## 8.3 EQUIPMENT REPAIR AND REPLACEMENT GUIDELINES

Generally, broken or unserviceable equipment should be repaired if possible. Factors which influence repair decisions include remaining expected life, cost of repair, and degree of obsolescence of the equipment. Guidelines for repair or replacement shall be developed for inclusion in the program QA/QC document and shall be the responsibility of program managers and/or Section Chiefs.

## 8.4 BACKUP REQUIREMENTS FOR CRITICAL EQUIPMENT

Requirements for backup equipment shall be developed for inclusion in the program QA/QC document. Requirements for periodic exercising of standby shall be developed and assigned to appropriate program managers and Section Chiefs.

# Section 9

# QUALITY ASSURANCE PROGRAM EVALUATION

## 9.1 INTERNAL REVIEW

All QA/QC aspects of Bureau environmental monitoring programs are subject to ongoing review by the program managers and Section Chiefs and may be audited at any time by divisional QA officer, or bureau QA representative. Bureau QA representatives and section chiefs also are expected to conduct data quality assessments for environmental monitoring programs/projects, based on perceived need or according to schedules set forth in the approved QAPPs. The QA performance of any given monitoring program/project may also be assessed as part of an internal or external management system review of the entire division. If an assessment identifies the need for a corrective action, program/project managers shall bear primary responsibility for reviewing the available options, selecting the most favorable, and obtaining the approval of the applicable bureau QA representative and section chief prior to implementing the selected action. The implementation status of the corrective action shall be monitored by the supervising section chief and addressed in the end of year program/project evaluation reports considered in 9.7, below.

Quality control aspects of routine environmental monitoring operations are subject to ongoing review by the responsible program/project managers and supervising section chiefs. Program/project managers are expected to cooperate fully with administrative requests for information on data precision and accuracy and overall QC performance. Section Chiefs are expected to track the QC performance of program managers, assists managers in identifying QC deficiencies within their programs, and facilitate the initiation of necessary corrective actions. The results of internal reviews conducted by the Section Chiefs are reported to the Bureau QA Representative, Bureau Director and Divisional QA Officer as part of the annual program evaluations.

Internal audits may also be performed by Bureau staff as needed. The audits may cover such items as the adequacy of physical facilities, equipment, personnel, training, field and laboratory procedures, record keeping, data validation and management, and other aspects of monitoring programs and will typically be completed by Program Managers, Section Chiefs, Bureau QA Representative, or Bureau Director.

## 9.2 INDEPENDENT AUDITS

To enhance the quality and credibility of the environmental data gathered by BOW staff all monitoring programs are required to participate in QA audits performed by an independent party, such as EPA, or other public agencies or private consulting companies having prior experience

and demonstrable expertise in program evaluations, and that are approved by the Division Director. Audit findings and corrective actions implemented in response to such findings are reported to the Bureau Director and Divisional QA Officer as part of the annual program evaluations described in section 9.4.

## 9.3 STAFF/SUPERVISOR PERFORMANCE

Position descriptions and performance evaluations are expected to accurately reflect the QA/QC functions and performance of the staff. All staff involved in environmental monitoring activities are expected to carry out their responsibilities under the QMP to the best of their abilities. Administration staff and program managers are expected to foster an appreciation for the role of QA/QC among nonsupervisory employees. In turn, the opinions and insights of nonsupervisory employees are to be taken seriously by program managers and administrative staff. The quality and credibility of the Bureau's environmental monitoring efforts ultimately depend on the willingness of all employees to work as a team, learn from their mistakes, and perform their duties in a diligent manner.

## 9.4 ANNUAL PROGRAM EVALUATIONS

End-of-year program evaluations are conducted by the Section Chiefs and the results submitted, in writing, through the Bureau QA Representative and the Bureau Director to the Divisional QA Officer by March 15 of the following year. The reports must indicate when, how, and by whom the evaluation was conducted, the specific aspects of the programs subjected to review, a summary of important findings, and technical recommendations for necessary corrective actions. Section Chiefs are expected to discuss the findings of the evaluations with the program managers and all participating field, laboratory, and data management staff.

# Section 10

# RESOURCES AND TRAINING

## 10.1 PERSONNEL QUALIFICATIONS

Bureau staff involved in the collection, handling and analysis of environmental samples or in the collection, storage retrieval, transfer and examination of environmental data must possess the minimum level of education, training and experience necessary to meet the demands of their position (as reflected in the class specifications for the job position or in the employee position description). The knowledge and skills possessed by staff and supervisory personnel strongly influence the quality of environmental monitoring data, the interpretation of these data, and the appropriateness of most administrative and regulatory actions taken by the agency.

## 10.2 SUPERVISORY EXPECTATIONS

The quality of the environmental monitoring data gathered by BOW is strongly influence by the level of staff training, experience and preparation. The Bureau QA Representative will work with the Section Chiefs and Program Managers to address the training needs to staff. To broaden the experience level of staff, supervisors also are expected to provide occasional opportunities for any interested employee to participate in activities outside his/her daily work routine (e.g. interprogram cross-training opportunities). Such activities must be within the general scope of the employee's classification specifications and conform to the orientation and safety training requirements presented in sections 10.3 and 10.4, below.

## 10.3 CONTINUING EDUCATION OPPORTUNITIES

Methods employed in the collection and analyses of environmental data are subject to continual refinement. Occasional conceptual or technological breakthroughs (e.g., satellite-based global positioning technologies; geographical information systems) may rapidly antiquate existing SOPs and require extensive training on the part of the staff. Continuing education courses offered by some colleges or vocation educational institutions may fulfill these training needs. Staff participating in such courses may be reimbursed by the Division provided the subject matter is within the general scope of the employee's position descriptions, funds for training have been set aside within the budget of the beneficiary program, and participation, funds for training have been set aside within the budget of the beneficiary program, and participation is otherwise allowable under prevailing agency training and travel policies.

## 10.4 NEW EMPLOYEE ORIENTATION

Supervisors, including program managers, shall ensure that all new employees, or recent transfers from other programs, or cross trainees receive a thorough indoctrination into the QA policies and procedures of the division, office and program. Part I of the QMP, together with the present document and applicable program-level QAPPs and SOPs, shall be required reading on the part of all new employees. After reading these documents, each employee shall sign an affidavit indicating that she/he has read the appropriate QA documentation. The signed affidavit shall be routed through the immediate supervisor and the Bureau QA Representative to the Division QA Officer.

Apart from QA considerations, supervisors shall ensure that new employees participate in orientation seminars offered by the KDHE Personnel Office. Where appropriate, supervisory seminars offered by the Department of Administration shall be included in the training curriculum.

The Bureau QA Representative will monitor compliance with new employee orientation and training requirements.

Critical safety procedures shall be thoroughly reviewed before any new employee engages in a potentially hazardous field of laboratory duty. New employees must demonstrate a satisfactory understanding of safety considerations before they are required (or permitted) by their supervisors to participate independently in any potentially hazardous activity (see section 10.6, below).

## 10.5 ANNUAL REVIEW AFFIDAVIT

All employees participating in environmental monitoring activities shall review Part I of the QMP, this document, applicable parts of QMP part III(s) and applicable parts of program-level QAPPs and SOPs at least once each year. Upon completion of this review, each employee shall sign an affidavit indicating that she/he has read the appropriate QA document. The signed affidavit shall be routed through the immediate supervisor, the Section Chief, and the Bureau QA incorporated into the employee's written job expectations and factored by the immediate supervisor into the employee's annual performance evaluation.

## 10.6 SAFETY CONSIDERATIONS

Field and laboratory staff that participate in environmental monitoring programs encounter potentially hazardous situations on a frequent basis. In addition to the routine possibility of automobile, boating or equipment accidents, employees may encounter slippery surfaces, toxic substance, fire or electrocution hazards, infectious microorganisms, vicious animals, belligerent persons, or other threatening situations. Injuries or illnesses resulting from such situations may lead to substantial human suffering and, from a QA/QC perspective, deprive monitoring programs of the services of a valuable employee for an extended period of time.

Although it is not possible to predict every conceivable risk that may arise during the course of work, supervisors must ensure that those risks faced by staff on a recurring basis are addressed in the SOPs and are discussed during employee training. No employee shall be compelled by any supervisor (or coworker) to operate automobiles, boats or equipment that are known to be defective and unsafe. No employee shall be compelled by any supervisor (or coworker) to perform unusual or hazardous physical activities that are beyond the scope of the employee's position description. Rather, the supervisor shall consult with higher administrative staff to confirm whether the work or action is necessary and identify the appropriate employee (or outside consultant) for the task.

Field and laboratory staff are expected to abide by the safety protocols contained within the QAPPs and SOPs and to integrate safety considerations into all aspects of their work. To the extent possible, BOW shall routinely budget for ongoing safety training expenses (e.g., cardiopulmonary resuscitation and first aid training fees). Nonsupervisory employees are expected to bring potentially unsafe practices or situations to the attention of their program manager. In turn, the program manager shall evaluate the practice or situation and either take the appropriate corrective action or, in complicated circumstances, seek the advice of the Section Chief or higher level supervisor. Major corrective actions (those warranting changes in an SOP) shall be implemented by staff only upon approval of the Section Chief, and the Bureau QA Representative.

# Section 11

# COMPUTER TECHNOLOGY

## 11.1 COMPUTER HARDWARE AND SOFTWARE

All purchases of computer hardware and software must be approved in advance by the KDHE Office of Information Systems (OIS) and abide by Division purchasing requirements. Anti-virus software approved by OIS shall be installed and utilized on all Bureau lap-top and desktop computers used for storage, retrieval, exchange, backup and/or analysis of environmental data.

## 11.2 DATA ENTRY REQUIREMENTS

Environmental data (and metadata) manually entered into a state or federal computer database shall be examined and verified by at least one other Bureau employee familiar with the database. This process shall entail the selection of a representative, randomly selected sample of data and the documentation and correction of any data entry errors. The percentage of data subjected to review, the method or review, and the reviewer shall be specified in the approved QAPP. Staff transferring data electronically shall perform random spot checks of the transferred data and report any problems to OIS (or the external cooperating entity) for further investigation and resolution. Persistent or recurring problems also shall be reported to appropriate supervisory staff and the Bureau QA Representative for determination of necessary corrective actions. Such problems shall be addressed in the end-of-year program/project evaluation reports.

## 11.3 VERIFICATION OF CALCULATIONS

Computer-based mathematical, statistical, geographical and graphical programs and models involving environmental data shall be tested before application and periodically thereafter. The reliability of software for performing calculations shall be tested by comparison to other computer programs, through hand calculations involving randomly selected data, or through other appropriate means. The reliability of computer-based calculations shall be verified according to schedules established in applicable QAPPs and whenever a problem is reported within the computational system. Quality assurance project plans shall describe the types of computer-based calculations. This requirement may be waived in writing by the Bureau Director for specific applications involving commercial software after review by the Bureau Director and Bureau QA Representative. Originals of these waivers shall be retained by the Bureau QA Representative with a copy forwarded to the Divisional QA Officer.

# Section 12

# REVIEW AND REVISION OF QUALITY ASSURANCE MANAGEMENT PLAN

To ensure that the BOW QA management program continues to meet the highest scientific and organizational standards and remains consistent with the objectives established in section 1.3 of this document, all QA/QC documentation must undergo periodic review and revision. At yearly intervals, the Bureau QA Representative with input from the Director of the BOW shall review the bureau-level QA management plan, formulate necessary revisions, and obtain concurrences from the Divisional QA Officer and Division Director. Similarly, Program Managers shall review the program-level QAPPs and SOPs, formulate necessary revisions, and obtain concurrences from the supervising Section Chief and Bureau QA Representative. Minor changes to Part II can be made at any time and approved by the Bureau QA Representative and the Bureau Director.

The above activities normally will occur following the annual QMP review period that usually takes place from October through December with QMP document revisions detailed in the annual QMP review summary that is submitted to the DOE QA Officer in March of the following year (see section 9.4). However, revisions to the office- and program-level QAPPs and SOPs may be initiated at any time, based on urgency of need or employee workload consideration. The Bureau of Water shall maintain in its library an updated hard copy of Part I of the QMP. Along with this document and all program-level QA management plans and SOPs developed, implemented or administered by BOW staff. The Bureau QA Representative will maintain an electronic representation of the BOW QMP Parts II and III on the KDHE internet server in a PDF “read only” format and made accessible to any interested employee or outside party.

Requirements for archiving environmental monitoring data and routine QC data shall be addressed on a program/project specific basis, in the individual QAPPs. Managers of the various environmental monitoring programs/projects are expected to track QC performance over time and to alert their respective section chiefs and the bureau QA representatives of any serious deviations from the historical norm or any failure to comply with established data performance criteria.

# APPENDIX A

# BOW QMP PART II REVISION HISTORY

**Table D1.** Listing of the changes made to BOW QMP Part II.

| Revision Number | Revision Date | Document Section | Revision Type | Revision Description |
|---|---|---|---|---|
| 16 | 04/18/18 | Signatures & Approvals | Update | Removed LWMS and WMS Section Chiefs from Approvals due to move to BEFS |
| 16 | 04/18/18 | 2.2 | Update | Updated historical overview to reflect move LWMS and WMS to BEFS |
| 16 | 04/18/18 | 2.4.1 | Update | Updated Table 2.4.1 to remove LWMS and WMS |
| 16 | 04/18/18 | Entire Document | Update | Updated document with one header displaying overall document revision number and date throughout the document. |
| 16 | 04/18/18 | Concurrences and Approvals | Update | Updated list of document approvers/signatories – removed LWMS, WMS, Deputy Bureau Director |
| 16 | 04/18/18 | Table of Contents | Update | Removed individual section revision numbers and dates. Revision history of the sections will be kept in Appendix A. |