# Quality Assurance Project Plan

# for

# Drinking Water Sampling of Public Water Systems

**U.S. EPA QTRAK #24-225**

**Period of Applicability:**

April 27, 2024 –- April 26, 2027

**NM Public Water System Supervision (PWSS) Grant No. F-00620321-0**

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## QAPP VERSION CONTROL

| QAPP Title | Version No. | Version Date | Page No. | Prepared By | Comments | Reviewed By |
|---|---|---|---|---|---|---|
| Drinking Water Sampling for PWSs | 0 | 1/9/2024 | All | B. Anderson | QAPP is being submitted for full review & new term under the requirements of EPA IT/IM Standard Directive Number CIO 2105-S-02.1 – Quality Assurance Project Plan Standard. | C.Pilar |
| Drinking Water Sampling for PWSs | 1 | 2/14/2025 | All | C. Pilar | This version of the Quality Assurance Project Plan (QAPP) includes the following updates for the annual review:<br>1. Change of Quality Assurance Manager from Christina Pilar to Bethany Anderson, who is now the DWB Water Conservation Fund Manager.<br>2. Current annual project organizational charts.<br>3. Approval page for signatures related to the annual review & approval.<br>Additionally, the document has undergone essential formatting changes throughout. However, the integrity of the original content concerning the technical and quality objectives of the project has been maintained and remains largely unchanged. | B. Anderson |

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## List of Tables



## Attachments

# ACRONYMS & ABBREVIATIONS

| | |
|---|---|
| **µg** | Microgram |
| **˚C** | Degrees Celsius |
| **˚F** | Degrees Fahrenheit |
| **CFR** | Code of Federal Regulations |
| **CO** | Compliance Officer |
| **COC** | Chain of Custody |
| **DBP** | Disinfection By-Products |
| **DBPR** | Disinfection By-Products Rule |
| **DQIs** | Data Quality Indicators |
| **DQO** | Data Quality Objectives |
| **DWB** | Drinking Water Bureau |
| **DWLCP** | Drinking Water Laboratory Certification Program |
| **DWSRF** | Drinking Water State Revolving Fund |
| **E. coli** | Escherichia coli |
| **EIO** | Environmental Information Operations |
| **EPA** | Environmental Protection Agency |
| **EPA, also U.S. EPA** | United States Environmental Protection Agency |
| **GWUDI** | Ground Water Under Direct Influence (of surface water) |
| **H2SO4** | Sulfuric Acid |
| **HAA5** | Haloacetic Acids |
| **HCl** | Hydrochloric Acid |
| **HNO3** | Nitric Acid |
| **IOC** | Inorganic Compound |
| **L** | Liter |
| **LCRR** | Revised Lead and Copper Rule Revisions |
| **LIMS** | Laboratory Information Management System |

| | |
|---|---|
| **MCL** | Maximum Contaminant Level |
| **mL** | Milliliter |
| **MQOs** | Measurement Quality Objectives |
| **MRDL** | Maximum Residual Disinfectant Level |
| **Na2S2O3** | Sodium Thiosulphate |
| **NaOH** | Sodium Hydroxide |
| **NH4Cl** | Ammonium Chloride |
| **NM** | New Mexico |
| **NMAC** | New Mexico Administrative Code |
| **NMED** | New Mexico Environment Department |
| **NMSA 1978** | New Mexico Statues Annotated 1978 |
| **NPDWR** | National Primary Drinking Water Regulations |
| **NTU** | Nephelometric Turbidity Unit |
| **OGC** | Office of General Counsel (NMED) |
| **OIT** | Office of Information Technology (NMED) |
| **PAG** | Program Administration Group |
| **pCi/L** | Picocuries per Liter |
| **PWS** | Public Water System |
| **PWSS** | Public Water System Supervision Program |
| **QA** | Quality Assurance |
| **QAM** | Quality Assurance Manager |
| **QAPP** | Quality Assurance Project Plan |
| **QC** | Quality Control |
| **QMP** | Quality Management Plan |
| **RTCR** | Revised Total Coliform Rule |
| **SDWA** | Safe Drinking Water Act |
| **SDWIS** | Safe Drinking Water Information System |
| **SOC** | Synthetic Organic Compound |
| **SOP** | Standard Operating Procedure |

| | |
|---|---|
| **SWIG** | Sustainable Water Infrastructure Group |
| **TDS** | Total Dissolved Solids |
| **TT** | Treatment Technique |
| **TTHM** | Total Trihalomethanes |
| **UOCP** | Utility Operator Certification Program |
| **VOC** | Volatile Organic Compound |
| **WCF** | Water Conservation Fund |

# ESSENTIAL DEFINITIONS

**Assessment**—The evaluation process is used to measure the performance or effectiveness of a system and its elements. As used here, assessment is an all-inclusive term used to denote any of the following: audit, performance evaluation, management review, peer review, inspection, surveillance, or readiness review (including competency assessment, Pre-award assessment of proposal, or technical assessment), peer consultation, product review (e.g., data inspection, software testing, pre-dissemination review, or review of contractor deliverables).

**Audit**—A systematic and independent examination to determine whether quality activities and related results comply with planned arrangements and whether these arrangements are implemented effectively and are suitable to achieve objectives.

**Data**—A quantitative or qualitative representation of values, facts, observations, or ideas in a formalized manner capable of being transmitted, processed, stored, analyzed, interpreted, and/or communicated by some process, whether on paper or electronic form.

**Drinking Water Laboratory:** A laboratory that analyses samples as part of compliance monitoring for a public water supply.

**Environmental Information**—Includes data and information that describe environmental processes or conditions which support EPA's mission of protecting human health and the environment. Examples include but are not limited to:

- direct measurements of environmental parameters or processes
- analytical testing results of environmental conditions (e.g., geophysical, or hydrological conditions)
- information on physical parameters or processes collected using environmental technologies.
- calculations or analyses of environmental information
- information provided by models.
- information data compiled or obtained from databases, software applications, decision support tools, websites, existing literature, and other sources: and
- design, construction, and operation or application of environmental technology.

**Environmental Information Operations (EIO)**—A collective term for work performed to collect, produce, evaluate, or use environmental information and the design, construction, operation, or application of environmental technology.

**Graded Approach**—The process of determining the level of detail for management controls to be applied to an activity according to the intended use and the degree of confidence needed in the quality of the results. This approach establishes the QA and QC requirements commensurate with the importance of the work, the available resources, and the unique needs of the organization.

**Must, Shall, Will**—Denotes mandatory requirements. On responsible for the program/project activity.

**Project Quality Assurance Manager (Project QAM)**—The individual designated as the quality assurance manager for projects defined in this QAPP and is the individual designated in the DWBs QMP as the principal manager within the Bureau having oversight authority and responsibilities for planning, documenting, coordinating, and assessing the effectiveness of the Quality Program for the Bureau.

**Process—**A set of interrelated resources and activities which transforms inputs into outputs. Examples of processes include analysis, design, data collection, operation, fabrication, and calculation.

**Project**—A unique process consisting of a set of coordinated, defined, and controlled activities with start and finish dates, undertaken to achieve an objective conforming to specific requirements including constraints of time, cost, and resources.

**Public Water System (PWS):** A system for the provision to the public of piped water for human consumption if such system has at least fifteen service connections or regularly serves an average of at least twenty-five individuals daily at least 60 days out of the year. See 40 CFR Part 141.2.

**Primacy:** primary responsibility for administration and enforcement of primary drinking water regulations and related requirements applicable to public water systems within the State of NM.

**Quality—**The totality of processes, procedures, features, and characteristics of a product or service that bear on its ability to meet the stated or implied needs and expectations of the user.

**Quality Assurance (QA)—**Management of an integrated system of activities involving planning, implementation, documentation, assessment, reporting, and quality improvement to ensure that a process, item, or service is of the type and quality needed and expected by the organization.

**Quality Assurance Project Plan (QAPP)**—A formal planning document which describes how environmental information operations are planned, implemented, documented, and assessed during the life cycle of a project. The QAPP describes in comprehensive detail the necessary QA/QC requirements and other technical activities that must be implemented to ensure that the results of the environmental operations performed will satisfy the stated performance and acceptance criteria.

**Quality Control (QC**)**—**The overall system of technical activities that measures the attributes and performance of a process, item, or service against defined standards to verify that they meet the stated requirements; operational techniques and activities that are used to fulfill requirements for quality.

**Quality Management Plan (QMP)—**The DWB QMP defines the Quality Program in terms of the organizational structure, functional responsibilities of management and staff, lines of authority, and required interfaces for those planning, implementing, and assessing all activities conducted.

**Quality Program—**The totality of management controls, processes, and documentation in DWB's planning, implementation, and assessment for ensuring the quality of Agency environmental information operations products and services and management of environmental projects that perform environmental information operations.

# PROJECT SCOPE & INTRODUCTION

The New Mexico Environment Department (NMED) Drinking Water Bureau (DWB) has developed this Quality Assurance Project Plan (QAPP) for its Drinking Water Sampling and Analysis Program, which serves New Mexico Public Water Systems (PWSs). This QAPP outlines the guidelines and requirements to ensure that water sampling plans and technical activities comply with established quality assurance standards. Additionally, it ensures that all Environmental Information Operations (EIO) described in this QAPP are planned, implemented, documented, and evaluated throughout their entire lifecycle.

The DWB Drinking Water Sampling and Analysis Program employs a graded approach to systematic planning, as defined in this QAPP, and establishes Quality Assurance (QA) criteria and Quality Control (QC) measures for conducting drinking water sampling, monitoring water quality parameters, and data verification for compliance reporting which is essential to ensure that PWSs provide safe drinking water to the public while meeting the goals and requirements of federal and state drinking water regulations.

This QAPP applies to all water sampling activities performed by DWB staff and all individuals responsible for conducting EIO, and it mandates adherence to the water sampling methods and procedures outlined in the plan. the Quality Assurance Project Plan (QAPP) for Drinking Water Samples. is available for public access on the Drinking Water Bureau webpage.

The general objectives and goals of the DWB Quality Program for its projects are to ensure that all environmental information and data operations generated and processed by or on behalf of the DWB is scientifically valid. This information must demonstrate known precision and accuracy, acceptable levels of completeness, representativeness, and comparability, and be legally defensible.

The Quality Program includes established processes for planning, implementing, documenting, and assessing the work performed by DWB staff and participants who conduct work for the DWB. The Bureau is committed to maintaining a quality program that instills confidence that the deliverables and decisions derived from environmental data operations comply with State and Federal drinking water regulations, ensuring that the public receives safe, clean drinking water.

The Environmental Information Operations (EIO) management and activities detailed within this QAPP are in alignment with all applicable EPA environmental information management documents and is compliant with EPA's Quality Policies, Standards, and regulatory requirements align with the EPA's Agency-wide Quality Program. The DWB Quality Program adopts and enforces EPA Environmental Policy and quality directives requirements in the DWB Quality Management Plan ( QMP), and management of EIO project QA processes through mandated QAPPs. Further Quality Information and references for the DWB Quality Program can be reviewed on the EPA's Managing the Quality of Environmental Information - Specifications for States webpage..

Table 1 on the following page, lists the project's QA planning documents, and regulated requirements related to this QAPP.

*Table 1 – Document Related to QAPP*

| Title of Document | Document Date | Pertinence to this QAPP |
|---|---|---|
| NMED DWB Quality Management Plan | Feb 14, 2026 | This QAPP is developed in accordance with the DWB's QMP and is made publicly available on the Drinking Water Bureau webpage |
| WCF Drinking Water Sampling Guide and Standard Operating Procedures | Mar 1, 2024 | SOP is Drinking Water Bureau's staff sample collection and chemical analysis procedures and analysis for NM PWS locations |
| *EPA Quality Assurance Project Plan (QAPP) Standard– IT/IM Standard, CIO 2105-S-02.1* | April 3, 2024 | This QAPP is developed in accordance with EPA's Environmental Information Standards available on the EPA's Environmental Information Policy, Procedures and Standards webpage. |
| *Environmental Information Quality Policy– IT/IM Directive, CIO 2105.4* | April 3, 2024 | " " |
| *EPA Environmental Information Quality Procedure IT/IM Directive, CIO 2105-P-01.4* | April 3, 2024 | " " |
| *EPA Environmental Information Management for States* | | This QAPP complies with EPA's EIO management requirements t DWB EIO management requirements are available on EPA's Managing the Quality of Environmental Information - Specifications for States webpage. |

# 1 PROJECT MANAGEMENT

## 1.1 PROJECT PURPOSE

The purpose of this Quality Assurance Project Plan (QAPP) is to outline the procedures for Quality Assurance and Quality Control (QA/QC) related to water sample collection, technical activities, analysis, and documentation of water data for Public Water Systems in New Mexico. The water sampling and analysis data generated under this QAPP will be utilized by the Drinking Water Bureau for ensuring water quality compliance and informing policy decisions.

## 1.2 PROJECT BACKGROUND SUMMARY

The Safe Drinking Water Act of 1974 (SDWA) and corresponding amendments – permits territories, and tribes' primary authority to implement and enforce drinking water laws and regulations. The EPA collaborates with states by providing oversight and support to primacy agencies and public water systems nationwide, enhancing public health protection. The NMED DWB has been granted primacy enforcement responsibility for PWSs under the SDWA and has the authority to implement and enforce the primary SDWA regulations. In addition to federal regulations, the DWB enforces the New Mexico's Drinking Water Regulations, 20.7.10 NMAC governed by the Environmental Improvement Act (Chapter 74, NMSA 1978).

The Public Water System Supervision (PWSS) program is a critical component of the EPA's national drinking water program under the SDWA. This program is essential for protecting public health by ensuring access to safe drinking water and aiming to reduce the number of public water systems (PWSs) that do not meet health-based standards. The DWB is required to maintain a PWSS program in order to retain primary enforcement authority over NM PWSs. The DWB PWSS Program promotes collaboration, implementation, and coordination with other DWB drinking water programs and initiatives, recognizing that both staff and management engagement is essential for success.

Additionally, the DWB Water Conservation Fund (WCF) Group provides analytical and sampling services for PWSs. It oversees the DWB Drinking Water Laboratory Certification Program (DWLCP), and coordinates water sampling activities across the State of New Mexico to ensure compliance with the SDWA and verify the quality of data collected. Established in 1993 under the New Mexico Environmental Improvement Act , NMSA 1978A, §74-1-13, the WCF imposes a water conservation fee of $0.03 per 1,000 gallons of water produced at all PWSs. The collected fees are designated for the WCF to ensure proper testing of all the PWS in accordance with the SDWA requirements.

The funds generated by the WCF are primarily used to operate the DWB WCF Sampling and Analysis Program, which covers the state's costs for collecting and analyzing drinking water samples from public water systems to ensure compliance. This includes training for PWS operators, conducting vulnerability assessments of water sources, and supporting the DWB Laboratory Certification Program, which ensures that scientific data meets legal standards for compliance with state and federal drinking water regulations. The WCF sampling team collects chemical and radiological samples to meet the requirements of federal grants and state and federal regulations, while also providing oversight to PWSs throughout New Mexico. Additionally, the DWLCP offers analytical services for water samples through contracted laboratories that are certified by the DWB.

The DWB Sustainable Water Infrastructure Group (SWIG) implements source water protection programs and develops community service capacity. They also manage the Utility Operator Certification Program (UOCP), which certifies samplers for PWSs. SWIG's initiatives focus on source water protection and water security, emphasizing preventative programs that enhance sustainability and safeguard drinking water.

PWSS, SWIG, and WCF initiatives prioritize water source protection, water security, sampling, and sample analysis. These programs include preventative measures that improve system sustainability and ensure the safety of drinking water. They provide valuable resources that help water systems achieve and maintain compliance with national primary drinking water regulations. Overall, these efforts support the broader goal of ensuring that public water systems preserve, protect, and enhance the quality of New Mexico's drinking water for both current and future generations.

## 1.3 PROJECT APPLICABILITY

This Quality Assurance Project Plan (QAPP) applies to all drinking water sample collection activities performed by DWB staff, UOCP certified operators and samplers, applicable contractors, and all individuals involved in the collection and management of data generated by the sampling events. All participants must adhere to the methods and procedures outlined in this plan, ensuring that the quality system is implemented according to established requirements and complies with the program's regulatory, technical, and quality objectives specified in this QAPP.

Additionally, all analytical services provided by laboratories contracted and certified by the DWLCP, as well as any contractors involved in developing water sampling plans, conducting water sampling, testing, analyses, or assisting in the development of new rules related to drinking water sampling protocols, must perform their activities in accordance with this QAPP.

The DWB PWSS, SWIG, and WCF Group Managers are responsible for ensuring that all relevant Team Leads, Supervisors and Staff comply with the provisions of this Quality Assurance Project Plan (QAPP) and report any quality assurance issues to the Quality Assurance Manager (QAM). The DWB Group Managers will collaborate with the QAM to determine the appropriate actions and to create or revise necessary policies or procedures. The Group Managers have the authority to work alongside the QAM to address quality assurance concerns within DWB programs. They are also responsible for fulfilling all obligations related to the terms and conditions of applicable EPA programs, and they must enforce these obligations in DWB extramural agreements, contracts, memorandums of understanding (MOUs), and the quality assurance/control processes for managing environmental information.

## 1.4 PROJECT PROBLEM DEFINITION

New Mexico drinking water may become contaminated from numerous sources such as improperly disposed of chemicals; animal wastes; pesticides; human threats; wastes injected underground; and naturally occurring substances. Likewise, drinking water that is improperly treated, or which travels through an inadequately maintained distribution system, may also pose a health risk.

The State of New Mexico has approximately 1,100 PWS which include: Community Water Systems, Transient Non-Community Water Systems, and Non-Transient Non-Community Water Systems. The PWSs are required to be monitored regularly to verify the water they provide to the public meets all state and federal drinking water regulatory standards to ensure the protection of public health. The data collected by the WCF sampling team is used to determine compliance with these regulations. How often and where samples are taken varies from system to system and contaminant to contaminant. This information is provided to the population served on an annual basis, at a minimum, or immediately whenever there is a potential risk to public health.

## 1.5 PROJECT TASK DESCRIPTION

The WCF Group Manager coordinates with the PWSS compliance team and WCF sampling team on a regular basis to identify sampling needs and establish sampling schedules for each PWS. These sampling schedules are maintained in the Safe Drinking Water Information System (SDWIS) and are reviewed regularly and adjusted, as necessary.

The WCF sampling staff and UOCP certified operators/samplers collect water quality samples from various locations at PWSs throughout the state based on EPA's Standardized Monitoring Framework: A Quick Reference Guide (SMF). The SMF Quick Reference Guide standardizes, simplifies, and consolidates monitoring requirements across various contaminant groups. It reduces variability in monitoring requirements for chemical and radiological contaminants across different system sizes and types. Additionally, the guide enhances public health protection by streamlining monitoring plans and aligning monitoring schedules. The SMF Quick Reference Guide summarizes the federal drinking water requirements and ongoing monitoring frequencies for existing systems, taking into account that primacy agencies with an EPA-approved waiver program have the flexibility to issue waivers. These waivers consider regional and state-specific characteristics and concerns.

Water quality samples can be collected from numerous locations within a single PWS depending on the size and complexity of the system. Water samples are collected from PWS location sources, surface water intakes, entry points, distribution, and treatment areas. Contaminants of concern for which samples are analyzed include EPA's National Primary Drinking Water Regulation (NPDWR) and the National Secondary Drinking Water Standards (NSDWRs).

The NPDWR contaminates listed in 40 CFR 141 protect drinking water quality by limiting the levels of specific contaminants that are known or are anticipated to occur in water and can adversely affect public health. The NPDWR contaminants consist of various organic, inorganic, radionuclide, disinfectant, disinfection byproduct, and microbiological contaminants.

The NSDWRs listed in 40 CFR Part 143 - Subpart A are secondary contaminants guidelines for contaminants that may cause aesthetic effects — undesirable tastes or odors, cosmetic effects — effects which do not damage the body but are still undesirable., and technical effects — damage to water equipment or reduced effectiveness of treatment for other contaminants.

Additional contaminants are also monitored as required for inclusion in Consumer Confidence Reports (CCR) (sodium) or as required in the State of NM Drinking Water Regulations.

## 1.6 PROJECT QUALITY OBJECTIVES & PERFORMANCE/ACCEPTANCE CRITERIA

### 1.6.1 Data Quality Objectives

The primary goal of NMED DWB Data Quality Objectives (DQOs) is to protect drinking water and public health. These DQO criteria assist DWB staff in making data-informed decisions while minimizing the risk of error for routine and compliance monitoring. The routine and compliance monitoring conducted by DWB undergoes comprehensive review to ensure that the data collected is of high quality, providing a strong level of confidence in the decisions made. By establishing data quality objectives through systematic planning, the DWB is able to make water quality management decisions that are:

- Consistent with the mission, goals, and objectives of NMED and DWB.
- Based on the appropriate application of policy and guidance.
- Informed by all relevant available information.
- Grounded in a comprehensive understanding of the data.
- Derived and supported from accurate information.

### 1.6.2 Data Quality Indicators

Measurement Quality Objectives (MQOs) are criteria that specify the quality required for measurements to be useful in the decision process. MQOs are often articulated as acceptable values of Data Quality Indicators (DQIs). The DQIs below establish acceptable values and performance standards for measurement data. These indicators ensure that decisions about drinking water compliance are legally defensible and in line with the DWB's DQOs mentioned above.

*Table 2 – Data Quality Indicators*

| DQIs | Quality Control (QC) Activities and Checks |
|---|---|
| Precision | The degree of variation in repeated measurements of the same quantity of a parameter are minimized by assuring samples are taken in a consistent and repeatable manner as described in this QAPP and the applicable DWB SOP. |
| Bias | This is minimized, to the extent possible, by training staff on repeated sampling procedures in accordance with established SOPs as well as hands on field training by peers. |
| Accuracy | Acceptable levels of accuracy are specified in the sampling SOPs; and are verified through evaluation of routine duplicate, spiked, and field blank sampling, as appropriate. |
| Representativeness | The measure of the degree to which data accurately and precisely represent variations at a sampling entry point is assessed by compliance staff at the time they perform onsite sanitary surveys of the public water systems. |
| Comparability | Comparisons to field blanks, spiked samples and duplicate samples provide the information for a dataset to determine its comparability. Comparability is assessed through the sample design process and selection of methods. |
| Completeness | To ensure confidence of the dataset for use in the decision it is intended for, the percentage of validated samples collected for a particular dataset from the number that was planned should not be below 95%. |
| Sensitivity | Sensitivity is the ability to discern the detection of a parameter within a sample set from null in order to meet the decision criteria and is based on the method being used in regard to the sensitivity of the instrument, potential interferences with other parameters, training to collect and analyze the sample, as well as the processes needed to calibrate within an acceptable range. |

### 1.6.3 Performance Measurement & Acceptance Criteria

Performance and acceptance criteria are specific to the individual performing environmental data operations and the quality of the evaluated are measured by the is DQI standards listed above, ensuring the data is of accurate and legally defensible quality.

Data validation and verification procedures and associated acceptance criteria used by a contract analytical laboratory are described in their Quality Assurance Plan (or equivalent) as provided by each laboratory. Statistical criteria used by the laboratory for validating and expressing the variability of analytical results are the standard deviation, coefficient of variation, range, 95-percent confidence limits, and control charts.

## 1.7 PROJECT DISTRIBUTION LIST

A list of key positions and their roles regarding this QAPP are provided in Table 2. Verification that DWB staff have access to and will comply with the requirements of the QAPP are documented by acknowledgement statements and maintained in DWB QA files.

*Table 3 – Distribution List*

| PROJECT KEY PERSONNEL | | | | |
|---|---|---|---|---|
| **PERSONNEL** | **TITLE** | **AGENCY** | **EMAIL** | **PHONE NO.** |
| **Christy Warren** | **EPA Quality Assurance Manager** | EPA - R6 | warren.christy@epa.gov | (281) 983-2137 |
| **Jessica L. Fry** | **EPA PWSS Project Officer** | EPA - R6 | fry.jessica.L@epa.gov | (214) 665-8038 |
| **Joe Martinez** | **DWB Bureau Chief** | NMED DWB | joe.martinez@env.nm.gov | (505) 467-9415 |
| **Bethany Anderson** | **Quality Assurance Manager/WCF Group Manager/DWLCP Certification Authority** | NMED DWB | bethany.anderson@env.nm.gov | (505) 469-7658 |
| Vernon Trujillo | Sampler | NMED DWB | vernon.trujillo@.env.nm.gov | (505) 372-8170 |
| Valerie Horner-Gonzales | Sampler | NMED DWB | valerie.horner@.env.nm.gov | (505) 372-8167 |
| Scott Hulder | Lead Chemical Hygiene Officer/Sampler | NMED DWB | scott.hulder@env.nm.gov | (505) 372-8173 |
| Scott Miller | Waiver Coordinator/Sampler | NMED DWB | scott.miller@env.nm.gov | (505) 819-7687 |
| Suzanne Lee | GWUDI Coordinator/Sampler | NMED DWB | suzanne.lee@env.nm.gov | (505) 231-3356 |
| Christina Pilar | DWLCP Lab Certification Manager / QA Coordinator | NMED DWB | Christina.pilar2@env,nm.gov | (505) 469-7658 |
| **Martin Torrez** | **PWSS Group Manager** | NMED DWB | Martin.torrez@env.nm.gov | (505) 469-5207 |
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| Brandi Littleton | Southern PWSS Supervisor | NMED DWB | brandi.littleton@env.nm.gov | (575) 323-4298 |
| James Midkiff | SDWIS Supervisor | NMED DWB | james.midkiff1@env.nm.gov | (505) 660-3391 |
| Daniel Ramirez | Data Steward | NMED DWB | daniel.ramirez1@env.nm.gov | (505) 670-9705 |
| Natsaran Gottlieb | Data Steward | NMED DWB | natsaran.gottlieb@env.nm.gov | (505) 819-7164 |

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|---|---|---|---|---|
| **Tanya Trujillo** | **SWIG Group Manager** | NMED DWB | tanya.trujillo2@.env.nm.gov | **(505) 372-8273** |
| VACANT | UOCP Team Lead | NMED DWB | | |
| **Ramon M. Lucero** | **Contractor/Regional Field Manager** | **RCAC \| Community & Environmental Services** | Ramon.Lucero@rcac.org | **(505) 819-7342** |
| Contractors & Stakeholders | The approved QAPP will be made available to other stakeholders, including PWS, contract laboratories or DWB employees via DWB webpage. The DWB QAM will provide EPA with a list of contractors upon request. | | | |

## 1.8 PROJECT QUALITY ASSURANCE MANAGER

Through the delegation of the Cabinet Secretary, the Director of the Water Protection Division (WPD) has designated the Chief of the Drinking Water Bureau (DWB) to develop and oversee the Quality Program for the Bureau's environmental initiatives. The DWB Chief has subsequently assigned these responsibilities to the DWB Quality Assurance Manager (QAM).

The QAM not only manages the Quality Program but also serves as the WCF Manager and the Certifying Authority for the DWLCP. Overall, the QAM/WCF Manager is responsible for the DWB Water Sampling & Analysis Program EIO activities and the Quality Program in its entirety.

Given the limited resources of the DWB, the QAM is not fully independent of environmental information within the Bureau and is the Water Sampling & Analysis Program Manager. They have been granted the authority to function as both a Group Manager and QAM, with the necessary access and power to coordinate the development and implementation of the Bureau's Quality Program. The WCF Group Manager has the authority to sign this QAPP as the DWB QAM.

Quality-related disputes between individual program areas and DWB staff must first be addressed at the bureau staff level. If these disputes remain unresolved, they will be escalated to the supervisors. If issues persist even at the supervisory level, they will be further elevated through the QAM to the Bureau Chief and the Director of the Water Protection Division.

The DWB QAM will maintain a current list of contractors and provide this information to the EPA Project Officer, updating the list, as necessary.

## 1.9 PROJECT ORGANIZATION

The managers of the PWSS Group, SWIG Group, WCF Group, along with Team Leads, Supervisors, QAM, and QAC are responsible for ensuring that all activities in their sections adhere to the provisions outlined in this QAPP. All DWB staff involved in the collection or management of environmental data must implement the methods and procedures described in this QAPP. They are required to be familiar with and follow QAPP provisions. The organization and responsibilities for drinking water sampling activities and related environmental operations are coordinated as follows:

### 1.9.1 The WCF Sampling Team Role & Responsibilities

The WCF provides the funding for compliance monitoring of the public water systems. The WCF sampling team has the primary responsibility for collecting drinking water samples for compliance and tracking monitoring schedules. However, various employees within the DWB are certified to collect drinking water samples, if necessary, and must also adhere to the requirements of this QAPP.

### 1.9.2 The UOCP Certified Operators & Samplers Role & Responsibilities

The collection of samples for microbiological contaminants and all chemical samples required in distribution or process control is the responsibility of each PWS. The UOCP requires regular training for drinking water sampling certification to ensure quality data is obtained through the sample collection. Each PWS must also employ a UOCP certified water operator. This certification includes water sampling certification. A list of approved certified operators, samplers can be found on the DWB Utility Operator Certification Program webpage.

### 1.9.3 Safe Drinking Water Information System (SDWIS)

The SDWIS group is led by the SDWIS Supervisor who oversees a team of Data Stewards. Data Stewards ensures that information is properly and consistently entered or uploaded to SDWIS to meet federal reporting regulations. Data Stewards also provide support in the approval of lab invoices/statements, ensuring labs are properly paid by the WCF.

### 1.9.4 NMED Office of Information Technology

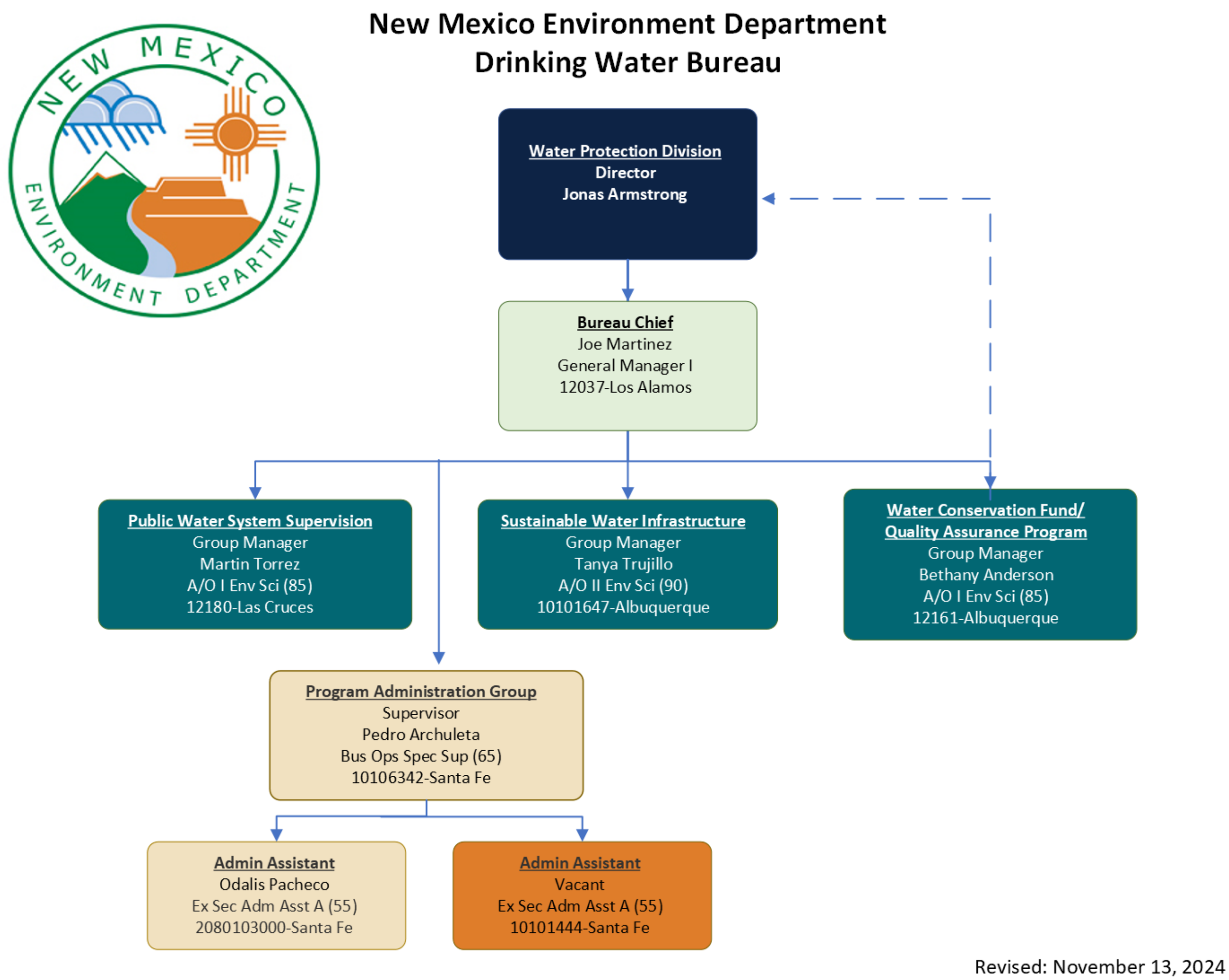
The Office of Information Technology Bureau of the NMED assigns technical staff to each bureau to maintain computer hardware, software, and networks, which includes maintaining SDWIS, the ultimate repository of all environmental data collected for compliance purposes Contracted Laboratories

### 1.9.5 Contracted Laboratories

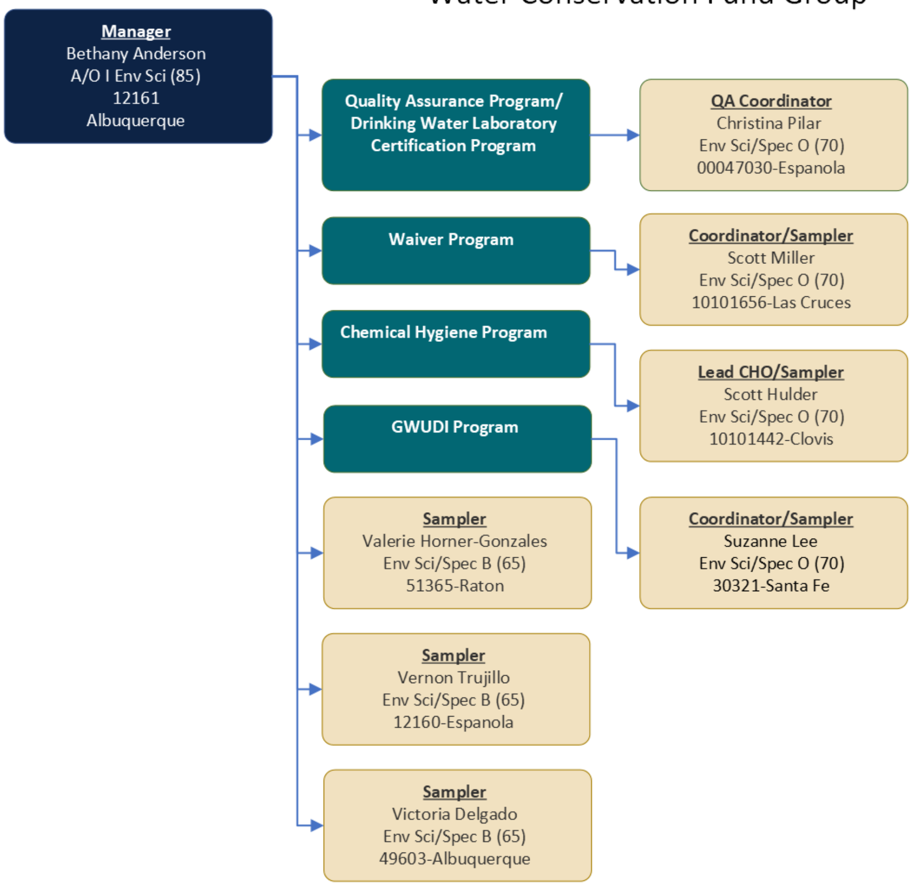
Drinking water samples collected for compliance by DWB and PWS staff are analyzed by the NM Department of Health Scientific Laboratory Division (SLD) and other DWB contract laboratories. Each analytical laboratory must be certified by the DWLCP and conform to the specifications and requirements of this QAPP. Each contract laboratory will have access to a copy of this QAPP via DWB's website, or upon request, and will report and provide data to the appropriate Compliance Officer/Data Steward. A list of the labs currently certified by the DWLCP can be found at the following link: Laboratories Certified by NMED-DWB to Analyze Drinking Water Samples.

## 1.10 PROJECT ORGANIZATION CHARTS

The following organization chart shows the lines of communication and reporting for the project.

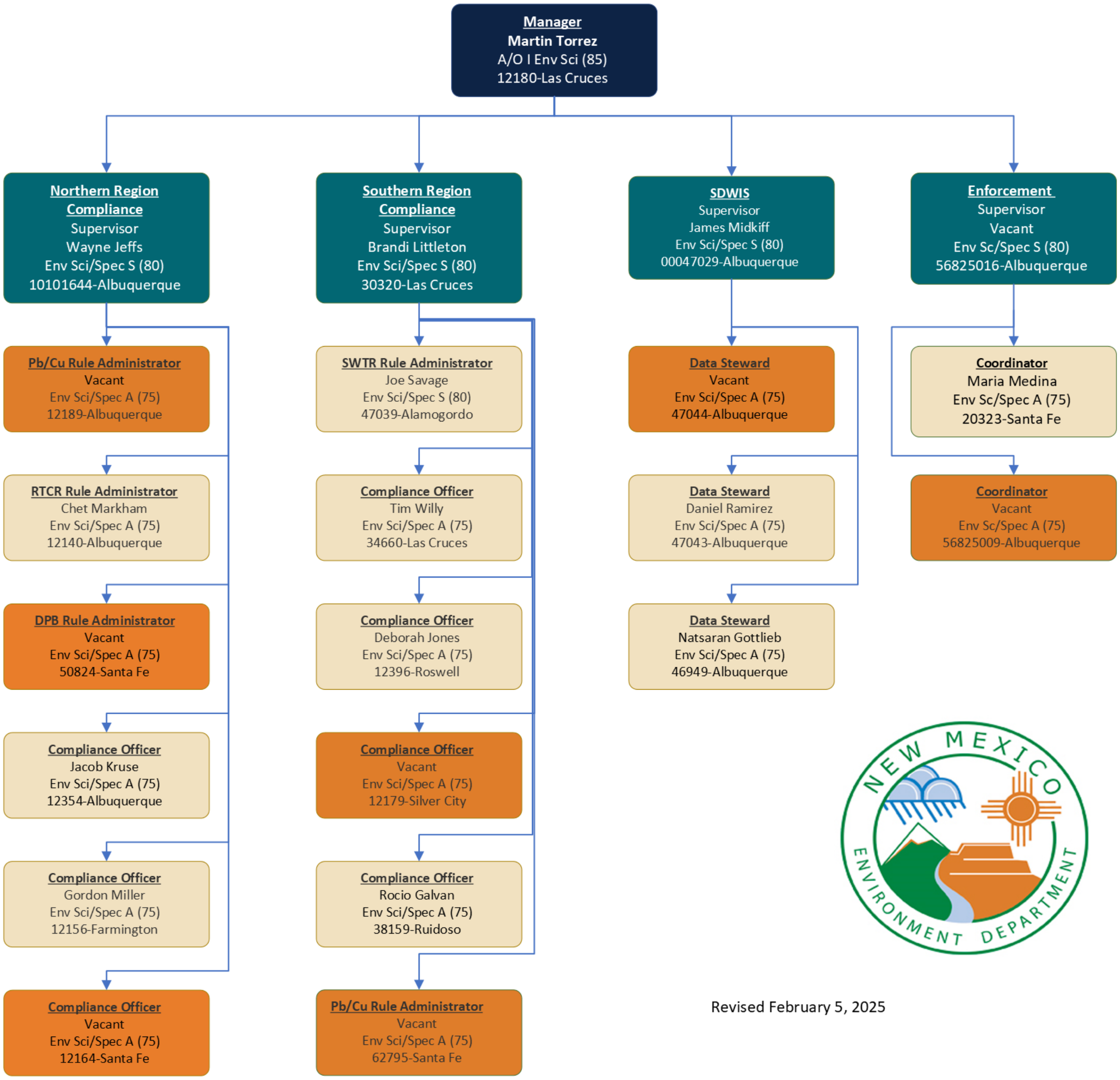


## New Mexico Environment Department
## Drinking Water Bureau
## Water Conservation Fund Group




Revised: February 5, 2025

# New Mexico Environment Department
## Drinking Water Bureau
## Public Water System Supervision Group




Revised February 5, 2025

# New Mexico Environment Department
## Drinking Water Bureau
## Sustainable Water Infrastructure Group

- **Manager**
  Tanya Trujillo
  A/O II Env Sci (90)
  10101647-Albuquerque
  - **Infrastructure Support Team**
    Team Lead
    Emily Worthen
    Eng Mgr I (EG)
    34664-Milan
    - **Infrastructure Review Engineer**
      Patrick Castillo
      Eng Prof II (EG)
      59991-Albuquerque
    - **Infrastructure Funding Outreach Coordinator**
      Vacant
      Water Res Prof III (EF)
      12172-Santa Fe
    - **Infrastructure Funding Coordinator**
      Aaron Beckworth
      Water Res Prof III (EF)
      10115976-Santa Fe
    - **Intern**
      Vacant
      56825006-Albuquerque
  - **Source Water Protection Team**
    Team Lead
    Andy Jochems
    Water Res Mgr I (EG)
    12297-Albuquerque
    - **Source Water Protect Coordinator**
      David Torres
      Env Sci/Spec A (75)
      0012313-Los Lunas
    - **Source Water Protect Coordinator**
      Katina Wilson
      Water Res Prof III (EF)
      10101655-Los Lunas
    - **Source Water Protect Coordinator**
      Kristin Kinic
      Water Res Prof III (EF)
      10115870-Santa Fe
  - **Regionalization & Sustainability Team**
    Team Lead
    Melanie Delgado
    Water Res Mgr I (EG)
    10114352-Espanola
    - **Regional Planning Specialist**
      Sonia Suazo
      Water Res Prof III (EF)
      10103504-Santa Fe
    - **Sustainable Systems Specialist**
      Anders Lundahl
      Water Res Prof III (EF)
      00050825-Albuquerque
  - **Grant & Contract Coordinator**
    Lauren Fegan
    Program Coordinator II (75)
    568208000-Santa Fe
  - **Assessment & Policy Team**
    Team Lead
    Karen Lithgow
    A/O I (80)
    10101643-Santa Fe
    - **Assessment Specialist**
      Michael Montoya
      Water Res Prof III (EF)
      00030326-Las Cruces
    - **Assessment Specialist**
      Vacant
      Water Res Prof III (EF)
      10103503-Albuquerque
  - **Capacity Support Team**
    Team Lead
    Krista Schultz
    Water Res Mgr I (EG)
    10103505-Albuquerque
    - **Emergency Response Coordinator**
      Adele McKenzie
      Water Res Prof III (EF)
      47221-Santa Fe
    - **Technical Assistance Specialist**
      Antonio Romero
      Water Res Prof III (EF)
      00047231-Las Cruces
    - **Capacity Assistance Coordinator**
      Vacant
      Water Res Prof III (EF)
      10103502-Albuquerque
  - **Utility Operator Certification Program**
    Team Lead
    Vacant
    Water Res Mgr I (EG)
    12146-Albuquerque
    - **UOCP Coordinator**
      Vacant
      Env Sci/Spec A (75)
      00071056-Santa Fe
    - **UOCP Coordinator**
      Carlos Gonzales
      Env Sci/Spec A (75)
      10117515-Albuquerque
    - **UOCP Coordinator**
      Nile Carver
      Env Sci/Spec A (75)
      00029130-Santa Fe
    - **UOCP Coordinator**
      Vacant
      Mgmt Analyst O (60)
      00012142-Albuquerque
    - **Instructor**
      Vacant
      56825010-Albuquerque

Revised: February 5, 2025

## 1.11 PROJECT AUTHORITY & LINES OF COMMUNICATION

Table 4 –Project Authority & lines of Communication

| **Project General lines of Communications & Role Responsibilities** | |
|---|---|
| **Organizational Unit** | **Responsibilities** |
| EPA – Region 6 Quality Assurance Manager Christy Warren | Final Approving Authority of the QAPP |
| EPA –PWSS Project Officer, Jessica L. Fry | PWSS Project Management Authority & QAPP approver. |
| DWB Bureau Chief, Joe Martinez | Oversees the DW bureau and program activities, including the QA Program. |
| DWB Quality Assurance Manager, Bethany Anderson | Oversees the DWB Quality Program, WCF Program, Project Manager for this QAPP, Certification Authority DWB Lab Certification Program, Point of Contact for EPA. |
| DWB Quality Assurance Coordinator, Christina Pilar | Certification Manager DWB Lab Certification Program, writes and reviews QA lab SOPs, DWB QAPPs and assists the DWB QAM & DWB Quality Program and internal audits, |
| DWB Water Conservation Fund Group Manager, Bethany Anderson | Coordinates water sampling to determine compliance with the Safe Drinking Water Act and helps ensure the quality of the resulting data; oversees laboratory certification program and manages all laboratory contracts. The WCF Manager also oversees the DWB Chemical Hygiene Program, Waiver Program, and the Ground Water Under Direct Influence (GWUDI) Program. |
| DWB Public Water System Supervision Group, Martin Torres | Provides oversight to PWS to ensure compliance with the drinking water regulations, protect the public from waterborne diseases, and ensure safe drinking water for all public water systems; manages and maintains SDWIS including the verification and validation of data; and implements the drinking water enforcement program. |
| DWB Sustainable Water Infrastructure Group, Tanya Trujillo | Implements Capacity Development, Community Services, Technical Assistance, Source Water Protection Programs, and Utility Operator Certification Program. |
| DWB Program Administration Group | Provides administrative support services to all DWB programs. |
| DWB Financial/Administrative Section | Oversees the financial functions of the Bureau, including central and field offices; evaluates financial program effectiveness; develops, modifies, and implements operating procedures, fiscal policies, and accounting procedures for funding programs within the DWB. Note: This section is not responsible for collecting environmental data and is organized under NMED's Administrative Services Division. |
| NMED Office of Information Technology Support | Maintains computer hardware, software and networks and maintains the Safe Drinking Water Information System for the DWB. Note: This section is not responsible for collecting environmental data and is organized under NMED's Office of Information Technology Division. |

## 1.12 STAFF TRAINING & CERTIFICATIONS

Staff responsible for conducting environmental information operations identified in the QAPP shall have appropriate qualifications, education, training, experience, and knowledge of the requirements of the work activities to be performed. The Quality Assurance Manager, or designee, is responsible for the individual responsible for documenting personnel training as identified below.

### 1.12.1 QA Training:

All DWB staff are required to be familiar with this QAPP, the DWB Quality Program, DWB's Quality Management Plan (QMP), WCF SOP Water Sample Guidance & Standard Operation Procedures (SOP), and all applicable policies and procedures pertinent to the project. Supervisors will provide these and other applicable documents to all new staff.

The WCF/QA Manager, and all relevant project supervisors are required to complete the EPA Region R6 Quality Assurance Training for quality management of EIO and obtain the EPA QA certificate of completion. The staff's certificates of completion must also be provided to the QAM to be recorded and will be recorded and filed for the DWB Quality Program.

### 1.12.2 Special Training:

There are no special training requirements aside from the training associated with the sampling certification described below. As resources allow DWB staff are encouraged to seek out and attend appropriate training courses, workshops, or other informative events and to share what they have learned with other staff. Information pertaining to attendance at these types of events is maintained in personnel files. Supervisor approval is required prior to attending any such events.

### 1.12.3 Water Sampling Certification:

DWB and PWS personnel who are responsible for collecting drinking water quality samples are required to be a certified sampler in accordance with 20.7.4.12 NMAC. The certification levels are described in Table 5. Copies of all training records and certificates are maintained in the DWB personnel files and/or by the appropriate PWS. Each level of certification requires a high school diploma (or equivalent), 10 training credit hours and the successful completion of a written certification examination.

Table 5 –Certification Requirements for Water Sampling

| **Type of Water Sampling** | **Population Served** | |
|---|---|---|
| | 25 to 500 | > 501 |
| Microbiology | Small Water or Water Sampling Technician 1 | Water Sampling Technician 1 |
| Chemical and Radiological | Water Sampling Technician 2 | Water Sampling Technician 2 |

### 1.12.4 Driving Certification:

Conducting sampling at PWSs requires travel to and from the water systems. In accordance with NMED Vehicle Use Policy and Procedure 07-07 and 1.5.3.12 NMAC, all DWB personnel must adhere to the requirements specified in these documents and are required to complete the National Safety Council Defensive Driving Course and retain a copy of the Defensive Driving training certificate while operating state vehicles.

### 1.12.5 DWLCP Laboratory Certification:

Any drinking water samples collected for compliance purposes must be analyzed by a DWLCP certified lab. Certification involves formal approval by DWLCP indicating that the laboratory is capable of producing accurate analytical data and is authorized to analyze drinking water samples for compliance purposes. A list of currently Certified Laboratories is available on the Drinking Water Bureau Sampling and Analysis webpage.

## 1.13 DOCUMENTS & RECORDS

### 1.13.1 Documents

#### *1.13.1.1 QAPP Document Information & Distribution*

This Quality Assurance Project Plan (QAPP) is reviewed and revised annually or whenever there are changes in procedures, with approval from the Environmental Protection Agency (EPA). The Quality Assurance Manager (QAM), or their designee, distributes the current version of the QAPP each year to staff and all relevant individuals listed within the QAPP' s Distribution List Table( 3).

Along with QAPP, an acknowledgment form is provided, which must be signed as a receipt of understanding the QAPP, which the QAM or designee will retain and record. This ensures that quality system policies are understood and implemented effectively.

This document is updated three (3) years from the date of EPA's approval. After three (3) years, it shall be submitted to EPA for review and reissue. The QAPP is available for public access on the Drinking Water Bureau webpage and may be reviewed at this link Quality Assurance Project Plan (QAPP) for Drinking Water Samples.

The WCF/QA Manager, or their designee, is responsible for preparing and updating the QAPP. The QAM. The QAM is the primary contact for the EPA regarding this QAPP. Prior to submitting the QAPP, the QAM will consult with the EPA Project Officer and the Regional Quality Assurance Manager (EPA-QAM) to meet any additional requirements. The QAM must submit the QAPP for EPA review and approval at least 60 days before its expiration. During the annual review, the QAM will also ensure that the quality assurance requirements outlined in the QAPP are updated as needed.

#### *1.13.1.2 Project Documents*

Data generated from projects covered by this QAPP must be of sufficient quality to withstand challenges to their validity, accuracy, and legality. To meet this objective, data is recorded in standardized formats and in accordance with prescribed procedures. The documentation of all environmental data collection activities must meet the following minimum requirements:

- Data and associated information must be documented directly, promptly, and legibly. All reported data must be uniquely traceable to the raw data. Data reduction/transformation formulas must be documented.
- All original data records include, as appropriate, a description of the data collected, units of measurement, unique sample identification (Request Identification [RID] number), station or location identification (if applicable), name (signature or initials) of the person collecting the data, and date of collection.
- Any changes to the original (raw data) entry must not obscure the original entry. The reason for the change must be documented, the change must be initiated and dated by the person making the change and approved by the DWB SDWIS Supervisor or WCF Manager.

Other specific documentation requirements are discussed throughout this QAPP and referenced procedures.

### 1.13.2 Records

**Table 6** below describes how records are maintained by DWB. Records retention periods for the DWB files are in accordance with applicable State and Federal Regulations (20.7.10 NMAC; 40 CFR 141; 40 CFR 142; 40 CFR 143).

*Table 6 - DWB Records Repositories*

| Record Type | Record Location | Document Repository Information |
|---|---|---|
| DWB Central Filing System | DWB main office in Santa Fe, NM | All original hard-copy documents prior to 2014 are in paper format and are filed and kept at DWB main office. Original hard copy folder & files include:<br>▪ All official records associated with PWSS Sanitary Surveys Reports, Plans & Specifications, Maps, Notices of Violations, Capacity Development, Source Water Assessments, and all related Correspondence etc.<br>▪ All official drinking water compliance & sample chemical analyses results.<br>▪ All original correspondence that is not associated with primary drinking water categories.<br>***Note –** In future, all DWB original hard copy files will be archived at the New Mexico State Records Center and Archives division. |
| DWB Electronic Data Folders | NMED Cloud Storage. Maintained by NMED IT & DWB | All Digitalized documents & information are stored in the department's electronic filing system. All documents post 2014 are stored in NMED specific electronic data folders and include the following documents:<br>▪ All official records associated with PWSS Sanitary Surveys Reports, Plans & Specifications, Maps, Notices of Violations, Capacity Development, Source Water Assessments, and all related Correspondence etc.<br>▪ All official drinking water compliance & sample chemical analyses results.<br>▪ All original correspondence that is not associated with primary drinking water categories. |
| SDWIS | Database. Maintained by NMED IT & DWB | Electronic repository for information specific to individual PWS such as board and operator contact information, inventory information, water quality data, and information pertaining to monitoring and compliance schedules, violations, and any enforcement actions. |
| DWB Sample Collection Application | Online application. Maintained by NMED IT & DWB | Web-based tool that is updated from the SDWIS database daily. Once registered with a password and assigned to a water system sample collectors and PWS operators can view the compliance sample schedules assigned to the water system and automatically prepare a Sample Request Form for any lab that DWB has on contract with all the proper demographic information pulled from SDWIS to minimize any errors. |

# 2 PROJECT ENVIRONMENTAL INFORMATION OPERATIONS & PROCEDURES

## 2.1 DRINKING WATER SAMPLING & ANALYSIS PROGRAM & PARAMETERS

The DWB Sampling Program sample collection, parameters, frequencies, and locations vary depending on numerous factors such as system type and size, source of water and distance from potential contamination and treatment methods.

Drinking water samples are conducted at each PWS in accordance with specified contaminants listed in the National Primary Drinking Water Regulations, Secondary Drinking Water Standards, and State of New Mexico drinking water regulations and services are of known and documented quality under the project and data acquisition methods.

## 2.2 PWS PRIMARY DRINKING WATER REGULATIONS (NPDWRs) FOR SAMPLING PARAMETERS

A detailed list of the PWS NPDWRs are provided in Attachment – 1 and can be viewed on EPA's PWS National Primary Drinking Water Regulations webpage.

### 2.2.1 Microbiological Contaminants

Microbiological contaminants can be a potential health threat to humans by causing gastrointestinal illnesses that result in diarrhea, vomiting and/or cramps. Coliform bacteria tend to be found in decaying organic matter and the intestinal tract of humans and animals, but it is not usually harmful to human health. The presence of coliform bacteria in the distribution systems of public water supplies is used as an indicator that more dangerous microbiological contamination may be present.

### 2.2.2 Disinfection Byproducts (DBPs)

The Disinfection Byproducts (DBP) Rule applies to all PWSs that add a chemical disinfectant, except for transient water systems that add a disinfectant other than chlorine dioxide. This rule requires these water systems to monitor disinfection byproduct contaminants and disinfectants within the system. Potential health risks from these disinfectants and disinfection byproducts include an increased risk of cancer, anemia, and liver, kidney, or central nervous system problems.

### 2.2.3 Inorganic Chemicals (IOCs)

Inorganic chemicals include compounds that do not contain carbon such as fluoride, cyanide, heavy metals, and nitrates. These chemicals sometimes contaminate water supplies as a result of human activity; however, many are naturally occurring in certain geographic areas. Potential health risks from inorganic contaminants are wide-ranging and include skin problems; kidney, liver, and nervous system problems; increases in blood pressure; and bone disease. Excess nitrates are a serious risk to infants, potentially causing Blue Baby Syndrome which can result in death.

- The PWSs are required to monitor at least annually to determine compliance with the nitrate MCL. Several analytical methods for nitrate and/or nitrite are available for total nitrate and nitrite. Once a sample meets or exceeds 5 mg/L with a total nitrate and nitrite analysis, EPA encourages subsequent analysis for nitrate to be conducted using a nitrate only method.

- Exceedance of either the nitrate MCL (10 mg/L) or total nitrate and nitrite MCL (10 mg/L) requires a Tier 1 public notification. Systems that detect total nitrate and nitrite must report these results in their Consumer Confidence Reports. If the levels are above 5 mg/L, but equal to or below the MCL, the system must provide additional health information in their Consumer Confidence Reports. Refer NMED Staff Guidance Use of Nitrate + Nitrite (total) Analysis for Compliance Determinations with Nitrate Maximum Contaminant Level.

Organic chemicals are compounds that contain one or more carbon atoms. Sources of organic chemical compounds can be natural, such as from decaying vegetation, or anthropogenic. Organic chemicals that are regulated in drinking water typically come from industrial and agricultural activities and include substances such as components of pesticides and industrial and commercial products.

### 2.2.4 Radionuclides

Radionuclides occur naturally in the environment and through erosion of natural deposits can enter drinking water supplies and pose a potential health risk to humans. Adverse health effects include increased risk of cancer and potential kidney toxicity.

## 2.3 PWS SECONDARY DRINKING WATER STANDARDS (NSDWRS)

NSDWRs (or secondary standards) are non-enforceable guidelines regulating contaminants that may cause cosmetic effects (such as skin or tooth discoloration) or aesthetic effects (such as taste, odor, or color) in drinking water. EPA recommends PWSs comply with secondary standards. DWB enforces specific secondary contaminates listed in **Table 8** – Section 2.7 *Secondary Contaminant Specific Sampling Procedures* .

Although secondary standards are not federally enforceable, the EPA mandates that community water systems provide special notice if they exceed the fluoride secondary standard of 2.0 mg/L. If a community water system exceeds this fluoride standard but remains below the primary standard of 4.0 mg/L, it must notify the public it serves within 12 months of learning about the exceedance (as per 40 CFR 141.208).

## 2.4 SAMPLE LOCATION AND FREQUENCY

Water sampling schedules and locations are maintained in SDWIS for all regulated public water systems and are updated, as necessary. The general requirements for the sampling process are summarized below in **Table 7.**

*Table 7 - DWB Drinking Water Sampling Process Summary*

| DRINKING WATER SAMPLING PROCESS | | |
|---|---|---|
| **SAMPLE GROUP** | **REFERENCE** | **SAMPLING SUMMARY** |
| Disinfection Byproducts | 40 CFR 141.132 & 141.621 | Systems must take all samples during normal operating conditions. Frequency and location depend on the type and size of system. |

| | | |
|---|---|---|
| Inorganic Chemical Sampling | 40 CFR 141.23 | Groundwater systems collect samples at every entry point to the distribution system which is representative of each well after treatment. Surface water systems collect samples at every entry point to the distribution system after any application of treatment or in the distribution system at a point which is representative of each source after treatment. If a system draws water from more than one source and the sources are combined before distribution, the system must sample at an entry point to the distribution system during periods of normal operating conditions, i.e., representative of all sources being used. Frequency of sampling depends on the size and type of the public water system as well as the chemical parameter. |
| Organic Chemical Sampling | 40 CFR 141.24 | Groundwater systems collect samples at every entry point to the distribution system which is representative of each well after treatment. Surface water (or combined surface/groundwater) systems collect samples at points in the distribution systems that are representative of each source or at each entry point to the distribution system after treatment. If the system draws water from more than one source and the sources are combined before distribution, the system must sample at an entry point to the distribution system during periods of normal operating conditions, i.e., representative of all sources being used. Frequency of sampling typically starts at four consecutive quarterly samples for each regulated organic contaminant and is then evaluated for potential modification based on various factors such as previous analytical results, proximity of system to potential sources of contamination, number of people served, etc. Resulting waivers and/or modifications are specified in the approved sample siting plan for each system. |
| Radionuclides | 40 CFR 141.26 | All existing community water systems using groundwater, surface water or both must sample at every entry point to the distribution system that is representative of all sources being used under normal operating conditions. Frequency of sampling typically starts at four consecutive quarterly samples for each regulated contaminant and is then evaluated for potential modification based on previous analytical results. |
| Unregulated Contaminants | 40 CFR 141.40 | Applies only to systems that are selected by EPA. EPA assigns sampling parameters, locations, and frequencies. |
| Lead & Copper | 40 CFR 141.86 | The PWSs are responsible for conducting a materials evaluation of its distribution system to identify a pool of targeted sample sites that meet the regulatory requirements and PWS homeowners collected the water samples to be analyzed. Sampling sites may not include faucets that have point-of-use or point-of-entry treatment devices designed to remove inorganic contaminants. The number of samples and frequency of sampling depends on the size and type of system. See section 2.8.3 |
| Source Water Monitoring | 40 CFR 141.701 | Initial sampling is conducted twice per month for 12 months or monthly for 24 months. After the initial monitoring period frequency and location of sampling will depend on the results of the initial monitoring and vary based on system size and source water type and location. |

## 2.5 GENERAL REQUIRED SAMPLING MATERIALS AND PROCEDURES

This section provides information on how drinking water samples will be collected consistently between locations by all sampling teams, ensuring no contamination occurs during the collection process. The following sections provide specific instructions for each group of samples taken from drinking water systems. For details on the appropriate sample containers, reagents, and holding times, please refer to DWB WCF SOP Water Sample Guidance & Standard Operation Procedures

### 2.5.1 General Materials Needed for Water Sampling

1. Appropriate sample containers as provided by the laboratory.
2. Labels supplied by the laboratory
3. Sample request forms (Chain of Custody
4. Pen/sharpie
5. Nitrile or latex gloves
6. Safety glasses
7. Cooler
8. Ice
9. Plastic bags to keep samples dry in cooler

### 2.5.2 General Water Sampling Collection & Handling Procedures

1. Obtain sample containers and labels from the laboratory. Store bottles in a cool dry place prior to use. If the bottle is dirty or becomes contaminated, do not use it.
2. Bring extra bottles to every sampling event.
3. Label bottle using the label provided by the laboratory. Labels should include the sampling location, date and time and any other information required by the analytical laboratory.
4. Complete sample request forms completely and in ink. Bring extra forms to every sampling event.
5. Use gloves to prevent contamination.
6. Use safety glasses when collecting samples and/or preserving them.
7. Select an approved sample point.
8. Remove any aerators from the tap. Unless sampling for compliance with the Lead and Copper Rule Revision (LCRR).
9. Flush the line for a sufficient amount of time to ensure there is no debris in the faucet and to allow the temperature to stabilize. Unless sampling for compliance with the Lead and Copper Rule Revision (LCRR).
10. Collect the sample.

11. Cool the sample. Sample must be chilled to a temperature of 4 $\pm$ 2°C for storage and/or transport to laboratory.
12. Place sample bottles in plastic bag and store and transport in cooler with ice.
13. Samples that will be in direct contact with ice must be placed inside a zip-lock bag to prevent contact with melted ice.
14. Never allow samples to freeze.
15. Deliver samples to the laboratory. Allow ample time for samples to be processed and analyzed by laboratory.

## 2.6 DWB WCF SAMPLING TEAM: SPECIFIC ENTRY POINT WATER SAMPLING PROCEDURES

The elements covered by the WCF sampling team are not all limited to discreet sampling points but cover a wide range of information collected about the system and include physical and administrative elements. See the DWB WCF SOP Water Sample Guidance & Standard Operation Procedures .

### 2.6.1 Inorganic Chemical Sampling Procedures:

Inorganic chemical sampling is categorized into various suites, each with specific sampling procedures. The sections below outline the different sampling suites and their corresponding procedures.

#### *2.6.1.1 Regulated Heavy Metals Specific Sampling Procedure*

1. Use a plastic container with a minimum volume of 500 mL.
2. The container may be pre-preserved to a pH of < 2 with nitric acid ($HNO_3$) or you can request that the laboratory preserve the sample after collection. If preservation at the laboratory is necessary, this must be indicated on the sample request form/chain of custody (COC).
3. Open the tap and let the water run for ~30 seconds to ensure no debris is in the faucet. Reduce the flow from sampling point to an un-aerated stream.
4. **Hold time** is 2 weeks without preservation and 6 months if preserved with $HNO_3$*Exception to this rule is for mercury, which has a hold time of 28 days.*

#### *2.6.1.2 Nitrate-Nitrite Specific Sampling Procedure*

1. Use a 100 mL plastic sample container and add 2 mL $H_2SO_4$ after collecting the
2. **Hold time** is 28 days.

#### *2.6.1.3 Cyanide Specific Sampling Procedure*

1. Use a 1 L cubitainer, add 0.6 g of ascorbic acid (if sample is chlorinated) and 8-12 pellets of NaOH before sampling.
2. **Hold time** is 14 days.

#### *2.6.1.4 Fluoride Specific Sampling Procedure*

1. Use a plastic sample container with a volume of at least 100 mL and no added preservative.
2. **Hold time** is 28 days.

### 2.6.2 ORGANIC CHEMICAL SAMPLING

Organic chemical sampling is categorized into various suites, each with specific sampling procedures. The sections below outline the different sampling suites and their corresponding procedures. Special precautions must be taken when sampling for organic contaminants to avoid contamination. Water is an exceptionally good solvent for many organic chemicals and when exposed to air, water can absorb volatile organic gases that may be present. Always observe the following precautions when collecting organic chemical samples:

- Check all sampling kits to ensure all bottles and preservatives are present.
- Do not fuel up vehicle prior to collecting samples.
- Do not smoke (tobacco smoke contains VOCs).
- Do not use hairspray/mousse, cologne/perfume, or breathe/spray mouthwash (all contain VOCs).
- Wear nitrile or latex gloves when sampling.
- Turn off vehicle (exhaust contains VOCs).
- Use well-ventilated areas and avoid collecting samples in enclosed areas that contain heavy chemical odors.

### 2.6.3 VOC SAMPLING PROCEDURES

1. Use two 40 mL glass vials with Teflon septum.
2. Sample vials contain ascorbic acid (chlorinated samples) and are preserved with HCl.
3. Remove the cap and hold the vial at a 45˚ angle. Position the vial as close to the faucet as possible and make sure the stream hits the side of the vial as it fills. Slowly fill the vial and ensure that it does not overflow.
4. Replace the cap without getting any air in the sample vial. There are two methods to doing this:
    - Fill the vial until there is a convex meniscus (bulging over the rim). Carefully slide the septum across the top of the vial and then screw on the cap.
    - Fill the vial to get a convex meniscus and fill the cap (don’t remove the septum) with water. Hold the inverted lid next to the rim of the vial and carefully flip the cap over the top and screw it down.
5. Check to make sure there are no air bubbles in the sample. If bubbles are present, remove the cap, add a little more water, and try again.
6. **Hold time** is 14 days.

### 2.6.4 SOC Sample Suite Sampling Procedures

There are seven individual analyses associated with the SOC sample suite. Due to the shorter holding time, arrangements with the analytical laboratory should be made in advance.

#### *2.6.4.1 VOC II Sampling Procedures*

These samples should be collected from an entry point after chlorination or collect sample for untreated water system at selected entry point.

1. Use two 40 mL glass vials with Teflon septum 3 mg of $Na_2S_2O_3$, added at laboratory.
2. Remove the cap and hold the vial at a 45˚ angle. Position the vial as close to the faucet as possible and make sure the stream hits the side of the vial as it fills. Slowly fill the vial and ensure that it does not overflow.
3. Replace the cap without getting any air in the sample vial. There are two methods to doing this:
    - Fill the vial until there is a convex meniscus (bulging over the rim). Carefully slide the septum across the top of the vial and then screw on the cap.
    - Fill the vial to get a convex meniscus and fill the cap (don't remove the septum) with water. Hold the inverted lid next to the rim of the vial and carefully flip the cap over the top and screw it down.
4. Check to make sure there are no air bubbles in the sample. If bubbles are present, remove the cap, add a little more water, and try again.
5. **Hold time** is 14 days to extraction at the lab and then 14 days for analysis.

#### *2.6.4.2 Acid Herbicide Sampling Procedures*

1. Use one 250 mL amber glass bottles, 12.5 mg $Na_2S_2O_3$, added at laboratory.
2. Remove the cap; slowly fill the bottle to the curve of the shoulder.
3. Replace the cap and invert bottle several times to make sure the $Na_2S_2O_3$ is dissolved.
4. **Hold time** is 14 days to extraction, 21 days to analysis.

#### *2.6.4.3 SOC Sampling Procedures*

1. Use two 1 L amber glass bottles, 50 mg Na2SO3, added at laboratory and 2 mL HCl added by sampler.
2. Remove the cap; slowly fill the bottle to the curve of the shoulder.
3. Replace the cap and invert bottle several times to make sure the $Na_2S_2O_3$ is dissolved.
4. Wait at least 2 minutes for de-chlorination to take place and then add 1 dropper of HCl into each of the two SOC bottles until pH is < 2.
5. **Hold time** is 14 days to extraction, 30 days to analysis.

#### *2.6.4.4 Carbamate Sampling Procedures*

1. Use two 40 mL vial, 0.375 grams of citrate buffer and $Na_2S_2O_3$ added at laboratory.
2. Slowly fill the vial and cap it. Air bubbles are not an issue.
3. **Hold time** is 28 days.

#### *2.6.4.5 Glyphosate Sampling Procedures*

1. Use one 40 mL amber glass vial with 4 mg of $Na_2S_2O_3$ added by laboratory.
2. Slowly fill the vial and cap it. Air bubbles are not an issue.
3. **Hold time** is 14 days.

#### *2.6.4.6 Endothall Sampling Procedures*

1. Use one 250 mL amber glass bottle, 20 mg $Na_2S_2O_3$, added at laboratory.
2. Open the tap and let the water run for ~30 seconds to ensure no debris is in faucet. Reduce the flow from sampling point to an un-aerated stream.
3. Slowly fill the bottle and cap it.
4. **Hold time** is 7 days to extraction, 14 days to analysis.

#### *2.6.4.7 Diquat Sampling Procedures*

1. Sample bottles will be one amber 1 L PPE bottle with 100 mg $Na_2S_2O_3$ added at laboratory.
2. **Hold time** is 7 days to extraction, 21 days to analysis.

#### *2.6.4.8 Radionuclide Sampling Specific Sampling Procedures*

1. Collect the sample using two 1-gallon cubitainers.
2. Sampler does not need to add $HNO_3$ to bring the pH < 2 but it must be noted on the sample request form/COC if the sample needs to be preserved at the laboratory.
3. **Hold time** is 5 days unpreserved, and 6 months after preservation.

## 2.7 Secondary Contaminant Specific Sampling Procedures

The sample containers for the secondary contaminants are provided by Eurofins Environment Testing South Central who perform the required analyses as the Department of Health Scientific Laboratory Division (SLD) does not perform these tests. **Due to the short hold times for the analyses the samples cannot be sent out of state**. The general sampling procedures apply to these samples and the sample containers are provided with the appropriate reagents already in the containers.

The following parameters are collected to determine the baseline of new wells:

*Table 8 – Secondary Contaminant List*

| Contaminant | Secondary MCL (******mg/L is milligrams of substance* ) | Hold Times |
|---|---|---|
| Aluminum | 0.05 to 0.2 mg/L* | 6 months |
| Chloride | 250 mg/L | 28 days |
| Color | 15 color units | 48 hours |
| Copper | 1.0 mg/L | 6 months |
| Fluoride | 2.0 mg/L | 28 days |
| Foaming agents/Surfactants/MBAS | 0.5 mg/L | 48 hours |
| Iron | 0.3 mg/L | 6 months |
| Manganese | 0.05 mg/L | 6 months |

| | | |
|---|---|---|
| Odor | 3 TON (threshold odor number) | 24 hours |
| pH | 6.5 - 8.5 | Immediately upon collecting sample |
| Silver | 0.1 mg/L | 6 months |
| Sulfate | 250 mg/L | 28 days |
| Total Dissolved Solids (TDS) | 500 mg/L | 7 days |
| Zinc | 5 mg/L | 6 months |

#### *2.7.1.1 Secondary Sample Containers & Preservation Method(s)*

- 2-500 mL plastic container, unpreserved.
- 1-500 mL plastic container preserved with $HNO_3$.
- 1-1 L amber glass, unpreserved.
- 1 100 mL PPE sample bottle.
- 2-1 GL (gallon) cubitainers, preserved with $HNO_3$ each quarter that the radiological composite is collected.

#### *2.7.1.2 Fluoride Specific Sampling Procedure*

1. Use a plastic sample container with a volume of at least 100 mL and no added preservative.
2. **Hold time** is 28 days.

## 2.8 UOCP CERTIFIED OPERATOR & SAMPLER: SPECIFIC WATER SAMPLING PROCEDURES FOR PWS DISTRIBUTION SYSTEMS

### 2.8.1 Microbiological Specific Sampling Procedures

1. Never use a kitchen sink faucet that swivels or an outdoor faucet that drips. Any hoses, vacuum breakers or other attachments must also be removed. The least-used faucet at the site is preferred because there is less chance of contamination of the faucet. If an indoor faucet is selected, make sure the sink and faucet are clean. Never collect a sample from a hot water faucet. Remove the aerator screen (it might be contaminated).
2. Disinfect the faucet with alcohol if necessary.
3. Open the tap and let the water run for 3-5 minutes. This will ensure that the water being sampled is from the main and has not been standing in the customer's plumbing.
4. Once the line is properly flushed, throttle the flow down to an un-aerated stream.
5. Run a chlorine residual analysis following the instructions in the test kit. Record results on sample request form.
6. Remove the cap, making sure not to touch the inside of the cap or the top of the sample bottle. Don't aerate the sample or allow it to splash on the outside of the bottle. Don't blow or breathe into the sample bottle.

7. Hold the bottle at a 45° angle while filling it. Fill bottle to fill line (within 1 inch from top) to ensure that there is 100 mL of sample in bottle. Do not overfill or pour excess water. If overfilled, use extra bottle. Leave air space in bottle to allow room to agitate prior to analysis.

8. Never set cap down or leave off for extended periods. Hold cap so that it is facing down at all times and securely replace lid after sample is collected.

9. **Hold time** is 30 hours; samples must be delivered to laboratory within 24 hours.

### 2.8.2 Disinfection Specific Sampling Procedures

There are two different sets of samples associated with the disinfection byproducts kit. Samples are analyzed for total trihalomethanes (TTHMs) and the haloacetic acid group (HAA5).

#### *2.8.2.1 TTHM Sampling Procedures*

1. Use two 40 mL glass vials with a Teflon septum. Remove the cap and hold the vial at a 45˚ angle. Position the vial as close to the faucet as possible and make sure the stream hits the side of the vial as it fills. Slowly fill the vial and ensure that it does not overflow.

2. Replace the cap without getting any air in the sample vial. There are two methods to doing this:

   - Fill the vial until there is a convex meniscus (bulging over the rim). Carefully slide the septum across the top of the vial and then screw on the cap.

   - Fill the vial to get a convex meniscus and fill the cap (don't remove the septum) with water.

3. Hold the inverted lid next to the rim of the vial and carefully flip the cap over the top and screw it down.

4. Check to make sure there are no air bubbles in the sample. If bubbles are present, remove the cap, add a little more water, and try again.

#### *2.8.2.2 Haloacetic Acid Sampling Procedures*

1. Use two 60 mL amber glass vials, each with 6 mg of $NH_4Cl$.Remove the cap and hold the vial at a 45° angle. Position the vial as close to the faucet as possible and make sure the stream hits the side of the vial as it fills. Slowly fill the vial and cap it. *Air bubbles are not an issue.*

2. Agitate the vial for one minute to dissolve the $NH_4Cl$.

3. **Hold time** is 14 days to extraction and 14 days to analysis.

### 2.8.3 LEAD & COPPER SPECIFIC SAMPLING PROCEDURES FOR PWS CUSTOMERS (HOMEOWNER)

The Lead and Copper Rule Revisions (LCRR) are designed to ensure that samples are collected from locations which have the highest risk of elevated lead concentrations. The rule established a tiering system that guides PWS in selecting locations for tap sampling that are considered high risk and requires that the sampling pool be comprised of Tier 1 sites if they are available [see 40 CFR 141.86(a)].

Lead and copper samples differ from other heavy metals in that these samples must be collected as a "first draw". For a sample to be considered "first draw", water must have been standing in the customers plumbing for at least 6 hours but should not have been standing in the pipe for more than 18 hours. The sampling location should be an interior tap typically used for consumption such as a cold-water kitchen or bathroom sink tap in residences.

Because the sample must be taken by the procedures described above, these samples are collected by PWS homeowners/customers. The PWSs must make sure that the individual responsible for collecting the sample understands how to do it correctly. As added insurance as the system gives proper instructions, the rule does not allow PWS to challenge sample results based on alleged homeowner errors in sample collection. Preservation can be done by the sampler or the laboratory after the sample has been collected.

#### *2.8.3.1 PWS Homeowner/Customer Sampling Procedures:*

1. Water must remain motionless in the pipes for at least six hours before sampling. Therefore, the most convenient times to sample may be early morning, after school, or after returning from work.
   - Do not run water before the start of the six-hour period.
   - Do not use any water in the house during the minimum six-hour period.
2. Select a faucet in the kitchen or bathroom that is commonly used for drinking water.
   - Do not sample from a bathtub, hose, or outdoor faucet as these samples will not represent water that you typically consume.
   - Do not use a faucet with a filter unless you turn the filter off.
   - Do not use a faucet that is connected to a water softener or reverse osmosis treatment.
   - Do not remove or clean the aerator before sampling.
3. Sample containers must be one liter in volume with a wide mouth, the outer diameter which measures at least 55 mm wide.
   - Number the sample containers 1-5 and place the containers in order next to the sink you will be using to collect the sample. Open all the sample containers, place the caps on the counter, being careful not to touch the inside of the containers or the caps.
4. Place the first sample container below the faucet and turn on the cold-water tap. If you have a single handle faucet, turn it fully to the cold side.
   - Fill the first sample container to the neck and be prepared to immediately start filling the next sample container once the first one has been filled.
   - Repeat this process until all the sample containers are full. Do not turn off the faucet between filling the sample bottles.
5. Tightly cap the first and fifth sample containers. Empty the other containers into the sink. Review the sample label to ensure all the information contained on the label is complete and correct.
   - Homeowners/Customer must arrange for pick-up according to the instructions provided the by PWS. Samples must be delivered to the lab for analysis within days from the date the sample was collected.

## 2.9 SAMPLE HANDLING AND CUSTODY

### 2.9.1 Sample Handling

For the sample handling procedures, refer to Section 2.5, *Required Materials and Sampling Procedures* within this QAPP.

### 2.9.2 Sample Custody

All samples collected by the DWB require an associated Chain of Custody (COC) to ensure the integrity of the sample and to track the possession and handling of each sample from the point of sample collection through laboratory analysis. This ensures legal defensibility of the sample results.

### 2.9.3 Analytical Methods

Analysis for drinking water contaminants shall be conducted in accordance with approved EPA methods. The methods and monitoring requirements for these contaminants are specified in 40 CFR 141.24. Additional methods are listed in Appendix A to Subpart C of CFR Part 141. The current list of EPA methods approved for drinking water analyses can be found at the following link:
https://www.epa.gov/dwanalyticalmethods/approved-drinking-water-analytical-methods

## 2.10 INTEGRITY OF ENVIRONMENTAL INFORMATION

The DWB maintains the data integrity necessary to comply with legal requirements concerning drinking water quality standards. This commitment demonstrates the reliability of environmental information for public health protection and regulatory compliance. DWB ensures accurate data essential for drinking water protection and improvements by following these protocols:

- Proper Sampling Technique: DWB adheres to established protocols for selecting sampling points, flushing lines, and collecting representative samples in clean, sterilized containers to prevent contamination from external sources.
- Chain of Custody: A documented record of sample handling is maintained, including details of who collected the sample, when and where it was collected, and any transfers to different personnel, thereby ensuring accountability throughout the process.
- Sample Preservation: Appropriate preservation methods, such as refrigeration or the addition of preservatives based on the analytes being tested, are utilized to maintain the integrity of the sample until analysis.
- Qualified Personnel: DWB employs trained staff who are knowledgeable about proper sampling techniques and quality assurance procedures.
- Laboratory Accreditation: DWB selects reputable laboratories that have recognized accreditation for the specific analyses required, ensuring accurate and reliable results.
- Quality Control Measures: Quality control procedures, such as using blank samples, duplicate samples, and spike recoveries, are implemented to monitor potential errors during analysis.
- Data Validation: Collected data is reviewed for consistency, outliers, and potential errors before final results are reported.

The DWB Management Team ensures that all DWB staff meet the minimum requirements specified in this Quality Assurance Project Plan (QAPP), particularly in Section 1.12 on Staff Training & Certification. In addition to training and certifications, DWB follows the Standard Operating Procedure (SOP) for Water Sampling.

## 2.11 QUALITY CONTROL

Quality control (QC) activities are technical activities performed on a routine basis to quantify the variability that is inherent to any environmental data measurement activity. The purpose for conducting QC activities is to understand and incorporate the effects this variability may have in the decision-making process. Additionally, the results obtained from QC activities may identify areas where the variability can be reduced or eliminated in future data collection efforts, thereby improving the overall quality of the program or project being implemented.

### 2.11.1 Field Quality Control

DWB controls the quality of the data by using standardized methods as described in this QAPP. Newly hired DWB field staff will learn sampling techniques through training and certification. All personnel who collect drinking water samples for compliance purposes must be familiar with and collect data in accordance with the procedures as they are defined. The collection of field QC samples is an important part of the continuing effort to improve the quality of the data by assessing and refining the collection, transportation, and handling techniques.

DWB uses repeat/confirmation samples and trip blank samples to ensure data quality. A repeat sample is a sample taken following a positive coliform result. A confirmation sample is taken following a chemical result at or above the MCL for SOC/VOC analyses, or above the MCL for all other chemicals. A trip blank is a sample of analyte-free water that is prepared in the laboratory. Trip blanks are used for volatile organic compound samples only. Trip blanks are prepared by the analytical laboratory using deionized, distilled water, and preserved as required. They are transported, unopened, to the field with other sample containers, handled like environmental samples and shipped to the laboratory for analysis with the collected samples. Trip blanks are used to identify contamination that might occur during sample transport and analysis rather than during sample collection and processing.

### 2.11.2 Laboratory Quality Control

DWLCP has established QA programs that implement the following key elements:

- Demonstrate the laboratory's capability and qualifications to perform environmental analyses by summarizing and documenting the QA procedures employed by the laboratory.
- Control laboratory operations by establishing procedures that measure the laboratory's performance on a daily, weekly, monthly, quarterly, and yearly basis.
- Measure matrix effects to determine the effect of a specific matrix on method performance and analyte recoveries.
- Provide a means of ensuring that appropriate QC information is consistent, available, and recoverable, to enable the end user to assess the quality of the data.
- Further information may be found in the current DWLCP Guidance Manual which is available at the following link: *NMED-DWB Laboratory Certification Program*.

## 2.12 EQUIPMENT CALIBRATION, TESTING, INSPECTION & MAINTENANCE

Complete procedures for calibrating instruments used for collecting measurements are contained in the manufacturer's instruction manual for each instrument. All DWB personnel using field equipment are expected to read and follow all procedures detailed in these manuals. Staff shall use appropriate standards and reagents specific to each instrument that are not expired.

## 2.13 INSPECTION & ACCEPTANCE OF PROJECT SUPPLIES & SERVICES

To ensure that the correct field and analytical supplies are available for sample collection the DWB thoroughly inspects all supplies upon receipt and prior to sampling. Typical supplies that require inspection by DWB staff include:

- Chemical reagents
- Sample containers
- Coolers for sample transport

## 2.14 ENVIRONMENTAL INFORMATION MANAGEMENT

The primary tool used by DWB to manage data is SDWIS which was developed by EPA and customized by each state to meet both federal and state specific needs. The following sections describe the data management processes for each type of data generated by DWB.

### 2.14.1 Microbiological Data

Microbiological/bacteriological sampling is performed by the PWSs. The process of managing this data is described below.

1. Sample Collection: Sampler obtains *Sample Request Form/COC* and containers and collects the samples according to the procedures described in Section 1.9 of this QAPP. The Sample Request Forms/COCs are provided to the lab along with each sample.
2. Laboratory Analysis: The results of the laboratory analysis are entered into the Laboratory Information Management System (LIMS), or the Microsoft Access database provided by NMED, which creates an electronic data file for upload.
3. Data delivery: The laboratory uploads the electronic data file into SDWIS using a Lab-To-State utility application. The application pre-checks for errors and produces an error report for any rejected data. The DWB data team works to resolve any errors and resubmit or manually enter corrected results. The data is then ready to be used to determine compliance with the regulations. Electronic pdf copies are sent to the DWB, and hard copies are mailed to the PWS's administrative contact of record.
4. Data QA/QC: The data are validated and verified through a series of automated SDWIS applications. DWB staff follow up on all flagged or rejected data.

### 2.14.2 Chemical and Radionuclide Data

1. Sample Collection: Samplers print *Sample Request Forms* (COCs) using the *Sampler's Application* that is linked to SDWIS. The sampler obtains containers from the laboratory and collects the samples according to the procedures described in Section 1.9 of this QAPP. The sample request forms are provided to the lab along with each sample.

2. Populated Database: The sampler enters information about the samples into the Drinking Water Sample Collection database application.
3. Laboratory Analysis: The results of the laboratory analysis are entered into the laboratory's LIMS which creates an electronic data file for upload.
4. Data delivery: The laboratory uploads the electronic data file into SDWIS using a Lab-To-State utility application. The application pre-checks for errors and produces an error report for any rejected data. DWB's data team works to resolve any errors and resubmit or manually enter corrected results. The data is then ready to be used to determine compliance with the regulations. Electronic PDF copies are sent to the DWB, and hard copies are mailed to PWS's administrative contact of record.
5. Data QA/QC: The data are verified and validated through a series of automated SDWIS applications. DWB staff follow up on all flagged or rejected data.
6. Perform Data Completeness Check: The WCF Manager follows up to obtain any missing data or determine if additional samples need to be collected. The data is then ready to be used to determine compliance with the regulations.

# 3 QUALITY SYSTEM ASSESSMENTS & RESPONSE ACTIONS

## 3.1 ASSESSMENTS

The progress and quality of the WCF sampling program shall be continuously assessed to ensure that objectives are met. The WCF Group Manager will periodically evaluate the following:

- Samples schedules are being met.
- Sampling and data management are occurring according to the procedures specified in this QAPP.
- Corrective actions are implemented as needed.

## 3.2 RESPONSE ACTIONS

The WCF/QA Manager will evaluate any problems that arise and will develop appropriate corrective actions to maintain program integrity. Annual assessments will be conducted to identify areas in need of improvement. If data are found to be consistently outside of the specified DQOs, corrective actions will be taken. Corrective actions can include additional training for program staff, revised procedures, alternate schedules, etc. All project staff is encouraged to identify problems immediately and provide feedback on program activities and needs. Any resulting program modifications will be documented in subsequent revisions to the QAPP.

## 3.3 OVERSIGHT & REPORTING TO MANAGEMENT

The WCF/QA Manager and the QAC will periodically perform a project oversight and quality assessment review and produce a summary report of the evaluation. This report will provide an evaluation of the overall status and quality assessment findings and will include the results of any Quality Assurance Audits that have been conducted. The report will include program updates and will identify any changes that were made or that are needed. This report will be provided to all parties included on the DWB Distribution List

# 4 ELEMENTS FOR ENVIRONMENTAL INFORMATION REVIEW & USABILITY DETERMINATION

All data collected by DWB undergo a series of checks to ensure that the data is of sufficient quality and conforms to a project's specific objectives. This section describes the procedures used to determine to accept, reject, or qualify data generated as part of the DWB Sampling Program.

## 4.1 DATA REVIEW, VERIFICATION, AND VALIDATION

Data review, verification and validation are key steps for ensuring the integrity, suitability, and usability of the data. In addition to the verification and validation procedures performed by the laboratories, all data are verified and validated by the DWB through a series of QA/QC checks performed by a series of automated SDWIS applications developed by EPA. The application produces a report that identifies all flagged and rejected data. DWB staff follow up on all flagged and rejected data to resolve any data quality issues. The Project Manager and/or QAM will address any unresolved data quality issues. All information pertaining to this process will be documented thoroughly and included in any quality assessment reports.

## 4.2 VERIFICATION AND VALIDATION METHODS

Data verification and validation are performed automatically by a series of SDWIS applications. The criteria for flagging and rejecting data are coded into the application. Additional information pertaining to these procedures can be reviewed on the EPA webpage Drinking Water Data and Tools.

## 4.3 RECONCILIATION WITH USER REQUIREMENTS

Data is considered usable once the data verification and validation process has been completed and the data has been accepted, rejected, or qualified. Data is then analyzed to determine compliance using the SDWIS application Compliance Decision Support. DWB compliance staff are then able to take action to address any systems identified as being out of compliance with the drinking water regulations knowing that the determinations were made based on quality data and information. The data and results are also provided to the public for use through the web-based application Drinking Water Watch.

# 5 PROJECT REPORTING REQUIREMENTS

The primary means of reporting the results obtained through the Drinking Water Sampling & Analysis Program is through the Lab-To-State application. This application is only available to laboratories that have registered for the application through the DWB. This allows laboratories to directly upload their results into the SDWIS database and to check for upload errors during the process.

The primary means of viewing data within the SDWIS database is Drinking Water Watch. This is a publicly accessible web-based application that allows users to search for information relating to specific water systems located in NM. The tool provides reports on information such as drinking water compliance monitoring results, violations, enforcement actions, contact information, etc.

Each year the NMED DWB also prepares and submits to EPA the Annual Public Water Systems Compliance Report New Mexico's Annual Public Water Systems Compliance Report. The purpose of the report is to provide the public with a summary of the different types of drinking water violations accrued by PWSs during the previous calendar year. The report is a mandated requirement of the federally funded PWSS Program and encompasses drinking water violations that were verified during a given calendar year.

# ATTACHMENT – 1

# PWS National Primary Drinking Water Regulations

EPA PWS National Primary Drinking Water Regulations, *retrieved online February 2025.*

**National Primary Drinking Water Regulations**

The National Primary Drinking Water Regulations (NPDWR) are legally enforceable primary standards and treatment techniques that apply to public water systems. Primary standards and treatment techniques protect public health by limiting the levels of contaminants in drinking water.

| **MICROORGANISM S**<br>Microorganism Rules<br>Surface Water Treatment Rules<br>Ground Water Rule<br>Revised Total Coliform Rule and<br>Total Coliform Rule | | | |
|---|---|---|---|
| **Contaminant** | **MCLG[1] (mg/L)[2]** | **MCL or TT1 (mg/L)2** | **Sources of Contaminant in Drinking Water** |
| Cryptosporidium | zero | TT3 | Human and animal fecal waste. |
| Giardia lamblia | zero | TT3 | Human and animal fecal waste. |
| Heterotrophic plate count (HPC) | n/a | TT3 | HPC measures a range of bacteria that are naturally present in the environment. |
| Legionella | zero | TT3 | Found naturally in water; multiplies in heating systems. |
| Total Coliforms (including fecal coliform and E. Coli) - | zero | 5.0%4 | Coliforms are naturally present in the environment; as well as feces; fecal coliforms and E. coli only come from human and animal fecal waste. |
| T.C. Quick reference guide | | | |
| T. C. Rule Summary | | | |
| Turbidity | n/a | TT3 | Soil runoff. |
| Viruses (enteric) | zero | TT3 | Human and animal fecal waste. |

| **DISINFECTION BYPRODUCTS**<br>**Disinfection Byproduct Rules**<br>Quick reference guide: Stage 1 and 2 Disinfectants and Disinfection Byproducts Rules<br><br>Stage 1 and 2 Rules Summary | | | |
|---|---|---|---|
| **Contaminant** | MCLG1 (mg/L)2 | **MCL or TT1 (mg/L)2** | **Sources of Contaminant in Drinking Water** |
| Bromate | zero | 0.01 | Byproduct of drinking water disinfection. |
| Chlorite | 0.8 | 1 | Byproduct of drinking water disinfection. |
| Haloacetic acids (HAA5) | n/a6 | 0.06 | Byproduct of drinking water disinfection. |
| Total Trihalomethanes (TTHMs) | n/a6 | 0.08 | Byproduct of drinking water disinfection. |

| **DISINFECTANTS**<br>**Disinfectant Rules**<br>Quick reference guide: Stage 1 and 2 Disinfectants and Disinfection Byproducts Rules<br><br>Stage 1 and 2 Rules Summary | | | |
|---|---|---|---|
| **Contaminant** | MCLG1 (mg/L)2 | **MCL or TT1 (mg/L)2** | **Sources of Contaminant in Drinking Water** |
| Chloramines (as $Cl_2$) | MRDLG=41 | MRDL=4.01 | Water additive used to control microbes. |
| Chlorine (as $Cl_2$) | MRDLG=41 | MRDL=4.01 | Water additive used to control microbes. |
| Chlorine dioxide (as $ClO_2$) | MRDLG=0.81 | MRDL=0.81 | Water additive used to control microbes. |

| **INORGANIC CHEMICALS**<br>Chemical Contaminant Rules<br>Summary | | | |
|---|---|---|---|
| **Contaminant** | MCLG1 (mg /L)2 | **MCL or TT1 (mg/ L)2** | **Sources of Contaminant in Drinking Water** |
| Antimony | 0.006 | 0.006 | Discharge from petroleum refineries; fire retardants; ceramics; electronics; solder. |
| Arsenic | 0 | 0.010 as of 01/23/06 | Erosion of natural deposits; runoff from orchards, runoff from glass and electronics production wastes. |
| Arsenic Quick reference guide | | | |
| Arsenic Consumer fact sheet | | | |
| Asbestos (fiber > 10 micrometers) | | 7 million fibers per liter (7 MFL) | Decay of asbestos cement in water mains; erosion of natural deposits. |
| Barium | 2 | 2 | Discharge of drilling wastes; discharge from metal refineries; erosion of natural deposits |
| Beryllium | 0.004 | 0.004 | Discharge from metal refineries and coal-burning factories; discharge from electrical, aerospace, and defense industries. |
| Cadmium | 0.005 | 0.005 | Corrosion of galvanized pipes; erosion of natural deposits; discharge from metal refineries; runoff from waste batteries and paints. |
| Chromium (total) | 0.1 | 0.1 | Discharge from steel and pulp mills; erosion of natural deposits. |
| Copper | 1.3 | TT7; Action Level=1.3 | Corrosion of household plumbing systems; erosion of natural deposits. |
| Cyanide (as free cyanide) | 0.2 | 0.2 | Discharge from steel/metal factories; discharge from plastic and fertilizer factories. |
| Fluoride | 4 | 4 | Water additive which promotes strong teeth; erosion of natural deposits; discharge from fertilizer and aluminum factories. |
| Lead | zero | TT7; Action Level=0.010 | Corrosion of household plumbing systems; erosion of natural deposits. |
| Lead Quick reference guide | | | |
| Lead Rule information | | | |
| Mercury (inorganic) | 0.002 | 0.002 | Erosion of natural deposits; discharge from refineries and factories; runoff from landfills and croplands. |
| Nitrate (measured as Nitrogen) | 10 | 10 | Runoff from fertilizer use; leaking from septic tanks, sewage; erosion of natural deposits. |
| Nitrite (measured as Nitrogen) | 1 | 1 | Runoff from fertilizer use; leaking from septic tanks, sewage; erosion of natural deposits. |
| Selenium | 0.05 | 0.05 | Discharge from petroleum refineries; erosion of natural deposits; discharge from mines. |
| Thallium | 0.0005 | 0.002 | Leaching from ore-processing sites; discharge from electronics, glass, and drug factories. |

* Lead and Copper are regulated by a TT that requires systems to control the corrosiveness of their water. If more than 10% of tap water samples exceed the action level; water systems must take additional steps.

| **ORGANIC CHEMICALS (Except for PFAs)** [Chemical Contaminant Rules Summary] | | | |
|---|---|---|---|
| **Contaminant** | MCLG1 (mg /L)2 | **MCL or TT1 (mg/ L)2** | **Sources of Contaminant in Drinking Water** |
| Acrylamide | zero | TT8 | Added to water during sewage/wastewater treatment. |
| Alachlor | zero | 0.002 | Runoff from herbicide used on row crops. |
| Atrazine | 0.003 | 0.003 | Runoff from herbicide used on row crops. |
| Benzene | zero | 0.005 | Discharge from factories; leaching from gas storage tanks and landfills. |
| Benzo(a)pyrene (PAHs) | zero | 0.0002 | Leaching from linings of water storage tanks and distribution lines. |
| Carbofuran | 0.04 | 0.04 | Leaching of soil fumigant used on rice and alfalfa. |
| Carbon tetrachloride | zero | 0.005 | Discharge from chemical plants and other industrial activities. |
| Chlordane | zero | 0.002 | Residue of banned termiticide. |
| Chlorobenzene | 0.1 | 0.1 | Discharge from chemical and agricultural chemical factories. |
| 2,4-D | 0.07 | 0.07 | Runoff from herbicide used on row crops. |
| Dalapon | 0.2 | 0.2 | Runoff from herbicide used on rights of way. |
| 1,2-Dibromo-3-chloropropane (DBCP) | zero | 0.0002 | Runoff/leaching from soil fumigant used on soybeans, cotton, pineapples, and orchards. |
| o-Dichlorobenzene | 0.6 | 0.6 | Discharge from industrial chemical factories. |
| p-Dichlorobenzene | 0.075 | 0.075 | Discharge from industrial chemical factories. |
| 1,2-Dichloroethane | zero | 0.005 | Discharge from industrial chemical factories. |
| 1,1-Dichloroethylene | 0.007 | 0.007 | Discharge from industrial chemical factories. |
| cis-1,2-Dichloroethylene | 0.07 | 0.07 | Discharge from industrial chemical factories. |
| trans-1,2-Dichloroethylene | 0.1 | 0.1 | Discharge from industrial chemical factories. |
| Dichloromethane | zero | 0.005 | Discharge from drug and chemical factories. |
| 1,2-Dichloropropane | zero | 0.005 | Discharge from industrial chemical factories. |
| Di(2-ethylhexyl) adipate | 0.4 | 0.4 | Discharge from chemical factories. |
| Di(2-ethylhexyl) phthalate | zero | 0.006 | Discharge from rubber and chemical factories. |
| Dinoseb | 0.007 | 0.007 | Runoff from herbicide used on soybeans and vegetables. |

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| Dioxin (2,3,7,8-TCDD) | zero | 0.00000003 | Emissions from waste incineration and other combustion; discharge from chemical factories. |
| Diquat | 0.02 | 0.02 | Runoff from herbicide use. |
| Endothall | 0.1 | 0.1 | Runoff from herbicide use. |
| Endrin | 0.002 | 0.002 | Residue of banned insecticide. |
| Epichlorohydrin | zero | TT8 | Discharge from industrial chemical factories; an impurity of some water treatment chemicals. |
| Ethylbenzene | 0.7 | 0.7 | Discharge from petroleum refineries. |
| Ethylene dibromide | zero | 0.00005 | Discharge from petroleum refineries. |
| Glyphosate | 0.7 | 0.7 | Runoff from herbicide use. |
| Heptachlor | zero | 0.0004 | Residue of banned termiticide. |
| Heptachlor epoxide | zero | 0.0002 | Breakdown of heptachlor. |
| Hexachlorobenzene | zero | 0.001 | Discharge from metal refineries and agricultural chemical factories. |
| Hexachlorocyclopentadiene | 0.05 | 0.05 | Discharge from chemical factories. |
| Lindane | 0.0002 | 0.0002 | Runoff/leaching from insecticide used on cattle, lumber, gardens. |
| Methoxychlor | 0.04 | 0.04 | Runoff/leaching from insecticide used on fruits, vegetables, alfalfa, livestock. |
| Oxamyl (Vydate) | 0.2 | 0.2 | Runoff/leaching from insecticide used on apples, potatoes, and tomatoes. |
| Polychlorinated biphenyls (PCBs) | zero | 0.0005 | Runoff from landfills; discharge of waste chemicals. |
| Pentachlorophenol | zero | 0.001 | Discharge from wood preserving factories. |
| Picloram | 0.5 | 0.5 | Herbicide runoff. |
| Simazine | 0.004 | 0.004 | Herbicide runoff. |
| Styrene | 0.1 | 0.1 | Discharge from rubber and plastic factories; leaching from landfills. |
| Tetrachloroethylene | zero | 0.005 | Discharge from factories and dry cleaners. |
| Toluene | 1 | 1 | Discharge from petroleum factories. |
| Toxaphene | zero | 0.003 | Runoff/leaching from insecticide used on cotton and cattle. |
| 2,4,5-TP (Silvex) | 0.05 | 0.05 | Residue of banned herbicide. |
| 1,2,4-Trichlorobenzene | 0.07 | 0.07 | Discharge from textile finishing factories. |
| 1,1,1-Trichloroethane | 0.2 | 0.2 | Discharge from metal degreasing sites and other factories. |
| 1,1,2-Trichloroethane | 0.003 | 0.005 | Discharge from industrial chemical factories. |
| Trichloroethylene | zero | 0.005 | Discharge from metal degreasing sites and other factories. |
| Vinyl chloride | zero | 0.002 | Leaching from PVC pipes; discharge from plastic factories. |
| Xylenes (total) | 10 | 10 | Discharge from petroleum factories; discharge from chemical factories. |

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| ****E**ach water system must certify, in writing, to the state (using third-party or manufacturer's certification) that when acrylamide and epichlorohydrin are used to treat water, the combination (or product) of dose and monomer level does not exceed the levels specified. |

| **RADIONUCLIDES**<br>Radionuclides Quick Reference Guide<br>Radionuclides Rule Information and Summary | | | |
|---|---|---|---|
| **Contaminant** | **MCLG1 (mg/L)2** | **MCL or TT1 (mg/L)2** | **Sources of Contaminant in Drinking Water** |
| Alpha particles | none ---------- zero | 15 picocuries per Liter (pCi/L) | Erosion of natural deposits of certain minerals that are radioactive and may emit a form of radiation known as alpha radiation. |
| Beta particles and photon emitters | none ---------- zero | 4 millirems per year | Decay of natural and human-caused deposits of certain minerals that are radioactive and may emit forms of radiation known as photons and beta radiation. |
| Radium 226 and Radium 228 (combined) | none ---------- zero | 5 pCi/L | Erosion of natural deposits. |
| Uranium | zero | 30 ug/L as of 12/08/03 | Erosion of natural deposits. |

**EPA: NPDWR List Notes**

**(1) Definitions:**

- Maximum Contaminant Level Goal (MCLG) - The level of a contaminant in drinking water below which there is no known or expected risk to health. MCLGs allow for a margin of safety and are non-enforceable public health goals.
- Maximum Contaminant Level (MCL) - The highest level of a contaminant that is allowed in drinking water. MCLs are set as close to MCLGs as feasible using the best available treatment technology and taking cost into consideration. MCLs are enforceable standards.
- Maximum Residual Disinfectant Level Goal (MRDLG) - The level of a drinking water disinfectant below which there is no known or expected risk to health. MRDLGs do not reflect the benefits of the use of disinfectants to control microbial contaminants.
- Treatment Technique (TT) - A required process intended to reduce the level of a contaminant in drinking water.
- Maximum Residual Disinfectant Level (MRDL) - The highest level of a disinfectant allowed in drinking water. There is convincing evidence that addition of a disinfectant is necessary for control of microbial contaminants.

**(2)** Units are in milligrams per liter (mg/L) unless otherwise noted. Milligrams per liter are equivalent to parts per million (PPM).

**(3)** EPA's surface water treatment rules require systems using surface water or ground water under the direct influence of surface water to:

**A.** Disinfect their water, and

**B.** Filter their water, or

**C.** Meet criteria for avoiding filtration so that the following contaminants are controlled at the following levels:

- *Cryptosporidium*: Unfiltered systems are required to include *Cryptosporidium* in their existing watershed control provisions
- *Giardia lamblia*: 99.9% removal/inactivation.
- Viruses: 99.99% removal/inactivation.
- *Legionella*: No limit, but EPA believes that if *Giardia* and viruses are removed/inactivated, according to the treatment techniques in the Surface Water Treatment Rule, *Legionella* will also be controlled.
- Turbidity: For systems that use conventional or direct filtration, at no time can turbidity (cloudiness of water) go higher than 1 Nephelometric Turbidity Unit (NTU), and samples for turbidity must be less than or equal to 0.3 NTUs in at least 95 percent of the samples in any month. Systems that use filtration other than the conventional or direct filtration must follow state limits, which must include turbidity at no time exceeding 5 NTUs.
- Heterotrophic Plate Count (HPC): No more than 500 bacterial colonies per milliliter.
- Long Term 1 Enhanced Surface Water Treatment: Surface water systems or groundwater under the direct influence (GWUDI) systems serving fewer than 10,000 people must comply with the applicable Long Term 1 Enhanced Surface Water Treatment Rule provisions (such as turbidity standards, individual filter monitoring, *Cryptosporidium* removal requirements, updated watershed control requirements for unfiltered systems).
- Long Term 2 Enhanced Surface Water Treatment Rule: This rule applies to all surface water systems or ground water systems under the direct influence of surface water. The rule targets additional *Cryptosporidium* treatment requirements for higher risk systems and includes provisions to reduce risks from uncovered finished water storage facilities and to ensure that the systems maintain microbial protection as they take steps to reduce the formation of disinfection byproducts.
- Filter Backwash Recycling: This rule requires systems that recycle to return specific recycle flows through all processes of the system's existing conventional or direct filtration system or at an alternate location approved by the state.

**(4)** No more than 5.0% samples total coliform-positive (TC-positive) in a month. (For water systems that collect fewer than 40 routine samples per month, no more than one sample can be total coliform-positive per month.) Every sample that has total coliform must be analyzed for either fecal coliforms or *E. coli* if two consecutive TC-positive samples, and one is also positive for *E. coli* fecal coliforms, system has an acute MCL violation.

**(5)** Fecal coliform and *E. coli* are bacteria whose presence indicates that the water may be contaminated with human or animal wastes. Disease-causing microbes (pathogens) in these wastes can cause diarrhea, cramps, nausea, headaches, or other symptoms. These pathogens may pose a special health risk for infants, young children, and people with severely compromised immune systems.

**(6)** Although there is no collective MCLG for this contaminant group, there are individual MCLGs for some of the individual contaminants:

- Trihalomethanes: bromodichloromethane (zero); bromoform (zero); dibromochloromethane (0.06 mg/L): chloroform (0.07 mg/L.
- Haloacetic acids: dichloroacetic acid (zero); trichloroacetic acid (0.02 mg/L); monochloroacetic acid (0.07mg/L). Bromoacetic acid and dibromoacetic acid are regulated with this group but have no MCLGs.

**(7)** Lead and copper are regulated by a treatment technique that requires systems to control the corrosiveness of their water. If more than 10% of tap water samples exceed the action level, water systems must take additional steps. For copper, the action level is 1.3 mg/L, and for lead is 0.010 mg/L.

**(8)** Each water system must certify, in writing, to the state (using third-party or manufacturer's certification) that when acrylamide and epichlorohydrin are used to treat water, the combination (or product) of dose and monomer level does not exceed the levels specified, as follows:

- Acrylamide = 0.05% dosed at 1 mg/L (or equivalent)
- Epichlorohydrin = 0.01% dosed at 20 mg/L (or equivalent)

**(9)** Health Based Water Concentration (HBWC) - To calculate the Hazard Index, a ratio is developed for each PFAS by dividing the measured level of the PFAS in drinking water by the level below which adverse health effects are not likely to occur (i.e., the Health Based Water Concentration).