COLORADO
Water Quality
Control Commission
Department of Public Health & Environment

Water Quality Control Commission
Policy 98-2
A Guide to Colorado Programs for Water Quality Management and Safe Drinking Water

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Part I. Introduction

A. Purpose and Overview

The Water Quality Control Commission (Commission) and Water Quality Control Division (Division) of the Colorado Department of Public Health and Environment (CDPHE), under the authority of federal and Colorado statutes, administer state programs implementing two major federal statutes: the Clean Water Act and the Safe Drinking Water Act. The federal Clean Water Act activities protect the quality of Colorado's ambient water bodies—its rivers, streams, lakes, reservoirs and ground waters. The federal Safe Drinking Water Act activities ensure that drinking water provided to consumers' taps by Colorado public water systems is always safe to drink.

The purpose of A Guide to Colorado Programs for Water Quality Management and Safe Drinking Water (Guide) is to describe how the objectives of these related, but separate, statutes are implemented in Colorado. In addition, this Guide is intended to help satisfy the requirements in Section 303(e) of the federal Clean Water Act that the state maintain a water quality "continuing planning process" by describing the process currently applied in Colorado. Part I provides a brief overview of the various agencies with roles in ensuring protection of water quality in Colorado. Part II describes how Colorado protects the quality of its ambient water bodies. Part III describes how Colorado's Safe Drinking Water Program primarily focuses on ensuring that the water provided by public water systems "at the consumer's tap" is always safe to drink. Part IV details the different Financial Assistance options available that can assist efforts to protect public health and the environment. The policy also contains three appendices. Appendix A is a historical perspective of the Colorado Water Quality Control Act and the Federal Clean Water Act. Appendix B provides an historical overview of the Federal and State Safe Drinking Water statutes. Appendix C provides a helpful set of common abbreviations used by the Division and the Commission.

The contents of this document have no regulatory effect, but rather to describe Colorado's Clean Water and Safe Drinking Programs current practices. Moreover, this guidance document is not intended and should not be interpreted to limit any actions undertaken by the Division or options that may be considered or adopted by the Commission in future proceedings. This guidance document can and will be modified over time as warranted.

B. Institutional Roles and Responsibilities

1. Water Quality Control Commission

The Colorado Water Quality Control Commission (Commission) is the administrative agency responsible for developing standards that protect the quality of drinking water and the beneficial uses of waters of the state. The Commission's nine members are appointed by the Governor and confirmed by the Colorado Senate for three-year terms. Appointments must "achieve geographical representation" and "reflect the various interests in water in the state," with at least two members from west of the Continental Divide.

The Commission adopts water quality classifications and standards to protect beneficial uses of water of the state as well as various regulations aimed at achieving compliance with those classifications and standards. It also adopts regulations to ensure safe drinking water. In addition to its formal rulemaking role, the Commission serves as a forum to facilitate and advance a statewide policy dialogue on a variety of important water quality topics.

The Commission also serves a quasi-judicial role in administrative hearings concerning appeals of certain decisions of the Division including but not limited to the following: approval of design plans and specifications for public water systems and domestic wastewater treatment plants, determinations regarding anti-degradation reviews, and Section 401 certification decisions.

2. Water Quality Control Division

The management of Colorado's water quality is crucial to the continued development of the state and to the quality of life the state offers to its citizens. The Division plays an important role in the protection and restoration of the state's streams, lakes and reservoirs and in assuring that the citizens of Colorado have safe water to drink. Table 1 describes the functional elements of the Division's organizational units. An organizational chart for the Division can be found on our website.

Table 1 Functional elements of the Division's organization

Clean Water Program	
Watershed Section	
Environmental Data Unit	Provide surface water quality status and reporting services to government agencies, the public, regulated entities, and the Water Quality Control Commission (Commission) so they can make informed decisions regarding the use and care of surface water resources.
Standards Unit	Provide information, scientific analysis, and policy recommendation services to the Commission, government agencies, and the public so they can make informed water quality decisions.
Restoration and Protection Unit	Provide scientific analyses, financial and technical support, and planning, collaboration and outreach services to program partners, government agencies, and the Commission so they can implement strategies to protect, improve, and restore water quality for the public's benefit.
Permits Section	
Permits Unit 1 Permits Unit 2 Permits Unit 3 Business Data Services and Admin Unit	Provide National Pollutant Discharge Elimination System permitting for surface water discharges, both process water and stormwater, from domestic treatment facilities, industrial sources, construction sites, municipal separate storm sewer systems, and pesticide applications. Issuance of pretreatment control mechanisms, reuse authorizations, and Colorado Discharge Permit System ground water discharge permits. Quality assurance of self-reported data and entry into the Environment Protection Agency's Integrated Compliance Information System database.
Environmental Agriculture Program	Provide National Pollutant Discharge Elimination System permits specific to animal feeding operations and housed commercial swine feeding operations. Water quality protection, state control, and permit regulations applicable to animal feeding operations, including concentrated animal feeding operations, are administered by the Department's Environmental Agriculture Program. This program is housed within the Division of Environmental Health and Sustainability and administers all aspects of the regulatory programs associated with livestock operations including inspections, permitting, compliance assurance and compliance assistance.

Clean Water Compliance and Enforcement Section	
Clean Water Enforcement Unit 1	Evaluate self-reported and field-collected National Pollutant Discharge Elimination System and Colorado Discharge Permit System facility data, enforcement of permit requirements and Colorado Water Quality Control Act.
Clean Water Compliance Unit	Evaluate self-reported and field collected National Pollutant Discharge Elimination System and Colorado Discharge Permit System facility data, and compliance inspections. Issue biosolids authorizations.
Drinking Water Program	
Field Services Section – Matrix-Managed With Clean Water Program	
Field Unit 1 (Denver)	Geographic coverage units provide compliance assurance and technical assistance to public water systems and clean water (e.g., domestic wastewater, industrial, stormwater, biosolids) facilities (e.g., compliance sampling and inspection, compliance assistance, spill response and enforcement case support).
Field Unit 2 (Pueblo and Grand Junction)	
Engineering Section – Matrix-Managed With Clean Water Program	
Engineering Review Unit 1	Provide engineering review, compliance assurance and technical assistance for public water systems and domestic wastewater facilities (e.g., area-wide wastewater facility planning and drinking water capacity development, facility site approval, engineering plan review, facility construction inspection, compliance assistance, comprehensive performance evaluation).
Engineering Review Unit 2	
Drinking Water Compliance Assurance Section	
Compliance and Enforcement Unit North	Evaluate self-reported and field collected drinking water facility data; Enforce the Colorado Primary Drinking Water Regulations.
Compliance and Enforcement Unit South	
Technical and Regulatory Implementation and Coordination Unit	Coordinate and directly support the development and maintenance of the Colorado Primary Drinking Water Regulations, Safe Drinking Water Program Policies, and Section-level business process and implementation documentation.
Community Development and Partnership Section – Matrix-Managed With Clean Water Program	
Local Assistance Unit	Provide training, technical assistance, and management support services to public water systems so they can strengthen their ability to supply safe drinking water to the public. Perform program- and division-wide support activities such as r security and emergency preparedness services including leadership of Colorado's Water/Wastewater Agency Response Network (“CoWARN”). Provide technical and financial assistance to public water systems and governmental entities to facilitate completion and implementation of source water protection plans. Provide assistance to facilities and operators and support for the Operator Certification Board (Matrix Managed with Clean Water Program).
Grants and Loans Unit	Provide financial assistance through the State Revolving Fund Programs along with other state grant assistance. Assist public water and wastewater facilities with project development and determining the best source for funding, including coordination with other agencies.
Communications and Special Projects Unit	Provide all communications support for the division including media, facilitation, branding, reporting, and general customer relations. Responsible for administering the excellence program, which has a recognition and grant component.
Administration Section - Matrix-Managed with Clean Water Program and Drinking Water Program	
Support Workgroup	Provide administrative support, fleet management, and human resource functions to the Division.
Business Services Unit	Oversee records management, data management, Office of Information Technology coordination, and process improvement services to the Division.
Fiscal Services Unit	Provide budget and accounting, time-keeping, contracting, purchasing, legislative fiscal note development, and grant management services for the Division.

The Division is the agency responsible for implementing and enforcing the regulations adopted by the Commission. Moreover, the Division provides the principal source of technical expertise available to the Commission in its rulemaking and other policy-setting activities. By statute, the Division is authorized to act as staff to the Commission in proceedings other than adjudicatory or appellate proceedings in which the Division is a party.

The Division has the challenging and vital responsibility of maintaining, restoring, and improving the quality of the state's waters and assuring that safe drinking water is provided from public water systems for the people of the state. In short, the Division's mission is to ensure that Colorado's waters are safe and clean.

C. Other State Implementing Agencies

The Colorado Water Quality Control Act identifies several “implementing agencies” that have the initial responsibility for implementing ground water quality classifications and standards adopted by the Commission for activities subject to their jurisdiction. These agencies include the Division of Reclamation, Mining, and Safety (formerly the Division of Minerals and Geology), the State Engineer, the Oil and Gas Conservation Commission, the Hazardous Materials and Waste Management Division, and the Division of Oil and Public Safety at the Department of Labor and Employment. Certain residual authority is preserved for the Commission to intervene should it determine that an implementing agency is not assuring compliance with water quality classifications and standards. Regulation of surface water discharges from mining, oil and gas, and solid and hazardous waste activities is retained by the Division.

Memoranda of Agreement (MOA) with each of the implementing agencies are in place to better define the interagency relationships. Pursuant to these MOA's, each agency submits annual reports to the Commission describing the status of their efforts to implement water quality protection requirements. These reports are discussed by the implementing agency with an opportunity for public comment provided at a regular Commission meeting. In addition, a Commission liaison and Division staff meet with each of these five implementing agencies on a regular basis to discuss implementation of the ground water quality classifications and standards.

Similarly, the Department of Agriculture has the initial responsibility to address potential ground water contamination from agricultural chemicals (pesticides and commercial fertilizers). Pursuant to Section 25-8-205.5 of the Colorado Water Quality Control Act, that Department develops voluntary best management practices and, if necessary, mandatory agricultural management plans to control this potential pollution source. Again, some residual authority is preserved for the Commission to act if it determines that additional regulatory requirements are necessary.

Finally, it should be noted that the Commission and the Division are required by Section 25-8-104(2)(d) of the Colorado Water Quality Control Act to consult with the State Engineer/Division of Water Resources and Water Conservation Board, which are part of the Colorado Department of

Natural Resources, "before making any decision or adopting any rule or policy which has the potential to cause material injury to water rights." The Commission, the State Engineer's Office, and the Colorado Water Conservation Board have entered into a Memorandum of Agreement outlining the scope and process for consultation.

More information can be found on these implementing agencies at their respective websites:

Colorado Department of Agriculture: https://www.colorado.gov/agmain.
Colorado Water Conservation Board: http://cwcb.state.co.us/Pages/CWCBHome.aspx.
Division of Reclamation, Mining, and Safety: https://mining.state.co.us/Pages/Home.aspx.
Division of Oil and Public Safety: https://www.colorado.gov/ops.
Hazardous Materials and Waste Management Division: http://www.colorado.gov/cdphe/hm.
Oil and Gas Conservation Commission: http://cogcc.state.co.us.
State Engineer's Office: http://www.water.state.co.us.

D. Colorado Water Resources and Power Development Authority

Since its creation by the General Assembly in 1981, the Colorado Water Resources and Power Development Authority (Authority) has evolved into a major financing resource for water and wastewater utilities throughout Colorado. The Division, in partnership with the Authority and the Department of Local Affairs (DOLA), administers the State Revolving Funds (SRF). The Authority is governed by a nine-member Board of Directors appointed to four-year terms by the Governor and confirmed by the Senate. The Board members are chosen geographically from the eight major drainage basins around the state and from the City and County of Denver.

E. Department of Local Affairs

As a signatory to the Memorandum of Understanding (MOU) with the Authority and the Division, DOLA helps administer the SRFs by reviewing the financial capacity of public water systems seeking loans or grants under the revolving loan program.

F. Water and Wastewater Facility Operators Certification Board

The Colorado Water and Wastewater Facility Operators Certification Board (WWFOCB) maintains a program for the certification of operators of water treatment plants, municipal and industrial wastewater treatment plants, water distribution systems, and wastewater collection systems. The WWFOCB establishes experience and examination requirements for separate categories of certification and establishes training requirements for renewal of certifications.

The WWFOCB contracts with a nonprofit corporation to carry out the principal day-to-day administration of the program. In addition, the Division is responsible for compliance and enforcement activities related to the operators certification program. The WWFOCB is responsible

for disciplinary actions regarding water and wastewater facility operators based on Division investigation findings. It also serves as an appellate body with respect to program implementation actions by the Division and nonprofit corporations that implement the program.

G. Regional Planning Agencies

Designated regional planning agencies and their collective local governments serve an important role in the overall water quality management program. These agencies are designated by the Governor, in consultation with local government officials, under Section 208 of the federal Clean Water Act to address areawide, substantial water quality problems resulting from concentrated urban or industrial activities or other significant factors. Section 208 identifies regional water quality management plans that address a range of potential water quality impacts, including those associated with both point and nonpoint sources of pollution, as key mechanisms for finding solutions to these water quality problems. The information compiled in the plans—and the actions that are taken by regional planning agencies and associated management agencies to implement the plans—ensures that local water quality goals and objectives are considered in state and federal water quality decision making, including decisions about site applications and the use of state revolving funds. Regional planning and management agencies are also critical partners for informing the development of Total Maximum Daily Loads (TMDLs) and ensuring TMDLs are implemented.

There are four active, governor-designated regional planning agencies in Colorado:

- North Front Range Water Quality Planning Association (Larimer and Weld Counties);
- Northwest Colorado Council of Governments (Pitkin, Eagle, Summit, Grand and Jackson Counties);
- Pikes Peak Area Council of Governments (El Paso, Teller and Park Counties); and
- Pueblo Area Council of Governments (Pueblo County).

The Governor, in consultation with each of these designated regional planning agencies, has identified management agencies (which may be, in accordance with Section 208 of the federal Clean Water Act and state law, a local, regional, or state agency or political subdivision) and, in some cases, operating agencies (for example, water and sanitation districts and industries) to assist with regional plan development and implementation. The regional planning agencies have also provided policies, guidance and assistance to these management and operating agencies and promoted the use of tools such as utility plans to ensure effective and consistent regional efforts that protect and improve water quality. This structure provided by the regional planning agencies has been fundamental to water quality actions that reflect local priorities and collaborative multi-purpose approaches.

H. Watershed-Based Water Quality Authorities/Associations/Forums

Watershed-based approaches are an excellent way to address water quality management. There is great diversity of organizational models and functional roles for watershed-based approaches in Colorado. Some initiatives focus on implementation of site-specific control regulations adopted by the Commission (e.g., Cherry Creek Basin Water Quality Authority, Chatfield Watershed Authority, Bear Creek Watershed Association, Summit County Water Quality Committee). Some initiatives primarily focus on sharing information (e.g., Colorado River Headwaters Forum). Some initiatives focus on source water protection (e.g., Standley Lake/Upper Clear Creek Watershed Association). Other initiatives focus on implementation of remediation and restoration projects (e.g., Animas River Stakeholders Group, Clear Creek Watershed Foundation).

The number and nature of these local and regional watershed initiatives in Colorado is continually evolving. No effort is made in this Guide to comprehensively catalogue or describe such initiatives. Whatever the primary focus, organizational structure, scope and level of formality of these local and regional initiatives, they play an important role in water quality management in Colorado. Of particular importance is the work these local partners accomplish in collaboration with the state's Nonpoint Source and Source Water Protection Programs. Additional information about local watershed groups can be found on the Colorado Watershed Assembly website at www.coloradowater.org, the Nonpoint Source Program's website at www.npscolorado.com, and in regional water quality management plans.

I. Local Health Departments

Organized local health departments exist in many areas of Colorado. These agencies are authorized by state law to provide health and environmental protection services at the local level. Through specific authorization, local health departments can serve as agents of CDPHE. Over the last several years, CDPHE has been striving to create a more effective partnership with local health agencies.

Among the functions which the local health departments can perform are water and wastewater inspections, sampling, and emergency assistance. Approval of on-site wastewater treatment systems (OWTS) rests under law with counties. This function is generally performed by the local health department, where one exists. Local health departments are provided the opportunity to comment on site applications for domestic wastewater treatment facilities and wastewater management planning aspects of regional water quality management plans. In addition to these responsibilities, the local health departments assist Division personnel in their routine functions.

J. Informal Advisory Organizations

In addition to the governmental and quasi-governmental entities described above, a number of more informal advisory organizations play important roles in the water quality management process. These

groups tend to fall into two categories: (1) standing committees that have an ongoing operation and role in water quality management; and (2) short-term, issue-specific groups.

One example of the former is the Colorado Water Quality Forum (Forum). The Forum was created in 1992 to provide an opportunity for an ongoing informal dialogue among diverse parties representing a broad spectrum of stakeholder interests in water quality management. Participants include water suppliers, industrial and municipal dischargers, environmental groups, and federal, state, and local governmental agencies. The adopted mission of the Forum is: "To achieve solutions to Colorado water quality issues through communication and understanding, balancing use, and protection of the resource." Forum meetings are facilitated by an external contractor and funded through participant contributions. To date, the Forum has experienced considerable success in improving communication among stakeholders and fostering a more cooperative approach in the administrative and legislative consideration of difficult water quality issues. The Forum's website is http://colowqforum.org/.

The state's Nonpoint Source Program also collaborates with an informal standing committee, the Colorado Nonpoint Source Alliance (the Alliance). The Nonpoint Source Program consults with the Alliance about development and implementation of Colorado's Nonpoint Source Program Management Plan, planning and implementation projects and outreach and education opportunities. The Alliance membership includes federal, state and local agencies, watershed groups, and representatives from other water interest groups.

K. Environmental Protection Agency

The federal Environmental Protection Agency (EPA) has several roles with respect to Colorado's water quality control programs. EPA is required to approve water quality classifications and standards adopted by the Commission as well as total maximum daily loads developed by the state. EPA provides discharge permit program oversight both by approving overall program delegation and through its ability to veto individual discharge permits or take independent enforcement action. As part of the state's continuing planning process, the Division submits the Statewide Water Quality Management Plan to EPA. This plan is prepared in accordance with Section 303(e) of the federal Clean Water Act. Section 208 plans approved by the Commission are also submitted to EPA.

EPA also plays a key role by providing approximately half of the funding for the Division's water quality programs. In addition to funding for general program administration, substantial funds are provided for nonpoint source control projects and to capitalize the SRFs for wastewater and water treatment plant construction. This funding from EPA requires the Division to prepare an annual work plan of its activities that is approved by EPA. The work plan is called the Performance Partnership Agreement (PPA) and is tied to the Performance Partnership Grant (PPG). The PPA outlines the Division's goals, objectives, performance measures, and milestones and is updated biennially with status reports in the alternate years.

Finally, in addition to adopting regulations establishing state water quality program requirements, EPA frequently issues guidance documents or policy statements on a variety of topics. While often useful, such documents have also led to controversy in a number of instances due to confusion or disagreement about whether their provisions are voluntary or mandatory.

L. Other Federal Agencies

Several other federal agencies become involved in water quality management in Colorado in particular circumstances. Federal land management agencies such as the U.S. Department of Agriculture (USDA), the U.S. Forest Service, the U.S. Department of the Interior Bureau of Land Management, and the National Park Service consider water quality protection in their management programs. The U.S. Army Corps of Engineers administers the federal Clean Water Act Section 404 permit program, which regulates the discharge of dredged or fill material that may adversely impact waters of the United States, including wetlands. The U.S. Bureau of Reclamation has increasingly included environmental protection considerations into its management of federal water projects. The USDA administers an Environmental Quality Improvement Program under the federal Farm Bill. The U.S. Fish and Wildlife Service (USFWS) consults with other federal agencies under Section 7 of the Endangered Species Act regarding activities that may adversely impact threatened or endangered species. The USFWS has entered into an MOA with EPA regarding consultation with respect to water quality program activities. The U.S. Geological Survey undertakes a variety of studies regarding water quality, including the National Water Quality Assessment program.

M. General Public

Public participation is an integral part of water quality management in Colorado. All regulatory actions of the Commission and Division are required to follow the appropriate public notice and hearing requirements. In addition, with respect to other policy-making and non-rulemaking activities of the Commission and Division, an opportunity for public input is often provided, e.g., through informational hearings or public meetings. Information regarding opportunities for participation in Commission activities is included in the *Water Quality Control Commission Public Participation Handbook*, copies of which are available from the Commission Office or the Commission website.

Local governments and regional water quality planning agencies are required to provide opportunities for public input as part of their deliberations regarding water quality management plan updates. Moreover, an important aspect of the increasing trend toward a watershed protection approach is assuring opportunities for stakeholder input and participation in watershed planning and management activities.

Part II. Water Quality Management

A. Introduction

This portion of the Guide describes how Colorado protects the quality of its ambient water bodies. Section 303(e) of the federal Clean Water Act requires states to maintain a continuing planning process to protect the quality of its ambient waters and describes how this requirement is met by Colorado's water quality management efforts. Traditionally, the term "water quality management" refers to ongoing efforts in the following areas:

- Assessing the quality of water in the environment;
- Setting water quality standards for such waters to protect beneficial uses; and
- Controlling sources of pollution that may adversely impact water quality.

Colorado's approach to water quality planning and management has evolved substantially over the last four decades, largely in response to changing federal and state statutory mandates. At present, these efforts are evolving toward more of a watershed protection focus. (In this context, the term "watershed" is intended as a flexible concept referring to an identified geographic area affecting a water body or water segment.) That is, planning and management are moving toward a holistic strategy to protect or attain the desired beneficial uses and levels of water quality within a watershed, including, where appropriate, protection of human health and aquatic ecosystems. A successful watershed protection approach must be founded on cooperative interaction between the federal, state, and local levels of government and between the public and private sectors. This document describes how these groups interact to address water quality management in Colorado.

There are five pillars to the continuing planning process for water quality management: information gathering, goal setting, protection and restoration, assurance, and assistance.

Information gathering: The clean water program gathers scientific data and information that is used to determine the health of Colorado waters. This information is used for all parts of the continuing planning process and to ensure that water quality is protected for use by people, agriculture and aquatic life. The program also develops information on the status of Colorado's streams and lakes

and about the compliance status of permittees. This information is available through EPA databases. In addition, the division's water quality planning efforts provide key information that is used by key stakeholders and other division efforts.

Goal setting: The program develops and presents scientific evidence to the Commission so it can establish water quality standards to protect Colorado's water for drinking water, agricultural uses, recreational uses such as swimming and boating, and for aquatic life.

Protection and restoration: The program issues permits to entities that discharge pollution to Colorado waters. Point source permits and authorizations for pretreatment, biosolids, and reclaimed water are set to be protective of water quality goals and control regulations set by the Commission. The program also identifies areas across the state that are not achieving the Commission's water quality goals and develops analyses to support restoration planning for these waters. The program reviews site location and designs for wastewater infrastructure across the state. Program staff also respond to spills and other environmental releases to Colorado waters. Also, the program certifies that federal permits and licenses are protective of Colorado's water quality goals. In addition, the program works with federal, state and local partners to reduce nonpoint sources of pollution.

Assurance: The program conducts oversight on the permits it issues. Oversight consists of onsite facility inspections and the evaluation of self-reported data required by the permit. Based on this oversight and the severity of noncompliance with regulations, the program can issue compliance advisories, notices of violation, cease and desist orders and/or penalties.

Assistance: The program provides assistance for all four pillars described above. Domestic and stormwater facilities that are required to make infrastructure improvements to protect streams and lakes are eligible for subsidized financing and possibly grants. The program provides financial and technical assistance for regional- and watershed-scale water quality restoration and protection planning and on-the-ground nonpoint source pollution control projects that both protect and restore water quality. The program also provides compliance assistance via telephone, email, guidance documents, and training to help people and entities understand and comply with regulatory requirements. In addition, the program provides technical assistance to point source and nonpoint source dischargers. This technical assistance includes providing information that can be used to understand the technical and economic feasibility of treatment options and providing guidance on technical aspects of the commission's water quality goal setting process.

Sections B through F of Part II provide a detailed overview of these five pillars of Colorado's water quality continuing planning process. The Division's efforts regarding financial assistance are summarized in Part IV of this guide.

B. Information Gathering

1. Monitoring

Monitoring of water quality is an important component of the state's water quality management program. Monitoring and data analysis are essential to identifying and characterizing water quality problems, revising water quality standards, and developing and evaluating the results of control programs. Monitoring information is also essential for calibration of water quality models used for wasteload allocation studies. Monitoring can also substantiate water pollution in connection with an enforcement action.

Although the federal Clean Water Act does not specifically direct states to conduct ambient monitoring, Section 106(e) of the federal Clean Water Act authorizes grants to states to administer pollution control programs if those states have established necessary water quality monitoring procedures, have compiled and analyzed data, and have completed a Section 305(b) report. In 2003, EPA issued a guidance document entitled *Elements of a State Water Monitoring and Assessment Program*. This guidance document was intended to help determine if a state program meets the prerequisites for Section 106(e) and to provide a framework for states to identify their programmatic and resource needs for establishing a plan for long-term, incremental improvement in their monitoring programs. In response to this guidance, the Division prepared the *Colorado's Water Quality Monitoring and Assessment Strategy 2016-2026*. The plan consists of two activities: review and evaluation of existing state monitoring and assessment programs and a list of potential new or enhanced statewide monitoring strategies, given adequate resources.

The following is a short list of the monitoring and assessment initiatives and projects that are underway or to be initiated in the future, pending available funding. These projects are part of the overall monitoring strategy and, to the extent that funding is available, the Division will implement them:

- Laboratory analytical services for water, sediment and biological samples;
- Macroinvertebrate analysis and assessment;
- Electronic data stream development for habitat, sediment and periphyton data;
- Monitoring of fish tissue for mercury, selenium, arsenic and other contaminants;
- Cyanotoxin (blue-green algae) monitoring;
- Monitoring of lakes/reservoirs;
- Ambient ground water monitoring;
- Support probability–based monitoring and assessment of lakes, rivers, and wetlands on the state level in conjunction with the national effort;
- Resources to fund monitoring partnerships;
- Data collection to support stressor identification; and
- Monitoring to inform Use Attainability Analyses and TMDL development.

The goal of the monitoring program is to provide information needed to assess surface waters and provide information for the state's water quality management activities. The Division's surface water monitoring strategy has many specific program objectives, which can be grouped into four categories: routine monitoring, lakes and reservoir monitoring, biological and habitat monitoring, and special studies monitoring.

a. Routine Monitoring

Routine monitoring is the collection of water quality samples at a network of fixed sites on a regular schedule, such as monthly or bimonthly. These sites are sampled for multiple purposes, including reviewing and developing water quality standards for rulemaking hearings, water quality assessments, trend detection, and TMDL development. The Division's routine water quality samples are collected by three technicians stationed in Denver. Samples are analyzed by CDPHE's Laboratory Services Division.

i. Standards Review

One focus of the Division's routine monitoring is to provide an adequate, representative, and current water chemistry database to support changes to water quality classifications, designations, and standards for surface water segments. Since 1992, the Division's routine monitoring has been concentrated in a different major watershed each year, to provide a complete data set for the triennial review of water quality standards. Each year, monitoring efforts are rotated to the watershed next on the schedule for standards review. The schedule for the water quality standards reviews is posted on the Commission's website.

Generally, the Division's primary monitoring for a particular basin occurs the year prior to the next major rulemaking hearing for a basin. The Division's monitoring plan is presented at an Issues Scoping Hearing 20 months prior to the rulemaking hearing.

ii. Trend Monitoring

Another important purpose for maintaining the statewide routine monitoring network is to obtain water quality data for the detection of trends. Sites established to detect trends are permanent, ensuring that there is an adequate database to identify and evaluate long-term changes in water quality, especially in relation to anthropogenic factors. Most of these sites are located on streams that are affected by point or nonpoint pollution sources such as urban development or irrigated agriculture. A few trend sites, however, are located in undeveloped watersheds; these act as reference stations which may aid in identifying subtle changes in quality due to changes in climatic patterns, or atmospheric deposition.

b. Lakes and Reservoir Monitoring

The Division conducts monitoring at a limited number of reservoirs and lakes around the state to determine their trophic status, develop TMDLs, and support changes to standards and classifications during triennial reviews. Resources for lake monitoring are limited, as funds for such monitoring originate from the overall surface water monitoring program. In 2019, additional resources were

added to the lakes monitoring efforts to focus on harmful algal blooms. The Division assists agencies and local waterbody managers to respond to concerns associated with harmful algal blooms. This includes working closely with Colorado Parks and Wildlife to collect and test water samples for toxins from lakes with suspected blooms.

c. Biological and Habitat Monitoring

The Division conducts biological and habitat monitoring to obtain data for use in stream standards and classification reviews and for determining attainment of the aquatic life use in the context of the listing of impaired waters pursuant to Section 303(d) of the federal Clean Water Act. This monitoring typically includes macroinvertebrate sampling, attached algae analysis, chemical sampling, and habitat evaluation.

d. Special Study Monitoring

Special studies include synoptic studies for the development of TMDLs, site-specific criteria development studies, spill investigations, measurement of contaminants in fish tissue, and fish-kill investigations.

i. Synoptic Studies

Synoptic studies provide a "snapshot" of water quality conditions and constituent loadings in a particular geographical area (watershed) during constant conditions, over a short period of time. Synoptic studies are typically conducted on targeted watersheds to determine pollutant concentrations and loadings. Watersheds are targeted for study based on (1) their priority in the schedule to complete TMDLs; (2) if assessments are needed to develop the Section 303(d) or monitoring and evaluation lists; (3) to develop effluent limits; or (4) to detect nutrient or other water quality problems where site-specific concerns have been raised.

ii. Probability-Based Monitoring

Colorado works closely with EPA in EPA's National Aquatic Resource Surveys, a probability-based monitoring program to assess the status and trends of aquatic systems. These surveys provide consistent and technically defensible methods across the country through standardized field and lab methods. This effort will result in a statistically-based comprehensive assessment of conditions in Colorado streams, lakes and wetlands. Data is reported out on a national level.

iii. Monitoring for Measurable Results

The Measurable Results Program was designed to conduct water quality characterization to support planning and prioritization of point pollution control activities to achieve maximum water quality benefit. The Division designs, plans and conducts water quality investigations to measure how effective investment projects and division programs are for restoring, maintaining and protecting water quality. The Division and its nonpoint source project sponsors also conduct monitoring to evaluate water quality results from nonpoint source implementation projects. These results are used to identify success stories which are about nonpoint source actions that have improved water quality. The success stories are then shared through EPA's national nonpoint source network.

e. Quality Assurance/Quality Control Program

The Division's monitoring programs follow standard operating procedures for sample collection, sample processing, field data analysis, and quality assurance/quality control (QA/QC). The Division has a quality management plan entitled *Quality Management Plan for the Collection and Utilization of Environmental Data* (QMP). This document represents an update of the Division's QA/QC procedures including the development of a process for updating and developing Quality Assurance Project Plans, Sample Analysis and Assessment Plans and Standard Operating Procedures. It defines the quality assurance goals and the methodology and criteria for attaining the goals. The QMP is an "umbrella" under which all activities involving the collection, manipulation, and utilization of environmental data are controlled. This QMP satisfies EPA's requirement for an approved agency-wide quality system for all EPA funded or sponsored activities generating or using environmental data. The QMP will be used to ensure that all data used by the Division, not just that connected to EPA programs, are reliable and of a defined level of quality. Mandatory use of Quality Assurance Project Plans and the associated Sampling Analysis and Assessment Plans and Standard Operating Procedures will be key elements in implementing this QMP. All activities that use or generate environmental data will be subject to the requirements outlined in the Division's QMP.

f. Monitoring Partnerships

In 1999, the Colorado Water Quality Monitoring Council was established by a group of interested stakeholders. The council was patterned after newly formed councils at the state and national levels. The Monitoring Council serves as a statewide collaborative body to facilitate water quality monitoring and data sharing among interested parties in Colorado. Numerous entities are now members, including government, academic, citizen, and industry organizations as well as consultants and watershed groups involved in water quality or quantity issues. The major project currently underway is the Colorado Data Sharing Network project.

The Data Sharing Network is a statewide, web-based, water quality database and interactive map. Anyone who would like to share water quality data can upload their data through a template on the internet. This data can be accessed (read only) by anyone. Anyone accessing the map can zoom into a particular watershed and click on a monitoring site (dots on the map) to find out who is monitoring at that site, and what parameters are being used. If the monitoring entity has uploaded data, the data can be viewed and downloaded. The data that is uploaded must comply with the EPA's Water Quality Exchange (WQX) requirements so that it is in a standard format that is usable by EPA and the state.

There are over 60 local watershed groups across Colorado, a number of which are involved in monitoring activities. The Division has partnered with several of these groups by providing laboratory analysis of samples collected by the watershed group and funding assistance for monitoring associated with nonpoint source planning and implementation projects. The Division has funded the sorting and identification of macroinvertebrate samples collected by the Big Thompson Watershed Forum, the Roaring Fork Conservancy, and Colorado Parks and Wildlife.

g. Environmental Quality Information System

Data management is important in the support of local, state, and national water resource monitoring and management strategies. The Division works to provide effective storage, retrieval, data analysis and presentation of water resource data, including chemical, physical, and biological information. The Division uploads information on a routine basis to EPA's Water Quality Exchange (WQX). The WQX provides a framework for data sharing through the EPA's Central Data Exchange (CDX) network and thus serves to ensure that the data being collected is readily shared and thus more useful to the community at large. Additionally, it is via the WQX/CDX network that the state will provide its data to the EPA's national ambient water quality warehouse, previously known as STORET for STOrage and RETrieval.

2. Assessment

a. Overview

Assessment is the process by which water quality data is transformed into information. Assessment can be characterized as the processes that lead to the interpretation of data and the utilization of tools such as computer modeling to simulate various conditions. Water quality information is then used as the basis for water quality management decisions. Assessment activities support nearly all aspects of the water quality management processes described in this document.

Assessment of water quality data is essential in determining whether use classifications and water quality standards are being attained and whether proposals to make changes to such standards and classifications are appropriate. Permit limitations, for municipal and industrial dischargers, also require an assessment of instream water quality conditions, the quality of discharged wastewater, and the allowable levels of various pollutants to meet stream standards.

Other important water quality management processes which may require assessment include reviews of actions which require an antidegradation analysis to ensure that antidegradation requirements are met, source water protection plans designed to reduce pollutants and provide safe drinking water quality, and certification of federal permits and licenses under Section 401 of the federal Clean Water Act to ensure that state water quality standards are met.

b. Listing of Impaired Waters

Section 303(d) of the federal Clean Water Act requires that states periodically submit to EPA a list of those waters for which technology-based effluent limitations and other required controls are not stringent enough to implement water quality standards. Once listed, the state is required to prioritize these water bodies or segments (rivers, streams, lakes, reservoirs) for analysis as to the causes of the water quality problem and for allocation of the responsibility for controlling the pollution. This analysis is called the TMDL process, which is described in Section D below.

Segments are included on the Section 303(d) list of impaired waters based on an evaluation of biological, chemical, or physical data demonstrating nonattainment of numeric or narrative

standards or use impairment. An additional list, the Monitoring and Evaluation List, is comprised of waters for which there is some data available suggesting water quality problems, but for which the data are inadequate to support a determination of nonattainment. Both lists are promulgated as regulation by the Commission.

The assessment practices used by the Division to determine the attainment status of waters in the state are detailed in the Listing Methodology document. The Listing Methodology is approved by the Commission through an Administrative Action Hearing process. Like the lists themselves, the Listing Methodology is revisited every two years. The Lists and Listing Methodology are available on the Commission's website.

Section 303(d)(l)(A) of the federal Clean Water Act requires states to compile lists of impaired waters and to "establish a priority ranking for such waters, taking into account the severity of the pollution and the uses to be made of such waters." The state has also utilized the list prioritization process to identify where the Division should concentrate its resources. Through this process, useful information is provided to other stakeholders when deciding how to focus their resources.

Priorities are initially based on consideration of the severity of impairment to use classifications for the segment. Use Classifications are described in Basic Standards and Methodologies for Surface Water Regulation No. 31 (5 CCR 1002-8, sec. 31.13). The initial prioritization will assign water bodies (or specific pollutant/water body combinations) as either a high priority or a low priority. Factors that result in an initial high priority ranking consider whether there is non-attainment of a human health-based criterion or a Class 1 Aquatic Life Use-based criterion (e.g., a high quality fishery may potentially be affected). Secondary factors are used to modify the initial prioritization to an overall or final prioritization which includes high, medium, and low priority categories. Secondary factors may either elevate a water body into a higher priority group (e.g., endangered or declining native species, public interest, administrative needs, NPS program priorities, and data availability) or reduce the priority (e.g., pace of the stakeholder group development, Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) cleanup action in progress). Prioritization factors are identified in the Listing Methodology document and, as such, are reviewed and approved by the Commission every two years in advance of the list development process.

i. Removal of Listed Segments from 303(d) List

In general, removal of water bodies/pollutants from the 303(d) List is subject to requirements similar to those utilized for listing decisions. Removal from the list is considered appropriate in instances where new information is developed which indicates that water quality standards are being met and/or designated uses attained. Considerations include more recent or more accurate data (for instance, chemical data generated using clean sampling/analytical methodologies), more sophisticated analysis or modeling, identification of deficiencies in the original assessment, or changes in standards, guidance, or policy.

Where sampling is performed to document improved water quality, sampling frequency and number of sampling events should be similar to, or greater than, that which was used as a basis to list the segment (an exception would be in instances where data collected utilizing conventional methods is supplanted by clean data). Assessments demonstrating attainment of designated uses should provide documentation of a nature similar to that used to support the listing decision. Attainment of water quality standards and uses will result in removal of the water body, or one or more listed parameters, from the list.

Similar data may be developed to document the underlying cause of non-attainment. Should information indicate that the water body remains in non-attainment, but that the listing is incorrectly attributed to pollutants (as opposed to a condition or stressor which is not appropriately addressed through a TMDL), the segment or condition will be removed from the list and placed in Category 4c.

In instances where the Division determines that pollutant controls which have been completed or are scheduled for implementation will result in attainment of water quality standards within a reasonable time frame, the segment will be removed from the list. EPA approval of a TMDL will result in removal of the segment/pollutant(s) addressed by the TMDL from the list.

ii. Monitoring and Evaluation List
The Monitoring and Evaluation List is an administrative and tracking tool for identifying segments where there is reason to suspect water quality problems, but there is uncertainty regarding one or more factors such as the representative nature of the data (data requirements are discussed in the Listing Methodology). The Division develops any additional water quality information necessary to support a decision with respect to standards attainment. Should additional information justify placement of the water on the 303(d) List, TMDL development will then follow as described elsewhere in this section.

3. Water Quality Management Plans and Reports
a. Integrated Report/Section 305(b) Report
Section 305(b) of the federal Clean Water Act requires each state to biennially prepare and submit a report regarding the status of water quality to EPA. This report provides a means for states to report to EPA an assessment of the status of water quality for the preceding two years.

The Integrated Report includes Section 305(b) as well as the Section 303(d) list. The state is responsible for preparation of the Section 305(b) report and draws upon a number of sources of information in preparation of the document.

Section 305(b) Report

Section 305(b) of the federal Clean Water Act requires states to assess and report on the quality of the State's waters every two years. The Section 305(b) Report, Status of Water Quality in Colorado, characterizes the waters of Colorado through the assessment of water quality data and analyzes the extent to which the waters support designated uses. The report also includes updates on the status of water quality control programs, including the Colorado Discharge Permit System Program. Nonpoint Source Management Program, Ground water Program, Water Pollution Control Revolving Fund, and the Drinking Water Program.

Particularly important information sources used in preparation of the report include monitoring information from a variety of sources such as special stream studies conducted by a variety of public or private agencies.

Once the Division has prepared the Integrated Report Section 305(b) and 303(d) list report, an informational public hearing is held by the Commission to provide a forum for public comment on the contents of the report. Following Commission approval, the report is submitted to EPA.

b. Water Quality Planning

The Division supports water quality planning at a variety of scales to ensure priority restoration and protection actions are identified and implemented. This planning provides a bridge between information gathering and restoration and protection activities and also engages local organizations, groups and the public in identifying and implementing actions to benefit water quality in local communities.

i. Statewide Water Quality Management Plan

The Statewide Water Quality Management Plan (SWQMP) was finalized in 2011 and provided a framework for water quality planning based on federal regulation at Section 130.6 of Title 40 of the Code of Federal Regulations (40 CFR 130.6). The SWQMP discusses Division programs and activities associated with the following specific elements defined in 40 CFR 130.6: water quality management agencies; effluent limitations; TMDLs; municipal and industrial waste treatment; nonpoint source management and control; water quality management plan implementation measures; dredge and fill; and ground water.

The SWQMP also provides a comprehensive look at water quality across the entire state as well as more specific water quality information for the seven river basins in the state. This comprehensive water quality information is compiled from a number of information sources including the Division's Integrated Report (an integration of the federal Clean Water Act Section 305(b) report on statewide water quality and the federal Clean Water Act Section 303(d) list of waters not meeting water quality standards) and the Colorado Water Conservation Board's statewide water supply initiative documents.

The process originally envisioned for updating the SWQWP was tied to the triennial review cycle with basin-specific data and information updated the year following the associated standards triennial review hearing and statewide and programmatic information updated the year following a Basic Standards Rulemaking Hearing. The Division has since transitioned to a more resource efficient method for providing state-scale planning information through the Watershed Rapid Assessment Program (WRAP) on Colorado State University's Environmental Resource Assessment and Management System (eRAMS) platform.

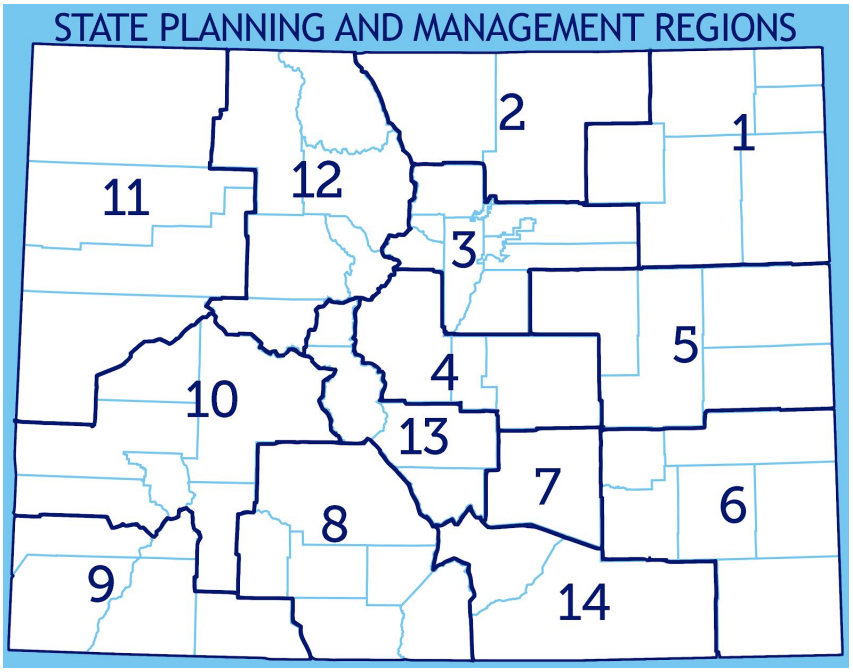
The WRAP tool is used to extract, organize, and analyze data and information at various statewide, regional, and watershed scales for readily available geospatial characteristics as well as water

quantity and quality. These characteristics include current and historic land use, population, climate, climate projections, stream flow, and stream water quality. The integrated assessment of watershed health is then broken down into six primary attributes: landscape condition, habitat, hydrology, geomorphology, water quality, and biological conditions. Utilizing the extracted data, the WRAP tool calculates a number of indicators for these attributes (for example, median summer nitrate concentration as an indicator of water quality) to create an overall summary of the watershed condition. This overall condition can then be used at a state-wide scale to identify and prioritize management actions similar to the basin plan sections of the 2011 SWQMP.

ii. *Regional Water Quality Management Plans*

Regional water quality management planning is conducted in the Department of Local Affairs State Planning and Management Regions. The planning structure and processes, as well as plan content, are discussed in Section 208 of the CWA. Plans consistent with Section 208 include the following:

- The identification of treatment works necessary to meet the anticipated municipal and industrial waste treatment needs of the area over a twenty-year period, necessary wastewater collection and urban stormwater runoff systems, necessary financial arrangements, land acquisition needs, and recreational use considerations associated with these treatment works;
- The establishment of construction priorities for such treatment works and time schedules for the initiation and completion of all treatment works;
- The identification of regulatory programs to manage waste treatment, including applicable pretreatment requirements and the location, modification, and construction of any facilities that may result in any discharge in an area;
- The identification of those agencies necessary to construct, operate, and maintain all facilities required by the plan and otherwise to carry out the plan;
- The identification of the measures those agencies deem necessary to carry out the plan, the period of time necessary to carry out the plan, and the costs of carrying out the plan within such time;
- Processes to identify nonpoint source pollution (including from agricultural, silvicultural and unregulated mining activities), control the disposition of all



residual waste generated in an area which could affect water quality and control the disposal of pollutants on land or in subsurface excavations within an area to protect ground and surface water quality.

The Division supports regional water quality management planning in regions with designated planning agencies (Regions 2, 4, 7 and 12) by providing federal funding assistance through a CWA Section 604(b) grant. The Division also provides technical assistance, data, and information (for example, nonpoint source information in the Nonpoint Source Program Management Plan, see subsection 10 in section D, Protection and Restoration), as well as tools such as WRAP for plan development, and supports designated planning agencies through the Administrative Action Hearing process for regional water quality management plan approval by the Commission. Links to regional water quality management plans for the designated areas can be found at www.colorado.gov/pacific/cdphe/wqcc.

Resources are not available for the Division to play an active role in regional water quality management planning for non-designated areas (i.e., those planning regions that do not have a designated planning agency). The Division therefore focuses on tool development to assist local governments with water quality planning, outreach about water quality planning, statewide nonpoint source management planning, and watershed planning.

iii. Watershed Plans

The Division's Nonpoint Source Program collaborates with local watershed groups to develop watershed plans. These plans are critical for identifying local priorities to restore and protect water quality, implementing load allocations defined in Total Maximum Daily Loads (TMDLs), and establishing collaborative groups to implement water quality improvement activities. The Division provides both funding, technical assistance, and tools (for example, the WRAP tool) for the development of watershed plans, in particular assistance with meeting EPA's foundational Nine Elements of Watershed-Based Plans:

- Identify causes and sources of pollution;
- Estimate pollutant loading into the watershed and the expected load reductions;
- Describe management measures that will achieve load reductions in targeted critical areas;
- Estimate amounts of technical and financial assistance and the relevant authorities needed to implement the plan;
- Develop an information/education component;
- Develop a project schedule;
- Describe the interim, measurable milestones;
- Identify indicators to measure progress; and
- Develop a monitoring component.

EPA developed the nine minimum elements to help watershed managers address some of the most common pitfalls seen in watershed plans, particularly those for impaired waters. Watershed plans often lack quantified estimates of current and projected pollutant loads and the reductions needed to achieve water quality standards and other watershed goals. These loading estimates and estimates of load reductions from proposed pollution control measures provide the analytic link between actions on the ground and attainment of water quality standards. In the absence of such a framework, it is difficult to develop and implement a watershed plan that can be expected to achieve water quality standards or other environmental goals. The Division's Nonpoint Source Program encourages local watershed groups to incorporate loading information from TMDLs and define priority management measures to achieve TMDL load reductions in order to maximize progress toward attaining water quality standards.

Watershed plans are locally-driven, and processes to develop and update plans depend on many unique factors. The Division's Nonpoint Source Program generally tracks watershed plan status and annually provides watershed plan information to the Colorado Water Conservation Board as part of reporting for the state Water Plan. Additional information about watershed plans can be found at www.npscolorado.com.

C. Goal Setting

1. Surface Water Standards

a. Overview

The Basic Standards and Methodologies for Surface Water (Basic Standards), Regulation No. 31 establishes the following: a system for classifying state waters to protect beneficial uses, for assigning numeric standards and for granting variances and temporary modifications; statewide standards that are applicable to all state waters; a statewide antidegradation rule; and certain provisions unique to wetlands.

The system for assigning surface water quality classifications and standards is based on adopting use classifications that identify uses to be protected on a stream segment and then adopting numerical standards for specific pollutants to protect those uses. The Basic Standards regulation constitutes the framework that is applied on a site-specific basis to adopt classifications and standards in each of the state's river basins. (As used in Colorado, "classifications" refers to the use categories for which specific state waters are to be protected, while "standards" refers to the narrative or numeric criteria that are adopted to protect the classified uses. EPA uses somewhat different terminology.)

Note that the state does not have jurisdiction to adopt water quality standards for surface water resources located on Reservation lands that are held in trust by the United States for the benefit of the Tribe and individual Tribal members. Water quality standards for those areas come under the jurisdiction of the EPA, Southern Ute tribe, or Ute Mountain Ute tribe.

b. Statewide Standards

Several narrative water quality standards have been adopted which are applicable to all state surface waters. (Note: Sections referenced in brackets refer to Commission Regulations.) [Section 31.11(1)] A narrative standard is a general, non-quantified statement of conditions to be met by state waters. For example, state surface waters are to be free from pollutants that are "harmful to the beneficial uses or toxic to humans, animals, plants, or aquatic life."

Statewide numeric standards have been adopted for radioactive materials and organic chemicals. The radioactive materials standards apply to all state surface waters unless alternative site-specific standards have been adopted. [Section 31.11(2)] The "water supply" and "aquatic life-based" standards for organic chemicals apply to all surface waters for which the corresponding use classifications have been adopted unless alternative site-specific standards have been adopted. [Section 31.11(3)] The "fish ingestion" and "water + fish" standards for organic chemicals are intended to provide human health protection where fish consumption is a consideration. The fish ingestion standards apply to all Class 1 aquatic life segments that do not have a water supply classification and any Class 2 aquatic life segments without a water supply classification designated by the Commission after a rulemaking hearing. The "water + fish" ingestion standards apply to Class 1 aquatic life segments and designated aquatic life Class 2 segments that also have a water supply classification. [See footnotes 3 and 8 to the Basic Standards for Organic Chemicals Table in Section 31.11(3).]

c. Site-Specific Classifications and Standards

Use classifications and numeric water quality standards have been adopted for streams, lakes, and reservoirs throughout each of the state's river basins. Within each basin, waters are divided into individual stream segments for classification and standard-setting purposes. Site-specific water quality classifications are intended to protect all existing uses of state waters and any additional uses for which waters are suitable or intended to become suitable. Section 31.13 of the Basic Standards includes the following use classification categories: (1) recreation class E - existing primary contact use, recreation class P - potential primary contact use, recreation class N - not primary contact use, or recreation class U - undetermined use; (2) agriculture; (3) cold and warm water aquatic life class 1 and 2; (4) domestic water supply; and (5) wetlands. A "seasonal" qualifier can be adopted to limit the applicability of a classification to certain periods of the year. A "goal" qualifier can be adopted to indicate waters that are not yet fully suitable for a classified use.

Classifications must protect the highest attainable use, and must not jeopardize downstream uses. Revisions of uses are possible where justified; however, use downgrades must comply with state and EPA downgrading rules. Section 31.6(2)(b) precludes downgrading "unless it can be demonstrated that the existing classification is not presently being attained and cannot be attained within a twenty year time period." A "use attainability analysis" (UAA) must be performed to justify the downgrading.

For each classified stream segment, numeric water quality standards are adopted that are intended to maintain water quality at a level sufficient to protect the classified uses. Even where classified uses can be agreed upon, there can be substantial debate over the appropriate numeric standards for a site-specific segment, largely because more stringent numeric standards can have a major impact on dischargers' treatment costs.

There are three potential approaches to the adoption of site-specific numeric standards. [Section 31.7(1)(b)] First, table value standards (TVS) are based on criteria set forth in three tables contained in the Basic Standards regulation. These are levels of pollutants determined to be generally protective of the corresponding use classifications. They are applied in most circumstances, unless site-specific information indicates that one of the following approaches is more appropriate.

Second, ambient quality-based standards may be adopted where it has been determined that the highest attainable use is protected at pollutant levels that are higher than would be allowed by TVS. These levels can be represented by the existing natural or irreversible pollutant levels or by improved water quality pollutant levels where attainment of TVS is not feasible. Ambient quality-based standards are authorized only where a comprehensive analysis has determined the sources and causes of elevated pollutant levels, identified the improved water quality conditions that could result from feasible pollution control alternatives, and characterized the highest attainable use.

Third, site-specific criteria-based standards may be adopted where an indicator species procedure (water effects ratio), recalculation procedure, use of the biotic ligand model for site-specific copper standards, use attainability analysis, or other site-specific analysis indicates that alternative numeric standards are appropriate for protection of the highest attainable use.

Temporary modifications to numeric standards may be adopted where the Commission determines that there is non-attainment of underlying standards, a water quality-based effluent limit compliance problem, and significant uncertainty regarding the appropriate underlying standard or the extent to which existing conditions are correctable. [Section 31.7(3)] For example, if the Commission believes that the existing quality of a segment may be the result of correctable human-induced conditions, it may adopt a temporary modification to protect existing uses by maintaining the status quo while studies are undertaken to determine the appropriate long-term standards to protect the highest attainable use and what pollution control or treatment alternatives are feasible. Temporary modifications are reexamined not less than once every three years and must be accompanied by an implementation plan for resolving the uncertainty and eliminating the need for the temporary modification.

The Basic Standards direct that while temporary modifications are in place, water quality should be maintained at the best level that is practicably achievable. This allows the Division to exercise its discretion for determining the level of treatment that a facility can provide affordably while maintaining or improving water quality. An example would be where the existing quality of the

facility discharge is better than the level of the temporary modification or where relatively minor actions, such as adopting local pretreatment limits or low cost facility improvements, could be taken to improve the quality of the discharge.

Variances to numeric standards were authorized by the Commission in 2010. The provisions in the Basic Standards allow discharger-specific variances (DSVs) from water quality standards to be adopted where an alternative analysis demonstrates that there are no feasible alternatives that would result in attainment of water quality-based effluent limits. [Section 31.7(4)]. Variances are expressed as temporary hybrid standards that represent the highest degree of protection of the classified use that is feasible within 20 years. They also must maintain and protect existing uses. The Commission has adopted discharger specific variances for selenium for three wastewater dischargers in the Arkansas River basin and for one industrial facility in the South Platte River basin. The Commission has also adopted discharger-specific variances for ammonia for two wastewater dischargers in the Gunnison and San Juan River basins. The Commission has also developed guidance for development, adoption, and review of DSVs and has adopted this guidance as WQCC Policy 13-1.

Pursuant to the federal Clean Water Act, EPA has established requirements that define acceptable state surface water quality standards. All water quality classifications and standards adopted by the Commission are submitted to EPA for review and approval. Pursuant to an EPA rule adopted in 2000, revisions to classifications and standards adopted by the Commission and submitted to EPA for approval now do not become effective for purposes of the federal Clean Water Act until approved by EPA. If EPA disapproves specific classifications and standards, the state has an opportunity to reconsider its standards. If appropriate modifications are not made, EPA has authority to adopt standards that will then apply within the state. Although EPA has never exercised this authority in Colorado, the potential has had a major impact on Commission decisions in a number of instances.

d. Antidegradation Provisions

Antidegradation provisions of the Basic Standards and Methodologies for Surface Water: (1) set forth provisions regarding the adoption of water quality-based designations for certain surface waters; and (2) establish an antidegradation review process applicable to certain activities impacting the quality of surface waters. [Section 31.8]

Antidegradation

Colorado's antidegradation regulation provides protection of water bodies from degradation over a baseline water quality condition. Three levels of protection apply to Colorado's waters: Outstanding Waters - where no degradation is allowed, "Reviewable Waters" - where only insignificant degradation is allowed without further analysis, and "Use Protected Waters" where degradation is allowed up to the water quality standard. Colorado's regulations regarding what constitutes significant degradation are further defined in a guidance document available on the Division's website.

Either of two water quality-based designations may be adopted in appropriate circumstances. [Section 31.8(2)] An “outstanding waters” designation may be applied to certain high quality waters that constitute an outstanding natural resource. These outstanding waters must be maintained and protected at their existing quality. However short-term degradation of existing quality is allowed for

activities that result in long-term ecological or water quality benefit or clear public interest. A "use-protected waters" designation may be applied to waters with existing quality that is not better than necessary to support propagation of fish, shellfish, and wildlife and recreation in and on the water. The quality of these waters may be altered so long as applicable use-based water quality classifications and standards are met.

Waters that are not given one of these designations are referred to as "reviewable waters." Reviewable waters are subject to antidegradation review requirements before any new or increased water quality impacts are allowed. [Section 31.8(3)] The activities that are subject to the requirements are those that: (1) require a discharge permit; (2) require water quality certification under Section 401 of the federal Clean Water Act; or (3) are subject to control regulations. The first step in the antidegradation review process is a determination, in accordance with criteria specified in the regulation, whether "significant degradation" would result from the activity. In 2001, the Division developed a guidance document entitled *Antidegradation Significance Determination for New or Increased Water Quality Impacts* to help explain how this significance determination is made. If significant degradation will not result from the activity, the review ceases. If significant degradation would result, a determination is made whether the degradation is necessary to accommodate important economic or social development in the area where the waters are located. This determination is based on an assessment of whether there are water quality control alternatives available that would result in less degradation of state waters and which are economically, environmentally, and technologically reasonable. The proposed degradation is allowed only if no such alternatives are available.

e. Wetlands Provisions

In 1993, the Commission added provisions to the Basic Standards regulation to address water quality classifications and standards for wetlands. Note that these provisions are not intended to affect the determination as to whether specific wetlands may be filled in, pursuant to Section 404 of the federal Clean Water Act. Rather, these provisions address the water quality to be maintained in wetlands that will continue to exist as wetlands. Waters in wetlands are state waters, except for waters in "constructed wetlands," which are wetlands designed, constructed, and operated for the primary purpose of wastewater or stormwater treatment or environmental remediation. [Section 31.5(11)]

Narrative standards have been adopted that are applicable to all wetlands that are state waters. [Section31.11(I)(b)] Site-specific water quality classifications and standards may be adopted to protect wetland functions. [Section 31.13(1)(e)(v), 31.7(1)(b)(iv)] The regulation defines three subcategories of wetlands to help distinguish which classifications and standards apply prior to adoption of any site-specific classifications and standards:

- "Compensatory wetlands" are those created to provide mitigation for adverse impacts to other wetlands. [Section 31.5(10)] These wetlands initially have the classifications and standards of the water body segment in which they are located.

- "Created wetlands" are wetlands other than compensatory wetlands that are created in areas which would not be wetlands in the absence of human modifications to the environment. [Section 31.5(12)] Unless site-specific wetlands classification and corresponding numeric standards have been adopted, only the statewide narrative standards apply to created wetlands.
- "Tributary wetlands" are wetlands that serve as the headwaters of surface waters or that are located within a floodplain, and which are hydrologically connected to other surface waters. [Section 31.5(29)] These wetlands are initially subject to most of the water quality classifications and numeric standards of the segment in which they are located, except where the existing ambient quality is worse than those standards.

Wetlands that are not tributary wetlands are often referred to as isolated wetlands and are initially subject to the statewide narrative standards but not numeric standards.

f. Nutrient Control Provisions

The Commission adopted nutrients regulatory provisions in June 2012, composed of two major components: (1) scientifically-based interim numerical values for nutrients at levels to protect beneficial uses of Colorado waters, which would initially be applied only to streams and lakes above qualified dischargers and to protect municipal water supplies taken directly from lakes or reservoirs; and (2) a new Nutrients Management Control Regulation establishing technology-based treatment requirements for many domestic (and some industrial) wastewater dischargers, enhanced nutrients control requirements for stormwater dischargers, provisions encouraging voluntary controls of nonpoint sources, and monitoring requirements to develop better information to refine Colorado's nutrients management efforts over time. The new rules became effective on September 30, 2012. The Commission adopted Phase 2 of its nutrients management strategy in 2017, which includes a voluntary incentive program to encourage dischargers to reduce nitrogen and phosphorus concentrations in their effluent below Regulation #85 effluent limits. In addition, the Division established Clean Water Policy 8 which is the state's Nutrient Management Plan and 10-Year Water Quality Roadmap for adopting revised standards and considering feasibility for nutrients, ammonia, selenium, arsenic, cadmium, and temperature.

2. Ground Water Quality Standards

a. Basic Standards for Ground Water

In 1987, the Commission adopted The Basic Standards for Ground Water, Regulation No. 41 (5 CCR 1002-41). This regulation establishes a system to classify and set numeric standards for ground water on a site-specific basis. This regulation also contains statewide ground water quality standards for radioactive materials and organic chemicals that are similar to the statewide surface water quality standards for these constituents, except that aquatic life protection is not a consideration. Since adopting The Basic Standards for Ground Water, the Commission has updated this regulation through the triennial review process, adopting new standards and omitting obsolete ones when appropriate.

b. Site-Specific Standards

In contrast to the comprehensive classifications and standards in place for Colorado surface waters, site specific ground water quality classifications and numeric standards have been established for slightly more than 50 specific areas. Most of these have been adopted to protect public water supply systems relying on ground water. Regulation No. 42 (5 CCR I 002-42) documents these specified areas and the associated standards that have been adopted. Due in part to the fact that it is likely to take many years before more comprehensive site-specific ground water quality classifications and standards are in place throughout the state, the Commission adopted an "interim narrative standard" for pollutants. The interim narrative standards include all compounds, other than statewide radioactive materials and organic chemical standards, and provide an initial level of protection of existing ground water quality throughout the state [Section 42.5]. The interim narrative standard states that in the absence of site-specific classifications and standards, ground water quality shall be maintained at the less restrictive of (1) ambient quality as of January 1, 1994; or (2) table value criteria. This interim standard is intended to ensure that (1) in relatively unpolluted areas, ground water quality adequate to protect all potential uses is preserved through the application of table value standards; and (2) in contaminated areas, ground water quality is not allowed to get any worse than its existing quality. This interim standard defines the protection provided unless and until site-specific use classifications and numeric standards are adopted.

3. Water Quality Standard-Setting Process

The Commission is required by both federal and state law to review all existing water quality classifications and standards at least once every three years. Because these triennial reviews occur separately for each of the state's major surface water basins and for the separately adopted ground water quality standards, the review and update process is nearly continuous. Moreover, in addition to these regularly scheduled reviews, any interested person can also petition the Commission to consider new or revised standards.

The Commission has established a three-step process for triennial review of water quality classifications and standards in Colorado. The first step is an Issues Scoping Hearing, which provides an opportunity for early identification of potential issues that may need to be addressed in the next major rulemaking hearing for particular regulations and an opportunity to identify any issues that may need to be addressed in rulemaking prior to that time. The second step is the Issues Formulation Hearing, which results in identification of the specific issues to be addressed in the next major rulemaking hearing. The third step is the Rulemaking Hearing, where any revisions to the water quality classifications and standards are formally considered and/or adopted. The timing of the three steps is as follows: (1) the Issues Scoping Hearing—for the *Basic Standards and Methodologies for Surface Water* or individual river basin classifications and standards—is held in October of Year 1; (2) the Issues Formulation Hearing is held in November of Year 2; and (3) the Rulemaking Hearing is held in June of Year 3. To satisfy the triennial review requirement, an Issues Scoping Hearing is held in the third year following a Rulemaking Hearing for a particular basin.

For proposals brought forward by individual entities or members of the public, informal communication is encouraged between the entity or person advancing the proposal and Division staff

prior to filing a formal rulemaking notice and proposal. In deciding whether any identified issue should be addressed in an upcoming rulemaking hearing, the commission will consider whether the issue is ripe for resolution. This includes 1) whether adequate data or other information is or will be available, 2) whether there is a need for an expeditious resolution of the issue, and 3) whether there has been or will be a good faith effort toward informal exploration of the proposal with the division and meaningful involvement of other impacted or relevant persons, entities, and communities regardless of their race, color, national origin, income, age, gender, or sexual orientation. The Commission has developed a document entitled *Considerations for Advancing External Proposals for Revised Water Quality Classifications and Standards Before the Water Quality Control Commission* to help determine when proposals are ripe for rulemaking.

Proposals advanced by the Division as staff to the Commission typically result from (1) changes in federal or state legal requirements; (2) new information regarding existing or potential future uses of water segments; (3) new scientific information regarding protective levels for particular uses; (4) new physical, chemical, or biological data for particular segments; (5) highest degree of protection of the classified use that is feasible; or (6) identification of errors in the previous classifications or standards. In preparing its proposals, the Division reviews the best currently available information regarding each of these factors. The Division considers any input received from water quality stakeholders. In some instances, the Division may determine that there is a need for additional data or analysis before proceeding with a rulemaking proposal.

Depending on the degree of complexity and the practical effects associated with a particular proposal, and within the constraints of available time and resources, the Division attempts to consult with interested persons prior to initiation of the formal rulemaking process. The rulemaking process provides an additional opportunity for public input. For more information on both the informal pre-rulemaking and formal rulemaking processes of the Commission, see the Water Quality Control Commission's Public Participation Handbook.

One important component of the triennial review process is a requirement in EPA's current water quality standards regulations that a UAA be conducted for any surface water segment that lacks either an aquatic life use classification or a use quality that provides protection for primary contact recreation. This requirement stems from a federal Clean Water Act goal of attaining “fishable, swimmable” water (e.g., “protection and propagation of fish, shellfish, and wildlife and… recreation in and on the water”) in all of our nation's surface waters. EPA’s interpretation of this provision puts the burden on states to justify any decision not to protect specific waters for these uses. There has been and continues to be debate regarding how much information is needed to constitute an adequate use attainability analysis. New or revised water quality classifications and standards adopted by the Commission after rulemaking are incorporated into the listing methodology, factored into subsequent revisions of point source discharge permits, used as targets in TMDL development, and form the basis for water quality planning such as regional water quality management plans and watershed plans.

D. Protection and Restoration

1. Total Maximum Daily Loads

The development of TMDLs is an important step for the Division's work to restore waterbodies that are listed as impaired. These EPA-approved technical analyses are the basis for planning and implementation actions that are focused on reducing pollutants in order to attain water quality standards.

a. Overview of Federal Regulatory Requirements

Section 303(d) of the federal Clean Water Act requires each state to identify waters within its boundaries for which technology-based effluent limitations and other required controls are not adequate to attain water quality standards. States then establish total maximum daily loads for those waters "at a level necessary to implement the applicable water quality standards with seasonal variations and a margin of safety which takes into account any lack of knowledge concerning the relationship between effluent limitations and water quality."

b. TMDL Development Prioritization

The Division must ensure that TMDLs are developed for all water bodies and pollutants on the 303(d) List. Recognizing that all TMDLs cannot be completed at once, the federal Clean Water Act directs the state to prioritize the waters on the 303(d) List. In order to refine TMDL development priorities, the Division evaluates factors in addition to the severity of pollution and the classified uses of waters criteria used for 303(d) list prioritization. This approach to TMDL development prioritization is a result of EPA's "Long-Term Vision for Assessment, Restoration and Protection under the Clean Water Act Section 303(d) Program." This vision has five associated goals: prioritization, assessment, protection, alternatives, engagement, and integration. The prioritization goal encourages states to review, systematically prioritize, and report priority watersheds or waters for restoration and protection to facilitate strategic planning for achieving water quality goals.

As part of meeting the prioritization goal, the Division developed a strategy to prioritize TMDL development from 2016–2022. Listings with standards, data or source uncertainties were screened out of the 2012 303(d) list, resulting in 146 pollutant/waterbody combinations identified as higher priorities for TMDL development of the 348 pollutant/waterbody listed. The 146 pollutant/waterbody combinations are predominantly tied to selenium, metals and E. coli causes.

These 146 pollutant/waterbody combinations were then evaluated by using the Recovery Potential Screening Tool (RPST) to refine the prioritization. Information such as age of listing, land use, threatened and endangered species, watershed plan in place, and local stakeholder involvement was translated into indicators for the RPST. The output of the RPST was prioritized by considering factors specifically associated with readiness for development (e.g., data availability, availability of additional characterization information such as source identification, stakeholder involvement). Stakeholder feedback on the prioritization approach was solicited from the Colorado Water Quality Forum.

The final results of this prioritization exercise were provided to EPA as the TMDL development commitment through 2022 and serve as the basis for reporting to EPA progress toward meeting performance measures. The prioritization results are also used by the division to inform annual TMDL development priorities, and these annual development projections are public noticed through the Integrated Report. A similar process is anticipated for identifying post-2022 TMDL development priorities.

c. TMDL Development Process

A TMDL is the maximum amount of a pollutant that a waterbody can receive and still meet water quality standards. The formula to express a TMDL is:

TMDL = Wasteload Allocation (WLA) for point source discharges + Load Allocation (LA) for nonpoint source discharges + Margin of Safety.

A TMDL sets a pollution budget for a waterbody that takes into account all potential sources of the pollutant. The amount of a pollutant that the source contributes to the waterbody during a period of time is the pollutant load. There could be a difference between the pollutant load that a source contributes to a waterbody and the pollutant allocation, which is the load a source should not exceed to meet water quality standards.

The process the Division uses to develop TMDLs has several steps that are common to all TMDLs (see Figure 1). The tools the Division selects for TMDL development, such as computer models, may vary based on waterbody type, the pollutant of concern, and the amount of data and other resources available. If data gaps exist, the Division will document those gaps and the technical assumptions used to address those gaps in the analysis.

Figure 1 Key Steps and Questions Addressed in the TMDL Development Process

The Division has the following objectives for all TMDLs developed:

- An adequate inventory of pollutant sources;
- Accurate estimates of pollutant contributions;
- Consideration of all readily available data;
- Documentation of decisions regarding use of data and other information;
- Adequate documentation of assumptions and modeling conducted;
- Opportunity for public participation from a wide range of interests; and
- Consistency with EPA approval requirements.

The Division is responsible for developing TMDLs for EPA's consideration. However, the process for developing and implementing TMDLs is more effective with stakeholder and other watershed partners' involvement. Stakeholders have a role to play, including attending public meetings, providing data, and commenting on the draft TMDL report during the 30-day public comment period. The Division notifies potential local stakeholders when beginning TMDL development and communicates with stakeholders at key milestones during the development process.

The Division values stakeholder input, from informal feedback throughout the TMDL development process to formal comments submitted during the 30-day public comment period for the draft TMDL report. The Division attempts to resolve issues raised by stakeholders and other watershed partners before formally submitting the TMDL report to EPA for approval consideration. In some cases, the Division will not be able to resolve concerns to all parties' satisfaction, at which point an affected party may appeal the Division's TMDL determination to the Commission. The Commission would then conduct an adjudicatory hearing to resolve the disputed issues. The Division would modify the TMDL report to reflect the Commission's decision and submit to EPA as the final TMDL report.

d. Implementation of TMDLs

TMDL implementation relies on existing regulations and programs—TMDLs do not create new regulations or mechanisms for reducing pollutants. If a TMDL assigns a WLA to a point source, the Division will review applicable Colorado Discharge Permit System point source permits and, if necessary, modify permit effluent limits or required best management practices (BMPs) to ensure consistency with the assumptions and requirements of the WLA. If a TMDL assigns a LA to a nonpoint source, the Division will identify existing nonpoint source pollution programs and active watershed organizations that could secure prioritized funding for voluntary watershed planning and BMP implementation. The Division may also recommend post-implementation monitoring to determine effectiveness of BMPs and progress toward meeting water quality standards.

2. Site Location and Design Approval Process

The site location and design approval process established by the Colorado Water Quality Control Act provides that construction of a domestic wastewater treatment works, or change of the treatment capacity of an existing facility, shall not commence unless the site location and design have been approved by the Division. As the site approval process includes elements that are also addressed by the regional water quality management plan and by discharge permits, it is critical that applicants for a site location decision understand that all three elements must be accomplished to allow construction of new or expanded wastewater treatment facilities.

The Commission has adopted Site and Design Approval Regulations for Domestic Wastewater Treatment Works, Regulation No. 22, defining policy and procedures for the submission and review of applications as well as criteria for decision-making on the part of the Division and Commission. These regulations establish a system of site application requirements based on the nature of the proposed facility and specify appropriate opportunities for public input and comment. The three categories of application requirements are new wastewater treatment plants, capacity changes of existing

wastewater treatment plants, and interceptor sewers and lift stations. The Commission has further created a process for the amendment of previously approved site applications to deal with upgrades and modifications to existing facilities. The basic steps in each of these processes are described below.

a. The process is initiated when an applicant (individual, developer, district, community, etc.) determines that the need exists for new or expanded domestic wastewater treatment works, as defined in the Colorado Water Quality Control Act. The applicant, working through the local planning process, the regional water quality management planning process, and the appropriate Division review engineer, defines the wastewater needs and prepares a site application. This application consists of preliminary effluent limits (PELs) if needed, an application form, and an engineering report. The engineering report requirements vary from category to category but generally will address such factors as treatment and/or location alternatives, water quality issues, and economic analyses. It is critical that the designated planning and management agencies be involved early in the process to ensure that the selected alternative is consistent with regional water quality goals. The applicant must also allow for public input and comment as specified in Regulation No. 22.
b. The completed site application is then circulated to the appropriate agencies for review and comment based on their respective responsibilities. The water quality planning agency's role includes an evaluation of the proposal's consistency with relevant elements of the applicable regional water quality management plan. If the proposal is not consistent with that plan, or is not reflected in the plan, the applicant should be following a parallel track to amend the plan to reflect the proposed wastewater facilities.
c. The comments and recommendations of the various reviewing agencies are submitted, along with the site application form and engineering report, to the Division. The Division is responsible for determining the completeness of the submittal as well as evaluating the suitability of the site, adequacy of the treatment alternative selected, consistency with the water quality aspects of local or regional planning efforts, management and institutional elements of the engineering report, feasibility of consolidation and efforts to achieve those ends, adequacy of the financial plan, and any public comments.
d. In the case of lift stations and interceptor sewers, the recommendation of the water quality planning agency, as reflected in the approved regional water quality management plan, will be adopted as the Division recommendation unless the Division is aware of potential adverse impacts to public health and/or water quality that are not addressed in the application. For other categories of site approval actions, the planning agencies will have the option to enter into an agreement with the Division to establish a coordinated review and approval process. Under such a process, a new or expanded wastewater treatment facility may, at the time of its inclusion in an approved water quality management plan, be deemed to meet the requirements of the site approval process.
e. The Division approves, conditionally approves, or denies the application based on the results of its review, the comments, and recommendations of the other review entities. The applicant is notified in writing of the Division's action, including the conditions of approval or

the rationale for denial. In the event of a denial, the notification also includes what actions, if any, can be taken to rectify those issues that form the basis for the action. Notice of the Division's action appears in the following month's Water Quality Information Bulletin.

f. For a period of 30 days after the mailing date of the Water Quality Information Bulletin containing notice of the Division action, that action may be appealed to the Commission by any person adversely affected by the decision.
g. The Commission, within 90 days of the filing of an appeal, commences a hearing to consider the appeal of the Division's decision. The Division's decision is stayed pending the outcome of the Commission's hearing.

Following site approval, design approval is also required. Applicants typically retain professional engineers to develop the engineering reports. Design documents are submitted to the Engineering Section. Decisions regarding design approvals are based upon the Design Criteria for Wastewater Treatment Facilities (Policy WPC-DR-1). Steps d through g above also apply generally to the design review process.

3. Point Source Discharge Permit

The federal Clean Water Act prohibits the discharge of pollutants from a point source to surface water without a permit. The National Pollutant Discharge Elimination System (NPDES) permit program was established by the federal Clean Water Act to regulate such discharges. Because the state has developed a program that meets the requirements of the federal Clean Water Act, the primary discharge permit program in Colorado is administered by the Division rather than by EPA (subject to certain EPA review and oversight authority). The Commission has adopted Colorado Discharge Permit System Regulations, Regulation No. 61 to govern this program. Note, however, that the state has not yet received delegation of permitting authority for federal facilities, the federal pretreatment requirements, or the federal biosolids requirements and does not have jurisdiction for permitting discharges on tribally-owned lands within Indian reservations. In these instances, permits and approvals are still issued by EPA.

The Discharge Permit System Regulations principally define the permit issuance process, which is illustrated in the permit flow charts (Figures 2 and 3 below). Individual permits are issued to a single facility and may cover a single or multiple discharges associated with the facility's operations. The Division may also issue general permits to cover a category of discharges. These permits are an administrative mechanism that was developed to provide more timely and efficient permit coverage to facilities with similar types of operations and discharges. Once the general permit has been issued, facilities that apply for coverage under a general permit are issued certifications, or authorizations to discharge in accordance with the general permit, as illustrated in the general permit certification flow chart.

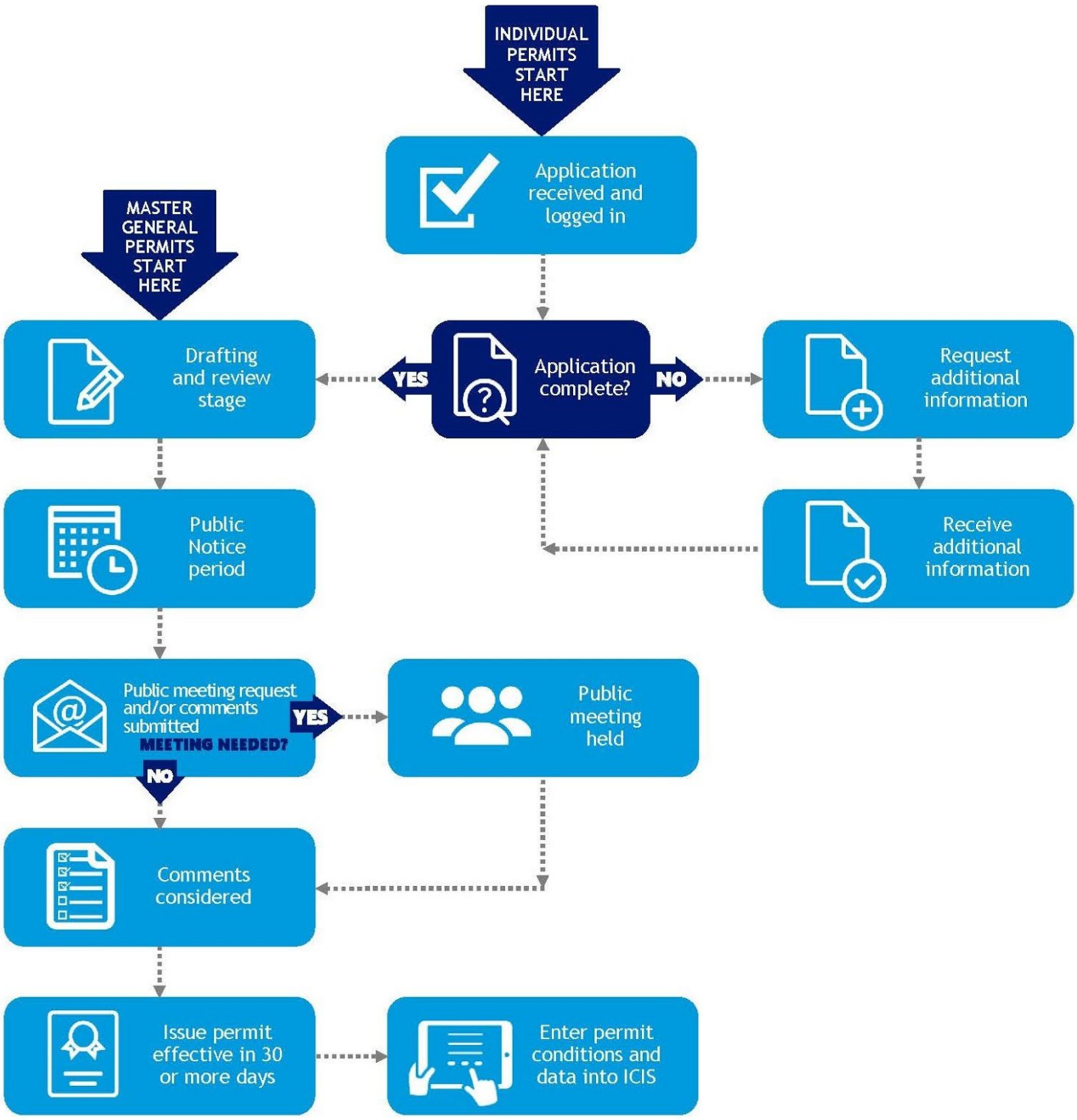


Figure 2 Individual permit process flow chart

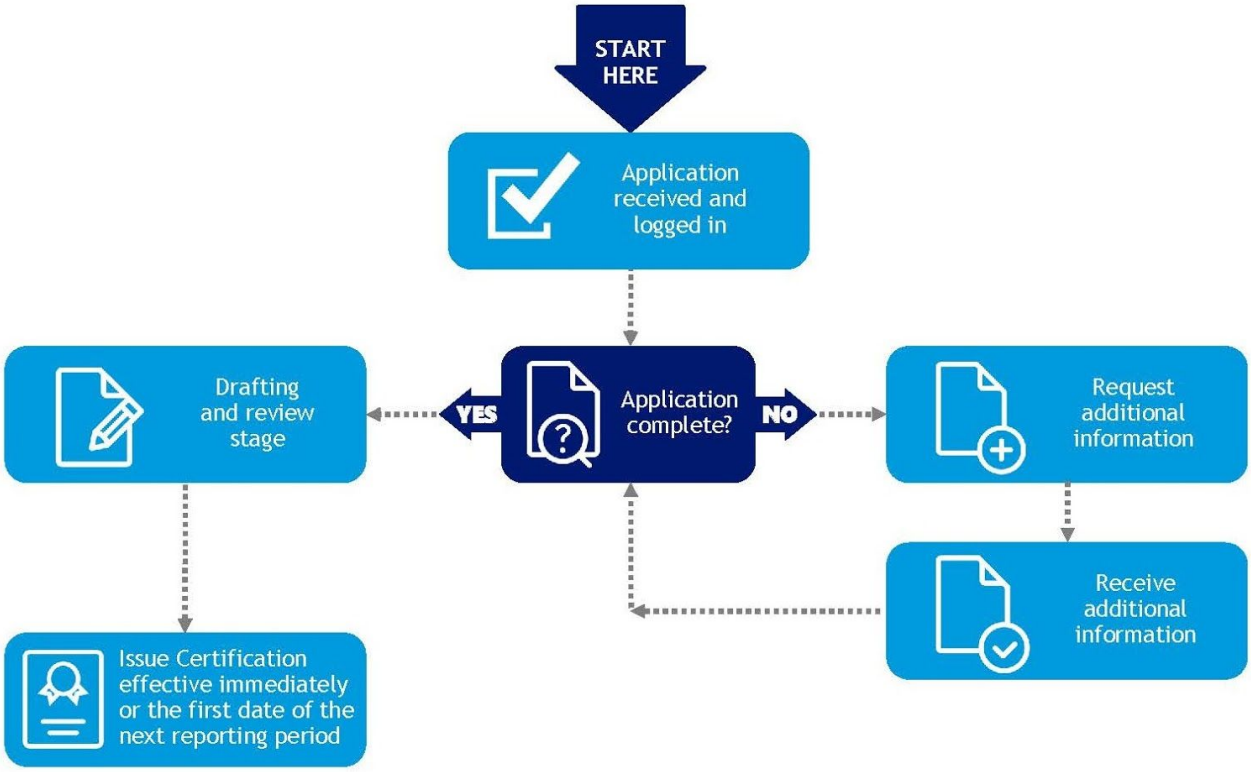


Figure 3 General permit process flow chart

The discharge permit regulations also define the types of terms and conditions that shall be included in permits. The condition effluent limitations included in permits are determined primarily by other regulations. These effluent limitations fall into two principal categories: (1) technology-based effluent limitations; and (2) water quality-based effluent limitations. Technology-based effluent limitations are intended to attain certain minimum levels of pollution control determined to be technologically achievable by dischargers within identified categories. These effluent limitations are based principally on nationally applicable EPA effluent limitation guidelines (ELGs) and on the Colorado Regulations for Effluent Limitations Regulation No. 62.

Water quality-based effluent limitations are intended to assure compliance with site-specific water quality classifications and standards as well as statewide narrative and numerical standards. To implement standards, the Division will incorporate the appropriate waste-load allocation developed pursuant to an applicable TMDL or will assign a numeric or narrative limitation on the concentration or load of pollutants that may be discharged. Numeric water quality-based limits for surface water discharge permits are developed by performing a “mass balance” analysis that determines what concentration of pollutants can be contained in a discharge of a particular volume so that water quality standards are still met instream during specified low flow conditions. In general, this allows dischargers to take advantage of any assimilative capacity (dilution) available in complying with

standards. However, this opportunity may not be available where discharges are to waters designated as critical habitat for threatened or endangered species or when antidegradation review requirements apply. The Division also includes conditions in permits to ensure that where assimilative capacity is allocated, appropriate physical mixing occurs. This mixing demonstration ensures that the pollutants in the discharge combine or mix with the receiving water uniformly.

Two areas where the Division routinely includes requirements in discharge permits as implementation of narrative water quality standards include toxicity, through requirements for whole effluent toxicity (WET) testing, and protection of irrigated crops, through requirements for electrical conductivity (EC) and sodium adsorption ratio (SAR). Rather than measuring the levels of specific pollutants in discharges, WET testing assesses the acute or chronic toxicity of effluent for certain aquatic test organisms. Thus, this technique may be beneficial in detecting toxicity from pollutants for which no specific standards exist or from the interaction of multiple pollutants. WET requirements therefore help implement the narrative "free from toxics" standard contained in the Basic Standards and Methodologies for Surface Water. [Section 31.11(1)] Requirements for EC and SAR are included in discharge permits to ensure that elevated salts will not be present in discharges at a level that impacts receiving water quality and its ability to be used for downstream crop irrigation. EC and SAR requirements, therefore, implement the narrative "no harm to plants" and "no harm to beneficial uses" provisions contained in the B*asic Standards and Methodologies for Surface Water*.

Discharge permit regulation provisions addressing discharges to ground water require permits for land disposal, land treatment, and discharges to ground water from impoundments. These permits include both technology-based and water quality-based effluent limits, which can be applied at a point of discharge with verification monitoring or at a downgradient compliance point such as a ground water monitoring location.

4. Pretreatment

The federal Clean Water Act and EPA regulations establish pretreatment requirements applicable to nondomestic sources of pollutants that discharge wastes into a publicly owned treatment works (POTW). The Commission has adopted Colorado Pretreatment Regulations, Regulation No. 63, with the following program goals:

- Prevent pass through and interference at the POTW;
- Protect the quality of the POTW's sludge; and
- Protect the workers at the plant and throughout the collection system from fires, explosions, and other safety hazards related to industrial discharges.

The pretreatment requirements do not apply to industrial discharges to privately owned treatment works or direct discharges to surface water or ground water.

The pretreatment requirements were developed with the intent that implementation would primarily be delegated to local authorities, usually either a city or a water/sanitation district. These cities/districts are responsible for implementing all aspects of the pretreatment program including: permitting, inspecting, and monitoring industrial dischargers; enforcing pretreatment program requirements; developing local limits; and identifying all industrial dischargers who should be included in the program. The Division issues permits or control mechanisms to "categorical" industries that are located in areas where no approved local pretreatment program exists.

The Division also conducts oversight of cities/districts that have approved pretreatment programs in coordination with EPA, who has the lead authority for the federal pretreatment requirements.

A business involved in operations described by one of the federal industrial point source discharge categories is automatically subject to the pretreatment requirements. Categories are listed in 40 CFR Parts 405 to 471. Examples of categorical processes include metal finishing, pharmaceutical manufacturing, plastics molding and forming, and steam electric power generation. In addition to categorical limitations, local limits, which are effluent limitations designed for a specific POTW's capacity, apply to categorical industries. Local limits may be more stringent than categorical standards and for some parameters may be the limitation that is the most difficult for an industry to meet. Businesses that are not involved in operations described by one of the categories may be subject to local limits. Businesses that do any of the following may be regulated:

- Discharge >25,000 gallons per day;
- Contribute >5% of the POTW's hydraulic load;
- Contribute >5% of the POTW's organic load; or
- Present a reasonable potential for adversely affecting the POTW's operation or for violating any pretreatment standard.

Because Colorado has not been formally delegated the authority to implement the federal pretreatment program, EPA retains ultimate authority over the program.

5. Biosolids Management Program

The Commission has adopted a Biosolids Regulation, Regulation No. 64, which establishes requirements for land application of domestic wastewater treatment plant sludge, or "biosolids." The purpose of this regulation is to establish requirements, prohibitions, standards and concentration limitations on the use of biosolids as a fertilizer and/or organic soil amendment in a manner so as to protect the public health and prevent the discharge of pollutants into state waters. Disposal of residuals/sludge from water treatment plants in Colorado are not included in the definition of biosolids but are regulated under Colorado solid waste laws.

The Commission regulation for the biosolids management program regulates the beneficial use of biosolids. Beneficial use is accomplished primarily through the application of biosolids to land as a fertilizer or soil conditioner. Application is typically made to agricultural land or to disturbed land for

reclamation. Municipalities, sanitation districts, and contractors practicing land application must submit Letters of Intent (LOIs) and receive Notices of Authorization (NOAs) for application sites and are subject to oversight inspection and compliance monitoring by the Division.

Both the federal and the Colorado regulations governing beneficial use of biosolids identify allowable levels of heavy metals and pathogens in biosolids, siting restrictions, and management requirements. The regulations require that application rates be based upon the nutrient requirements of the crops under cultivation. The regulations also specify maximum long-term application limits, which are determined by the metal content of the biosolids. Permittee monitoring of biosolids quality and application site soils is required and is supplemented by compliance monitoring performed by the Division.

In 2018, approximately 88 percent of the biosolids generated by municipal wastewater treatment facilities in Colorado was beneficially reused and is regulated under the program.

Because Colorado has not been formally delegated the authority to implement the federal biosolids program, EPA retains ultimate authority over the the federal biosolids rules that have a broader scope than Colorado regulations. Colorado's requirements in Regulation No. 64 for land application of biosolids is consistent with federal requirements.

6. Reclaimed Water Program

The Commission adopted the Reclaimed Water Control Regulation, Regulation No. 84, pursuant to Section 25-8-205(1)(f) of the Colorado Water Quality Control Act. This regulation applies to the direct application of treated domestic wastewater without discharge to "waters of the state." Regulation No. 84 requires submittal of LOIs by the entity that treats the domestic wastewater (treaters) as well as each entity that irrigates with the reclaimed water (users).

The public health risk of contracting disease from pathogenic microorganisms via exposure to reclaimed water is mitigated by treating wastewater to minimize the number of viable pathogenic microorganisms: bacteria, viruses and protozoa. Acceptable public health risk is determined based on an absence of acute gastrointestinal disorders (the most likely type of disease manifestation) in those persons either casually exposed to reclaimed water as it is used for surface irrigation of landscaping or via ingestion from cross connections due to higher risk uses such as indoor toilet flushing. Treatment levels for pathogens are established based on the potential health risk associated with each source and use. The regulation identifies treatment targets for bacteria, viruses, and protozoa. Proper operation and treatment is routinely verified through monitoring requirements. Bacterial protection is ensured through routine monitoring of E. Coli that is consistent with EPA limits for surface waters set to protect swimmers. Viral and protozoan protection is ensured through routine monitoring for turbidity or total suspended solids, as appropriate.

Approved applications include the use of reclaimed water for landscape irrigation, cooling towers, closed loop cooling systems, dust suppression, soil compaction, mechanized street sweepers,

concrete mixing and washout, zoo operations, commercial and residential fire protection, indoor fixture flushing, edible crop irrigation, hemp irrigation, and resident-controlled landscape irrigation. The regulation provides a framework that assures these additional uses are consistent with the Commission's goals of protecting the public health and the environment by requiring reclaimed water to properly operate and maintain treatment processes, meet minimum standards, and requiring treaters and users of such water to employ appropriate best management practices and oversee its use. NOAs issued to treaters include conditions for the type of treatment and quality of the reclaimed water that are based on the potential for public contact and the potential for cross-connection with potable supplies at the point of use.

There are three categories of reclaimed water:

- Category 1 water requires secondary treatment and disinfection with limits for E. Coli and total suspended solids. This water is typically used for applications that have little public exposure potential. This category of water is subject to "restricted use," which means that it may only be used when the public is not present or barriers shall be installed during use to prevent public contact;
- Category 2 water requires secondary treatment, disinfection, and filtration as an added barrier with limits for E. Coli and turbidity (as a check for filtration efficiency). Category 2 water is "unrestricted use" and can be used where public contact is likely; and
- Category 3 water requires secondary treatment, filtration, and disinfection and has more stringent E. Coli limits than the other uses. This high-quality water is typically required for uses that have high potential for public contact/cross-connection potential. This category of water is required for such uses as resident-controlled landscape irrigation and residential fire protection.

NOAs for users include conditions for the use of the water, many of which are based on whether public access to the irrigated area is restricted or unrestricted. Conditions common to all uses include a requirement to post signs notifying the public that reclaimed water is in use; a requirement for precautions to be taken to ensure that reclaimed water will not be sprayed on any facility or area not designated for application (such as occupied buildings or domestic drinking water facilities); a requirement that runoff from use areas be strictly minimized; a requirement to educate workers and contractors of the hazards associated with reclaimed water use and proper hygienic practices; and a requirement that aggressive cross-connection control programs be implemented.

7. Stormwater

Stormwater runoff was traditionally considered nonpoint source pollution and therefore not regulated by the CDPS regulations. In August 1993, Colorado established regulations for the control of stormwater from specific municipal and industrial sources to implement 1987 revisions to the federal Clean Water Act [see particularly Sections 61.3(2), 61.4(3), and 61.8(4)(n)-(o) of the Regulations]. These regulations redefined stormwater from these sources as point source discharges instead of nonpoint source runoff and required stormwater permit coverage. Under the regulations (referred to

as Phase I), permits are required for the discharge of stormwater from municipalities exceeding 100,000 population (Denver, Aurora, Lakewood and Colorado Springs, as well as the Colorado Department of Transportation) and certain industrial facilities and construction sites that disturb five or more acres of ground.

In December 1999, EPA promulgated "Phase II" stormwater discharge permit requirements that substantially expanded the applicability of this program. Colorado adopted its version of the Phase II regulations in January 2001—see particularly Sections 61.3(2)(f) and (h), 61.4(3)(d), and 61.8(11) and (12). The program now covers construction sites from one to five acres and municipally-owned industries, most of which had been under a temporary exemption. In addition, many smaller municipalities will be required to have permit coverage for their storm sewer systems. The chief requirements of the municipal permits are the development and implementation of six minimum measures:

- Public education and outreach on stormwater impacts;
- Public participation and involvement;
- Detection and elimination of illicit connections and discharge;
- Construction site stormwater runoff control;
- Post-construction stormwater management in development/redevelopment; and
- Pollution prevention/good housekeeping for municipal operations.

Information about the Stormwater Program, including a program summary, applications, guidance documents, and permit copies, is available on the Division's website.

8. Section 401 Certification

Pursuant to Section 401 of the federal Clean Water Act, issuance of a federal license or permit for an activity which may result in any discharge into waters of the United States requires a certification from the state that authorization of the activity will not result in a violation of water quality standards. The Section 401 certification process in Colorado is governed by a Commission regulation entitled Section 401 Certification Regulation, Regulation No. 82. The Commission revised Regulation No. 82 in 2018. The following federal permits require Section 401 certifications in Colorado: 1) federal Clean Water Act Section 404 permits issued by the Army Corps of Engineers for the discharge of dredged or fill material; 2) licenses issued by the Federal Energy Regulatory Commission (FERC); 3) federal Clean Water Act Section 402 permits issued for federal facilities by the EPA; and 4) other federal permits or licenses that may be determined to require a Section 401 certification.

The Section 401 Certification Regulation sets forth the process to request a Section 401 certification in Colorado, and identifies the procedures and criteria that will be used by the Division in acting on certification requests. Based upon the information provided by an applicant, the Division may approve, conditionally approve, or deny Section 401 certification requests. Denial of certification triggers denial of the federal permit or license for which certification is requested. Applicants for Section 401 certification, except for federal Section 402 NPDES permits, must select BMPs and

commit to the operation, maintenance, and replacement of these water quality protective measures for all aspects of their project, for the life of the project.

Federal Section 402 permit applicants at a minimum are required to include a copy of the Section 402 permit submitted to EPA, while FERC and all other federal licenses require a letter of application with specific project details.

9. Control Regulations
Section 25-8-205 of the Colorado Water Quality Control Act authorizes the Commission to adopt "control regulations" for a variety of water quality control purposes. Control regulations may be adopted to establish prohibitions, standards, effluent limitations, and/or precautionary measures applicable to facilities or activities that may adversely impact water quality.

Current control regulations of statewide applicability include:

- Regulations for Effluent Limitations, Regulation No. 62;
- Pretreatment Regulations, Regulation No. 63;
- Biosolids Regulation, Regulation No. 64;
- Regulations Controlling Discharges to Storm Sewers, Regulation No. 65;
- Financial Assurance Criteria Regulations for Colorado Housed Commercial Swine Feeding Operations, Regulation No. 66;
- Animal Feeding Operations Control Regulation, Regulation No. 81;
- 401 Certification Regulation, Regulation No. 82
- Reclaimed Water Control Regulation, Regulation No. 84;
- Nutrients Management Control Regulation, Regulation No. 85.
- Graywater Control Regulation, Regulation No. 86

Current watershed protection control regulations include:

- Dillon Reservoir Control Regulation, Regulation No. 71;
- Cherry Creek Reservoir Control Regulation, Regulation No. 72;
- Chatfield Reservoir Control Regulation, Regulation No. 73;
- Bear Creek Watershed Control Regulation, Regulation No. 74;

10. Nonpoint Source Management Program
Prior to 1987, CWA programs were primarily directed at point source pollution discharged from discrete and identifiable industrial and municipal sources, such as pipes and other outfalls. In contrast, except for general planning activities (for example those discussed in CWA Section 208), little attention had been given to nonpoint source pollution, which is diffuse rain and snowmelt runoff over land that can carry pollutants to waterbodies. The 1987 CWA amendments authorized measures to address such pollution by directing states to develop and implement nonpoint pollution

management programs (Section 319). Federal financial assistance was authorized to support demonstration projects and actual control activities.

Colorado's nonpoint source pollution management program is defined in the Nonpoint Source Program Management Plan and is focused on both restoring and protecting water quality through priority nonpoint source pollution reduction activities such as implementation of on-the-ground best management practices. The Division's Nonpoint Source Program develops and, in collaboration with many partners, implements this Plan. In order to ensure that state nonpoint source programs are current and relevant, EPA issues guidance for updating nonpoint source management plans every five years. The Nonpoint Source Program completes these plan updates through a public Administrative Action Hearing process with the Commission. The current Nonpoint Source Program Management Plan can be found at www.npscolorado.com.

The Nonpoint Source Program Management Plan not only establishes priority activities undertaken by the Division to reduce nonpoint source pollution, including developing programs that promote, for example, outreach and education, but the priorities identified in the plan also serve as the basis for actions taken by local nonpoint source partners who receive funding assistance from the Division. The Division's Nonpoint Source Program manages federal financial assistance provided under Section 319. This federal funding is distributed through a competitive process to local nonpoint source project sponsors and must be administered consistently with the priorities identified in the Nonpoint Source Program Management Plan (for additional information, see subsection E in the Assistance Section).

Partners such as the Nonpoint Source Alliance and local project sponsors who receive funding assistance are critical to the successful implementation of the Nonpoint Source Program Management Plan and the restoration and protection of water quality. Nonpoint source pollution reduction activities are voluntary and rely on locally-driven initiatives with locally-engaged participants. The Division's Nonpoint Source Program, in collaboration with EPA, recognizes local nonpoint source accomplishments every year by identifying success stories that demonstrate improved water quality from nonpoint source pollution reduction activities. Additional information about these success stories can be found at www.npscolorado.com.

E. Assurance

1. Monitoring and Oversight

The Division is responsible for ensuring the regulated community complies with the requirements of the Colorado Water Quality Control Act and its implementing regulations. Compliance inspections are conducted for a portion of facilities with CDPS permit coverage and are prioritized based on factors that vary by sector, including but not limited to the length of time since last inspection, size of the facility, timing of CDPS permit renewal, and the facility's recent compliance history.

Because CDPS permits and control regulations cover a variety of sectors, compliance inspections vary widely in scope. A typical inspection includes a review of any self-reported data, discharge logs, analytical results, calibration records, interviews with operators, and physical evaluation of the facility, including sampling of effluent when necessary to determine effluent characterization and facility compliance. The Division also conducts inspections of unpermitted facilities and discharges, typically as part of investigation and follow up to a citizen complaint or a reported spill.

2. Enforcement Activities

Compliance and enforcement procedures and protocols are outlined in the Division's Enforcement Management System. Oversight and enforcement are conducted in cooperation with other sections within the Division and the EPA. Compliance and enforcement work range from informal compliance assistance services to formal enforcement activities, which are authorized by statute. Staff review self-reported and field-generated data and compare the information to established enforcement criteria in order to determine an appropriate compliance or enforcement response, ranging from the issuance of compliance advisories to the development of formal enforcement cases. The formal enforcement case process includes corrective action requirements to ensure compliance, calculation of civil penalties, and negotiation of settlements. Monies collected from civil penalty assessments are routed to the Water Quality Improvement Fund.

Part III. Safe Drinking Water

A. Introduction

The Division is delegated enforcement responsibility (primacy) for implementing all aspects of the federal Safe Drinking Water Act that apply to public drinking water systems and the Colorado Primary Drinking Water Regulations (CPDWR). To retain primacy, the Division must comply with the primacy regulations published in the National Primary Drinking Water Regulations Implementation, 40 CFR 142, with the following minimum requirements:

- Adoption of regulations no less stringent than the national primary drinking water regulations in effect under 40 CFR 141;
- Implementation of adequate procedures for enforcement, including:
    - Maintenance of an inventory of public water systems;
    - A systematic program for the conduct of sanitary surveys;
    - Establishment and maintenance of a state program for the certification of analytical laboratories conducting measurements of drinking water contaminants;
    - Assurance of the availability of state laboratories certified by the Administrator of EPA and capable of analyzing all contaminants specified in the state primary drinking water regulations;
    - Reviewing design for new and modified water treatment facilities to ensure they will be capable of compliance with the state primary drinking water regulations,
    - Statutory or regulatory enforcement authority adequate to compel compliance, including:
    - Authority to apply the primary regulations to all public water systems;
    - Authority to sue in courts of competent jurisdiction to enjoin any threatened or continuing violation of the primary drinking water regulations;
    - Right of entry and inspection of water systems;
    - Authority to require water systems to keep appropriate records and report to the state
    - Authority to require water systems to provide consumer confidence reports and public notice that are no less stringent than those promulgated by EPA;
    - Authority to assess civil or criminal penalties for violations of primary drinking water regulations;
- Establish and maintain record keeping and reporting of its activities as specified by regulation;
- Issuance of any variances or exemptions in a manner no less stringent than the requirements of the Act;
- Adoption and implementation of a plan for the provision of safe drinking water under emergency circumstances; and
- Authority for assessing administrative penalties.

B. Summaries of Key Fundamental Elements

1. Regulation and Policy Development

The Division, in consultation with interested stakeholders, is responsible for drafting proposed regulations for consideration and adoption by the Commission. New regulations may be proposed for adoption based on consumer health risks identified solely within the Colorado program or in response to revisions to or new national primary drinking water regulations promulgated by EPA. Unlike the federal Clean Water Act program, states with primacy for the Safe Drinking Water Act do not have the option of adopting only part of the federal requirements. Failure by Colorado to have primary regulations at least as stringent as the national primary drinking water regulations is grounds for revocation of Colorado's Safe Drinking Water Act primacy and associated funding provided by the federal Public Water System Supervision (PWSS) and Drinking Water State Revolving Fund (DWSRF) capitalization grants. Accordingly, each new or revised federal primary drinking water regulation begins a regulatory adoption cycle for the Colorado program. This effort may involve simply adopting specific requirements of the federal regulation but may also involve making decisions about which regulatory approach to pursue from among the options provided in the federal regulations, developed internally or recommended by stakeholders.

Federal and Colorado regulations require public water systems to always provide consumers with safe drinking water, even under challenging conditions. To achieve this goal, the CPDWR establishes multiple water system requirements based on the multiple risk-multiple barrier concept:

- Department-approved design plans and specifications (Risk Prevention);
- Operation of treatment works by certified treatment operators (Risk Prevention);
- Installation and proper operation of specified treatment techniques such that associated performance requirements are achieved (Risk Prevention);
- Provision of treated water that meets quality standards (Risk Management);
- Compliance monitoring and reporting to the Division as specified in the regulations including a monitoring plan containing a process flow schematic (Monitoring and Compliance); and
- Monitoring and reporting to consumers that includes, among other topics: water sources, source susceptibility to contamination, monitoring results and levels of contaminants, and potential health effects of any contaminant detected in violation of health standards (Individual Action).

The regulations are tailored to address contamination risks from a number of causes, including:

- Natural or man-made contaminants that may be present in the untreated source water, including:
    - Microorganisms;
    - Organic chemicals;
    - Inorganic chemicals; and
    - Radionuclides.

- Contaminants that may result from treatment chemical impurities, interactions between treatment chemicals and contaminants in the water, or contaminant concentration within the treatment process, including:
    - Coagulant impurities such as acrylamide and epichlorohydrin;
    - Disinfection byproducts; and
    - Recycled filter backwash flows.
- Microbiological contaminants that gain entrance to treated water due to defects in the water system's storage or distribution system;
- Contaminants that gain entrance to the distribution system as a result of cross-connections or storage tank integrity problems; and
- Contaminants that leach from distribution or plumbing system components such as lead.

To make this comprehensive web of contamination barriers more cost-effective, many of the regulatory requirements are also tailored to the type and size of the public water system and their specific associated risks. For example:

- Systems using surface water sources must provide filtration treatment for the control of certain microbiological contaminants, while systems using ground water sources do not;
- Systems that serve residential populations must monitor and control contaminants that cause adverse health effects due to long and short term exposure, while systems that serve transient populations must only address contaminants that cause adverse health effects due to short-term exposure; and
- Systems serving large numbers of consumers must generally monitor more frequently than systems serving small numbers of consumers.

This tailoring of requirements is achieved by defining different categories of public water systems to which different requirements apply.

A public water system is defined as "any water system for the provision to the public of water for human consumption if such system has at least 15 service connections or regularly serves an average of at least 25 individuals daily for at least 60 days out of the year." This broad category is then divided into systems that serve more than 25 year-round residents and those that do not. Systems that serve more than 25 year-round residents are classified as community public water systems, while all remaining systems are classified as non-community public water systems.

The regulations establish two types of systems within the category of Non-Community public water systems:

- Transient (e.g., restaurants, campgrounds) that serve 25 or more different people daily; and
- Non-transient (e.g., school, business, etc.) that serve 25 or more of the same people daily for six or more months of the year.

Currently, there are approximately 2,100 regulated public drinking water systems in Colorado. Regardless of water system size, complexity, or the treatment processes used, multiple risks threaten a water system's ability to provide continuously safe drinking water. But the multiple risks can be eliminated or mitigated by the application of these associated multiple risk barriers:

- Risk Prevention;
- Risk Management;
- Monitoring and Compliance; and
- Individual Action.

These conceptual barriers, when translated into specific actions taken by the community, the government, the watershed, the utility, the water plant, and individual consumers, can effectively eliminate contamination risk and ensure the continuous provision of safe drinking water.

There are presently 88 regulated drinking water contaminants, generally divided into six major categories along with turbidity: seven microorganisms, 16 inorganic chemicals, 53 organic chemicals, three disinfectants, four disinfection byproducts, four radionuclides and turbidity. Contaminants for which it is difficult to establish a Maximum Contaminant Level (MCL) are controlled by means of a treatment technique. Treatment technique requirements have been established for 10 specific contaminants including:

- Turbidity and the following microorganisms:
    - *Cryptosporidium*;
    - *Giardia lamblia*;
    - Heterotrophic plate count;
    - Total Coliforms
    - *Legionella*; and
    - Viruses.
- Lead and copper whether due to raw water contamination or corrosion within the system;
- Certain coagulant monomers including:
    - Acrylamide; and
    - Epichlorohydrin.

Certain systems using surface water must also use a treatment technique to remove disinfection byproduct precursors.

The EPA's website provides an informative table that summarizes the regulated contaminants. It identifies the major category of the contaminant, whether the contaminant is controlled by means of an MCL or treatment technique, maximum contaminant level goals, a summary of potential health effects from long-term exposure, and common sources of each contaminant in drinking water. This EPA table is located at: http://water.epa.gov/drink/contaminants/upload/mcl-2.pdf.

In Colorado, there are several treatment requirements applicable to all public water supplies. All systems, except for a limited number of protected ground water systems, are required to disinfect the water supply to control bacteria and viruses. Surface water suppliers are required to filter to remove other regulated microorganisms that cannot be effectively controlled by chemical disinfection. Systems having raw water that cannot meet an established MCL are required to either treat the water so that compliance with the MCL is attained or to find an alternative water supply. Under the 1996 amendments to the federal Safe Drinking Water Act, new standards will be developed by EPA from a federal list approximately every six years. EPA has also established a list of secondary standards related to the aesthetic quality of the drinking water. Federal and state laws provide that these secondary standards are not enforceable.

2. Public Water System Inventory Development and Maintenance

Colorado is required to develop and maintain an inventory of public water systems as a condition of maintaining primacy for the federal Safe Drinking Water Act. Unlike the federal Clean Water Act program where controls are established by issuance of a site specific (or general) permit that details compliance requirements for a specific regulated entity, the Division does not issue permits to its regulated public water systems. Instead, the federal and Colorado drinking water regulations are self-implementing, and a public water system must consult the regulations to determine the requirements applicable to it depending on their water source, system size, residential classification, and type of treatment process utilized. The Division becomes aware of new systems by various means, including system self-disclosure, citizen complaints or inquiry, or discovery by our field staff or local health departments. Regardless of the means, the inventory process is used to document the characteristics of the public water system and record them in the Colorado data system, which is linked to the national drinking water database. The system characteristics are then used to determine how the CPDWR applies to the system.

3. Assistance to Public Water Systems

Much of the assistance provided to public water systems in Colorado is derived from the capitalization grant authorized by Section 1452 of the 1996 federal Safe Drinking Water Act Amendments. While 69% of Colorado's annual capitalization grant is reserved to support the state revolving fund, which provides below-market rate loans to water systems for infrastructure improvements, up to 31% of the grant may be used for activities designed to strengthen the ability of public water systems to provide consistently safe drinking water. The set-asides provide funds to reduce specific known contamination risks such as source water contamination, insufficient system capacity, and inadequately certified operators. They also provide flexibility for states to design activities to address risks unique to the state's circumstances, provided the proposed activities are included within a written strategy developed with opportunity for public input and linked to an EPA approved set-aside work plan that meets minimum federal Safe Drinking Water Act requirements. The text box below summarizes the set-asides available from the annual revolving fund capitalization grant as they apply to public water systems (PWS).

Drinking Water State Revolving Fund Set-Aside Reference Chart

Amount	Statutory Citation	Purpose
4%	**1452(g)(2)**	**DWRSF Administration and Technical Assistance to PWSs**
2%	**1452(g)(2)**	**Small Systems Technical Assistance**
		Technical Assistance to PWSs Serving <10,000 people
10%	**1452(g)(2)**	**State Program Management**
		1. Administer the State PWSS Program
		2. Administer or Provide Source Water Technical Assistance
		3. Develop and implement a capacity development strategy
		4. Develop and Implement an Operator Certification Program
15%	**1452(k)**	**Local Assistance and Other State Programs**
		No more than 10% of Capitalization Grant Amount can be used for any one activity
		1. Loans to acquire land or conservation easements for protection of source waters
		2. Loans to provide funding to implement voluntary, incentive-based source water quality protection measures
		3. Assistance to PWSs as part of capacity development strategy
		4. Assistance to establish and implement wellhead protection programs under Section 1428

The Division has elected to provide assistance in the following major categories: compliance assistance, source water protection, capacity development and financial assistance.

a. Compliance Assistance
Compliance assistance is provided to public water systems to facilitate their compliance with specific regulatory requirements. It generally includes one on one communication to explain specific requirements including, for example, explaining monitoring requirements, developing compliance options to resolve monitoring or standards violations, and explaining how to properly complete required forms, provide public notice, or conduct and report performance monitoring.

b. Source Water Protection

As the sensitivity of analytical methods improved in the 1970's, many public water sources were found to be contaminated with organic chemicals, some of which are considered human carcinogens. Water systems soon learned how quickly a valued water source could be so degraded by contaminants as to be useless or even a liability. It became apparent to water systems and regulators that it is far less expensive to prevent source water contamination than to find a new source or treat the current source to remove contaminants to safe levels. The 1986 Amendments to the federal Safe Drinking Water Act required the establishment of state wellhead protection programs, and in the late 1980's the Division began implementing its wellhead protection program. The 1996 Amendments to the Safe Drinking Water Act strengthened and expanded the requirements to protect source waters. It extended previous wellhead protection efforts to include surface water sources and mandated states to provide water systems with a source water assessment as the first step to encouraging water systems to undertake voluntary protection efforts. In Colorado, source water protection now encompasses both the wellhead protection and surface water protection efforts.

Source Water Protection Phases: Assessment & Protection

"Assessment" consists of four elements:

- Delineation of a public water system's source water area.
- A contaminant inventory to identify potential sources of contamination within the source water area.
- A susceptibility analysis to determine the potential risk to a system of a release from a facility or activity in their source water area.
- Public involvement to inform the public of the vulnerability of their drinking water supply.

The "protection" phase is voluntary and is the responsibility of local government.

Colorado's assessment phase produced a report for each public water system that included a map of the source water assessment area, the locations of potential sources of contamination, and a ranking of the susceptibility of each water source. It was recognized that this initial assessment was a baseline evaluation to provide a starting point for protection planning. The assessment reports were released to all public water systems in early 2005.

Utilizing the information developed during the assessment effort, the state is now encouraging PWS and planning partners to engage in protection planning. The source water protection effort is providing technical and financial assistance to PWS and governmental entities to facilitate their efforts to develop protection plans that will minimize the risk of source water contamination.

Available technical assistance includes a state-designed protection plan template that participating entities can use to develop their protection plans. The template simplifies the process and allows flexibility to individualize a protection plan while helping to organize the plan's four essential elements:

- Stakeholder involvement;
- Protection plan development;
- Protection plan implementation; and

- Monitoring results and updating the plan.

Site-specific technical assistance for protection planning is also provided by the Colorado Rural Water Association.

Funding to support the source water protection planning effort is provided from set-asides to the DWSRF capitalization grant for two types of projects: pilot planning projects and development and implementation projects. Additional information on grants is provided in Part IV of this Guide. Grants will support the development of exemplary and comprehensive source water protection plans. It is anticipated that, once completed, these pilot projects will serve as examples to other entities interested in developing protection plans for their drinking water sources. The complete protection planning process is outlined in the Division's source water protection planning toolkit. The protection planning template and the toolkit are available on the Colorado Source Water Assessment and Protection Program (SWAP) website at (www.colorado.gov/cdphe/swap).

c. Capacity Development

Public Water System Capacity Development Components

Technical Capacity
- Source Adequacy
- Infrastructure Adequacy
- Proper Operation

Managerial Capacity
- Ownership Accountability
- Effective Staffing & Organizational Structure
- Effective External Linkages

Financial Capacity
- Revenue Sufficiency
- Fiscal Management and Financial Controls
- Credit Worthiness

The 1996 Amendments to the federal Safe Drinking Water Act authorized the use of funds set aside from the state revolving fund capitalization grant to support a state developed public water system capacity development strategy. The term “Capacity Development” is used within the federal Safe Drinking Water Act and is a frequently misunderstood term because it implies building infrastructure. Rather than building infrastructure, the capacity development effort conducted under the federal Safe Drinking Water Act set-aside provisions is designed to build the capabilities of public water systems to provide continuously safe drinking water to their customers. The program is not designed to build physical infrastructure but to enhance the ability of the water system to manage and operate their existing infrastructure effectively and to identify those situations where infrastructure changes are essential. In the federal Safe Drinking Water Act context, water system capacity is defined in three dimensions:

- Technical;
- Managerial; and
- Financial.

Section 1420 of the federal Safe Drinking Water Act defines the components required of each state’s capacity development program. These include:

- Primary drinking water regulation;

- Identification of public water systems in significant non-compliance and submittal of a report on the program's success in improving the capacity of these systems;
- A capacity development strategy developed with the opportunity for public input; and
- A triennial report to the state's governor and the public analyzing the efficacy of the strategy.

States must have legal authority to ensure certain new public water systems have capacity. States that do not develop and implement such a strategy lose 20% of their annual capitalization grant.

The Division has developed a Capacity Development Strategy that synthesizes the prevention activities of the federal Safe Drinking Water Act's set-asides and provides an overview of the multiple goals to be achieved. Strategy implementation details are provided in individual work plans tailored to the federal Safe Drinking Water Act requirements for each set-aside. Individual work plans are developed for the State Program Management Set-aside, the Local Assistance and Other State Programs Set-aside, and the Small System Technical Assistance (SSTA) Set-aside. EPA reviews and approves each work plan. Colorado also identifies work plan activities and costs in the state's annual Intended Use Plan for the Capitalization Grant, which is presented to and approved by the Commission.

The current strategy and associated work plans are available on the Division's website. The current Intended Use Plan is available on the Commission's website.

The Local Assistance Unit is the focal point for strategy development and documentation of the extensive public water system capacity development activities of the Division. However, capacity development activities under the umbrella of the strategy are implemented by multiple Sections and Units of the Division, including the Local Assistance Unit, Compliance Assurance Section, Field Services Section, Engineering Section, and select activities of the Division's Watershed Program.

Thumbnail sketches of capacity development activities pursued by the named Sections and Units of the Colorado Safe Drinking Water Act are provided below. More detailed and current lists of activities are available in the current strategy and work plans available on the Division's website.

i. Local Assistance Unit
The Capacity Coaching workgroup includes two certified operators as Capacity Coaches who provide on-site training and technical assistance to small water systems throughout Colorado. They also support a wide variety of special projects, workshops and group training efforts requiring specialized technical experience.

- The Security and Emergency Preparedness Program promotes security and all-hazards preparedness for public water systems including education, planning exercises, and partnership development through the Colorado Water/Wastewater Agency Response Network (CoWARN) and National Incident Management System (NIMS) initiative.

- The Drinking Water Excellence Program promotes treatment process optimization and provides advanced and highly specialized technical training and recognition for surface water treatment facilities.
- Through a long-term water system training strategy (available on the Division's website), the Local Assistance Unit leverages training and technical assistance partnerships to deliver focused activities including short schools, a mobile training unit, distribution system training, monitoring plan/technical, managerial and financial (TMF) workshops, a baffling factor study, distribution systems training center, and other seminars and conferences.
- The SWAP work group assists public water systems with source water protection efforts as described above.

ii. Compliance Assurance Section

- Design and implement system-specific monitoring and compliance programs for new regulations.
- Develop policy and provide training to drinking water system staff to prepare them to meet requirements of new regulations.
- Identify water systems that are failing to comply with drinking water regulations so capacity resources can be directed to provide assistance.
- Develop and provide training to water system staff on regulatory requirements.

iii. Engineering Review and Field Services Sections

- Perform capacity reviews of all new public water systems to ensure they possess adequate technical, managerial and financial capacity to comply with CPDWR and continuously provide safe drinking water.
- Review capacity of all public water systems seeking loans from the DWSRF.
- Provide on-site technical assistance during routine sanitary surveys of existing public water systems.
- Manage the effort to assist water systems with radionuclides violations to achieve compliance.
- Provide an internal expert on drinking water treatment, storage, and delivery to provide technical assistance to drinking water systems on a variety of issues including emerging technologies, design and treatment issues, and the development of training programs and guidance documents for both public water systems and internal staff.

4. Public Water System Compliance Assurance

The Division allocates a significant portion of available resources to assuring that public water systems comply with all applicable regulations:

- Monitoring and Reporting. This is generally a review of water system-reported data to ensure the required monitoring was conducted and that the results of the monitoring are within acceptable limits. This also includes an on-site review of water system monitoring and reporting procedures and records conducted as part of a sanitary survey.

- Public Notification. This activity ensures that appropriate information about any water system violations is provided to the system's consumers and that certain water systems provide their consumers with an annual Consumer Confidence Report (CCR). The CCR is the centerpiece of the right-to-know provisions in the 1996 federal Safe Drinking Water Act. It allows customers to know what is in their drinking water, how the water was treated, and the source of their water. Every community public water system must provide a report to each of its customers annually. The report must include the following: the telephone number and name of the system's local contact; the telephone number of the EPA Hotline; all sources of drinking water used by the system; the treatment techniques used; definitions of terms used in the report; a list of all tested contaminants; a table of all detected contaminants listing the name, date of sample, the applicable standards, the level detected and most likely source of the contaminant; and any violations for the reporting year listing the type of violation, the length of the violation, any pertinent health effects information, and steps the system is taking to correct the violation.
- System Design and Construction. New water systems and modifications to existing water systems require approval prior to their construction to ensure their ability to provide safe drinking water. On-site reviews verify that water works are in compliance with this requirement.
- Proper Operations. Treatment techniques required by the CPDWR mandate installation and proper operation such that specified performance requirements are achieved. On-site surveys also verify that approved water works are being properly operated such that the performance requirements are consistently achieved.

Compliance failures at public water systems do occur. When failures are identified, the Division's goal is to take timely and appropriate action that will result in a return to compliance. In general, compliance assurance efforts are premised on the belief that most regulated entities seek to maintain compliance with regulatory requirements.

For systems that frequently violate or fail to respond to informal Division actions to encourage their return to compliance, the Division may immediately escalate the formality of response. Additionally, the EPA has developed an enforcement targeting tool. Based on this approach, resources are targeted to address those public water systems that are determined to pose the most significant health threats. The Division is obligated to address these priority systems with formal enforcement action in a timely fashion to retain primacy. Penalties to recoup a violator's economic benefit and to encourage deterrence may also be imposed.

Systems having violations that are egregious, or that involve data falsification, are immediately escalated to receive formal enforcement, with a penalty to recoup financial advantage and a not-insignificant deterrent penalty.

When a situation that presents an immediate threat to health is discovered at a public water system, the Division immediately assembles its acute team, consisting of the Drinking Water Program technical expert and compliance and field service staff. The acute team's most immediate task is to ensure action is taken to prevent a waterborne disease outbreak by investigating the circumstances

and determining if immediate public notification is necessary. If so, an immediate enforcement order (often referred to as a "Boiled/Bottled Water Order") is promptly issued, outlining public notice requirements and additional measures to be taken by the public water system to address any potential contamination.

5. Assistance to Consumers

The Division provides assistance to consumers both directly and indirectly. Direct assistance is provided to consumers who contact our staff in person, via email or by telephone. These consumers generally request information about the water quality provided by their private well or their public water system. Our ability to assist private well owners to assess their water quality or diagnose a suspected water quality problem is limited by the lack of Division funding to support this activity. The Division's response capacity is generally limited to explaining how to access laboratory services for various chemical, microbiological, physical or radiological analyses and referring callers to generic information about private wells that is maintained on our website.

For consumers requesting information about their public water system, staff are able to convey specific information such as where to find a water system's current CCR and to provide specific information about the system, including contact information, the name of the system's certified operator, system compliance status, and the status of any condition that resulted in issuance of a public notice by the water system.

Part IV. Financial Assistance

The Division provides various financial assistance opportunities to assist with efforts towards protecting public health and the environment. The following section describes the financial assistance programs administered by the Division.

A. State Revolving Funds

The State Revolving Funds (SRFs) provide low-interest loans to governmental entities for drinking water and water quality improvement projects. Governmental agencies, which include cities, towns, counties and special districts, are eligible to receive funds. Private-not-for-profits are eligible for the Drinking Water SRF. A proposed project must be identified on the current Project Eligibility List, which is updated annually by the Division, subject to approval by the Commission and Joint Resolution by the Colorado General Assembly and is signed by the Governor. To receive a loan, in addition to being identified on the current eligibility list, eligible entities must comply with the following basic requirements:

- Possess an approved planning document that demonstrates the economic, environmental, and engineering feasibility of the proposed project and that the project is consistent with any approved water quality management plan;
- Complete and submit a loan application packet;
- Determination that the minimum standards for acceptance into the program have been achieved and the governmental agency is financially solvent;
- Enter into a loan agreement with the Colorado Water Resources and Power Development Authority;
- When bidding the project, include the State of Colorado standard bidding specifications; and
- Initiate construction in accordance with applicable program requirements/approvals.

The SRFs provide pre-loan planning and design grants that offer financial assistance to applicants with costs associated with complying with program requirements. The criteria for eligibility are provided in the annual Intended Use Plans found on the Commission's website. Grant funds may be used to support a variety of project development activities: project needs assessments; technical, managerial and financial reviews of public water systems; environmental assessments; engineering design documents; energy audits; and legal fees associated with formation of a legal entity capable of receiving SRF assistance. The SRFs also provide design and engineering grants to assist with the cost of design. These funds help position the project for moving into construction after loan execution.

The Division—in partnership with the Authority, DOLA, and the Division of Local Government (DLG) (collectively the SRF agencies)—administer the SRFs. The three agencies play distinct, yet important, roles in ensuring the success of the program. The SRF agencies operate under formal operating agreements and MOAs that identify their respective roles and responsibilities:

- The Division is the EPA-designated primacy agency responsible for managing the administrative and technical components of the programs, including the management of the DWSRF set-asides.
- The Authority is responsible for financial structure, budgets, investments, disbursements of funds, and compliance with all federal reporting requirements.
- The DLG provides financial and managerial assistance to systems, coordinates funding activities with the Funding Coordination Committee, markets the SRFs to potential applicants and conducts financial capability assessments of communities' ability to repay loans.

To ensure the SRF Agencies are working toward the same common goals approved and supported by the Commission and the Authority Board, a shared mission statement and defined goals have been adopted by the SRF Agencies and the Commission. These goals are included in the annual Intended Use Plans.

The mission of the SRF agencies that administer Colorado's SRFs is to actively target and allocate affordable resources to projects and initiatives that result in significant public health and/or environmental benefits while maintaining perpetual, self-sustaining revolving loan fund programs. The SRF agencies are dedicated to providing affordable financing to systems by capitalizing on all available funds to address the state's priority water-related public health and water quality issues by providing affordable financing to communities for projects they need and support. The SRF agencies will manage the funds in a manner to provide benefits for current and future generations.

Applicable requirements for the SRFs are described in the Water Pollution Control Revolving Fund Rules, Regulation No. 51, the Drinking Water Revolving Fund Rules, Regulation No. 52, and associated annual Intended Use Plans. These documents can be found on the Commission's website.

B. Water Quality Improvement Fund Grant Program

The Water Quality Improvement Fund (WQIF), provides grant funds for water quality improvement projects using civil penalties from water quality violations. State House Bill 11-1026 amended the statute to authorize grants for stormwater management training and best practices training to prevent or reduce the pollution of state waters. HB17-1306, titled the "Safe Water in Schools Act," added another category to the WQIF establishing a grant program to assist public schools as defined in sections 22-1-101(1) and 25-1.5-203(1)(f) C.R.S. with lead testing for their drinking water. This is a three-year program, which will sunset on June 30, 2020.

The WQIF rules, Regulation No. 55, provide the eligibility and prioritization framework that will be used to award grants from the WQIF. Funding is dependent upon fund balance and is based on violations that were committed on or after May 26, 2006 and penalties paid into the fund.

Entities eligible for grants in Categories 1 thru 4 include 1) governmental agencies; 2) publicly owned water systems; 3) private not- for- profit public water systems; 4) not- for- profit watershed groups;

5) not-for profit stormwater program administrator in accordance with 25-8-802 C.R.S.; 6) not-for-profit training provider; and 7) private landowners impacted by a water quality violation.

Entities eligible for grants in Category 5 include public schools that are not subject to the federal lead and copper rule, 40 CFR part 141, subpart I, and public schools that have not tested or are not in the process of testing their drinking water for lead.

C. Source Water Protection Grants

Funding to support the source water protection planning effort is provided from set-asides to the DWSRF capitalization grant for two types of projects: pilot planning projects and development and implementation projects. Pilot planning project grants will be of a limited number, but broad in spectrum. They will support the development of exemplary and comprehensive source water protection plans. It is anticipated that, once completed, these pilot projects will serve as examples to other entities interested in developing protection plans for their drinking water sources. Grant amounts for these projects may range up to $50,000. This additional analysis is expected to underscore the importance and significance of protecting a system's source water. Development and implementation projects will be funded in an amount of up to $5,000. These grants require a one-to-one financial match (cash or in kind).

D. Small Communities Water and Wastewater Grant Fund

Senate Bill 14-025 revised and consolidated the Small Communities Water and Wastewater Grant Fund to be codified in section 25-1.5-208, C.R.S. This section establishes a grant program under the Colorado Water Quality Control Act to assist suppliers of water and domestic wastewater treatment works that serve a population of not more than five thousand people with meeting their responsibilities to protect public health and water quality. Money for the fund originates from the severance tax perpetual base fund (up to $10 million) and is applied to both drinking water and wastewater projects.

E. Natural Disaster Grant Fund

House Bill 14-1002 created the Natural Disaster Grant Fund to be codified in section 25-8-608.7, C.R.S. This section establishes a grant program under the Colorado Water Quality Control Act to repair water infrastructure impacted by a natural disaster. The purpose of the fund is to award grants to local governments, including local governments accepting grants on behalf of and in coordination with not-for-profit public water systems, under rules promulgated by the commission for the planning, design, construction, improvement, renovation or reconstruction of domestic wastewater treatment works and public drinking water systems that have been impacted, damaged or destroyed as a result of a natural disaster. The division may only award grants to be used in counties for which the governor has declared a disaster emergency by executive order or proclamation under section 24-33.5-704, C.R.S.

F. Nonpoint Source Grant Funding

The Division funds nonpoint source projects to help achieve two overarching objectives of restoring and protecting waterbodies from nonpoint source pollution impacts. A federal grant from EPA under Section 319(h) of the CWA funds these projects, and priorities for use of the 319 funds are defined in the Nonpoint Source Management Plan at www.npscolorado.com. The funds are provided to local project sponsors through cost reimbursement contracts with the state for projects chosen during an annual, competitive process. This process begins with a request for applications that is released every fall. The Division's Nonpoint Source Program evaluates project applications in consultation with EPA and the NPS Alliance, and the Water Quality Control Commission makes final funding decisions during an administrative action hearing in the spring. Non-federal matching funds equal to at least 40% of the total project cost are required. Match can be cash and/or in-kind.

These Section 319 funds can be used for both watershed planning and implementation of on-the-ground, best management practices that are focused on restoring waterbodies impaired by nonpoint source pollution or for protecting waterbodies from further degradation from nonpoint source pollution. Watershed plans must meet EPA's Nine Elements for Watershed-Based Plans, and implementation projects must be identified in an EPA Nine Element Watershed-Based Plans.

G. Colorado Healthy Rivers Fund

Senate Bill 02-087 established the Colorado Watershed Protection Fund. The name was changed subsequently to the Colorado Healthy Rivers Fund. The legislation authorizes the fund to be added to the Colorado Individual Income Tax Refund Check-off Program to give taxpayers the opportunity to voluntarily contribute to watershed protection efforts in Colorado. From 2002 through 2014 the program was funded solely through the tax refund check-off program. In 2016 the fund was restructured by the legislature to receive contributions on a year-round basis as well as through the tax refund check-off program.

The legislation provides that funds be made available in a grant program established jointly by the Colorado Water Conservation Board (CWCB) and the Commission in cooperation with the Colorado Watershed Assembly (CWA). The Division, CWCB, and CWA collaborate to evaluate project applications that are submitted during a competitive process and jointly make decisions regarding projects that will receive funding.

Projects should be led by a local, community-based organization and should be watershed efforts committed to collaborative approaches that involve locally and/or regionally-based diverse interests. At least 20% in-kind or cash match is required to implement or plan projects intended to restore and/or protect water, land, and other natural resources within watersheds.

H.Funding Coordination Committee

Funding for drinking water and wastewater projects is coordinated by the Funding Coordination Committee, which meets regularly to discuss partnering and pooling funds. Participants include the Division, DLG, the Authority, USDA Rural Development, and the Colorado Water Conservation Board.

Appendix A: Colorado Water Quality Control Act and Federal Clean Water Act Historical Perspective

The major elements of the Colorado Water Quality Control Act largely reflect the major features of the federal Clean Water Act—the establishment of water quality classifications and standards, implemented principally through a point source discharge permit program. However, the scope for the federal Clean Water Act is largely limited to surface water, whereas the state act addresses surface water and ground water.

The Colorado Water Pollution Control Act was first adopted in 1966, creating authority to adopt water quality standards consistent with the requirements contained in the 1965 amendments to the federal Clean Water Act.

In 1972, Congress adopted a major overhaul of the Federal Water Pollution Control Act, including changes that:

- Established the National Pollutant Discharge Elimination System (NPDES) permit program to regulate point source discharges of pollutants by requiring that dischargers meet both water quality-based and technology-based effluent limitations;
- Authorized the EPA to establish technology-based effluent limitations for certain categories of dischargers;
- Required states to develop a comprehensive and continuing planning process for water quality management, including the adoption of area wide waste treatment management plans (Section 208 plans);
- Authorized EPA to establish water quality standards where any state fails to adopt standards that meet the requirements of the federal Clean Water Act; and
- Substantially expanded a program to provide federal grants for the construction of domestic wastewater treatment plants.

In 1973, the Colorado Water Pollution Control Act was completely rewritten (and renamed the Colorado Water Quality Control Act) to bring it into compliance with the new federal law. A second total rewrite of the Colorado Water Quality Control Act was adopted by the Legislature in 1981. Senate Bill 81-10 moved for the first time to a partially cash-funded discharge permit system. Among the other innovations of SB 81-10 were provisions requiring that "economic reasonableness" be taken into account at various points in the water regulation process. EPA objected that certain provisions—for example, variances from water quality standards based on economic impact—were inconsistent with provisions of the federal Clean Water Act and could result in EPA withdrawing authority for the state to administer the discharge permit program in lieu of a federal program.

In 1985, the Legislature amended the Colorado Water Quality Control Act by adopting SB 85-83, which was aimed in large part at eliminating the deficiencies alleged by EPA in SB 81-10. One result

of the 1985 amendments was the adoption of Section 25-8-207, creating a new basis for reconsideration of water quality classifications and standards, in part because the SB 81-10 water quality standards variance provision was deleted. Section 25-8-207 creates an automatic right to a rulemaking hearing to review classifications and standards in certain circumstances. Senate Bill 85-83 also eliminated the Commission's authority to hear certain permit appeals in order to avoid a conflict of interest concern because Commission members include persons employed by dischargers.

In 1989, the Legislature further amended the Colorado Water Quality Control Act with the adoption of SB 89-181. Among other changes, this bill included new provisions regarding the relationships between the Commission and the Division and other state agencies. Section 25-8-104(2)(d) now requires the Commission and Division to consult with the State Engineer and the Colorado Water Conservation Board before taking any actions that have "the potential to cause material injury to water rights." In addition, new Section 25-8-207(7) identifies "implementing agencies"—Mined Land Reclamation Division (now the Division of Reclamation, Mining and Safety), State Engineer, Oil and Gas Conservation Commission—as well as agencies responsible for implementation of the federal Resource Conservation and Recovery Act (currently the Hazardous Materials and Waste Management Division at CDPHE and the Oil Inspection Section at the Department of Labor and Employment) that have the initial responsibility for implementing water quality classifications and standards adopted by the Commission for activities subject to their jurisdiction, except for point source discharges to surface waters. The roles of these other agencies are discussed further in Part I of this Guide.

In 1990, the Legislature adopted SB 90-26, establishing new provisions in the Colorado Water Quality Control Act, to address potential ground water quality contamination from agricultural chemicals (pesticides and commercial fertilizers). Section 25-8-205.5 of the Colorado Water Quality Control Act now gives the state Department of Agriculture authority to develop voluntary best management practices and, if necessary, mandatory agricultural management plans to control this potential pollution source, subject to ultimate authority of the Commission to adopt regulatory requirements, if necessary.

In 1992, the Legislature adopted House Bill 92-1200, which established a new Section 25-8-209 regarding water quality designations. This section provides for (1) an "outstanding waters" designation for certain waters for which no degradation will be allowed, and (2) a "use-protected waters" designation for waters whose quality may be altered so long as applicable water quality classifications and standards are met. All waters not given one of these two designations are subject to antidegradation review requirements before any new or increased water quality impacts are allowed.

In 1993, Subsection 25-8-205(1)(e) was added to the statute to give the Commission the authority to regulate the use and disposal of biosolids. In the 1998 general election, a citizen's initiative known as Amendment 14 passed, establishing a new Section 25-8-501.1 for regulating housed commercial swine feeding operations. This provision requires that such facilities obtain an individual discharge permit. It also sets forth detailed requirements regarding the construction and operation of these facilities

and establishes a separate permit fee specific to these operations. In 2000, Subsection 25-8-205(1)(f) was added to the statute to give the Commission the authority to regulate the reuse of reclaimed domestic wastewater for purposes other than drinking.

In 2001, the Legislature adopted HB 01-1032 which provides for the renewal of discharge permits, using a risk-based approach that limits the amount of work required to renew permits that have minimal or no change in permit conditions. This bill also removed the state requirement that discharge permits expire every five years.

In 2002, HB 02-1344 increased point source discharge permit fees and required that the Division conduct a study regarding whether revisions to Colorado's water quality classifications and standards system are appropriate due to the unique attributes of Colorado water bodies. The increased fees were allowed to sunset in 2005.

In 2006, SB 06-171 transferred rulemaking authority for the following water quality-related functions from the Board of Health to the Commission:

- The Primary Drinking Water Regulations (5 CCR 1003-1);
- The Drinking Water Revolving Loan Fund (5 CCR 1003-3);
- The Drinking Water Grant Program (5 CCR 1003-8);
- Biosolids Fees (5 CCR 1003-7); and
- Individual Sewage Disposal System (ISDS) Guidelines (5 CCR 1003-6).

Also in 2006, HB 06-1337 established a new Water Quality Improvement Fund. Penalties for violations of the Colorado Water Quality Control Act after the effective date of this legislation would be deposited into this fund, which is to be used for the following purposes:

- Improving the water quality in the community or water body impacted by the violation;
- Providing grants for stormwater projects or to assist with planning, design, construction, or repair of domestic wastewater treatment works; or
- Providing the non-federal match funding for nonpoint source projects under Section 319 of the federal Clean Water Act.

Subsequent years brought additional changes. In 2007, HB 07-1329 was passed that changed drinking water and clean water fees as authorized under the Colorado Water Quality Control Act.

In 2008, HB 08-1099 amended the Colorado Water Quality Control Act by authorizing the Commission, instead of the State Board of Health, to hear drinking water penalty appeals and by modifying the procedures for water discharge permit applications. In 2009, the Colorado Water Quality Control Act was amended in HB09-1330 to change fees related to concentrated animal feeding operations and housed commercial swine feeding operations. In 2011, HB 11-1026 expanded the funding eligibility within the Water Quality Improvement Fund to include grants for stormwater management training and best practices training.

In 2011, SB Bill 11-021 eliminated term limits for the Water and Wastewater Operator Certification Board and SB 11-1026, which authorized the Department to designate a nonprofit stormwater management system administrator to assist in compliance activities for the state's NPDES program.

In 2012, HB 12-1119 directed the divisions to collaborate with industry to develop a streamlined and responsive process for stormwater related violations and enforcement. HB 12-1126 was authorized concerning on-site wastewater treatment systems and directing the division to develop rules for the Commission's approval setting minimum standards for the location, design, construction, performance, installation, alteration, and use of onsite wastewater systems.

In 2013, HB 13-1044 authorized the use of graywater for specific uses in accordance with rules established by the Commission; HB 13-1191 created a grant program to assist facilities with complying with the Commissions Nutrients management Control Regulation; SB 13-073 required the Division to comply with the rule-making procedures set forth in the State Administrative Procedure Act (APA) when proposing new or amended permit requirements with respect to general permits related to water quality control; and SB 13-150 authorized the continuation of the water and wastewater facility operators certification board until 2020 and implements recommendations in the sunset report.

In 2014, the General Assembly created a new Natural Disaster Grant program (HB 14-1002) to assist communities with water/wastewater infrastructure projects as a result of any natural disasters. Further, the General Assembly appropriated $17 million to assist water and wastewater entities with rebuilding as a result of the September 2013 floods.

In 2015, HB 15-1249 was proposed and adopted in place of a comprehensive fee increase. It revised the current fee structure to create five sectors: Commerce and Industry, Construction, Public and Private Utilities (includes MS4), Pesticides, and Water Quality Certification. The bill created new fees for the Water Quality Certifications and Pesticides sectors and created a new fee structure and increased fees for the Construction sector beginning in FY 2016-17. In addition, HB 15-1252 allowed a state income tax credit in an amount determined by the Colorado Water Conservation Board for qualified expenditures the taxpayer has made for one or more watershed health projects during the income tax year for which the taxpayer claims the credit. Finally, SB 15-121 provided assistance to governmental agencies and private nonprofit entities for projects that appear on the drinking water project eligibility list. The Colorado Water Resources and Power Development Authority may now spend moneys in the drinking water revolving fund for financial assistance to governmental agencies and private nonprofit entities for eligible projects.

In 2016, the general assembly passed HB 16-1005, allowing the collection of precipitation from the roof of a home in up to two rain barrels with a combined storage capacity of 110 gallons. The division was required to develop best practices for non-potable usage of collected precipitation and vector control (disease prevention) to the extent practicable within existing resources. In addition, HB 16-1413 focused on incremental improvements in data collection for the division's Clean Water

Program. Based on the need for greater transparency and per the request of stakeholders, the division began tracking revenues and expenditures for Clean Water Program sectors in 2015. To assist, this bill created six different cash funds to align with the division Clean Water Program sectors: commerce and industry, construction, pesticides, municipal separate storm sewer systems (MS4), public and private utilities, and water quality certifications. The bill also directed the division to conduct a stakeholder process regarding the appropriate and necessary fees that each subcategory of each sector should pay to enable each sector to be adequately funded by fees collected from that sector.

In 2017, HB 17-1285 established the funding mix between General Fund and cash funds for each fee sector created in 2015. In addition, the bill increased fees. The General Fund and cash fee increases included in the bill should sustain the program through SFY 2022-23. The bill also required the division to report annually to the legislature regarding several key production metrics (permit backlog, number of enforcement actions, etc.). In addition, the general assembly adopted HB 17-1306, providing up to $300,000 for grants from the Water Quality Improvement Fund, as administered by the Colorado Department of Public Health and Environment, to be used for voluntary lead testing at public schools. Eligible public schools include public schools that are not a registered public water system and public schools that have not already tested for lead under the requirements of the 1991 federal Lead and Copper Rule or are not currently testing for lead.

In 2018, the General Assembly passed three bills focused on reclaimed water: HB 18-1069 – Toilet and urinal flushing in multifamily residential and nonresidential structures, HB 18-1093 – Food crop irrigation, and SB 18-038 – Industrial hemp cultivation. These three bills codified Regulation 84 and added each identified activity as an allowable use of reclaimed domestic wastewater, along with requirements for each use. These bills give the Water Quality Control Commission a deadline of December 31, 2019 to adopt the new uses and requirements. In addition, SB 18-019 amended the Colorado Water Resources and Power Development Authority statute to give the authority the ability to issue loans for all borrowers through the Water Pollution Control Revolving Fund for a longer term. The bill removed the original loan term of 20 years and authorizes loans up to 30 years under the Water Pollution Control Revolving Fund.

In 2019, HB 19-1279 included a number of provisions with respect to limiting the use of toxic firefighting foams, scientifically known as PFAS. As of August 2, 2019, the legislation bans the use of Class B firefighting foams that contain PFAS for training or for testing systems that suppress fire. In addition, manufacturers or other persons who sell firefighting personal protective equipment are required to provide written notice to a purchaser at the time of sale that the equipment contains intentionally added PFAS. As of August 2, 2021, the legislation bans the sale of Class B firefighting foam that contains intentionally added PFAS. It also requires the division to develop and administer a survey to all fire departments, as defined in the legislation, to gather information for any use and inventory of Class B firefighting foams that contain PFAS. The division is required to report the results of the survey by January 1, 2020. The division is required to conduct the survey every three years and report to the legislature.

Appendix B: Historical Perspective of Federal and State Safe Drinking Water Legislation

In addition to the federal Clean Water Act, a second federal statute of major importance to the structure and content of water quality management in Colorado is the federal Safe Drinking Water Act. Waterborne illness, throughout the early history of the state, was one of the primary reasons for the establishment of the Colorado Department of Public Health in the 1940s. The formation of the Department was quickly followed by regulations to protect public drinking water supplies. The major drinking water problems were related to microbiological contamination from human and animal wastes and heavy metal contamination due to heavy metal mining. By the time the federal Safe Drinking Water Act was passed in 1974, the state had become a leader in the use of advanced drinking water treatment for micro-organism control. The state adopted provisions to implement the federal act in 1979 and has continued to expand drinking water protection through adoption of provisions to implement the federal Safe Drinking Water Act amendments of 1986 and 1996. The 1986 amendments established an ambitious schedule for the adoption of federal drinking water standards for additional pollutants and established a voluntary "wellhead protection program" for community water supplies that rely on ground water. The 1996 amendments adopted several important changes, including:

- A more realistic schedule for adoption of new federal drinking water standards;
- New consumer notification provisions;
- A new drinking water revolving loan program designed to help fund both water system infrastructure improvements and state drinking water programs including:
    - New source water assessment and protection provisions;
    - Capacity development for new and existing systems;
    - Minimum certification requirements for water and distribution system operators;
    - Small system training and technical assistance; and
    - Program management.

The safe drinking water program, which has historically been viewed as a separate entity from the clean water program, is composed of similar program elements requiring staff with much the same professional and technical expertise. Drinking Water Program elements include: regulatory development (e.g., developing treatment standards and performance requirements for public water systems for adoption by the Water Quality Control Commission); compliance evaluation of self-reported data; compliance inspections (e.g., sanitary surveys); engineering plan review; technical assistance; and partnering with other agencies to oversee the DWSRF. In Colorado, the safe drinking water functions and clean water functions have been integrated. This has been timely, particularly in view of the new program elements which emerged following the 1996 reauthorization of the Safe Drinking Water Act (e.g., source water protection, vulnerability assessment, and the DWSRF program) that will rely upon ground water and watershed sciences, as well as the financial assistance program which has long been functioning within the Division's clean water program.

Another requirement of the 1996 Safe Drinking Water Act amendments was that states have a certification program for operators of drinking water treatment plants and water distribution systems. In response, Colorado's plant operator certification program was expanded to include mandatory certification of water distribution system operators and to meet all of the new federal requirements. The requirements to have certified operators of public water systems is an additional means of assuring compliance with the requirements to provide adequate drinking water quality.

Appendix C: Common Abbreviations

APA	Administrative Procedure Act
BMP	Best Management Practice
CCR	Consumer Confidence Reports
CDPHE	Colorado Department of Public Health and Environment
CDPS	Colorado Discharge Permit System
CDX	Central Data Exchange
CERCLA	Comprehensive Environmental Response, Compensation and Liability Act
CFR	Code of Federal Regulations
CoWARN	Colorado Water/Wastewater Agency Response Network
CPDWR	Colorado Primary Drinking Water Regulations
CRS	Colorado Revised Statutes
CWA	Colorado Watershed Assembly
CWCB	Colorado Water Conservation Board
DLG	Division of Local Government
DOLA	Department of Local Affairs
DRCOG	Denver Regional Council of Governments
DSVs	Discharger-specific Variances
DWSRF	Drinking Water State Revolving Fund
EC	Electrical Conductivity
ELG	Effluent Limitation Guidelines
EPA	Environmental Protection Agency
eRAMS	Environmental Resource Assessment and Management System
FERC	Federal Energy Regulatory Commission
FRCA	Failure and Root Cause Analysis Project
ICIS	Integrated Compliance and Information System
ISDS	Individual Sewage Disposal System
LA	Load Allocation
LOI	Letters of Intent
MCL	Maximum Contaminant Level
MOA	Memorandum of Agreement
MOU	Memorandum of Understanding
NIMS	National Incident Management System
NOA	Notices of Authorization
NPDES	National Pollutant Discharge Elimination System
OWTS	Onsite Waste Treatment System
PEL	Preliminary Effluent Limits
POTW	Publicly Owned Treatment Works
PPA	Performance Partnership Agreement
PPG	Performance Partnership Grant

PWS	Public Water System
PWSS	Public Water System Supervision
QA/QC	Quality Assurance/Quality Control
QMP	Quality Management Plan
RPST	Recovery Potential Screening Tool
SAR	Sodium Absorption Ratio
SDWIS	Safe Drinking Water Information System
SRF	State Revolving Fund
SSTA	Small System Technical Assistance
STORET	STOrage and RETrieval
SWAP	Source Water Assessment and Protection Program
SWQMP	Statewide Water Quality Management Plan
TMDL	Total Maximum Daily Load
TMF	Technical, Managerial, Financial
TVS	Table Value Standards
UAA	Use Attainability Analysis
USDA	U.S. Department of Agriculture
USFWS	U.S. Fish and Wildlife Service
WET	Whole Effluent Toxicity
WLA	Wasteload Allocation
WQIF	Water Quality Improvement Fund
WQX	Water Quality Exchanges
WRAP	Watershed Rapid Assessment Program
WWFOCB	Water and Wastewater Facility Operators Certification Board