COLORADO

WATER QUALITY MANAGEMENT

AND DRINKING WATER PROTECTION

HANDBOOK

A Continuing Planning Process

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For additional information regarding the programs and topics addressed in this Handbook, please contact:

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or

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Additional information regarding the Water Quality Control Division and Commission is available on their web sites, which can be accessed from the Colorado Department of Public Health and Environment's web site, at http://www.cdphe.state.co.us/index.html.

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INTRODUCTION

A. Purpose of this Handbook

This handbook has two primary purposes. First, it is intended to provide a concise, readable summary of the water quality management and drinking water protection system in Colorado, and the roles of the major participants in that system. Second, it is intended to help satisfy the requirement 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.

B. Historical Perspective

The Federal Water Pollution Control Act (now commonly referred to as the Clean Water Act) was originally adopted in 1948. Amendments to this Act in 1965 for the first time required states to adopt water quality criteria for interstate waters and a plan for implementation and enforcement of the criteria. The Colorado Water Pollution Control Act was adopted in 1966, creating authority to establish water quality standards consistent with the federal Clean Water Act.

In 1972, Congress adopted a major overhaul of the Federal Water Pollution Control Act. The 1972 Act:

(1) Established the National Pollutant Discharge Elimination System (NPDES)[1] permit program to regulate point source discharges of pollutants, by requiring that dischargers meet both water quality-based and technology-based effluent limitations;

(2) Authorized the Environmental Protection Agency (EPA) to establish technology-based effluent limitations for certain categories of dischargers;

(3) Required states to develop a comprehensive and continuing planning process for water quality management, including the adoption of "areawide waste treatment management plans" (section 208 plans);

(4) Authorized EPA to establish water quality standards where any state fails to adopt standards that meet the requirements of the Federal Act; and

(5) Substantially expanded a program to provide federal grants for the construction of domestic wastewater treatment plants.

In 1973, the Colorado Water Quality Control Act was completely rewritten (and renamed), 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 10). A brief history of some of the major revisions to the Colorado Act is included as Appendix A to this handbook.

The next major changes to the federal Clean Water Act were adopted in 1987. These changes included provisions that:

(1) Established new requirements reg

[1] A list of common abbreviations is included as Appendix C to this Handbook.

(2) arding the permitting of stormwater discharges;

(3) Required that states develop management programs to address nonpoint source water pollution (section 319); and

(4) Phased out the previous federal construction grant program, while authorizing initial federal funding for state revolving loan funds to address water quality management infrastructure needs.

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 (SDWA). 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 1940's. 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 SDWA 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.

C. Overview of this Handbook

Part 1 of this Handbook addresses water quality management in Colorado. Traditionally, the term "water quality management" refers to efforts to assess the quality of water in the environment, set water quality standards for such waters to protect beneficial uses, and to control sources of pollution that may adversely impact water quality. Part 2 of this Handbook addresses drinking water protection in Colorado. "Drinking water protection" has focused principally on setting standards that apply "at the tap" to control the quality of the drinking water provided by public water systems.

Overview of Handbook

This Handbook provides an overview of water quality management in Colorado. Part 1 describes the programs associated with the Clean Water Act. Part 2 describes the programs associated with the Safe Drinking Water Act. Where applicable, web sites are identified. Otherwise, further information can be obtained by calling the Water Quality Control Division at (303) 692-3500.

PART 1 – WATER QUALITY MANAGEMENT

I. INTRODUCTION

Colorado's approach to water quality planning and management has evolved substantially over the last three decades, largely in response to the changing federal and state statutory mandates described above. 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. The remainder of this Handbook describes how these groups currently interact to address water quality management in Colorado.

Section II of Part 1 provides a brief summary of the institutional roles and responsibilities of the major participants in the Colorado water quality management system. Understanding who these entities are and what they do is essential to understanding how the management system functions.

Sections III through VIII of Part 1 provide a summary of Colorado's approach to implementation of what can be referred to as the "water quality management cycle." The concept of a watershed-based water quality management cycle is based on the observation that there is a logical sequence to most of the steps in the water quality management process, and that this process is an iterative one, where the major steps are repeated over time. Specifically, the major steps in this cycle can be summarized as:

- Water Quality Monitoring, Reporting and Assessment
- Water Quality Classifications and Standards
- Total Maximum Daily Loads (TMDLs)
- Establishment of Source Controls
- Compliance Assurance
- Financial Assistance

After this final step, the process returns to monitoring, reporting and assessment. Although this model is largely conceptual and in many instances provides only a very general relationship to day-to-day water quality management, it provides a useful framework for understanding how the planning and management process works.

II. INSTITUTIONAL ROLES AND RESPONSIBILITIES

A. Water Quality Control Commission

> Effective August 8, 2006, administrative functions assigned to the Board of Health (related to drinking water management) have been reassigned to the Water Quality Control Commission.

The Colorado Water Quality Control Commission is the administrative agency responsible for developing specific water quality policy in Colorado, in a manner that implements the broader policies set forth by the Legislature in the Colorado Water Quality Control Act. The Commission's nine members are appointed by the Governor and confirmed by the Colorado Senate for three-year terms. Appointments are to "achieve geographical representation" and "reflect the various interests in water in the state." At least two members are to be from west of the Continental Divide.

The Commission adopts water quality classifications and standards to protect beneficial uses of waters of the state, as well as various regulations aimed at achieving compliance with those classifications and standards. 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 Water Quality Control Division, including: domestic wastewater treatment plant site approvals; approval of design plans and specifications for domestic wastewater treatment plants; determinations regarding antidegradation reviews; and section 401 certification decisions. These Division actions are described further in section VI of this Handbook. The Water Quality Control Commission's web site is located at http://www.cdphe.state.co.us/op/wqcc/index.html.

B. Board of Health

Historically, the Board of Health has been the administrative agency that adopted rules and regulations and general policies related to the Safe Drinking Water Act and the Water Quality Control Division's drinking water management program (described later in this document), Individual Sewage Disposal Systems (ISDS), and Water Treatment Sludge Regulations and Fees (described below). Effective August 8, 2006, these roles have been assigned to the Water Quality Control Commission per Senate Bill 171, adopted by the Legislature in 2006.

Individual Sewage Disposal Systems (ISDS). The Board adopted Guidelines on ISDS (septic systems and other on-site wastewater treatment systems). These Guidelines establish minimum standards for the location, construction, performance, installation, alteration, and use of ISDS in Colorado. These Guidelines are implemented principally through rules and regulations adopted by local Boards of Health.

Water Treatment Biosolids. The Board adopted Regulations Pertaining to the Beneficial Use of Water Treatment Biosolids and Fees Applicable to the Beneficial Use of Biosolids. These regulations establish requirements applicable to land application of water treatment plant biosolids, and establish a fee system for beneficial use of these water plant sludges as well as a fee system for biosolids from domestic wastewater treatment plants.

C. Water Quality Control Division

The Water Quality Control Division (Division) is the agency responsible for implementing and enforcing the regulations adopted by the Water Quality Control 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 Water Quality Control 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 this state's waters are safe and clean.

1. Clean Water Program

A complete "clean water" water program consists of the following seven strategic functional elements: ambient water quality monitoring, water quality assessment and standards development (e.g., providing scientific support for adoption of standards and other control regulations by the Water Quality Control Commission); compliance assurance; water quality management planning and TMDL development; permitting and other pollution control mechanisms (including activities such as facility siting approval, wastewater treatment plant design review and approval, compliance evaluation of self-reported data, compliance sampling and inspections, compliance assistance and enforcement activities); water quality restoration and enhancement efforts; and, wastewater facility planning and financing. Of course, each of these functional elements depends upon an internal management and administrative structure to provide a wide range of general support functions and services.

2. Drinking Water Program

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 (i.e., 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 (i.e., sanitary surveys); engineering plan review; technical assistance, and implementation of, the drinking water state revolving loan fund (DWSRF). In Colorado, the safe drinking water functions and clean water functions have been integrated. This has been timely, particularly in view of the several 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) which will rely upon ground water and watershed sciences expertise as well as the financial assistance program which has long been functioning within the Division's clean water program.

See Water Quality Control Division Organization Chart on the following page. The Division's web site is located at http://www.cdphe.state.co.us/wq/index.html.

3. Integrated Water Quality Management

The totality of these integrated program elements form a complete water quality management program for ground water and surface water. *Monitoring* provides data to form a picture of the current status and trends in this state's water quality; i.e., where we are now with our water quality. *Assessment* evaluates the monitoring data and provides the scientific support for establishing the goal framework for water quality including standards for surface water and ground water; i.e., where we want to be with our water quality. *Water Quality Management Planning and TMDL Development* is the process of translating the standards goal framework into specific terms for identified water bodies in relation to the threats and impacts presented by point source discharges and nonpoint source discharges, which result in non-attainment of water quality standards. Water quality management planning may also result in source water protection strategies to ensure the safety of drinking water supplies while minimizing the costs for

required treatment and monitoring. *Permits and Control Mechanisms* translate the standards framework (including total maximum daily loads (TMDLs)), along with applicable technology-based requirements, into very specific terms and conditions for regulated entities. *Compliance Assurance* includes all of the activities that go into assuring regulated drinking water and pollution control facilities know what requirements must be met and have the necessary facilities and operational capabilities to maintain compliance with regulatory requirements. *Water Quality Restoration and Enhancement Efforts* result in actual improvements to water quality through nonpoint source projects and voluntary cleanup projects, and through education and outreach efforts. *Financial Assistance Programs* provide funds through grants and low interest loans to drinking water systems and publicly owned pollution control facilities.

A brief description of the Division's organizational units is provided on the following page.

Table 1

Organization Units	Functional Water Quality Management Elements
Watershed Program	
Monitoring Unit	Ambient water quality monitoring (including chemical, physical and biological sampling and field investigations as well as laboratory-based toxicity bioassays). Compliance sampling in conjunction with watershed scale investigations.
Assessment Unit	Standards development, TMDL development (including data analysis, interpretation and reporting; source water vulnerability analysis, water quality modeling, antidegradation reviews, 401 certification, etc.).
Outreach and Assistance Unit	Community-based water quality management planning, financial assistance (including watershed partnerships, nonpoint source cooperative projects, drinking water and pollution control facility grants and loans).
Senior Scientist	
Clean Water Facilities (CWF) Program	
Permits Section	
Domestic Unit	NPDES program management for process water discharges from domestic treatment facilities, biosolids authorizations, pretreatment control mechanisms, and CDPS ground water discharge permits.
Industrial Unit	NPDES program management for process water discharges from industrial treatment facilities and stormwater discharges.
Facility Operator Program	
Drinking Water Program	
Engineering Section – Matrix Managed With CWF Program Manager	
Denver Field Unit	Compliance assurance and technical assistance for DW water and WW facilities (including areawide WW facility planning and DW capacity development, facility siting approval, engineering plan review, facility construction inspection, compliance sampling and inspection, compliance assistance and comprehensive performance evaluation, spill response and enforcement case support).
West Slope Field Unit	
South East Field Unit	
Compliance Assurance and Data Management Section – Matrix Managed With CWF Program Manager	
Drinking Water Compliance Assurance Unit	Evaluation of self-reported and field collected DW facility data, enforcement of the CPDWR, and facility data management.
Clean Water Compliance Assurance Unit	Evaluation of self-reported and field collected NPDES and CDPS facility data, facility data management, enforcement of permit requirements and Colorado Water Quality Control Act.
IT Management Workgroup	Development, implementation & maintenance of facility-based data management systems.
Capacity Development and Public Water System Security	
Administration	
Business Services Unit	Provides professional, technical, and administrative support for division's central records center; personnel and training administration; IT physical inventory management and services coordination; fleet management; travel coordination: telecommunication management; communication coordination; office management; and general clerical support services.
Fiscal Services Unit	Provides budgetary, contract, purchasing, fleet fiscal management, and grant management. Service to Division, Department, and other third-party stakeholders.

D. Other State Implementing Agencies

The Colorado Water Quality Control Act identifies several "implementing agencies" that have the initial responsibility for implementing water quality classifications and standards adopted by the Water Quality Control Commission for activities subject to their jurisdiction, except for point source discharges to surface water. These agencies are: the Division of Minerals and Geology (formerly the Mined Land Reclamation Division), 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 step in if it determines that an implementing agency is not assuring compliance with water quality classifications and standards.

Memoranda of Agreement 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 and an opportunity for public comment provided at a regular Commission meeting.

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 Water Quality Control Act, that Department is to develop 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 State Act to consult with the State Engineer and the 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." These agencies receive copies of all Commission rulemaking hearing notices, and all notices include a provision requesting information from the public regarding potential impacts on water rights. In addition, in recent years the Commission and Division have initiated several informal efforts to work toward better integration of Colorado's water quality and water quantity management systems, including:

(1) Quarterly meetings between Commission members, the Commission Administrator, the Division Director, the State Engineer, the Water Conservation Board Director, and members of the Water Conservation Board. Representatives of the Division of Wildlife and Department of Agriculture also participate in these meetings;

(2) Periodic joint meetings between the Water Quality Control Commission and the Colorado Water Conservation Board; and

(3) Briefings of the Colorado Water Conservation Board or the Commission by staff of the other agency on topics of mutual interest.

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

Colorado Department of Agriculture: http://www.colorado.gov/ag.
Division of Minerals and Geology: http://www.mining.state.co.us.
Division of Oil and Public Safety: http://oil.cdle.state.co.us.
Hazardous Materials and Waste Management Division: http://www.cdphe.state.co.us/hm/index.htm.

Oil and Gas Conservation Commission: http://cogcc.state.co.us.
State Engineer's Office: http://www.water.state.co.us.

E. Water and Wastewater Facility Operators Certification Board

The Colorado Water and Wastewater Facility Operators Certification Board (Operators Certification Board) 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 Operators Certification Board establishes experience and examination requirements for separate categories of certification, and establishes training requirements for renewal of certifications.

The Board contracts with two nonprofit corporations to carry out the principal day-to-day administration of the program. In addition, the Water Quality Control Division maintains a staff person responsible for compliance and enforcement activities related to the operators certification program. The Operators Certification Board is responsible for disciplinary actions regarding water and wastewater facility operators. It also serves as an appellate body with respect to program implementation actions by the Water Quality Control Division and the nonprofit corporations that implement the program. The Operators Certification Board web site is located at http://www.cdphe.state.co.us/op/ocb/index.html.

F. Regional/Areawide Planning Agencies

Section 208 of the federal Clean Water Act provides that the Governor of a State must identify areas of the State which, as a result of urban or industrial concentration or other significant factors, have substantial water quality problems. The Governor may designate regional planning agencies for these areas, after consultation with local governmental officials having jurisdiction over the area, to conduct the planning required by section 208. The planning in these areas must be done by a single regional planning agency representing local elected officials. Section 208 calls for the preparation of "areawide waste treatment management plans," which are now more commonly referred to as "regional water quality management plans."

In Colorado, regional water quality management planning has occurred in each of the fourteen planning and management regions. The Governor has designated regional planning agencies to conduct 208 planning in five of these regions:

- Denver Regional Council of Governments (Denver, Boulder, Broomfield, Jefferson, Adams, Arapahoe, Clear Creek, Gilpin and Douglas Counties);
- North Front Range Water Quality Planning Association (Larimer and Weld Counties;)
- Northwest Colorado Council of Governments (Pitkin, Eagle, Summit, Grand, Jackson and Routt Counties;
- Pikes Peak Area Council of Governments (El Paso, Teller and Park Counties); and
- Pueblo Area Council of Governments (Pueblo County).

Water quality management planning for the remaining areas of Colorado (nondesignated areas) is the responsibility of the state and is being coordinated through the Water Quality Control Division in cooperation with local governments.

The regional water quality management planning agencies serve as the local link in the overall water quality management program. The actions of these agencies, and their collective local governments, in regard to stream classifications, wasteload allocations, grant and/or loan priority information, planning reviews, and site application comments provide essential information to ensure that local water quality goals and objectives are considered in state and federal water quality decision making.

The water quality management planning process also identifies roles for "management agencies" and "operating agencies." Management agencies are identified under the law as implementors of section 208 plans. The primary responsibility of the management agency is to assure that the point and nonpoint source control programs which have been assigned to them are accomplished within prescribed time frames.

In Colorado, general purpose local governments and special districts have been designated as management agencies for point sources. General purpose local governments, such as counties and incorporated cities and towns, are considered preferable in this management role since the opportunity to coordinate point source, nonpoint source, and planning decisions can be vested in one specific entity.

Several water quality management plans prepared under section 208 have identified operating agencies. Operating agencies, as distinguished from management agencies, are those entities which are responsible for specific activities for pollution control under the general direction of a management agency. For example, water districts, sanitation districts, industries and municipalities who are holders of point source discharge permits are operating agencies under some water quality management plans. They may be responsible to a management agency (e.g., a city or a county within which they are located).

G. Watershed-based Water Quality Authorities/Associations/Forums

Over the last several years, increasing interest in a watershed-based approach to water quality management has led to a number of local and regional initiatives in Colorado. These initiatives reflect a great diversity of organizational models and functional roles. 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 have principally an information-sharing focus (e.g., Upper Arkansas Watershed Initiative; 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 evolving rapidly. No effort is made in this Handbook 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 are expected to play an increasingly important role in water quality management in Colorado. This trend should be facilitated and accelerated by the organizational structure of the Water Quality Control Division, described above. All local and regional watershed initiatives should be listed in appropriate regional water quality management plans. To increase the effectiveness of watershed initiatives, the Colorado Watershed Assembly was formed. It is an informal network which facilitates communication between groups and agencies and serves as a clearinghouse for resource information. The Assembly's web site is http://www.coloradowater.org/.

H. 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 the Colorado Department of Public Health and Environment. 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 individual sewage disposal systems (ISDS) 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 the Water Quality Control Division personnel in their routine functions. The Division contracts with three local health departments to do biannual inspections of Housed Commercial Swine Feeding Operations (HCSFO). Additionally, the Division contracts with 13 local health departments to conduct Sanitary Survey Inspections of non-community ground water systems.

I. 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. 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 the University of Colorado at Denver's Center for Public-Private Sector Cooperation, 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 web site is http://www.cwqf.org.

A second example of an informal standing committee is the Colorado Nonpoint Source Council, formerly known as the Nonpoint Source Task Force. The Task Force was formed at the request of the Water Quality Control Division in 1987. Since then it has served as an advisory work group for the Division in the implementation of Colorado's nonpoint source management program, annually making recommendations on which proposed projects should receive federal funding under section 319 of the Clean Water Act. The current Nonpoint Source Council is made up of 25 members representing various water interests, including governmental, environmental, and the resource development community. Two other examples of informal advisory organizations are the Colorado Water Quality Monitoring Council and the Groundwater Quality Protection Council. Both serve as a forum for information exchange on water quality monitoring and protection efforts as well as a vehicle for exchanging data and databases.

J. 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 (TMDLs) 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. EPA is also responsible for approving section 208 plans (regional water quality management plans) submitted by states as well as states' continuing planning processes prepared in accordance with section 303(e) of the federal Clean Water Act.

EPA also plays a key role by providing approximately half of the funding for the Colorado Water Quality Control 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 state revolving loan funds for wastewater and water treatment plant construction. This funding from EPA requires the Water Quality Control 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 water quality program requirements that must be met by states, 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 their voluntary vs. mandatory nature.

K. 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 USDA Forest Service and the USDI Bureau of Land Management, and National Park Service, consider water quality protection in their management programs. The U.S. Army Corps of Engineers administers the 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 U.S. Department of Agriculture administers an Environmental Quality Improvement Program under the federal Farm Bill. The U.S. Fish and Wildlife Service 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 a Memorandum of Agreement 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 (NAWQA) program.

L. General Public

Public participation is an integral part of water quality management in Colorado. All regulatory actions of the Water Quality Control 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 a Water Quality Control Commission Public Participation Handbook, copies of which are available from the Commission Office or the Commission Website at http://www.cdphe.state.co.us/op/wqcc/PublicParticipation/handbook.html. Local governments and regional water quality planning agencies are required to provide opportunities for public input into their deliberations regarding water quality management plan updates. Moreover, an important aspect of the increasing trend toward a watershed protection approach is assuring a full opportunity for stakeholder input into and participation in watershed planning and management activities.

III. WATER QUALITY MONITORING, ASSESSMENT AND REPORTING

A. 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 Clean Water Act (CWA) does not specifically direct states to conduct ambient monitoring, Section 106(e) of the CWA 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 set of guidance *Elements of a State Water Monitoring and Assessment Program* (*The Ten Elements*). This guidance document was intended to assist in determining whether a state program meets the prerequisites for section 106(e), and to provide a framework for states to identify their programmatic and resource needs so as to establish a plan for incremental improvement in the monitoring program over the long-term. In response to this guidance the Division prepared the *Colorado's Water Quality Monitoring and Assessment Strategy 2004 – 2014*. The plan consists of two activities: review and evaluation of existing state monitoring and assessment programs, and development of statewide monitoring strategies.

In the process of developing this strategy, the Division took the first steps in evaluating its monitoring and assessment programs. The Division identified many needs, gaps, and opportunities to improve the programs. Already several activities to improve or expand its monitoring activities have been included as objectives in the *FY06 Colorado Environmental Performance Partnership Agreement* (*PPA*).

The following is a short list of the new and expanded monitoring and assessment initiatives and projects that are underway or being initiated. These projects are part of the overall strategy and, to the extent that funding is available, the Division will continue to implement them.

- increased funding for laboratory analytical services for water samples
- increased macroinvertebrate sampling
- electronic data stream development for habitat, sediment and periphyton data
- increased monitoring of fish tissue for mercury
- cyanotoxin (blue-green algae) monitoring
- increased monitoring of lakes /reservoirs
- ambient ground water monitoring

To facilitate implementation of *The 10 Element's* EPA provided "Supplemental" monitoring funds in FY06 and "Monitoring Initiative" funds for FY07.

The goal of the monitoring program is to provide information needed to assess the 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.

1. 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 total maximum daily load (TMDL) development. The Division's routine water quality samples are collected by four technicians stationed in Denver and one stationed in Grand Junction. Samples are analyzed by the Department of Public Health and Environment's Laboratory and Radiation Services Division. The Water Quality Control Division continues to maintain a fixed network of 75 permanent routine water quality sites; these are included in the total of 314 sites in the network.

a. Standards Review

The primary focus of the Division's routine monitoring is to provide an adequate, representative, and current water chemistry database to verify and 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. This approach involves retaining a minimum number of permanent fixed sites in all watersheds and sampling an additional set of sites in the watershed of focus. 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 web site at http://www.cdphe.state.co.us/op/wqcc/index.html. 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.

b. Trend Monitoring

Another important purpose for maintaining the statewide routine monitoring network is to obtain water-quality data for the analysis of trends. Sites established to analyze trends are permanent and ensure that there is an adequate database to identify and evaluate long-term changes in water quality, especially in relation to anthropogenic causes. These sites are usually located on streams that are affected by point or nonpoint pollution sources. A few trend sites, however, are allocated to more pristine waters; these act as reference stations which may aid in identifying subtle changes in quality due to changes in climatic patterns, atmospheric pollution, or land use.

2. 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.

3. Biological and Habitat Monitoring

The Division conducts biological and habitat studies primarily to obtain data for use in stream standards and classification reviews and for the future development of biocriteria. This monitoring typically includes fish population surveys (where data are not available from the Colorado Division of Wildlife), macroinvertebrate sampling, attached algae analysis, chemical sampling, and habitat evaluation.

4. 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, fish-kill investigations, compliance sampling inspections of dischargers, special water quality investigations, and in-depth monitoring below specific wastewater treatment plants to develop information about effluent mixing zones.

a. 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.

In early 2000, the number of synoptic studies was reduced substantially. Reduced synoptic sampling allowed resources to be shifted to the routine monitoring required for triennial review of water quality standards.

b. Point-Source Monitoring

Under the Colorado Discharge Permit System, the state collects water quality data to use in calculation of wasteload allocations on stream segments before discharge permits are issued or renewed. These allocations ensure that the discharge of constituents to the stream segment will not affect the beneficial uses of the water.

c. Probability-Based Monitoring

Colorado is currently involved in a probability-based approach to monitor and assess the status and trends of ecological aquatic systems. In a cooperative effort between EPA, the Division and Division of Wildlife, a program called "Western Pilot" will use probability design to measure ecological indicators in wadeable streams across Colorado. EPA's Office of Research and Development is using this effort to refine methods and techniques used in other ecosystems to assess the Intermountain Region aquatic ecosystem. This effort should result in statistically based comprehensive assessment of the condition of Colorado streams by 2004.

5. 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 (Quality Management Plan (QMP) for the Collection and Utilization of Environmental Data). 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, is 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.

6. Monitoring Partnerships

In 1999, the Colorado Water Quality Monitoring Council was established by a group of interested stakeholders, including the Water Quality Control Division. The council was patterned after newly formed councils at the state and national level. The Monitoring Council serves as a statewide collaborative body to help achieve effective collection, interpretation, and dissemination of water quality data and information. The goals of the Monitoring Council are to:

- Provide a forum for effective communication, cooperation, collaboration, and documentation among individuals and organizations involved in monitoring.
- Promote the development of collaborative and cost effective watershed-based monitoring strategies.
- Promote the use of quality assurance procedures and protocols related to sample collection, analytical methods, assessment, data management, and distribution.
- Provide strategic direction for a statewide water quality monitoring network.

Numerous entities are now members, including a diverse group of policy-level individuals; government, academic, citizen, and industry organizations; consultants, and watershed groups who are involved in water quality or quantity issues. Activities sponsored by the council include website development, a conference, and data swaps where entities involved in monitoring in a particular watershed were invited to a council meeting to share why, what, when, where and how they were monitoring water quality and quantity. The data swaps were very successful in identifying where there were monitoring gaps as well as duplication of monitoring efforts. The major project currently underway is the Colorado Data Sharing Network project.

The Data Sharing Network is a state-wide, 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, what parameters, and, if the monitoring entity has uploaded data; the data can be viewed and downloaded. The data that is uploaded must comply with the STORET requirements so that it is in a standard format that is usable by EPA and the state.

The software tools were donated by the EPA Region X, and the network will be maintained by EPA Region VIII. A non-point source/319 grant from the Division is funding this project and includes development of training materials, user training, and outreach to publicize the network and to seek out monitoring data to populate it. The USGS is uploading their data to help make this a state-wide data sharing tool. The next step is to make this network sustainable. This will take ownership by some agency or possibly a fee structure or both.

There are over 50 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. The Division has funded the sorting and identification of

macroinvertebrate samples collected by the Big Thompson Watershed Forum, the Roaring Fork Conservancy, and the Colorado Division of Wildlife. The Division has funded the analytical costs for nutrient sampling by the North Fork Gunnison River Improvement Association and macroinvertebrate sampling by various groups.

7. STORET Database

The STORET ambient water quality database is a crucial piece in the support of local, state, and national water resource monitoring and management strategies. This database provides for effective storage, retrieval, data analysis and presentation of water resource data, including chemical, physical, and biological information. It also facilitates cooperation among monitoring agencies and other entities since a standardized set of data elements are used to describe the expertise and methodologies used to obtain the data. This provides a framework for data sharing and serves to ensure that the data being collected is readily shared and thus more useful to the community at large. Therefore, a strategic objective of the state will be to encourage the use of STORET as the ambient water quality database. The State will also provide its data to the EPA's national database of water quality.

The STORET software is available from the EPA. Agencies and other entities interested in taking advantage of the multi-faceted capabilities of STORET may need to make some modest hardware and software investments in order to be ready to install STORET. The Division, as well as EPA, will provide continuously updated information about training, hardware and software requirements, and enhancements for agencies and other monitoring entities interested in running STORET. Finally, in addition to water quality data, more information about the STORET database is available at the EPA web site: http://www.epa.gov/storet.

Currently, Storet is in evolution to a data flow system called Water Quality Exchange (WQX). The rationale for WQX is two-fold: (1) It ensures that various databases are compatible with the overall development of IT at EPA in order to maximize coordination of EPA's investments, and (2) It uses new dataflow technologies where data is sent to EPA's Central Data Exchange (CDX), and CDX moves the data to various databases that require that data. In Spring of 2006, EPA began holding outreach meetings to inform data partners of the transition. In 2007 and 2008 various WQX modules will be piloted with the anticipated ramp-up of WQX leading to a fully-operational WQX model by September of 2008 and deactivation of Storet by September 2009.

B. Assessment

1. Overview

Assessment is the process by which water quality data is transformed into information. Assessment can be characterized as the processes which leads 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 Clean Water Act to ensure that state water quality standards are met.

2. 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 total maximum daily load "TMDL" process, which is described in Section V, 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 which suggests water quality problems, but for which that data is inadequate to support a determination of non-attainment. 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 at: http://www.cdphe.state.co.us/op/wqcc/SpecialTopics/303(d)/303dtmdlpro.html.

C. Water Quality Management Plans and Reports

1. Section 305(b) Report

Section 305(b) of the federal Clean Water Act requires that 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, and ultimately Congress, an assessment of the status of water quality for the proceeding two years. Typically, the 305(b) report includes a summary of water quality management programs, and an estimate of the environmental, social and economic impacts associated with achieving the objectives of the Clean Water Act.

305(b) Report

Section 305(b) of the Clean Water Act requires states to assess and report on the quality of the State's waters every two years. The 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, Groundwater Program, Water Pollution Control Revolving Fund, and the Drinking Water Program.

EPA summarizes the information contained in the section 305(b) report for the United States Congress. This summary includes information regarding:

- National progress toward, and the associated benefits and costs of, meeting the goals of the Clean Water Act.

- Program plans and needs in areas such as permits, grants, effluent guidelines, etc., and mechanisms to implement needed changes.

The State is responsible for preparation of the 305(b) report and draws upon a number of sources of information in preparation of the document. Particularly important information sources used in preparation of the report include monitoring information from a variety of sources, special stream studies conducted by a variety of public or private agencies, and the water quality assessment section of regional water quality management plans. A summary of the current 303(d) listing are also incorporated into the 305(b) report. Since 2004, in an effort to maximize limited resources, Colorado has elected to submit updates to the 2000 305(b) report.

Once the Division has prepared the 305(b) 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.

2. Section 208/Regional Water Quality Management Plans

Section 208 provides that the Governor of a state must identify areas of the state which, as a result of urban or industrial concentration or other significant factors, have substantial water quality issues. The Governor may designate regional planning agencies for these areas, after consultation with local governmental officials having jurisdiction over the area, to conduct water quality management planning. The planning in these identified areas must be done by a single regional planning agency representing local elected officials of the area. The state through the Water Quality Control Division is required to conduct planning for areas outside the borders of designated planning agencies.

In Colorado, regional water quality planning has occurred in each of the fourteen planning and management regions. The Governor has designated five regional planning agencies to conduct planning in their respective regions. The planning agencies are the Denver Regional Council of Governments (DRCOG) (State Management Region 3), the Pikes Peak Area Council of Governments (PPACOG) (State Management Region 4), the Pueblo area (State Management Region 7), the North Front Range Water Quality Planning Association (NFRWQPA) (State Management Region 2), and the Northwest Colorado Council of Governments (NWCCOG) (State Management Region 12, except for Routt County). In each area the planning is being conducted under auspices of the local council of governments or other designated planning agency, representing the local governmental agencies within the jurisdiction of the designated regional agency. Watershed overlaps between the jurisdictional boundaries of four planning agencies (DRCOG, NFRWQPA, NWCCOG and PPACOG) has resulted in a memorandum of understanding to cooperate on overlapping water quality planning issues.

Section 208 planning for the remaining areas of Colorado (non-designated areas) is coordinated through the Water Quality Control Division in cooperation with the local governments. The Division does the functional planning in these areas (Regions 1, 5, 6, 8, 9, 10, 11, 13, and 14). The Division will periodically review the need to update regional water quality management plans for the non-designated regions of Colorado. Factors such as funding availability, regional interest in pursuing an update, population growth, development pressure, support of local elected officials, and the commitment of local and regional resources into continued water quality planning will be considered in this review. The Division will identify potential funding that may be available to hire contractors or made available to local and regional interests to develop an appropriate plan.

The role and uses of approved water quality management plans include, but are not limited to the following:

1. The plans review the status of water quality within specific areas and report on progress in meeting the local, state, and federal water quality goals as well as watershed management objectives, which are established in approved plans.

2. The plans support and/or recommend revisions to water quality standards, stream classifications, and total maximum daily loads, where appropriate.

3. The plans include priorities, processes and recommended solutions for addressing water quality problems. The plans document results of local and regional TMDLs and special studies.

4. The plans identify priorities and permitting needs or wastewater utility/facility plans for improving or constructing wastewater facilities, as required by Section 208(d) of the Act.

5. The plans identify the social, economic and environmental costs and benefits of implementing portions of the plans, where appropriate.

6. The plans list existing or anticipated (20-year planning horizon) water quality problems, assessments and solutions.

7. The plans identify data and information to support watershed restoration action strategies, source water, TMDLs, stormwater and nonpoint source decision-making processes.

3. Watershed and Basin Plans

Watershed plans and basin plans are designed to consider water quality problems and solutions from a broad perspective. Watersheds are geographic regions which are usually defined by natural drainage areas and the waters within those drainages. Utilizing a "watershed approach" allows for an inclusive appraisal of all potential sources of water pollution, both point and nonpoint source, and increases the opportunities for finding solutions to those identified problems. In recognition of this potential, the Colorado Water Quality Forum authored a July, 1994 paper on the watershed approach, which is entitled "A Colorado Watershed Protection Approach."

Basin planning pursuant to section 303(e) of the Clean Water Act was initiated in 1973 with $1 million in financial assistance from the State of Colorado. This broad planning effort was conducted by the Water Quality Control Division at the hydrologic river basin level for a major portion of the state. Three localized exceptions were the Standard Metropolitan Statistical Areas of Denver, Colorado Springs, and Pueblo. These areas of the State were omitted from the basin planning process with the expectation that they would be addressed through planning conducted under section 208. The basin plans for the remainder of the state were completed and approved by the Water Quality Control Commission and the Governor in 1975. The basin plans concentrated on water quality management for point sources. Nonpoint source problems were assessed only briefly.

Watershed planning is a comprehensive approach to considering water quality problems and solutions in a holistic framework. It generally is utilized when water quality problems cannot be solved at a single location with a simple solution, but instead require analysis of many different possible sources which may generate water pollution.

Watershed planning may vary in terms of specific objectives, priorities, elements, and resources, but generally follows the guiding principles listed below:

1. Partnerships/Stakeholders – Those people most affected by management decisions are involved throughout and shape key decisions.

2. Geographic Focus – Activities are directed within specific geographic areas, usually areas that drain to rivers, streams, or lakes;

3. Sound Management Techniques Based on Good Science and Data –Sound scientific data, tools, and techniques are used in an iterative decision-making process. This requires characterizing the affected resources, setting goals and objectives, identifying priority problems, developing management options, implementing selected options, and evaluating effectiveness.

Watershed planning encourages long-lasting collaborative relationships, which are capable of establishing and implementing goals and targets for water quality improvement while continuing to analyze and verify problems for which information is incomplete.

4. Commission/Division Report to the Public

The Water Quality Control Commission and Division have developed a new type of report to the public regarding Colorado water quality. The goal is a short, easy-to-read document that conveys an understanding of current water quality in Colorado, as well as existing and future challenges. This report is entitled "Status of Water Quality in Colorado." It is accessed on the web at http://www.cdphe.state.co.us/op/wqcc/Resources/waterstatus_305_b/305bUpdate08.pdf.

IV. WATER QUALITY STANDARDS

A. Overview of Water Quality Classifications, Standards, and Designations

1. Surface water standards

a. Overview

"The Basic Standards and Methodologies for Surface Water" Regulation #31 (1) establishes a system for classifying state waters to protect beneficial uses, for assigning numeric standards and for granting temporary modifications, (2) establishes certain statewide standards that are applicable to all state waters, (3) establishes a statewide antidegradation rule, and (4) includes certain provisions unique to wetlands.

The system for assigning surface water quality classifications and standards is based on adopting use classifications that identify those 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. (Note: 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.) See Water Quality Standard-Setting Process flow chart on the following page.

Note that the State does not have jurisdiction to adopt water quality standards for land on Indian reservations located within Colorado's borders. Water quality standards for those areas come under the jurisdiction of the EPA, Southern Ute tribe, or Ute Mountain Ute tribes.

b. Statewide Standards

Several narrative water quality standards have been adopted which are applicable to all state surface waters. [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 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 are intended to become suitable. [Section 31.13] The current use classification categories are: (1) recreation class E – existing primary contact use, recreation class P – potential primary contact use, recreation class N – not primary contact use, recreation class U – undetermined use; (2) agriculture; (3) aquatic life cold water class 1, warm water class 1, or aquatic life class 2; (4) domestic water supply; and (5) wetlands. A "seasonal" qualifier can be adopted to limit 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.

The concern regarding appropriate classifications is heightened by the 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) needs to be performed to justify the downgrading.

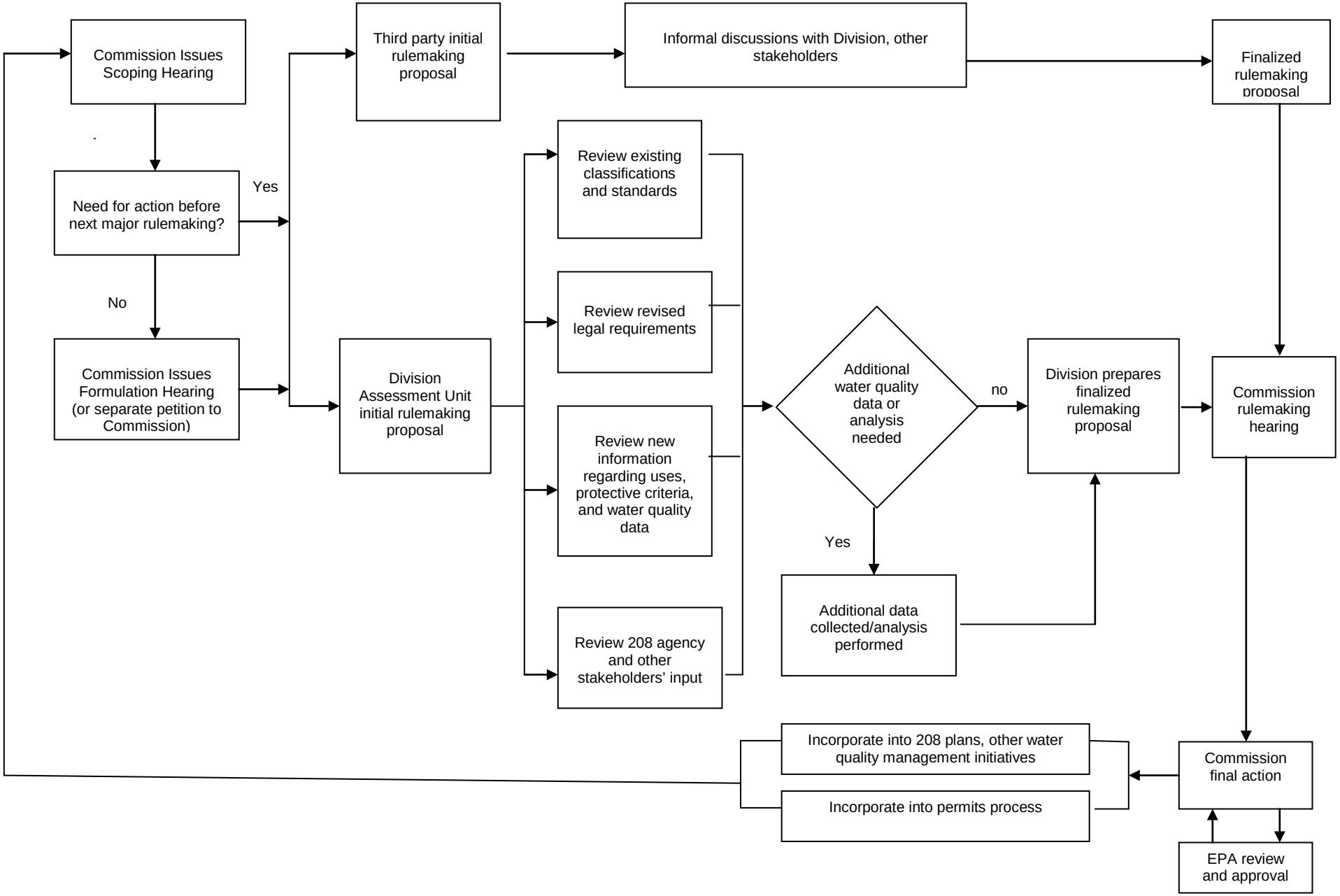
For each classified stream segment, numeric water quality standards are adopted that are intended to maintain water quality at a level sufficient to protect the classified uses. Even where classified uses can be agreed upon, there can be substantial debate over the appropriate numeric standards for a 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—i.e., standards based on the existing in-stream quality—may be adopted where natural or irreversible pollutant levels are higher than would be allowed by table value standards but are determined adequate to protect classified uses. The third option is to adopt site-specific criteria-based standards 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 classified uses.

Temporary modifications to numeric standards may be adopted where an underlying standard is not being met at the present time, but the Commission determines that the conditions causing lower water quality are correctable. [Section 31.7(3)] For example, if the Commission believes that the existing quality of a segment can be significantly improved with additional feasible point or nonpoint source controls, it may adopt a temporary modification based on existing quality, with a more stringent underlying standard to encourage clean-up. In addition, temporary modifications may be adopted where there is significant uncertainty regarding the appropriate long-term underlying standard. Temporary modifications are re-examined not less than once every three years.

The Commission expects that progress will be made to develop information to resolve temporary modifications. The Commission in the June 2005 Basic Standards Rulemaking directed 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 in determining the level of


Commission Issues Scoping Hearing
Need for action before next major rulemaking?
Yes
No
Commission Issues Formulation Hearing (or separate petition to Commission)
Third party initial rulemaking proposal
Division Assessment Unit initial rulemaking proposal
Informal discussions with Division, other stakeholders
Review existing classifications and standards
Review revised legal requirements
Review new information regarding uses, protective criteria, and water quality data
Review 208 agency and other stakeholders' input
Additional water quality data or analysis needed
no
Yes
Additional data collected/analysis performed
Division prepares finalized rulemaking proposal
Finalized rulemaking proposal
Commission rulemaking hearing
Commission final action
Incorporate into 208 plans, other water quality management initiatives
Incorporate into permits process
EPA review and approval

treatment that a facility can provide without significantly increasing costs such that water quality would be maintained or even improved. 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.

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

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.

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]

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. No degradation of outstanding waters by regulated activities is allowed. 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 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 in which 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 whether specific wetlands may be filled in, pursuant to section 404 of the 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. [Section 31.11(1)(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 a 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.

2. Ground Water Quality Standards

a. Basic Standards

In 1987, the Commission adopted "The Basic Standards for Ground Water," Regulation #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 the original adoption of the Basic Standards for Ground Water, the Commission, through the triennial review process, has updated this regulation 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 #42 (5 CCR 1002-42) documents theses 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 assure 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.

B. Water Quality Standard-Setting Process

The Water Quality Control 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 in the triennial review process – the Issues Formulation Hearing – results in an 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 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.

Water Quality Classifications and Standards

Year	October Issues Scoping Hearing	November Issues Formulation Hearing	June Rulemaking Hearing
2005	Arkansas (#32); Rio Grande (#36)	San Juan (#34); Gunnison (#35)	Basic Standards (#31)
2006	Upper Colorado (#33); Lower Colorado (#37)	Arkansas (#32); Rio Grande (#36)	San Juan (#34); Gunnison (#35)
2007	South Platte (#38)	Upper Colorado (#33); Lower Colorado (#37)	Arkansas (#32); Rio Grande (#36)
2008	Basic Standards (#31)	South Platte (#38)	Upper Colorado (#33); Lower Colorado (#37)
2009	San Juan (#34); Gunnison (#35)	Basic Standards (#31)	South Platte (#38)
2010	Arkansas (#32); Rio Grande (#36)	San Juan (#34); Gunnison (#35)	Basic Standards (#31)

For proposals brought forward by individual entities or members of the public, there typically will be informal communication between the entity or person advancing the proposal and the Division staff prior to filing a formal rulemaking notice and proposal, although the Commission is generally willing to consider in rulemaking any proposal that a member of the public wishes to advance. While not required, this informal, pre-rulemaking communication may reduce or eliminate controversy at a rulemaking hearing.

Proposals advanced by the Division as staff to the Commission typically result from: (1) identification of errors in the previous classifications or standards; (2) changes in federal or state legal requirements; (3) new information regarding existing or potential uses of water segments; (4) new scientific information regarding protective levels for particular uses; or (5) new water quality data for particular water segments. In preparing its proposals, the Division reviews the best currently available information regarding each of these factors. The Division considers any input received from the applicable section 208 agencies, as well as from other 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 controversy associated with a particular proposal, and within the constraints of available time and resources, the Division attempts to consult with interested persons regarding proposals 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, copies of which are available from the Commission Office or on the Commission's web site at http://www.cdphe.state.co.us/op/wqcc/index.html.

One important component of the triennial review process is a requirement in EPA's current water quality standards regulations that a "use attainability analysis" be conducted for any surface water segment that lacks either an aquatic life use classification or a class 1 recreational use classification. This requirement stems from a Clean Water Act goal of attaining "fishable, swimmable" water quality (i.e., "protection and propagation of fish, shellfish, and wildlife and … recreation in and on the water") in all of our nation's surface waters. EPA has interpreted this provision to put 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. In 2002, the Division finalized a guidance document regarding the preparation of use attainability analyses for recreational uses.

New or revised water quality classifications and standards adopted by the Commission after rulemaking are incorporated into section 208 plans, factored into subsequent revisions of point source discharge permits, and used as the basis for other water quality management planning, such as the development of TMDLs, nonpoint source control efforts, and in watershed planning initiatives.

V. TOTAL MAXIMUM DAILY LOADS (TMDLs)

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. In accordance with a priority ranking of those waters, states are then to establish total maximum daily loads (TMDLs) 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 Process for Listed Waters

303(d) List and TMDLs

Section 303(d) of the federal Clean Water Act requires that states compile lists of impaired waters. Impaired waters are those lakes or stream segments which do not attain one or more numeric or narrative standards, or classified uses.

Total Maximum Daily Loads, or TMDLs, are prepared for the pollutant/water body combinations which are included on the 303(d) List. TMDLs:

- Quantify the overall reduction in pollutant loading which is necessary to attain assigned standards or classified uses,
- Identify and characterize significant sources of the pollutants,
- Allocate the necessary loading reduction among those sources.

1. Assigning Priorities

The Water Quality Control Division (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 Clean Water Act directs the State to prioritize the waters on the 303(d) List. The Division uses the prioritized 303(d) List to focus resources to support the development of TMDLs. For more information on the Division section 303(d)/TMDL program see http://www.cdphe.state.co.us/wq/Assessment/TMDL/tmdlmain.html.

Section 303(d)(1)(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. The identification of a high priority segment does not necessarily mean that the TMDL will be developed before any lower priority segments. For some high priority TMDLs the development may have to await data collection or stakeholder outreach.

The segments on the 303(d) List will be at different stages on the path to an approved TMDL. Some will need to have more data collected, some will need outreach to increase stakeholder involvement, some will need scoping, additional data and problem identification. Some TMDLs are complex, multi-task problems, some simply result in CDPS permit effluent limits. The development of these TMDLs may proceed at different rates. *Implementation* of approved TMDLs is a separate process with separate authorities and time frames.

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 waterbodies (or specific pollutant/waterbody combinations) 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 (i.e. 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) or reduce the priority (e.g., pace of the stakeholder group development, 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.

a. Removal of listed TMDLs

In general, removal of waterbodies/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 waterbody, 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 waterbody 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.

In instances where the WQCD determines that pollutant controls which have been completed or are scheduled for implementation will result in attainment of water quality standards within a reasonable timeframe, 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.

b. Monitoring and Evaluation List

The Monitoring and Evaluation List is an administrative and tracking tool to identify 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). In general the Division develops any additional water quality information necessary to support a decision with respect to standards attainment within six years of the original listing decision. Should additional information justify placement of the water on the 303(d) List, TMDL development will then follow as described elsewhere in this section.

c. TMDL Completion Schedule

As the result of settlement of litigation regarding TMDL development in Colorado, the State has committed to the following schedule for completion of TMDLs for the segments and parameters on the 1998 303(d) List. "Percentage" indicates the cumulative percentage of total TMDLs from the 1998 List.

TMDL Completion Schedule for 1998 Section 303(d) List				
Biennium	***End Date***	**Number of TMDLs to be Completed**		
		Number	***Percent of Total***	***Cumulative Percentage***
1st	6/30/00	30	15	15
2nd	6/30/02	50	25	40
3rd	6/30/04	40	20	60
4th	6/30/06	40	20	80
5th	6/30/08	38	20	100

Additional 303(d) Lists have been promulgated in 2002, 2004 and 2006. The priorities assigned each listed waterbody/pollutant combination have remained consistent over time, for example a water which is not in attainment of a human health-based standard has been assigned a "high" priority. In general the Division would expect a TMDL to be promulgated for a high priority listing within two to five years of listing. As consistent with USEPA guidance, any listed water should be addressed within thirteen years of its original listing (see *Guidance for 2006 Assessment, Listing and Reporting Requirements pursuant to Sections 303(d), 305(b) and 314 of the Clean Water Act, USEPA, July 2005.)*

2. Methods for development of TMDLs

The TMDL process results in the determination of: (1) the amount of a specific pollutant that a segment can receive without exceeding water quality standards (the TMDL); and (2) the apportionment to the different contributing sources of the pollutant loading (the allocation). The TMDL must include a margin of safety, waste load allocation (for point sources) and a load allocation (for non-point sources and natural background). The TMDL can include upstream loads in the assessment and apportionment.

The Division has overall responsibility to complete TMDLs for all segments on the 303(d) List. However, the Division will rely upon local watershed groups and entities to participate and even develop TMDLs for their segments. TMDLs must ultimately be submitted to EPA for review and approval. Once a prioritized 303(d) List is finalized, the Division's principal responsibilities are: (1) to ensure that all completed TMDLs will be protective of water quality standards; and (2) to submit TMDLs to EPA for approval in accordance with the schedule for completion.

The Division has the following objectives for all individual TMDLs submitted by the Division to EPA for approval. They must have:

- an adequate inventory of pollutant sources;
- accurate estimates of pollutant contributions;
- consideration of all readily available data;

- documentation of decisions regarding sources and data;
- appropriate verification or validation of assumptions and modeling; and
- opportunity for public participation representing a wide range of interests.

The Division's preference for developing TMDLs is that local stakeholders groups, representing a diversity of backgrounds and interests, participate in TMDL development. The Division believes that apportionment of the TMDL is most appropriately done with the full participation of local stakeholders. Therefore, local entities or groups that decide that they want to pursue TMDL development with the Division, must ensure that their membership adequately represents the diversity of interests in their watershed. This is especially critical when an individual undertakes a TMDL. In areas where adequate stakeholder groups do not exist, the Division will undertake to develop stakeholder involvement in its preparation of TMDLs. The Commission may determine in reviewing a proposed update to a water quality management plan (section 208 plan) that TMDLs recommended in the plan should be submitted to EPA for approval.

Notwithstanding the preceding comments, the Division recognizes the potential need to expedite TMDL development in instances where a TMDL may effectively address an imminent threat to public health, agriculture or the aquatic environment. In these circumstances the Division may opt to develop the TMDL internally, coupled with a streamlined public process.

In order to reduce duplication and to increase efficiency, the Division intends that all TMDLs that are initiated should be of a quality that the Division can submit them to EPA without lengthy delays. To ensure adequate Division consideration and timely submittal, initiation of TMDL development by outside parties must be coordinated through the Division. The Division will support locally initiated TMDL development projects, as long as the objectives discussed above are met and the Division is involved in the process.

A rigid procedural approach to the completion of TMDLs is inappropriate. The wide variety of water bodies, parameters and local stakeholder group evolution dictates that the Division retain a flexible approach to problem solving. This is not a one-size-fits-all program; however, the common process elements involved in all TMDLs are:

- Scoping (enough problem analysis to know what data to gather and what stakeholders to involve);
- Stakeholder involvement;
- Data gathering;
- Data analysis;
- TMDL apportionment; and
- Public involvement.

Many TMDLs are simple dilution calculations that mix the pollutant concentration of a discharge with the receiving stream. The new mixed concentration is not allowed to exceed a numeric water quality standard. This model uses existing data for streamflow and water quality. Expected effluent flow is provided by the discharger, and, based upon known factors, the allowable effluent pollutant concentrations are identified.

A TMDL may be more complex when extensive preparatory work is required because data is missing, limited, or must be extrapolated. TMDLs for multiple discharges to a segment, nonpoint sources, stormwater discharges or unusual background conditions may incorporate the use of more sophisticated models which consider kinetic reaction rates, travel times, constituent partitioning, or constituent

interactions. This type of TMDL may require a special data collection program to explain the water quality or hydrologic system, and may involve difficult negotiations among various stakeholders to arrive at an equitable wasteload allocation for all entities.

Before the Division submits a TMDL to EPA for approval, there is a public comment period. The Division attempts to resolve issues raised during this comment period and, if it is successful, does so before formal submittal to EPA. In some cases, it is anticipated that the Division will not be able to resolve issues to all parties' satisfaction. In these cases, the preferred course of action would be through Commission adjudicatory review of the TMDL decision in question. In this process, the Commission would conduct an adjudicatory hearing to decide the disputed issues. The Division would submit the modified TMDL, reflecting the Commission's decision, to EPA as the final TMDL.

A second alternative that may sometimes be appropriate to resolve a disputed TMDL would be through traditional rulemaking processes. A party could ask the Division for a stay of the TMDL and propose a TMDL in the form of a Control Regulation for consideration by the Commission. The final Control Regulation, if adopted by the Commission, would be submitted as the TMDL.

TMDL wasteload allocations for point sources are implemented as effluent limits in a discharge permit. Effluent limits are legal restrictions on the quantities, rates, and concentrations of chemical, biological, physical, or other constituents which are discharged from point sources. The wasteload allocation may include both a flow rate and a concentration of the constituent, both of which may be translated into effluent limits.

Load allocations may also be assigned to nonpoint sources. The nonpoint source reduction program for Colorado gives preference to nonregulatory solutions to nonpoint source problems over regulatory options, as provided by the Colorado Water Quality Control Act and the Colorado Nonpoint Source Management Program. Under this program, stream segments are prioritized for the application of best management practices (BMPs) based on severity of the nonpoint source impact and amenability of restoration. The purpose of BMPs is to reduce mass loading of pollution to a segment, but in some cases BMPs may not produce sufficient load reduction to alleviate exceedances of the standards. After BMPs have been installed, a review of stream improvements may require that stream classifications and standards be revisited, or that additional BMPs be identified. In such cases identification of nonpoint source loading areas and parties responsible for reduction of these loads is necessary. Technological and financial constraints may cause the application of BMPs to lag behind point source improvements. In some instances that lag may be shortened through control regulations for nonpoint sources if nonregulatory efforts appear to be unable to produce pollutant reductions in a timely fashion.

C. Expiring Water Quality-Based Permits

Many discharge permits contain water quality-based effluent limitations (which are more stringent than technology-based). These limitations serve to protect water quality and to attain applicable water quality standards. As these permits expire and are opened for renewal, dilution calculations and predictive modeling may reveal that TMDLs, wasteload allocations, and effluent limits must be adjusted in order to provide adequate water quality protection. The TMDLs resulting from discharge permit renewals will be submitted to EPA for review and approval.

VI. ESTABLISHMENT OF SOURCE CONTROLS

A. Site Approval Process

The site approval process established by the Colorado Water Quality Control Act provides that construction of a domestic wastewater treatment works, or enlargement 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 which are also addressed by the regional water quality management plan and by discharge permits, it is critical that applicants for site approval understand that all three elements must be accomplished to allow construction of new or expanded wastewater treatment facilities.

The Water Quality Control Commission has adopted Regulations for the Site Approval Process, Regulation #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 application requirements based on the nature of the proposed facility. The three categories of application requirements are: new wastewater treatment plants; expansions 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.

(1) 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 Water Quality Control Division district engineer, defines the wastewater needs and prepares a site application. This application consists of 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.

(2) 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.

(3) The comments and recommendations of the various reviewing agencies are submitted, with the site application form and engineering report, to the Division. The Division is responsible for determining completeness of the submittal and evaluating 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; and adequacy of the financial plan.

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 which 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.

(4) The Division recommends approval, conditional approval, or denial of the application based on the results of its review as well as the comments and recommendations of the other review entities. The applicant is notified in writing of the Division's action and 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 which are the basis for the action. Notice of the Division's action appears in the following monthly Water Quality Information Bulletin.

(5) For a period of 30 days after the date of mailing of the Water Quality Information Bulletin containing notice of the Division action, that action may be appealed to the Water Quality Control Commission by any person adversely affected by the decision.

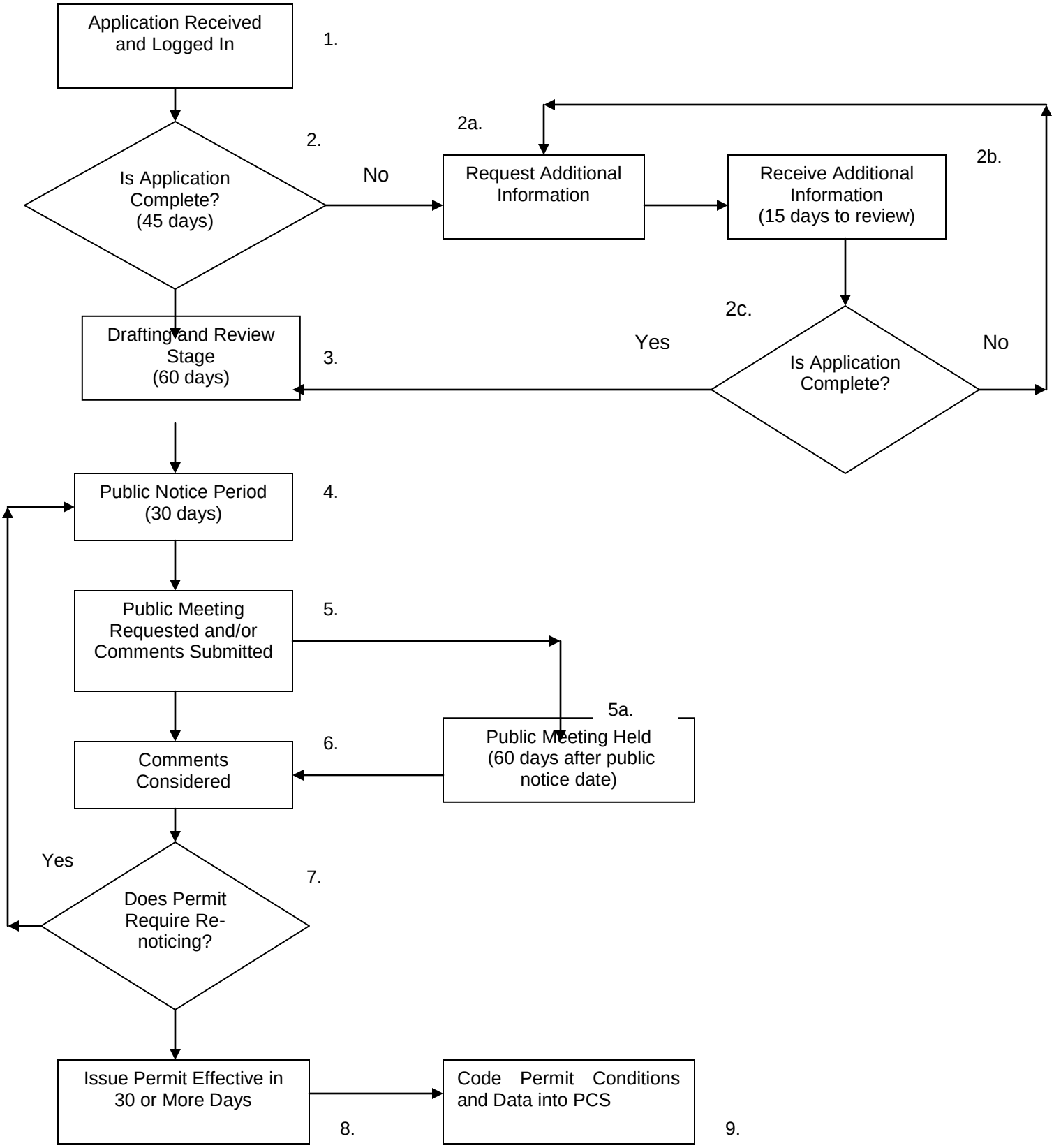
(6) The Commission, within 90 days of the filing of an appeal, commences a hearing to consider the appeal of the Division's decision. The Division's decision is stayed pending the outcome of the Commission's hearing.

B. Point Source Discharge Permit Program

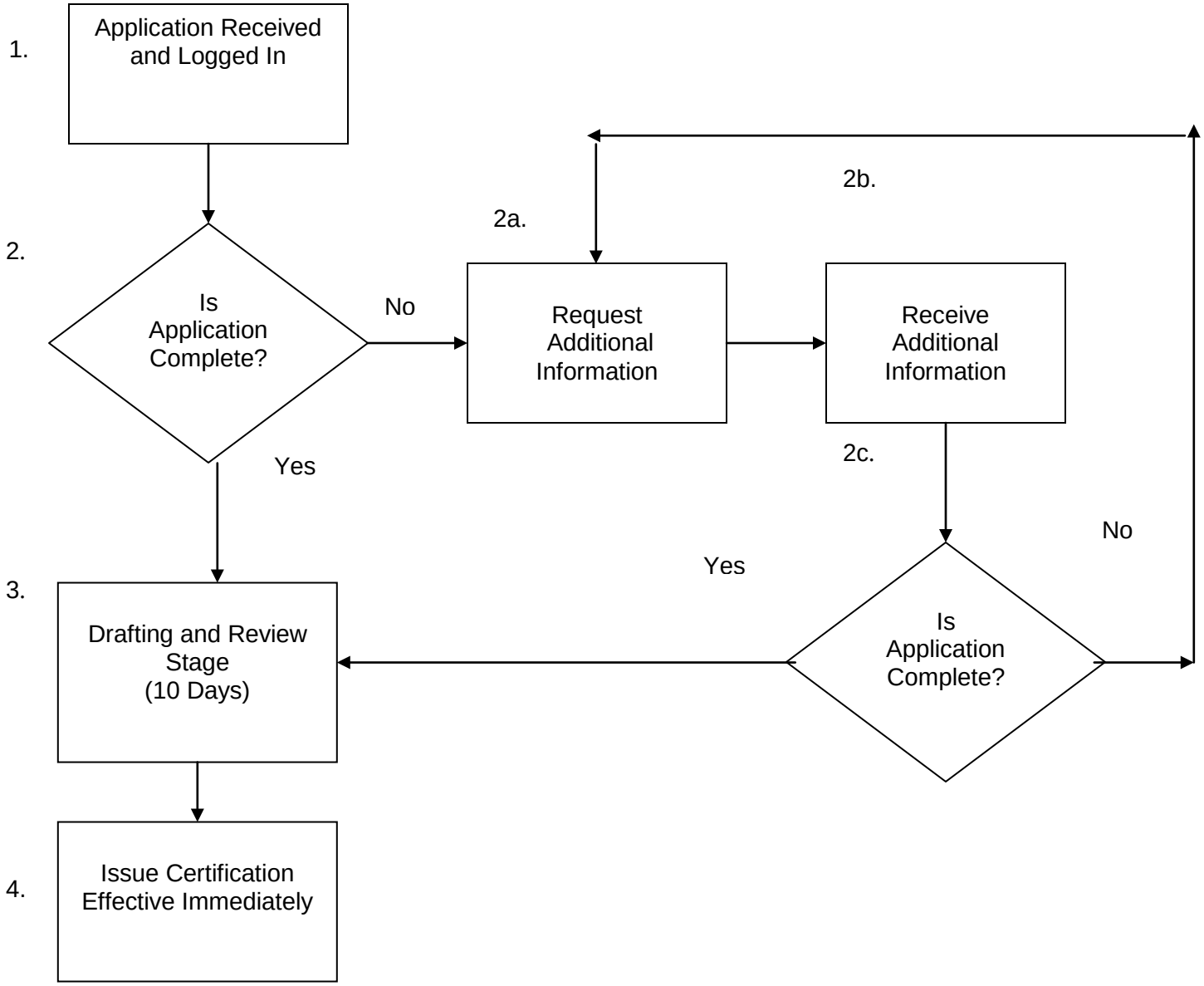
The federal Clean Water Act prohibits the discharge of pollutants from a point source to surface water without a permit. The NPDES permit program was established by the Act to regulate such discharges. Because the State has developed a program that meets the requirements of the federal Clean Water Act, 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 #61 to govern this program. Note, however, that the State has not yet received delegation of permitting authority for federal facilities in Colorado and does not have jurisdiction for permitting discharges on Indian reservations. In these instances, permits are still issued by EPA.

The processes used by the Division for review of applications and issuance of (1) individual permits and (2) general permit certifications are set forth on flow charts on the following pages.

Individual Permit Flow Chart



Process Wastewater and Stormwater General Permit Certification
Flow Chart



1. Municipal and industrial wastewater discharges

a. Technology-based and water quality-based controls

The Discharge Permit System Regulations principally define the permit issuance process. The substantive conditions included in permits are determined primarily by other regulations. These substantive conditions 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 and on the Colorado "Regulations for Effluent Limitations" Regulation #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 either incorporate the appropriate waste-load allocation developed pursuant to an applicable TMDL or will perform 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 antidegration review requirements apply, as discussed in section IV.A of this Handbook. The Division has the authority to reopen permits and revise effluent limitations whenever applicable water quality standards are modified; however, the current routine practice is to incorporate any such revisions at the time of permit renewal.

The Commission adopted the first Colorado whole effluent toxicity (WET) testing—also referred to as aquatic life biomonitoring—requirements as part of the Discharge Permit System Regulations in 1988. Rather than measuring the levels of specific pollutants in discharges, this form of 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)]

A several-year disagreement with EPA regarding the validity of Colorado's regulatory provisions governing WET testing and how such requirements would be enforced was resolved by major revisions to these provisions in February 1993. [Section 61.8(2)] The WET testing provisions in the regulation are now quite brief, with most of the detail regarding implementation of these requirements set forth in separate Division policy guidance documents.

b. Mixing Zones

In October of 2000 the Water Quality Control Commission adopted amendments to the "Basic Standards and Methodologies for Surface Waters" at section 31.10 that incorporated substantial changes to the provisions applicable to mixing zones for point source discharges to surface waters. Prior to that time, permit limits for point sources of discharge in Colorado were based on the assumption that the discharge and the receiving water mixed virtually instantaneously. Studies conducted by the Division and others showed that the mixture of a point source discharge with a receiving water occurs over a period of time and therefore results in an area within which full mixing has not occurred. This space, which is called the "'physical mixing zone," may show concentrations of regulated substances that exceed the acute or chronic water quality standards applicable to the receiving water. The area within a physical mixing zone where a water quality standard for a given constituent is exceeded is referred to in the regulation as the

"exceedance zone" for that constituent. To be fully protective of the designated uses of surface waters, the revised mixing zone regulation limits the size of exceedance zones. In early 2002 the Division finalized guidance that includes simple methods (exclusion tables) to determine if a point source discharge will be able to use the entire low flow for calculation of water quality standards-based permit limits.

The sizes of both chronic and acute regulatory mixing zones for streams in Colorado are based on an area that is a function of the "bankfull" stream width rather than a distance from the discharge. Therefore, exceedance zones for acute and chronic standards in streams are limited to a proportionally small area of the aquatic environment in the vicinity of a discharge. The size of the mixing zone for lakes has been limited to three percent of the surface area of the lake or a geographically identifiable aspect of the lake such as a bay, so that, as with streams, the exceedance of water quality standards is limited to a relatively small area of the aquatic environment. Furthermore, the mixing zone regulation limits the cumulative area of exceedance zones resulting from multiple discharges along a reach of stream or in a lake. Finally, the regulation allows for further limitation or denial of a regulatory mixing zone where the use of such a zone, even though small, could create an unacceptable risk of impairment to beneficial uses or damage aquatic habitat of special value.

c. Pretreatment program

The federal Clean Water Act and EPA regulations establish pretreatment requirements applicable to non-domestic sources of pollutants that discharge wastes into a publicly owned treatment works (POTW). The Commission has adopted "Colorado Pretreatment Regulations", Regulation #63. The goals of the program are:

- 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 program does not apply to industrial discharges to privately owned treatment works or direct discharges to surface water or ground water.

The pretreatment program was developed with the intent that implementation would primarily be delegated to local authorities, usually either a city or a water/sanitation district. There are currently 26 cities/districts which have approved pretreatment programs. Program development has been initiated by two additional districts. 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 State pretreatment program steps in and regulates "categorical" industries that are located in areas where no approved local pretreatment program exists. Currently, the state regulates 10 industries which are located in areas such as Berthoud, Fort Lupton, Monument, Windsor, and Brush.

The other role of the State pretreatment program is to conduct oversight of cities/districts which have approved pretreatment programs. Oversight inspection of the cities/districts includes: review of each program's budget, local limits, compliance history, and program changes. The oversight inspection also includes a review of a city's/district's management of their industrial users.

A business involved in operations described by one of the federal industrial point source discharge categories is automatically subject to the pretreatment program. 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 which is the most difficult for an industry to meet.

Businesses which are not involved in operations described by one of the categories may be subject to local limits. Businesses which 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.

Generally a city/district which has more than two categorical industries will be a candidate for development of their own pretreatment program. Also, a POTW with a history of pass through or interference due to industrial discharges may be required to develop a program. A city/district with unusually high potential to be adversely affected by an industrial discharge may also be required to develop a program.

Because Colorado has not yet been formally delegated authority to implement the federal pretreatment program, EPA retains ultimate authority over the program. EPA plays a substantial role with respect to program implementation for municipalities but currently has little involvement in day-to-day industrial implementation of pretreatment requirements.

d. Biosolids Management Program

The Commission has adopted a Biosolids Regulation, Regulation #64, that 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 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. The program also regulates the sale or distribution of composted or heat dried biosolids through similar permitting and oversight mechanisms.

The Colorado regulations governing beneficial use of biosolids identify allowable levels of heavy metals and pathogens in the 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.

Approximately 85 percent of the biosolids generated by municipal wastewater treatment facilities in Colorado is regulated under the program. This is equivalent to approximately 200 to 210 dry tons of sewage sludge per day or 75,000 dry tons per year. In addition, approximately 32,000 dry tons are imported from New York City and 5,000 dry tons are imported from Boston, all of which are beneficially used in southeastern Colorado.

Because Colorado has not yet been formally delegated authority to implement the federal biosolids program, EPA retains ultimate authority over the program. EPA Region 8 implemented a General Sewage Sludge Permit in 2002 for any facility that removed sewage sludge. However, Colorado currently exercises substantial autonomy in implementing the land application portion of the program in Colorado, since its program is consistent with federal requirements.

e. Reclaimed Water Program

In October of 2000 the Water Quality Control Commission adopted the "Reclaimed Domestic Wastewater Control Regulation", Regulation #84, pursuant to revisions to section 25-8-205(1)(f) of the Colorado Water Quality Control Act that were adopted by the General Assembly in its 2000 session. This regulation applies to the direct application of treated domestic wastewater without discharge to "waters of the state." Regulation #84 is modeled on the Biosolids Regulation, Regulation #64, and requires submittal of letters of intent 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 protozoan. Acceptable public health risk is determined based on an absence of acute gastrointestinal disorders (the most likely type of disease manifestation) in those persons casually exposed to reclaimed water as it is used for surface irrigation of landscaping or other uses subject to public exposure. Bacterial protection is ensured through the imposition of limits on *E.coli* that are consistent with EPA limits for surface waters set to protect swimmers. Viral and protozoan protection is ensured by the imposition of limits for turbidity or total suspended solids, as appropriate.

The Commission originally limited the scope of the regulation to reuse of reclaimed water for landscape irrigation. In April of 2004 and August of 2005, the Commission held rulemaking hearings during which several modifications and additions to the regulation were adopted. As a result of these rulemakings, the Commission amended the regulation to further promote the use of reclaimed water, by allowing such water to be used in industrial and commercial application as well as landscape irrigation. The Commission found that the industrial and commercial uses contemplated by the amendments would create no greater risk to public health or the environment that the landscape irrigation uses authorized before the amendments. Approved applications include use of reclaimed water for cooling towers, closed loop cooling systems, dust suppression, soil compaction, mechanized street sweepers, concrete mixing and washout, zoo operations, commercial and residential fire protection and resident-controlled landscape irrigation.

The regulation, as amended, 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 meet minimum standards, and requiring treaters and users of such water to employ appropriate best management practices and oversee its use.

Notices of Authorization (NOAs) issued to treaters include conditions for the type of treatment and quality of the reclaimed water that are based on the potential for the 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 TSS. 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 were public contact is likely.
- 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.

Notices of Authorization (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.

Irrigation of landscape with treated domestic wastewater has been regulated under the Colorado Discharge Permit System in the past. As notices of authorization are issued, the entity's discharge permit will be amended to remove any condition relative to irrigation with reclaimed water unless there are specific wasteload allocations for parameters contained in the treated wastewater, such as phosphorus. In this instance, the permittee may choose to have those allocations prescribed in the NOA in lieu of their discharge permit.

There are nearly 20 facilities distributing reclaimed water to hundreds of users. This accounts for nearly 40 million gallons per day of reclaimed water used during peak demands.

2. Stormwater discharges

Stormwater runoff was traditionally considered nonpoint source pollution and therefore not regulated by the Colorado Discharge Permit System 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), certain industrial facilities and construction sites that disturb five or more acres of ground.

Most industrial stormwater discharges are covered by general, rather than individual, permits. The principal substantive requirement of all stormwater permits is the development of a stormwater management plan. The major element of such plans is the identification of best management practices

(BMPs) that will be implemented to reduce the amount of pollutants entering state waters from stormwater runoff.

In December 1999, EPA promulgated "Phase II" stormwater discharge permit requirements that substantially expand 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 will now cover 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 is 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;
- 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 at http://www.cdphe.state.co.us/wq/PermitsUnit/stormwater/index.html.

3. Discharges to ground water

Discharge permit regulation provisions addressing discharges to ground water first became effective in 1993. These provisions, which are tailored in a manner to avoid overlap with other existing regulatory programs, require permits for land disposal, land treatment, and discharges to ground water from impoundments. One of three alternative levels of permit conditions may be established by the Division, depending on the site-specific facts. These three levels are: (1) effluent limitations at a point of compliance, with verification monitoring; (2) ground water monitoring only; and (3) discharge monitoring only.

C. 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 401 certification process in Colorado is governed by a Commission regulation entitled "401 Certification Regulation," Regulation #82. The Commission revised Regulation No. 82 in 2003. Federal permits that require section 401 certifications in Colorado are: 1) Clean Water Act section 404 permits issued by the Army Corps of Engineers for the discharge of dredged or fill material (404 permits); 2) licenses issued by the Federal Energy Regulatory Commission (FERC); 3) Clean Water Act section 402 permits issued for federal facilities by the Environmental Protection Agency; and 4) other federal permits or licenses that may be determined to require a section 401 certification.

The 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 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 402 permit submitted to EPA while FERC and all other federal licenses require a letter application with specific project details.

D. Control Regulations

Section 25-8-205 of the 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:

1. Regulations for Effluent Limitations, Regulation #62;
2. Pretreatment Regulations, Regulation #63;
3. Biosolids Regulation, Regulation #64;
4. Regulations Controlling Discharges to Storm Sewers, Regulation #65;
5. Confined Animal Feeding Operations Control Regulation, Regulation #81;
6. Passive Treatment of Mine Drainage Control, Regulation #83;
7. Reclaimed Domestic Wastewater Control Regulation, Regulation #84.

Current watershed protection control regulations include:

1. Dillon Reservoir Control Regulation, Regulation #71;
2. Cherry Creek Reservoir Control Regulation, Regulation #72;
3. Chatfield Reservoir Control Regulation, Regulation #73;
4. Bear Creek Watershed Control Regulation, Regulation #74;
5. Cheraw Lake Control Regulation, Regulation #75.

Cherry Creek Reservoir Control Regulation

Extensive revisions to this control regulation were adopted by the Commission in 2001. The Commission expressed concerns about the deterioration of water quality in the reservoir at this time. They determined that it was appropriate to adopt the control regulation as a "phased TMDL" consistent with EPA guidance. The phased process provides for the implementation of point source and nonpoint source controls of phosphorus that will provide protection to the reservoir while additional investigative studies are undertaken and any additional necessary control programs are identified.

E. Nonpoint Source Management Program

The principal federal and state water quality regulatory programs have focused to date on discharges of pollutants from point sources. Pollution from less discrete sources, such as diffuse stormwater runoff from agricultural operations and inactive mining activities, is referred to generally as nonpoint source pollution. In contrast to the point source discharge permit program, the current approach to nonpoint sources of water pollution in Colorado is largely voluntary and nonregulatory.

Nonpoint Source Pollution

Nonpoint source pollution results from rainfall or snowmelt moving over and through the ground. An example of nonpoint source pollution is when runoff picks up and carries away natural and manmade pollutants, finally depositing them into lakes, rivers, wetlands, and groundwater. These pollutants include:

- Excess fertilizers and pesticides from agricultural lands and residential areas;
- Oil, grease, and toxic chemicals from urban runoff and energy production;
- Sediment from improperly managed construction sites, crop and forest lands, and eroding streambanks;
- Heavy metals in acid drainage from abandoned mines;
- Bacteria and nutrients from livestock, pet wastes, and faulty septic systems.

The federal Clean Water Act originally envisioned that nonpoint source pollution would be dealt with at the state and local level pursuant to "areawide waste treatment management plans" mandated by section 208 of the statute. However, the section 208 planning process by itself was not sufficient to address nonpoint sources of water pollution. To date in Colorado, regulatory provisions addressing nonpoint sources have been adopted only in limited site-specific contexts. For example, the Dillon Reservoir, Cherry Creek Reservoir, Chatfield Reservoir and Bear Creek Watershed Control Regulations referenced above each address the relationship between point and nonpoint sources of phosphorus.

The 1987 amendments to the Clean Water Act included a new section 319, providing for the development of nonpoint source management programs by the states. States are to identify waters not attaining water quality standards without additional nonpoint source controls and to identify best management practices for categories of nonpoint source problems, along with programs to implement BMPs. This section is intended to operate principally through financial incentives, providing federal matching funds for nonpoint source projects in states with approved management programs. Adoption of this management program was preceded by adoption of a Nonpoint Source Assessment Report, evaluating the extent of current nonpoint source pollution in Colorado.

The Colorado Nonpoint Source Management Program was first approved in May 1989. Programs for agriculture, silviculture, urban runoff, construction runoff, and mining were adopted at that time. These management programs were updated in October of 1990. The Hydrologic Modification Nonpoint Source Management Program was adopted in June, 1992.

By the mid 1990's, the milestones established in the original management program had been essentially completed. At about the same time, EPA issued new guidance for updating state management programs, identifying nine key elements considered to be the keystones of nonpoint source management. The new guidance was used to develop a major update to Colorado's Nonpoint Source Management Program, which was approved by EPA in January of 2000.

The new program, with the goal of restoring waters impaired by nonpoint sources and preventing future impairments, includes significant ties to the TMDL program, with on-going activity on several 303(d) listed waterbodies, including the Gunnison, the Animas, and the Rio Blanco Rivers.

The Water Quality Control Commission approved a supplement to the 2000 NPS Management Program in August 2005. While the goal of the NPS Program remains the same, the supplement provides a road map to integration of the various nonpoint source categories of pollution at the watershed level. In

addition, the supplement provides more clear direction to target funds toward high-priority restoration activities, including implementation of actions necessary to accomplish the goals of Colorado's approved TMDLs.

As with TMDLs, EPA expects the nonpoint source program to link to other water quality programs, including the Clean Lakes Program. States are encouraged to use Section 319 funding for eligible activities that might have been funded in previous years under Section 314 of the Clean Water Act. The Clean Lakes Program has received total appropriations of $145 million since 1976; however, the current expectation is that Section 319 funds will be used for lakes activities. Examples of program integration in Colorado include the Three Lakes study in Grand County and an emerging effort on Barr Lake/Milton Reservoir in Adams and Weld Counties.

Since the nonpoint source program relies on voluntary efforts to implement needed actions, partnerships are critical to success. Those partnerships exist on two levels: the programmatic level and the project level.

Programmatic partnership is displayed through the Colorado Nonpoint Source Council, formerly the Task Force, which was established by the Division in 1987 to act as an advisory group and work group in preparation of the Nonpoint Source Assessment and Management Programs discussed previously. The Council is comprised of a consortium of federal, state, and local governmental agencies, and public and private interest groups. The Council meets five to seven times a year. It assists the Division in determining program direction and recommending projects for section 319 funding. Rules of Operation adopted by the Council determine membership, leadership, and responsibilities for the organization.

The Council also has five committees which relate to the primary nonpoint source pollutant categories: (1) mining; (2) agriculture/silviculture; (3) urban and construction, (4) hydrologic modifications; and (5) information and education. These committees have open membership, meet as needed throughout the year and advise the Council on the technical issues of these particular nonpoint source concerns, especially on the best management practices appropriate to each category.

Owl Mountain Partnership

The Owl Mountain Partnership was formed in 1993. The mission of the Partnership is to serve the economic, cultural and social needs of the community by developing adaptive, long term landscape management programs, policies, and practices that ensure ecosystem sustainability. The first five years were extremely challenging to develop a working group with the trust and credibility to make meaningful decisions and recommendations on managing the land and its resources. Their process for ecosystem management provides an effective template for others with the desire to coalesce divergent views to a cohesive approach. Their success can be measured by the community desire to expand the project area beyond the original boundaries to include most of North Park.

Partnerships at the project level are critical to success on the ground. Many nonpoint source issues cover broad areas within a watershed. Land ownership is typically mixed, with private land interspersed with public lands, resulting in a range of land uses, from agricultural production to recreation to resource extraction and transportation. The most successful projects have active and diverse stakeholder groups, with representatives from all the various land uses and ownerships. Another hallmark of a successful project is its sustainability after the nonpoint source funding is gone.

The reliance on partnerships also means the nonpoint source program has the opportunity to be a part of many successful, locally-led efforts to improve the aquatic resources in a community. In several instances section 319 funding provided the "seed" money to start an initiative; while in other cases, section 319 was the primary source of funds. Examples of these successful partnerships are displayed in the efforts of the Badger Creek watershed restoration, the Gunnison Basin Selenium Task Force, the restoration of the Rio Blanco River, the James Creek Initiative and the Owl Mountain Partnership.

VII. COMPLIANCE ASSISTANCE AND ASSURANCE

A. Compliance Assistance

1. Technical Assistance

Compliance assistance is the first step in a process of escalating responses to non-compliance. If compliance assistance activities are not successful, the actions taken by the Division escalate in formality until compliance is achieved or formal enforcement action is pursued. The Enforcement Escalation Policy is the Division's procedure for determining the appropriate compliance activities. Prior to initiating form enforcement action, technical assistance is provided to all regulated systems that are in violation of the applicable regulations, if it is determined that the situation is not egregious or willful.

The Division assists small communities in the use of the self-assessment guidance document for planning improvements necessitated by growth or planned development.

The Division continues to play a role in implementing Colorado's Small Community Environmental Flexibility Act since most small towns with multiple public health and environmental compliance priorities are concerned with drinking water and wastewater issues.

2. Pollution Prevention

The Division provides relevant targeted information to local municipal pretreatment authorities and to industrial users to encourage worthwhile pollution prevention projects.

The Division endeavors to identify small-to-medium size industries which have the potential to significantly impact water bodies, or which have a history of non-compliance, and provide them with pollution prevention information and encouragement to employ pollution prevention concepts.

B. Compliance Assurance

1. Monitoring and Evaluation

The Division generally performs compliance sampling inspections in conjunction with watershed scale monitoring investigations in each of the four river basins unless there is cause for such sampling elsewhere, such as targeted facility effluents. Compliance inspectors are prepared to sample effluent at locations they are inspecting throughout the state where grab samples are adequate to characterize the source. Compliance inspections are targeted to a portion of the public drinking water systems and wastewater treatment facilities in the state, taking into account the length of time since the last inspection, size of the facility, timing of permit renewal and recent compliance history.

The Division continuously reviews self-reported data for NPDES and public water systems and enters the data into the EPA Permit Compliance System (PCS) and the Safe Drinking Water Information System (SDWIS), respectively. Routine reports are generated and reviewed to assess the compliance status of regulated facilities. The Division's Enforcement Management System is a comprehensive document which reflects each element of the compliance assurance and data management process, providing the underpinning for enforcement activities for each program.

2. Enforcement Activities

Under the authority of the Colorado Water Quality Control Act and the Colorado Primary Drinking Water Regulations, the responsibility for issuing Notices of Violation, Cease and Desist Orders, Clean Up Orders, Enforcement Orders, and for recommending penalties for imposition, rests with the Division. The process for determining the Division's enforcement response to various types of violations is fully described in the Enforcement Management System. The role of local governments and areawide agencies in the enforcement process is not defined formally in statute. Any person or agency may request to have suspected or alleged violations investigated. The Division also supports the enforcement efforts of local governments/agencies.

An important component of the Enforcement Management System is the statutory authority to collect civil and/or administrative penalties. The Civil Penalty Policy defines in detail the process for evaluating violations and developing preliminary penalty calculations. The protocol for calculating penalties ensures consistent, equitable penalty determinations. The penalty policy recognizes mitigating circumstances with respect to the potential environmental damage associated with the violation and provides the opportunity for additional credit for good faith efforts to comply.

The "typical" enforcement process proceeds through the following steps:

1. Any suspected or alleged violation of statute (or regulation promulgated under that authority), discharge permit, or compliance order may cause the enforcement process to begin. Violations may be noted through the Division's review of self-reported monitoring data or through a report received from any person or agency.

2. The Division determines whether an alleged violation has occurred. In the case of a third party report, if no violation has been detected, the requested action is terminated. If the self-reported data or an investigation indicates that a violation has occurred, the alleged violator is notified of the violation in accordance with the process outlined in the Division's Enforcement Management System.

3. Once an entity is informed of the alleged violation, the issue or problem which caused the violation may be resolved and the action terminated. Where the violation is particularly serious or of a persistent nature, a Notice of Violation/Cease and Desist Order is issued to the alleged violator. Additional monitoring is sometimes necessary to substantiate a violation.

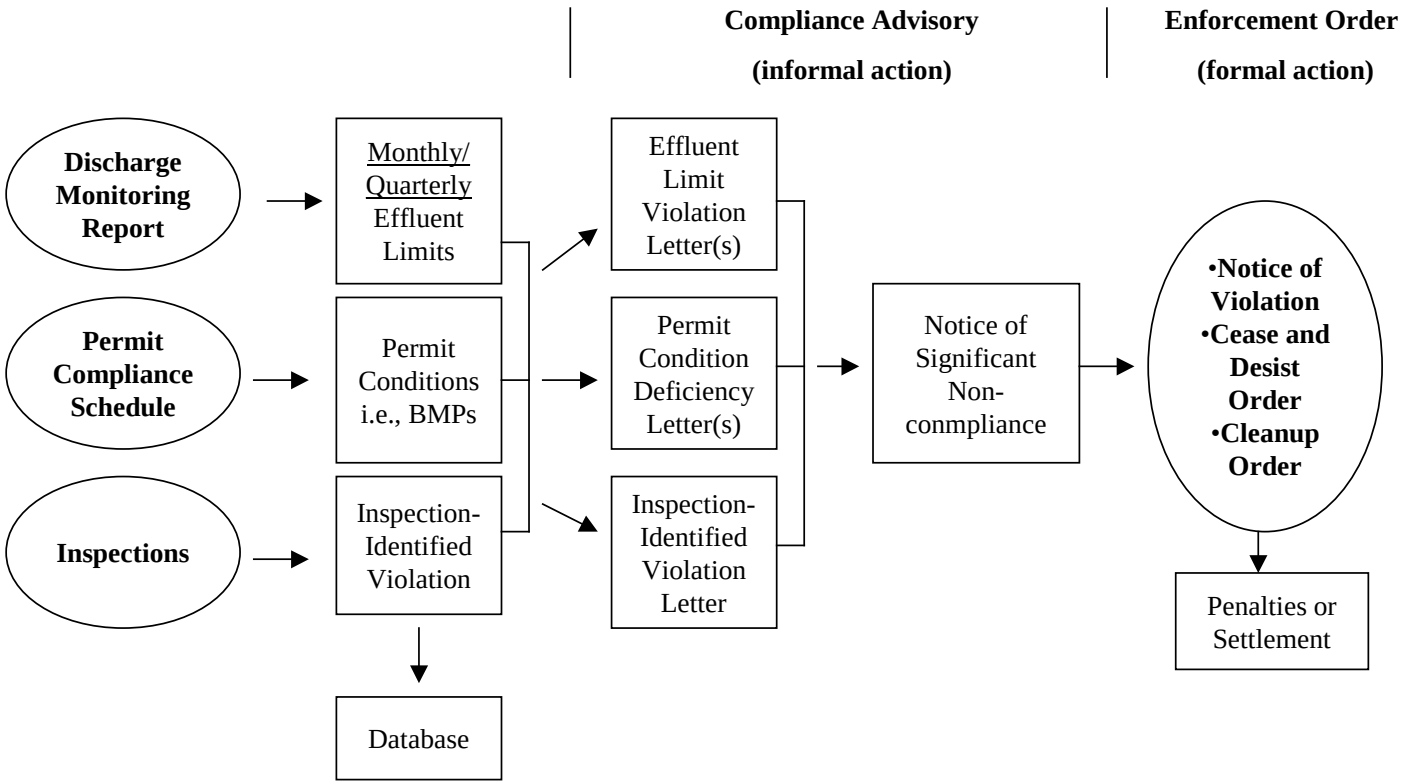
4. Once the formal action has been issued, either the alleged violator or the Division may request a public hearing to determine if the violation actually occurred.

5. If no hearing is requested, or if a hearing determines that a violation has occurred, additional legal orders may be issued, the penalty policy is applied and a penalty is assessed.

6. Judicial action may ensue if a party receiving an enforcement action fails to comply with the order. Such action includes contempt motions filed in District Court and may include criminal referrals to the EPA or State Attorney General.

See the figure on the following page.

Wastewater Violations/Enforcement Process



VIII. FINANCIAL ASSISTANCE

A. Water Pollution Control Revolving Fund

Financial Assistance for Wastewater Treatment Facilities

The federal Water Pollution Control Revolving Fund (WPCRF) is a low-interest loan program for funding wastewater treatment infrastructure projects. (A special provision of the WPCRF also allows it to fund nonpoint source projects.) The state Domestic Wastewater Treatment Grant Program is a grant program for small communities (less than 5,000 population) for funding wastewater treatment infrastructure projects. To be eligible for a grant or loan under this program, a facility must be a governmental entity, and be listed on the legislatively-approved "eligibility list."

The federal Water Pollution Control Revolving Fund (WPCRF) is a low-interest loan program for funding publicly owned treatment works. In addition, a feature of the WPCRF called the "funding framework" enables the fund to make loans for "non-traditional" projects such as nonpoint source projects. The fund was created by the 1987 amendments to the federal Clean Water Act and corresponding state legislation.

Applicable requirements for the WPCRF are described in the following regulations:

- Regulation #51: Water Pollution Control Revolving Fund Rules; and
- Regulation #52: Water Pollution Control Revolving Fund: Intended Use Plan.

Governmental agencies, which include cities and towns, counties and special districts, are eligible to receive funds. A proposed project must be identified on the current WPCRF Eligibility List, which is updated annually by the Water Quality Control Division, subject to approval by the Water Quality Control Commission and Joint Resolution by the Colorado General Assembly.

To receive a WPCRF loan, in addition to being identified on the current eligibility list, governmental agencies 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 WPCRF loan application packet;
- Determination by the WPCRF Committee 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, solicit participation from Disadvantaged Business Enterprises; and
- Initiate construction of wastewater treatment project in accordance with applicable State requirements/approvals.

Three State agencies are involved in the implementation of the WPCRF program. The Water Quality Control Division is the primary contact for loan applicants and will assure that technical reviews are coordinated and that projects comply with all applicable requirements. The Division of Local

Government is responsible for analyzing the applicant's financial condition. The Colorado Water Resources and Power Development Authority provides Colorado's required 20 percent match for federal funds by using available funds or by issuing revenue bonds, enters into loan agreements and is responsible for the administration and management of the financial aspects of the WPCRF. (See attached WPCRF Operation Chart.)

B. Domestic Wastewater Treatment Grants

The state Domestic Wastewater Treatment Grant Program provides funds for communities, or to counties on behalf of unincorporated areas, of less than 5,000 population with wastewater treatment needs. The grant program regulations establish priority for communities based upon public health and water quality needs. Financial need is used to determine the amount of assistance provided to applicants. The following steps describe the grant process.

1. The Domestic Wastewater Treatment Grant Funding System (Regulation #53) and the Domestic Wastewater Treatment Grant Program: Intended Use Plan (Regulation #54) describe the planning and design requirements necessary for grant awards. These requirements result in an engineering report which describes a proposed project for wastewater treatment improvements.

2. A community with a project listed on the Project List (for governmental agencies) in the current Intended Use Plan can apply for funds when they are ready to proceed.

3. The Division must approve the facility plan (as recommended in a section 208 plan, where applicable), provide site approval, and approve plans and specifications before a community can begin construction of its project.

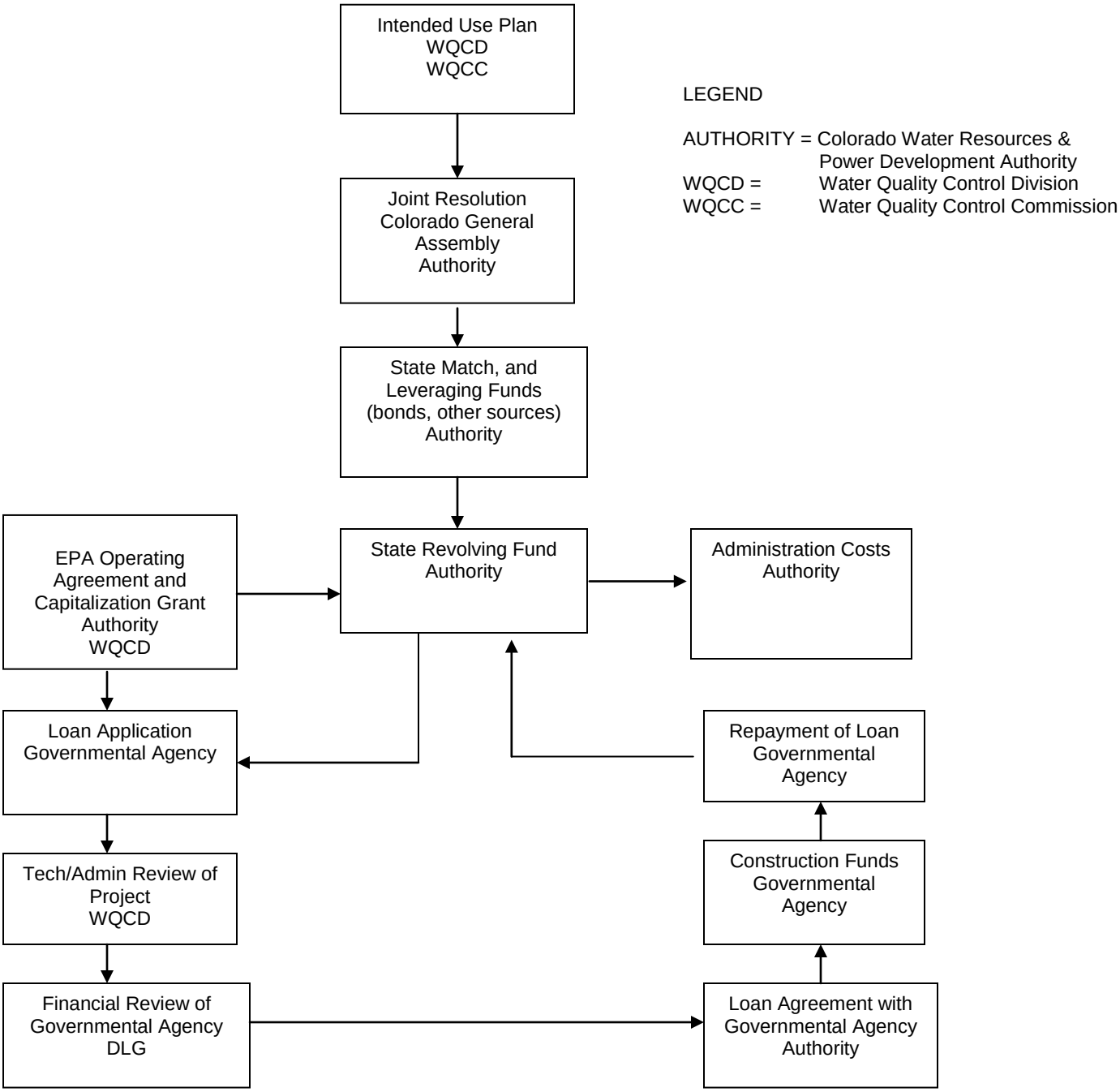
4. The Division will disburse payments on the grants as costs are incurred and will perform inspections of the construction to ensure compliance with conditions of the grant.

The grant program was established in the early 1970's. Funding was suspended by the legislature from 2002 to 2005. The Division will receive $1.5 million from the State Legislature in 2006 to distribute to small communities through this program.

C. Funding Coordination Committee

In addition to the Division's wastewater loan and grant programs, other state and federal agencies fund wastewater treatment and related facilities. Funding for priority projects is coordinated by the Funding Coordination Committee which meets quarterly to discuss partnering and pooling funds. Participants include: the Division, Division of Local Government, Colorado Water Resources and Power Development Authority, USDA Rural Development, Colorado Water Conservation Board, and Colorado Municipal League.

WATER POLLUTION CONTROL REVOLVING FUND FLOW CHART



Nonpoint Source Grant Program

The Nonpoint Source Program receives an annual allocation from the Environmental Protection Agency for a grant program. The funds require a 40 percent state or local match. The match can be cash or in-kind services. Funds are distributed through a competitive process to local project sponsors to implement projects which restore impaired waters, prevent future impairments, or raise public awareness. Project sponsors may be nonprofit organizations, government agencies, for-profit companies or individuals. The Colorado Nonpoint Source Council reviews all proposals and provides a recommendation on which projects to fund.

D. Nonpoint Source Project Grants

The first federal funds were appropriated under section 319 for nonpoint source projects in 1990. Through 2006 Colorado has received over $27 million of section 319 funds. These funds have supported both staffing in the Division, as well as implementation of dozens of projects related to agriculture, silviculture, urban runoff, construction runoff, abandoned and inactive mines, hydrologic modifications, and information and education. These projects have provided on-the-ground demonstrations of technologies, watershed-based water quality improvement, and information and education benefits.

Recently section 319 funding has been subdivided into two categories – "base" funding and "incremental" funding-and the appropriation has been augmented. The state receives slightly over $1 million annually in base funding devoted to the traditional demonstration and information and education projects. The state also receives slightly over $1 million annually in incremental funding, which is targeted for TMDL-related projects. To assist prospective project sponsors in understanding the section 319 grant process, the Division offers an annual "how to" workshop on applying for section 319 grants. For successful applicants, the Division also offers an annual "how to" workshop on contracts and other procedural requirements associated with successfully administering a section 319 grant.

All projects funded in Colorado are reviewed and prioritized by the Colorado Nonpoint Source Council. The Water Quality Control Commission holds an annual informational hearing to approve the proposed projects prior to submitting a funding request to EPA.

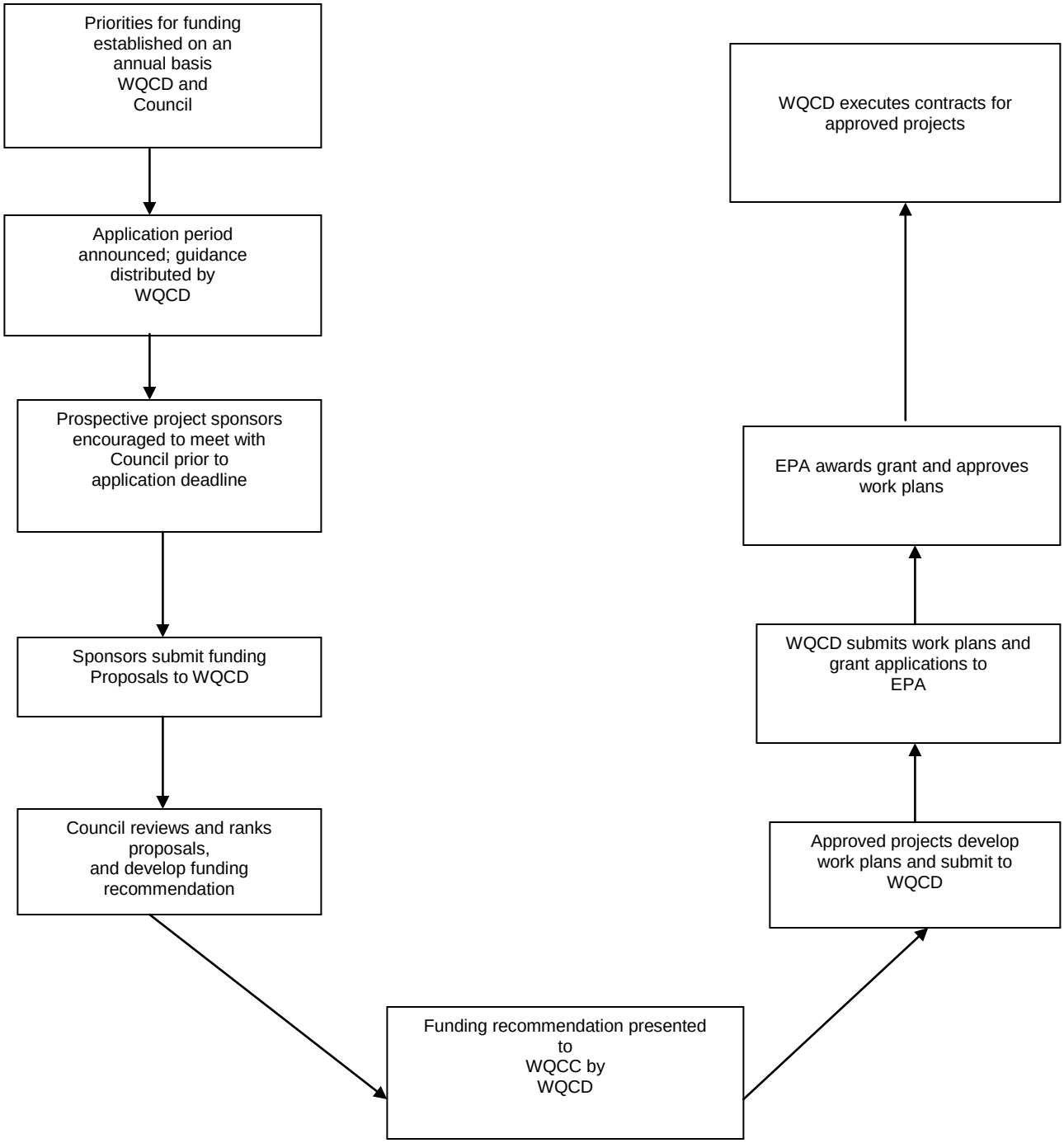
E. Other Funding Sources

The "Consolidated Funding Process" was created in response to numerous requests that the agency simplify the process of seeking ecosystem and water quality protection project funding. A project proponent may now apply for multiple sources using a single application. Grant programs included in the process are: Wetlands Protection Project Grants; Water Quality Cooperative Agreement Grants; Regional Geographic Initiative Grants; and Total Maximum Daily Load Program Grants. Grants are awarded on a competitive basis. For-profit organizations are not eligible to apply directly for the funds.

Senate Bill 02-087, adopted by the 2002 Colorado General Assembly, established the Colorado Watershed Protection 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. The legislation provides that moneys collected in the fund will be made available in a grant program established jointly by the Colorado Water Conservation Board and the Water Quality Control Commission, in cooperation with the Colorado Watershed Assembly. Two grant categories are available under the program – project grants and planning grants. Project grants support projects that promote the improvement and/or protection of the condition of the watershed. Planning grants support the development and implementation of a successful watershed restoration or

protection project. Grants are awarded on a competitive basis. Almost $300,000 has been distributed to local water interests to date.

NONPOINT SOURCE GRANT PROGRAM FLOW CHART



WQCD = Water Quality Control Division
WQCC = Water Quality Control Commission
EPA = Environmental Protection Agency
Council = Colorado Nonpoint Source Council

PART 2 – DRINKING WATER PROTECTION

I. INTRODUCTION

Under the Colorado Primary Drinking Water Regulations, public water supplies are required to monitor for the presence of a number of contaminants, to comply with established maximum contaminant levels (MCLs) and to provide the necessary treatment to assure that the water supply is continually safe to drink. Public water supplies, by definition, have at least 15 service connections or serve an average of at least 25 persons for at least 60 days per year.

There are two kinds of public water systems: Community and Non-Community.

- Community PWS (e.g., cities, towns, subdivisions, etc.) serve 25 or more residents.
- Non-community systems are defined as those that are not community PWS. There are two categories of non-community PWS:
    - Transient (e.g. restaurants, campgrounds, etc.) serve 25 or more different people daily
    - Non-transient (eg., school, business, etc.) serve 25 or more of the same people daily for six or more months of the year.

Section II below discusses the institutional roles and responsibilities of the major participants in the provision of safe drinking water.

Section III explains the various regulatory aspects of the program, including standards, monitoring and the protection of ground water supplies.

Section IV describes financial assistance available to public water systems.

II. INSTITUTIONAL ROLES AND RESPONSIBILITIES

A. Water Quality Control Commission

The Commission has two major roles with respect to drinking water protection in Colorado. First, the Commission adopts the Colorado Primary Drinking Water Regulations, which establish requirements intended to assure the safety of public drinking water supplies. These regulations establish drinking water standards for potential pollutants, monitoring requirements for public water systems, requirements for treating drinking water supplies, siting requirements for such systems, and other requirements. The Water Quality Control Division administers the drinking water program implementing these regulations.

Second, the Commission adopts an annual priority list for financial assistance for the construction of public water system facilities. This assistance is in the form of (1) loans from the Drinking Water Revolving Fund (DWRF), which has been established in large part by appropriations under the federal Safe Drinking Water Act, and (2) state grants for small communities.

B. Water Quality Control Division

The Division is the agency with primary responsibility (primacy) for implementing all aspect of the federal Safe Drinking Water Act (SDWA), and the Colorado Primary Drinking Water Regulations. Functional elements of the SDWA program include regulatory development, implementation of control mechanisms, compliance assistance, compliance assurance and program management and reporting.

A. Environmental Protection Agency

The EPA provides an oversight role to the Division to assure that the provisions of the SDWA are being enforced. EPA headquarters is responsible for establishing national standards, regulations, and guidelines that the state adopts as applicable to maintain primacy. The EPA Region 8 office in Denver works with the state program to provide guidance, oversight activities and potential enforcement action if warranted.

B. Local Health Departments

Many local health departments are active in drinking water program implementation efforts, especially for these systems that serve small nonresidential populations such as campgrounds, restaurants and day care centers. Often it is the local authorities that receive the first public complaints on drinking water quality. They may follow-up by evaluating the complaint with respect to the condition of the drinking water system, water source, and treatment. They may resolve the complaint by talking to citizens, notifying the Division, or possibly taking samples to assure that the system is safe. When the Division detects an exceedance of an acute MCL, the local health department is notified immediately, and may become involved in answering public concerns and assisting the water system in implementing measures to ensure public safety. Some remote local health departments also provide services to the drinking water systems in their community, such as sampling and sample analysis, and provide the Division an immediate response to any unsafe samples detected by their laboratory.

III. REGULATION OF PUBLIC WATER SYSTEMS

A. Overview

Pursuant to the federal Safe Drinking Water Act (SDWA) and corresponding state legislation, EPA has delegated primary enforcement responsibility (primacy) for the SDWA in Colorado to the Colorado Department of Public Health and Environment. The Commission must establish regulations and standards that are at least as stringent as the corresponding federal regulations and standards. In addition, a number of programs and duties related to the protection of public health through the provision of safe drinking water must be implemented by the state. These regulations are applicable to all public water systems.

B. Drinking Water Standards

Primary (health-related) standards for drinking water are established by EPA and may include MCL's, maximum residual disinfection levels, and treatment techniques. The state must adopt standards that are at least as stringent. There are presently 78 MCLs for drinking water, including those for microorganisms, turbidity, inorganic chemicals, organic chemicals, and radionuclides. Contaminants for which it is difficult to establish an MCL may require a treatment technique to by established. Contaminants such as protozoan microorganisms and corrosion by-products have a treatment requirements. 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 supplies are required to filter to remove other microorganisms that cannot be controlled by disinfection. Treatment requirements to control the corrosivity of the water are applied to systems that have been shown to have high lead or copper levels at the tap. Systems having raw water that cannot meet an established MCL, or find an alternative water supply, are required to treat the water so that compliance with the MCL is attained. Under the 1996 amendments to the SDWA, new standards will be developed by EPA from a federal list approximately every 6 years. EPA has also established a list of secondary standards related to the aesthetic quality of the drinking water. Federal and state law provides that these secondary standards are not enforceable in the state.

C. Compliance Assistance

1. Capacity Development

Under the 1996 SDWA amendments, the state in order to receive full funding for the Drinking Water Revolving Fund Capitalization Grant (DWRF) is required to create a Capacity Development Program to assure the long-term compliance by public water systems. States may use up to 10% of the amount of their DWRF capitalization grant for their capacity development and implementation efforts. States that do not meet the provision's requirements are subject to a 20 percent withholding from their DWRF capitalization grant allotment. For Colorado, this loss of capitalization grant would amount to approximately $2.6 million dollars per year.

The State has designed a program to ensure that all new community and new non-transient, non-community water systems commencing operation after October 1, 1999 demonstrate sufficient technical, managerial, and financial capacity to comply with national primary drinking water regulations. The Division, with input from an open stakeholder workgroup has also developed an ongoing strategy to assist existing public water systems in acquiring and maintaining the technical, managerial, and financial capacity to comply with SDWA requirements.

The Colorado Capacity Development program aims to identify technical, managerial, and financial capacity weaknesses both in systems that are currently in compliance, and in systems that are not in full compliance. Once a system's capacity weaknesses are identified, specific resources are directed to assist the system to eliminate the weakness. The Division expects that this capacity development program will better enable Colorado's public water systems to consistently provide safe drinking water, thereby preventing waterborne diseases.

2. Source Water Protection

Wellhead Protection and Source Water Assessment and Protection Program (collectively referred to as SWAP)

SWAP is a water supply protection program. The "Assessment" phase, which is the state's responsibility, 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.

In Colorado, the Source Water Assessment and Protection Program encompasses both the wellhead protection and surface water source water protection efforts. The Division implemented a wellhead protection program for several years beginning in the late 1980's, as part of its ground water protection strategy. This protection strategy was extended to surface water sources with the 1996 SDWA amendments. The 1996 SDWA amendments require states to develop and implement a program designed to evaluate the vulnerability of public drinking water systems to possible sources of contamination with this background the state is expected to work with these systems to develop protection and management plans to minimize the risk of source water contamination.

a. Assessment Phase Efforts

Source water assessment and protection is a two-phased process. The assessment phase was mandatory, while the protection phase is voluntary. The state was required to assess all public water systems to determine their susceptibility to contamination. The source water assessment effort was a screening level analysis of the source water for all public water systems. The resulting reports contained a map of the source water assessment area, the locations of potential source(s) of contamination, and a ranking of the susceptibility of the water source to the identified contaminant sources. It was recognized that this initial assessment was a first level effort, which could be improved upon if subsequent assessments are undertaken. Public water systems were encouraged to inform the state of any errors in the assessments, so they could be evaluated and addressed if necessary prior to release of the information to the public. The assessment reports were released to all public water systems in early 2005, and posted on the program website for general public availability later in 2005.

b. Protection Phase Efforts

The second, or protection phase, proposes to use the information obtained from the assessment phase as a starting point, and encourages the public water providers to employ measures within the source water assessment area that will help ensure the long-term integrity and protection of the water source. A number of the elements required for wellhead protection plan approval are typically included in the source water protection plans. Examples include the management approaches that define the measures or best management practices (BMPs) that will be employed, a commitment to use wellhead protection/source water protection concepts in siting new water systems or expanding existing ones, and development of emergency and contingency plans that will ensure replacement of the water source in the event of a disaster or drought.

c. Integrated Program Plan

Since many of the elements in a wellhead protection plan would be incorporated in source water protection plan, the integration of the two programs was intuitive. The Water Quality Control Division evaluated the two programs and determined that an integration of the two program plans would allow for more efficient implementation and administration. The merger of the two programs will assist in achieving the common goal of both programs, namely minimizing potential source water contaminant risk. An integrated document will incorporate the wellhead protection and source water protection programs while maintaining the integrity of each. It also defines the state's approach to developing and implementing the protection phase of source water protection. This new program plan is now referred to as the Integrated Source Water Assessment and Protection (ISWAP) program plan.

An integrated source water protection program will blend the planning elements for both wellhead protection and source water protection. Three of the elements are the same (delineation, contaminant inventory and public participation) for both programs. The protection elements from wellhead (management approaches, contingency planning and siting new sources) will be added to complete the planning matrix. Use of the same elements for both programs will help ensure consistency among them, and possibly foster partnering among those within the same or adjacent watersheds.

D. Compliance Assurance

1. Operator Certification

Another requirement of the 1996 SDWA 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.

2. Monitoring and Evaluation

Public water systems are required to perform microbiological, chemical, physical, and radiological monitoring of their drinking water to determine the presence of any regulated contaminants. The levels of detected contaminants are used to determine compliance with an MCL, and to evaluate the need for additional treatment. Detection of a contaminant in a finished water supply may require public notification, and, in the case of an MCL violation, the notification must include health effects information and the need for an alternate water supply.

The frequency of required monitoring is dependent on the type of water system, the number of persons served, the water source, and the presence of contaminant generating activities in the area surrounding the water source. All public water systems must test for microbiological contaminants. Because of the short-term exposure of the population at non-community transient systems, the only chemical monitoring requirement is for nitrate, since this is generally the only common acute chemical contaminant. Non-transient non-community public water systems and community public water systems must monitor for chemical contaminants because of the potential long-term exposure of the water users. Systems using surface water supplies have different monitoring requirements than ground waters due to the different and more direct paths of contamination that the water sources are exposed to.

Monitoring requirements may be reduced through an assessment by the Division of the vulnerability of the water supply. These vulnerability assessments are an evaluation of any existing sources of contamination that may affect the quality of the source water prior to treatment.

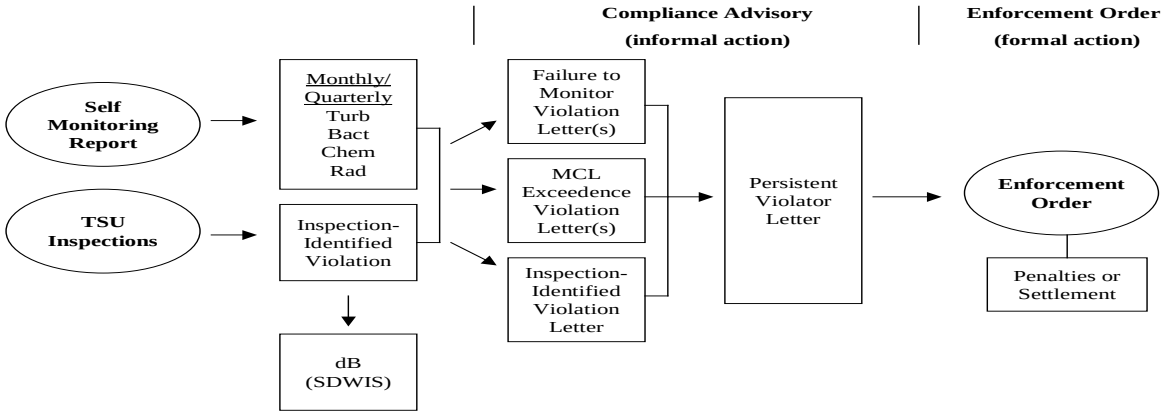
3. Enforcement Activities

The enforcement process for drinking water generally relies on a predictable path of actions that increase in formality as follows:

- Identification of violation
- Informal notification of public water system
- Formal notification of PWS
- Legal action

This predictable escalation of response to violations is predicated on the assumption that regulated entities generally desire to be in full compliance and that violations are generally the result of accidents or ignorance of all requirements. Egregious violations resulting in environmental harm or disease outbreaks or willful violations (such as those associated with data falsifications) demand the immediate and full application of the Division's enforcement and penalty authorities.

Drinking Water Violations/Enforcement Process



4. Consumer Confidence Report

Another mechanism to help assure long-term compliance by public water systems is the requirement to provide consumer confidence reports. The consumer Confidence Reports Rule is the centerpiece of the right-to-know provisions in the 1996 SDWA. It allows customers to know what is in their drinking water, how the water was treated, and where the water comes from. The reports are designed to assist consumers to make informed choices that affect their health and the health of their families. Every community public water system must provide a report to each of its customers annually. The report must include:

- 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 contaminants tested for;
- 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, length of the violation, any pertinent health effects information, and steps the system is taking to correct the violation.

The report provides the opportunity for public water systems, the State of Colorado and the EPA to work together to educate consumers about the sources and quality of their drinking water, and to increase their involvement in decisions about it. Educated consumers are more likely to help protect their drinking water sources. The state program provides extensive assistance to water systems to ensure their compliance.

IV. FINANCIAL ASSISTANCE

A. Drinking Water Revolving Loan Fund

The federal Drinking Water Revolving Loan Fund (DWRF) is a low-interest loan program for funding eligible public water systems projects. The fund was created by the 1996 amendments to the federal Safe Drinking Water Act and corresponding state legislation.

Financial Assistance for Drinking Water Treatment Facilities

The federal Drinking Water Revolving Fund (DWRF) is a low-interest loan program for funding drinking water treatment infrastructure projects. (A special provision of the DWRF also allows it to fund water quality protection programs.) The state Drinking Water Grant Program is a grant program for small communities (less than 5,000 population) for funding drinking water treatment infrastructure projects. To be eligible for a grant or loan, a facility must be a governmental entity (or in the case of the grant program, nonprofit entities are also eligible) and be on the legislatively-approved "eligibility list".

Applicable requirements for the DWRF are described in the:

- "Drinking Water Revolving Fund Rule", and the
- "Drinking Water Revolving Fund: Intended Use Plan."

The project priority system is intended to establish priorities for financial assistance from the DWRF in order to protect and improve the health, safety, and reliability of drinking water supplies in Colorado. Eligible entities include governmental agencies with prioritized projects that are included on the Eligibility List. Eligibility criteria consist of the agency having or anticipating having a planning document completed during the funding year. The DWRF Eligibility List is updated annually by the Water Quality Control Division, approved by the Water Quality Control Commission (WQCC) and passed by a Joint Resolution of the Colorado General Assembly.

To receive a DWRF loan, in addition to being identified on the current eligibility list governmental agencies must comply with the following basic requirements:

Special Features of the Drinking Water Revolving Fund

The Drinking Water Revolving Fund is much more than a low-interest loan program. Up to 31 percent of the fund is dedicated to "set-asides" which fund water quality protection programs such as Capacity Development and the Source Water Assessment and Protection Assessment Program, described above. Additionally, up to 30 percent of the fund can be used for loan assistance to disadvantaged communities.

- Possess an approved planning document which demonstrates the economic, environmental, and engineering feasibility of the proposed project;
- Complete and submit a DWRF loan application packet;
- Demonstrate that the system has technical, managerial, and financial capacity;
- Determination by the DWRF Committee that the minimum standards for acceptance into the program have been achieved and the agency is financially solvent;
- Enter into a loan agreement with the Colorado Water Resources and Power Development Authority;
- Solicit participation from Disadvantaged Business Enterprises when bidding the project; and
- Initiate construction of the drinking water treatment project in accordance with applicable State requirements and conditions of approvals.

Three State agencies are involved in the implementation of the DWRF program. The Water Quality control division is the primary contact for loan applicants and assures that technical reviews are coordinated and that projects comply with all applicable requirements. The Division of Local Governments is responsible for analyzing the applicant's financial condition. The Colorado Water Resources and Power Development Authority provides Colorado's required 20 percent match for federal funds by using available funds or by issuing revenue bonds, enters into loan agreements and is responsible for the administration and management of the financial aspects of the DWRF. (See attached DWRF Operation Chart.)

B. Drinking Water Grant Program

The state Drinking Water Grant Program provides funds to communities with a population of less than 5,000 with drinking water treatment needs. The grant program rules establish funding priorities for communities based upon public health and compliance needs. Financial need is used to determine the amount of assistance provided to applicants. The following steps describe the grant process.

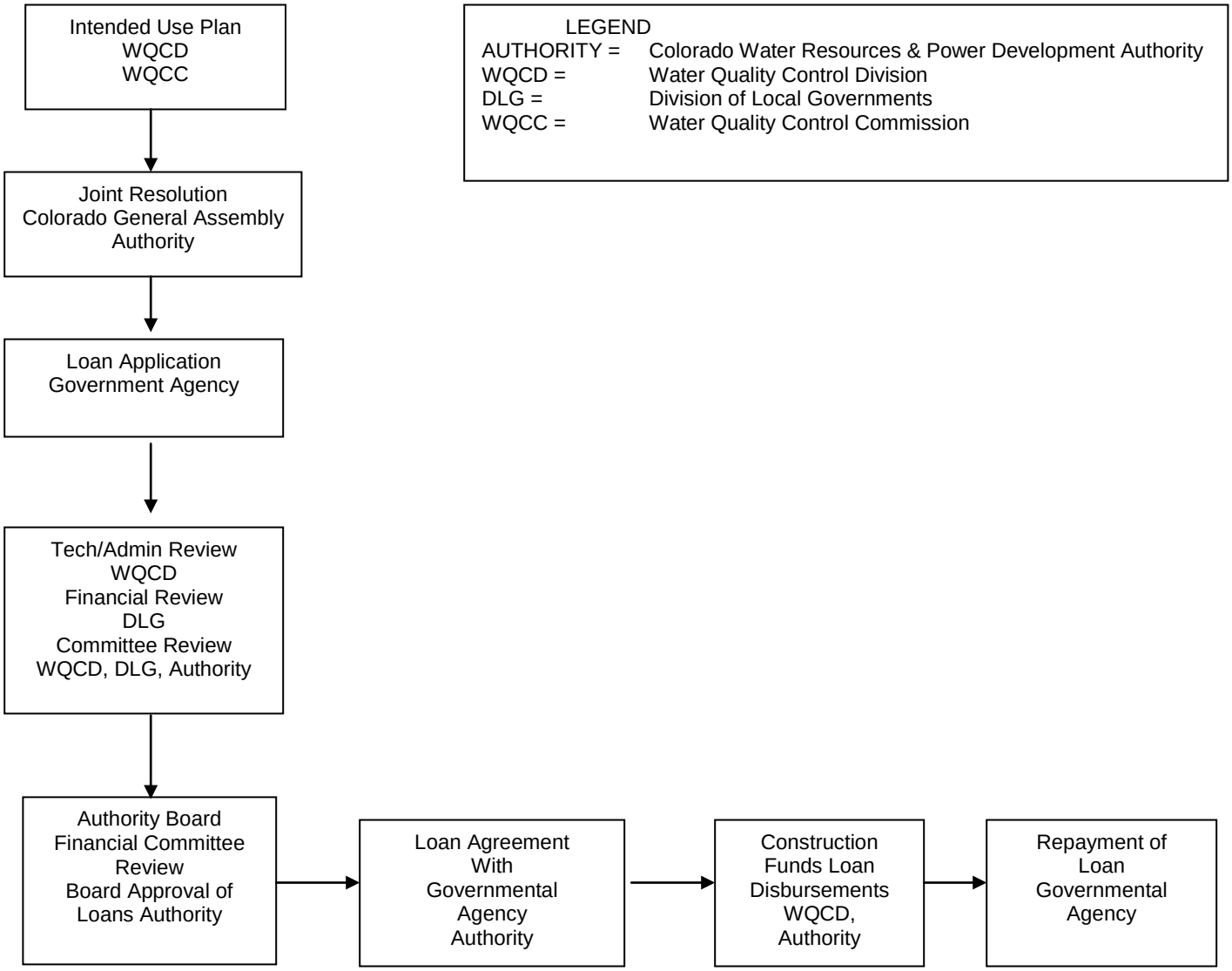
1. The "Drinking Water Grant Program: Plan for Distribution of Funds" and the "Drinking Water Program Rules" describe the planning and design requirements necessary for grant awards. These requirements result in an engineering report which describes the proposed project for drinking water treatment improvements.
2. A community with an eligible project listed on the Project Lists (for governmental agencies or not-for profit organizations) in the current Plan for Distribution of Funds can apply for funds when they are ready to proceed.
3. Feasibility study, site application, and plans and specifications approval must be given by the Division before a community can begin construction of its project.
4. The division disburses payments on the grants as costs are incurred and performs inspections of the construction to ensure compliance with conditions of the grant.

The grant program was established in 1999. Funding was suspended by the legislature from 2002 to 2005. The Division will receive $1.5 million from the State Legislature in 2006 to distribute to small communities through this program.

C. Other Funding Sources

In addition to the Division's loan and grant programs, other state and federal agencies fund drinking water treatment and related facilities. Funding for priority projects is coordinated by the Funding Coordination Committee which meets quarterly to discuss partnering and pooling funds. Participants include: Water Quality Control Division, Division of Local Government, Colorado Water Resources and Power Development Authority, USDA Rural Development, Colorado Water conservation Board, and Colorado Municipal League.

DRINKING WATER REVOLVING FUND FLOW CHART



Appendix A

Colorado Water Quality Control Act History

The major elements of the Colorado Water Quality Control Act largely pattern 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 of the Federal 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. As summarized in the text of this Handbook, major revisions to the Federal Act were adopted in 1972, including a new discharge permit program, which was initially administered by EPA, but could be delegated to states. In 1973, the Colorado Water Quality Control Act was completely rewritten (and renamed), to bring it into compliance with the new federal law. Colorado chose to develop a delegated discharge permit program, which was initially approved by EPA in 1975.

As mentioned in the text of this Handbook, the last comprehensive rewrite of the Colorado Act was Senate Bill 10, adopted in 1981. Senate Bill 10 moved for the first time to a partially cash-funded discharge permit system. Among the other innovations of Senate Bill 10 were provisions requiring that "economic reasonableness" be taken into account at various points in the water quality 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 State Act by adopting Senate Bill 83, which was aimed in large part at eliminating the deficiencies in Senate Bill 10 alleged by EPA. 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 Senate Bill 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 83 also eliminated the Commission's authority to hear certain permit appeals, to avoid a conflict of interest concern (since Commission members include persons employed by dischargers).

In 1989, the Legislature further amended the State Act by the adoption of Senate Bill 181. Among other changes, this bill included new provisions regarding the relationships between the Water Quality Control Commission and 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 Minerals and Geology, State Engineer, Oil and Gas Conservation Commission and the agencies responsible for implementation of the federal Resource Conservation and Recovery Act [now 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 section II Part I of this Handbook.

In 1990, the Legislature adopted Senate Bill 126, establishing new provisions in the State Act to address potential ground water quality contamination from agricultural chemicals (pesticides and commercial

fertilizers). Section 25-8-205.5 of the Act now gives the 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 Water Quality Control Commission to adopt regulatory requirements if necessary.

In 1992, the Legislature adopted House Bill 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 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 House Bill 1032 that 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, House Bill 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.

In 2006, Senate Bill 171 transferred rulemaking authority for the following water quality-related functions from the Board of Health to the Water Quality Control 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, House Bill 1337 established a new Water Quality Improvement Fund. Penalties for violations of the Water Quality Control Act after the effective date of this legislation will 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 storm water projects or to assist with planning, design, construction, or repair of domestic wastewater treatment works; or
- Providing the nonfederal match funding for nonpoint source projects under section 319 of the federal Clean Water Act.

Appendix B

Bibliography of Other Important Water Quality Management Documents

This Appendix lists a number of documents of general interest related to water quality management in Colorado. Copies should be available from the entities identified below. In some cases, there may be a charge.

In addition certain current information related to water quality management in Colorado is available on the Water Quality Control Commission's web site, which can be found at: http://www.cdphe.state.co.us/op/wqcc/index.html. Information currently available on the Water Quality Control Commission's Homepage, which can be accessed via the Colorado Homepage, includes:

- The Colorado Water Quality Control Act, Commission regulations and policies
- Monthly Commission meeting agendas
- Commission long-range schedule and explanatory notes
- Summaries of Proceedings/Motions from prior Commission meetings
- Informational Hearing and Rulemaking Hearing Notices
- Commission member roster and biographical summaries
- A calendar of upcoming water quality meetings

Documents available on the web and/or in hard copy:

1. The following policies adopted by the Water Quality Control Commission:

    - Policy 87-2; Policy Concerning Approval of Section 208 Water Quality Plan Amendments.
    - Policy 96-1; Design Criteria for Wastewater Treatment Works.
    - Policy 96-2; Human Health-Based Water Quality Criteria and Standards.
    - Policy 98-1; Provisional Implementation Guidance for Determining Sediment Deposition Impacts to Aquatic Life in Streams and Rivers.
    - Policy 98-2; Colorado Water Quality Management and Drinking Water Protection Handbook.

2. Status of Water Quality in Colorado 2002 – Section 305(b) Report
    http://www.cdphe.state.co.us/op/wqcc/Resources/wqresdoc.html (Water Quality Control Division; 2002)

3. Water Quality Limited Segments – Colorado's 1998 303(d) List
    (Water Quality Control Division; 1998)

4. Colorado Nonpoint Source Assessment Report [Hard copy only]
    (Water Quality Control Division; 1988)

5. Colorado Nonpoint Source Management Program
    (Water Quality Control Division; 2000)

6. Colorado Watershed Protection Approach [Hard copy only]
   (Colorado Water Quality Forum; 1994)

   - A Special section on water quality classification and standards reviews
   - Information regarding selected special topics

7. Colorado Wellhead Protection Program [Hard copy only]
   (Water Quality Control Division; 1994)

8. Colorado Source Water Assessment and Protection Program
   http://www.cdphe.state.co.us/wq/Assessment/Assessment_unit.html
   (Water Quality Control Division; 2000)

9. Guidelines for Conducting Whole Effluent Toxicity Tests [Hard copy only]
   (Water Quality Control Division; 1993)

10. Colorado Water Quality Control Division Biomonitoring Guidance Document [Hard copy only]
    (Water Quality Control Division; 1993)

11. WQCD Enforcement Management System [Hand copy only]
    (Water Quality Control Division; 1993)

12. Water Quality Control Commission Public Participation Handbook
    http://www.cdphe.state.co.us/op/wqcc/PublicParticipation/handbook.html
    (Water Quality Control Commission; 1998)

13. Water Quality Control Commission Index for Policies, Regulations and Guidelines
    http://www.cdphe.state.co.us/op/wqcc/StatutesRegsPolicies/wqreg.html
    (Water Quality Control Commission; 2002)

14. Senate Bill 89-181 Implementing Agency Memoranda of Agreement
    http://www.cdphe.state.co.us/op/wqcc/Resources/SB181/sb89-181moa.html
    (Separate MOAs with State Engineers Office, Oil and Gas Conservation Commission, Hazardous Materials and Waste Management Division, Division of Minerals and Geology, and the Oil Inspection Section of the Department of Labor and Employment)

15. Section 208 Water Quality Management Plans [Documents available on the web and/or in hard copy]

    - Region 1 – Northeastern Colorado (Morgan, Logan, Yuma, Sedgwick, Phillips, and Washington Counties)
      Last Update – 1997

    - Region 2 – North Front Range Water Quality Planning Association
      (Designated Planning Agency; Larimer and Weld Counties)
      Last Update – 2003

    - Region 3 – Denver Regional Council of Governments (Designated Planning Agency; Adams, Arapahoe, Boulder, Douglas, Denver, Jefferson, Clear Creek, and Gilpin Counties)
      Last Update –1998

- Region 4 – Pikes Peak Area Council of Governments (Designated Planning Agency; El Paso, Park, and Teller Counties)
  Last Update – 1989

- Region 5 – East Central Colorado (Elbert, Lincoln, Kit Carson, and Cheyenne Counties)
  Last Update – 1987

- Region 6 – Lower Arkansas Region (Kiowa, Crowley, Otero, Bent, Prowers, and Baca Counties)
  Last Update – 1984

- Region 7 – Pueblo Area Council of Governments (Designated Planning Agency; Pueblo County only)
  Last Update – 1993

- Region 8 – San Luis Valley (Sagauche, Mineral, Rio Grande, Alamosa, Costilla, and Conejos Counties)
  Last Update – 1988

- Region 9 – San Juan Region (Dolores, Montezuma, La Plata, San Juan, and Archuleta Counties)
  Last Update – 1987

- Region 10 – District 10 (Gunnison, Hinsdale, Ouray, San Miguel, Montrose, and Delta Counties)
  Last Update – 1990

- Region 11 – Northwest Colorado (Moffat, Bio Blanco, Mesa, and Garfield Counties)
  Last Update – 1986

- Region 12 – Northwest Colorado Council of Governments (Designated Planning Agency; Routt, Jackson, Grand, Summit, Eagle, and Pitkin Counties)
  Last Update – 1996)

- Region 13 – Upper Arkansas (Lake, Chaffee, Fremont, and Custer Counties)
  Last Update – 1988

- Region 14 – Huerfano/Las Animas (Huerfano and Las Animas Counties)
  Last Update - 1987

Appendix C

Common Abbreviations

APA	Administrative Procedure Act
ARARs	Applicable or Relevant and Appropriate Requirements
ASIWPCA	Association of State and Interstate Water Pollution Control Administrators
AWT	Advanced Wastewater Treatment
BAT	Best Available Technology
BMP	Best Management Practice
BPJ	Best Professional Judgment
BPT	Best Practicable Technology
CACI	Colorado Association of Commerce and Industry
CAFO	Confined Animal Feeding Operation
CCR	Colorado Code of Regulations
CDPHE	Colorado Department of Public Health and Environment
CDPS	Colorado Discharge Permit System
CERCLA	Comprehensive Environmental Response, Compensation and Liability Act
CMA	Colorado Mining Association
CRS	Colorado Revised Statutes
CWA	Clean Water Act
CWC	Colorado Water Congress
CWCB	Colorado Water Conservation Board
CWRPDA	Colorado Water Resources and Power Development Authority
DIMP	Diisopropyl methylphosphonate
DLG	Division of Local Government

DMG	Division of Minerals and Geology
DOLA	Department of Local Affairs
DOW	Division of Wildlife
DRCOG	Denver Regional Council of Governments
DWRF	Drinking Water Revolving Fund
EPA	Environmental Protection Agency
GC/MS	Gas Chromatography/Mass Spectrometry
HMWMD	Hazardous Materials and Waste Management Division
HCSFO	Housed Commercial Swine Feeding Operation
ISDS	Individual Sewage Disposal System
IRIS	Integrated Risk Information System
LA	Load Allocation
MCL	Maximum Contaminant Level
MCLG	Maximum Contaminant Level Goal
MDL	Method Detection Limit
mg/l	milligrams per liter
MLRB	Mined Land Reclamation Board
NFRWQPA	North Front Range Water Quality Planning Association
NPDES	National Pollutant Discharge Elimination System
NWCCOG	Northwest Colorado Council of Governments
OGCC	Oil and Gas Conservation Commission
pCi/L	picocuries per Liter
PPACOG	Pikes Peak Area Council of Governments
POTW	Publicly Owned Treatment Works
PQL	Practical Quantitation Limit

RCRA	Resource Conservation and Recovery Act
SARA	Superfund Amendments and Reauthorization Act
SEO	State Engineer's Office
SDWA	Safe Drinking Water Act
SIC	Standard Industrial Classification
SWAP	Source Water Assessment and Protection Program
TDS	Total Dissolved Solids
THM	Trihalomethane
TMDL	Total Maximum Daily Load
TVS	Table Value Standards
µg/l	micrograms per liter
UIC	Underground Injection Control
UMTRA	Uranium Mill Tailings Remedial Action
UST	Underground Storage Tanks
WET	Whole Effluent Toxicity
WHPA	Wellhead Protection Area
WLA	Wasteload Allocation
WQCC	Water Quality Control Commission
WQCD	Water Quality Control Division
WPCRF	Water Pollution Control Revolving Fund
WWFOCB	Water and Wastewater Facility Operators Certification Board

Appendix D

Section 208 Planning Requirements

Regional water quality management plans prepared under Section 208 of the federal Clean Water Act should be updated regularly to reflect the progress of plan implementation and changes in regulatory programs. The plans are a source of water quality assessment information for the preparation of 305(b) reports. They also provide data, information and recommendations used for stream classifications, TMDLs and waste load allocation studies, and permitting requirements necessary for regulatory decisions in the water quality management process. The federal Clean Water Act states that plans must include, but are not limited to, the following:

- The identification of treatment works necessary to meet the anticipated municipal and industrial waste treatment needs over a twenty-year period, including treatment requirements, necessary wastewater collection and urban stormwater runoff systems, financial arrangements, and relationship to potential land use.

- 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 used to manage waste management and discharge facilities.

- The period of time necessary to carry out the plan, the costs of carrying out the plan within that time, and the economic, social, and environmental impact of carrying out the plan.

- Processes to identify nonpoint sources of pollution including agriculture, silviculture, mining, construction activity, the control and disposition of residual waste, and the disposal of pollutants on land or in subsurface excavations to protect ground and surface water quality.

- An identification of management and operating agencies to carry out appropriate portions of a water quality management plan.

Uses of the Plans

Water Quality Management Plans provide guidance on water quality goals and objectives, the cost of water pollution control, and social, economic, and environmental costs and benefits. Regional water quality management plans assist local, state, and federal decision makers to focus on priority water quality issues and provide local input and guidance to Colorado's overall water quality program. This process helps assure that decisions made at the local and state levels are consistent with pertinent statutory and planning requirements. The role of the regional plans and the planning agencies is, therefore, to assure that the necessary information for water quality decisions is adequate and up-to-date and that there is proper follow-through on the part of the management agencies designated in approved plans. The roles of the planning agencies include, but are not limited to the following:

1. The planning agencies assist with the development and the implementation of nonpoint source, TMDLs and stormwater control programs.

2. The planning agencies assist designated management agencies with the review of wastewater utility/facility plans and site approvals to assure consistency with approved water quality management plans.

3. The planning agencies review discharge permits to assure that discharges to a stream segment are consistent with approved plans, as required by Section 208(e) of the Act.

4. The planning agencies assist designated management and operating agencies in carrying out their responsibilities established in approved plans.

5. The planning agencies provide information, assist with education, provide public participation opportunities and serve as a water and environmental resource to local governments and management agencies.

6. The planning agencies participate in regulation development processes and can provide local government or management agency perspectives.

7. The planning agencies periodically review the performance of the designated management agencies to assure that these agencies continue to fulfill their responsibilities.

For the plans to remain useful decision-making documents, it is necessary that specific components of the plans be amended periodically. Amendments to plans recommended by planning agencies must be made in accordance with the federal Clean Water Act and Colorado Water Quality Act. The regional water quality management plan elements that need to be kept current through the update and amendment process are as follows:

1. Facility needs – Discharge facility needs are those capital improvements, collection systems, purchases, and construction programs for wastewater treatment, which will result in a change in degree or method of treatment or an increase in capacity. These needs, covering a minimum period of five years with a 20-year planning horizon, must be identified in the regional plan and be supported by population and/or employment projections, degree of treatment requirements, and facility timing criteria. New facilities must be consistent with the service area, location, and capacity identified in the plan or in other locally adopted plans. The plan identifies regional priorities for facility construction, improvement, or expansion.

2. Facility location - The regional plan locates existing and proposed (20-year planning horizon) municipal and industrial wastewater treatment facilities. The plan lists the stream segment to which a discharge occurs or is expected to occur. Stream segments are consistent with prevailing state stream classifications.

3. Capacity - The capacity of a waste treatment facility is based upon design criteria. The plan shall identify the allowable organic and hydraulic throughput of the treatment works for existing conditions as well as projected needs through a 20-year planning horizon. The units of measure for allowable organic and hydraulic throughput must be consistent with discharge permit requirements.

4. Timing of expansion facilities - The Colorado Water Quality Control Act requires that domestic wastewater treatment works permittees "initiate engineering and financial planning for expansion of the sewage treatment works whenever throughput and treatment reach 80 percent of design capacity" and "commence construction of such sewage treatment works expansion whenever throughput and treatment reach 95 percent of design capacity." The regional plan identifies the existing throughput, treatment design capacity and years in which the facility is expected to reach 80/95 % of design capacity.

5. Population and/or employment projections - Population and/or employment projections are to be based on the best available information. Projections as adopted by the planning agencies and supported by the management agencies will determine the 20-year size of the service area and capacity of new or expanded treatment facilities.

6. Service area - The service area for a wastewater treatment facility is that area to which the facility provides wastewater service, is required to provide service, or will provide service when the facility reaches design capacity. It must be consistent with an adopted regional plan. Service areas in the Denver metropolitan region are governed by an adopted urban growth boundary

7. Level of treatment - Prevailing stream standards, classifications and regulations will determine the level of treatment. Treatment levels established by the Division will be listed for existing and proposed facilities, which have gone through the site approval process. Recommended changes to treatment levels based on approved TMDLs may be listed in the plan.

8. Social, environmental and economic impacts of carrying out the plan - The plan should contain information on the costs and benefits of carrying out the plan in sufficient detail as to be able to identify the costs to management and operating agencies. Other social, environmental and economic information will be provided, as appropriate.

9. Permit conditions - The major factors in permit conditions for a municipality is determined by effluent limitations. These limitations are subject to the prevailing stream classifications, standards and regulations. Water quality management plans can identify appropriate special permit requirements.

10. TMDLs/Wasteload allocations - The results of a TMDL/wasteload allocation, that has been approved by the Environmental Protection Agency, may be assigned to an individual discharger as an effluent limit contained in a State discharge permit. Water quality management plans may assist in determining the need for and completion of TMDL/wasteload allocation studies by: 1) evaluating stream flow, water quality, and existing and projected wastewater discharges; 2) documenting the need for such studies; 3) recommending priorities for conducting TMDL/wasteload allocation studies; 4) making recommendations regarding actual conduct of such studies, including institutional and financial arrangements for carrying out the studies; and 5) coordinating and recommending the most politically acceptable means for allocating wasteloads among multiple dischargers, where appropriate; and 6) providing planning agency recommendations, where appropriate.

11. Nonpoint Source and Storm Water Information - The plan should update nonpoint source and stormwater information of a regional interest as it becomes available either through wasteload allocation studies, stream sampling projects, municipal control programs, or stormwater permit programs. The plan may identify nonpoint source elements, priority watersheds, best management practices, watershed restoration strategies, stormwater management programs and other watershed-oriented information.

12. Management Agency Review - The designated planning agency is responsible for recommending each designated management agency within its planning area to be identified in each plan update.

13. Watershed Restoration Plans – The plan should identify information that may be applicable to a specific watershed restoration strategy.

14. Source Water Assessment and Protection (SWAP) - The plan may identify information applicable to source water assessment and protection efforts under the Safe Drinking Water Act.

15. Links to Other Water Quality Related Programs – The plan may provide links, including strategies and recommendations, to other water quality related programs (e.g., Drinking Water, Superfund, Brownfield redevelopment, Endangered Species Act).

16. Partnerships – The plan can identify other water quality partnerships in addition to management agencies. These partnerships may include, but are not limited to, watershed associations, conservancy districts, river and/or lake protection groups and agencies.

17. Water Quality Analysis and Assessment – The plan may include specific water quality and environmental analysis and assessment results from special studies and efforts of management agencies or other appropriate partnerships.

18. Standards and Classifications – The plan may contain recommendations related to potential changes to water quality classifications and standards.

19. Regional Water Quality Policies – The plan may contain regional water quality or environmental policies, implementation guidelines and recommendations adopted by local government officials in the planning region.

Process for Amending and Updating Plans

The Clean Water Act and the Colorado Water Quality Control Act establish the update and amendment process. The plan amendment process is ongoing. A formal plan update, which incorporates all amendments as well as additional required information, should be done at regular intervals. The Division reviews all requests for section 208 plan amendments after they are duly adopted at the local level, determines whether the amendment is major or minor, and makes a recommendation as to whether the amendment warrants an informational hearing by the Commission. The Commission has final authority to approve, deny, or conditionally approve a section 208 plan amendment and to recommend that the Governor certify the amendment to EPA.

Occasionally requests are made by regional planning agencies to amend a water quality management plan between plan updates or outside the updating process. Sometimes the need arises for approval of a plan amendment in a relatively short time frame, in order for a wastewater treatment project to proceed. Plan amendments proposed outside of the normal update cycle are a particular problem, as they affect the overall water quality planning process.

In order to expedite the review process, when necessary, plan amendments can be classified as either major or minor. Minor changes that are agreed to by the Division, the planning agency, and/or the management agency are not required to undergo an extensive amendment process. Neither the planning agency nor Division anticipates water quality impacts or major conflicts associated with a minor amendment. Minor changes can include some technical update information used for permitting purposes and water quality or environmental assessments from watershed studies. A periodic update of management plans eliminates the need for minor amendments with any minor change elements incorporated in the plan through a routine update process.

Major amendments warrant review by the Commission and require an informational hearing. These major amendments include, but are not limited to:

1. Changes in planning or management agency designation or membership.

2. Periodic updates to the priority water quality management plan elements previously listed in this section.

3. Changes that impact water quality or have generated public controversies.

4. Changes to stream standards, classifications or regulations approved by the Commission.

5. Changes that affect local, regional, state or commission policies and guidelines.

6. Changes that alter watershed management strategies.

7. Changes to discharge permits or permitting processes.

8. Other changes identified by the Division or Commission can be subjected to an informational hearing process.