REPORT OF

THE

STATE AUDITOR

WATER QUALITY CONTROL DIVISION

PERFORMANCE AUDIT
AUGUST 2000

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August 9, 2000

Members of the Legislative Audit Committee:

This report contains the results of a performance audit of the Water Quality Control Division in the Colorado Department of Public Health and Environment. This audit was conducted pursuant to Section 2-3-103, C.R.S., which authorizes the State Auditor to conduct audits of all departments, institutions, and agencies of state government. This report presents our findings, conclusions, and recommendations, and responses of the Water Quality Control Division and the Colorado Water Resources and Power Development Authority.

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STATE OF COLORADO
OFFICE OF STATE AUDITOR **REPORT SUMMARY**

J. DAVID BARBA, C.P.A.
State Auditor

Water Quality Control Division
Performance Audit
August 2000

This performance audit of the Water Quality Control Division was conducted under the authority of Section 2-3-103, C.R.S., which authorizes the State Auditor to conduct audits of all departments, institutions, and agencies of state government. The audit was conducted according to generally accepted auditing standards. The audit work, which included gathering information through interviews, reviewing documents, and analyzing data, was performed between January and July 2000.

This report contains findings and recommendations relating to the Division's discharge permitting, compliance reporting, and watershed monitoring functions, as well as the financial assistance programs. We acknowledge the efforts and assistance extended by staff of the Division. The following summary provides highlights of the comments, recommendations, and responses contained in the report.

Overview

The Water Quality Control Division in the Colorado Department of Public Health and Environment is charged with protecting the quality of the State's water by implementing federal and state water quality control and regulatory programs. Statewide, the Division oversees the water quality of more than 107,000 miles of streams and rivers; about 164,000 acres of lakes, reservoirs, and ponds; about 2,200 public water systems; and just under 1,100 process wastewater dischargers. The Division accomplishes this by regulating drinking water systems and wastewater dischargers, monitoring and assessing water samples from across the State, and working with local governments and citizens to address water quality needs. The Division also acts as staff to the Water Quality Control Commission, which adopts water quality classifications and standards to protect the beneficial uses of state waters and establishes regulations to achieve compliance with the classifications and standards.

The Division's budget for Fiscal Year 2001 is about $9.1 million. About half the Division's budget is provided by federal funds, with the other half being divided almost equally between cash and general funds.

According to Division data, efforts to protect water quality have resulted in a high level of compliance with regulatory standards. For example, in 1997 over 97 percent of the State's 2,200 public water systems were in compliance with Maximum Contaminant Levels (please see Appendix C for a glossary of terms) and in 1998 almost 90 percent of the State's stream miles fully met the standards for their use classifications. The Division's programs appear to be comprehensive in addressing the

needs of the State in terms of water quality monitoring, regulatory oversight, and professional and technical assistance for water facility operators, industries, and users. The recommendations contained in this report concentrate primarily on improving effectiveness and efficiency in Division operations to protect the State's waters at the most economical cost.

Discharge Permitting

Both state and federal laws prohibit the discharge of pollutants from a point source to surface waters without a permit. Permits are issued to protect the beneficial uses of water by limiting the amount of pollutants entering streams, lakes, rivers, and groundwater. The primary types of permits issued by the Division are major and minor permits for domestic and industrial dischargers of wastewater, general permits that provide certification for individual dischargers within general domestic and industrial categories, groundwater permits that are issued to entities discharging their water on to land rather than to a water body, and stormwater permits that regulate stormwater runoff. As of July 2000 there were 105 major permits, 344 minor permits, 11 general permits with 622 certifications, 194 groundwater permits, and over 2,000 certifications in effect under seven general categories. In accordance with state and federal laws, all permits are good for five years.

To monitor compliance with permit limits, facilities are required to conduct water sampling and submit compliance reports to the Division on a regular schedule. If the sampling results indicate that the permit limits are exceeded, the facility may be required to make adjustments to its treatment processes, follow a compliance schedule to return the water quality to acceptable levels, or ultimately cease discharging if public health is threatened.

The Permit Backlog

The Division has a substantial number of major and minor individual permits that are considered backlogged because their renewal applications have been received but the permit has not been renewed. These permits are administratively extended and the requirements of the existing permit must continue to be met until renewal. Several other states have similar backlogs and the U.S. Environmental Protection Agency (EPA) has established a goal for states to reduce their backlogs to 10 percent by December 31, 2004. The Water Quality Control Division has developed a backlog reduction plan with a goal of reducing the backlog to 10 percent by December 31, 2005. In December 1999 about 45 percent of the major permits and 36 percent of the minor permits were backlogged. In the last six months, growth in the backlog has been controlled and the figures have declined slightly.

The backlog creates administrative problems for the Division in terms of prioritizing its work effort and may, in some cases, require facilities to continue to comply with outdated effluent limits or monitoring requirements. However, there is little evidence of water quality deterioration or increased noncompliance with discharge limits associated with the backlog. This may be due, in part, to the

fact that regulated facilities are still required to monitor and report on their water quality, typically on a monthly basis, even if their permits have been extended beyond five years.

Changing the Permitting Approach

We believe the frequency with which permits are updated and renewed should be driven by risk factors rather than simply by the passage of time. The Division is moving to a watershed approach to water quality management that would support this sort of permitting strategy. Adjustments to policies and procedures would be needed, such as ensuring ongoing communication between the Assessment and Permits Units so that permit drafters would be kept up to date on any standards changes and updating the Division's data systems to efficiently identify permits affected by changes such as the establishment of new standards. Although these are large-scale changes, we believe the Division could take steps to move toward a more risk-based process, including using a needs-based assessment approach for permit renewals rather than a standard, uniform process to renew all permits every five years.

Currently, the five-year expiration date triggers a process that includes a complete review and redevelopment of the permit. The Division does not automatically renew any permit or rank applications based on criteria such as type of facility, location of discharge, quality of water in the receiving water body, or other factors. We found some states have developed systems to rank permits to determine the amount of work needed to update or renew them. Federal law prohibits the Division from allowing permits to extend beyond five years without risking the loss of its permitting delegation from the EPA. However, the Division could propose changes to the state law to remove this limitation and make policy and procedural changes that would result in a permitting approach that is more risk-based. Therefore, **we recommend the Water Quality Control Division implement an approach for renewing individual permits that includes evaluating permits to determine the amount of work required for renewal, establishing a streamlined process for permit renewal, and continuing to move toward a permitting process that bases renewals on changing circumstances and needs. In addition, the Division should propose changes to remove the five-year duration requirement from the statutes and establish permit lengths in regulations.**

Contractors Can Assist With the Backlog Reduction Effort

The Division has made significant efforts to address the permit backlog, but it still will not meet the EPA's deadlines and will not, according to its own plan, have eliminated the backlog until at least 2005. The backlog reduction plan anticipates a major effort to address the backlog over the next three to five years, with only a slight reduction of effort over that time. The Division has begun using contract resources to perform some functions related to permitting. We believe this practice should be expanded. Increased use of contract work would allow the Division to eliminate the backlog sooner and direct resources to other functions without making a permanent commitment to additional staffing. The Division has the ability to use the EPA's contractor to outsource permit-related work

in the future. Therefore, **we recommend the Water Quality Control Division expand on the use of contractors to assist in reducing the permit backlog.**

Water Quality Monitoring and Self-Reporting

One of the primary ways the Division monitors water quality in the State is by requiring that permitted water dischargers and drinking water systems regularly sample and analyze their water and submit the results to the Division. For permitted facilities, monitoring requirements are stipulated in the permit. For drinking water, the Division provides each public water system with an annual monitoring schedule that specifies the frequency and location of water sampling. All routine reports from public drinking water systems and permitted wastewater dischargers are submitted to the Division's Compliance Monitoring and Data Management Unit in hard copy. This results in thousands of reports each month that must be entered into databases. We found some states have implemented electronic reporting systems for submitting reports resulting in a more efficient use of resources. Although the Division noted several concerns with pursuing electronic reporting, including concerns about security, we believe these obstacles can be dealt with to allow electronic reporting in the future that would provide long-term benefits to both the Division and the regulated community. Therefore, **we recommend the Water Quality Control Division pursue the establishment of a self-reporting system that would allow permittees and water systems to report their monitoring information via electronic means.**

State Revolving Loan Funds Should Be Expanded

The federal government provides money to the State for funding of wastewater and drinking water projects through the Water Pollution Control and Drinking Water Revolving Funds, which are administered and maintained by the Colorado Water Resources and Power Development Authority (Power Authority). The Power Authority anticipates that the total loan capacity of the Water Pollution Control Revolving Fund will be almost $124 million by September 1, 2001, and about $44 million for the Drinking Water Revolving Fund. As both funds continue to increase in loan capacity over time, the agencies involved in the administration of the programs should seek additional beneficial uses of these moneys. One possible alternative for the Water Pollution Fund is to make loans to private entities to address nonpoint source pollution. A similar option for the Drinking Water Fund is to make loans to privately-owned public drinking water systems. Currently state statutes do not allow the Authority to make loans to nongovernmental entities. Providing low-interest loans to private entities would have an overall positive effect on Colorado waters and would help the Division ensure all drinking water systems in Colorado meet standards. Therefore, **we recommend the Water Quality Control Division work with the Colorado Water Resources and Power Development Authority to seek statutory changes to allow funds in the Water Pollution Control Revolving Fund to be loaned to private entities and funds in the Drinking Water Revolving Fund to be loaned to privately-owned public drinking water systems.**

Additional Funding Is Available to Address Nonpoint Source Pollution

The EPA provides funding to address nonpoint source pollution through the State's management program. The Nonpoint Source Management Program has received nearly $16 million in federal funding over the ten years it has been in operation. In Fiscal Year 2000 the Program made grants to 17 remediation projects totaling $2 million. These projects include mining remediation activities, agricultural runoff projects, and information and education projects. Federal law requires that 40 percent of nonpoint source grants be provided by the grant recipient. This match requirement may prevent some interested applicants from seeking grants. Nonpoint source grant applicants could seek funds from the Energy and Mineral Impact Assistance Program, administered by the Department of Local Affairs, to provide the match portion of the federal grant. The Energy and Mineral Impact Assistance Program has a large unreserved fund balance of about $26 million. If additional grant funds from the Mineral Impact Fund were available to participants in the Nonpoint Source Program, it is likely that more mining remediation projects would be undertaken, resulting in improved water quality. Therefore, **we recommend the Water Quality Control Division actively encourage the use of the Energy and Mineral Impact Assistance Program funds to accomplish more abandoned mine nonpoint source remediation projects.**

Sharing Information Could Benefit the Division

The Division conducts water sampling and analysis activities on waters across the State for setting standards and use classifications. Additionally, there are numerous local governments and entities that conduct similar monitoring activity on the same waters. One of these other entities is the Denver Water Department, which provides much of the metro area's drinking water. Due to the size of the watershed that supplies the Denver Water system, there is tremendous opportunity for the Division and Denver Water to share monitoring data that would result in a more efficient use of resources. According to officials at the Denver Water Department, they conduct about 50,000 individual analyses of water samples each year, including monitoring all source waters and reservoirs. Division staff believe the data produced by Denver Water are high quality. Sharing of hydrologic information between Denver Water and the Division provides the opportunity to increase efficiency and reallocate resources to other activities. Therefore, **we recommend the Water Quality Control Division work with the Denver Water Department to create a system and process acceptable to both parties for sharing data resulting from sampling and analysis activity undertaken by Denver Water.**

Summary of Responses:

The Water Quality Control Division agrees or partially agrees with all the audit recommendations in the report. The Colorado Water Resources and Power Development Authority partially agrees with Recommendation Nos. 7 and 8 regarding expanding the two state revolving loan programs, and disagrees with Recommendation No. 9 to use a risk-based approach to conducting interim construction inspections on projects funded from the Water Pollution Control Revolving Fund. Complete responses to all recommendations may be found in the body of the report.

RECOMMENDATION LOCATOR

Rec. No.	Page No.	Recommendation Summary	Agency Addressed	Agency Response	Implementation Date
1	24	Implement a risk-based approach for renewing permits and work toward a permitting system that bases permit changes and renewals on changing circumstances rather than on calendar deadlines.	Water Quality Control Division	Partially Agree	February 28, 2001
2	26	Propose a change to Section 25-8-501, C.R.S., to remove the requirement that discharge permits be renewed every five years and allow permit durations to be set through regulations.	Water Quality Control Division	Agree	July 1, 2001
3	28	Streamline the permit amendment process by including more flexible language in the permits and implementing standard criteria for evaluating amendment requests.	Water Quality Control Division	Agree	February 28, 2001
4	30	Expand the use of contractors to assist in reducing the permit backlog.	Water Quality Control Division	Agree	July 1, 2001
5	31	Expand the tracking of workload in the Permits Unit to include greater detail on all significant functions, and use tracking information to establish and monitor Unit priorities.	Water Quality Control Division	Agree	October 31, 2000
6	34	Pursue the establishment of electronic self-reporting systems by working with facilities and using other states as models.	Water Quality Control Division	Agree	July 1, 2001
7	40	Work with the Colorado Water Resources and Power Development Authority to seek changes to Section 37-95-106.5, C.R.S., to allow loans to private entities from the Water Pollution Control Revolving Fund for nonpoint source projects.	Water Quality Control Division Power Authority	Agree Partially Agree	July 1, 2001 --

RECOMMENDATION LOCATOR

Rec. No.	Page No.	Recommendation Summary	Agency Addressed	Agency Response	Implementation Date
8	43	Work with the Colorado Water Resources and Power Development Authority to seek changes to Section 37-95-107.8, C.R.S., to allow loans from the Drinking Water Revolving Fund to privately-owned public water systems.	Water Quality Control Division	Agree	July 1, 2001
			Power Authority	Partially Agree	--
9	46	Reduce the number and frequency of construction inspections on Water Pollution Control Revolving Fund projects by implementing a risk-based approach to conducting interim inspections.	Water Quality Control Division	Partially Agree	October 31, 2000
			Power Authority	Disagree	--
10	50	Actively encourage the use of Energy and Mineral Impact Assistance Program funds to accomplish more abandoned mine nonpoint source remediation projects.	Water Quality Control Division	Agree	July 1, 2001
11	54	Work with the Denver Water Department to establish an agreement to share water sampling in a manner acceptable to both agencies. Pursue future agreements with other entities.	Water Quality Control Division	Agree	February 28, 2001
12	56	Expand efforts to use volunteer resources to collect water samples.	Water Quality Control Division	Partially Agree	February 28, 2001

Description of the Water Quality Control Division

The Water Quality Control Division in the Colorado Department of Public Health and Environment is responsible for maintaining, restoring, and improving the quality of the State's waters in the environment and protecting the safety of the drinking water supplied by public water systems. Statewide, the Division oversees the water quality of more than 107,000 miles of streams and rivers; about 164,000 acres of lakes, reservoirs, and ponds; about 2,200 public water systems; and just under 1,100 wastewater dischargers. The Division accomplishes this by regulating drinking water systems and wastewater dischargers, monitoring and assessing water samples from across the State, and working with local governments and citizens to address water quality needs.

The Division acts as staff to the nine-member Water Quality Control Commission. The Commission adopts water quality classifications and standards to protect the beneficial uses of state waters and establishes regulations to achieve compliance with the classifications and standards. The Commission also conducts administrative hearings concerning appeals of decisions made by the Water Quality Control Division. In addition, the Division implements drinking water regulations promulgated by the State Board of Health.

Drinking Water and Wastewater Regulation

The Water Quality Control Division implements technical and regulatory measures intended to verify that drinking water systems and wastewater discharge facilities comply with approved water quality standards. Division staff provide technical assistance to promote compliance with standards and regulations, as well as regulatory oversight through reviews of plans and specifications for new or modified drinking water and wastewater facilities, inspections of facilities, and review of self-reported water quality data.

For drinking water, the federal Safe Drinking Water Act, as well as state statutes (Section 25-1-107, C.R.S.), contains standards for drinking water systems. Drinking water standards may be in the form of maximum contaminant levels (MCLs), which stipulate the maximum level of a specific contaminant that can occur in drinking water, or treatment techniques, which specify methods facilities must follow to remove certain contaminants.

For wastewater, the federal Clean Water Act and the Colorado Water Quality Control Act (Section 25-8-501,C.R.S.) prohibit the discharge of pollutants from a point source to surface waters without a permit. Because the Colorado Discharge Permit System meets federal requirements, the U.S. Environmental Protection Agency (EPA) has delegated authority to the Division to issue discharge permits to municipalities and industries. The permits specify the levels of contaminants, such as bacteria, metals, and chemicals that can be discharged by the permitted entity.

Both public water systems and permitted wastewater dischargers are required to routinely test their water and report the results to the Division. Violations of any standards must be reported to the EPA. In addition, the Division inspects these facilities and has the authority to administer enforcement actions if facilities fail to comply with laws and regulations. Enforcement actions can include financial penalties as well as legal actions such as closing a facility.

Water Quality Standards and Classifications

The Division assists the Water Quality Control Commission in developing water body use classifications and standards and regulating dischargers for compliance with the standards. All surface waters of the State, except for water in ditches and other man-made conveyance structures, are classified according to the uses for which they are currently suitable or are intended to become suitable. Rivers and streams are divided into individual segments for classification and standard-setting purposes. The current classification categories for water use are as follows:

- Recreation
- Agriculture
- Aquatic Life
- Domestic Water Supply
- Wetlands

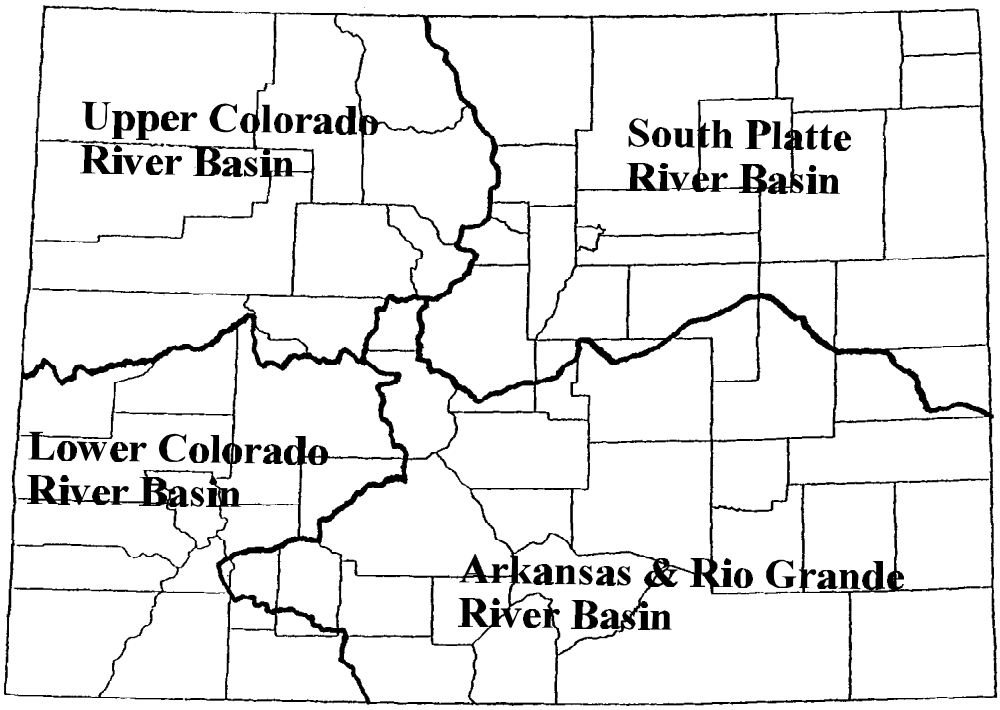
A complete listing of water use classifications and their definitions is included in Appendix A.

For each classified stream segment, numeric water quality standards for different pollutants are adopted to maintain the water quality at a level sufficient to protect the classified uses. All water quality classifications and standards adopted by the Water Quality Control Commission are submitted to the EPA for review and approval.

The Water Quality Control Commission is required by state and federal law to review all existing water quality classifications and standards at least once every three years. The classifications and standards are used to set effluent limits in discharge permits

as well as for other water quality management planning, such as nonpoint source control activities, watershed planning initiatives, and the development of Total Maximum Daily Loads (TMDLs). The Clean Water Act requires the State to identify waters for which existing treatments and controls are not adequate to attain the water quality standards. These waters are reported to the EPA on the State's 303(d) list. The State is required to prioritize the listed water segments based on the severity of pollution, determine the causes of the water quality problem, and ultimately implement controlling measures for the pollution. The TMDL process results in a determination of the amount of any specific pollutant that a water segment can receive without exceeding water quality standards. The Division's 1998 303(d) list identified 79 water segments that need TMDLs. The Division developed a prioritization schedule that calls for 100 percent of the segments to have TMDLs developed by 2010.

The Division has divided the State into four separate geographic regions called watershed basins, which are designated by natural drainage areas and the waters contained therein. The four watershed basins are the South Platte, the Arkansas/Rio Grande, the Upper Colorado, and the Lower Colorado, as shown in the following map. These watershed basins allow the Division to address a range of individual water quality issues while keeping a broad view of the region's needs.

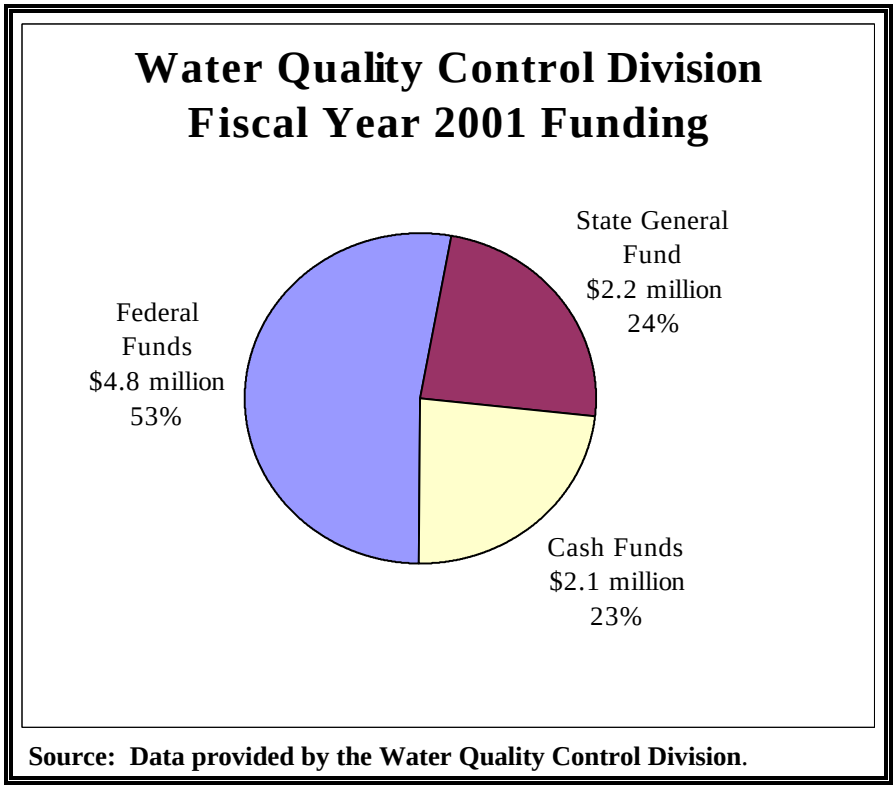


Source: Water Quality Control Division.

Water Quality Control Division Revenues and Expenditures

The Division's budget for Fiscal Year 2001 is about $9.1 million, which is divided among three main functional areas. The Water Quality Protection Section, described in Chapter 1, has a budget of about $4.2 million; the Watershed Section, described in Chapter 2, has a budget of about $2.4 million; the Administrative Unit, which provides support to the Division as a whole, has a budget of about $2.5 million.

The following chart shows that just over half the Division's budget is provided by federal funds, with the other half being divided almost equally between cash and general funds.



Source: Data provided by the Water Quality Control Division.

The majority of cash funds are generated from fees paid by permitted wastewater dischargers. The state general fund moneys are used primarily to provide required match amounts for the different federal funding sources. The Division must match the federal moneys at rates ranging from about 25 to 40 percent.

Federal funds are available from two primary sources. First, the Clean Water Act provides funds for a variety of purposes, as follows:

- About $1.5 million is available to be used at the Division's discretion for any aspect of wastewater regulation.

- About $620,000 is for administration of the Water Pollution Control Revolving Fund program, including both administrative and engineering staff who carry out duties related to the program.

- About $525,000 is for the State's Nonpoint Source Management Program.

- About $265,000 is for groundwater pollution control activities.

In addition, the Safe Drinking Water Act supports all aspects of the Drinking Water program, with about $1.3 million in discretionary funds and almost $400,000 for the Drinking Water Revolving Fund program.

Water Quality in Colorado

The Water Quality Control Division is the state agency charged with protecting the quality of the State's water by implementing federal and state water quality control and regulatory programs. According to Division data, efforts to protect water quality have resulted in a high level of compliance with regulatory standards, as indicated by the following statistics:

- In 1997 over 97 percent of the State's 2,200 public water systems were in compliance with Maximum Contaminant Levels.

- In 1998 almost 90 percent of the State's stream miles fully met the standards for their use classifications.

The Division's programs appear to be comprehensive in addressing the needs of the State in terms of water quality monitoring, regulatory oversight, and professional and technical assistance for water facility operators, industries, and users. The recommendations contained in this report concentrate primarily on improving effectiveness and efficiency in Division operations to protect the State's waters at the most economical cost.

Audit Scope

This audit covered a variety of programs and functions in the Water Quality Control Division, focusing mainly on discharge permitting, nonpoint source activities, and financial assistance programs. The audit is part of a National State Auditors' Association effort to review water quality programs in a number of states. The results of this audit will be compiled with those of other states and released in late Calendar Year 2000.

Water Quality Protection

Chapter 1

Overview

The Water Quality Protection Section carries out regulatory functions to control water pollution and safeguard the drinking water supplied by public water systems. The Section consists of three units with about $4.2 million in funding for Fiscal Year 2001. The functions of the Section are described below.

Permits Unit: This unit, with 14 FTE, is responsible for issuing all wastewater discharge permits in the State. In general, permits stipulate effluent limits for all industrial and municipal water dischargers. The Division charges statutorily authorized annual fees for permits, which range from about $300 for domestic wastewater sewage discharge of less than 20,000 gallons per day to about $12,000 for domestic wastewater treatment plants discharging in excess of 100 million gallons per day. For Fiscal Year 2001 the Division estimates about $1.5 million will be collected in permitting fees.

Compliance Monitoring and Data Management Unit: This unit has 12 FTE who obtain and review all self-reported data from permitted entities as well as from public drinking water systems. Staff of this unit check reported water quality data and enter it into wastewater and drinking water databases. This unit is also responsible for developing and managing the Division's data systems.

Drinking Water and Wastewater Technical Services Unit: This unit has a main office in Denver as well as satellite offices in Grand Junction and Pueblo. The primary functions of the unit include inspecting drinking water and wastewater facilities to ensure compliance with water quality regulations and reviewing and approving the designs for new or expanding treatment facilities. The unit also monitors projects funded through the Drinking Water and Water Pollution Control Revolving Loan Fund and state grant programs. The unit has 22 FTE.

Enforcement Team: Separate from the three designated units is an enforcement team of two FTE that reports directly to the Section manager. This team is responsible for handling enforcement actions relating to drinking water systems and permitted facilities. Enforcement efforts range from correspondence requesting compliance with

regulations to court actions such as the closure of a facility and the assessment of penalties.

Discharge Permitting

Both state and federal laws prohibit the discharge of pollutants from a point source to surface waters without a permit. Permits are issued to protect the beneficial uses of water by limiting the amount of pollutants entering streams, lakes, and rivers. Each permit specifies limits on the amount of particular elements and contaminants the permitted facility can discharge. The primary types of permits issued by the Division are as follows:

- **Major individual permits** are issued to municipal dischargers of at least 1 million gallons per day of wastewater and to large industrial dischargers that meet certain criteria relating to the type and volume of waste being discharged. There are 105 active major permits as of July 2000.

- **Minor individual permits** are issued to municipalities discharging less than 1 million gallons per day and to industrial facilities that do not meet the criteria for a major permit. There are currently 344 active minor permits.

- **General permits** contain stipulations for the most common types of pollutants that would be discharged within a general activity or industry category. For example, there are 11 different general permits, which cover industries such as fish hatcheries, coal mining, and construction. Individual facilities are certified under the requirements of the general permit. As of July 2000 there are 622 active certifications.

- **Groundwater permits** are issued to entities that discharge their water to land rather than to a water body. Currently this is a state-mandated program with 194 active permits.

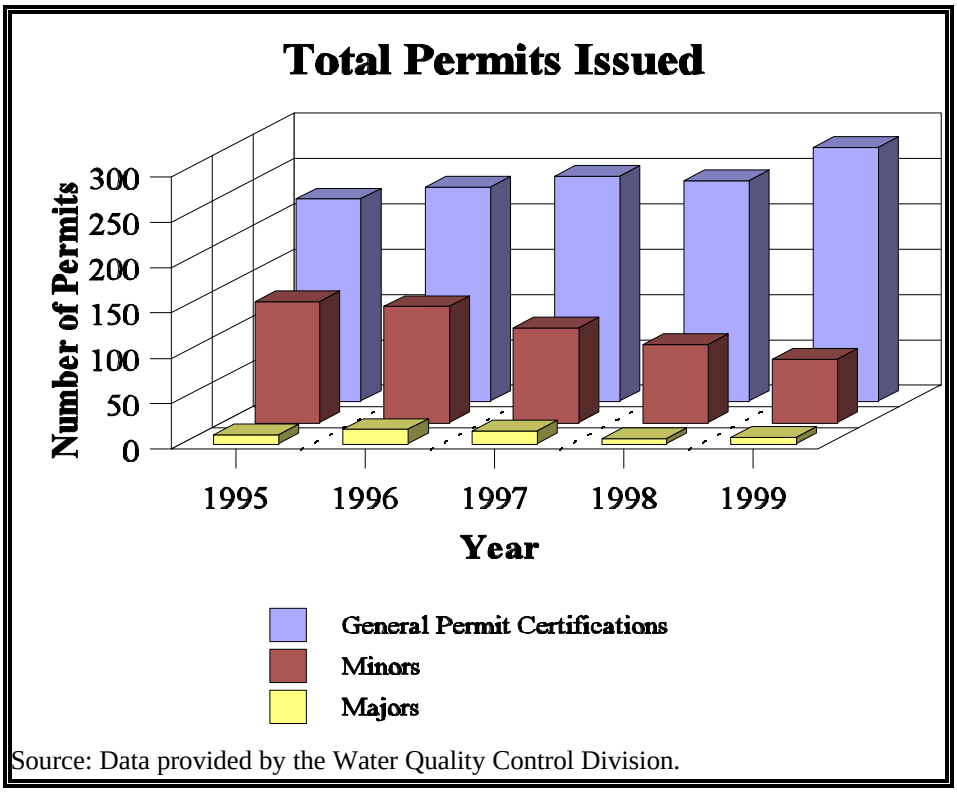
- **Stormwater permits** regulate the runoff from storms that can transport contaminants to water bodies. Municipalities with populations over 100,000 must have stormwater permits. The Division has four municipal stormwater permits and over 2,000 stormwater certifications under seven industry categories.

General, individual, and stormwater permits are issued by the Division under a delegation agreement with the U.S. Environmental Protection Agency (EPA) and in accordance with federal laws and regulations. The State's Water Quality Control Act contains permitting requirements that cover all types of permits issued by the Division.

In accordance with state and federal laws, all permits issued by the Division expire five years after their issue date.

To monitor compliance with permit limits, facilities are required to conduct certain types and frequencies of water sampling and compare the results with the limits established in their permits. The facilities must submit compliance reports to the Division on a regular schedule based on this sampling. As an example of required testing and reporting, a permitted municipal wastewater treatment plant might be required to take five water samples per day to be tested for total residual chlorine and report the maximum amount detected each month or to test and report quarterly on levels of mercury in the water. Division staff review the data reported by all facilities. If the sampling results indicate that the permit limits are exceeded, the facility may be required to make adjustments to its treatment processes, follow a compliance schedule to return the water quality to acceptable levels, or ultimately cease discharging if public health is threatened.

The following chart shows the number of permits issued in each of the last five years.



Source: Data provided by the Water Quality Control Division.

The Permit Backlog

The Permits Unit is facing a substantial backlog of major and minor individual permits (general permit certifications are not backlogged). A permit is considered backlogged when a renewal application has been received but the permit review process is not completed by the permit's expiration date. These permits are extended by the Division under the State Administrative Procedures Act, and the requirements of the existing permit must continue to be met until renewal. According to the Division, the primary causes of the backlog are the loss of FTE from the permitting function and growth in the State, which increases the number of permits needed.

The Division has information on the aggregate number of permits and certifications in effect at various dates in the past. According to this information, the backlog has grown from 96 individual permits in June 1996 (about 9 percent of all individual permits and certifications) to 160 in December 1999 (about 15 percent of all individual permits and certifications). However, until December 1999 the Division did not keep track of the number of individual major and minor permits in effect at specific dates. The Division does know that in December 1999 about 45 percent of the major permits and 36 percent of the minor permits were backlogged. In the last six months, growth in the backlog has been controlled and the figures have declined slightly to about 44 and 33 percent of the major and minor permits, respectively.

Several other states have similar backlogs, and the EPA has made reduction of permit backlogs a priority for the next several years, establishing backlog reduction goals for the states. The Water Quality Control Division has developed its own plan to address Colorado's backlog, with a longer time frame than that set by the EPA, as shown in the following table.

COMPARISON OF EPA & WATER QUALITY CONTROL DIVISION PERMIT BACKLOG GOALS

Backlog Area	EPA Goal	Water Quality Control Division Goal	Division Backlog
Major Permits	10% by December 31, 2001	10% by December 31, 2002	44% as of July 2000
Minor Permits	The EPA did not set a goal for minor permits.	10% by December 31, 2005	33% as of July 2000
All Permits	10% by December 31, 2004	10% by no later than December 31, 2005	33% as of July 2000

Source: Data provided by the Water Quality Control Division.

The Division formally implemented its backlog reduction plan in March 2000. The plan outlines a number of steps to expedite the permitting process, including prioritizing permits for issuance and renewal, establishing a permit tracking system to monitor the status of permits being drafted, and converting some individual permits to certificates under a general permit (certificates are typically much less time-consuming to issue than individual permits). Furthermore, the Division has added and shifted some resources to expedite the processing of permit applications. Specifically:

- Several staff of the Division's Assessment Unit were assigned to help permit drafters complete some of the background work necessary to issue permits between January and June 2000. These staff have since been reassigned to regular Assessment Unit duties.

- The Division is planning to assign one FTE from the Assessment Unit to permitting activities on a permanent basis beginning in early Fiscal Year 2001.

- Some staff within the Permits Unit have redirected their efforts to reducing the backlog and have put aside other projects, such as issuing groundwater permits.

- The Division has contracted out some activities related to permitting. Specifically, the EPA is providing a contractor to perform some assessment work for permits between June and September 2000. In addition, the Division is using a contract consultant to calculate preliminary effluent limits for new facilities, which are used to establish effluent limitations within a permit.

To reach its goals, the Division must issue 12 major and 28 minor permits every six months for the next three years. This schedule has been accomplished in the six-month period of January through June 2000.

Effects of the Permit Backlog

The backlog creates administrative problems for the Division in terms of prioritizing its work effort and may, in some cases, require facilities to continue to comply with outdated effluent limits or monitoring requirements. However, there is little evidence of water quality deterioration or increased noncompliance with discharge limits associated with the backlog. We compared a list of enforcement actions prepared by the Division for 1998 and 1999 with listings of backlogged permits and found no clear correlation between the two. This may be due, in part, to the fact that regulated facilities are still required to monitor and report on their water quality, typically on a monthly basis, even if their permits have been extended beyond five years.

The need to establish limits on the types and amounts of pollutants a wastewater facility or industry may discharge to waters of the State is clear. Discharge permits are carefully designed to protect the State's waters while meeting the needs and capabilities of individual dischargers. However, the need to renew all permits on a calendar-driven schedule is less clear. This is because it is not the permit itself that ensures water quality. Rather, the monitoring and reporting of hydrologic data and the technical assistance provided to facilities to deal with any deficiencies are the actions that protect the waters of the State. As one state we contacted pointed out, the five-year permit limit is arbitrary and bears no relation to any environmental criteria for reexamining effluent limitations on a permitted entity.

According to Division and EPA staff, there has been discussion at the federal level of extending discharge permits to allow them to be renewed less frequently, most likely every ten years. One state we contacted indicated it is beginning to evaluate and issue permits so that they can be in force longer, in anticipation of a possible change in the federal requirements. The benefits of allowing permits to remain in effect longer include time and effort savings for both the state permitting programs and the regulated facilities that apply for permits.

Changing the Permitting Approach

We believe the frequency with which permits are updated and renewed should be driven by risk factors and environmental significance rather than simply by the passage of time. For example, once a permit has been issued, it should be modified or "renewed" whenever a significant change occurs that affects the permit conditions. Such changes include, but are not limited to:

- Modifications in the permitted facility's processes that change the quality of the effluent water.
- Improvements or deterioration in the quality of the waters upstream or downstream from the facility.
- Changes in regulatory requirements.
- Changes in water body standards.

The Division's move toward a watershed approach to water quality management supports this sort of permitting strategy. However, the Division currently is not organized in a way that facilitates this approach, which would require a number of adjustments to policies and procedures. For example, the Division would have to ensure ongoing communication between the Assessment and Permits Units so that permit drafters would be kept up to date on any standards changes. In addition, the Division would probably need to assign permits to individual drafters on a permanent basis and make the drafters responsible for monitoring situations that would affect their permits. Furthermore, changes in the Division's data systems would be needed

to efficiently identify permits affected by water body changes such as the establishment of new standards or TMDLs. (See Appendix C for a glossary of terms.)

Another element that constrains the Division in changing its permitting system is the existence of state and federal laws limiting the duration of a permit to five years. While the Division could seek changes to eliminate this requirement from state statutes, as we discuss later in the report, the same requirement at the federal level means the Division cannot formally extend permits beyond five years without risking the loss of its permitting delegation from the EPA. However, there are steps the Division could take to move towards the approach we've described, including:

- Using a risk- or needs-based assessment approach for permit renewals rather than a standard, uniform process to renew all permits every five years.

- Seeking a statutory change to remove the five-year permit limit from state law and set permit durations through regulations. This would allow non-federally regulated groundwater permits to extend beyond five years and allow changes in the permitting process to occur more easily if the federal requirement were changed.

- Including more flexibility in the written permits to alleviate the need for minor amendments and developing standard criteria for determining when an amendment should and should not be issued.

Each of these issues is discussed in greater detail below.

The Division Does Not Use a Risk-Based Approach to Renewing Permits

While the growth in Colorado has resulted in an increasing number of applications for new discharge permits, the vast majority of permit issuance work is for renewing existing permits. Renewing permits is about as time- and work-intensive as issuing an original permit. The process begins when a permitted facility submits a renewal application, which is identical to a new permit application. Division permit drafters then follow a process that includes:

- Determining pertinent issues affecting the permit, such as the need for additional water quality data and new technology-based limits for a manufacturing process.

- Assembling data documenting the conditions of the facility and the water body receiving the discharge, including a facility's past compliance record.

- Identifying pollutants of concern (those pollutants that could be in the discharged water at a rate high enough to exceed water quality standards).

- Conducting, or obtaining from a Division District Engineer, an evaluation of the facility that indicates necessary technology-based effluent limits and the facility's capability to comply with relevant water quality standards.

- Summarizing available effluent data to document the reasonable potential for the facility to cause or contribute to a water quality standard being exceeded for each pollutant of concern.

- Establishing a water monitoring schedule that specifies when and where water samples should be taken, what they should be tested for, and how often the sampling results should be reported to the Division.

Similar steps are followed for each permit renewal even if there have been no significant changes in the permittee's processes, in the stream flow, or in regulations that would require modifications to the permit. Thus, the five-year expiration date triggers a process that includes a complete review and redevelopment of the permit. The Division does not automatically renew any permit or rank applications based on environmental impact or criteria such as type of facility, location of discharge, quality of water in the receiving water body, or other factors.

Priorities Other Than Permitting Will Need to Be Addressed in the Future

Because a large part of the staff resources in the Permits Unit are currently directed toward reducing the permit backlog, other work is being curtailed. For example, groundwater permits are generally not being renewed until the permit backlog is under control. As of July 2000 about three-quarters of the 194 individual groundwater permits are backlogged, and only six individual permits for groundwater discharge were issued between July 1999 and May 2000.

Additionally, the Division is facing issues that will likely become high priorities in the near future. For example, Phase II of the federal stormwater program will be implemented beginning in 2003 and will require stormwater permits for all municipalities with populations greater than 10,000. Currently, stormwater regulations require permits for municipalities with populations of more than 100,000 according to the 1990 census; only four municipalities are permitted under this criterion. The Division will need to dedicate resources to this and other programs within the Permits Unit while keeping up with the backlog reduction plan or risk a recurrence of the backlog in the future.

The Permits Unit does not have a detailed time-tracking system and could not provide records of the time required to issue or renew an individual permit. However, the Division did provide estimates which indicate that, on average, it takes about 170 hours to issue a major permit, about 70 hours to issue a minor permit, and about 9 hours to issue a certification under a general permit.

Permits Unit staff have been actively seeking to convert minor permits into certifications as appropriate to increase efficiency. We believe the Unit should continue this approach and expand its efforts wherever possible to use a more streamlined approach to permitting for both major and minor permits. For example, if the Division could follow a process that requires minimal work to renew 10 to 20 percent of its minor permits each year, rather than conducting an extensive renewal process, it could save between 500 and 1,000 hours annually. This equals one-quarter to one-half of one FTE that could be reallocated to other efforts and upcoming initiatives.

Some States Use Different Approaches to Updating and Renewing Permits

Although all states with delegated discharge permitting authority are required to have permitting programs that are as stringent as federal requirements, we learned that some states have developed varying systems to improve the efficiency and effectiveness of their permit renewals. Two states we contacted have implemented ranking or scoring systems to evaluate permits for updating or renewal; one state prioritizes its permitting efforts based on the type of facility. Specifically:

- New York's approach is essentially risk-based, involving an annual ranking of all active permits to identify those that need to be updated or renewed. The ranking process takes into account factors such as the existence of pollutants that are not addressed by the permit, the extent to which the permitted entity contributes to local water quality, and the length of time since the permit's last complete review and renewal. Those permits that receive the highest scores based on this ranking are carefully reevaluated and updated. All expiring permits are automatically reauthorized. This system allows New York to focus its resources on the discharge permits that pose the greatest risk of damaging the state's water quality, rather than on those that are expiring but do not require significant changes.

- The State of Washington has implemented a pilot system that evaluates the environmental significance of permit renewals and determines the amount of work necessary to reissue the permit. Washington scores applications for renewal permits with the most significant environmental factors increasing the score the most. Resources are devoted first to those permits with the highest

scores, which undergo an extensive evaluation and renewal process. As scores decline, so do the resources spent evaluating and issuing the permit. The lowest-scoring permits are simply reauthorized, with minimal time and effort. Examples of criteria used to determine environmental significance include whether the facility is a major polluter to a water quality limited water body and whether a permit change is needed to accommodate economic development.

- Pennsylvania has implemented a more rudimentary system to reduce the amount of time spent renewing relatively simple permits. State officials indicated that certain types of permits, such as those for nonmunicipal facilities and small dischargers, are renewed using a streamlined process that requires fewer resources than a typical permit renewal.

Both Washington and New York indicated that their regional EPA offices have been supportive of states' efforts to reduce permit backlogs, streamline permit drafting, and generally reduce the amount of work required to issue permits within current federal requirements. The Division would need to work with local EPA Region VIII officials in implementing significant changes to its permitting process.

We believe Colorado should establish an approach to permit renewal that is similar to those of New York and Washington. We recognize that other states have varying environmental factors affecting their water quality programs including significant rainfall, the existence of coastal waterways, and different types of industry, all of which impact their criteria and processes for permitting. Colorado is also affected by unique conditions such as diverse topography, an arid climate, rapid growth, and active stakeholders. However, these factors could be accounted for in developing criteria to evaluate and prioritize renewals and implement streamlined processes to expedite the renewal of permits. The Division could include criteria ranging from environmental factors to facility size and type.

Ultimately, the Division should move toward a permit process that does not require a routine renewal based on uniform calendar deadlines. Instead, the Division should pursue a permitting approach that allows permits to remain in effect as long as their conditions are appropriate and to be modified or renewed as circumstances change.

Recommendation No. 1:

The Water Quality Control Division should implement a risk-based approach for renewing individual permits by:

a. Establishing criteria to evaluate expiring permits to determine the amount of work required for renewal.

b. Developing procedures that allow for a limited or automatic renewal of permits determined to be of low risk or with no changes in circumstance that lead to modifications of the permit conditions.

c. Continuing to move toward a permitting process that bases renewals on changing circumstances and needs rather than on an arbitrary time frame.

Water Quality Control Division Response:

Partially Agree. The Division agrees that renewing permits based on their risk rather than set time frames will allow the process to be more environmentally protective while still ensuring the water quality of the state. Although we have made efforts to streamline the process by issuing general permits with certifications instead of other types of permits when possible, we see the value in continuing to move toward basing renewals on changing circumstances. However, as we implement a risk-based system, we will need to work with the EPA to ensure that it will support such a process and that making the change to a risk-based approach will not jeopardize the Division's delegated authority.

Changes in State Statutes Would Allow Some Changes in the Permitting Process

One area where state law applies in the absence of federal statutes is in the issuance of groundwater permits. Federal laws do not address the permitting of entities that discharge wastewater on to the ground rather than to a water body. However, as noted previously, state statutes are consistent with federal law in limiting the duration of discharge permits to five years. These state laws apply to groundwater permits as well as surface water permits. As of July 2000 there were 194 active individual groundwater permits, which represents 31 percent of the total number of active individual permits.

One step toward a permitting system that allows changing circumstances and needs, rather than calendar deadlines, to dictate the renewal cycle is to eliminate the state requirement to renew groundwater permits every five years. The Division could propose a change in Section 25-8-501, C.R.S., to remove the permit duration limit from the statute and allow permit expiration requirement to be stipulated in regulation. This would allow the Division to issue groundwater permits that could remain in effect longer, resulting in:

- A reduction in the total number of permits renewed in any year. For example, if individual groundwater permits had a duration of ten years, the average number of groundwater permit renewals each year would be decreased as the longer permit terms became effective. Since the permit fees are paid annually, a change in the permit duration would not affect the amount of fees collected.

- An enhanced ability to allocate resources among competing activities based on priorities rather than on permit expiration dates.

Federal regulations mandate that a state with a delegated permit program have requirements that are at least as stringent as those imposed by the federal government. Thus, to retain its delegation for discharge permitting, Colorado's permitting requirements, including the duration of the permit, cannot be more lenient than federal requirements. Any proposed change in the statutory language should be evaluated to ensure that sufficient stringency is maintained. The Division should explore a proposal that removes the specific duration from the statutes and allows the Water Quality Control Commission, through the promulgation of regulations, to establish permit durations. This would allow the Commission and the Division more flexibility in setting permit lengths. For example, the Commission could then lengthen the term of a groundwater permit without affecting the duration of other permits. In addition, the Commission would be able to act more quickly to change expiration dates if federal requirements change.

Recommendation No. 2:

The Water Quality Control Division should propose a change to Section 25-8-501, C.R.S., to remove the requirement that discharge permits be renewed every five years and allow permit durations to be established through regulations.

Water Quality Control Division Response:

Agree. The Division will explore seeking changes to Section 25-8-501, C.R.S., to eliminate the state-level requirement that discharge permits be renewed every five years. Seeking these changes now will allow us to quickly change the renewal period should the federal requirements change.

Permit Amendments

All the conditions of any discharge permit are in effect for the entire period of the permit unless an amendment to the permit is obtained. According to regulations, modifications may be made to change requirements of the original permit and can be initiated by either the permittee or the Division. Amendments range in scope and significance from correcting typographical errors to establishing new effluent limits. According to Division staff, amendments are most commonly requested by the permittee to modify requirements or limitations the permittee believes are no longer applicable. For example, a permit might require a facility to conduct toxicity testing on its discharge for a certain period. However, if after consistent monitoring, the effluent is found to be nontoxic, the permittee can request an amendment to its permit to stop toxicity testing. This is an example of a relatively minor change to a permit. Less frequently, changes in law or regulations may require an amendment, which would be initiated by the Division. Permittees pay amendment fees ranging from 25 to 55 percent of their annual permit fees, not to exceed $1,300 for minor modifications and $2,750 for major modifications.

Permits Allow Limited Flexibility to Change Requirements

Individual permits written by the Division typically do not allow flexibility for changing conditions or requirements. Most modifications, such as changes to effluent discharge limits or monitoring and reporting requirements, require the permit to be amended by the Division. However, there are some circumstances in which permits include conditional language. For example, for a new permit there may be limited data available on the amount of a certain contaminant, such as mercury, in the water flowing into the facility. The permit might originally require the facility to test for mercury, then allow the testing to be discontinued in the future if the contaminant is not found.

We believe the Division should expand this approach and make permits as flexible as possible. Specifically, if the Division could anticipate the need for changes and write permits to accommodate the changes without a formal permit amendment, it could reduce both the workload on the Division and the burden on permitted facilities of requesting amendments for some modifications.

One approach the Division could take is to review amendments that have been requested to identify the most common requests. The Division could then modify the standard permit language to allow these common amendments to occur without the need for a formal permit amendment. Another approach is to direct permit drafters to try to anticipate amendments on a permit-specific basis. Thus, when a permit is

written with conditions that can reasonably be expected to change within the duration of the permit, the Division could include language that allows the change without a permit amendment.

In addition, the Division should develop standard criteria for evaluating the need for and priority of amendment requests. Until the Division began to focus efforts on renewing expired permits to reduce the backlog, amendments were treated with the same priority as any other permit issuance or renewal and, according to Permits Unit staff, required a significant amount of staff time. The current backlog effort has made amendments a lower priority in the short term, but the Division has not developed mechanisms to prioritize amendments in the future.

From July 1999 through May 2000 the Division issued 40 permit amendments, or about 3.5 amendments per month. According to Division staff, permit amendments can require anywhere from 2 to 80 hours of work, but, on average, require about 20 hours of staff time. Therefore, the Division spent, roughly, 800 hours issuing permit amendments in that 11-month period. It is possible that some resources spent on amendments could be better used to issue high-priority permits or conduct other Division business. Writing permits with more flexibility to accommodate changing circumstances would also benefit regulated entities by reducing or eliminating both the need to obtain amendments and the associated fees.

Recommendation No. 3:

The Water Quality Control Division should take steps to streamline the permit amendment process by:

a. Identifying common amendment requests and expanding on the number of permits that include stipulations allowing some modifications in the requirements of the permit such as changes to monitoring and reporting requirements.

b. Establishing policies that direct permitting staff to actively seek opportunities to include conditional language in new and renewal permits.

c. Developing and implementing standard criteria for evaluating permit amendment requests to ensure that staff resources are directed toward high-priority permitting activities.

Water Quality Control Division Response:

Agree. There appear to be opportunities to reduce the number of permit amendment requests through the use of more flexible, conditional language that anticipates possible changes in permit-related circumstances. However, due to the nature of some permits, we anticipate that even the most diligent efforts in this area will not eliminate or streamline the process for all amendments.

Contractors Can Assist With the Backlog Reduction Effort

The Division has made significant efforts to address the permit backlog, but it still will not meet the EPA's deadlines and will not, according to its own plan, have eliminated the backlog until at least 2005. The backlog reduction plan anticipates a major effort to address the backlog over the next three to five years, with only a slight reduction of effort over that time. The plan requires 24 major and 56 minor permits to be issued every year for the next three years to reach the goals the Division has set itself. This schedule is based on eight FTE over that period working almost exclusively on issuing individual permits. Furthermore, according to Division managers, the Unit will have to continue at a similar permit production level after 2005 to keep up with the workload anticipated at that time.

As noted above, the Division has begun using contract resources to perform some functions related to permitting. However, the Division's main effort to date has concentrated on redirecting internal resources to the permitting function. Although this approach has the advantage of using existing resources and qualified individuals, a drawback is that the duties normally performed by these staff will be delayed, possibly causing future problems and resource issues. Increased use of contract work would allow the Division to eliminate the backlog sooner and direct resources to other functions without making a permanent commitment to additional staffing.

According to Division staff, it is difficult to contract out permitting work because it is a fairly specialized function, so it is difficult to find individuals or companies that have the required expertise. Consequently, training contract staff can be expensive, especially over the short term. However, the arrangement the Division has with the EPA to use a private contractor indicates there are some private-sector organizations that have the necessary skills. In addition, the Division has the ability to use the EPA's contractor to outsource permit-related work in the future. According to Division managers, the Division intends to take advantage of this opportunity in federal Fiscal Year 2001 when additional Clean Water Act funds are expected to be

available. We encourage the Division to pursue this option as well as other contracting opportunities.

Recommendation No. 4:

The Water Quality Control Division should expand the use of contractors to assist in reducing the permit backlog either through the EPA contract or through separate contractual arrangements.

Water Quality Control Division Response:

Agree. The Division is already using contractors to the extent allowed by the availability of qualified contractors and the resources available to procure such work. However, the Division plans to expand its use of contractors should additional funding become available.

Tracking and Prioritizing Permits Unit Workload

The Permits Unit has established processes to monitor the status of permitting efforts. First, the Unit has an automated system that can track major milestones in the permitting process. This Permit Tracking System includes new and renewal permits of all types, certifications, and amendments. It lists the staff assigned to handle each activity and the planned and actual completion dates for reviewing permit applications, preparing draft permits, providing public notice of the draft, and issuing the permit.

In addition to the Permit Tracking System, the Permits Unit manager maintains a spreadsheet to monitor individual major and minor permits in detail. Similar to the Permit Tracking System, the spreadsheet identifies the permit drafter responsible for each permit as well as planned and actual dates for preparing a draft, publishing notice of the draft, and issuing the permit. In addition, the spreadsheet has further detail on specific steps in the drafting process, such as collecting an assessment package from the Assessment Unit and having the draft permit reviewed by the EPA. The spreadsheet is used by the Unit and Section managers to ensure that work is progressing to achieve planned goals as described in the Backlog Reduction Plan. Since the spreadsheet is limited to just individual major and minor permits, there is a greater level of detail on these activities than on other functions, such as preparing amendments and certifications under a general permit.

The Unit's backlog reduction plan states that one goal of the Unit is to set priorities for all Unit activities. This goal could be more easily achieved if the Unit tracked all activities at a greater level of detail. A comprehensive tracking and scheduling system provides a mechanism for the Unit to ensure that priorities are put into practice by providing the Unit manager with an accurate picture of the workload distribution among staff and the status of all projects at any given point in time. The type and level of detail included in the current permit tracking spreadsheet would be useful in monitoring and evaluating all Unit work efforts and planning for upcoming projects. The Division could use this model to expand to a larger-scale workload tracking system.

Recommendation No. 5:

The Water Quality Control Division should expand its workload tracking effort in the Permits Unit to include greater detail on all significant Unit functions including issuance of permit amendments, groundwater permits, and certifications. The Division should then use information from its tracking process to establish and monitor priorities of the Unit.

Water Quality Control Division Response:

Agree. The Division sees the value of tracking the workload and progress on the status of certificates, groundwater permits, and permit amendments in greater detail than is currently available. This level of detail will allow us the opportunity to better use the information to establish and monitor Unit priorities.

Water Quality Monitoring and Self-Reporting

One of the primary ways the Division monitors water quality in the State is by requiring that permitted water dischargers and drinking water systems regularly sample and analyze their water and submit the results to the Division. For permitted facilities, monitoring requirements are stipulated in the permit. Monitoring schedules are developed for each facility that specify how often water samples must be taken, what type of sample is needed (e.g., a grab sample is collected in a container at a specified point; a visual sample requires simply looking at the water for visible contaminants such as oil), at what points in the system the samples should be obtained, what contaminants should be tested for, and in what format the results

should be reported to the Division. For drinking water, the Division provides each public water system with an annual monitoring schedule that specifies the frequency and location of water sampling.

All routine reports from public drinking water systems and permitted wastewater dischargers are submitted to the Division's Compliance Monitoring and Data Management Unit in hard copy. There are about 2,200 public water systems in the State and almost 1,100 permitted dischargers. Therefore, the Division receives thousands of reports each month with data that must be entered into one of two database systems: the Permits Compliance System for permitted facilities and the Drinking Water Information Management System for drinking water systems. These databases are used by the Division for oversight of water systems and dischargers and for monitoring of water quality. They also provide required data to the EPA.

The Compliance Monitoring and Data Management Unit has about two FTE who are responsible for processing and entering data from routine reports submitted by public drinking water systems and permitted facilities. We estimate the cost of these FTE is about $70,000 per year. If the Division could reduce the need to have these staff entering data, it could realize annual cost savings or redirect these resources to other activities.

Some States Have Electronic Reporting Systems

Reporting of water sampling results in hard copy appears to be typical for virtually all states. However, we found a few states have developed electronic reporting systems for their wastewater discharge monitoring reports (DMRs) or are running pilot projects. Although some of the states reported significant start-up costs for their programs, they also reported ongoing reductions in the staff resources required to process reports. Some examples of other states' efforts include the following:

- Kansas began phasing in a system in 1997 that allows permitted facilities to submit DMRs via email or on diskette. Currently about 15 percent of their permitted facilities submit their DMRs in this manner and the Department is working to bring more facilities on board. Kansas reports that the program has resulted in reduced staff time devoted to processing DMRs, improved data quality, enhanced data access, and increased user satisfaction. Facility operators use a Personal Identification Number (PIN) to secure the data transmission. According to Kansas officials, the cost of this system was minimal because EPA staff developed and provided the programming.

- New York operated a small pilot program that allowed facilities to submit their DMRs via the Internet to a contract firm. The pilot has ended and the Department is working to establish its own web site that will allow electronic

reporting on a larger scale. The system eliminates the need for any manual data entry by the State. New York also uses PINs for security and intends the system to improve data quality and reduce future data processing costs. New York officials estimated the pilot generated start-up costs of about $200,000 to $250,000.

Other states that use or are trying electronic reporting have noted that, in addition to reducing the need for staff to process and enter data from hard copy reports, electronic reporting has improved the quality of their data. Eliminating the need for staff to enter data at the Division reduces the possibility of data entry errors showing up in the databases.

An obstacle to electronic submission of DMRs has been the lack of a written signature certifying the accuracy of the reports. The concern is that if a problem arises related to an electronically submitted report, a facility operator may be able to avoid accountability by claiming that he or she did not actually submit the report. However, recent federal legislation that allows electronic signatures on various legally binding transmissions may alleviate this concern.

The Water Quality Control Division has recognized the value of electronic reporting and is currently working to establish a system so that results of drinking water samples tested by the State Lab will be submitted electronically and can be uploaded into the Division's drinking water database. Unit staff estimate that about one-third of the drinking water systems in the State use the State Lab. In addition, Division staff have been involved in a nationwide effort to promote the use of electronic reporting for environmental reports. However, staff also noted several concerns with pursuing electronic reporting, including the following:

- There could be security and confidentiality issues if permitted entities are allowed access to the Department's Local Area Network to submit reports. Since other Department sections handle many confidential documents, security is a high priority.

- The cost of switching to an electronic reporting system can be high, particularly for an untested reporting approach.

- Some small facilities and systems may not have ready access to the Internet and email, so electronic reporting may not be feasible for all facilities.

We believe these obstacles can be dealt with through planning and system changes to allow electronic reporting in the future, which would provide long-term benefits to both the Division and the regulated community.

Recommendation No. 6:

The Water Quality Control Division should pursue the establishment of an electronic self-reporting system that would allow permittees and water systems to report their monitoring information via electronic means. Specifically, the Division should consider:

a. Working with facilities to determine their capabilities and needs with respect to automated reporting.

b. Beginning with one type of reporting, such as discharge monitoring reports, to test the concept before expanding to other areas.

c. Using other states as models and resources for electronic reporting systems for discharge monitoring reports.

d. Ensuring that any reporting system uses data formats that allow data to be automatically entered into the appropriate Division databases, eliminating the need for manual data entry.

Water Quality Control Division Response:

Agree. The Division has been aware of the need to do this sort of electronic self-reporting for some time but has been unable to fully pursue the option due to questions regarding whether information without a written signature attesting to the accuracy of the data could be legally binding for enforcement purposes. However, we now believe that this obstacle can be overcome due to procedural innovations and recent changes in federal law. The Division will work with the appropriate parties while developing the electronic reporting method to ensure that the electronically-submitted data will stand up to legal challenges.

Watershed Programs

Chapter 2

The Watershed Section

Through its Watershed Section, the Water Quality Control Division uses an approach to water quality management that allows for appraisal of all potential sources of water pollution, both point and nonpoint. This "watershed approach" includes efforts to assess the quality of water in the environment and to set standards for protecting water uses and controlling sources of pollution. The Watershed Section includes three units that address water quality issues on a large-scale basis. For Fiscal Year 2001 the Section has a total of 34 FTE with a budget of approximately $2.4 million. The three units are:

- **Monitoring Unit:** This unit has ten FTE who are responsible for collecting water samples statewide that are essential to water quality decision making. The samples are used to identify water quality trends in both surface and groundwater to provide support for the development of water quality standards.

- **Assessment Unit:** This unit assesses the data resulting from the sampling work conducted by the Monitoring Unit to determine whether classifications and standards are being attained. Water quality data form the basis for water quality management decisions such as whether proposals to make changes to such standards or classifications are appropriate. The Unit also develops Total Maximum Daily Loads as explained in the Description Chapter. The Assessment Unit has 12 FTE.

- **Outreach and Assistance Unit:** This unit includes the Division's Nonpoint Source Management program, which issues grants for nonpoint source pollution activities, and the Financial Assistance Program, which provides loans and grants to water and wastewater treatment facilities to replace deteriorating or inadequate systems. In addition, this unit works with appropriate stakeholders to design and implement management practices for watersheds that have been impacted by point or nonpoint sources of pollution. This unit has 12 FTE.

Financial Assistance Programs

The Division administers four programs that provide financial assistance to local governments to meet the wastewater and drinking water needs of municipalities, counties, and water and sanitation districts across the State. Specifically, the Outreach and Assistance Unit operates two loan programs funded with federal dollars and two grant programs funded with state general fund moneys, as follows:

- The Water Pollution Control Revolving Fund is a low-interest loan program that provides financing for water quality projects such as wastewater treatment works and pollution control projects.

- The Drinking Water Revolving Fund is a low-interest loan program that assists governmental agencies in constructing drinking water treatment facilities to meet public health requirements.

- The Domestic Wastewater Treatment Grant program provides financial assistance to governmental agencies for planning, design, and construction of wastewater projects serving a population of not more than 5,000 people.

- The Drinking Water Grant program provides assistance to governmental agencies and nonprofit public water systems for planning, design, and construction of drinking water treatment and distribution system projects serving populations of not more than 5,000 people.

The following table shows the number of projects funded in Fiscal Year 2000 by each of the financial assistance programs along with the total funding provided.

FISCAL YEAR 2000 WATER PROJECTS

Financial Assistance Program	No. of Projects Funded	Total Amount Provided
Water Pollution Control Revolving Fund	12	$79,812,000
Drinking Water Revolving Fund	7	$39,999,900
Domestic Wastewater Treatment Grants	14	$1,500,000
Drinking Water Grants	14	$1,500,000
Totals	**47**	**$122,811,900**

Source: Data Provided by the Water Quality Control Division.

The Water Pollution Control Revolving Fund

The 1987 amendments to the federal Clean Water Act created a new program for funding construction of publicly owned water treatment works. The program replaced the existing Federal Construction Grant Program with a revolving loan fund. Under the new program, the EPA makes capitalization grants to the State to fund the Water Pollution Control Revolving Fund (WPCRF). State statutes (Section 37-95-107.6, C.R.S.), created the State's Water Pollution Control Revolving Fund, which is administered and maintained by the Colorado Water Resources and Power Development Authority (Power Authority).

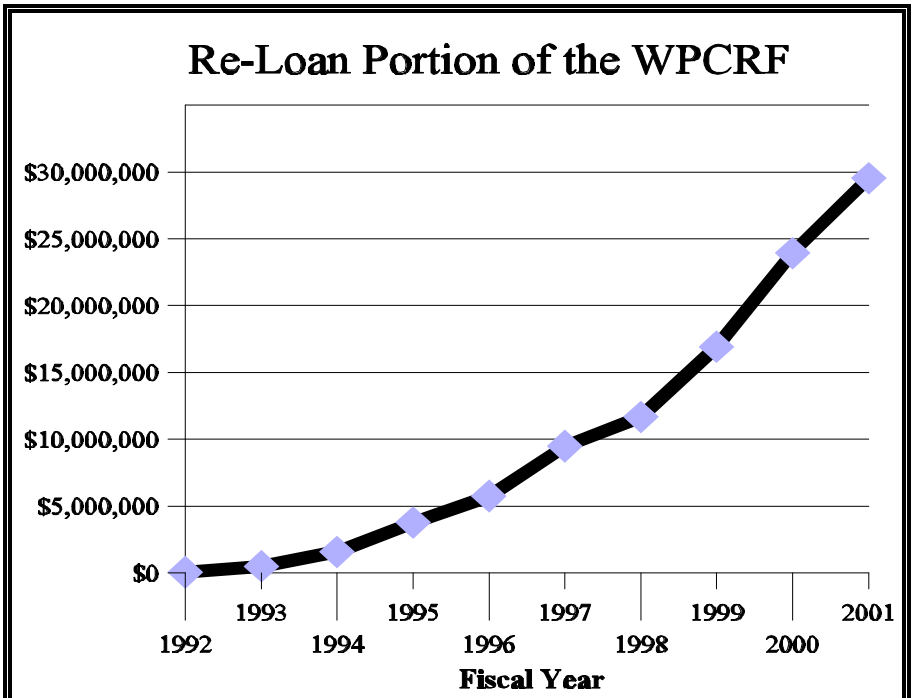
Funding of individual projects is based on a needs analysis conducted by the Water Quality Control Division, the Division of Local Government in the Department of Local Affairs, and the Power Authority. The Power Authority acts as the banker for the revolving loan program, receiving the annual capitalization grant from the federal government and providing the required 20 percent state match for the grant. The Authority then leverages the grant by issuing bonds through the private bond market. The proceeds of the bond sales are loaned to applicants, and the Authority buys down the interest rate with the capital from the federal grant amount and the state match. This arrangement allows the Authority to offer loans to local governments at low interest rates, usually between 3.9 and 4.5 percent, with a maximum term of 20 years.

Since 1989 the WPCRF has made 47 leveraged loans with a total value of nearly $327 million. Funds leveraged through bond sales are used to provide individual loans in excess of $1 million that typically go to large cities or water and sanitation districts. The WPCRF also makes direct loans to local governments for projects costing less than $1 million. These loans, which are not made from the proceeds of bond sales, but rather from the capitalization grant and the state match, typically go to smaller municipalities and sanitation districts. Since 1989, there have been 31 direct loans, totaling about $16 million. Either type of loan can cover up to 100 percent of the eligible project costs. A list of loans made by the Water Pollution Control Revolving Fund can be found in Appendix B.

Eligible entities include governmental agencies (i.e., municipalities, counties, and special districts) with projects designed to resolve health hazards or help ensure wastewater standards compliance. Specifically, Section 37-95-106.5 (3)(a), C.R.S., states that "the Authority may make and contract to make loans to governmental agencies ... to finance the cost of wastewater treatment projects." A project eligibility list is created annually and approved by a joint resolution of the General Assembly. The eligibility list includes projects that have an approved planning document and could be ready to begin construction on the project if funding were provided. A project must be approved through the eligibility list process prior to receiving funding.

The Water Pollution Control Revolving Fund Should Be Expanded

The Power Authority anticipates that the total loan capacity of the Water Pollution Control Revolving Fund will be almost $124 million by September 1, 2001, with the re-loan portion totaling approximately $29.5 million. The re-loan moneys have been paid into the Fund from prior loan recipients. Since the Fund is a revolving loan program, moneys repaid by prior recipients are available to be loaned for additional water treatment projects. This is how the program will be sustained if federal funding is discontinued in the future. The chart below shows the increase in the amount of funds that have been repaid by prior loan recipients, which translates into an increasing total loan capacity for the WPCRF.



Source: Data Provided by the Colorado Water Resources & Power Development Authority.

There are upcoming programs and priorities, such as the implementation of Phase II stormwater permits described earlier in the report, that are expected to place demands on the WPCRF for point source projects. However, as the available funds in the WPCRF continue to increase over time, the agencies involved in the administration of the program should seek additional beneficial uses of these moneys. One possible alternative is to make loans to individuals and private entities. Although state statutes

currently do not allow the Authority to make loans to non-governmental entities, the federal Clean Water Act does allow WPCRF loans to private entities to address nonpoint source pollution. This type of pollution is caused by rainfall or snowmelt moving over and through the ground, carrying away natural and man-made pollutants and depositing them into lakes, rivers, and wetlands. Pollutants can include excess fertilizers and pesticides applied on agricultural and residential areas; metals from abandoned mining sites; and oil, grease, and chemicals from urban runoff. Changing the statutes to allow loans to individuals and private entities to address nonpoint source pollution would have an overall beneficial effect on the waters of Colorado. Nonpoint source remediation projects could then be assessed in a manner similar to other WPCRF projects to determine the highest priority for loan approval.

Funds Could Also Address Nonpoint Source Pollution

The agricultural industry would be most likely to benefit from WPCRF loans because of the ability of farmers and ranchers to repay the loans. Other nonpoint pollution sources, such as abandoned or inactive mine sites, would probably not seek WPCRF loans because there is no revenue source to repay the loan. Allowing loans to be made to private entities would greatly benefit the agricultural industry in the State, including both crop and livestock farmers. Farmers undertake loans frequently and could use low-interest loans to conduct nonpoint source remediation activities, such as:

- Changing irrigation systems from high runoff, surface water systems to low runoff, sprinkler-type systems. Reducing runoff improves water quality by decreasing the amounts of fertilizers, pesticides, and sediment being transported to the waterways.

- Constructing diversion ditches around feedlots. Preventing water from flowing over feedlots results in better water quality by not transporting pollutants from the feedlot into the waters.

- Constructing water pipe lines and livestock storage tanks away from streams or other water bodies where cattle prefer to graze. Placing water storage tanks away from the stream bed encourages the cattle to graze away from the stream, which results in less direct contamination of the stream and prevents the cattle from destroying the vegetation along the stream bank, thus reducing sediment loss.

- Purchasing alternative seeding and tillage equipment. Non-till seed equipment allows the field to use the remainder of the prior year's harvested crop, which reduces sediment runoff and improves irrigation.

The EPA encourages the use of WPCRF moneys for nonpoint source management projects. In fact, the EPA produced a brochure entitled "The Clean Water State Revolving Fund: How to Fund Nonpoint Source and Estuary Enhancement Projects." This brochure provides numerous examples of how other states have used the Fund to accomplish nonpoint source pollution remediation projects ranging from animal feeding lot projects to construction of sedimentation basins and stream stabilization projects. One state has implemented a system that uses private banks to administer the loans to private entities. This would be especially useful in Colorado, since the current system for issuing loans is focused on analyzing the financial and managerial capabilities of governmental entities. Working with private banks would allow the agencies involved in the WPCRF to maintain their current process of issuing loans. According to EPA staff, three other states in Region VIII – Utah, Montana, and North Dakota – have programs to allow the moneys in the Water Pollution Control Revolving Fund to be loaned to individuals and private entities to address nonpoint source pollution, resulting in an overall benefit to water quality.

Recommendation No. 7:

The Water Quality Control Division should work with the Colorado Water Resources and Power Development Authority to seek a change to Section 37-95-106.5, C.R.S. to expand how moneys in the Water Pollution Control Revolving Fund may be used by allowing funds to be loaned to private entities for nonpoint source activities.

Water Quality Control Division Response:

Agree. The Division believes the Water Pollution Control Revolving Fund should be used to provide loans for the highest priority projects, regardless of whether they are for point or nonpoint sources and whether they are being addressed by governmental units, individuals, or private entities. Seeking statutory change regarding the existing restrictions on the parties that can receive such loans will allow the flexibility to fund the highest priority projects. However, the Division wants to ensure the solvency of the Water Pollution Control Revolving Fund is preserved. Given this concern, the Division supports a pilot program with a limitation on the total amount that can be provided to individuals and private entities as a first step. In addition, to implement such a program the Division and Colorado Water Resources and Power Development Authority may need to work with a third party, such as a bank, to ensure appropriate evaluation of the different risks associated with making loans to private entities.

Colorado Water Resources and Power Development Authority Response:

Partially Agree. The Authority is not opposed to funding nonpoint source projects, but with the list of projects involving publicly-owned treatment works exceeding $500 million the emphasis should be to fund those projects. The Authority currently has the ability to issue loans for governmental nonpoint source projects. The need to identify and prioritize nonpoint source projects should come from the Water Quality Control Division.

The Department of Public Health and Environment and the Governor should take the lead in implementing this recommendation.

Auditor's Addendum

This recommendation is intended to identify additional beneficial uses for the increasing loan capacity of the WPCRF. In Fiscal Year 2000, WPCRF loans equaled $79 million or just over half the loan capacity of the Fund. Since 1992, loans made from the WPCRF have represented, on average, only 30 percent of the annual total loan capacity of the Fund. According to the Division, no wastewater treatment project has ever been denied by the WPCRF for lack of available loan funds. Changing the statutes so that loans can be made to private entities for nonpoint source activities would allow the Division to prioritize all eligible projects that have a beneficial affect on water quality in Colorado.

The Power Authority produces an annual eligibility list that identifies projects which could be funded by the WPCRF. The list is approved by the General Assembly, and for Fiscal Year 2000, identified a cumulative project cost of $511 million since 1988 for public wastewater treatment projects in Colorado. Although we recognize that additional needs will arise in the future, we believe a more accurate estimate of the cost of currently identified needs for the WPCRF is about $200 million. This is because the eligibility list includes numerous projects that have already been funded by the WPCRF and projects that, according to Division staff, will not seek loan funds from the WPCRF.

The Drinking Water Revolving Fund

The Drinking Water Revolving Fund (DWRF) is similar to the WPCRF in that the Colorado Water Resources and Power Development Authority receives a capitalization grant from the EPA to provide financial assistance to local governments

for drinking water projects. The Authority leverages the capitalization grant to enable large loans to be made to governmental agencies. The Division works with the Authority and the Division of Local Government to establish a project eligibility list similar to the WPCRF. Division of Local Government staff conduct a financial and managerial analysis on potential loan recipients to provide the financial security needed to issue the loans.

The DWRF was authorized by the 1996 amendments to the federal Safe Drinking Water Act. According to state statutes, eligible entities include governmental agencies with projects designed to address health hazards or help with drinking water standards compliance. The Authority made the first loans from the program in 1997 and has issued a total of 17 leveraged loans valued at approximately $133 million. Additionally, the DWRF has made six direct loans to governmental agencies totaling about $2.5 million. A complete list of loans made from the DWRF can be found in Appendix B.

Private Water Systems Could Benefit From Drinking Water Revolving Fund Loans

There are over 2,000 public drinking water systems in Colorado, including over 1,400 systems that are owned by either private or nonprofit entities. A public water system is one that provides potable water to at least 25 persons for more than 60 days per year. Privately-owned public water systems can include homeowner associations, mobile home parks, and restaurants. According to Division staff, privately-owned public drinking water systems are more likely to be in need of improvement or have compliance-related problems than publicly-owned systems.

One example of a situation in which smaller systems may have difficulties is when drinking water rules change. The 1996 amendments to the Safe Drinking Water Act required the EPA to issue a new rule covering the levels of arsenic in drinking water systems by January 2001. According to the Division, there are 95 systems in the State whose current levels of arsenic would place them out of compliance with the new standard. These systems will be required to add treatment equipment, use additional chemicals, and increase oversight to comply with the new rule. About 40 percent of these systems are privately-owned, making them ineligible for low-interest loans from the DWRF under current state statutes. Even though these privately-owned public water systems are required to comply with the new rule, they will have to seek funds from other sources, such as private banks, to make needed improvements.

Like the WPCRF, the Drinking Water Revolving Fund has a re-loan balance from repayments of prior loans. The re-loan amount is projected by the Authority to be $2.1 million as of September 2000 and about $5.5 million as of September 2001. The

agencies involved in the administration of the DWRF could make additional beneficial use of the increasing loan capacity of the DWRF if loans to privately-owned public water systems were allowed. Expanding the DWRF Program to allow such loans would enable the Division to set priorities among projects for either privately- or publicly-owned systems. According to officials at the EPA, three states in Region VIII – Montana, North Dakota, and Utah – have the ability to make loans from their DWRFs to privately-owned public water systems. Additionally, the EPA is supportive of such loans because the Fund should be used as a tool for the Division to assist all drinking water systems in complying with rules and standards.

Recommendation No. 8:

The Water Quality Control Division should work with the Colorado Water Resources and Power Development Authority to seek a change to Section 37-95-107.8, C.R.S., to allow the moneys in the Drinking Water Revolving Fund to be loaned to privately-owned public drinking water systems for compliance or capacity development projects.

Water Quality Control Division Response:

Agree. The Division will explore seeking statutory changes to allow loans from the Drinking Water Revolving Fund to be made to privately owned public drinking water systems. Such change should allow loans to be made to the highest priority projects, regardless of ownership. However, the Division wants to ensure the solvency of the Drinking Water Revolving Fund is preserved. Given this concern, the Division supports a pilot program with a limitation on the total amount that can be provided to privately owned drinking water systems as a first step. In addition, to implement such a program the Division and Colorado Water Resources and Power Development Authority may need to work with a third party, such as a bank, to ensure appropriate evaluation of the different risks associated with making loans to private entities.

Colorado Water Resources and Power Development Authority Response:

Partially Agree. The current list of governmental drinking water projects exceeds $500 million and with limited funds, the emphasis should be on governmental public water systems. Many entities have the ability to convert to special districts and become eligible for funding from the Drinking Water

Revolving Fund. The need to identify and prioritize privately-owned public water systems should come from the Water Quality Control Division.

The Department of Public Health and Environment and the Governor should take the lead in implementing this recommendation.

Auditor's Addendum

Because safe drinking water is an important public health issue, we believe moneys in the DWRF should be available to all public drinking water systems. Allowing loans to be made to privately-owned public drinking water systems is consistent with the purposes of the Fund and the Safe Drinking Water Act to help ensure that water systems provide clean drinking water. Although the loan capacity of the DWRF is only expected to be $44 million by September 2001, it is likely that it will grow similar to the WPCRF.

The Power Authority produces an eligibility list for the DWRF that currently identifies more than $500 million in needed drinking water projects across the state. However, this amount includes projects valued at about $210 million that have already been funded by either the DWRF or other sources. Additionally, about 61 percent of the projects included on the eligibility list each year use non-DWRF moneys.

Interim Construction Inspections of Water Pollution Control Revolving Fund Projects

In Calendar Year 1998 the WPCRF funded six leveraged loan projects totaling nearly $55.7 million, plus an additional four direct loans totaling $2.1 million. Direct loans are not leveraged and are for small projects costing less than $1 million each. In 1999 the WPCRF funded five leveraged loan projects for $42.2 million and an additional five direct loans for $2.5 million.

The Technical Services Unit in the Water Quality Section reviews plans and specifications and conducts site analyses of all new and expanded wastewater and drinking water projects, including those funded through the WPCRF. In addition, the District Engineers in the Technical Services Unit conduct interim construction inspections of the wastewater projects funded with the WPCRF. The Operating Agreement for the administration of the WPCRF requires that interim inspections be

conducted at least quarterly while the Division's WPCRF Handbook of Procedures sets a goal of conducting at least monthly interim inspections.

Interim Inspections Provide Little Value

We reviewed the five largest loans made in 1998 and found that interim inspections were consistently made on a quarterly basis, in addition to initial and final inspections. None of the interim inspections identified any deficiencies with the progress or quality of the construction. Two of the five projects' initial inspections found only minor deficiencies, which were remedied prior to the next interim inspection. The value of these inspections appears limited, in part because the entity that will be operating the facility is ultimately held responsible by the Division for the effectiveness of the system and the ability to meet effluent standards. The entity contracts with both the engineering consultant and the contractor for design and construction of the facility. Local government officials, professional engineering consulting firms, and licensed contractors should provide the appropriate level of control on the construction of the facility.

The WPCRF is unique in requiring these types of inspections. The Drinking Water Revolving Fund does not require construction inspections to be done on drinking water projects. Additionally, wastewater projects that do not use WPCRF funds undergo the same design review and site analysis as WPCRF projects, but there is no requirement for engineers to conduct inspections of the facilities during construction. The benefit of the construction inspections is minimal in the overall construction process of an effective, well built wastewater facility.

The Water Quality Control Division and the Technical Services Unit have numerous demands on staff resources. Using a risk-assessment approach to reduce the number of interim construction inspections would allow for scarce engineering resources to be applied to other priorities without increasing the likelihood of problems during construction of a facility. For example, WPCRF projects would benefit from increased involvement by Technical Services Unit engineers in the planning phases of a project. Communities must decide on a treatment facility design before bringing the plans to the Division for approval, and Division involvement early in the process would reduce costly modifications to plans.

According to the time-tracking system, the engineers in the Technical Services Unit have spent approximately 375 hours per year in the last two years on WPCRF project construction inspections. This amounts to about $12,400 each year in Division FTE resources applied to WPCRF construction inspections. Implementing a risk-assessment approach for interim construction inspections could result in these hours

being reallocated from construction inspections to other activities on projects funded with the Water Pollution Control Revolving Fund.

Recommendation No. 9:

The Water Quality Control Division should reduce the number and frequency of construction inspections on Water Pollution Control Revolving Fund projects by:

a. Working with the EPA and the Colorado Water Resources and Power Development Authority to modify the Operating Agreement to allow the Division to implement a risk-assessment approach for performing construction inspections of Water Pollution Control Revolving Fund wastewater projects.

b. Developing and implementing a risk-assessment approach to conducting interim construction inspections.

c. Continuing to conduct design reviews and site analyses of new and expanded projects.

Water Quality Control Division Response:

Partially agree. Given the number of controls over the construction process, the Division agrees that the interim construction inspections are of minimal benefit for ensuring an effective, well built wastewater facility, and will pursue a risk-based approach to conducting the inspections. However, under the loan agreements, payments are made only after costs have actually been incurred. One benefit of the existing interim inspections is to provide assurance that the stage of construction justifies the level of payment. Reviews for this purpose will continue to be necessary, but we think that in many cases they could be done by administrative, rather than engineering staff and will pursue this change.

Colorado Water Resources and Power Development Authority Response:

Disagree.

Auditor's Addendum

Although we requested additional information regarding the disagreement with Recommendation No. 9, the Power Authority did not expand on its response.

This recommendation is intended to relieve some of the administrative requirements placed on the Division's engineering staff and allow these skilled resources to be reallocated to other higher priority activities on WPCRF projects. As noted, the interim construction inspections appear to provide little or no benefit to the process of constructing wastewater treatment facilities with WPCRF loan moneys. Additionally, projects conducted with loans from the DWRF, also administered by the Power Authority, are not subjected to a similar inspection process. We do not recommend eliminating construction inspections completely, but believe that a risk-based approach to this process is a much more efficient use of public funds.

Nonpoint Source Pollution

Pollutant loadings from both public and private point sources, such as industrial and sewer treatment facilities, have dramatically decreased since the enactment of the federal Clean Water Act in 1972. Under the Act, the federal government has provided over $80 billion in grants and loans to the states to assist in controlling the discharge of pollutants from publicly owned treatment facilities. However, less than $2 billion has been provided to assist in the control of nonpoint sources of pollution. Nonpoint source pollution typically comes from dispersed sources such as abandoned mining waste sites, agricultural operations, sediment runoff from construction sites, and stormwater runoff in urban areas. As resources and efforts are shifted from addressing the challenges of point source pollution, nonpoint source activities are taking a higher priority. Congress has stated that increased federal funding for programs to control nonpoint source pollution through a variety of flexible management practices is necessary to meet the water quality standards and goals of the country.

The Division's Nonpoint Source Management Program was created when the Clean Water Act was amended in 1987. Section 319 of the Clean Water Act authorized the State to create a management program to address nonpoint source pollution through state activities and grants to local governments and private entities. The Program is nonregulatory and relies on voluntary actions by governmental entities and individuals, along with best management practices, to make progress in addressing nonpoint source pollution. The Division established the Nonpoint Source Council in

1987 to serve as an advisory and work group to assist the Division in creating the management program. The Council still exists today with a reduced role of providing comments on Section 319 grant applications.

The Federal Government Provides Money For Nonpoint Source Pollution Remediation

The EPA provides funding to the State to address nonpoint source pollution through the management program. The State received initial funding in 1989 and began to grant funds to nonpoint source remediation projects in 1990. Federal funding has gradually increased from $512,000 in 1990 to slightly more than $2,000,000 in Fiscal Year 2000. The Nonpoint Source Management Program has received nearly $16 million in federal funding over the ten years it has been in operation. No state general or cash funds are used in the administration of the Nonpoint Source Management Program. In Fiscal Year 2000 the Program made grants to 17 remediation projects totaling $2 million. These projects include mining remediation activities, agricultural runoff projects, and information and education projects directed at specific industry areas and broader urban runoff issues.

Section 319 of the Clean Water Act provides that the federal share of nonpoint source management programs implemented with federal funds shall not exceed 60 percent of the management program's costs. This means that the federal grant portion of each nonpoint source pollution management project cannot exceed 60 percent. The remaining 40 percent match required of the grant recipient can be in the form of either a cash match or in-kind contribution (e.g., labor, equipment, and supplies). This match requirement may prevent some interested applicants with limited resources from seeking nonpoint source grants. Division staff have indicated that the 40 percent match requirement is probably a prohibiting factor to some entities applying for grants.

Additional Funding Is Available to Address Nonpoint Source Pollution

The Department of Local Affairs administers the Energy and Mineral Impact Assistance Program, which is funded with severance tax proceeds paid by the mining and energy industries and the State's portion of federal lease payments made by mining companies for operations on federal lands. Specifically, the Energy and Mineral Impact Assistance Program contains the Local Government Severance Tax Fund and the Local Government Mineral Impact Fund. The Executive Director of the Department of Local Affairs is statutorily authorized to distribute these funds, through a competitive grant process, to political subdivisions that are socially or economically

impacted by mineral and energy development. The Energy and Mineral Impact Assistance Program has a large unreserved fund balance of about $26 million ($16.2 million in the Severance Tax Fund and $9.6 million in the Mineral Impact Fund) as of the end of Fiscal Year 2000. The Division of Local Government receives severance tax proceeds on a monthly basis and federal lease payments quarterly.

Nonpoint source pollution remediation activities on abandoned mines and mill tailings sites that are impacting water quality would qualify to use the Mineral Impact Fund. Local agencies could combine moneys from the Fund with Nonpoint Source grant funds to provide the required match, thus making the Nonpoint Source program available to more applicants.

One way the Division could promote the use of both funding sources together is to work with the Department of Local Affairs to review and approve grant applications that seek funding from both sources. The Department of Local Affairs has already developed a partnership with another state agency for combining grants from the Energy and Mineral Impact Assistance Program with other grant funds. Specifically, the Department and the Colorado Historical Society's State Historical Fund have agreed to make joint funding decisions on local facility needs that fit the funding priorities and criteria of both programs. The Historical Fund provides money for preservation and restoration of historic structures across Colorado. There were four projects collaboratively funded in 1999 that included restoring county courthouses in areas impacted by mining and energy development.

Another approach to encouraging the use of Mineral Impact Fund moneys to supplement nonpoint source grants is for the Division to inform potential applicants that they could seek Mineral Impact Fund moneys to provide the required match for nonpoint source projects. Although one of the Division's stated goals for the Nonpoint Source Management Program is to assist project sponsors in procuring funding from a wide range of sources, the Division has not included information in its Nonpoint Source Program Project Proposal Guidance for Fiscal Year 2000 about the availability of the Energy and Mineral Impact Assistance Program.

Nonpoint Source Funds Can Be Targeted to Address Division Priorities

In 1998 the Division developed the state 303(d) list, which is a federally required report of the State's waters for which existing treatments and controls are not adequate to attain water quality standards. The State must establish Total Maximum Daily Loads (TMDLs) for these waters as part of a settlement agreement. The TMDL process determines the amount of a specified pollutant that a segment can receive without exceeding a water quality standard and the amount of the pollutant

that each discharger to the segment can contribute to the water. The 303(d) list contains 79 different water segments with more than half of the segments being affected by mining activity. Of the 1,749 miles of waterways contained on the 303(d) list, about 1,355 miles, or 78 percent, are impacted by inactive or active mining sites.

The evaluation of nonpoint sources is an essential component of the TMDL process, and stream segments on the 303(d) list will be targeted for nonpoint source management controls. Mining-related nonpoint sources have a significant impact on the water quality of streams and rivers in Colorado and will be given a high priority in this process. Developing a process to allow applicants to combine Energy and Mineral Impact Assistance Program funds with nonpoint source grant projects would allow for more resources to be directed toward the development of TMDLs across the State.

Mine waste piles and mill tailings piles contaminate surface waters and can be relatively easy to remediate. The most basic type of mine remediation project involves hydrologic controls that inhibit or prevent the process of acid formation from rain and snow runoff passing over a mine waste or tailings pile. Some examples of hydrologic controls include digging diversion ditches around a waste pile, removing and consolidating mine waste piles in an area away from water sources, and leveling and capping waste piles with top soil and vegetation. According to the Nonpoint Source Management Program, preventing water from coming into contact with mine wastes can be the best and most cost-effective remediation approach. If additional grant funds from the Mineral Impact Fund were available to participants in the Nonpoint Source Management Program, it is likely that more mining remediation projects would be undertaken, resulting in improved water quality.

Recommendation No. 10:

The Water Quality Control Division should actively encourage the use of the Energy and Mineral Impact Assistance Program funds to accomplish more abandoned mine remediation projects by:

a. Seeking a proactive partnership with the Division of Local Government to make joint funding decisions on mining-related nonpoint source remediation projects that fit the funding priorities and criteria for both the Energy and Mineral Impact Assistance Program and the Nonpoint Source Management Program.

b. Placing specific language in the Nonpoint Source Management application booklet to inform applicants that the Energy and Mineral Impact Assistance Program is a potential source of funds for the required federal match.

c. Producing fact sheets and brochures with information on both programs that staff of the Water Quality Control and Local Government Divisions can provide to interested parties, such as local watersheds groups, city and county governments, and conservation districts.

Water Quality Control Division Response:

Agree. The Division will ensure applicants for Nonpoint Grants know that the Energy and Mineral Impact Assistance Program funds may also be available to them and will work with the Department of Local Affairs to make joint funding decisions on mining-related nonpoint source remediation projects.

Watershed Monitoring

The Monitoring and Assessment Units are primarily responsible for testing surface water in Colorado and developing standards for water use throughout the State. The Monitoring Unit collects water samples from around the State, which the Assessment Unit then analyzes and uses to develop standards and water use classifications. In Fiscal Year 1999 the Monitoring Unit collected approximately 1,300 samples from water bodies throughout Colorado. The water samples are tested for temperature and pH levels, and to detect levels of contaminants.

Currently the Division employs eight FTE who spend about 75 percent of their time traveling around the State collecting water samples. For Fiscal Year 2000 we estimate the cost of this function was about $360,000, including staff salaries and operating and travel costs. About 70 percent of this amount is funded out of state general funds.

Collecting water samples for regulatory decisions is a technical and time-consuming task for the Monitoring Unit. We believe there are steps the Division can take that could help make this task more manageable and cost-effective. In particular, expanding efforts to share information with other agencies that collect and test water has the potential to provide efficiencies and cost savings for all participants as discussed in the following sections.

Coordination of Water Monitoring in the State

In addition to the Division's water monitoring, there are numerous local and federal government agencies as well as private entities across the State that conduct water sampling and analysis activities. The Division does make some limited use of monitoring activities performed by others. For example, when the Division is in need of biological information, such as fish tissue samples, staff often work with the Division of Wildlife to collect and prepare the samples for analysis. However, for the most part the Division collects water quality data independently from other agencies.

The Division and others have taken a step to improve water monitoring coordination in Colorado. In 1998 the Water Quality Control Division, along with Colorado State University and the U.S. Geological Survey, initiated a statewide Water Quality Monitoring Council. The Council consists of representatives from approximately 80 organizations including local, state, and federal agencies, environmental groups, private industry, higher education, and citizen initiative groups. The stated purpose of the Council is to provide a forum for participants to discuss concerns and share information. Its goals include:

- Providing strategic direction for a statewide water quality monitoring network.
- Promoting the development of collaborative and cost-effective watershed-based monitoring strategies.
- Promoting the use of quality assurance procedures and protocols related to sample collection, analytical methods, assessment, and data management.

The Monitoring Council represents a positive step toward improved coordination of hydrologic data in the State and provides a unique opportunity for organizations that collect water quality information to work together to set up a statewide monitoring and information system. Ideally, accomplishment of the Council's information-sharing goals would result in water monitoring cost savings and more complete data for all involved.

Even though the Council and the Monitoring Unit have goals of expanding cooperative and coordinated data collection efforts, the Division has no formal agreements to routinely share water sampling results with other entities. Division staff report that if such agreements were to be developed on a large scale, it would be difficult to organize and coordinate. Additionally, the Division views the development of a data sharing network as a long-term goal that will not be achieved in the near future. However, the Division could pursue limited scale agreements to coordinate water monitoring with specific entities.

One reason the Division may not have actively pursued the use of data from other sources is that methods for collecting and analyzing water samples vary from agency to agency. In order for the Division to use data from others, the procedures used by the entities for sampling and analysis must meet certain criteria developed by the Division and the EPA. For example, there are various field techniques, field measurements, and analytical methods used to collect water samples. Also, analytical methods may differ based on the type of equipment used in the lab and the purpose of the analysis. Only data that are submitted in accordance with an approved quality assurance plan can be used by the Division in lieu of its own.

Sharing Information Could Produce Cost Savings for the Division

There are some entities that currently conduct their sampling and analysis in a way that is consistent with Division operations. Specifically, Division staff indicated that they consider the hydrologic data produced by the Denver Water Department to be high-quality and consistent with the State's quality assurance requirements. Water Quality Control Division staff indicated that Denver Water provides one of the best opportunities in the State for beneficial data sharing. According to officials at the Denver Water Department, they conduct about 50,000 individual analyses of water samples per year. The water in Denver's system comes entirely from surface sources within a watershed that covers 3,100 square miles on both sides of the Continental Divide. Major sources of water are the South Platte River and its tributaries, the rivers that feed Dillon Reservoir, and the creeks above the Frasier River.

There is a tremendous opportunity for the Division and Denver Water to share monitoring data, resulting in potential resource savings for both organizations. On the basis of information provided by the Division, we estimate the average cost to collect and test a sample of water is about $535, including personnel, travel, and laboratory costs. In Fiscal Year 1999 the Division took at least 500 water samples from sites along the South Platte River for routine monitoring and specific studies. If the Division could have used data from the Denver Water Department instead of collecting and testing these samples itself, the Division could have saved about $270,000 in resources. These resources could then be reallocated to other high priority activities in the Division.

According to the Division, past discussions with the Denver Water Department have been favorable but have not resulted in any cooperative agreements. We contacted Denver Water officials who indicated they support the idea of sharing water information with the Division. We believe the Division should continue efforts to work with the Denver Water Department to create a system and process acceptable to both parties to coordinate water sampling activities. The system should enable the Division

to both obtain water data from Denver Water and provide information as appropriate. In particular, the arrangement should reduce or eliminate duplicative monitoring efforts by the two agencies. In the future, this type of agreement could be expanded to include other entities around the state that meet the criteria for sampling and analysis developed by the Division and the EPA.

Recommendation No. 11:

The Water Quality Control Division should expand its efforts to share water quality sampling activities and information with other organizations. In particular, the Division should work with the Denver Water Department to establish an agreement to share water sampling at as many sites as possible in a manner acceptable to both agencies. On the basis of the success of this effort, the Division should pursue additional agreements with other entities in the future.

Water Quality Control Division Response:

Agree. We will work with the Denver Water Board to establish an agreement to share water quality information. The Division strongly believes that water sampling information collected with public money should be made available to the public in a timely manner. However, the Division does not currently have the authority to require other agencies to share their water quality information if they do not wish to do so. If the General Assembly believes this sort of information sharing should be mandatory, the Division could be given this authority through changes to Section 25-8-303, C.R.S.

The Division Should Increase the Use of Volunteer Programs

Another way the Division could supplement its resources is to use information from volunteer water monitoring programs whenever possible. Currently the Division does make some use of volunteers to help collect and analyze water samples that are used to assess water quality in the State. Examples of specific situations in which the Division uses volunteers include the following:

River Watch: The River Watch volunteer monitoring program was begun in 1990. It is operated by the Division of Wildlife and consists of an estimated 200 volunteer groups, mostly high school and middle school classes, that sample and analyze water at more than 500 sites around Colorado. This program has Quality Assurance and

Quality Control plans approved by the EPA. The Division uses some information from River Watch to confirm data collected through its own water sampling efforts.

Las Animas Stakeholders: In Fiscal Year 1999 the Division trained and used the Las Animas Stakeholders volunteer group for a project in which hundreds of water samples were collected in just a few days as part of the Arkansas River Basin standards review. The Division provided the group with short-term, intensive training, specific to the project. This kind of sampling allows the Division to assess the water quality in an entire river basin in a short time period.

Grand Lake Volunteers: The Division has a long-standing relationship with a small group that collects samples and provides data on water quality in Grand Lake. According to the Division, the Grand Lake volunteers have provided a consistent water quality monitoring effort since 1992. The Division provided initial training to this group and offers ongoing consultation and payment of laboratory fees, as well as some equipment, to support the effort. In addition, because the monitoring effort is linked to nonpoint source issues in the lake, the program receives Section 319 Nonpoint Source funding from the EPA.

These examples illustrate the variety of ways in which volunteer efforts can be of value to the Division by supplementing its own resources. In addition, expansion of these types of collaborative programs is consistent with the goals of the Monitoring Unit and with efforts of other states. For example:

- Florida estimates that volunteer monitoring efforts provide about 10 percent of its monitoring data. It is also beginning to work with the Florida LAKEWATCH volunteer monitoring program, which receives legislative appropriations and is implemented by the University of Florida.

- Wyoming is working with conservation districts around the state to develop monitoring programs that would complement efforts at the state level.

- California reports that it has three FTE employed to coordinate volunteer efforts with schools and community groups.

Our review also found that the EPA is supportive of using volunteer groups for monitoring activities and views them as an important component in monitoring water quality.

According to Division staff, the regulated community is reluctant to accept data from volunteer sources for compliance purposes such as setting permit conditions or establishing TMDLs. Therefore, data and samples collected by volunteers might be best used for more routine purposes, such as monitoring stream trends and as the initial

step in determining if there are water quality problems on a stream segment or other water body. Other drawbacks of using volunteers noted by Division staff include the time and cost of training, the difficulty of ensuring quality techniques and results, and the lack of continuity of both data and the volunteers themselves. It is important for the Division to weigh both benefits and costs of using volunteers for any monitoring efforts. However, the examples of volunteer programs cited above indicate that these issues can be addressed

Use of Volunteer Efforts Can Benefit the Division and Participants

The use of volunteers for sampling essentially allows the Division to expand its resource base to accomplish more work without significant additional cost. Establishing cooperative programs with voluntary groups also offers benefits to participants by providing educational opportunities and keeping interested stakeholders involved in water quality management.

On the basis of information provided by the Division, we estimate the average cost of collecting and analyzing a water sample is about $535. Therefore, every sample collected and tested by a volunteer group that is used by the Division in lieu of its own data has the potential to save this amount. Even if a volunteer group simply collects water samples that are then tested by the Division, we estimate the Division can save about $300 per sample in staff time and travel costs. There is no way to reliably estimate the total number of samples that could be collected by volunteers. However, since the Division collects thousands of samples a year, the potential for resources savings and reallocation is considerable. Therefore, we believe the Division should expand the use of volunteer efforts for water quality monitoring.

Recommendation No. 12:

The Division should expand efforts to use volunteer resources to collect water samples, particularly for use in activities that do not directly result in standards setting, permitting, or TMDL development. Specifically, the Division should:

a. Pursue additional alternative uses for data collected by established volunteer groups.

b. Continue to cultivate long-term monitoring arrangements with volunteer groups.

c. Increase the use of volunteers on short-term projects whenever possible.

Water Quality Control Division Response:

Partially Agree. The Division sees the value that can be provided by volunteers with regard to water sampling and agrees that volunteer efforts such as the River Watch Program have been quite successful. However, based on the experiences of other agencies, we believe that recruiting, training, and coordinating volunteers for water sampling could require a substantial amount of staff resources. Whether we are able to expand the use of volunteers will depend on the availability of resources to support such an effort.

Appendix A

Water Use Classifications

Water Quality Control Commission Regulation No. 31: The Basic Standards and Methodologies for Surface Water, contains the following information on water use classifications.

Surface waters, excluding those in ditches or other manmade conveyance structures, are classified according to the uses for which they are currently suitable or are intended to become suitable. The use classifications are as follows:

I. Recreation

A. Class1 - Primary Contact. These surface waters are suitable or intended to become suitable for recreational activities in or on the water when the ingestion of small quantities of water is likely to occur. Such waters include but are not limited to those used for swimming, rafting, kayaking, and water-skiing.

B. Class 2 - Secondary Contact. These surface waters are suitable or intended to become suitable for recreational activities in or about the water which are not included in the primary contact subcategory, including but not limited to fishing and other stream side or lakeside recreation.

II. Agriculture

These surface waters are suitable or intended to become suitable for irrigation of crops usually grown in Colorado and which are not hazardous as drinking water for livestock.

III. Aquatic Life

These surface waters presently support aquatic life uses as described below, or such uses may reasonably be expected in the future due to the suitability of present conditions, or the waters are intended to become suitable for such uses as a goal.

A. Class l - Cold Water Aquatic Life. These are waters that (1) currently are capable of sustaining a wide variety of cold water biota, including sensitive species, or (2) could sustain such biota but for correctable water quality conditions. Waters shall be considered capable of sustaining such biota where physical habitat, water flows or levels, and water quality conditions result in no substantial impairment of the abundance and diversity of species.

B. Class 1 - Warm Water Aquatic Life. These are waters that (1) currently are capable of sustaining a wide variety of warm water biota, including sensitive species, or (2) could sustain such biota but for correctable water quality

conditions. Waters shall be considered capable of sustaining such biota where physical habitat, water flows or levels, and water quality conditions result in no substantial impairment of the abundance and diversity of specifies.

C. Class 2- Cold and Warm Water Aquatic Life. These are waters that are not capable of sustaining a wide variety of cold or warm water biota, including sensitive species, due to physical habitat, water flows or levels, or uncorrectable water quality conditions that result in substantial impairment of the abundance and diversity of species.

IV. Domestic Water Supply

These surface waters are suitable or intended to become suitable for potable water supplies. After receiving standard treatment (defined as coagulation, flocculation, sedimentation, filtration, and disinfection with chlorine or its equivalent) these waters will meet Colorado drinking water regulations and any revisions, amendments, or supplements thereto.

V. Wetlands

A. The provisions of this section do not apply to constructed wetlands.
B. Compensatory wetlands shall have, as a minimum, the classifications of the segment in which they are located.
C. Created wetlands shall be considered to be initially unclassified, and shall be subject only to the narrative standards set forth in section 31.11 of the regulations, unless and until the Commission adopts the "wetlands" classification described below and appropriate numeric standards for such wetlands.
D. Tributary wetlands shall be considered tributaries of the surface water segment to which they are most directly connected and shall be subject to interim classifications as follows: such wetlands shall be considered to have the same classifications, except for drinking water supply classifications, as the segment of which they are a part, unless the "wetlands" classification and appropriate site-specific standards have been adopted to protect the water quality dependent functions of the wetlands. Interim numeric standards for these wetlands are described in section 31.7(1)(b)(iv) of the regulations.
E. The Commission may adopt a "wetlands" classification based on the functions of the wetlands in question. Wetland functions that may warrant site-specific protection include ground water recharge or discharge, flood flow alteration, sediment stabilization, sediment or other pollutant retention, nutrient removal or transformation, biological diversity or uniqueness, wildlife diversity or abundance, aquatic life diversity or abundance, and recreation. Because some wetland functions may be mutually exclusive (e.g., wildlife abundance, recreation), the functions to be protected or restored will be determined on a wetland-by-wetland

basis, considering natural wetland characteristics and overall benefits to the watershed. The initial adoption of a site-specific wetlands classification and related standards to replace the interim classifications and standards described above shall not be considered a downgrading.

VI. Qualifiers

The following qualifiers may be appended to any classification to indicate special considerations. Where a qualifier applies, it will be appended to the use classification; for example, "Class 1, Warm Water Aquatic Life (Goal)".

A. Goal. A qualifier which indicates that the waters are presently not fully suitable but are intended to become fully suitable for the classified use. "Goal" will be used to indicate that a temporary modification for one or more of the underlying numeric standards has been granted.

B. Seasonal. A qualifier which indicates that the water may only be suitable for a classified use during certain periods of the year. During those periods when water is in the stream, the standards as defined in sections 31.7(1)(b) and 31.9(1) of the regulations shall apply.

C. Interrupted Flow. A qualifier which indicates that due to natural or human induced conditions the continuity of flow is broken not necessarily according to a seasonal schedule. This qualifier appended to a classification indicates that the flow conditions still permit the classified use during period of flow. The presence of water diversions in a stream does not change the classifications and standards and the standards do not require that flow be maintained in the stream.

VII. Areas Requiring Special Protection

In special cases where protection of beneficial uses requires standards not provided by the classification above, special standards may be assigned after full public notice and hearings. Cases where special protection may be needed include but are not limited to wildlife preserves and water bodies endangered by eutrophication.

Appendix B

Water Pollution Control Revolving Fund

Loan Summary as of 6/15/00

LEVERAGED LOANS		ORIGINAL		EFFECTIVE
	LOAN	LOAN	LOAN	INTEREST
BORROWER	DATE	AMOUNT	TERM	RATE
DENVER SOUTHEAST SUBURBAN W&SD	12/01/89	6,905,000	22 YEARS	4.634%
TOWN of CASTLE ROCK	08/15/90	4,319,911	20 YEARS	5.202%
CITY of ENGLEWOOD	11/15/90	12,750,000	22 YEARS	4.642%
CITY of LITTLETON (REVENUE)	11/15/90	5,000,694	22 YEARS	4.642%
CITY of LITTLETON (GEN. OBLIG.)	11/15/90	7,750,000	22 YEARS	4.642%
METRO WASTEWATER RECLAM. DISTRICT	05/01/91	21,910,000	20 YEARS	4.576%
CITY of FORT LUPTON	06/15/92	4,200,000	21 YEARS	5.174%
FRISCO SANITATION DISTRICT	06/15/92	4,500,000	20 YEARS	5.174%
EAGLE RIVER W & S DISTRICT	06/15/92	7,368,840	21 YEARS	5.174%
CITY of FORT COLLINS	07/15/92	24,540,580	23 YEARS	4.045%
CITY of LONGMONT	07/15/92	3,500,000	20 YEARS	3.965%
CITY of ALAMOSA	08/01/94	3,197,216	15 YEARS	3.768%
GENESEE W & S DISTRICT	08/01/94	1,498,152	20 YEARS	4.863%
CITY of GREELEY	08/01/94	13,457,960	20 YEARS	4.973%
PARKER W & S DISTRICT	08/01/94	1,781,883	20 YEARS	4.892%
TOWN of WINDSOR	08/01/94	3,998,853	15 YEARS	4.621%
CITY of BRIGHTON	05/01/95	5,080,484	20 YEARS	4.578%
CITY of CRAIG	05/01/95	1,096,820	20 YEARS	4.578%
CITY of FORT MORGAN	05/01/95	9,146,685	20 YEARS	4.587%
CITY of STEAMBOAT SPRINGS	05/01/95	1,563,550	20 YEARS	4.576%
EAGLE RIVER W & S DISTRICT	05/01/95	6,099,183	20 YEARS	4.583%
WINTER PARK W & S DISTRICT	05/01/95	3,050,000	20 YEARS	4.590%
TOWN of CRESTED BUTTE	06/01/96	2,499,120	20 YEARS	4.727%
MT. CRESTED BUTTE W & S DISTRICT	06/01/96	1,399,080	19 YEARS	4.740%
FOUNTAIN SANITATION DISTRICT	06/01/96	1,716,099	19 YEARS	4.711%
CITY of IDAHO SPRINGS	06/01/96	1,541,237	20 YEARS	4.742%
BRECKENRIDGE SANITATION DISTRICT	05/01/97	8,093,617	20 YEARS	4.534%
TOWN of CARBONDALE	05/01/97	2,327,490	10 YEARS	4.216%
TOWN of EAGLE	05/01/97	2,345,204	20 YEARS	4.533%
TOWN of ERIE	05/01/97	1,821,690	20 YEARS	4.539%
PARKER W & S DISTRICT	05/01/97	3,271,642	20 YEARS	4.543%
CITY of STERLING	05/01/97	2,499,524	19 YEARS	4.534%
CITY of WESTMINSTER	05/01/97	13,246,525	20 YEARS	4.543%
BUENA VISTA SANITATION DISTRICT	04/01/98	3,896,505	19 YEARS	3.960%
EAGLE RIVER W & S DISTRICT	04/01/98	17,685,396	18 YEARS	3.940%
CITY of EVANS	04/01/98	1,141,617	20 YEARS	4.030%
CITY of TRINIDAD	04/01/98	6,670,909	20 YEARS	3.990%
CITY of WESTMINSTER	04/01/98	4,085,697	19 YEARS	3.980%
CITY of COLORADO SPRINGS	04/01/98	22,204,270	21 YEARS	4.060%
CITY of AURORA	07/01/99	24,124,366	15 YEARS	4.040%
FREMONT SANITATION DISTRICT	07/01/99	8,094,568	20 YEARS	4.200%
GRAND COUNTY W & S DISTRICT	07/01/99	3,999,978	19 YEARS	4.170%
MT. WERNER W & S DISTRICT	07/01/99	3,034,627	20 YEARS	4.200%
CITY of STEAMBOAT SPRINGS	07/01/99	2,935,636	20 YEARS	4.200%
PARKER W & S DISTRICT	05/15/00	12,063,546	20 YEARS	4.670%
SUMMIT COUNTY	05/15/00	17,086,830	20 YEARS	4.670%
THREE LAKES W & S DISTRICT	05/15/00	6,498,576	19 YEARS	4.650%
TOTAL LEVERAGED LOANS		**$326,999,559**		

Water Pollution Control Revolving Fund

Loan Summary as of 6/15/00

DIRECT LOANS		ORIGINAL		EFFECTIVE
	LOAN	LOAN	LOAN	INTEREST
BORROWER	DATE	AMOUNT	TERM	RATE
LARIMER COUNTY - MTN. RANGE SHADOWS	12/01/89	1,721,489	21 YEARS	3.150%
MOUNTAIN W & S DISTRICT	04/17/90	200,000	20 YEARS	1.431%
TOWN of WELLINGTON	06/01/90	375,000	20 YEARS	1.431%
DURANGO WEST METRO. DISTRICT #2	07/29/91	500,000	20 YEARS	4.500%
NUCLA SANITATION DISTRICT	05/11/92	180,000	20 YEARS	1.500%
DIVIDE W & S DISTRICT	07/15/92	69,000	9 YEARS	4.500%
CITY of OURAY	09/17/92	800,000	20 YEARS	4.500%
MONTROSE COUNTY	10/30/92	257,919	20 YEARS	4.500%
CITY of FORT LUPTON	01/12/94	200,000	20 YEARS	5.170%
ST. MARY'S GLACIER W & S DISTRICT	07/15/94	150,000	20 YEARS	4.500%
ROXBOROUGH PARK METRO. DISTRICT	11/18/94	600,000	20 YEARS	4.500%
PARKER W & S DISTRICT	03/16/95	500,000	5 YEARS	4.890%
CITY of FRUITA	04/27/95	155,435	20 YEARS	4.500%
TOWN of LOG LANE VILLAGE	06/01/95	250,000	21 YEARS	4.500%
TOWN of ORDWAY	10/15/96	350,000	20 YEARS	4.500%
CITY of BROOMFIELD	12/05/96	2,514,119	20 YEARS	4.710%
TOWN of LYONS	10/07/96	506,311	20 YEARS	4.500%
TOWN of VONA	01/29/97	85,000	20 YEARS	4.500%
TOWN of MANZANOLA	06/01/97	80,360	20 YEARS	4.500%
PAGOSA SPRINGS SANITATION DISTRICT	06/03/97	640,000	19 YEARS	4.500%
TOWN of ERIE	10/08/97	500,000	20 YEARS	4.500%
CITY of HOLYOKE	12/01/97	489,700	20 YEARS	4.500%
BYERS W & S DISTRICT	08/28/98	435,000	20 YEARS	4.500%
CITY of LAS ANIMAS	11/12/98	1,070,000	20 YEARS	4.500%
CITY of EVANS	11/16/98	400,000	20 YEARS	4.500%
EAST ALAMOSA W & S DISTRICT	12/02/98	180,000	20 YEARS	4.500%
TOWN of NEW CASTLE	01/01/99	917,076	20 YEARS	4.500%
LEFT HAND W & S DISTRICT	03/05/99	126,300	19 YEARS	4.500%
TOWN of MONTE VISTA	09/01/99	968,000	20 YEARS	4.500%
CITY of LA JUNTA	10/15/99	358,400	20 YEARS	4.500%
TOWN of KERSEY	12/29/99	163,000	20 YEARS	4.500%
COLUMBINE WATER & SANITATION DIST.	03/31/00	485,000	15 YEARS	4.500%
TOTAL DIRECT LOANS		**$16,227,110**		
TOTAL Water Pollution Control Revolving Fund Loans		**$343,226,669**		

Drinking Water Revolving Fund

Loan Summary as of 6/15/00

LEVERAGED LOANS		ORIGINAL		EFFECTIVE
	LOAN	LOAN	LOAN	INTEREST
BORROWER	DATE	AMOUNT	TERM	RATE
ARAPAHOE ESTATES WATER DISTRICT	10/01/97	1,048,333	20 YEARS	4.150%
CITY of ENGLEWOOD	10/01/97	15,292,636	21 YEARS	4.140%
CITY of FORT COLLINS	10/01/97	10,125,300	20 YEARS	4.120%
TOWN of BUENA VISTA	06/01/98	1,324,120	20 YEARS	4.010%
CITY of FORT MORGAN	06/01/98	15,433,355	21 YEARS	4.020%
CITY OF AURORA	05/01/99	14,999,899	15 YEARS	3.633%
CITY of FORT COLLINS	05/01/99	4,998,395	20 YEARS	3.808%
CITY OF GLENWOOD SPRINGS	05/01/99	4,999,017	19 YEARS	3.773%
GRAND COUNTY W&S DISTRICT	05/01/99	2,998,566	19 YEARS	3.783%
CITY OF GREELEY	05/01/99	14,999,038	20 YEARS	3.802%
TOWN OF JULESBURG	05/01/99	994,600	20 YEARS	3.809%
LEFT HAND WATER DISTRICT	05/01/99	6,571,538	20 YEARS	3.802%
EVERGREEN METROPOLITAN DISTRICT	04/15/00	5,577,982	20 YEARS	4.402%
FOUNTAIN VALLEY AUTHORITY	04/15/00	7,607,966	20 YEARS	4.405%
TOWN OF LIMON	04/15/00	1,440,809	20 YEARS	4.408%
CITY OF WESTMINSTER	04/15/00	14,998,357	20 YEARS	4.406%
BOARD OF WATER WORKS OF PUEBLO, CO	04/15/00	9,558,795	22 YEARS	4.603%
TOTAL LEVERAGED LOANS		**$132,968,705**		

DIRECT LOANS		ORIGINAL		EFFECTIVE
	LOAN	LOAN	LOAN	INTEREST
BORROWER	DATE	AMOUNT	TERM	RATE
TOWN of GRAND LAKE	10/29/97	495,000	20 YEARS	4.500%
CHATFIELD SOUTH WATER DISTRICT	07/13/98	728,500	20 YEARS	4.500%
LEFT HAND W&S DISTRICT	09/11/98	188,700	20 YEARS	4.500%
THUNDERBIRD W&S DISTRICT	06/01/99	285,000	20 YEARS	4.500%
CITY OF LA JUNTA	10/15/99	490,000	20 YEARS	4.500%
SEDALIA W & S DISTRICT	03/09/00	326,000	20 YEARS	4.500%
TOTAL DIRECT LOANS		**$2,513,200**		
TOTAL Drinking Water Revolving Fund Loans		**$135,481,905**		

Source: Data provided by the Colorado Water Resources and Power Development Authority.

Appendix C

Glossary of Terms

303(d) List	List of impaired water bodies in the state. Developed pursuant to section 303(d) of the Clean Water Act.
Classification	Designation of water quality intended to protect all existing uses of state waters, and any additional uses for which waters are suitable or intended to become suitable.
Clean Water Act	Federal legislation that regulates surface water quality.
DWRF	Drinking Water Revolving Fund. Low interest loan program that assists governmental agencies in constructing drinking water facilities to meet public health requirements.
Effluent Limit	The amount of a contaminant which a discharger is permitted to release into the water. Intended to assure compliance with water quality standards and classifications.
MCL	Maximum Contaminant Level. The maximum level of a specific contaminant that can occur in drinking water.
Nonpoint Source	Pollution from a nonpoint source typically results from dispersed origins such as abandoned mining waste sites, agricultural operations, and stormwater runoff in urban areas.
Point Source	A discrete source of discharge of a contaminant, such as discharge from a factory or wastewater facility that flows directly into a water body.
Power Authority	The Colorado Water Resources and Power Development Authority is responsible for management of Water Pollution Control and Drinking Water Revolving Funds.
Safe Drinking Water Act	Federal legislation that regulates drinking water.
Standards	Numeric values that are intended to maintain water quality at a level sufficient to protect the classified uses of that stream or river segment.
Technology Based Effluent Standards	Limitations based primarily on nationally applicable EPA guidelines that are intended to attain certain minimum levels of pollution control determined to be attainable by dischargers in specific categories.

Appendix C

TMDL	Total Maximum Daily Load. The maximum amount of a contaminant that a water body can carry and still meet water quality standards.
Watershed	Geographic region designated by natural drainage areas.
WPCRF	Water Pollution Control Revolving Fund. A program that provides low interest loans for water quality projects such as improvements to wastewater facilities and pollution control centers.

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