Annual Report

to the Water Quality Control Commission
and Colorado Legislature

2017

Submitted by the Water Quality Control Division
October 2017

FOREWORD

I am pleased to submit the Water Quality Control Division's Annual Report to the Water Quality Control Commission for the period of July 1, 2016 through June 30, 2017 (SFY2017). Pursuant to CRS Section 25-8-305, the division is to file with the commission, on an annual basis, a report on the effectiveness of its efforts under the state Water Quality Control Act. In particular, the division is to:

> Include in such report such recommendations as it may have with respect to any regulatory or legislative changes that may be needed or desired. Such report shall include the then current information that has been obtained pursuant to Section 25-8-303 [monitoring] and information concerning the status of the division's implementation of the discharge permit program established in part 5 of this article.

Further, in accordance with the requirements of section 25-8-305 of the Colorado Water Quality Control Act, this report is also filed with the House Agriculture, Livestock and Natural Resources Committee and the Senate Agriculture, Natural Resources and Energy Committee.

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Colorado Department of Public Health and Environment
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I. EXECUTIVE SUMMARY

The mission of the Water Quality Control Division is to protect and restore water quality for public health and the environment in Colorado. The vision of the division is to be a top performing organization that implements its programs in such a way that Colorado's drinking water and natural waters are of the highest attainable quality. The division will achieve its mission by pursuing the following clean water and drinking water program goals:

- Protect all designated uses by fully attaining water quality standards through improved implementation of the federal Clean Water Act and Colorado Water Quality Control Act and their associated regulations.
- Restore impaired water quality to attainable standards through improved implementation of the federal Clean Water Act and Colorado Water Quality Control Act and their associated regulations.
- Prevent waterborne disease and reduce chronic public health risks from drinking water through improved implementation of the federal Safe Drinking Water Act and Colorado's drinking water statutes and regulations.
- Deploy resources to achieve the greatest benefit for public health and the environment while pursuing a strategy of organizational improvement that includes increasing efficiency.

During the 2017 legislative session, the department was successful in funding the Clean Water Program through HB17-1285. This bill should provide secure funding for the program for the next five years. The bill established the funding mix between general fund and cash funds that each sector (established in 2015) should receive in the future. The bill established fee increases that will take effect July 1, 2018.

The division's Safe Drinking Water Program is now experiencing a budget shortfall. Currently, the program receives 82 percent of its funding from federal funds, 13 percent from the General Fund, and five percent from cash funds paid by regulated public drinking water systems via an annual fee. General Fund appropriations have remained relatively flat and cash fees have not been raised since 2007. During the same period, salaries and operating expenses have continued to increase. This inverse relationship between program revenue and expenses is not sustainable in the long-term. Department leadership has implemented significant reductions to allow the program to remain solvent for the next two state fiscal years (SFYs 2017-18 and 2018-19) as summarized here: https://drive.google.com/file/d/0B4_2BkAMBRe8Q01iUGJpXzJLcW8/view.

II. LEGISLATIVE AND REGULATORY UPDATE

A. Budget status

For many years, there has been a significant gap in the demand placed on the division and the resources available to address that demand. Since 2006 the division has been required to submit an annual report to the state legislature's Joint Budget Committee. The report summarizes the division's current and anticipated workload levels, including the impact of existing and proposed federal and state program requirements, as well as the associated funding and staffing needs based on those workload levels. The 2015-16 report documented that the current Clean Water Program costs more to administer than the annual funding provided and reduces the fund balance at an accelerated rate.

Federal funds provided to the division continue to be in jeopardy, but no funding reductions were implemented in federal fiscal year 2016. If additional future federal funds are cut, the division will

evaluate its program activities to set new priorities and will deploy resources to meet the most pressing water quality problems/needs. Water quality issues not deemed to be priorities will likely not be addressed.

The drinking water budget shortfall and immediate staff and service level reductions were referenced above. Without identifying a sustainable funding solution, additional staff and service level reductions will be required in the future. The division is launching stakeholder discussion to build consensus on a path forward that all can support.

In alignment with the department's strategic plan, the division is moving toward the development of a sustained funding solution to allow it to continue to address public concerns about water quality as well as recommendations from the Flint Water Advisory Task Force. The final report from the task force urges the need for state budgets to "ensure highly skilled personnel and adequate resources are available to protect public health. The consequences of underfunding include insufficient and inefficient responses to public health concerns."

B. Legislative changes

During the 2017 session of the general assembly, two bills passed that affect the division.

HB17-1285 Refinance Water Pollution Control Program

This bill focused on establishing the funding mix between General Fund and cash funds for each fee sector created in 2015. In addition, the bill increased fees which go into effect on July 1, 2018. The General Fund and cash fee increases that were included in the bill should sustain the program for the next five years. The bill also requires the division to report annually to the legislature regarding several key production metrics (permit backlog, number of enforcement actions, etc.) and to continue to provide financial reporting.

HB17-1306 Safe Water in Schools Act

Legislation provides up to $300,000 for grants from the Water Quality Improvement Fund, as administered by the Colorado Department of Public Health and Environment, to be used for voluntary lead testing at public schools. Eligible public schools include public schools that are not a registered public water system and public schools that have not already tested for lead under the requirements of the 1991 federal Lead and Copper Rule or are not currently testing for lead.

C. Regulatory changes

With reference to regulatory changes that are required or desired, the Water Quality Control Commission (commission) is fully aware of the ongoing efforts of the division to address a variety of issues through collaborative work group processes, including those formed under the auspices of the Water Quality Forum. The current status of the Water Quality Forum work groups can be found at www.colowqforum.org. The stakeholder community is advancing many work group proposals. A current list of new and ongoing work groups is provided in Appendix A. Division staff substantially participated in these work groups through the current reporting period.

The division provided staff support to the commission for these rulemaking hearings in SFY2017. The regulations and topics discussed were as follows.

August 2016 rulemaking - October 2016 adoption (Sand Creek moved from M&E List to 303(d) List)
Regulation 93 - Colorado's Section 303(d) List of Impaired Waters and Monitoring and Evaluation List (5 CCR 100-93)

August 2016 rulemaking - November 2016 adoption

Regulation 41 - The Basic Standards for Ground Water (5 CCR 1002-41)

Regulation 42 - Site-Specific Water Quality Classifications and Standards for Ground Water (5 CCR 1002-42) (NOTE: Revisions proposed to Regulation 42 by Cherokee Metropolitan District were not adopted by the commission in this hearing)

October 2016 rulemaking - November 2016 adoption (adoption of discharger specific variances)

Regulation 32 - Classifications and Numeric Standards for Arkansas River Basin (5 CCR 1002-32)

Regulation 35 - Classifications and Numeric Standards for Gunnison and Lower Dolores River Basins (5 CCR 1002-35)

Regulation 38 - Classifications and Numeric Standards for South Platte River Basin, Laramie River Basin, Republican River Basin, Smoky Hill River Basin (5 CCR 1002-38)

October 2016 rulemaking and adoption (fee sectors)

Regulation 61 - Colorado Discharge Permits System Regulations (5 CCR 1002-61)

December 2016 rulemaking and adoption

Regulation 63 - Pretreatment Regulations (5 CCR 1002-63)

December 2016 rulemaking - January 2017 adoption (temporary modifications)

Regulation 32 - Classifications and Numeric Standards for Arkansas River Basin (5 CCR 1002-32)

Regulation 33 - Classifications and Numeric Standards for Upper Colorado River Basin and North Platte River (Planning Region 12) (5 CCR 1002-33)

Regulation 34 - Classifications and Numeric Standards for San Juan River and Dolores River Basins (5 CCR 1002-34)

Regulation 35 - Classifications and Numeric Standards for Gunnison and Lower Dolores River Basins (5 CCR 1002-35)

Regulation 36 - Classifications and Numeric Standards for Rio Grande Basin (5 CCR 1002-36)

Regulation 37 - Classifications and Numeric Standards for Lower Colorado River Basin (5 CCR 1002-37)

Regulation 38 - Classifications and Numeric Standards for South Platte River Basin, Laramie River Basin, Republican River Basin, Smoky Hill River Basin (5 CCR 1002-38)

January 2017 rulemaking and adoption (correction of errors)

Regulation 31 - Basic Standards and Methodologies for Surface Water (5 CCR 1002-31)

January 2017 rulemaking and adoption (map replacements – no change to boundaries)

Regulation 42 - Site-Specific Water Quality Classifications and Standards for Ground Water (5 CCR 1002-42)

March 2017 rulemaking and adoption

Regulation 21 - Procedural Rules (5 CCR 1002-21)

March 2017 rulemaking and adoption (fee sectors – response to OLLS concerns)

Regulation 61 - Colorado Discharge Permits System Regulations (5 CCR 1002-61)

April 2017 rulemaking and adoption (correction of errors)

Regulation 38 - Classifications and Numeric Standards for South Platte River Basin, Laramie River Basin, Republican River Basin, Smoky Hill River Basin (5 CCR 1002-38)

April 2017 rulemaking - May 2017 adoption

Regulation 43 - On-Site Wastewater Treatment System Regulation (5 CCR 1002-43)

May 2017 rulemaking - June 2017 adoption
Regulation 81 - Animal Feeding Operations Control Regulation (5 CCR 1002-81)

June 2017 rulemaking - August 2017 adoption
Regulation 34 - Classifications and Numeric Standards for San Juan River and Dolores River Basins (5 CCR 1002-34)
Regulation 35 - Classifications and Numeric Standards for Gunnison and Lower Dolores River Basins (5 CCR 1002-35)

D. New drinking water contaminant standards

According to CRS section 25-1.5-202(3), the division is required annually to establish and revise a priority list of contaminants or substances for which new standards may be considered and shall submit the list to the commission for review and approval. This topic was discussed at the June 2011 Safe Drinking Water Program workshop with the commission. It was agreed that this requirement would be covered via inclusion in the annual report. As has been the case for at least the past fifteen years, the division is not considering developing new standards for any contaminants or substances independent of the process established in the Safe Drinking Water Act whereby the EPA develops and establishes national standards. Promulgating new standards is a time-consuming, resources intensive and very expensive process. The Colorado Department of Public Health and Environment (department) does not have the resources either in number or type of personnel to undertake such activities at this time. The EPA is in the process of evaluating numerous contaminants for drinking water standards development.

E. Regulation 85 - Nutrients management control

Regulation 85 (Nutrients Management Control Regulation) became effective September 30, 2012. This control regulation establishes numerical effluent limitations for many domestic wastewater treatment plants and industrial wastewater dischargers that are likely to have significant levels of nutrients in their discharges. It describes requirements for other point source dischargers and voluntary steps for nonpoint sources to address nutrients. The control regulation also establishes monitoring requirements for point source dischargers and a program aimed at monitoring surface waters for nutrients and related parameters. This effort is geared toward better characterizing nutrient sources and current nutrient conditions to help inform future regulatory decisions regarding nutrient management.

The monitoring requirements in Section 85.6 specify that nutrient data be submitted to the division by April 15 every year. To date, we have received data from over 350 facilities in 2014, 2015, 2016 and 2017. For the 2016 submittal, approximately 285 reports have been received. We are currently working on reviewing and uploading the 2017 data. The Municipal Separate Storm Sewer System (MS4) discharge assessment data reports were due by October 31, 2014. The reports concluded that using Event Mean Concentration of pollutants for specific land uses provides the best representative estimates for nutrient concentrations in discharges from MS4s. The division agrees that this approach is appropriate.

Of the approximately 47 domestic wastewater treatment works (DWWTWs) currently subject to the Regulation 85 effluent limits, the division has implemented the applicable requirements in 21 permits that authorize the discharge of nutrients. Of those, three met the dilution exception and the division did not apply effluent limits or applied alternative effluent limits. Effluent limits for existing and new facilities were applied in the remaining 18 permits.

To date, 44 DWWTWs are working with the division on planning, designing and implementing nutrient-related projects. Thirty-one of the 44 DWWTWs are subject to the nutrient effluent limitations, most of which have not yet had the effluent limits implemented in their discharge permits. The other 13 DWWTWs appear to be forecasting a future need to comply with nutrient limits or are aware of the advantages associated with biological nutrient removal (BNR), such as dissolved oxygen and alkalinity recovery through biological processes, instead of mechanical and chemical processes. Overall, the nutrient grants efforts appear to have encouraged responsiveness from DWWTWs. Twenty of the 25 DWWTWs required to comply with Regulation 85 received funding through nutrient grants.

By the authority granted in House Bill 13-1191, the division was able to provide grant funding to bolster compliance efforts of the domestic facilities required to comply with phase one nutrient control requirements. The grants targeted facilities which are rated as two million gallons or greater per day (MGD) in capacity and are located in priority watersheds. The grants provided $15 million in funding in state fiscal year 2013-14 and an additional $2 million in state fiscal year 2014-15. Funding reached all corners of the state, touching communities from Durango to Pueblo, and Grand Junction to Fort Collins.

The funding objectives included supporting Regulation 85 compliance and reducing phosphorus and nitrogen in waterways to improve Colorado's water quality. The scope of the resulting grant projects included planning activities and process modifications, as well as treatment improvement design and construction. Examples of planning projects included pilot studies and plant optimization research, the development of watershed management plans, and nutrient engineering reports. Approximately 70 percent of the grants supported construction activities, 22 percent funded design, and the remaining eight percent was dedicated to planning efforts. The specific awards typically ranged from $80,000 to $1,000,000.

By statute, all grant funds had to be expended no later than September 1, 2016, as the funding was repealed as of that date. A total of 20 projects received funding and all have been completed. In addition to these accomplishments, the grants served to propel many entities forward in a proactive response to altering processes and facilities to meet their permit requirements.

The nonpoint source program expanded its proactive partnership with the agricultural community during this reporting period to promote Regulation 85 voluntary nutrient controls, information and education campaigns about nutrients, and monitoring of nutrients to better understand sources and effectiveness of nutrient controls. The nonpoint source program is doing this in partnership with Colorado State University (CSU) through a number of projects:

- **CSU agriculture outreach committee:** The division contracted with the CSU Extension to create an educational outreach program for agricultural nutrient Best Management Practice (BMP) implementation. Two videos featuring interviews with agricultural producers and scientists in the state and a fact sheet were developed by CSU. The information is available on an outreach website at https://coagnutrients.colostate.edu/colorado-regulation-85/. One video highlights the current voluntary aspects of the nonpoint source reduction strategy in Regulation 85. The other video, which includes mostly producers, features farm applied BMPs that control nutrients to promote clean and safe drinking water.

  The fact sheet entitled "Reducing Nutrients in Water: What's in it for Colorado Ag Producers?" provides a quick reference for stakeholders about nonpoint sources of nutrients and Regulation 85 as it relates to agricultural nutrients entering surface waterways.

- **South Platte Agriculture Nutrients Committee (SPAN):** In order to better catalog agricultural BMPs to control nutrient nonpoint sources, the division's nonpoint source program contracted

with the CSU Extension on the SPAN project. The project engaged agricultural producers in the South Platte Basin to assist in developing a database of agricultural BMPs to reduce nutrient runoff. The database is housed in the CSU Environmental Risk Assessment and Management System (eRAMS) platform and has been available at www.erams.com/cdphe since early 2017. This database complements another BMP database developed by Wright Water Engineers independent of division resources.

- **Regulation 85 outreach project:** The division funded a contractor to provide Regulation 85 awareness through presentations to and conversations with agricultural stakeholders around the state. The contractor provided a total of 11 presentations in various engagements with stakeholders including these venues: Impacts to Your Bottom Line conference in La Junta; the Fort Morgan conservation district, later reported in an article appearing in the Fort Morgan Times; the Colorado Livestock Association Annual Meeting in Loveland; the Regional Livestock Association meeting in Sterling; and Colorado Ag Council and Colorado Ag Water Alliance meetings at the Agricultural Research, Development and Education Center in Ft. Collins. These outreach efforts will continue through an agreement between the nonpoint source program and the Colorado Department of Agriculture.

- **CLEAN Center at CSU:** The division continued work with the CLEAN Center to assess and model nutrient data collected across the state. The center developed the CLEAN Nutrient Dashboard, a publicly available internet-based system where nutrient loadings from various sources are estimated (www.erams.com). These sources can include wastewater treatment facilities, agriculture, stormwater and background. The model was tested for the Big Dry Creek watershed in collaboration with stakeholders, and the model continues to be expanded to include agricultural source information for each basin in the state (the model currently includes agricultural parcels and cropping patterns for the South Platte basin). The CLEAN Center also provides outreach through webinars, presentations and stakeholder meetings.

- **Agricultural implementation projects:** The nonpoint source program worked with its partners to implement BMPs for reducing nonpoint sources of nutrients. The program collaborated with the Colorado Department of Agriculture to implement irrigation efficiency BMPs in partnership with producers in the Lower Arkansas. Local collaborators are collecting water quality data from 16 monitoring locations over 2,000 acres to evaluate effectiveness of these BMPs, information that will not only be important for this specific project but will also help communicate opportunities for success to others interested in partnering to reduce nonpoint sources of nutrients and other parameters.

  The nonpoint source program continued to collaborate with the Natural Resources Conservation Service (NRCS) to promote implementation of effective BMPs for reducing nonpoint sources of nutrients. The program continued its focused work to monitor the effectiveness of nutrient BMPs implemented in the Grape Creek watershed which is a NRCS National Water Quality Initiative watershed. The program also continued discussions with NRCS about executing a memorandum of understanding which would allow the nonpoint source program to obtain nutrient BMP data directly from NRCS while still protecting the producers' privacy.

- **Nonpoint source program communications:** The nonpoint source program communicated the role of Regulation 85 to the program's stakeholders through its website (npscolorado.com), the program's day-to-day interactions with its partners and active participation in working groups, watershed conferences and other nonpoint source organized events.

During the October 2015 Triennial Review Informational Hearing for Regulation 85, the division recommended to the Water Quality Control Commission that the regulation should be updated and recommended a scope for the rulemaking. That rulemaking hearing to update Regulation 85 is scheduled for October 2017. The division is currently leading a Water Quality Forum work group for

the regulation update and that group will provide input to the proposal that the division will prepare for and present to the commission.

F. Water reuse

Regulation 86 - Graywater control

House Bill 13-1044 encouraged the use of graywater by providing definitions and a framework for adoption and implementation by the Colorado Plumbing Board, Water Quality Control Commission, Department of Natural Resources, and cities and counties. The house bill did not address operator certification. The Water Quality Control Commission adopted Regulation 86 (Graywater Control Regulation) on May 11, 2015, with a follow-up write-in, comment-only hearing for improved organization and readability on November 9, 2015.

There continues to be interest in expanding and refining graywater use. The City and County of Denver has developed a local graywater control program and the City of Boulder is actively working on developing a local graywater control program. Division staff members have encouraged the development of these local graywater control programs by answering questions and interpreting Regulation 86. Many stakeholders have expressed interest in allowing agricultural irrigation with graywater in future regulation revisions. The division believes that agricultural irrigation with water reuse sources (e.g., graywater and reclaimed water) should be considered holistically so that division staff can thoroughly review research documents and gauge potential human health impacts. Members of the Water and Wastewater Facility Operators Certification Board (board) have asked division staff for support in developing operator requirements for larger graywater treatment facilities. As a result, division staff members have helped create a conceptual proposal to be populated through a stakeholder process before presentation to the board.

Regulation 84 - Reclaimed water

With respect to reclaimed water, the division has received funding from the Colorado Water Conservation Board and the Colorado Water Resources and Power Development Authority to fund a temporary position and existing staff that would help support the division's participation as a stakeholder to review additional uses for Regulation No. 84. A three-year term-limited position was filled on April 10, 2017. Denver Water has initiated a stakeholder process for adding toilet flushing, irrigation of edible crops, and livestock washdown to Regulation No. 84. The stakeholder process, expected to finish in December 2017, has included two stakeholder meetings to date.

The division has been involved with a variety of activities related to graywater regulation and reclaimed water including the following efforts.

- Working with the City of Boulder and the City and County of Denver on the development of local graywater control programs.
- Participating as a stakeholder of the National Blue Ribbon Commission for Onsite Non-potable Water Systems to help develop adaptable and implementable regulatory frameworks for reuse.
- Participating as a stakeholder in a workgroup intending to consider the use of non-potable water (including graywater and reclaimed water) for edible crops, toilet flushing, and animal washdown.
- Managing the stakeholder process for the development of proposed revisions to Regulation 100 (Water and Wastewater Facility Operators Certification Requirements) to address graywater and reclaimed treatment systems.

III. MONITORING ACTIVITIES

The division's surface water monitoring activities for SFY2017 were grouped into six general types: (A) routine sampling; (B) special studies; (C) lake and reservoir monitoring; (D) aquatic life and habitat studies; (E) nonpoint source monitoring requirements; (F) cooperative monitoring activities; and (G) augmented monitoring funds.

A. Routine sampling

The division uses a rotating basin approach for primary stream monitoring. The entire state is sampled on a five-year cycle that matches the commission's schedule for triennial reviews of basin standards and classifications. For the purposes of conducting the triennial reviews, the state has been divided into four major river basins. Each of the four major river basins is sampled intensively once every five years. This allows the division to concentrate its limited resources on one basin in order to provide data for the triennial review scheduled for that basin and for other data objectives such as impairment determination and source control investment targeting and evaluation. Sampling is more evenly allocated among the long-term trend sites in the four basins, where special studies are conducted and where specific data gaps may be filled. In every fifth year of the cycle, Regulation 31 (Basic Standards and Methodologies for Surface Water) is reviewed by the commission, and there is no need to intensively sample one of the major basins.

The number of sites and the number of times a specific site is sampled each year is controlled by the division's monitoring budget for laboratory analyses, which in SFY2017 was $470,477. The samples collected are analyzed by the department's Laboratory Services Division. Depending upon the amount of data sought for a particular site and its accessibility, sites are visited on a regular schedule, such as monthly or bimonthly, or when weather and road conditions allow access. In SFY2017, the specific river basin focus targeted the Colorado River Basin.

Routine water chemistry samples were collected from a network of 190 sampling sites located across the state. Of the 190 total sites, 29 sites are classified as trend sites, sites to be maintained annually and independent of the sites selected for the focus basin in a particular fiscal year. The trend sites are distributed as follows: seven within the South Platte River Basin, ten within the Colorado River Basin, six within the Arkansas/Rio Grande River basins, and six within the San Juan/Gunnison River basins. Of the total number of sites, 16 percent are within the Platte River basins, 61 percent within the Colorado River Basin, 16 percent within the Arkansas/Rio Grande River basins and 7 percent within the San Juan/Gunnison River basins. This sampling resulted in the collection of 1,115 sample sets. Samples were analyzed for a suite of constituents including metals, inorganics and nutrients. Field parameters such as dissolved oxygen, pH, specific conductance, turbidity and temperature were also collected.

Sampling needs of other parts of the division as well as citizen and performance partner demands for water quality sampling services exceed the fiscal and staff resources currently available to the division. Increasing analytical costs and a slightly decreasing monitoring budget have caused fewer waterbody locations to be sampled on an annual basis than in past years, which results in less information for future water quality management decisions.

B. Special studies

Special studies monitoring includes synoptic sampling events for total maximum daily load

determinations, fish tissue sampling and other water quality investigations. Here are the results of these activities.

Fourteen reservoir and river sites across the state were sampled for fish tissue from July 1, 2016 through June 30, 2017. No new fish consumption advisories were issued. However, some changes were made to existing advisories to include or exclude certain species or size classes of fish based on the fish tissue levels from the most recent data. Fish consumption advisories for Cheesman Reservoir, McPhee Reservoir, Narraguinnep Reservoir, Puett Reservoir, and Trinidad Reservoir were modified. As of July 1, 2017, there are 25 advisories for lakes and reservoirs in Colorado. The advisory on Sweitzer Lake for fish tissue selenium, issued in 2004, was removed based on updated assessment methodology and more recent fish tissue selenium data. The division has continued to build a strong working relationship with the Colorado Division of Parks and Wildlife aquatic biologists by providing rationales behind sampling sites priorities, supporting biologists' efforts in the field, and modifying sampling priorities based on feedback from the biologists.

In SFY2017, the division and its contributing local health partner, San Juan Basin Public Health, implemented water quality monitoring per the Colorado Department of Public Health and Environment's Upper Animas Basin Long-Term Monitoring Plan. This strategic plan called for two distinct seasons of surface water and sediment sampling. These included one "low flow" period from July 2016 through March 2017 and a spring runoff period from April to June 2017. One hundred and twenty eight (128) surface water samples and 116 sediment samples were collected during this period across six monitoring sites, including the Animas River (4), Cement Creek (1) and Mineral Creek (1). Additionally, San Juan Basin Public Health collected water quality, including micro-biological, data from 100 domestic drinking water wells along the mainstem of the Animas River near Durango, CO. During this period, the division leveraged 106 Monitoring Initiative funds to contract with the U.S. Geological Survey (USGS) to install and service water quality instrumentation at four flow gages from Silverton to Durango. These instruments, known as sondes, were capable of transmitting temperature, specific conductance, pH, and turbidity readings in 15-minute increments to USGS's real-time monitoring network for instantaneous public viewing. Due to harsh winter conditions in the Silverton area, the division allowed USGS to remove the sondes from service from December 2016 through March 2017 to prevent unnecessary damage.

On August 26, 2016, WQCD staff responded to a gas spill in Bear Creek just above the confluence with Fountain Creek. Benthic macroinvertebrates were collected on Fountain Creek immediately upstream of Bear Creek, at a control site, and then immediately below Bear Creek, to check for potential acute distress in the aquatic community. The control site had a multi-metric index (MMI) score of 56.6 while the lower site had an MMI score of 47.3. Both scores indicate that this section of Fountain Creek was in attainment of the aquatic life use several hours after the spill occurred.

The division also continued to monitor selenium levels of Colorado fish in anticipation of the EPA's new selenium criterion, which was finalized on June 20, 2016. For selenium, fish tissue concentrations are generally not a concern for human consumption. Instead, the criterion protects the fish themselves from toxic effects including mortality, decreased growth rates and reproductive effects such as increased rate of mortality and deformities in offspring. The EPA criterion consists of both fish tissue-based and water column-based elements. The division is working in collaboration with Colorado Parks and Wildlife and Colorado State University to better understand bioaccumulation, trophic transfer, and toxicity of selenium in naturally exposed fish. In addition to division special projects resources, the division was awarded substantial funding from the Colorado Water Resources and Power Development Authority to supplement this effort. Data collected may help answer questions about whether Colorado fish, which may be naturally exposed to relatively high levels of selenium due to geology, are as sensitive as the fish with which the criterion was

developed. These data may also help answer questions regarding reproductive and hatching success of Colorado fish with relatively high selenium tissue levels. The division may continue to monitor fish tissue levels in waterbodies which have been previously listed for exceedances of water column standards.

C. Lake and reservoir monitoring

The division continued its lake and reservoir sampling in SFY2017. The division focused sampling efforts on the Arkansas, Rio Grande, and Upper and Lower Colorado River basins and the South Platte River basin in order to provide data for the upcoming triennial review. Twelve lakes from the Upper and Lower Colorado River basins were sampled three times each during the growing season. Ten lakes from the South Platte River basin were also visited one time each to help focus sampling efforts for SFY2018 monitoring. At each lake, depth profiles of dissolved oxygen, pH, conductivity and temperature were collected at one-meter intervals. Water quality samples were taken from near the surface and near the bottom. Samples were analyzed for a suite of chemical parameters including nutrients, metals and inorganics. In addition, the surface sample was analyzed for the chlorophyll a content as a measure of trophic status and for the phytoplankton population to determine the algal species composition.

As part of an effort to expand the lake monitoring program in Colorado, the division continued its partnership with Colorado Parks and Wildlife (CPW). This lake sampling partnership began as a pilot program in the summer of 2013 and has continued into 2016 resulting in data collection at over 79 lakes and reservoirs. The partnership will continue using a rotating basin approach as long as funding is available. The field work will be completed by the CPW field staff while the analytical funds have been set aside from the 106 Monitoring Initiative grant. A limited suite of lake monitoring parameters were tested from each lake. Through this partnership, Colorado can increase the percentage of assessed acres in Colorado for the Integrated Report while CPW can continue investigating water quality at waterbodies susceptible to invasive species. The division plans to continue this partnership into SFY2018 but has agreed with CPW to re-evaluate continuing this program prior to the SFY2019 sampling season. The division plans on summarizing results from this work in the 2019 Integrated Report.

D. Aquatic life and habitat studies

The division collected macroinvertebrate and habitat samples at multiple locations in the state. At each of the habitat sites, water quality samples were taken and analyzed for a specific suite of chemical constituents. These data plus habitat scores, periphyton samples, and occasional substrate measurements will be used in the assessment of the Aquatic Life Use and 303(d) or Monitoring and Evaluation (M&E) listing decisions.

The aquatic life studies included the following activities: targeted sampling of 303(d) listed stream segments (COLCWH07, COLCWH15, COUCEA08, and COUCRF03a) as well as sampling of M&E listed stream segments (COUCBL17 and COUCEA06); characterizing the benthic macroinvertebrate communities at four trend sites across the Upper and Lower Colorado basins and one trend site on the Animas River; investigating Aquatic Life Use Policy Statement 10-1 high quality water declines in MMI scores; collecting periphyton samples at existing reference sites where that algal assemblage was not previously collected; investigating and visiting candidate reference sites in the Colorado River Basin; and gathering sediment data to resolve a long-standing 303(d) listing issue. The division also collected water quality and macroinvertebrate data from several sites on the Rio Grande River to support “big rivers” analysis pertaining to future iterations of Policy 10-1. In addition, the division worked collaboratively with the U.S. Geological Survey, U.S. Forest Service, U.S. EPA, and

a graduate student from Colorado State University - Pueblo in order to collect macroinvertebrate samples at monitoring stations of particular importance to these agencies.

E. Nonpoint source monitoring requirements

The division's nonpoint source program (program) is required to report to the EPA measurable results from projects funded through its Clean Water Act Section 319 grant. For implementation projects, these results are measured through monitoring, and the program assists project sponsors with monitoring through its Measurable Results Program (MRP). The program is also encouraged as part of its Section 319 grant to collaborate with the Natural Resource Conservation Service (NRCS) on the National Water Quality Initiative (initiative) for the two priority watersheds in Colorado. The program's role in the initiative is to monitor the effectiveness of conservation practices that the NRCS helps producers implement.

Nonpoint Source Program MRP

Through the MRP, the nonpoint source program provides project sponsors with technical assistance for sampling and analysis plan development, pre- and post-contract water quality monitoring and data analysis, and access to sampling protocols that have been adopted by the division's Environmental Data Unit (EDU). The program implements the MRP in partnership with the EDU for the collection of nonpoint source monitoring data. The following discussion highlights MRP accomplishments during this reporting period.

1) Kerber Creek restoration project.

   The nonpoint source program continued sample collection to evaluate long-term effectiveness of best management practices (BMPs) to address mine wastes/tailings in the Kerber Creek watershed. These additional data will augment the near-term effectiveness evaluation discussed in the project's final report on the npscolorado.com website.

2) Lower Arkansas River selenium and nutrient reduction project.

   Nonpoint source funds were used to support implementation BMPs to address selenium and nutrient runoff to the Lower Arkansas River. In collaboration with local partners, the nonpoint source program conducted pre-project monitoring to establish a baseline from which BMP effectiveness will be evaluated. Irrigation improvements are scheduled to be implemented in late 2018, and post-project samples will then be collected to assess the impact of the BMPs on water quality.

National Water Quality Initiative

The nonpoint source program continued collecting water quality data in the Grape Creek/DeWeese Reservoir watershed, an initiative priority watershed. This data was gathered in collaboration with the NRCS and local producers to evaluate effectiveness of conservation practices implemented in the watershed to reduce nonpoint sources of nutrients. Data from 2014 - 2016 are being assessed to determine the impact conservation practices are having on water quality.

F. Cooperative monitoring, data management and data assessment activities

To ensure that the maximum quantity of relevant data are assessed each year, the division issues a call for data to numerous cooperators, including federal and state entities, basin authorities, dischargers, watershed groups, as well as River Watch, the Data Sharing Network and nonpoint source management project sponsors. Through this mechanism, the division accumulates a considerable amount of data beyond what it can directly sample and analyze.

G. Augmented monitoring funds

In order to upgrade state monitoring efforts and implementation of the Monitoring and Assessment Strategies for States, Colorado applies for Clean Water Act Section 106 monitoring initiative grant money every year. Colorado received $160,000 of these monitoring initiative funds to facilitate the implementation of the EPA's 10 Elements document and to conduct a statewide probabilistic survey of water quality as part of a national project. Additional monitoring projects were completed in SFY2017. The division has designated these funds for additional monitoring of rivers and lakes, nutrient sampling, and aquatic life use attainment studies. In this grant cycle, the division worked with Tetratech to update and calibrate the multi-metric index (MMI) bioassessment tool for the EDAS (Ecological Data Application System). Through this work, the division proposed revisions to Policy 10-1, the Aquatic Life Attainment Policy. This program continues to fund Colorado's effort to expand its monitoring and assessment capabilities.

In SFY2017, four studies evaluated the water quality changes in receiving streams as a result of the implementation of Water Pollution Control Revolving Fund assisted infrastructure projects. These studies include continued work and characterization of improvements to the Boxelder Sanitation District Wastewater Treatment Facility, Town of Cedaredge Wastewater Treatment Facility, South Adams County Water and Sanitation District's Williams Monaco Wastewater Treatment Plant, and Town of Wray Wastewater Treatment Facility. The new studies include projects for the Town of Nucla and the City of Durango.

Additionally, in SFY2017, five studies evaluated water quality impacts and quantified pollution contributions from abandoned hardrock mines. Each of these studies exists in water quality limited waterbodies and are done in coordination with the Division of Reclamation, Mining and Safety (DRMS). DRMS contributes significantly through sampling, report generation and restoration expertise. Projects include the Evans Gulch near Leadville, the Upper Uncompahgre Drainage near Ouray and Henson Creek near Lake City. Each of these assessments is at a different point of completion. This program has also supported work through the Colorado Abandoned Mine Water Quality Study and the Colorado Abandoned Mine Information Hub.

IV. PERMITS PROGRAM

A. Permitting

Program areas

1) Process wastewater discharges to surface water.

   Traditional sources were the first to be permitted following promulgation of the Clean Water Act in 1972, and these are referred to as process wastewater discharges. This includes discharges from domestic sewage systems, or domestic wastewater treatment facilities, and discharges from a variety of industrial sources such as manufacturing, food processing, natural resource extraction, transportation, electric services and construction. About 1,614 permits authorizing these types of discharges are in effect, about 369 of which are individual permits and about 1,245 of which are authorizations under 13 general permits. These comprise the majority of the permits included in the permit backlog and high priority permit performance measures discussed later.

2) Municipal separate storm sewer systems (MS4).

   Operators of MS4s in urban areas are required to obtain permit coverage for discharges from

their MS4s to waters of the state. Operators of MS4s include Colorado cities and counties (referred to as "standard" MS4s) as well as other governmental organizations such as the Department of Transportation, special districts, and school districts (referred to as "non-standard" MS4s). The permits require the implementation of control measures to prevent or reduce the discharge of pollutants to waters of the state. Discharges from five of the largest MS4s in the state are authorized under individual permits. Discharges from approximately 58 MS4s operated by cities and counties (standard MS4s) are authorized under two general permits, and discharges from approximately 60 MS4s operated by other governmental organizations (non-standard MS4s) are authorized under a third general permit. The division recently completed the renewal of the two general permits for standard MS4s.

3) Industrial and mining stormwater.

   Operators of industrial and mining facilities in certain categories are required to obtain permit coverage for discharges of stormwater from their facilities or else certify that their industrial activities are not exposed to precipitation. Discharges from two facilities are authorized under individual permits, and discharges from approximately 1,337 facilities are authorized under general permits. Another 371 facilities have certified that their industrial activities are not exposed to precipitation.

4) Construction stormwater.

   Site operators engaged in clearing, grading and excavating activities that disturb one acre or more, including smaller sites as part of a larger common plan of development, must obtain permit coverage for their stormwater discharge. The division authorizes all construction stormwater discharges in the state under one general permit and currently has about 4,563 authorizations. The number of authorizations under this general permit varies significantly year to year and seasonally, but this number has shown an upward trend over the last several years that correlates with an increasing trend in the number of active construction projects.

5) Pesticides.

   A 2009 federal appeals court decision resulted in a requirement for entities applying pesticides in or near waterways to obtain discharge permit coverage by an October 31, 2011, court-ordered deadline. In November 2011, the division issued a short-term (two-year) general permit based on the final EPA permit. This allowed the department time to seek permitting and compliance oversight resources to issue permits and conduct a reasonable level of compliance oversight. Those resources were secured in the 2013 legislative session, and the permit was extended later that year. The division renewed the permit in 2014 for a five-year term.

6) Groundwater.

   The division issues permits authorizing discharges to groundwater from domestic sewage systems with a design capacity greater than 2,000 gallons per day. Discharges from smaller systems are subject to county authority. This is a state-only permit program. The division estimates that there are approximately 200 facilities that should be permitted; however, many of these facilities do not have current permits. The division continues to implement a process to ensure that the owners of these facilities do obtain the appropriate permits. This process is resource intensive because many facilities without appropriate permit coverage need to upgrade their level of treatment. To assist these operators, the division works with them to upgrade their systems prior to issuing new permits or includes compliance schedules in permits that outline the steps facilities need to take to comply with effluent limits. The division

continues to make incremental progress in permitting these discharges. There are 133 groundwater permits, most of which are administratively continued.

7) Biosolids.

The division implements a state biosolids program consistent with the direction provided in Regulation 64. The regulation provides authority to the division for implementation independent of, and more stringent than, the federal biosolids requirements for land application. Both the federal and the Colorado regulations governing beneficial use of biosolids identify allowable levels of heavy metals and pathogens in the biosolids and set restrictions and management requirements. The regulations require that application rates be based upon the nutrient requirements of the crops under cultivation. In 2015, approximately 76 percent of biosolids generated by municipal wastewater treatment facilities in Colorado were beneficially reused and subject to regulation under the program. Because Colorado has not been formally delegated authority to implement the federal biosolids program, the EPA retains ultimate authority over the federal program.

8) Pretreatment.

The division implements a state pretreatment program consistent with the direction provided in Regulation 63. The division's administration of the program focuses on issuing permits or control mechanisms to significant industrial user facilities that discharge to domestic sewage systems without a federally approved local pretreatment program. The regulation provides authority to the division for implementation of requirements equivalent to and more stringent than the federal program. The division currently has two state-authorized pretreatment programs and ten permits or control mechanisms for industrial user facilities. This tool is a strong complement to the federal pretreatment framework. Because Colorado has not been formally delegated authority to implement the federal pretreatment program, the EPA retains ultimate authority over the federal program.

9) Reclaimed water.

The division implements a state reclaimed water program consistent with the direction provided in Regulation 84. There is not a corresponding federal regulation that addresses uses of reclaimed water. Regulation 84 requires permitting by the entity that treats and distributes the reclaimed domestic wastewater as well as each entity that uses the reclaimed water. A total of 27 entities are authorized to treat and distribute reclaimed water which allows for the reuse of up to 124 million gallons per day (MGD) of reclaimed water in Colorado. Approximately 502 entities are authorized to use reclaimed water, and 96% of the authorized uses are for irrigation. If the authorized capacity was used, the quantity of reclaimed water distributed would be equivalent to the estimated average daily domestic water consumption of about one million Coloradans (based on a 2005 estimate of 121 gallons per day per capita provided in *Ivahnenko, Tamara, and Flynn, J.L., 2010, Estimated withdrawals and use of water in Colorado, 2005: U.S. Geological Survey Scientific Investigations Report 2010-5002*).

Permitting performance measures: Permit backlog and high priority permits

Backlog is a measure of uncompleted work. A backlogged permit is defined as a permit that has not been renewed prior to its expiration date or as a new individual permit that is not issued within 180 days of receipt of the permit application. In May 2000 as part of a national backlog reduction initiative, the EPA required a permit backlog reduction plan for the division due to its inability to keep up with permit renewals and requests. Shortly thereafter, the EPA first approved the division's backlog reduction plan, and backlog maintenance expectations have been included in the

annual state EPA performance partnership agreement ever since.

Approximately 605 permits are currently included in the EPA's permit backlog measure. This includes a subset of permits authorizing discharges to surface water, more specifically, all individual permits, general permits for confined animal feeding operations, and general permits for process water discharges. The section achieved its backlog goal of 75 percent current (25 percent backlogged).

Another EPA measure is priority permits. Priority permit issuance has been used as a performance measure in the PPA between the department and EPA since FFY2005. The measure and procedures have changed over time. However, the EPA has always considered any expired permit for which a renewal application has been submitted and which has been administratively extended for two years or more, or any application for a new permit that has not been acted upon for two years or more, to be a priority permit. Since FFY2013, the EPA and states are required to select 20 percent of candidate permits. Candidate permits include new and renewal permit applications that have not been acted upon for two years or more plus permits eligible for environmental significance or state/national program priority reasons. Of the identified candidate permits, the states must commit to issuing approximately 80 percent. For FFY2017, the division issued 65% of the priority permits that were targeted by the EPA.

B. Environmental Agriculture Program

The Environmental Agriculture Program administers regulatory, permitting, compliance assistance and compliance assurance activities for animal feeding operations (AFOs), concentrated animal feeding operations (CAFOs - e.g., large dairies, feedlots, poultry facilities) and housed commercial swine feeding operations (HCSFOs). The program utilizes a sector-based approach that takes into account the interaction and environmental impact of air, water and soil resources when making regulatory and policy decisions.

The program oversees 93 swine farms covered by 10 individual HCSFO permits, 85 certifications under the general CAFO permit, one individual CAFO permit, 113 non-permitted CAFOs, and hundreds of AFOs. The program administers Water Quality Control Commission Regulation No. 61, the Colorado Discharge Permit System Regulations; Regulation No. 81, the Animal Feeding Operations Control Regulation; Regulation No. 66, the Financial Assurance Criteria Regulation for Colorado Housed Commercial Swine Feeding Operations; and Air Quality Control Commission Regulation No. 2, Part B, Odor Emissions regulation for HCSFOs.

During state fiscal year 2017 (SFY2017), the program completed 259 compliance assurance inspections at animal feeding operations. Of these inspections, 44 were conducted at CAFOs and AFOs and 186 were conducted at HCSFOs. CAFO inspections included 23 permitted CAFOs, 18 non-permitted CAFOs and three follow-up inspections at other non-permitted CAFOs to verify compliance with corrective actions identified during the previous inspection year. One medium-sized AFO was inspected to verify animal numbers and to ensure appropriate best management practices were being implemented. In addition, the program conducted 16 compliance assistance site visits at non-permitted CAFOs and AFOs to facilitate their understanding of the regulations and applicable record keeping requirements. The program conducted 94 water quality inspections and 92 odor inspections at HCSFOs. Overall compliance rates at CAFO facilities continued to improve in SFY2017. On average, 87% of inspected non-permitted CAFOs and 93% of permitted CAFOs were in compliance with the relevant surface and groundwater requirements. HCSFO compliance rates improved with approximately 96% of sites in compliance with applicable air and water regulatory requirements. The program continues to see improvement in the number of days required for facilities to return to compliance following an inspection. On average, permitted CAFOs returned to

compliance in 118 days (down from 146 days), non-permitted CAFOs returned to compliance in 112 days (down from 121 days) and HCSFOs returned to compliance in 26 days (down from 42 days).

In SFY2017, the program completed the triennial review and rulemaking for Regulation No. 81. Two meetings were held with stakeholders, which resulted in the program successfully gaining consensus on the proposed amendments. The revised regulation was adopted by the Commission on June 12, 2017 and became effective on July 31, 2017. The program also developed a new general CAFO discharge permit that became effective on January 11, 2017. To date, 65 of the 85 permitted CAFOs have been certified under the new general permit. The program will continue to review renewal applications and certify the remaining permitted CAFOs in a timely and efficient manner.

Program goals for SFY2018:

- Partner with industry to successfully complete legislation necessary to preserve the CAFO and HCSFO fees established in statute.
- Enhance the program's inspection processes to utilize the division's new database and digital inspection platform which will improve efficiency and further reduce the number of days facilities are out of compliance.
- Continue to utilize the facility management plan CAFO binder along with compliance assistance site visits to non-permitted CAFOs.
- Continue program improvements in order to maintain an efficient and effective program that meets stakeholder expectations and supports the department's strategic plan.

C. Water quality information systems

The division currently utilizes a Microsoft 2010 SharePoint (Aquifer) platform to share information and track workflows. A description of technological advances made in SFY2017 follows.

The Safe Drinking Water Program's July 2014 EPA Cross-Media Electronic Reporting Regulation (CROMERR) approval of its Colorado Drinking Water System (CDWS) has enabled the program to receive compliance data and reports electronically. On June 15, 2015, pilot testing of the CDWS concluded and full implementation commenced. Since its implementation, the CDWS system has provided significant improvements in efficiency and effectiveness in the Safe Drinking Water Program's receipt of required compliance data and other reports. Of the approximately 2,000 public water systems that are required to submit compliance data, approximately 1,700 public water systems, 62 laboratories, and 1,600 users are utilizing the portal to report forms and sampling data. The department routinely processes an average of 2,000 files per month through the portal.

Implementation of the CDWS fulfills long-standing stakeholder requests for the program to provide a reliable, easy to use electronic submittal mechanism. Feedback from stakeholders and labs on CDWS continues to be overwhelmingly positive. Once the Customer Interface Modernization Project for a Lean Environment (CEOS - Colorado Environmental Online System), discussed below, is able to meet the business needs of the Safe Drinking Water Program and its stakeholders, it is planned that CDWS will be integrated into CEOS, allowing one single login for users.

The EPA promulgated a new rule requiring electronic reporting for current paper-based NPDES reports, effective December 21, 2015. The division supports electronic reporting as it saves time and resources for permittees, the State of Colorado, and the EPA while improving compliance and resulting in better protection of the nation's waters. The rule requires permittees and regulators to

use information technology to electronically report information and data related to the NPDES permit program in lieu of filing written reports. DMRs must be submitted electronically by December 21, 2016, unless a waiver has been granted. All other documents must be submitted electronically by December 21, 2020, unless a waiver has been granted. The division is making substantial progress in implementing the requirements of phase 1 of the EPA's Electronic Reporting Rule, by requiring permittees to submit their discharge monitoring reports (DMRs) electronically through the NetDMR system. The current permitted universe requiring a DMR is 2,501. There are currently 1,001 permits submitting DMR's electronically through NetDMR.

The department's environmental program has embarked on a five-year project called the Colorado Environmental Online System (CEOS). This initiative is designed to create an umbrella system for customers to interface with all of the department's environmental divisions. This umbrella system will provide a single point of entry for customers to electronically provide and obtain environmental information. This system will bring the division into compliance with the EPA's Electronic Reporting Rule. The division implemented a pilot version of CEOS for limited stakeholder use in December 2016, and the system went into limited production in June of 2017. Funding for future development has been requested but not yet approved.

The division continues to update and improve the standards database for the commission that manages and organizes all of the water quality standards, designations, classified uses and temporary modifications. This database includes over 30,000 data records across 900 plus waterbody segments.

The division continues to increase the availability of information online through the expansion of our online records system. The Colorado Environmental Records System allows citizens better access to vital environmental information, fosters quicker and more predictable interactions with businesses, and allows division personnel to make more informed decisions based on timely and accurate information.

The division has created a preliminary five-year information technology roadmap. The plan lays out a strategic direction for the major systems used by the division. Each major system will be addressed moving forward to make sure the division has the most efficient available technology for each operational area.

V. STATE FUNDED GRANT PROGRAMS

A. Water Quality Improvement Fund

During the 2006 legislative session, the general assembly created the Water Quality Improvement Fund (WQIF) (CRS 25-8-608[1.5]), and the commission adopted Regulation 55. The WQIF was created to provide grants to local communities/entities to improve water quality, health and safety. Revenue for the fund comes from penalties assessed on polluters who have committed water quality violations.

During the 2012 legislative session, the general assembly authorized an additional $600,000 for capital construction funding. Historically, $167,000 was appropriated annually with a requirement that the funds be expended within the fiscal year. The 2012 changes provided additional funding, required grants be issued for stormwater management training, and allowed the flexibility to expend the funds over multiple years.

The division issued a Request for Application in SFY2016-17. Table 1 shows the awardee and the amount of the award.

B. Nutrients Management Grant Fund

During the 2013 legislative session, the general assembly created a new Nutrients Management Grant Fund (H.B. 13-1191) within the WQIF. The general assembly authorized $15 million in general funds to provide grants to domestic wastewater treatment works owned and operated by local governments and subject to the first phase implementation of Regulation 85. State general funds were provided for projects to plan, design, construct or improve a wastewater treatment works in order to comply with the effluent limits of Regulation 85. Per the legislation, the Nutrient Management Grant Fund was repealed in its entirety on September 1, 2016.

C. Natural Disaster Grant Program

During the 2014 legislative session, the general assembly created a new Natural Disaster Grant Program to assist communities with water/wastewater infrastructure projects as a result of any natural disasters. Further, the general assembly appropriated $17 million to assist water and wastewater entities with rebuilding as a result of the September 2013 floods.

D. Small Community Grant Program

Senate Bill 14-025 revised and consolidated the small communities water and wastewater grant fund to be codified in CRS, Section 25-1.5-208 - Concerning the establishment of a grant program under the Colorado Water Quality Act to assist suppliers of water and domestic wastewater treatment works that serve a population of not more than 5,000 people with meeting their responsibilities for the protection of public health and water quality.

The following table illustrates the state grants awarded during SFY2016-17.

TABLE 1 WATER QUALITY IMPROVEMENT FUND SFY2016-17

Associated General Contractors	$25,000.00
Center Sanitation District	$101,825.50
Colorado State University	$25,000.00
Galeton Water and Sanitation District	$101,825.50
North La Junta Sanitation District	$101,825.50
Steamboat Springs, City of	$67,883.00
Widefield Water and Sanitation District	$101,825.50
Total	**$525,185.00**

VI. WATER QUALITY CHALLENGES

A. Legacy mining impacts to water quality

The discharge of low pH metals-laden water into the Animas River on August 5, 2015, at the Gold King Mine near Silverton highlighted the potential impacts of past mining activities on water quality in Colorado. The division's response to the release during this reporting period included monitoring and data analysis. The division collected water quality, sediment, and fish tissue samples in the Animas and its tributaries and assessed the data after the release. In addition, the

division has a routine monitoring station on the upper Animas River near Silverton below Mineral Creek that samples every other month. In response to the spill, additional data were collected at another site with the collection scheduled for the same date as the Animas River station. The second site is located on Cement Creek above the confluence with the Animas River. Testing includes field parameters, nutrients and a suite of metals. Findings are reported on the division's website at https://www.colorado.gov/pacific/cdphe/animas-river-spill.

In addition to the monitoring efforts described above, the division secured grant funding from the EPA. This funding is being used for coordinated sampling efforts with local health departments and the U.S. Geological Survey (survey) for real-time and long-term monitoring. This monitoring is used to address concerns about the risk of heavy metal exposure for agricultural, recreational and water supply uses of the river. High flows, expected each spring during snowmelt, and unanticipated precipitation events are capable of releasing accumulated loads of metals. Characterizing relationships between those metals and continuously monitored parameters, such as pH, turbidity or specific conductance, becomes important for addressing associations between elevated metal concentrations and impacts on Colorado's designated uses. Using existing water quality data from the Upper Animas River Basin, the division has developed interim notification thresholds for specific conductance and pH at two of the survey's discharge gages near the Town of Silverton. Exceedances of these interim thresholds will form the basis for preliminary alert notifications, which are intended to communicate water quality risks to the public. Additional water quality data, collected during the spring runoff and fall-winter base flow period, will be used to adaptively adjust or develop new thresholds at three survey gages.

The division has formed an internal task force to examine the impacts to water quality from mine activity throughout the state. The initial focus of this task force will be to identify available data regarding mining impacts to water quality and to make recommendations about how to close any data gaps. The division will continue to coordinate with the Colorado Department of Natural Resources' Division of Reclamation, Mining and Safety to identify potential source control projects that will improve water quality in the Animas River Basin and pursue appropriate funding sources. The division will also coordinate with local public health agencies, the department's Hazardous Materials and Waste Management Division, and EPA Region VIII staff regarding long-term water management activities that will address the problems exemplified at the Gold King Mine.

The division has also contracted with the Colorado Geological Survey to compile existing inventories of abandoned mines and mining features into a single internet application. Several federal and state agencies are assisting in this effort, including the U.S. Forest Service, U.S. Bureau of Land Management, National Park Service, U.S. Fish and Wildlife Service, U.S. Environmental Protection Agency, U.S. Department of Energy, Colorado Office of Archaeology and Historic Preservation, and the Colorado Division of Reclamation, Mining and Safety. The abandoned mine internet application was finished in 2017 and will be accessible to the public at https://erams.com/map/. Additional information can be found at https://www.colorado.gov/pacific/cdphe/wq-mining.

B. Health threats to drinking water

1. Lead

The events in Flint, Michigan created heightened awareness of lead in drinking water and generated public interest and media scrutiny. Additionally, the EPA modified its expectations for states to implement this rule. The division has responded to numerous media and EPA requests for information. The division has been working with water systems across the state regarding lead rule issues and will continue its efforts to help water systems comply with this most complicated rule. In

2017, all water systems subject to this rule must sample at least annually. The division also reached out to all water systems and is working with them to assure that their monitoring plan meets regulatory requirements. Detailed guidance was developed in coordination with the Colorado Water Utility Council, but planned outreach sessions to be held around the state were cancelled due to the budget difficulties outlined earlier.

2. Perfluorinated compounds

During sampling required by the Unregulated Contaminant Monitoring Rule, perfluorinated compounds (PFCs) were detected in drinking water supply wells located in the Widefield Aquifer. The wells in this aquifer are used by Security, Widefield, Fountain and other systems. Private wells were impacted too. The department estimates that over 60,000 citizens of Colorado are directly impacted by this contamination and have likely consumed PFCs in years past. The department partnered with the EPA, El Paso County Public Health and the affected water systems to address this issue. The U.S. Air Force was identified as one source of contamination from prior firefighting activities although other sources may be involved as well. The Air Force has been working to mitigate the situation, and at present, all public drinking water systems have either made modifications or have other systems in place to avoid public consumption of drinking water above the health advisory level for PFCs. While the department reviewed and approved the treatment systems that were installed at public water systems, due to the unregulated nature of PFCs, continued monitoring of the installed treatment is at the discretion of the individual public water systems. The department does not possess the latest information about the status of PFCs in each individual water system.

3. Harmful algae blooms

Harmful algae blooms have been detected in Colorado waterbodies since at least 2014 and may generate cyanotoxins that are dangerous to humans and animals. The department partnered with water systems to adapt the EPA's guidance for state implementation. The department also worked with epidemiologists and state parks to develop a plan for recreational waterbodies. In 2017, the division assisted the town of Wellington in responding to a serious algae bloom that caused taste and odor issues and public concerns. The division sampled the drinking water source and treated water; cyanotoxins were not detected. The division has been working with the Laboratory Services Division to investigate appropriate sampling methods and how to adequately respond to public concerns.

4. Unregulated Contaminant Monitoring Rule 4

The fourth round of unregulated contaminant monitoring based on the federal rule of the same name is slated to begin in January 2018. All public drinking water systems above 10,000 in population and a subset of smaller systems will be required to sample for thirty unregulated contaminants. This process helps EPA determine the occurrence and levels of contaminants around the nation and contributes to EPA's decision-making regarding the need to regulate these chemicals. Manganese and some disinfection byproducts could be detected at levels of concern. The division has coordinated with EPA and the Colorado Water Utility Council to prepare for this, but given resource constraints will still be in a more reactive mode than desired.

VII. CONCLUSION

The division will continue to plan and implement improvements to its monitoring and permitting programs in an effort to maximize efficiencies and focus on those areas where there is the greatest potential for substantive water quality improvement. The division will continue these efforts by

evaluating work processes to make systems more efficient by reducing or eliminating redundancy or waste. This may be done with the involvement of stakeholders where appropriate.

Finally, the division will continue to respond to drinking water impacts posed by regulated and unregulated contaminants. The division was involved in several national work groups reviewing the lead and copper rule and now awaits the conclusion of the EPA's efforts to finalize a new draft rule, expected in 2018. The division will also continue to respond to the threats posed by unregulated contaminants, especially the issue of perfluorinated compounds in the Widefield Aquifer south of Colorado Springs. The division is also launching stakeholder discussions to begin building consensus toward a sustainable funding pathway for the future.

APPENDIX A

Colorado Water Quality Forum Work Groups

Work Group Name	Commission Contact(s)
• Regulation 84 Reuse	Mary Fabisiak and Barb Biggs
• MS4 – Stormwater	Not designated
• 10-Year Water Quality Roadmap	Kevin Greer
• Permit Issues Forum	Not designated
• Temperature Technical Advisory Committee	Not designated
• 401 Certification Regulation (Regulation 82)	Barb Biggs

Note: For the latest work group status, please visit the Colorado Water Quality Forum website.
http://colowqforum.org