North Front Range Water Quality Planning Association

Through the 2015 Colorado Water Plan Lens

2020-2025 Master Plan

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EXECUTIVE SUMMARY

North Front Range Water Quality Planning Association (NFRWQPA, Association) is the regional section 208 planning association for water quality planning in Larimer and Weld Counties under state and federal statutes. The Association is responsible for and prepares the annual 208 *Areawide Water Quality Management Plan (208 AWQMP)*, the planning document under the Federal Clean Water Act per section 208.

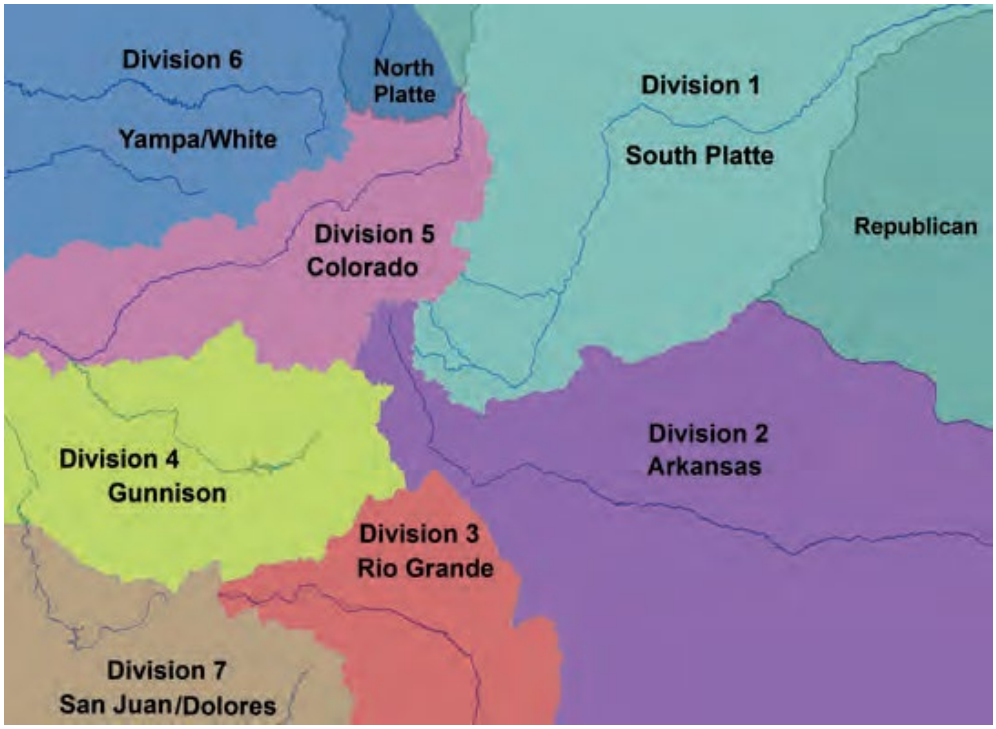


Figure 1 Colorado Watershed Basins

The Association recommends strategies and actions to maintain and restore water quality-related environmental issues from regional population growth and development. The planning process is ever-evolving and repetitive due to changing water quality targets and unpredictable growth patterns in any region. As new technology is invented, solutions are found to many challenging pollution problems, even as new issues arise from constantly changing regulations. The 208 AWQMP is designed to support Association decisions through sound policies and a regional collaborative approach to water quality land use planning and wastewater management regarding facilities and agency service areas.

The basis for this Master Plan is to maintain or restore the water quality within the assigned 208 watershed region of Larimer and Weld County within the South Platte basin, Figure 1. By informing management and operational agencies about the environmental impacts of urbanization, we can ensure that decisions are made based on accepted science and practices.

The Clean Water Act (CWA), first passed in 1972 and later amended in 1977 and 1987, is the primary federal law regulating surface water quality in the United States. This Act establishes the need for water quality planning as outlined in section 208. The CWA allows states to administer many programs under the Act if the state laws and regulations governing these programs are at least as stringent as the federal Act. The Colorado Water Quality Control Act (CWQCA) was established for the state to assume the lead role in many of these program areas, including water quality management. The CWQCA authorizes the governor to designate planning agencies for the Federal Clean Water Act. NFRWQPA is the designated Planning Agency for Larimer and Weld Counties, Region 2, as represented in Figure 2. The Association has the following Mission and Vision:

Mission Statement

TO USE COLLABORATIVE REGIONAL PLANNING, FACILITATION, AND REVIEW TO ENSURE THAT PRESENT AND FUTURE WASTEWATER NEEDS ARE MET ECONOMICALLY AND WITH A FOCUS ON WATER QUALITY PROTECTION.

Vision Statement

AS AN ADVOCATE FOR OUR STREAMS, LAKES, AND COMMUNITIES, NFRWQPA ASPIRES TO BE A HIGHLY RESPECTED REGIONAL LEADER IN RESOLVING WATER QUALITY PLANNING ISSUES, AND A SOURCE OF RELIABLE INFORMATION AND DATA, REGULATORY INTERPRETATION, AND THOUGHTFUL COMMENT ON PROPOSALS. IT IS A UNIFYING FORCE IN REGIONAL LONG-TERM WASTEWATER AND WATER QUALITY PLANNING, ENSURING THAT WASTEWATER SERVICE IS PROVIDED WITH COORDINATION EFFORT, AND TECHNICAL EXPERTISE.

Figure 2 State Planning & Management Regions

As the designated planning agency, NFRWQPA is responsible for periodically developing and updating the 208 AWQMP. Once approved, the 208 AWQMP serves as the overriding planning document to coordinate the region's water quality planning. As stated in the Clean Water Act, the plan shall include "the identification of treatment works necessary to meet the anticipated municipal and industrial waste treatment needs of the area" and "the identification of the measures necessary to carry out the plan." EPA's 40 CFR 130.6 establishes policies and program requirements for water quality planning, management, and implementation under several sections of the CWA, including section 208. Included in these program requirements is the need for states to establish a continuing planning process that, among other things, shows the mechanism for updating and maintaining Water Quality Management Plans. The Water Quality Control Division (WQCD) prepared "*A Guide to Colorado Programs for Water Quality Management and Safe Drinking Water*" (CWQCD, 2018). This document is the latest version for Colorado stakeholders to participate, contribute, and create a continuous planning process regarding water quality statewide. It also discusses additional details regarding the roles and required elements of 208 plans. It provides a list of components that "need to be kept current through the update and amendment process" for the plans to remain valid decision-making documents.

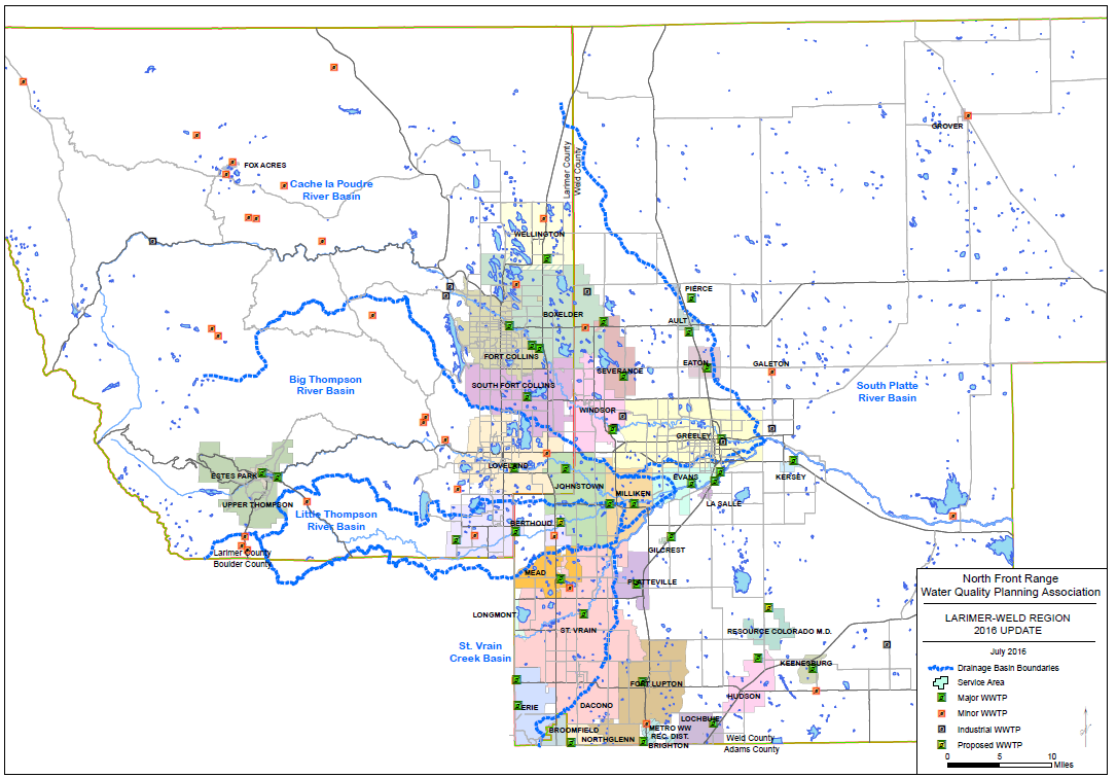
Policy #98-2 provides essential information to ensure that local water quality goals and objectives are considered in state and federal water quality decision-making. NFRWQPA and management and operation agencies are responsible for carrying out the tasks identified in the plan. The Association has policies and guidance documents that govern specific activities associated with these tasks. These policies are designed to steer the planning process.

• INTRODUCTION

If urbanization projections continue at the current rates, the South Platte River Basin could lose up to one-third of today's irrigated agricultural lands by 2050 (Colorado's Water Plan, 2015). Already the most populated watershed in the state, anticipated growth is projected to be 3.5 million to 6 million people by 2050 (Colorado's Water Plan, 2015). The epicenter of this growth is the Front Range, which offers numerous social and economic avenues. The hydrology of the South Platte River basin spurs excellent social and economic benefits from the mountain headwaters to the eastern grassland plains. Major tributaries in the NFRWQPA planning region of the South Platte River include the Big and Little Thompson Rivers, St. Vrain River, and Cache La Poudre, Figure 3. Geographically this allows the South Platte basin to have more irrigated lands than any other basin in Colorado (Colorado's Water Plan, 2015). The region has most of the state's population and anticipated growth. It represents most of the state's economy, and it is one of the state's highest-producing agricultural regions; these highlights do, however, present watershed health and water supply and quality challenges (Colorado's Water Plan, 2015). Not to mention the vast recreational opportunities of the region, including hunting, fishing, hiking, camping, rafting, skiing, golfing, and boating—practically anything outdoors.

Given the current state of the region's population and growth, the South Platte watershed's health is unsustainable without thoughtful land-use management planning. Land-use management planning is essential to preserve and restore impaired waters of the South Platte watershed as our economy and population growth continue to accelerate. The South Platte watershed includes five river basins, mountain ranges, forests, grasslands, wetlands, and human communities, which all have very diverse terrains interconnected to the watershed's biology and physical attributes. The EPA defines a healthy watershed as "mostly natural land cover, especially near its waters; good water quality, quantity, and flow; and habitats with diverse aquatic life. Together, these components support long-term, sustainable benefits to people and the environment" (EPA, Integrating Watershed Assessment and Protection across EPA, 2016). After decades of focusing on the restoration of impaired waters. The social mindset is shifting to emphasize protecting high-quality water and quantity through healthy watershed objectives. The objectives are to maintain the water's chemical, physical, and biological integrity (EPA, Integrating Watershed Assessment and Protection across EPA, 2016). Healthy watershed objectives, for now, are a non-regulatory and collaborative approach to protect the water that is the region's livelihood.

Figure 3 The Five Watersheds within the NFRWQPA Region



The overall health of the South Platte River basin can be based on the WQCD's 2018 Integrated Water Quality Monitoring and Assessment Report-Section 305(b) report. The report shows that 96 percent of the river and 57 percent of the lake acres have been assessed; 75 percent of the river miles are fully supporting, with an additional 0.83 percent supporting at least some of the uses. For lakes within the South Platte River basin, 37.7 percent of the lake acres fully support all classified uses, and 1.58 percent of the lake acres support at least some of the classified uses. Table 1 summarizes the individual use support for the South Platte River basin. Arsenic, *E. coli,* and aquatic life (macroinvertebrates) are the most common listings for rivers and streams; dissolved oxygen and pH are the most common listings for lakes and reservoirs (WQCD, 2018, p. 93).

EPA Segment Classified Category Uses		Rivers and streams (miles)	Lakes and reservoirs (acres)
1	Fully supporting	16,509	36,845
2	Some uses supporting	183	1,548
3a	Not assessed	968	41,895
3b	Insufficient data (M&E list)	1,079	2,811
4a	TMDL completed and approved	212	1,724
4b	Impaired, no TMDL necessary	0	0
4c	Impairment is not caused by pollutant	0	0
5	Impaired, TMDL necessary	3,059	12,971

Table 1 South Platte River Basin (WQCD, 2018, p. 93)

The NFRWQPA region within the South Platte River basin of Larimer and Weld counties includes approximately 6,650 square miles in northeastern Colorado. The major rivers and tributaries of the South Platte basin within the NFRWQPA 208 area are the South Platte, St. Vrain River, Big & Little Thompson River, and the Cache La Poudre River. Arsenic and *E. coli* are the most common listings for rivers and streams, whereas Ammonia and Fish Mercury are the most common listings for lakes and reservoirs with the NFRWQPA region. Tables (2-3) below show the watershed's health for the NFRWQPA regional 208 area by assessing the 2018 segments. The tables display much room for improvement, with 54% of streams and 38% of lakes and reservoirs fully supporting uses. The impaired waters within the NFRWQPA region may be viewed on the NFRWQPA website using GIS here: https://data-nfrwqpa.hub.arcgis.com/.

NFRWQPA Water Quality Assessment of Rivers and Streams							
2018-EPA Water Category Uses		Total Miles	%	Aquatic Life Use	Recreation	Agriculture	Water Supply
1	Fully supporting	5447.8	54%	1541.1	308.3	2536.9	1061.5
2	Some uses supporting	0	0%	0	0	0	0
3a	Not Assessed	1290.8	13%	0	1290.8	0	0
3b	Insufficient data (M&E list)	584.2	6%	197.7	349.6	0	36.9
4a	TMDL completed and approved	0	0%	0	0	0	0
4b	Impaired, no TMDL necessary	45.7	0%	18.9	0	0	26.8
4c	Impairment is not caused by pollutant	0	0%	0	0	0	0
5	Impaired, TMDL necessary	82	1%	55.2	26.8	0	0
6	Not Supported	2478.8	24%	724	561.4	0	1193.4
7	NA	208.4	2%	0	0	0	208.4
	Total	10137.7					
Actual Total Miles within NFRWQPA = 2537							

Table 2 NFRWQPA Rivers and Streams Section 305(b) report Assessment Results

NFRWQPA Water Quality Assessment of Lakes and Reservoirs							
2018-EPA Water Category Uses		Total Acres	%	Aquatic Life Use	Recreation	Agriculture	Water Supply
1	Fully supporting	9310.1	38%	0	1257	5490.5	2562.6
2	Some uses supporting	0	0%	0	0	0	0
3a	Not Assessed	4233.5	18%	0	4233.5	0	0
3b	Insufficient data (M&E list)	0	0%	0	0	0	0
4a	TMDL completed and approved	0	0%	0	0	0	0
4b	Impaired, no TMDL necessary	26.8	0%	0	0	26.8	0
4c	Impairment is not caused by pollutant	0	0%	0	0	0	0
5	Impaired, TMDL necessary	26.8	0%	26.8	0	0	0
6	Not Supported	10173.2	42%	6051.9	0	1193.4	2927.9
7	NA	416.8	2%	0	0	208.4	208.4
	Total	24187.2					
Actual Total Acres within NFRWQPA = 5491							

Table 3 NFRWQPA Lakes & Reservoirs Section 305(b) report Assessment Results

• CHALLENGES

A watershed's attributes create the ecosystem, which naturally and by human intervention degrades a watershed's health, water quality, and quantity. Water quantity and quality are related to the region's quality of life for all species. Each time population expands and urbanizes, the complexity of the watershed increases across a multitude of variables. Urbanization changes the landscape to nonpermeable surfaces from healthy forests, grassland plains, and fallow agricultural ground that once could absorb rainfall and snowmelt, controlling the runoff and recharging vital groundwater and river flows naturally. Permeable surfaces act as a natural treatment, percolating and filtering pollutants; urbanized nonpermeable surfaces concentrate sediments and pollutants, and erosion via channeled and directed stormwater collection systems and their outfall points within a river basin. Urban stormwater sediment control is vital to maintain water quality and a watershed's water quantity downstream to the next user. Stormwater is the next downstream user's drinking or recreational water. The effects of urbanization on a watershed alter the health equilibrium in which the ecology can suppress runoff and erosion. Urban lawn irrigation and over-fertilization exacerbate the problem. HOAs are increasingly popping up and mandating lawn sizing and grass species—bluegrass. Also, large portions of the non-pervious surface and less-than-green infrastructure increase the issue of nonpoint source runoff. Accordingly, HOAs historically exhibit more water consumption and use because of their bylaws regarding landscaping. In contrast, older properties are, in many cases, more significant and have more permeable soil for groundwater recharge along with natural sediment barriers for absorbing nonpoint sources. Xeriscaping landscapes can use less water, reduce runoff, and be aesthetically pleasing.

Watershed management must include planning and consideration for point (WWTF) and nonpoint sources (Service Areas) to maintain or restore a healthy watershed in the early stages of local government land-use planning and development of infrastructure policies or requirements. Land

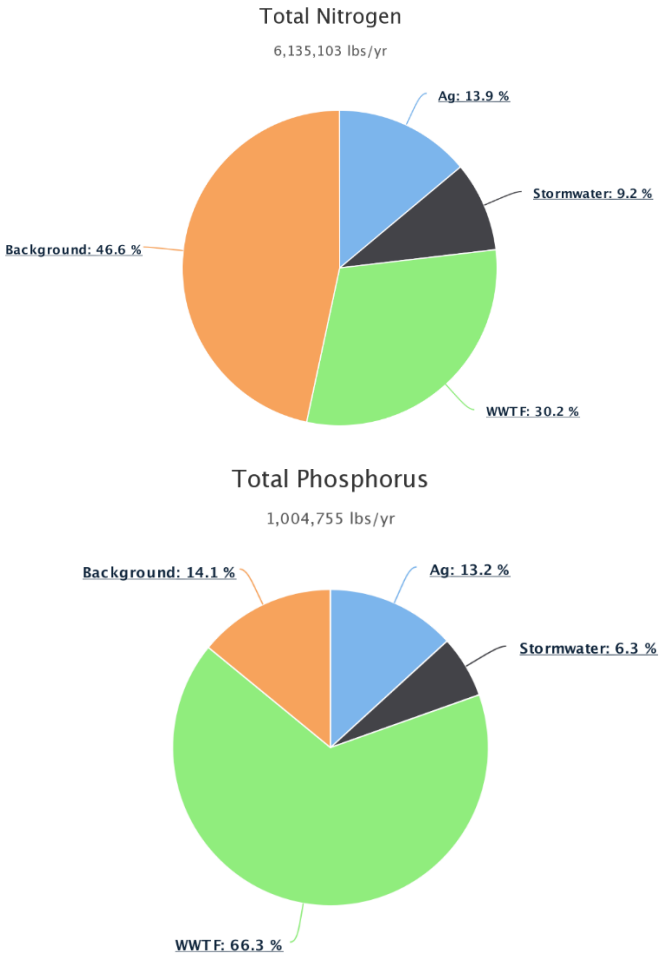
use management in the region must not only be economically viable for local and regional interests but also include interest in the quantity and quality of water needed for future generations of Coloradans. Best Management Practices (BMPs) of tomorrow will consider both point and nonpoint sources to protect the growing needs of water supply and quality with the intent of being low-regret. Coloradans do not only live off the land; a healthy watershed environment for residents is for recreation and is critical to the economy and our Colorado heritage. 208 planning supports sustainability-forethought prioritizing land use management for long-term and near-term projects to protect, preserve, and repair watershed health and function. Intentionally becoming *water-smart* is imperative to watershed land use management planning.

Watershed pollution creates challenging fiscal conditions for water infrastructure encompassing all facets of water (i.e., flooding, stormwater, agriculture, potable, wastewater, and mining, amongst others). Coloradans have always pulled their bootstraps up and educated themselves, reached out, and innovated efforts behind the premise that "*we can if*—not *we can't because*." Trying new things and risking the outcomes are essential considerations for the tangible betterment of society and future generations. The Association must pursue innovations through an understanding that subsequent generations will have to operate and live with less water and agriculture drying up. Projects for both point and nonpoint sources need to be multifunctional assets. While improving water quality and quantity to restore ecology, innovative projects must also incorporate Blue-Green (Blue = Water and Green = Environment) adaptive management throughout a land management agency's planning horizon. The EPA reported the return on public health that, for every $1 spent on watershed ecology, there is a $3 return on the quality of life (EPA, The Economic Benefits of Protecting Healthy Watersheds, 2012). Healthy watersheds provide climate change resiliency and natural carbon sequestration, improving the air quality that all species use for respiration—for plants and animals. The EPA suggests that a healthy watershed provides "free work" that communities do not have to pay for or do themselves. Benefits of a healthy watershed include improved mental health, lower illness rates, enhanced cognitive development, greater quality of life, increased property values, strong economy, viable recreation, and tourism while mitigating excessive future costs (EPA, The Economic Benefits of Protecting Healthy Watersheds, 2012). These benefits may also include reductions in potable water and utility infrastructure costs, making the monetary value of a healthy watershed immeasurable. As such, the South Platte watershed supports a regional economy that relies on water from industries, including agriculture, ranching, fisheries, recreation, and municipal and domestic uses. Investment in land use planning is critical to supporting our respective way of life. Land-use, management needs to leverage the maximum benefit from the watershed for quality of life and a stimulated economy. Ultimately, it is a natural right to live a healthy and vibrant life while enjoying what nature offers.

A watershed's soil and range health play vital roles in protection, removing nonpoint sources that retain water, soil, and nutrients across the landscape. Protecting soil and range health must be a collaborative, multigenerational work effort related to the water quality industry or business. Our civic responsibility is to care and act for the future while intentionally promoting continued adherence to moral and ethical standards. Water-dependent economies such as recreation, agriculture, and resource extraction all depend on our immediate and foreseeable actions. Agricultural value is often understated in many attributes with intrinsic, qualitative, and value-based reductions under conservation plans. Agriculture is common to conservation districts' watershed management plans,

which stakeholders should not shy away from. Optimal lower rangeland agricultural irrigation practices influence grassland plains watershed health. We are all linked, and so is the pollution created by our actions, whether by point or nonpoint sources. The economic impact of BMP projects, whether nonpoint or point, is broadly improving quality of life. Regionally, decision-makers must stop delineating between point and nonpoint sources of pollution and converge the concepts of pollution sources. Ultimately, all water ends up in the watershed. Stormwater is someone else's downstream drinking water. Preventing point and nonpoint sources is a science-based and science-backed approach to protecting our watershed. Our goals are not to restore the river basin's ecology to its original or historical state, which is not possible or warranted for our uses and economic desires, but to maintain or restore the water quality and quantity throughout the watershed region to protect our future. Association membership has that responsibility, as well as Colorado partnerships.

Figure 4 NFRWQPA Region Total Nitrogen and Phosphorus Loading; source eRAMS.com; version 2.6.3



The goal is to incorporate planning management into both point and nonpoint source pollution sources while simultaneously supporting the region's economic development and protecting the quality of life for future generations. A variety of partnerships will help the Association meet this goal and collaborate to provide answers to our most challenging obstacles with a multi-objective

approach.

Watershed health partnerships not only span a great deal of spatial distance and interests, but they must span across sociopolitical boundaries and diverse interests for collaborative success. Water is a limited resource in Colorado upon which all groups must collaborate. Because, in the end, we cannot drink or eat money. Stakeholder planning and management projects should be based on science and consider the outcomes which may affect, protect, or improve watershed health. Land use management planning should include all regional levels, including government, special districts, private landowners, the local economy, residents, educators, public health, recreation, agriculture, mining, and environmentalists. Having a funded association such as the NFRWQPA acting as a unified body improves the chance for success by acting as the liaison for all involved parties. NFRWQPA's 208 Areawide Water Quality Management Plan serves as the guiding document and the region's watershed plan and defines strategies, goals, objectives, and the watershed's health assessment. The 208 AWQMP can track and trend the watershed's health assessment over time as a measurable outcome. Association membership and partners then aid in carrying out specific responsibilities and objectives, strengthening the process. This local-driven, collaborative approach leads to the successful implementation of the 208 AWQMP and watershed health management of the South Platte region basin by river basin. Although all watershed associations, conservation districts, and coalitions across the state should have input to the efforts of a Colorado watershed plan, aligning common goals and objectives across the state. State agencies that should contribute efforts are the CPW, CDPHE, and CWCB, fostering partnerships with local, regional, and national organizations that provide investment opportunities for maintaining and restoring healthy watersheds. This approach then involves all stakeholders and stressors, point and nonpoint, within the watershed region.

• STRATEGIC ACTIONS AND OBJECTIVES

Colorado's Water Plan provides 11 actions for watershed planning management to be incorporated into watershed master plans that address the needs of a diverse set of local stakeholders. All parties across the state must embody the same action goals for partnerships to be successfully collaborative. Collaborative partnerships do not mean dilution of local control or weakening of private property rights regarding land-use planning and management decisions. Collaborative partnerships are, however, catalysts for better financial incentives, BMP decisions, relationships, and watershed health for improving the land-use management planning process. An advantage for NFRWQPA land-use management agencies is that they have land-use authority within their wastewater utility service areas and their growth management areas to address water quantity and quality needs. When a management agency incorporates the land-use and water utilities planning process into Utility Plans, it can influence decision-makers to consider water supply demand and stormwater and wastewater collection system impact on the watershed to promote holistic awareness. Decisions based on awareness can then support Colorado's Water Plan actions.

Colorado's Water Plan Actions include:

1. Identify existing watershed coalitions, watershed plans, and assessments, including source-

water protection plans.

2. Encourage and support capacity in many areas that currently do not have watershed groups or other groups that work with a broad set of local stakeholders.

3. Assist stakeholders in existing watershed groups to identify tools and resources that address gaps and build capacity in existing plans.

4. Identify public and private funding sources that together can support watershed- and forest-health projects.

5. Identify watersheds that are critical to the water supply.

6. Work toward a long-term goal of developing watershed master plans for watersheds critical to the consumptive and nonconsumptive water supply.

7. Prioritize and implement projects identified in master planning.

8. Monitor projects to ensure that objectives are met and maintained.

9. Conduct adaptive management as necessary.

10. Coordinate statewide watershed coalition and partnership plans, projects, monitoring, and adaptive management strategies.

11. Watershed management plans may include potential environmental impacts, public water supplies, agricultural production from abandoned mines, and a strategy for addressing these impacts. CDPHE and DRMS are potential partners in developing a prioritized list of mines that could impact streams.

This Master Plan will outline desired deliverables NFRWQPA can work towards regarding Colorado's Water Plan watershed-identified actions in Table 4 below.

Table 4 Colorado Water Plan Actions & NFRWQPA Deliverables

Action:	Deliverables:
1. Identify existing watershed coalitions, watershed plans, and assessments, including	1a. North West Colorado Council of Governments, Pikes Peak Area Council of Governments, Colorado Water Conservation Board, Bear Creek Watershed Association, Pueblo Area Council of Governments, Big Dry Creek Watershed Association, Barr Milton Watershed Association, CDPHE.

source-water protection plans.	
2. Encourage and support capacity in many areas that currently do not have watershed groups or other groups that work with a broad set of local stakeholders.	Support Education efforts through: 2a. Water Education Colorado. 2b. Colorado Water Assembly. 2c. CSU's One Water Solutions Institute - (eRAMS). 2d. Big Thompson Watershed Forum. 2e. Poudre Learning Center. 2f. Colorado Water Assembly. 2g. Colorado Rural Water Association.
3. Assist stakeholders in existing watershed groups to identify tools and resources that address gaps and build capacity in existing plans.	3a. Stakeholders ➢ Attorney General's Office ➢ Big Thompson Water Conservation District ➢ Big Thompson Watershed Forum ➢ Cattleman's Association Partners for Western Conservation Ag Water Network ➢ Colorado Department of Public Health and Environment ➢ Colorado Agricultural Water Alliance ➢ Colorado Decision Support Systems ➢ Colorado Ground Water Commission ➢ Colorado Hazard Mapping ➢ Colorado Healthy Rivers Fund ➢ Colorado Riparian Association ➢ Colorado River Water Conservation District ➢ Colorado Parks and Wildlife ➢ Colorado State University – One Water Solutions Institute (eRAMS) ➢ Colorado Stormwater Council ➢ Colorado Watershed Assembly ➢ Colorado Water Conservation Board ➢ Department of Agriculture ➢ Department of Natural Resources ➢ Department of Local Affairs ➢ Division of Local Government ➢ Division of Local Affairs, Colorado ➢ Division of Reclamation, Mining and Safety, Colorado ➢ Ducks Unlimited ➢ EPA Healthy Watersheds Protection ➢ Growing Water Smart ➢ Nation Forest Service Foundation ➢ Northern Water Conservancy District ➢ River Network ➢ South Platte Coalition for Urban River Evaluation ➢ The Greenway Foundation ➢ The Water Research Foundation ➢ Trout Unlimited

	➢ U.S. Bureau of Land Management ➢ U.S. Forest Service ➢ U.S. National Park Service ➢ Water Education Colorado ➢ West Greeley Conservation District
4. Identify public and private funding sources that together can support watershed- and forest-health projects.	4a. Funding through Colorado Water Conservation Board, Ducks Unlimited, Trout Unlimited, Colorado Parks and Wildlife, Colorado Healthy Rivers Fund, Colorado Watershed Restoration Program, Fish and Wildlife Resources Fund, Water Supply Reserve Account, CDPHE-Grants and Loans Unit, and Watershed Wildfire Protection Group.
5. Identify watersheds that are critical to the water supply.	5a. South Platte 5b. Big & Little Thompson 5c. Cache la Poudre 5d. St. Vrain 5e. Dry Creek
6. Work toward a long-term goal of developing watershed master plans for watersheds critical to the consumptive and nonconsumptive water supply.	6a. Identified in 2019 Strategic Plan. 6b. Identified 2019 Master Plan. 6c. Bi-annual revisions of the 208 AWQMP.
7. Prioritize and implement projects identified in master planning.	7a. Incorporate Nonpoint source planning. 7b. Fund eRAMS nonpoint source project. 7c. Summarize IR Report Water Quality Assessments for NFRWQPA Region. 7d. Blue – Green Projects. 7e. Bring nature into City Projects.
8. Monitor projects to ensure that objectives are met and maintained.	8a. Ongoing.
9. Conduct adaptive management as necessary.	9a. Implementing a New Utility Plan Guidance document, NFRWQPA must be flexible regarding the new requirements. 9b. Goals are based on the WQCD's Integrated 303(b) Report Water Quality Assessment.
10. Coordinate statewide watershed coalition and partnership plans, projects, monitoring, and adaptive	10a. Keep It Clean 'Cause we are all downstream& Live like you love it – campaigns 10b. Water Districts 10c. Sanitation Districts 10d. Conservancy and Conservation Districts 10e. Urban Drainage and Flood Control 10f. Groundwater Management Districts

management strategies.	
11. Watershed management plans may include potential environmental impacts, public water supplies, agricultural production from abandoned mines, and a strategy for addressing these impacts. CDPHE and DRMS are potential partners in developing a prioritized list of mines that could impact streams.	11a. The new Utility Plan format should address the impacts of the listed topics. 11b. The information from these Utility Plans will be incorporated into the NFRWQPA 208 AWQMP.

As the population exponentially grows within the front range, the driving need for land use planning and mitigative actions regarding nonpoint and point sources becomes increasingly evident. Effective land use planning can be accomplished through the 208 AWQMP and Utility Plans and is delivered through Regulation 22. Aspects of Regulation 22 projects can address nonpoint and point source pollution in the watershed. Efforts can protect and provide a sustainable, high-quality water supply from the headwaters and down to local industries that rely on water. Land management strategies, decisions, and actions must balance future water supply demand in the front range. They must realize that the better we manage nonpoint source pollution, the higher the return on investment for high-quality water to supply Colorado's river basins. While water consumption has reduced because of low-flow fixtures and appliances (EPA WaterSense & Energy star), WWTFs have realized an increase in the total customer base. Still, they have, regardless, stabilized hydrologic influent flows. Although influent organic loads are increasing as influent hydraulic flows are evening out, WWTFs have still been able to deliver high-quality effluent to the river. This same effort must be applied to nonpoint source pollution in urbanized and agricultural areas by controlling flow and providing high-quality runoff to the watershed.

Practical measures in land use management can prevent agricultural dry-up. Wastewater and stormwater infrastructure require improvements over time to meet stringent regulatory and water quality-based permit limits relative to future requirements concerning nutrients, metals, and temperature. The benefits to public health, quality of life, ecology, and the economy can become unrestricted by thoughtful and nurtured land management planning. The opportunity Association membership has for local land management planning lies within NFRWQPA's 208 planning authority specific to land use and water planning. The Local Government Land Use Control Enabling Act allows counties and municipalities to balance environmental protection with the need to provide

for the planned and orderly use of land (Colorado's Water Plan, 2015). However, the Act lacks consideration for nonpoint source pollution from urbanized and phased developments, even though the developer must demonstrate an adequate water supply to serve the development. The Act also requires counties and municipalities to develop master plans, although, once again, the requirements lack a nonpoint source component. Even so, counties and municipalities have the right to impose impact fees as a condition of urbanization to pay for development costs, including existing infrastructure and capital improvements. State law encourages water efficiency and conservation through public project landscaping guidelines (Colorado's Water Plan, 2015). Furthermore, HB-74-1041 supports local governments, primarily counties, to identify site locations, construction, or extensions of new significant water and sewage treatment systems (Colorado's Water Plan, 2015). HB-74-1041, paired with the collaboration of Regulation 22, local governments, and local referral agencies, can consider the effects of new developments while stating concerns and suggesting solutions to local issues (Colorado's Water Plan, 2015).

Public support and decision makers' willingness to attribute funds to nonpoint and point source capital improvement projects are still in development stages or are developing, albeit very slowly. The results of this slow support progress could include significant consequences to Colorado's mining, economy, and agriculture, along with a degraded environment from not implementing projects that value water supply and quality. The continued status quo mindset of funding nonpoint and point source projects could create regrettable future situations for subsequent generations. In contrast, increased investment today in our municipal infrastructure for stormwater and wastewater creates a low-regret decision portfolio for future generations by planning and preserving water sustainability projects supporting watershed health, economy, and recreation. The shift of social values regarding blue-green building and bringing nature into our lives can be measured by the number of projects funded and constructed that are considered low-impact urban development on watershed health. Decision-makers at all government levels need to support innovative and collaborative science to build, fund, construct, maintain, measure, and share the benefits of investing in watershed health. A grassroots effort will meet the region's municipal, agricultural, environmental, and recreational high-quality water supply needs while protecting the watershed's health by growing *water-smart*. Every project considered should start with conserving the water supply, and the resulting water quality returned to the watershed. In support of the evaluation of projects, the EPA has nine minimum elements to be included in nonpoint watershed plans for threatened or impaired waters (EPA, Integrating Watershed Assessment and Protection across EPA, 2016). NFRWQPA has defined the Association's actions related to the EPA's nine elements for nonpoint source watershed plans in Table 5.

Table 5 EPA Nine Elements for Nonpoint Watershed Plans & NFRWQPA Actions

EPA Elements of a Watershed Plan	NFRWQPA Actions
a) Identify causes and sources of pollution.	Focused NFRWQPA Water Quality Assessments.
b) Estimate pollutant loading into the watershed and the expected load reductions.	eRAMS Assessments of both POTWs and Nonpoint Sources.
c) Describe management measures that will achieve load reductions and targeted critical areas	Best Management Practices recommended in Utility Plans and adopted in the 208 AWQMP.
d) Estimate amounts of technical and financial assistance and the relevant authorities needed to implement the plan.	Identified stakeholders and funders above in Table 1, Colorado's Water Plan Actions.
e) Develop an information/education component.	Identified education components above in Table 1, Colorado's Water Plan Actions.
f) Develop a project schedule.	Strategic Plan Outlines Schedule.
g) Describe the interim, measurable milestones.	Listed in Section IV.
h) Identify indicators to measure progress.	Listed in Section IV.
i) Develop a monitoring component.	208 Areawide Water Quality Management Plan and Water Quality Assessments.

Photo Credit: https://www.carlislepa.org/my-borough/stormwater-information/

• PRIORITIES & MEASURABLE OUTCOMES

The WQCD of the CDPHE, under the authority of federal and Colorado statutes, administers state programs implementing two primary federal statutes: The Clean Water Act and the Safe Drinking Water Act. The Federal Clean Water Act activities protect the quality of Colorado's ambient water bodies – its rivers, streams, lakes, reservoirs, and ground waters. To assist agencies, the division created *A Guide to Colorado Programs for Water Quality Management and Safe Drinking Water* (Guide) to describe how the objectives of these related but separate statutes are implemented in Colorado. In addition, the Guide is intended to help satisfy the requirements in Section 303(e) of the federal Clean Water Act—that Colorado is to maintain a water quality "continuing planning process." Section 208 of the federal Clean Water Act provides that the governor of a state must identify areas of the state that, due to urban or industrial concentration or other significant factors, have substantial water quality problems. Section 208 calls for the preparation of areawide waste treatment plans, commonly referred to as regional water quality management plans. Specific plan components must be amended periodically by the Association for the plans to remain functional. Table 6 lists the elements of a regional water quality management plan that need to be kept current through updates and amendments. The table also includes the action NFRWQPA takes or intends to take to fulfill the requirement.

Table 6 Colorado Section 208 Planning Requirements

Regional Planning Elements That Need to be Kept Current:	Actions:
Facility needs - Discharge facility needs are those capital improvements, collection systems, purchases, and construction programs for wastewater treatment, which will result in a change in degree or method of treatment or an increase in capacity. These needs, covering a minimum period of five years with a 20-year planning horizon, must be identified in the regional plan and be supported by population and/or employment projections, degree of treatment requirements, and facility timing criteria. The plan identifies regional priorities for facility construction, improvement, or expansion. New facilities must be consistent with the service area, location, and capacity identified in the plan or in other locally adopted plans.	This information is located in the specific data sheets developed for each Management / Operating Agency. A brief summary of the needs is provided and, in many cases, includes a reference to the Utility Plan for that agency which provides more detailed information regarding needs.
Facility location - The regional plan locates existing and proposed (20-year planning horizon) municipal and industrial wastewater treatment facilities. The plan lists the stream segment to which a discharge occurs or is expected to occur. Stream segments are consistent with prevailing state stream classifications.	This information is located in the specific data sheets developed for each Management / Operating Agency. Additionally, the treatment facility locations are mapped and are available on the Association's

	website via a GIS platform linked to each facility.
Capacity -The capacity of a waste treatment facility is based on design criteria. The plan shall identify the allowable organic and hydraulic throughput of the treatment worked for existing conditions and projected needs through a 20-year planning horizon. The units of measure for acceptable organic and hydraulic throughput must be consistent with discharge permit requirements.	This information is located in the specific data sheets developed for each Management / Operating Agency. Additionally, capacity calculations will be available within CSU's eRAMS database by service area, river basin, and watershed.
Timing of expansion facilities - The Colorado Water Quality Control Act requires that domestic wastewater treatment works permittees "initiate engineering and financial planning for expansion of the sewage treatment works whenever throughput and treatment reach 80 percent of design capacity" and "commence construction of such sewage treatment works expansion whenever throughput and treatment reach 95 percent of design capacity." The regional plan identifies the existing throughput, treatment design capacity, and years in which the facility is expected to reach 80/95% of design capacity.	This information is located in the specific data sheets developed for each Management / Operating Agency. Additionally, data sheets are available on the Association's website via a GIS platform linked to each facility.
Population or employment projections - Population or employment projections are based on the best available information. Projections adopted by the planning agencies and supported by the management agencies will determine the 20-year size of the service area and the capacity of new or expanded treatment facilities.	This information is located in the specific data sheets developed for each Management / Operating Agency. More detailed information regarding projections can also be found in the agency-specific Utility Plans referenced in the data sheets. Additionally, data sheets are available on the Association's website via a GIS platform linked to each facility.
Service area - The service area for a wastewater treatment facility is the area to which the facility provides wastewater service, is required to provide service, or will provide service when the facility reaches design capacity. It must be consistent with an adopted regional plan. An adopted urban growth boundary governs service areas in the Denver metropolitan region.	Wastewater Utility Service Area (WUSA) maps are provided for each Management / Operating Agency. In addition, a GIS layer containing these areas is provided to all member and partner agencies for planning purposes. It is available on the Association's website via a GIS platform linked to each facility.
Level of treatment - Prevailing stream standards, classifications, and regulations will determine the level of treatment. Treatment levels established by the WQCD will be listed for existing and proposed facilities that have undergone the site approval process. Recommended changes	The 208 AWQMP discusses the overall water quality for the region and references the established standards. It references the treatment level identified in the current discharge permit. In addition, the datasheet for

to treatment levels based on approved TMDLs may be listed in the plan.	each Management / Operating Agency identifies the discharge location and the current classifications associated with that segment. Additionally, NFRWQPA has developed its assessment for the region regarding rivers, streams, lakes, and reservoirs from the WQCD's integrated 303b report.
Social, environmental, and economic impacts of carrying out the plan - The plan should contain information on the costs and benefits of carrying out the plan in sufficient detail to identify the costs to management and operating agencies. Other social, environmental, and economic information will be provided as appropriate.	The data sheets for each Management / Operating Agency identify approved Utility Plan projects and the associated costs for each agency. These plans contain detailed information about the costs and impacts of planned improvements for the service areas.
Permit conditions - Effluent limitations determine the significant factors in permit conditions for a municipality. These limitations are subject to the prevailing stream classifications, standards, and regulations. Water quality management plans can identify appropriate special permit requirements.	The data sheets for each Management / Operating Agency identify the current permit for each facility and whether the permit is active, administratively extended, or terminated. In addition, the current stream standards for the discharge location are also identified.
TMDLs/Wasteload allocations - The results of a TMDL/wasteload allocation that the Environmental Protection Agency has approved may be assigned to an individual discharger as an effluent limit contained in a State discharge permit. Water quality management plans may assist in determining the need for and completion of TMDL/wasteload allocation studies by: 1) evaluating stream flow, water quality, and existing and projected wastewater discharges; 2) documenting the need for such studies; 3) recommending priorities for conduction TMDL/wasteland allocation studies; 4) making recommendations regarding actual conduct of such studies, including institutional and financial arrangements for carrying out the studies; 5) coordinating and recommending the most politically acceptable means for allocating wasteloads among multiple dischargers, where appropriate; and 6) providing planning agency recommendations, where appropriate.	TMDLs/Wasteload allocations completed for the South Platte Basin by the WQCD via Regulation 93. Effective 01/01/2020, The Utility Plan should include, in coordination with the division, a wasteload study if a TMDL exists for the agency's discharge.
Nonpoint Source and Storm Water Information - The plan should update nonpoint source and stormwater information of a regional interest as it becomes available through wasteload allocation studies, stream sampling projects, municipal control programs, or stormwater permit programs.	The 208 AWQMP discusses the statewide nonpoint source and stormwater program activities and the NFRWQPA participation in these activities.

The plan may identify nonpoint source elements, priority watersheds, best management practices, watershed restoration strategies, stormwater management programs, and other watershed-oriented information.	An agency's Utility Plan is required to determine the load to the water basin or segment due to the service area and BMPs. Nonpoint source and stormwater information may be obtained from CSU's eRAMS platform.
Management Agency Review - The designated planning agency is responsible for recommending each designated management agency within its planning area be identified in each plan update.	A current list of Management Agencies is provided in the 208 AWQMP.
Watershed Restoration Plans - The plan should identify information that may be applicable to a specific watershed restoration strategy.	Watershed activities for the region are discussed in the 208 AWQMP.
Source Water Assessment and Protection (SWAP) - The plan may identify information applicable to source water assessment and protection efforts under the Safe Drinking Water Act.	The 208 AWQMP discussed the Statewide Water Quality Management Plan, which includes the Source Water Assessment and Protection program.
Links to Other Water Quality-Related Programs - The plan may provide links, including strategies and recommendations, to other water quality-related programs (e.g., Drinking Water, Superfund, Brownfield Redevelopment, Endangered Species Act).	The 208 AWQMP discussed the Statewide Water Quality Management Plan, which includes links to programs.
Partnerships - The plan can identify other water quality partnerships in addition to management agencies. These partnerships may include but are not limited to watershed associations, conservancy districts, river or lake protection groups, and agencies.	The 208 AWQMP discussed partnerships of NFRWQPA, including the: Colorado Wastewater Utility Council Colorado Monitoring Framework Permit Issues Forum Water Quality Forum
Water Quality Analysis and Assessment - The plan may include specific water quality and environmental analysis and assessment results from special studies and efforts of management agencies or other appropriate partnerships.	Water Quality Analysis and Assessment can be obtained from the division's Integrated 305b report or the NFRWQPA summary of the region found in the 208 AWQMP.
Standards and Classifications - The plan may contain recommendations for potential changes to water quality classifications and standards.	Agencies have the opportunity with their Utility Plans to recommend standards and classifications in coordination with the WQCD, which may be adopted as recommendations with NFRWQPA's 208 AWQMP.
Regional Water Quality Policies - The plan may contain regional water quality or environmental policies,	The policies and guidance documents used by NFRWQPA are available on the Association's website.

implementation guidelines, and recommendations adopted by local government officials in the planning region.	

To foster actions of the CWP, the EPA, and Colorado Section 208 planning requirements, NFRWQPA developed three priorities and respective measurable outcomes.

1. Continue as the South Platte River Basin's 208 Planning Agency.
    - Further, develop the success of Utility Plans implemented in the past several years.
    - Encourage more BMPs for nonpoint source pollution in service areas as guidelines for land use management agencies.
    - Enhance the transfer of information for membership to measure water quality effects.
2. Enhance the Association's 208 AWQMP to demonstrate the watershed's water quality value.
    - Watershed Classifications Segment Assessments
    - River Basin Classifications Segment Assessments
        - Maintaining, enhancing, or managing the water quality for all use classifications
    - Watershed flow and load Assessments
        - PTOWs Point source vs. Nonpoint
    - River Basin flow and load Assessment
        - PTOWs Point source vs. Nonpoint
3. Develop more partnerships for collaboration, transfer of information, and construction funding.
    - Watershed and River Associations
    - Wastewater Associations
    - Stormwater Associations
    - Water Associations
    - Conservatory and Conservation Districts
    - Nonprofit Environmental Foundations and Organizations
    - Educational Organizations
    - Government Organizations
    - State Agencies
    - Green Industry
    - Construction Industry
    - Roundtables

Issue Identification

Present information on watershed management and health issues in the basin; and provide a forum for people to voice their concerns over water issues directly to the membership. The problems identified form the basis for the goals in the 208 AWQMP as they may through the process.

Gather and Transfer Information

Adaptive management strategies, action plans, and decision matrices vary and are highly scientific day-to-day practical water management and decision-making trees. Utility Plans rely on various experts and individuals involved in water management as outlined in the Utility Plan Guidance document and the 208 AWQMP. Through Utility Plans and the 208 AWQMP, membership may gather the necessary information to assess issues identified in phase one. Association members also have the opportunity to ask questions of the experts and explore topics related to the projects being proposed for consideration. This transfer of technical, scientific, and policy information provides a foundation for the Association's recommendations in the site location approval process.

208 AWQMP Recommendations Development

To initiate the process of approving recommendations proposed in Utility Plans, the Association provides a framework to the membership for considering alternatives for recommendations; NFRWQPA identified a set of criteria to screen alternatives:

■ Is it technically feasible? ■ Is it financially feasible? ■ Is public support documented? ■ Is it constructible? ■ Does the management agency have the approval to implement? ■ Does the management agency have regional support from local referral agencies? ■ Is it in accordance with Regulation 22?

Master Plan Summary

NFRWQPA can fulfill its South Platte watershed Section 208 planning responsibilities, within Weld and Larimer counties, by performing the actions listed within this Master Plan. Within this Master Plan are guiding principles for NFRWQPA operations provided by the Colorado Water Plan, the Colorado Water Quality Control Act 208 Section requirements, and the EPA's nine elements for nonpoint source watershed plans. Actions within the Master Plan converge to protect, maintain, or restore water quality in the NFRWQPA region through thoughtful land-use management planning concerning both point and nonpoint sources that degrade water quality and quantity. Thoughtful land-use management planning provided by membership Utility Plans consider both point and nonpoint sources of pollution. The information gathered in membership Utility Plans is then transferred into the Association's 208 AWQMP as local land-use management planning recommendations. The 208 AWQMP is a resource for the entire region to manage the effects of urbanization concerning water quality and quantity.

WORKS CITED

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