

# Watershed Planning and Management in Colorado

## Getches-Wilkinson Center Working Paper<sup>1</sup>

### I. Introduction

The Colorado Water Plan (Water Plan) establishes as a goal the promotion of “watershed health and supports the development of watershed coalitions and watershed master plans that address the needs of a diverse set of local stakeholders.”<sup>2</sup> The Water Plan embraces a watershed approach for managing water resource quality and quantity within specific drainage areas or watersheds.<sup>3</sup> A watershed approach is described as a flexible framework for managing water-resource quality and quantity within specified drainage areas, or watersheds. It includes “stakeholder involvement and management actions supported by sound science and appropriate technology.”<sup>4</sup> While often associated with environmental concerns, watershed management is intended to bring together the full range of interests in water within a specific place—a watershed.

Included among the Water Plan’s critical goals is protection of watershed health, including recovery of imperiled species, protection and enhancement of recreation, water quality, and wetland and riparian areas and, more broadly, the protection and restoration of critical watersheds.<sup>5</sup> In addition, a measurable objective is established to cover 80% of locally prioritized rivers with stream management plans, and 80% of critical watersheds with watershed protections plans, all by 2030.<sup>6</sup> The Water Plan describes critical actions to achieve these goals, but implementation of these actions will require focus and resources that may not be immediately available to the Colorado Water Conservation Board and the other entities listed as partners in these actions.<sup>7</sup> It is not enough to simply have watershed plans on paper that cover the state. Successful plans must be assembled by a broad and representative coalition of watershed stakeholders who are committed to their implementation. It is important to emphasize that the watershed approach extends beyond primarily environmental considerations; it seeks to integrate our consumptive and nonconsumptive interests.

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<sup>1</sup> For more information, contact Larry MacDonnell>l.macdonnell@comcast.net.

<sup>2</sup> Water Plan, at 7-3. A watershed is a defined geographic area within which all water drains to a common point, a stream or river. Watersheds can be defined at different scales, from the tiniest of tributaries up to a water basin. Focusing on particular watershed promotes understanding of the array of interrelated influences that affect the quantity and quality of water.

<sup>3</sup> Water Plan, at 7-5 to 7-7, 7-10. *See generally*, Water Plan, Section 7.1.

<sup>4</sup> *Id.* at 7-5 to 7-6.

<sup>5</sup> *Id.* at 10-12.

<sup>6</sup> *Id.* at 10-7. The Plan interchanges stream management plans and watershed plans.

<sup>7</sup> Proposed actions are listed in the Water Plan at 10-12.

We offer concrete suggestions here of methods through which the State of Colorado can make real progress in achieving its interests in promoting state-supported, locally-driven, collaborative efforts to identify current conditions in critical watersheds, to reach agreement on desired projects and actions with multiple benefits, and to achieve their implementation. First we discuss the existing institutional structures in Colorado that already follow a more geographically and hydrologically based approach to water matters, emphasizing the uniqueness and importance of basin roundtables. Then we discuss ways to build on the work of the roundtables and to better integrate the work of state and local entities with these efforts.

## II. The Watershed Approach in Colorado

Colorado organizes its system of water rights determination and administration around its seven primary river basins.<sup>8</sup> The appointed members of the Colorado Water Conservation Board come from the State's major river basins, with one additional member from the Denver metro area.<sup>9</sup> Colorado has 76 soil and water conservation districts across the State that work with private landowners to improve soil and water conservation practices.<sup>10</sup> The Colorado Water for the 21<sup>st</sup> Century Act established nine basin roundtables, organized around each of the State's river basins, to facilitate continued discussions of water management issues within and between the basins and to encourage locally-driven collaborative solutions to water supply and protection challenges.<sup>11</sup> The analyses and water supply needs assessments conducted by the CWCB and the roundtables ultimately led to the development of the Colorado Water Plan. The Water Plan includes summaries of the basin implementation plans (BIPs) produced by each basin roundtable, and the full BIP for each basin is available online.<sup>12</sup>

The Colorado Department of Public Health and the Environment, Water Quality Control Commission has established water quality standards for all surface waters in the State's river basins.<sup>13</sup> The Water Quality Control Division's Statewide Water Quality Management Plan explicitly adopts a watershed approach for achieving and maintaining

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<sup>8</sup> Colo. Rev. Stat. § 37-92-201 (water divisions). The State Engineer also appoints division engineers to administer water rights each in of the seven water divisions. Colo. Rev. Stat. § 37-92-202. Water divisions are further subdivided into water management districts, the level at which water rights are administered by water commissioners.

<sup>9</sup> Colo. Rev. Stat. § 37-60-104.

<sup>10</sup> <https://www.colorado.gov/pacific/agconservation/conservationboard>. The Colorado State Conservation Board is made up of members from these districts and provides recommendations to the Colorado Department of Agriculture for awarding grants and for providing training and other support.

<sup>11</sup> Colo. Rev. Stat. § 37-75-104.

<sup>12</sup> Colorado Water Plan, available online at <http://coloradowaterplan.com/>. This site also includes links to each BIP under the "Community" tab.

<sup>13</sup> The regulations are available at <https://www.colorado.gov/pacific/cdphe/water-quality-control-commission-regulations>.

designated water quality.<sup>14</sup> The Colorado Division of Parks and Wildlife has, as a primary goal, the conservation of wildlife and its habitat, including the protection and enhancement of water resources for fish and wildlife populations, but its programs are not organized hydrologically.<sup>15</sup>

In addition, there are approximately 80 local watershed groups in existence around the State, formed to address particular concerns at the local level.<sup>16</sup> The Colorado Water Plan provides links to about 75 watershed plans produced by these groups.<sup>17</sup> Colorado Trout Unlimited has 24 chapters working in local watersheds around the State,<sup>18</sup> and Trout Unlimited's Western Water Project has five river basin coordinators on the ground in western and southern Colorado.<sup>19</sup>

In short, Colorado organizations have long embraced a watershed-based approach to water matters, but there has been little effort at coordination or integration of the activities of these different organizations. Conceptually, the basin roundtables represent the most comprehensive effort to date to think about the State's water resources concerns from a basin perspective, both hydrologically and geographically, and to encourage local participation in those discussions. The BIPs contain a wealth of information about water supply and water uses as well as expected future needs, both consumptive and nonconsumptive, in each basin. Subsequent to the finalization of the Colorado Water Plan, the basin roundtables have continued to meet and discuss projects and activities that can address future needs. Using a variety of different approaches, the eight BIPs proposed a total of 520 projects to meet municipal, industrial, and agricultural needs, costing an estimated \$20 billion.<sup>20</sup> In addition, the BIPs proposed a total of 474 projects to address recreational and environmental needs

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<sup>14</sup> Colorado Water Quality Control Division, Statewide Water Quality Management Plan (2011) at 1-1 to 1-3, available at <https://www.colorado.gov/pacific/cdphe/statewide-water-quality-management-plan>.

<sup>15</sup> See Colorado Parks and Wildlife, 2015 Strategic Plan at 9, available online at <http://cpw.state.co.us/Documents/About/StrategicPlan/2015CPWStrategicPlan-11-19-15.pdf>.

<sup>16</sup> A directory of watershed groups is available online at <http://www.coloradowater.org/Watershed%20Group%20Directory>. The Colorado Watershed Assembly serves as a state-level focal point and advocate for local watershed efforts. See <http://www.coloradowater.org/>.

<sup>17</sup> <http://cwcbweblink.state.co.us/weblink/0/doc/197258/Electronic.aspx?searchid=c39986f7-7670-4457-aa01-2a92b22450e8>.

<sup>18</sup> See <http://coloradotu.org/chapter-locations/>.

<sup>19</sup> See <http://www.tu.org/tu-programs/western-water>.

<sup>20</sup> The proposed projects are summarized in Chapter 6.5 of the Plan, pp. 6-130 to 6-136. The number of projects by basin and their projected total cost are shown on p. 9-10 in Table 9.2.1. Many of the proposed projects have not yet been analyzed for their cost. The Statewide Water Supply Initiative placed the total cost for municipal, industrial, and agricultural water supply projects by 2050 to be between \$15 and \$17 billion. Water Plan, at 9-10. The Water Plan uses the figure of \$20 billion as the amount needed to "close the gap." Water Plan, at 9-11.

at a projected cost of \$2 to \$3 billion.<sup>21</sup> The roundtables are working to reach agreement internally on prioritizing projects for possible State funding support.<sup>22</sup>

### III. Moving to the Next Level – Implementation of the BIPs

While the BIPs represent Colorado’s first attempt to put in place a comprehensive view of water needs and interests in each water basin, implementation requires the efforts of many parties taking the actions necessary to achieve the objectives articulated in the various plans. A primary benefit of the roundtables was the involvement of a large number of participants with a wide range of interests meeting together regularly over many years and, with state guidance and funding and consultant assistance, developing a more or less shared view of basin and state water problems and needs. Relationships have developed that extend beyond the usual interest-group alignments. Understanding of others’ views and concerns improved. Recognition that, often, more can be achieved by working together than by working separately, or in opposition, also improved.

The Water Plan suggests a substantially enhanced State role in facilitating, supporting, and funding projects supported by the basin roundtables and that also meet specific criteria.<sup>23</sup> These criteria call for commitments to collaboration and sustainability, in addition to demonstration of technical and fiscal feasibility and meeting an identified water “gap.” Collaboration is defined to mean meeting more than a single need and involving multiple participants. Sustainability means inclusion of conservation best practices and avoiding or minimizing adverse impacts to environmental or recreational interests and economic and social impacts to agriculture and rural communities. The Water Plan also promises a more active State role in facilitating needed approvals for such projects.<sup>24</sup>

The Water Plan reviews existing sources of public funding, including the CWCB Water Project Loan Program, the Water Supply Reserve Account (WSRA), the Watershed Restoration Program, the Species Conservation Trust Fund, and financing through the Colorado Water Resources and Power Development Authority.<sup>25</sup> Total State funding

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<sup>21</sup> The proposed projects are summarized in Chapter 6.6 of the Water Plan, pp. 6-168 to 6-177.

<sup>22</sup> Final determinations about uses of funds available to the CWCB for such projects will be made by the Board. The Plan set out a general statement of the criteria that will be applied:

For a project to be considered priority, the CWCB weighs several criteria—including the project’s funding; whether it meets multiple purposes, has multiple partners, and provides multiple benefits; and whether it is regional in nature.

Water Plan at 9-11. More detailed criteria are presented at 9-44 to 9-45 and are discussed at pp. 6-7 herein.

<sup>23</sup> Water Plan, at 9-43 to 9-45. The manner in which these narrative criteria will be applied remains uncertain and is addressed at pp. 6-7 herein.

<sup>24</sup> *Id.* at 9-45 to 9-48.

<sup>25</sup> *Id.* at 9-13 to 9-15.

available over the next 35 years for water supply project loans and grants is estimated to be about \$2 billion, compared to an estimated need of \$20 billion.<sup>26</sup> Projected State funding for environmental and recreational needs over the next 35 years is \$385 million, compared to an estimated need of \$2 to 3 billion.<sup>27</sup> Because environmental and recreational projects are not typically ratepayer-supported and rely primarily on grants for financial support, the difference between the available funding and estimated need represents the gap.<sup>28</sup> While some federal funds are likely to be available, the Water Plan concludes that substantial additional State money and other forms of support will be necessary to meet the array of identified water-related needs by 2050.<sup>29</sup> While a number of possible options are being explored, the ultimate sources of these funds remain unclear.

## IV. Possible Next Steps

### A. The Basin Roundtables

The basin roundtables will continue to serve as a forum for discussion of basin water-related interests and needs. As currently constituted, the roundtables are heavily weighted towards water supply and use interests that can provide employees as roundtable members who are paid for the time they spend.<sup>30</sup> Consideration should be given to enlarging representation of nonconsumptive interests, including providing stipends to cover the costs of those representatives without institutional support. In addition to consideration of future needs, roundtables could discuss and address ways to improve existing basin water management so that additional benefits might be possible within existing water uses.<sup>31</sup> In addition, roundtables could also encourage and participate in the development of sub-basin and watershed plans that provide a better and more detailed understanding of conditions and needs in each of these units and that help refine the original basin-wide assessment of needed projects and activities.<sup>32</sup>

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<sup>26</sup> *Id.* at 9-11, 9-15. The majority of this anticipated need, approximately \$14 billion, is expected to be borne by municipal ratepayers or corporate investment. An additional \$3 billion can be provided through existing governmental grant and loan programs, including the \$2 billion mentioned above. Still remaining, however, is a gap of \$3 billion, translating to approximately \$100 million per year for 30 years. See Interbasin Compact Committee, presentation of Tim Feehan, Feb. 23, 2016, available at <http://cwcbweblink.state.co.us/WebLink/0/doc/198087/Electronic.aspx?searchid=bd458641-1e59-4441-a941-0cb5f8feedf9>

<sup>27</sup> *Id.* at 9-10, 9-16.

<sup>28</sup> *Id.* at 9-15

<sup>29</sup> *Id.* at 9-20 to 9-21.

<sup>30</sup> Originally, roundtable membership consisted of “designated” members, at-large members, the basin’s CWCB board member, non-voting members, and agency liaisons. Colo. Rev. Stat. § 37-75-104(4). See also, <http://cwcb.state.co.us/water-management/basin-roundtables/Pages/BasinRoundtableMembership.aspx>.

<sup>31</sup> See Navigating a Pathway Toward Colorado’s Water Future: A Review and Recommendations on Colorado’s Draft Water Plan, Getches-Wilkinson Center, April 2015 at 26-28.

<sup>32</sup> The Water Plan calls for additional support for these efforts. Action F.6, at 10-12; Action G.4, at 10-13.

In the short term, the primary role of the roundtables is to further refine and prioritize projects and activities considered most important in each of the basins and to recommend these projects for public funding as appropriate.<sup>33</sup> Roundtables can play a valuable role in promoting multi-purpose projects that engage multiple interests and that serve economic, environmental, and social needs in each basin. In addition, the roundtables can encourage within-basin watershed planning and management by coalitions of local interests and state agencies to help achieve basin and state goals articulated in the Water Plan.

## B. State Agencies

State agencies with significant responsibilities for water-related matters in Colorado include the Colorado Water Conservation Board, the Colorado Division of Water Resources, and the Colorado Division of Parks and Wildlife, all located within the Colorado Department of Natural Resources; the Colorado Water Quality Control Commission and Division, located within the Colorado Department of Public Health and the Environment; and the Colorado Conservation Board and the Soil and Water Conservation Districts, located within the Colorado Department of Agriculture. Despite inevitable overlaps of responsibilities and interests, there is little coordination among these agencies and little integration of responsibilities.

In addition, there are four water conservation districts, 48 water conservancy districts, 15 water users associations, 12 irrigation districts, 15 groundwater management districts, 7 water authorities, large numbers of water and sanitation districts, and 7 Section 208 water quality management agencies.<sup>34</sup> All of these entities are authorized under state law to carry out specific responsibilities and are considered branches of state government, as are counties and cities.

The conservation and conservancy districts, as well as all counties and many cities, have representatives on the basin roundtables, and most water-related state agencies have designated liaisons to each roundtable.<sup>35</sup> The roundtables thus provide one means of connecting this wide array of state and sub-state governmental entities.

It is time to take a hard look at ways this impressive array of governmental entities can better coordinate and integrate their water-related responsibilities. The Colorado Water Plan itself now serves as guidance for all executive state agencies on

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<sup>33</sup> The roundtables use the criteria for evaluation of CWC's WSRA grants for this prioritization, not the criteria outlined in the Water Plan. See, Water Supply Reserve Account Criteria and Guidelines, available at <http://cwcbweblink.state.co.us/weblink/0/doc/191238/Electronic.aspx?searchid=dd02a52b-f8e7-4c85-bd32-ece5c42ada0b>

<sup>34</sup> Colorado Water Congress, Colorado Water Almanac and Directory.

<sup>35</sup> See <http://cwcb.state.co.us/water-management/basinroundtables/Pages/BasinRoundtableMembership.aspx>.

water-related matters. Moreover, in its discussion of critical actions, the Water Plan lists “partners” next to every action.<sup>36</sup> This listing provides a starting point for identifying related agency interests. To achieve collaborative planning at the state level, it is critical that Executive Branch agencies be explicitly charged with coordinating with and among each other to better integrate their overlapping water-related interests. Given our growing orientation toward addressing water matters on a hydrographic and geographic basis, it may make sense to have agencies examine their programs and responsibilities in this way and then look for commonalities. One prominent example is the shared interests multiple state agencies have respecting watershed health.

To ensure that the goals of multiple-purpose projects and collaborative planning are carried out, it is essential that the evaluation criteria stated in the Water Plan are adhered to by all relevant agencies.<sup>37</sup> Following these criteria will help ensure that watershed health and other values are considered by the various state funding sources. The Water Plan makes it clear that the State will use the criteria set forth to determine State engagement, facilitation, and funding to ensure alignment with Colorado’s water values. To implement this intent, the CWCB and other grant-making State agencies should further refine and incorporate the Water Plan criteria into their own grant or loan application evaluation guidelines. The U.S. Bureau of Reclamation’s WaterSMART application process provides an example of an objective methodology for incorporating specific evaluation criteria into funding decisions and a detailed weighting system for each criterion and sub-component. This approach provides transparency to applicants and a thorough understanding of the importance placed on various components of an application.<sup>38</sup>

### C. Strengthening Local Efforts

Water institutions in Colorado developed primarily for the purpose of supporting the development and use of water. As our water-related interests have broadened to incorporate concepts of resiliency and watershed health to ensure the long-term availability of water supplies, some of these entities have also broadened their activities to better address these additional interests. The Colorado River Water Conservation District, for example, supports projects within its boundaries that are concerned with improving water quality, water use efficiency, and watershed management.<sup>39</sup> Grand County is working actively to protect and improve flows in streams within the county.<sup>40</sup> Denver Water has active programs related to conservation, water quality protection, recreation, and watershed protection.<sup>41</sup> The Northern Colorado Water Conservancy

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<sup>36</sup> Water Plan, at 10-9 to 10-14.

<sup>37</sup> Water Plan, at 9-34 to 9-44.

<sup>38</sup> See [http://www.usbr.gov/watersmart/weeg/docs/foas/FY15\\_WEEG\\_FOA.pdf](http://www.usbr.gov/watersmart/weeg/docs/foas/FY15_WEEG_FOA.pdf).

<sup>39</sup> See <http://www.coloradoriverdistrict.org/grant-program/>.

<sup>40</sup> See <http://co.grand.co.us/412/Stream-Management-Plan-Phase-3>.

<sup>41</sup> See <http://www.denverwater.org/AboutUs/>. See tabs for conservation, water quality, recreation, and environmental stewardship.

District has active programs on water quality and water conservation.<sup>42</sup> There are many other examples.

Local watershed groups have emerged in response to the need for locally-based collaborative efforts that look more comprehensively at the watershed to address particular concerns, often related to water quality or other watershed health issues.<sup>43</sup> Examples of the kinds of activities performed by these groups are available online.<sup>44</sup>

The Water Plan envisions an increased role for such groups in achieving watershed health, including forest health and improved stream flows.<sup>45</sup> Specifically, critical action items in the Water Plan include developing stream management plans<sup>46</sup> for priority streams, providing technical and financial support for the development of watershed master plans, and providing funding for such planning.<sup>47</sup> While the funding gap for watershed projects is substantial, as discussed above, there is a particular need for the modest support required to establish and maintain the ongoing work of watershed groups themselves.<sup>48</sup> The funding required for the development of watershed or stream management plans is estimated at \$18 million statewide.<sup>49</sup> In recognition of this specific need, the State broadened its Watershed Restoration Program in 2015 to include funding grants for stream management plans as well as flood mitigation and watershed/stream restoration.<sup>50</sup> Further, the Water Plan recommends the continuation of funding at least \$1 million annually to support stream management and watershed plans.<sup>51</sup>

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<sup>42</sup> See <http://www.northernwater.org/Default.aspx>.

<sup>43</sup> See <http://www.coloradowater.org/>. See also Douglas S. Kenney, *Watershed Planning*, Getches-Wilkinson Center, 2016.

<sup>44</sup> See <http://www.coloradowater.org/How%20Groups%20Are%20Helping>; <http://www.coloradowater.org/Measurable%20Results%20Project>; <http://cwcb.state.co.us/LoansGrants/colorado-healthy-rivers-fund-grants/Pages/main.aspx#ExampleProjects>.

The Water Plan provides information about the many plans these entities have developed in support of their activities. Colorado Water Plan, Appendix D.

<sup>45</sup> Water Plan, at 7-5—7-7.

<sup>46</sup> The Colorado Basin Roundtable is using the term “integrated water management plans” to reflect its intention to integrate nonconsumptive and consumptive needs in its evaluations.

<sup>47</sup> Water Plan, at 10-12 to 10-13, Action Items, F.3, F.6, G.4. One important source of support, the Colorado Healthy Rivers Fund, is funded through a state income-tax check-off program and other donations. Grants are jointly administered by the CWCB and the CWQCD, together with the Colorado Watershed Assembly. See <http://cwcb.state.co.us/LoansGrants/colorado-healthy-rivers-fund-grants/Pages/main.aspx>. The future of this program is uncertain.

<sup>48</sup> Douglas S. Kenney, *Watershed Planning*, Getches-Wilkinson Center, 2016.

<sup>49</sup> Water Plan, at 9-10.

<sup>50</sup> Colorado Water Conservation Board, Colorado Watershed Restoration Program, Grant Program Guidance, Revised July 2015 available online at [http://cwcb.state.co.us/LoansGrants/colorado-watershed-restoration-grants/Documents/cwrp\\_guidance\\_FINAL.pdf](http://cwcb.state.co.us/LoansGrants/colorado-watershed-restoration-grants/Documents/cwrp_guidance_FINAL.pdf).

<sup>51</sup> Water Plan, at 10-13, Action Item G.4.

Increasingly, the conservation community is working at the local level.<sup>52</sup> Many environmental groups now recognize the importance of working with water users to facilitate outcomes that are mutually beneficial. It seems likely that future water development activities will include stream restoration projects for critical reaches as mitigation for the reduced flows associated with more water development. Work by conservation groups and watershed groups can help shape and implement such actions.<sup>53</sup>

## V. Conclusion

Water management and decision-making in Colorado are increasingly organized hydrologically and geographically, an approach advanced by the Colorado Water for the 21<sup>st</sup> Century Act and continued in the Colorado Water Plan. The Water Plan provides the framework within which a more inclusive and integrated approach to water decision-making and management can occur. Key to implementation of the Plan is the availability of State funding and technical resources that can be used to develop watershed plans and help guide and support the implementation of desired actions. The basin roundtables will help prioritize these actions, and the Colorado Water Conservation Board will support these efforts and make the final funding decisions. To maintain the broad support developed during the Water Plan process, it will be critical that these actions do in fact represent the full array of interests in the basin, that the process for making funding decisions be open and transparent, and that the narrative criteria outlined in the Water Plan be turned into quantitative criteria that can be openly and fairly applied to all funding decisions.

Even without substantial additional funding, however, there are things that can be done within the water-related State agencies, the basin roundtables, and the regional and local water entities to help achieve the goals outlined in the Water Plan. The basin roundtables are centrally positioned to help implement their basin visions, serving as a critical linkage among interests in and outside of the basin. State agencies should be directed to implement their water-related responsibilities by working together and through partnerships developed through the roundtables. And local interests can seek out more collaborative means of achieving their objectives. We are optimistic that the momentum developed in the past decade will continue to move us in this direction.

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<sup>52</sup> See Improving Irrigation Water Uses for Agricultural and Environmental Benefits, A Getches-Wilkinson Center Working Paper, 2016 for illustrations of projects in which conservation groups are actively involved with irrigators to provide improvements that benefit both agriculture and the environment.

<sup>53</sup> In addition, the critical actions identified in the Water Plan include the CWCB developing templates for stream management plans and better metrics for assessing the health of streams and watershed. Water Plan, at 10-12, Action Items F.3, F.4.