

Framework for Watershed¹ Management Planning in the Upper Gunnison Basin

*Report to the Board of the Upper Gunnison River Water Conservation District
from the Ad Hoc Committee on Watershed Management Planning*

I. Introduction

As charged by the Board, the Ad Hoc Committee on Watershed Management Planning submits this proposed framework for the Upper Gunnison River Water Conservancy District (UGRWCD) and its partners to employ in developing an Upper Gunnison River management plan a) to meet the water needs of new population (statewide as well as local) by midcentury, and b) to do so with water supplies projected to be reduced 10-20 percent locally by climate changes. This planning framework is consistent with action directives in Chapter 7 of the Colorado State Water Plan and in the Gunnison Basin Implementation Plan, which recommend that future planning begin with assessing needs in both consumptive and non-consumptive water uses in the planning area, and incorporating those assessments into a watershed management plan for addressing the identified needs.

II. Overview and Background of the Need for Watershed Management Planning

The Upper Gunnison River Basin is an important headwaters area of the Gunnison River, a major tributary of the Colorado River. Primary water uses in the Upper Gunnison Basin include agricultural, recreational, domestic/municipal, industrial and environmental. Most of the Upper Gunnison River Basin is comprised of several sub-basins: East River, Ohio Creek, Taylor River, Tomichi Creek, Cebolla Creek, and the Lake Fork of the Gunnison, along with other smaller tributaries contributing to the Blue Mesa Reservoir. In addition, about 20 heavily-used miles of the Gunnison River mainstem, from Almont to Blue Mesa Reservoir, are included in this planning process as a sub-basin.

The mainstem and tributary sub-basins each have unique qualities, a distinct set of uses, and specific needs for the ambiguous future; thus each sub-basin warrants its own needs assessment for incorporation into a Watershed Management Plan for the Upper Gunnison Basin. These factors need to be taken into account in each sub-basin needs assessment:

Current Use and Identified Conservation, Efficiency or Other Projects and Processes (IPPs):
This will be a baseline for where and with what we are starting.

¹ The Colorado Water Plan is a little ambiguous – perhaps deliberately – in specifying the planning it recommends for all basins. Chapter 7 (Water Resource Management & Protection) asks for “watershed management planning,” which appears to encompass all water uses. Chapter 6.6 (Environmental and Recreational Projects and Methods) asks for “stream management planning” with a clear focus on addressing environmental and recreational needs (and no mention of agriculture or domestic uses). Our Ad Hoc group has actually been working more on a *watershed* focus because our charge from the Basin Implementation Plan is to inventory both agricultural infrastructure needs and environmental/recreational needs.

Anticipation of Future Population Growth: State Water Supply Initiative (SWSI) projections² indicate that the human population of the Upper Gunnison Basin will grow from ~16,000 now to 25,000-32,000 by mid-century (60-100% increase), depending on numerous economic and cultural factors.

Water Supply Losses from Climate Change: Preliminary research funded by state agencies reveals that impacts of climate change to our basin may be significant.³ Already researchers are observing that earlier snowmelt is leading to a decrease in streamflow.⁴ Potential impacts could include earlier spring runoff peaks, lower summer flows due to higher crop evapotranspiration rates, and a decrease in water supplies from 5 to 20 percent by 2070.

Geopolitical Colorado River Basin Issues: Another dry period in the Colorado River Basin equivalent to the 2000-2006 drought would bring strong pressure from large junior water users (Denver Water's Roberts Tunnel, the Fry-Ark Project, etc.) onto agriculture to lease or sell water senior to the 1922 Colorado River Compact, to meet urban and Lower Basin needs, with the implied threat of eminent domain if the water is not forthcoming. This warrants a need for agricultural users in places like the Upper Gunnison Basin to determine the true value of water here, both for economic and ecological needs, and plans for interrupted supply scenarios.

Once this baseline and future-needs assessment information is compiled from the sub-basins, the planning partners will approach watershed and stream management planning from a holistic perspective. As opposed to viewing consumptive and non-consumptive use of water as separate elements, watershed planning recognizes that there are complex interactions between environmental, agricultural, municipal, and recreational uses of water. By recognizing this incontrovertible relationship between consumptive and non-consumptive uses of water, management can focus on increasing the adaptive capacity of the system as a whole.

The Ad Hoc Committee acknowledges an obvious need for an adaptive "learning through doing" approach in these planning processes. This will begin with the process of engaging a diverse group of stakeholders in each sub-basin. The approach will be to identify willing participants who see the sense and value in the process of planning ahead for the projected changes in supply and demand; and work with them, with well-displayed demonstration projects or programs, anticipating that others will come on board as the value to participating neighbors becomes more evident. Through this process, stakeholders will come to realize a range of potential benefits, both for themselves and their watershed.

² SWSI 2010 Gunnison Basin Report – June 2011

³ The Colorado River Water Availability studies address these issues in more detail.

⁴ http://www.nsf.gov/news/news_summ.jsp?cntn_id=189304&org=NSF&from=news.

III. Steps in the Watershed Management Planning Process

Phase 1: Initial Sub-Basin Mapping and Compiling Existing Information

The two primary objectives of this phase are to collect and synthesize existing information, while identifying needs for additional information. The UGRWCD will help initiate this process by constructing a detailed map of the sub-basin under assessment and by compiling information about the usage and health of the watershed ecosystems.

Preliminary mapping and information collection could identify the following:

- Water collection region (headwaters areas, where streams form with no significant human withdrawals)
- Areas with significant agricultural irrigation withdrawals, headgates, and significant diversions. This would be determined using water rights tabulations and diversion records.
- Areas with significant human concentrations (incorporated towns/cities, unincorporated communities with organized water/sanitation districts, P.U.D.s and legal subdivisions, educational facilities, unofficial settlements with five or more structures, etc.). Tabulate populations, describe water collection and waste disposal systems.
- Industrial areas and activities (ski areas, active mines, abandoned mines with water concerns, multi-user energy installations, snowcat/helicopter ski services, commercial rafting areas, commercial flatwater usage, etc.). Tabulate water impacts as closely as possible.
- Areas with individual recreational use (whitewater boating, flatwater boating, instream fishing, swimming, river-walks, etc.). Estimate numbers where possible.
- Areas with significant environmental concerns (instream flow problems, fishery concerns, riparian degradation, water quality concerns, etc.). Describe thoroughly and mark accurately on the map.
- Key areas and water users in the area.
- Legal framework (water rights and other legal constraints affecting watershed management).

This initial mapping will provide necessary information that can be used when engaging in stakeholder outreach and as a foundation for sub-basin management planning.

Phase 2: Identifying Sub-Basin Coordinator

The UGRWCD will use the information above to help identify a compensated coordinator to work directly with key stakeholders in the needs assessment and Watershed Management Plan processes.

- The sub-basin coordinator will be a person familiar with the sub-basin and its inhabitants who will be best able to interact with the major water users. A complex sub-basin may warrant more than one coordinator – i.e., one to work with agricultural users, another to work with municipal and industrial users, etc. Coordinators will be compensated through the UGRWCD watershed planning budget.

Phase 3: Stakeholder Outreach

The primary objectives of this phase are twofold: the first will be to identify stakeholder's perception of personal and sub-basin needs under current conditions; then to identify needs they perceive based upon projected changes for the future.

- The sub-basin coordinator will work with appropriate board members to identify individuals in the sub-basin who will be most interested in Watershed Management Planning, then will meet with those individuals to explain the process in detail, and consult with them on further outreach strategies within the sub-basin.
- A general notice with a questionnaire will be sent to all members of each sub-basin stakeholder group. These questionnaires can be adapted to address the targeted interest and concerns of different user groups. Please see Appendix A for an example of one such questionnaire.
- Begin needs inventory process with those willing to participate, and identify pilot projects within the sub-basin that can be readily and affordably completed.

Phase 4: Address Informational Gaps in Non-consumptive and Consumptive Use Inventories

In Phases 1 and 3 we will be collecting information on consumptive and non-consumptive water needs. The primary objective in Phase 4 is to address gaps in information needed to provide a comprehensive picture of the sub-basin. Two basic types of inventories will be used to determine basin needs:

Consumptive Use Inventory: The primary objective of the consumptive use inventory is to protect existing uses. In addition to this overarching objective, the inventory may help address shortage concerns, identify infrastructure needs, and identify areas where improved infrastructure could improve water management or riparian habitat and forage. A consumptive use inventory should include these elements:

- Historic diversion records and projected future diversion needs to maintain existing uses.
- Areas that experience shortages.
- Infrastructure that is in need of improvement.
- Ditch locations that need to be corrected in the state records.
- Legal framework.

Non-Consumptive Use Inventory: During the non-consumptive use assessment process, the objective is to identify and quantify environmental and recreational needs.⁵ Elements for consideration include: how climate impacts may influence water availability, low flow concerns for stream ecosystems, water quality issues, recreational needs, and riparian habitat degradation. This inventory should include these elements:

- Collecting and synthesizing existing data describing flows for river ecosystems, boating, or other needs in the watershed.
- Assessing existing physical conditions of stream reaches, including geomorphologic and riparian conditions.
- Quantifying specific numeric flow recommendations (or ranges of flow) and physical conditions and assessing the potential for channel reconfiguration to support environmental and recreational values(CWP).
- Inventory of decreed instream flow rights.

Once completed, these combined inventories will accurately portray our water use needs and watershed health. Projected changes in precipitation and temperature patterns that may impact water availability and runoff will be assessed with an eye towards how those changes may impact existing uses and watershed health.

⁵ The Gunnison BIP states that “Environmental and Recreational needs include identification and inventorying of specific projects throughout the basin and in 29 target stream reaches.” To that end, the BIP identifies IPPs to accomplish this task, including project number 21, “Non-consumptive Project Identification/Inventory - Upper Gunnison Region.” Such an assessment could provide the information discussed above to complete a stream management plan.

Table 1: Timetable for Needs Assessments by Sub-Basin

Sub-Basin	Timetable
Ohio Creek	2017 (including pilot projects)
East River	2017-2019
Lake Fork of the Gunnison River	2017-2018
Taylor River	2018
Cebolla Creek	2018
Tomichi Creek	2019-2020
Gunnison River mainstem (Almont to Blue Mesa Reservoir)	2019-2020

Phase 5: Develop Draft Watershed Management Plan

The assessments completed in Phase 4 will look at existing uses as well as recreational and ecological needs to provide baseline information for planning. Once most sub-basin needs assessments are complete, stakeholders, coordinators and UGRWCD staff will begin to integrate them into a draft watershed management plan for the entire Upper Gunnison River Basin.

**Appendix A
Upper Gunnison Watershed Planning
Questionnaire**

The following questions are intended as prompts to generate comprehensive stakeholder input for this watershed planning effort. Please provide additional recommendations or suggestions as needed.

1) What type of water use categories would you, your property, or your business best associate with. (Select all that apply)

1. Agricultural
2. Industrial
3. Recreational
4. Environmental

2) Are there additional objectives that you would like to see included in the attached Watershed Assessment Outline?

- 1.
- 2.
- 3.

3) Do you have recommendations for projects or actions that could help improve water use or water security for your property or business under current conditions? With 20% less water in the watershed by 2050?

- 1.
- 2.
- 3.

4) Do you have recommended projects or programs that could help protect or improve water quality and stream channel function for the Ohio Creek watershed under current conditions? With 20% less water in the watershed?

- 1.
- 2.
- 3.

5) What projects or programs would you like to see included in a Watershed Management Plan?

- 1.
- 2.
- 3.

6) What issues should be addressed in a watershed management plan anticipating major projected changes? (i.e. irrigation shortages, riparian degradation, water quality, emerging climate changes, etc.)

- 1.
- 2.
- 3.