

Section 3

Nonconsumptive Projects and Methods

3.1 Nonconsumptive Projects and Methods

Overview

Section 2 of this report summarizes the nonconsumptive needs across the state of Colorado. As discussed in Section 1, the Water for the 21st Century Act requires the basin roundtables to identify projects and methods to meet their consumptive and nonconsumptive needs. For consumptive projects and methods, the Colorado Water Conservation Board (CWCB) worked with water providers and the basin roundtables to update the Statewide Water Supply Initiative (SWSI) 1 identified projects and processes (IPPs) from a planning horizon of 2030 to 2050. This effort is summarized in Section 5 of this report. For nonconsumptive needs, the CWCB has conducted an analogous outreach effort with the environmental and recreational community and the basin roundtables to identify nonconsumptive projects and methods similar to the municipal and industrial (M&I) consumptive IPPs. CWCB digitized the project information into geographical information system (GIS) and compared this information with the nonconsumptive focus areas summarized in Section 2. With this information, CWCB was able to preliminarily identify nonconsumptive focus areas with and without projects and methods. It is important to note that if a focus area does not have an associated project and method it does not mean that the area needs protective projects and methods. It is also important to note that CWCB did not judge the sufficiency of the projects and methods in each reach; rather, as with the M&I IPPs, CWCB did not judge the merits of the nonconsumptive projects and methods being pursued by local organizations. The basin roundtables will use this information as they finalize their needs assessments during 2011. This information gathered is intended to assist the basin roundtables in addressing the following questions:

1. Are there existing protections/efforts for environmental and recreational focus areas?
2. Are there areas without protections that need further study?
3. What strategies are needed to support Nonconsumptive priority areas?
4. Are there areas where new flow or water level quantification is appropriate?
5. Are there areas where a project, whether structural (e.g., river restoration) or nonstructural, can be identified and implemented?
6. Are there areas where no action is needed at this time?

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Section 3.2 describes the methodology used to gather nonconsumptive projects and methods across the state. Section 3.3 summarizes the methodology used to analyze the project and method information. Section 3.4 explains the results of the analysis and Section 3.5 discusses funding and legal mechanisms to assist implementation of nonconsumptive projects and methods.

3.2 Nonconsumptive Projects and Methods Methodology

In January 2010, CWCB developed a survey to collect information on where there are existing or planned nonconsumptive projects, methods, and studies. Studies were included since they may recommend or inform the implementation of projects or methods that will provide protection or enhancement of environmental and recreational attributes. This survey was distributed through CWCB's basin roundtable and email database. On February 10, 2010, CWCB conducted a workshop in Silverthorne, Colorado to discuss the Phase II efforts and to collect information on nonconsumptive projects, methods, and studies from the workshop attendees. At the workshop, information on 116 stream segments and 209 projects, methods, or studies was provided to CWCB. In addition, CWCB also gathered information on individuals and organizations to follow up with the data collection effort. Since the February 2010 meeting, an additional 57 meetings have occurred to gather data on additional projects, methods, and studies. Table 3-1 below summarizes the number of individuals or organizations contacted since the February 2010 meeting, the number of follow-up meetings held, and the number of projects, methods, and studies identified to date for each basin. Table 3-1 details the number of projects, methods, and studies that are in the focus areas and the number of projects outside of the focus areas. In total, 648 projects were identified from the outreach effort. Examples of the types of projects collected during this outreach effort include:

- Habitat restoration projects such as bank stabilization projects or instream habitat restoration such as pool and riffle development. Another example of habitat restoration area projects that focus on the maintaining connectivity for fish passage such as fish ladders.
- Flow protection projects such as voluntary flow agreements, instream flow (ISF) donations, or voluntary re-operation of reservoirs for releases for environmental or recreational needs.

Table 3-1 Summary of Meetings to Collect Nonconsumptive Project and Methods Information

Basin Roundtable	No. of Individuals or Organizations Contacted	No. of Meetings	No. Projects and Methods in Focus Areas	No. Projects and Methods Outside Focus Areas	Total No. Projects and Methods
Arkansas	7	5	40	0	40
Colorado	21	12	168	35	203
Gunnison	9	4	44	15	59
Metro	See South Platte	See South Platte	See South Platte	See South Platte	See South Platte
North Platte	1	1	41	7	48
Rio Grande	10	5	59	0	59
South Platte	17	14	54	53	107
Southwest	17	12	84	10	94
Yampa-White	9	4	22	16	38
TOTAL	91	57	512	136	648

In addition, there is a great deal of information gathered from divisions within the Colorado Department of Natural Resources (DNR) that have been integrated into the projects and methods database. For instance, Table 3-2 summarizes CWCB's ISFs for each basin roundtable. Decreed ISFs have been confirmed by the water court. Pending ISFs have been approved by the CWCB Board and are going

through the water court process. Recommended ISFs include those areas submitted to CWCB as a recommendation, but not yet approved by the CWCB Board at this time.

Table 3-2 Summary of CWCB Instream Flows and Natural Lake Levels

Basin Roundtable	Natural Lakes	ISF Decreed	Pending ISF	Recommended ISF
Arkansas	86	171	11	8
Colorado	150	404	12	6
Gunnison	82	259	15	2
Metro	0	24	0	0
North Platte	31	45	1	3
Rio Grande	49	141	0	0
South Platte	31	208	2	2
Southwest	50	151	4	6
Yampa-White	150	175	7	5
TOTAL	494	1,578	52	32

The CWCB's Watershed Protection and Flood Mitigation section oversees the agency's watershed restoration efforts. In addition, many of the Water Supply Reserve Account (WSRA) grants fully or partially address nonconsumptive needs. Table 3-3 shows the funding programs implemented by CWCB and project type associated with each program. The table shows the status of the projects; pending in this case means that either the contract has not yet been signed, but has CWCB approval, or that applicants have applied, but are not yet approved by the CWCB.

Table 3-3 Summary of CWCB's Watershed Restoration and Nonconsumptive WSRA Projects

Funding Source	Type	Complete	On-going	Pending	Total
Colorado Healthy Rivers Fund	Report	19	9	3	31
Colorado Healthy Rivers Fund	Restoration Project	15	7	6	28
Colorado Watershed Restoration Program	Report	1	3	0	4
Colorado Watershed Restoration Program	Restoration Project	2	9	1	12
Fish and Wildlife Resources Fund	Restoration Project	2	2	0	4
Multi-Objective Watershed Protection Plan	Report	5	0	1	6
Multi-Objective Watershed Protection Plan	Restoration Project	6	0	4	10
WSRA Nonconsumptive Related Grants	Report	8	15	3	26
WSRA Nonconsumptive Related Grants	Restoration Project	13	12	4	29
TOTAL		71	57	22	150
Total Restoration Projects	Restoration Project	38	30	15	83
Total Reports	Report	33	27	7	67
TOTAL CWCB Dollars Spent/Encumbered				\$14,499,625	
TOTAL Estimated Match Dollars				\$34,323,697	
TOTAL Approximate Expenditures				\$ 48,823,322	

In addition to CWCB's efforts, the Colorado Division of Wildlife (CDOW) is in the process of updating its water management plan for the Rio Grande Basin and plans to expand this effort to other river basins in the state. CDOW plans to use the basin roundtables in the process and this information will be incorporated into the basin reports in 2011. CDOW's current working list of statewide nonconsumptive projects and methods is summarized in Appendix E.

Finally, CWCB included the Southwest Regional Gap Analysis Project (SRGAP), coordinated by U.S. Geological Survey (USGS) into the projects and methods database. The SRGAP created detailed, seamless GIS data layers of land cover, all native terrestrial vertebrate species, land stewardship, and management status values. The management status values quantify the relationship between land management and

biodiversity throughout the state of Colorado. Four management status values are as described below (USGS 2010):

- Status 4 lands are where there are no known public or private institutional mandates or legally recognized easements or deed restrictions held by the managing entity to prevent conversion of natural habitat types to anthropogenic habitat types. The area generally allows conversion to unnatural land cover throughout.
- Status 3 lands comprise areas having permanent protection from conversion of natural land cover for the majority of the area, but subject to extractive uses of either a broad, low-intensity type (e.g., logging) or localized intense type (e.g., mining). It also confers protection to federally-listed endangered and threatened species throughout the area.
- Status 2 lands are areas having permanent protection from conversion of natural land cover and a mandated management plan in operation to maintain a primarily natural state, but which may receive uses or management practices that degrade the quality of existing natural communities, including suppression of natural disturbance.
- Status 1 lands include areas having permanent protection from conversion of natural land cover and a mandated management plan in operation to maintain a natural state within which disturbance events (of natural type, frequency, intensity, and legacy) are allowed to proceed without interference or are mimicked through management.

For this effort, CWCB include areas with a status between 1 and 2.5 as a project and method in the nonconsumptive projects database.

3.3 Nonconsumptive Projects and Methods GIS Mapping and Analysis Methodology

The project and method information collected by CWCB as described in Section 3.2 was spatially digitized in GIS. Each project was digitized separately using an existing stream database called National Hydrography Dataset (NHD) 12-digit segments. The average length of a NHD segment is 1.5 miles. Depending on the length of the project, multiple NHD segments could represent one project. Also, depending on the project location, multiple projects could exist on the same NHD segment. A unique Project ID and Segment ID were given to all surveyed and interviewed projects within the Nonconsumptive Needs Assessment database. In addition, the WSRA grant project locations were digitized in a similar fashion. The CWCB ISFs and natural lake levels, CWCB restoration projects, and the USGS SRGAP information had previously been summarized using GIS; therefore, this data did not have to be digitized. The USGS SRGAP information was analyzed further to calculate a weighted management status value for each NHD segment. This value was calculated in GIS for each NHD 12-digit HUC by a weighted average of each land management status within the HUC.

Following are the assumptions used in digitizing the nonconsumptive projects and methods:

- No NHD segment was edited (i.e., if the project was smaller than an NHD segment, the whole NHD segment was used to represent the project location).
- Projects were digitized based on hand drawn locations and/or brief descriptions. This information is still under review by the basin roundtables.

Following are the types of information included in the GIS geodatabase for each project:

- Project or Method Name
- Project or Method Type (i.e., study, flow protection, or restoration project)
- Project or Method Location
- Comments
- Project or Method Status (i.e., ongoing, planned, or completed)
- Project or Method Identification Number
- Project or Method Contact Name
- Project or Method Contact Identification Number

To help the basin roundtables answer the questions listed at the beginning of this section, CWCB developed a series of four maps that can be presented at a statewide or basinwide level. Because information is still under review by the basin roundtables, this information is presented at a statewide level for this report so that the basin roundtables and other stakeholders can develop an understanding of how this information can be used in finalizing their needs assessments. The four maps include:

- Projects and Methods Map
- Projects and Methods Status Map
- Studies Status Map
- Focus Areas with Projects and Methods Map

The **Projects and Methods Map** represents the spatial information for all nonconsumptive projects and methods that are planned, ongoing, or completed statewide. This map contains all nonconsumptive projects and methods including—1) CWCB interviews and workshops, 2) CWCB watershed restoration projects, and 3) WSRA grants. ISFs, decreed flows, pending ISFs, and land management status were not included in this map. Please note that this map includes projects and methods outside of the designated focus areas to spatially display the full extent of any project collected by CWCB. A complete list of projects is available in Appendix F.

The **Projects and Methods Status Map** shows nonconsumptive projects and methods from the interview data and CWCB restoration and WSRA grants. Examples of nonconsumptive projects and methods include instream habitat restoration projects and voluntary flow agreements that provide some level of environmental or recreational protection. In addition, the CWCB ISFs and the USGS Land Stewardship information are included as projects on this map. These projects and methods were intersected with the basin roundtable focus areas discussed in Section 2 of this report using GIS. For each project and method, the status (i.e., planned, ongoing, or completed) is differentiated using GIS. The USGS Land Stewardship was considered complete for this map. This map intersects with the roundtable identified environmental and recreational focus areas.

For the **Study Status Map**, GIS was used to differentiate the status of each of the identified studies identified in CWCB's outreach effort (i.e., planned, ongoing, or completed). Examples of studies include ISF studies, restoration planning studies, and water quality monitoring efforts. Studies are efforts that provide information but no measures have been implemented to protect environmental or recreational attributes. However, implementable projects or methods could be a likely outcome of studies. The studies identified in the **Study Status Map** tool are studies that intersect the environmental and recreational focus areas identified by the basin roundtables.

The **Focus Areas with Projects and Methods Map** identifies environmental and recreational focus areas with projects or methods that may be complete, ongoing, or planned in a stream reach. It also identifies environmental and focus areas without projects and methods. For focus areas with projects and

methods, the associated project and method does not necessarily provide sufficient protection for the focus area. Likewise, if a focus area does not have an associated project or method this does not indicate that the associated resource in the focus is not protected.

In addition to identifying the spatial extent and status of the identified projects and methods, CWCB also examined what type of protection the project or method may provide to a given environmental or recreational attribute. CWCB has classified the projects as having direct or indirect protections based on a given environmental or recreational attribute. Details of this analysis are provided in Appendix G. The definitions used for direct and indirect protections are as follows:

- **Direct Protection** – Projects and methods with components designed intentionally to improve a specific attribute. For example, ISFs have direct protection of fish attributes. Additionally, restoration of a stream channel would also provide direct protections for aquatic species.
- **Indirect Protection** – Projects and methods with components that were not designed to directly improve the specific attribute but may still provide protection. For example, flow protection for a fish species may also indirectly protect riparian vegetation that is located in the area of the flow protection. Another example includes protective land stewardship or a wetland or bank stabilization effort that could indirectly protect aquatic species.

The projects and methods identified through interviews were individually evaluated and compared to the environmental and recreational attributes gathered by the basin roundtables during their focus area mapping effort (focus area mapping is described in Section 2 of this report). For this report, CWCB examined warm water and cold water fish attributes throughout the state and identified if these areas have projects and methods that provide direct or indirect protections. In addition, CWCB identified where both indirect and direct protections occur for warm water and cold water fish. Examples of warm water fish include roundtail chub, flannelmouth sucker, bluehead sucker, and Iowa darter. Examples of cold water fish include Colorado River cutthroat trout, Gold Medal fishing areas and greenback cutthroat trout. Finally, note that CWCB has not identified the sufficiency or adequacy of these direct and indirect protections.

3.4 Nonconsumptive Projects and Methods GIS Mapping Results

The four projects and methods map types described above are shown in Figures 3-1 through 3-4. Figures 3-2 through 3-4 were created as Geospatial PDF (GeoPDF) files; information on how to utilize GeoPDFs is summarized in Section 2.3 and Appendix D of this report. Figure 3-1 shows the spatial extent of the projects and methods collected by CWCB. These include the projects and methods gathered through CWCB interviews and surveys, WSRA grants, Colorado Healthy Rivers grants, and Colorado Watershed Restoration Program grants. Note that many projects and methods "overlap" and individual projects are not distinguished in Figure 3-1. Table 3-4 summarizes the status of the projects and methods shown in Figure 3-1. For the 708 projects and methods shown in Figure 3-1, 48 percent are complete, 29 percent are ongoing, and 23 percent are planned/proposed.

Table 3-4 shows that approximately 80 percent of the identified projects, methods, and studies were within the basin roundtable focus areas. Although it is not clear why at this point in the analysis, there are some differences between the summary statistics of the areas within the focus areas compared to those outside of them. For instance, 25 percent of the identified projects, methods, and studies within the focus areas are planned or proposed, whereas only 14 percent are planned or proposed outside of the

focus areas. Related to this statistic, there is also a smaller proportion of completed projects within the focus areas.

Table 3-4 Summary of Project and Methods Status

Project and Methods Status	Number of Projects and Methods in Focus Segments	Number of Projects and Methods Outside Focus Segment	Total No. of Projects and Methods
Completed	254	90	334
Ongoing	169	34	203
Planned/Proposed	141	20	161
TOTAL	564	144	708

Table 3-5 summarizes the types of projects and methods summarized in Figure 3-1. Note that there is some overlap between project and method types (i.e., some projects and methods provide study information and an actual project such as a restoration project). For the 708 projects and method types shown in Figure 3-1 and summarized in Table 3-5, 57 percent are restoration projects, 18 percent are flow protection, and 25 percent are information or studies.

Note that ISF projects and USGS Stewardship Status areas are not included in these statistics. Data collected to-date indicate some differences when comparing project type between those projects, methods, and studies found within the focus areas and those found outside of them. Focus areas statewide have a higher proportion of studies and fewer restoration projects.

Table 3-5 Summary of Projects and Methods Type¹

Project and Methods Status	Number of Projects and Methods in Focus Segments	Number of Projects and Methods Outside Focus Segments	Total No. of Projects and Methods
Restoration Project	301	96	397
Flow Protection	104	25	129
Information	159	23	182
TOTAL	564	144	708

¹ Some overlap occurs between project and methods types

Figure 3-2 shows the Projects and Methods Status Map for the CWCB surveyed and interviewed projects, CWCB watershed restoration projects, CWCB WSRA projects, CWCB ISF projects, and USGS Stewardship Status areas. The planned, ongoing, and completed projects and methods cover an area of 11,000 miles of basin roundtable environmental and recreational focus areas. The majority of projects and methods shown in Figure 3-2 are complete (57 percent). Thirty-three percent of the projects and methods are ongoing and 10 percent are planned or proposed. The Study Status map is provided as Figure 3-3. Of these projects 56 percent are completed, 36 percent are ongoing, and 8 percent are planned or proposed. Figure 3-4 is the Focus Areas with Projects and Methods Map. This figure was designed as a tool for the basin roundtable to identify focus areas without projects or methods. These areas are shown in red on Figure 3-4. If an environmental or focus area is shown in red it does not mean that there is not a project located there or that that area does not have some type of protection for environmental and recreational attributes. All four maps are intended to be utilized by the basin roundtables in completing their needs assessments.

In the state of Colorado, 33,000 miles of streams and lakes have been identified by the basin roundtables as environmental and recreational focus. Nearly one-third of the length (11,000 miles) of these focus areas have an associated project or method. The environmental and recreational focus areas have approximately 12,000 miles of cold water fish attributes and 11,000 miles of warm water fish attributes. For

cold water fisheries, approximately 5,000 miles of the 12,000 miles of identified fisheries have an associated project or method that offers direct or indirect protections. For warm water fisheries in the focus areas, 3,500 miles of the 11,000 miles have direct or indirect protections. Examples of other attributes besides cold water and warm water fish that are in the focus areas include riparian areas, water based terrestrial wildlife such as river otter and boreal toad, whitewater and flat water boating, and wildlife viewing. An analysis of additional attributes will be conducted for the basin reports.

Table 3-6 summarizes the direct and indirect protections for cold water and warm water fishery focus areas. Over 50 percent of cold water fishery focus areas have direct, indirect, or both types of protections. Nearly 30 percent of warm water fishery areas have direct, indirect, or both types of protections. Many of the cold water fisheries examined are protected by ISFs in headwaters areas across the state. This is one of the main reasons that the percentage of cold water focus areas with protections is higher than the warm water fishery areas. It is more difficult to file an instream flow water right in areas with a higher degree of management, since water availability is often limited. Warm water fish occurrences are very often in the highly managed reaches located further downstream.

Table 3-6 Summary of Focus Area Cold Water and Warm Water Fisheries Environmental and Recreational Protections

Protection Type	Cold Water Fish Focus Areas Length (miles)	Warm Water fish Focus Areas Length (miles)
Direct	2,000	1,100
Indirect	1,000	800
Direct and Indirect	2,300	1,600
No Known Protections	6,400	7,700
TOTAL¹	12,000	11,000

¹ Totals rounded to two significant digits to reflect increased uncertainty at large geographic scales.

As was discussed previously, the CWCB has not made judgments about the adequacy or sufficiency of the identified projects and methods. During 2011, CWCB will work with the basin roundtables to complete their nonconsumptive needs assessments. Basin-specific maps similar to Figures 3-1 through 3-4 will be developed at the basin roundtable level. It is anticipated that the CWCB and basin roundtables will use the Projects and Methods Map (Figure 3-1) to understand the realm of different projects that has been identified for their basin. Basin roundtable members can utilize the Projects and Methods Status Map (Figure 3-2) to identify if there are ongoing or planned projects that need their support. This support could include financial support through WSRA funding or political support. Basin roundtables can utilize information in the Studies Status Map (Figure 3-3) to see if these studies recommended actions that could be turned into future projects by the basin roundtables. There is a small number of studies (1 percent) located in focus areas where no projects exist and these studies could be examined to see if they provide recommendations for project implementation. Information provided in Figure 3-4 will allow the basin roundtables to identify areas that need further action or areas where no further action is needed. In addition to the basin-specific figures, CWCB will work with the basin roundtables to develop basin-specific statistics similar to those described above for cold water and warm water fisheries. In addition to these two attributes, CWCB will develop additional statistics for other attributes such as riparian areas, whitewater boating, and a limited number of specific aquatic dependent species based on basin roundtable requests.

3.5 Funding and Legal Mechanisms to Assist Implementation of Nonconsumptive Projects and Methods

Environmental and recreational values will continue to be important to the state's economy and quality of life as was discussed in Section 2. As discussed above, Colorado has many existing projects and methods aimed at meeting these nonconsumptive values. Additional nonconsumptive projects and methods will be needed to meet Colorado's nonconsumptive water supply needs, especially in warmer waters with endangered, threatened, and imperiled species. Funding will continue to be an important issue for successful implementation of nonconsumptive projects and methods. In addition, several federal and state legal mechanisms could be utilized to assist with the implementation of nonconsumptive projects and methods. The remainder of this section summarizes funding and legal mechanisms that could be useful in implementing nonconsumptive projects and methods in the future.

3.5.1 Federal and State Funding

There are several ways that funding can be acquired for environmental and recreational water development. Existing federal and state programs can be drawn on and new programs at the state and local levels can also be created to provide funding. Table 3-7 shows existing federal funding sources appropriate for meeting the goals of environmental and recreational needs.

The federal funding programs identified are not dedicated entirely to recreational or environmental water development, but these purposes are eligible for development under each program to varying degrees. For instance, under the Continuing Authorities Program administered by the U.S. Army Corps of Engineers (USACE), there is a clear eligibility requirement consistent with environmental and recreational water development (Section 206 – Aquatic Ecosystem Restoration and Section 1135 – Project Modifications for Improvement of the Environment). Grant monies must be matched by local resources and funding must be authorized and approved by Congress, a significant challenge. The Rural Community Assistance Corporation (RCAC) loan program also has an environmental eligibility criterion; however, a dependable source of repayment must be identified to receive this loan. The U.S. Department of Agriculture (USDA), the U.S. Economic Development Administration (USEDA), and U.S. Environmental Protection Agency (USEPA) all have programs in which environmental or recreational project attributes represent legitimate purposes, although none of these programs are actually focused directly on recreation or the environment.

In sum, federal funding for environmental and recreational water development is possible through a number of eligible programs, but obtaining such monies is tenuous at best. Even so, these opportunities should not be ignored since combining environmental and recreational water purposes with other water development purposes may lead to sufficient public support to gain federal funding from one or more of these programs.

In addition to federal funding programs, a variety of state level funding sources are also available. Table 3-8 shows existing state level funding sources available for meeting the goals of environmental and recreational water needs. There are a host of state programs available for environmental and recreational water development led by the various programs of the CWCB. Several of these programs specifically call out eligibility requirements related to environmental and recreational water development. However, these grants are typically not large or common. The most widely used program available to water developers—the construction loan program—can also have an environmental or recreational purpose. However, these loans require a dependable source of repayment that can be a challenge for

environmental or recreational development. The Colorado Water Resources and Power Development Authority (CWRPDA) also has a number of loan programs that focus on environmental improvement, largely related to water pollution. These programs are mostly revolving fund programs that require loan repayment and are typically sponsored through public entities. Among the other available state programs, Great Outdoors Colorado (GOCO) has a specific focus on recreation and the environment. These grants, through one of three programs, typically entail other funding partners and public entities.

Although recreational and water development projects are eligible to receive funding from a number of state programs, significant challenges remain in accessing these funds. First, public entities and other partners are often required to secure the funding. Secondly, loan repayment sources must be identified, which is a considerable challenge for environmental and recreational water developments. Third, competition for public money is keen and identified constituencies for environmental and recreational water development are more difficult to identify than more traditional water resource development purposes.

Many of the challenges for state funding of environmental and recreational development are the same challenges that all other water development purposes face, especially agricultural water projects and rural water development.

While Tables 3-7 and 3-8 indicate many funding sources, they are not meant to be an exhaustive list. There are several other sources of funding from federal, state, and local governments as well as private and corporate foundations. While grant and loan sources are continually evolving and changing, many of these can be found for free by going to the Red Lodge Clearinghouse funding database at www.rlch.org/content/get-funding.

3.5.2 Legal Mechanisms to Support Nonconsumptive Projects and Methods Implementation

This section provides an overview of the type of water rights, federal tools, state tools, and local tools available for nonconsumptive projects and methods implementation. Table 3-9 provides a comparison of the type of water rights and other mechanisms that provide environmental and recreational flows. Table 3-9 also describes local, state, and federal mechanisms for establishing water rights for the environment and recreation as well as describing how multipurpose projects or structural improvements could provide environmental and recreational flows.

3.5.2.1 Federal Tools

Following is a summary of federal tools that could be utilized when implementing a nonconsumptive project or method.

Endangered Species Act

The Endangered Species Act (ESA) provides protection for fish, wildlife, and plant species that are listed as threatened or endangered in the U.S. The ESA gives procedures that federal agencies must follow when taking actions that may jeopardize a listed species. Federal agencies typically consult with the U.S. Fish and Wildlife Service (USFWS) and the National Marine Fisheries Service to ensure that listed species and their habitats are not harmed. If negative impacts are expected, plans such as a recovery plan or habitat conservation plan are required. In Colorado, recovery plans have been created to protect endangered species on a programmatic basis on the Colorado and Platte Rivers.

For more information see: <http://www.fws.gov/endangered/>.

Table 3-7 Existing Federal Funding Programs for Environmental and Recreational Water Development

Agency	Program	Purpose	Application Process	Funding Type	Recent Award	Eligibility/Comments	Website
USACE	Continuing Authorities Program	Develop solutions to water resource issues including aquatic ecosystem restoration and improvements to the environment from modification of Federal water resource projects.	Various.	Grant (35% - 50%)	\$27 million	Authority and funding from Congress.	http://www.spk.usace.army.mil/organizations/cespk-pd/pdcap.html
RCAC	Rural Community Assistance Corporation Loan	Rural area focus on safe and decent housing, drinking water, wastewater, and community facilities.	Submit a loan application to the RCAC specific to the proposed project.	Loan	\$4.47 million	Nonprofit organizations, municipalities, and tribal governments.	http://www.rcac.org/doc.aspx?82
USDA	Rural Development - Water and Environment Programs	Focus is water development for rural areas and towns of less than 10,000.	Various application processes.	Grant/Loan	Not Available	Various eligibility requirements. See fact sheet on website.	http://www.usda.gov/rus/water/program.htm
USDA	Natural Resource Conservation Service (NRCS) – Wetland Reserve Program (WRP)	Focus is on restoring, protecting, and enhancing wetlands and associated uplands on private land.	<ol style="list-style-type: none"> 1. Submit an application to the local NRCS office. 2. The local NRCS office reviews the application for eligibility and then ranks all applications based on area ranking criteria. 3. Funds are allocated to applicants based on project rank. 	Grant or Conservation Easement	\$2.77 million total allocation for Colorado (FY07)	Landowners (must own land for previous 12 months) whose land is restorable and suitable to wildlife benefits.	http://www.nrcs.usda.gov/PROGRAMS/wrp/
USDA	NRCS – Wildlife Habitat Improvement Program (WHIP)	Focus is on creating high quality wildlife habitats for species of National, State, Tribal, or local significance.	See WRP process.	Grant	\$0.5 million total allocation for Colorado (FY07)	Lands that are privately owned or tribal lands; adjusted gross income of land owners from the three preceding years does not exceed \$2.5 million.	http://www.nrcs.usda.gov/programs/whip/

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Table 3-7 Existing Federal Funding Programs for Environmental and Recreational Water Development, continued

Agency	Program	Purpose	Application Process	Funding Type	Recent Award	Eligibility/Comments	Website
USDA	NRCS – Environmental Quality Incentives Program (EQIP)	Focuses on soil, air, water, and other natural resource concerns.	See WRP process.	Grant (Cost-share up to 75% total project cost)	\$40 million total allocation for Colorado (FY07)	Agricultural producers whose adjusted gross income from the three preceding years does not exceed \$2.5 million.	http://www.nrcs.usda.gov/PROGRAMS/eqip/
USEDA	Public Works and Economic Development Program	Infrastructure in low income areas.	<ol style="list-style-type: none"> 1. Applicant will meet with the Regional EDA office to determine eligibility of project. 2. If deemed eligible a request for proposal will be requested from the applicant. 3. If project is deemed viable a pre-application meeting will be requested. 4. After the pre-application meeting a request for formal application may be issued. 5. The applicant submits a formal application. 6. The EDA reviews the application and makes a determination. 7. The EDA notifies the applicant of its determination. 	Grant	\$2.5 million for Colorado (FY08)	<p>State, city, county, or other political subdivision of a State, including a special purpose unit of a State or local government engaged in economic or infrastructure development activities, or a consortium of such political subdivision, an institution of higher education or a consortium of institutions of higher education, an Economic Development District organization, a private or public nonprofit organization or association, including a faith-based non-profit organization, acting in cooperation with officials of a political subdivision of a State, or an Indian Tribe, or a consortium of Indian Tribes.</p>	http://www.eda.gov/AboutEDA/Programs.xml

Table 3-7 Existing Federal Funding Programs for Environmental and Recreational Water Development, continued

Agency	Program	Purpose	Application Process	Funding Type	Recent Award	Eligibility/Comments	Website
USEPA	Targeted Watershed Grant Program	Focus is water quality improvement along with habitat improvements.	<ol style="list-style-type: none"> 1. Submit proposal to EPA in response to RFP. 2. EPA regional watershed experts will review and score all eligible applications. 3. The regional administrator will submit 4 recommended projects to the national panel. 4. The national panel will review 40 semi-finalists and submit its recommendation to the Selection official for final determinations. 5. Selected applicants are required to submit a complete application upon notification. 	Grant	Not Available	States, local governments, public and private nonprofit institutions/organizations, federally recognized Indian tribal governments, U.S. territories or possessions, and interstate agencies are eligible to apply.	http://www.epa.gov/tw g/
USEPA	Wetland Program Development Grants	Focus is water quality improvement along with habitat improvements.	<ol style="list-style-type: none"> 1. Submit proposal to EPA in response to RFP. 2. EPA will review proposals. 3. Applicants will be notified of EPA's decision. 	Grant	Not Available	States, tribes, local government agencies, interstate agencies, and intertribal consortia, and national non-profit, non-governmental organizations are eligible.	http://www.epa.gov/owow/wetlands/grantguide lines/
Bureau of Reclamation (BOR)	WaterSMART Grants (formerly known as 2025 Grants)	Focus is on projects that reduce conflicts through water conservation, efficiency, and markets.	<ol style="list-style-type: none"> 1. Submit proposal to BOR in response to RFP. 2. BOR reviews proposal and makes determination. 3. Applicant is notified of BOR's determination. 	Grant (50%)	Not Available	Irrigation and water districts, municipal governments, tribes, and states.	http://www.usbr.gov/waterSMART/
USFWS	Partners for Fish and Wildlife	Focus is on restoring habitat on private lands including wetlands and riparian areas.	Contact Partners for Fish and Wildlife coordinator for more information.	Grant	Not Available	Individuals and groups who privately own land.	http://ecos.fws.gov/partners/ViewContent.do?ViewPage=home

Table 3-7 Existing Federal Funding Programs for Environmental and Recreational Water Development, continued

Agency	Program	Purpose	Application Process	Funding Type	Recent Award	Eligibility/Comments	Website
USFWS	Wildlife Restoration Program	Focus on projects to restore, conserve, manage, and enhance wild birds and mammals and their habitat.	Apply by contacting local Wildlife and Sport Fish Restoration (WSFR) Office (http://wsfrprograms.fws.gov/Subpages/ContactUs/ContactUs.htm)	Grant (with 25% state match)	Not Available	State agencies	http://wsfrprograms.fws.gov/Subpages/GrantPrograms/WFR/WR.htm
USFWS	Sport Fish Restoration Program	Focus on restoring and better managing America's declining fishery resources.	Same as Wildlife Restoration Program	Grant (with 25% state match)	Not Available	State agencies	http://wsfrprograms.fws.gov/Subpages/GrantPrograms/SFR/SFR.htm
National Fish and Wildlife Foundation (NFWF)	General Matching Grant Program and Special Grant Programs	Focus in on projects that restore native populations of sensitive or species.	<ol style="list-style-type: none"> 1. Submit a preproposal (only applicable for certain special grants). 2. If a preproposal application is required and successful the NFWF will request a full proposal from the applicant. 3. NFWF staff review and NFWF Board of Directors make final determinations on proposals. 4. Applicant is notified of final determination. 	Grant	Not Available	Various eligible projects and applicants.	http://www.nfwf.org/AM/Template.cfm?Section=Grants

Source: Interviews with program officials and selected websites, 2010.

Table 3-8 Existing State Funding Programs for Environmental and Recreational Water Development

Agency	Program	Purpose	Application Process	Funding Type	Recent Award	Eligibility/Comments	Website/Reference
CWCB	Fish and Wildlife Mitigation Fund	Fund mitigation of impacts on fish and wildlife resources from water diversions, deliveries, or storage facilities.	<ol style="list-style-type: none"> 1. Application is submitted to CWCB staff for review. 2. CWCB staff makes a recommendation to the CWCB Board. 3. CWCB Board will make a final determination. 4. CWCB notifies applicant of final determination. 	Grants (Up to 25% of total project cost; maximum \$250,000)	Elkhead Reservoir \$1,048,000	<ul style="list-style-type: none"> • Used for the appropriation or acquisition of water rights to preserve or improve the natural environment to mitigate impact of an existing water facility. • Used to complete river restoration feasibility studies and construction projects. • Eligible applicants include operators of existing water diversions, delivery or existing storage projects and the CWCB. 	http://cwcb.state.co.us/WatershedProtection/FloodMitigation/Watershed/WatershedRestorationProgram.htm
CWCB	Construction Loans (Water Project Loan Program)	Provide low-interest loans to agricultural, municipal, and commercial borrowers for the development of raw water resource projects.	<ol style="list-style-type: none"> 1. Conduct a loan feasibility study and submit the study along with the loan application to the CWCB. 2. CWCB staff will review the application and provide a recommendation to the Board. 3. Board staff will evaluate the application for approval. 4. CWCB notifies applicant of decision. 	Mostly Loan	Republican River Water Conservation District - Compact Compliance Pipeline Project \$60,600,000 at 2.0%	<ul style="list-style-type: none"> • Overall project can have recreation and/or environment component. 	http://cwcb.state.co.us/Finance/LoanProgram/waterProjectLoanProgram.htm

Table 3-8 Existing State Funding Programs for Environmental and Recreational Water Development, continued

Agency	Program	Purpose	Application Process	Funding Type	Recent Award	Eligibility/Comments	Website/Reference
CWCB	Severance Tax Trust Fund Operational Account	Water resources planning studies and associated demonstration projects, within mineral impacted areas of the state.	<ol style="list-style-type: none"> 1. Application submitted to CWCB. 2. CWCB evaluates application. 3. CWCB notifies applicant of decision. 	Grant	Annually	<ul style="list-style-type: none"> • Requests Reviewed Annually by CWCB. 	http://cwcb.state.co.us/Finance/InvestmentProgram/SeveranceTaxTrustFundOperationalAccount/
CWCB	Senate Bill (SB) 179 - Water Supply Reserve Account	Fund water activities approved by the Basin roundtables.	<ol style="list-style-type: none"> 1. Application submitted to CWCB. 2. CWCB evaluates application. 3. CWCB notifies applicant of decision. 	Grant	Bimonthly	<ul style="list-style-type: none"> • Approval by Interbasin Compact Roundtables and non-consumptive water needs are one of the eligible activities. 	http://cwcb.state.co.us/IWMD/WaterSupplyReserve/
CWCB	House Bill (HB) 1400 - Implementation of the Water for the 21st Century Act	Technical support to Interbasin Compact Roundtables	Task Orders from Basin Roundtables submitted to state project manager	Operations CWCB	Approximately \$700,000 annually	<ul style="list-style-type: none"> • Funds available to complete Basin Roundtable Needs Assessments. 	http://ibcc.state.co.us
CWCB/ Colorado Department of Public Health and Environment (CDPHE)	Healthy Rivers Fund (formerly the Colorado Watershed Protection Fund)	Colorado Individual Income Tax Refund checkoff program to give taxpayers the opportunity to voluntarily contribute to Watershed Protection. Grants are locally based water projects and planning.	<ol style="list-style-type: none"> 1. Application submitted to CWCB 2. CWCB staff, CDPHE, Water Quality Control Commission (WQCC) staff, and Colorado Watershed Assembly review, rank, and identify funding proposals to be forwarded to the Board and WQCC. 3. The Board and WQCC may select two respective designees each responsible for making final grant award decisions, in consultation with the Colorado Watershed Assembly representative. 	Grant	Raised \$97,000 in 2008	<ul style="list-style-type: none"> • Collaborative locally-based watershed protection. Must provide 20 percent in-kind or cash match. 	http://cwcb.state.co.us/WatershedProtectionFloodMitigation/Watershed/WatershedRestorationProgram.htm

Table 3-8 Existing State Funding Programs for Environmental and Recreational Water Development, continued

Agency	Program	Purpose	Application Process	Funding Type	Recent Award	Eligibility/Comments	Website/Reference
CWCB	Instream Flow Acquisition Fund	One million dollars dedicated to costs of acquiring water, water rights, and interests in water for ISF use.	CWCB's Policy 19 guides expenditures under the Instream Flow Acquisition Fund. Generally, CWCB staff must present the board with a summary of the financial aspects of the proposal, including a breakdown of costs and any in-kind services provided by the water rights owner or any other individual or entity.	Acquisition fund	Not Available	<ul style="list-style-type: none"> Permanent or temporary water acquisitions that supplement existing ISF water rights that are not always fully satisfied by existing stream flows Water acquisitions that facilitate the appropriation of the new ISF water rights that are the minimum amount necessary to preserve the natural environment to a reasonable degree Preserve threatened or endangered species habitat, support wild and scenic alternative management plans, or provide federal regulatory certainty 	http://www.cwcb.state.co.us/NR/rdonlyres/E6DA70D1-1D32-41D2-BF26-67A1BD6092E9/0/19.pdf
DNR	Native Species Conservation Trust Fund	Funds projects to protect native species and promote recovery of endangered species.	Projects are selected by agencies within the DNR. Selected programs are placed in an annual appropriations bill.	State budget appropriation	Not Available	<ul style="list-style-type: none"> Projects may be completed by non-governmental agencies as well, agencies actually apply for the funding. 	Colorado Revised Statutes Title 24 Article 33 Section 24-33-111
CWCB	Watershed Restoration Grants	Provides planning, engineering, and construction services for watershed/stream restoration studies and projects.	Apply to CWCB	Grant	Not Available	<ul style="list-style-type: none"> No specific eligibility requirements for grantees, special consideration given to projects that integrate multi-objectives. 	http://cwcb.state.co.us/WatershedProtection/FloodMitigation/Watershed/WatershedRestorationProgram.htm

Section 3 • Nonconsumptive Projects and Methods

Table 3-8 Existing State Funding Programs for Environmental and Recreational Water Development, continued

Agency	Program	Purpose	Application Process	Funding Type	Recent Award	Eligibility/Comments	Website/Reference
CDPHE/ USEPA	319 Program	Focus on nonpoint source pollution to impaired Colorado water bodies.	<ol style="list-style-type: none"> 1. Submit draft proposal to nonpoint source (NPS) coordinator. 2. Review of draft proposals is conducted by technical committees, watershed coordinators, and EPA. Feedback is given to project sponsors about project eligibility. 3. Final proposals are submitted to NPS coordinator. 4. Project is reviewed by Project Review Committee. 5. Proposals are submitted to NPS Council and EPA for final review. 6. NPS Council rank projects and provide recommendations to Water Quality Control Division (WQCD). 7. WQCD presents recommended project list to the WQCC for approval. 	Grant	\$1.8 million	<ul style="list-style-type: none"> • Program funds BMP construction and also Watershed Management Plans. 	http://www.epa.gov/OWOW/NPS/cwact.html http://www.cdphpe.state.co.us/wq/nps/index.html

Table 3-8 Existing State Funding Programs for Environmental and Recreational Water Development, continued

Agency	Program	Purpose	Application Process	Funding Type	Recent Award	Eligibility/Comments	Website/Reference
CWRPDA	Drinking Water Revolving Fund	Provides low interest loans to government agencies for the construction of water projects for public health and compliance purposes.	<ol style="list-style-type: none"> The borrower's project included in the adopted annual intended use plan (IUP) eligible project list. The IUP and eligible project list included in a Joint Resolution approved by General Assembly and signed by Governor. The borrower submits an application to the WQCD once the project is on the eligible project list. Application is forwarded to Division of Local Government (DLG) who then conducts a review along with CWRPDA and WQCD. CWRPDA Project Finance Committee and the Board of Directors review the borrower's credit report. Board of Directors approves application. 	Loan	\$13 million	<ul style="list-style-type: none"> Drinking water infrastructure. 	http://www.cwrpda.com/DWRFsubmenu.htm
CWRPDA	Water Pollution Control Revolving Fund	Provides loans to government entities for construction of water quality projects.	See Drinking Water Revolving Fund process.	Loan	\$24 million	<ul style="list-style-type: none"> Wastewater infrastructure; non-point source abatement. 	http://www.cwrpda.com/WPFCRFsubmenu.htm

Table 3-8 Existing State Funding Programs for Environmental and Recreational Water Development, continued

Agency	Program	Purpose	Application Process	Funding Type	Recent Award	Eligibility/Comments	Website/Reference
CWRPDA	Small Water Resource Projects	Finance water supply projects costing \$10 million or less.	<ol style="list-style-type: none"> Submit application directly to CWRPDA (if the project involves raw water collection or storage application is forwarded to CWCB for informational purposes). Application reviewed by CWRDPA staff and Financial Guaranty Insurance Company (FGIC). CWRDPA Project Finance Committee and the Board of Directors review the borrower's credit report. Board of Directors approves application. 	Loan	\$10 million	<ul style="list-style-type: none"> All water supply systems components. 	http://www.cwrpda.com/SWRPsubmenu.htm
Department of Local Affairs (DOLA)	Energy and Mineral Impact Assistance Program	Assist communities with implementing improvement projects and local government planning.	<ol style="list-style-type: none"> Submit application to the Department of Local Affairs. Applications reviewed by department and state advisory committees. Grant/loan awards announced. 	Grant/Loans	\$500,000/\$1 million	<ul style="list-style-type: none"> Municipalities, counties, school districts, and most special districts that have been affected by development, processing, or energy conversion of fuels and minerals. Funding for 2009-2010 was used to fill gaps in the General Fund. Applications for 2009 are being held for 2010. 	http://www.dola.state.co.us/dlg/fa/eiaf/index.html

Table 3-8 Existing State Funding Programs for Environmental and Recreational Water Development, continued

Agency	Program	Purpose	Application Process	Funding Type	Recent Award	Eligibility/Comments	Website/Reference
DOLA	Conservation Trust Fund	Implementation of projects that benefit state and local parks, recreation facilities, open space, environmental education, and wildlife habitat.	Funds dispersed quarterly on a per capita basis.	Grant	\$51 million distributed in 2006.	<ul style="list-style-type: none"> Municipalities, counties, school districts, and most special districts that intend to acquire, develop, or maintain new conservation sites or implement capital improvements or maintenance for recreational purposes on any public site. 	http://www.dola.state.co.us/dlg/fa/ctf/index.html
State of Colorado	Colorado Conservation Easement Tax Credit	Protecting lands through conservation easements.	State income tax credit.	Tax Credit	Up to \$375,000 for donations made on or after January 1, 2007	<ul style="list-style-type: none"> Colorado resident individuals, Corporations, trusts, estates, and members of pass-through entities. 	http://www.revenue.state.co.us/fyi/html/
CWCB	Instream Flow Tax Credit	Tax credit for donated water rights to the CWCB's ISFs program	State income tax credit up to 50% of the donation value	Tax Credit	Not Available	<ul style="list-style-type: none"> Eligible water rights, value determined by appraisal, seniority and historical consumptive use (CU), decreed use, location and extent to which aquatic habitat will benefit 	http://www.coloradoatertrust.org/acquisitions/tax-credit/
CDOW	Habitat Stamp	Acquiring or preserving wildlife habitat.	Funding recommendations made by a citizen committee to the Wildlife Commission.	Grant	Not Available	<ul style="list-style-type: none"> 	http://wildlife.state.co.us/ShopDOW/AppsAndLicenses/HabitatStamp/

Section 3 • Nonconsumptive Projects and Methods

Table 3-8 Existing State Funding Programs for Environmental and Recreational Water Development, continued

Agency	Program	Purpose	Application Process	Funding Type	Recent Award	Eligibility/Comments	Website/Reference
CDOW	Fishing is Fun (FIF) Program	Improve fishing opportunities for anglers.	<ol style="list-style-type: none"> 1. File an application with CDOW. 2. Various reviews by CDOW staff. 3. Presentation and Q&A session by applicants to FIF Review Panel meeting. 4. Review Panel recommendations forwarded to CDOW top management for final decision. 	Grant	Not Available	<ul style="list-style-type: none"> Local governments, park and recreation departments, water districts, individuals, conservation groups, and organizations with projects that either improve angler access, improve habitat, improve fishing sites, or improve motorboat access. 	http://wildlife.state.co.us/Fishing/Resources/Tips/FishingIsFunProgram
CDOW	Colorado Wetland Wildlife Conservation Program	Preserve, restore, enhance, and create wetlands and adjacent habitat.	Projects are selected by a CDOW committee of biologists and field operations staff.	Allocated annually	\$19,000 for Cottonwood State Wildlife Area	<ul style="list-style-type: none"> 	http://wildlife.state.co.us/LandWater/WetlandsProgram/
Various Counties	County Open Space Sales Tax	Open space protection.	Various.	Sales Tax	Not Available	<ul style="list-style-type: none"> Focus is on acquiring land for open space. 	See county websites
WQCC	Watershed protection fund	Protect lands and waterways in Colorado's watersheds.	<ol style="list-style-type: none"> 1. Applications Available March 1. 2. Deadline April 30. 3. Applications reviewed and approved July 31. 4. Grants Awarded September 30. 	Grants	\$15,000 Design and \$50,000 Projects	<ul style="list-style-type: none"> Requires 20% match. 	http://www.cdphe.state.co.us/op/wqcc/SpecialTopics/CWPF/colowtshdprot.html
GOCO	Legacy initiative	Implement projects of regional or statewide importance that preserve land and water, enhance critical wildlife habitats, create new state and local parks, construct trails, and provide environmental education.	<ol style="list-style-type: none"> 1. File an application with GOCO. 2. GOCO reviews applications. 3. Grants awarded. 	Grant	\$13.2 million	<ul style="list-style-type: none"> Parks, outdoor recreation, environmental education; regional or state significance. 	http://www.goco.org/GrantPrograms/Legacy/tabid/125/Default.aspx

Table 3-8 Existing State Funding Programs for Environmental and Recreational Water Development, continued

Agency	Program	Purpose	Application Process	Funding Type	Recent Award	Eligibility/Comments	Website/Reference
GOCO	Local government	Implement projects that provide places to play, gather, and compete.	See Legacy Initiative process.	Grant	Not Available	<ul style="list-style-type: none"> Similar emphasis for local governments. 	http://www.goco.org/GovrantPrograms/LocalGovt/tabid/120/Default.aspx
GOCO	Open space	Open space protection.	See Legacy Initiative process.	Grant	Not Available	<ul style="list-style-type: none"> River corridors, habitat, broad objectives. 	http://www.goco.org/GovrantPrograms/OpenSpace/tabid/119/Default.aspx
Colorado State Parks/ National Park Service (NPS)	Land and Water Conservation Fund (LWCF)	Create parks and open spaces, protect wilderness, wetlands, and refuges, preserve wildlife habitat, and enhance recreational opportunities.	LWCF accepts applications from local governments and CSP	Grants with matching requirements	Not Available	<ul style="list-style-type: none"> Acquisitions of land or water property interests to be used for recreational purposes Construction or redevelopment of outdoor recreational facilities Planning grants that address needs, problems or issues identified in the Statewide Comprehensive Outdoor Recreation Plan 	http://parks.state.co.us/trails/lwcf/Pages/LWCFHome.aspx
Colorado Water Trust	Colorado Water Trust	Acquisition of water rights or interests in water rights for streamflow enhancement.	None.	Depends on project	Not Available	<ul style="list-style-type: none"> Existing water users, willing participants. 	http://www.coloradowatertrust.org

Source: Interviews with program managers and selected websites, 2010.

Table 3-9 Comparison of Types of Water Rights and Other Mechanisms that Provide Environmental and Recreational Flows

	Recreational In-Channel Diversions (RICDs)	CWCBC Program		Voluntary Flow Agreements	Federal Permitting Conditions	Multipurpose Projects	Structural Improvements
		CWCBC ISF and Natural Lake Level Water Rights (New Appropriations)	Dedication of Existing Water Right to CWCBC for ISFs				
Entity	Local governmental entities. Private, State, and Federal entities are prohibited from appropriating these types of water rights.	CWCBC is the only entity authorized to obtain a decree for ISF or natural lake level water rights.	CWCBC can acquire by donation, purchase, lease, loan, or other contractual agreement from any person or entity.	Can be between any water users, subject to each party's legal authority and to applicable water court decrees.	Can be imposed by federal agencies such as the Forest Service, Bureau of Reclamation, USACE, National Park Service, Bureau of Land Management, or other agency.	Any type of water user, in conjunction with CWCBC if providing ISFs, or with a local governmental entity if providing flows for RICDs.	Any type of water user, in conjunction with CWCBC if providing ISFs, or with a local governmental entity if providing flows for RICDs.
Flow Amounts	Minimum stream flow for a reasonable recreation experience.	Minimum amount to preserve the natural environment to a reasonable degree.	Minimum amount to preserve or improve the natural environment to a reasonable degree.	Amounts determined by mutual agreement.	Variable – these sometimes mimic CWCBC ISF decreed amounts.	Agreed upon and proposed by project sponsors and partners and confirmed by water court.	Variable - but may be limited by size of pumpback pipelines, pumping costs, or other logistical constraints.
For What Purposes	To provide stream flows for a reasonable recreation experience.	To preserve the natural environment to a reasonable degree.	To preserve or improve the natural environment to a reasonable degree.	Determined by mutual agreement.	Recreation/environment/ other uses associated with the original federal authorization legislation.	Recreation/ environment.	Recreation/ environment/ water quality.
Season	Can be year round or seasonal (usually summer).	Can be year round or seasonal.	Can be year round or seasonal.	Determined by mutual agreement.	Can be year round or seasonal. These sometimes mimic CWCBC ISF decreed amounts.	Agreed upon and proposed by project sponsors and partners and confirmed by water court.	May be limited during the winter season because of icing/freezing pipelines or other frozen infrastructure.
Times of Day	Usually limited to daylight hours.	24 hours a day.	24 hours a day.	24 hours a day.	Typically 24 hours a day. May be limited by operational schedules.	Agreed upon and proposed by project sponsors and partners.	Variable.

Table 3-9 Comparison of Types of Water Rights and Other Mechanisms that Provide Environmental and Recreational Flows, continued

	Recreational In-Channel Diversions (RICDs)	CWCB Program	Voluntary Flow Agreements	Federal Permitting Conditions	Multipurpose Projects	Structural Improvements
Limits	Limited to the minimum flow to provide for a reasonable recreation experience.	Limited to the minimum flow to provide reasonable preservation of the natural environment.	Limited to the minimum flow to provide reasonable preservation of the natural environment.	Can only be imposed when a new permit is needed, or when a current permit is up for renewal. These types of federal imposition of bypass flows have been, and could continue to be the subject of litigation.	Limitations determined by mutual agreement or imposed by law.	Costs associated with the pipeline, costs associated with pumping, costs associated with the storage vessel.
Effects on Compact Entitlements	Shall not impair the ability of Colorado to fully develop and place to consumptive beneficial use its compact entitlements.	Shall not deprive the people of the State of Colorado of the beneficial use of those waters available by law and interstate compact.	Shall not deprive the people of the State of Colorado of the beneficial use of those waters available by law and interstate compact.	Potential to impact Colorado's compact entitlements.	In accordance with law governing ISFs or RICDs.	Should not affect Colorado's Compact entitlements.
Example Projects	Town of Avon, City of Longmont, and City of Steamboat Springs	CWCB has decreed 1,578 ISFs and 494 Natural Lake Levels	City of Boulder (Boulder Creek) and City of Aspen (Hunter Creek)	Chatfield Reallocation	Elkhead Enlargement	Elkhead Enlargement

Federal Reserved Water Rights

Federal reserved water rights are implied and express water rights that are created when land is taken out of the public domain for national parks, national wildlife refuges, national forests, etc. The U.S. Supreme Court recognized these rights in 1907 in *Winters vs. United States*, which concluded that the U.S. could not deprive Native Americans of water reserved for them through the creation of tribal reservations (known as the "Winters Doctrine"). In Colorado, reserved water rights are finalized throughout the state with the exception of the U.S. Forest Service (USFS) reserved rights in Water Division 7 and the Black Canyon of the Gunnison National Park reserved rights.

For more information see: www.blm.gov/nstc/WaterLaws/fedreservedwater.html.

Section 404 Dredge and Fill Permits

Section 404 of the Clean Water Act (CWA) instituted a permit program to regulate discharge of dredge and fill material in wetlands and in "waters of the U.S." USACE is responsible for issuing permits and assessing the potential impact to the environment including water quality. USACE may require terms and conditions on the permit to mitigate any potential impacts as per 404(B)(1) guidelines.

For more information see: http://www.usace.army.mil/CECW/Pages/reg_materials.aspx

Nonpoint Source Management Program

The Section 319 NPS Grant Program was created by Section 319 of the CWA to curb NPS pollution. USEPA administers funding to state and tribal agencies. The money is then used to assess nonpoint pollution and to develop and implement NPS management programs. In Colorado, the grant program funds voluntary NPS pollution projects that are intended to enhance water quality and potentially provide environment and recreation benefits.

For more information see: <http://www.epa.gov/OWOW/NPS/cwact.html>.

Salinity Control Program

The salinity control program is a program in which the BOR, USDA, the Bureau of Land Management (BLM), and Colorado River Basin states are working together to cost-effectively reduce salinity in the Colorado River Basin. For example, in western Colorado, earthen canals have been replaced with pipes to reduce seepage and salt loading to the Colorado River. There may be funds available for projects that help improve water quality by reducing salinity levels.

For more information see: <http://www.usbr.gov/uc/progact/salinity/>

Federal Facilities

Federal water facilities, such as those operated by BLM and USACE, may provide multiple benefits, including water supply, flood control, power development, and environment and recreation benefits. Reservoirs often provide flatwater recreation and habitat opportunities as well as beneficial environmental and recreational downstream flows.

For more information see: <http://www.usbr.gov/projects/>, <https://www.nwo.usace.army.mil/>, <http://www.spa.usace.army.mil/>, and <http://www.spk.usace.army.mil/>

Federal Energy Regulatory Commission (FERC) Licenses

Under the Federal Power Act, FERC issues licenses for non-federal hydroelectric projects requiring compliance with state and local requirements. Many hydroelectric projects currently need to renew their licenses. This triggers a review process in which water quality and other environment and recreation benefits/impacts may be reviewed and addressed.

For more information see: <http://www.ferc.gov/> and <http://www.ferc.gov/docs-filing/elibrary.asp>

National Environmental Policy Act (NEPA) Reviews

NEPA requires federal agencies to prepare an environmental impact statement to evaluate the environmental impacts of a proposed action(s) and to consider alternatives that may avoid or reduce impacts. Potential environment and recreation impacts as a result of changes in flows are identified and either avoided or mitigated.

For more information see: <http://www.epa.gov/compliance/nepa/eisdata.html>

Forest Management Plans

In accordance with the National Forest Management Act of 1976, national forests are required to develop a comprehensive management plan. These plans include management, protection, use goals and guidelines, and monitoring plans. Periodically, these plans are revised to adapt to changing conditions and management strategies.

For more information see: <http://www.fs.fed.us/emc/nfma/index.htm> and each individual National Forest website.

Resource Management Plans (RMPs)

The Federal Land Policy and Management Act of 1976 requires the BLM to create extensive land use management plans, called RMPs, to guide agency actions for a particular region. In these plans, the BLM must manage the landscape for many uses while still protecting water quality.

For more information see: <http://www.blm.gov> and each individual BLM field office website.

USGS Data Gathering on Water Quality and Quantity

The USGS collects water quality and flow data through the National Water-Quality Assessment Program (NAWQA) and the National Streamflow Information Program (NSIP), respectively. The USGS operates and maintains approximately 7,000 stream gages that collect long-term stream flow data through the NSIP. In Colorado, the NAWQA program collects water quality data from the South Platte, Upper Colorado River, and Rio Grande Valley Basins.

For more information see: <http://water.usgs.gov/nawqa/> and <http://water.usgs.gov/nsip/>

Wild and Scenic River Designation (WSR)

Passed in 1968, the WSR serves to preserve selected rivers that possess not just "wild and scenic" qualities but also "outstanding remarkable scenic, recreational, geologic, fish and wildlife, historic and cultural or other similar values." Congressional intent was to complement water development activities on some rivers with preservation of free flowing river conditions on other rivers. Currently, the Cache La Poudre River is the only WSR in Colorado. The BLM, NPS, and USFWS are the primary agencies charged with designating a river as a WSR.

For more information see: <http://www.rivers.gov/>

3.5.2.2 CWCB Program Tools

The following summary of CWCB programs may be used by the basin roundtables as they implement projects and methods for their nonconsumptive needs.

CWCB Instream Flow Program

The 1973 General Assembly enacted SB 97, which created the Colorado ISF and Natural Lake Level Program (ISF Program) to be administered exclusively by the CWCB. The CWCB is solely responsible for the appropriation and protection of ISF and natural lake level water rights to preserve the natural environment to a reasonable degree and the acquisition of water rights to preserve and improve the natural environment to a reasonable degree. To date, the CWCB has appropriated and adjudicated

approximately 1,500 water rights in approximately 8,500 miles of streams and 476 natural lakes. In addition to new appropriations, state law also authorizes the CWCB to acquire existing water rights on a voluntary basis to preserve or improve the natural environment.

For more information see: <http://cwcb.state.co.us/Streamandlake/>.

Recreational In-Channel Diversion (RICD) Rules

In 1998, Golden filed for water rights to create a kayak course running through its downtown. The state opposed the application, but the water court eventually decreed Golden's full claim.

After the water court ruled but before the case was appealed to the Colorado Supreme Court, the General Assembly passed SB 01-216. This bill provided that local governmental entities could apply for water rights for RICDs, but limited these types of water rights to the "minimum stream flow" "for a reasonable recreational experience in and on the water." Section 37-92-102, C.R.S. requires applicants for RICD water rights to provide a copy of their application to the CWCB. Under SB 01-216, the CWCB was required to review an application for an RICD and submit findings and recommendations to a water court within 90 days of the expiration of the Statement of Opposition period. SB 01-216 grandfathered in prior water right applications for recreational flows, such as Golden's.

By the time the case reached the Colorado Supreme Court, Vail and Breckenridge's efforts to create recreational flows had also been included in the case. The Colorado Supreme Court deadlocked 3-3, operationally affirming the lower court decisions and granting them recreational flows.

For more information see: <http://cwcb.state.co.us/WaterSupply/RICD.htm>

3.5.2.3 Other State and State-Administered Federal Program Tools

Rangewide Conservation Agreement for Roundtable Chub, Bluehead Sucker, and Flannelmouth Sucker

The CDOW and the BLM are both signatories to the Rangewide Three Species Conservation Agreement for the protection and conservation of flannelmouth sucker, bluehead sucker, and roundtail chub populations throughout their ranges. This agreement between the Upper Basin states, federal agencies including the USFS, BLM, and BOR, Native American tribes, and non-governmental organizations is intended to proactively prevent a federal listing of these three native fishes.

Interruptible Water Supply Agreements (C.R.S. 37-92-309)

The State Engineer may allow interruptible water supply agreements between two or more water right owners. Under an interruptible water supply agreement, the loaning water right owner stops its use of the loaned water right for a specified length of time. The State Engineer authorizes the approval and administration of interruptible water supply agreements that permit a temporary change in the point of diversion, location of use, and type of use of an absolute water right without the need for adjudication. An interruptible water supply agreement can be exercised 3 years in a 10-year period.

401 Certification

The state has to certify that the construction and operation of any project requiring a federal approval (404, FERC license, federal discharge permit) will meet all applicable state water quality requirements. The statute sets forth best management practices that may be imposed to help ensure compliance with state water quality standards. The state can also include conditions on the 401 certification to ensure compliance with state water quality standards.

For more detailed information see: <http://www.cdphs.state.co.us/wq/PermitsUnit/index.html>

National Pollution Discharge Elimination System Permits

The National Pollution Discharge Elimination System, under the CWA, requires discharge permits for municipal and industrial wastewater and stormwater. The Colorado WQCD issues permits for the majority of discharges in Colorado. Permits may include conditions to protect water quality. USEPA issues permits for federal facilities and on American Indian reservations. Permits are renewed every 5 years.

For more information see: <http://www.cdphe.state.co.us/wq/PermitsUnit/index.html> and <http://cfpub.epa.gov/npdes/>

State Classifications and Standards

The Colorado WQCD decides on an appropriate level of water quality for stream reaches by first assessing how the water is used and identifying the desired future beneficial uses. Colorado surface waters may be classified for the following uses: recreation, aquatic life, agriculture, water supply, and wetlands. Numerical and narrative water quality standards are assigned to stream reaches to protect the classified uses.

For more information see: <http://www.cdphe.state.co.us/op/wqcc/index.html>

Exchange and Substitution Statutes

Colorado water law requires that if an upstream user takes water that a senior downstream user would otherwise receive, the water must be replaced at the time, location, quantity, and of suitable water quality that the downstream user experienced prior to the exchange or substitution. This protects senior downstream users and can indirectly help maintain water quality for downstream environmental and recreational purposes.

For more information see: <http://water.state.co.us/wateradmin/wateradmin.asp>

319 Projects

Section 319 of the CWA established the 319 NPS Management Program under which states, territories, and Indian tribes receive federal grant money for NPS implementation projects. The states are responsible for submitting their funding plans to USEPA, in which USEPA awards funding as long as the state's plans are within the grant eligibility requirements and procedures.

For an example project see: http://www.epa.gov/nps/Success319/state/co_mos.htm

HB 1132 Regulations

HB 07-1132 was enacted to address water quality protection in water court for change of use applications for large water transfers. Specifically, for a change of type of use of water rights that transfers more than 1,000 acre-feet of water per year, the water judge is allowed to include a term or condition that addresses decreases in water quality caused by the change.

For the exact bill text see: http://www.leg.state.co.us/clics/clics2007a/csl.nsf/fsbillcont3/B7940B3E87651B5A87257251007A063B?Open&file=1132_enr.pdf

HB 1012 Regulations

HB 07-1012 was enacted to amend C.R.S. 37-83-105(2) to state that any loaned water right used by the Board for ISF purposes will not negatively impact historic CU analysis. Additionally, HB 07-1012 under C.R.S. 37-92-103 revises the definition of "abandonment of a water right" to state that the loan of water to the CWCB for ISF use shall not be used to determine abandonment.

For the exact bill text see: http://www.leg.state.co.us/clics/clics2007a/csl.nsf/fsbillcont3/85F8683D5A1CD69887257251007B8552?Open&file=1012_enr.pdf

3.5.2.4 Local Tools

The following local tools may be utilized by nonconsumptive project and method proponents.

HB 1041 Regulations

HB 1041, codified at Section 24-65.1-101 et. seq., C.R.S., was passed in 1974 to address impacts associated with growth in Colorado. HB 1041 gave local governments a voice in the development of projects that benefit one community but cause impacts in another community. Specifically, HB 1041 Regulations allow consideration and mitigation of impacts associated with water projects. Typically, HB 1041 regulations require the project proponent to obtain a permit to construct the project. The local government may require terms and conditions in the permit to mitigate environmental, social, and economic impacts associated with the project.

HB 1280

HB 08-1280 (codified at Section 37-92-102(3), C.R.S.) provided needed protections to lessors of water to the state's ISFs program. Passed in 2008, the bill removed the threat of abandonment from water rights leased or loaned to the CWCB. It also ensured the right's historical CU would not be diminished for the duration of the lease/loan.

Local Land Use Regulations

Counties and municipalities have other land use tools available to protect water quality and even require mitigation of water projects. For example, municipalities may adopt a watershed ordinance to protect the watershed above its water supply intake. Special use permit regulations can also be structured to require mitigation of a project.

Conservation Easement

A conservation easement is a legal agreement between a landowner and a qualified land organization that restricts the amount and type of development that can occur on the property. This may prevent the landowner from selling or transferring water rights associated with the property. In Colorado, land owners are eligible for a state tax credit and conservation easements have been used to preserve open space and keep land in agriculture in perpetuity.

Recreational In-Channel Diversions Statute and Regulations

These regulations provide authority for local governments to seek RICDs. See Section 4.3.3 for more detail.

Stream Restoration Projects

As competition for water resources increases, local communities are looking for stream restoration projects that utilize less water. These projects often provide habitat enhancement to stream reaches that experience low flow conditions without requiring increased flows. Grants are often available for these projects.

Voluntary Flow Management Programs

These are programs in which reservoir operations are modified to provide recreational flows for downstream users. Dillon Reservoir has been operating voluntarily to optimize downstream flows for boaters for specific periods of time to benefit recreation and the environment.

Water System Re-optimization

The operation of major water systems can be optimized to enable a better balance between consumptive and nonconsumptive needs. Numerous tools are available to determine if re-operation of the system will provide additional benefits to both consumptive and nonconsumptive water users.

3.5.2 5 Multi-stakeholder and Market Based Tools

Following are examples of multi-stakeholder and market based tools that could be utilized to protect or enhance nonconsumptive needs

Multi-Party Voluntary Flow Management Programs

Multi-party programs in which river flows are managed to provide recreational flows for downstream users. For example, the Arkansas River Recreation Management Plan includes the BLM, Colorado DNR's Division of Parks and Outdoor Recreation (DPOR), the USFS, and CDOW. The objective of this plan is to emphasize the Arkansas River Headwaters Recreation Area's natural resources, sustainability, and public land health, while respecting private property and embracing education, recreation, and commercial activities. In some situations, these plans may be of use when RICDs or instream-flow water rights may not be exercised due to water rights constraints.

Water Court Decree Stipulations

In order to obtain a water right in Colorado, an application must be filed with the appropriate water court. All applications are filed in the "resume" and local newspaper. Any person may submit a statement of opposition within two months after the water court publishes its resume. The water referee manages the application and statement(s) of opposition. After the referee's ruling, parties may protest, initiating water court litigation. At trial, the parties either settle or the water judge decides whether the application is granted or denied. This process enables water right holders to protect their water rights and apply for new rights.

Decrees for Piscatorial Use

In order to obtain a decreed water right, the applicant must show that the water is being put to beneficial use. Piscatorial use is considered a beneficial use, usually in the context of a storage water right. Water rights for piscatorial uses have been granted at a number of locations, including Taylor Reservoir where the concept of using releases from storage to protect ISFs was first developed when the Upper Gunnison River Water Conservancy District filed for enough water for a second filling of the reservoir. Other examples with decrees for piscatorial use include Elkhead and Wolford Reservoirs.

Temporary Water Transfers

Water rights may be donated to the CWCB for ISF use. The donation of senior water rights is especially beneficial to the ISF Program. Water rights may also be donated on a temporary basis, providing additional flows to decreed ISF rights for a period of time. Special lease agreements between the CWCB and other governmental agencies, including the BLM and the Colorado DPOR have occurred where leased water supplemented ISF water rights.

Water Sales

Water rights may be sold and purchased for conservation and environment benefits. They must be donated to the CWCB or utilized for a recognized beneficial use. The mission of the Colorado Water Trust is to acquire and provide assistance to others in acquiring water rights for stream flow enhancement. The Nature Conservancy and Trout Unlimited also strive to acquire water for conservation purposes.

Subordination Agreements

A subordination agreement is a legal agreement by which a senior water right holder allows a junior right holder to be satisfied out of priority. Subordination agreements may be developed to allow senior water right holders to subordinate their water rights to a junior ISF water right, providing environmental benefits. The State Engineer's Office will generally not approve selective subordinations, but will administer a subordination that is authorized by a water court decree.

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