

TECHNICAL ASSISTANCE FOR BASIN ROUNDTABLES, CWCB, AND IBCC



February 2012

Colorado's Nonconsumptive Needs and Project and Methods Implementation

Overview

In 2005, the Colorado General Assembly passed the Colorado Water for the 21st Century Act (House Bill [HB] 05-1177). The Act set up a framework that provides a permanent forum for broad-based water discussions, and it created two new structures—

1. The Interbasin Compact Committee (IBCC), a statewide committee that addresses issues between basins; and
2. The basin roundtables, which were established in each of the state's eight major river basins plus the Denver Metro area.

One of the responsibilities of each basin roundtable is to prepare a water needs assessment for the environment and recreation, and projects and methods to meet those needs.

Environmental and recreational attributes are important to the State of Colorado and to the quality of life for Colorado's citizens. Because of this, the state invested significant resources into the identification and evaluation of nonconsumptive needs for water to protect these attributes, including approximately \$1 million to fund the nonconsumptive needs assessment (NCNA) portion of the Statewide Water Supply Initiative (SWSI) 2010. Additionally, the state approved approximately \$7 million (33 percent) of the Water Supply Reserve Account (WSRA) grant program for nonconsumptive studies, projects, and methods.

This fact sheet describes progress made to date by the basin roundtables in completing this assessment of their nonconsumptive needs, and identifying projects and methods to meet those needs.

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Identifying Nonconsumptive Water Needs

The NCNA effort has included an extensive inventory, analysis, and synthesized mapping effort. **Figure 1** shows the process that was utilized by the Colorado Water Conservation Board (CWCB) and basin roundtables in completing their NCNAs. Figure 1 can also be found in the SWSI 2010 Final Report, Section 2, Figure 2-3; the complete Section 2 can be downloaded from the CWCB's website (<http://cwcb.state.co.us/water-management/water-supply-planning/Documents/SWSI2010/SWSI2010Section2.pdf>). The basin roundtables utilized environmental and recreational mapping to identify where the nonconsumptive focus areas are in their basins.

The focus area maps developed by each basin roundtable are based on a common set of environmental and recreational attributes and represent where Colorado's important water-based environmental and recreational attributes are located (**Figure 2** on the following page).

The CWCB developed the environmental and recreational focus area mapping for the following purposes:

- The maps are intended to serve as a useful guide for water supply planning so that future conflicts over environmental and recreational needs can be avoided.
- The maps can assist in identifying environmental and recreational water needs status, such as where needs are being met, where additional future study may need to take place, and where implementation projects in the basin have been identified.
- The maps can help basins plan for the water needs of species of special concern so that they do not become federally-listed as endangered or threatened in the future.
- The maps can provide a basis for collaborative efforts for future multi-objective projects.

Figure 2 comes from the Nonconsumptive Needs Assessment Focus Mapping Final Report, which can be found on the CWCB SWSI 2010 website (<http://cwcb.state.co.us/water-management/water-supply-planning/Pages/SWSI2010.aspx>), under SWSI 2010 Full Final Report (sections), Appendix C.

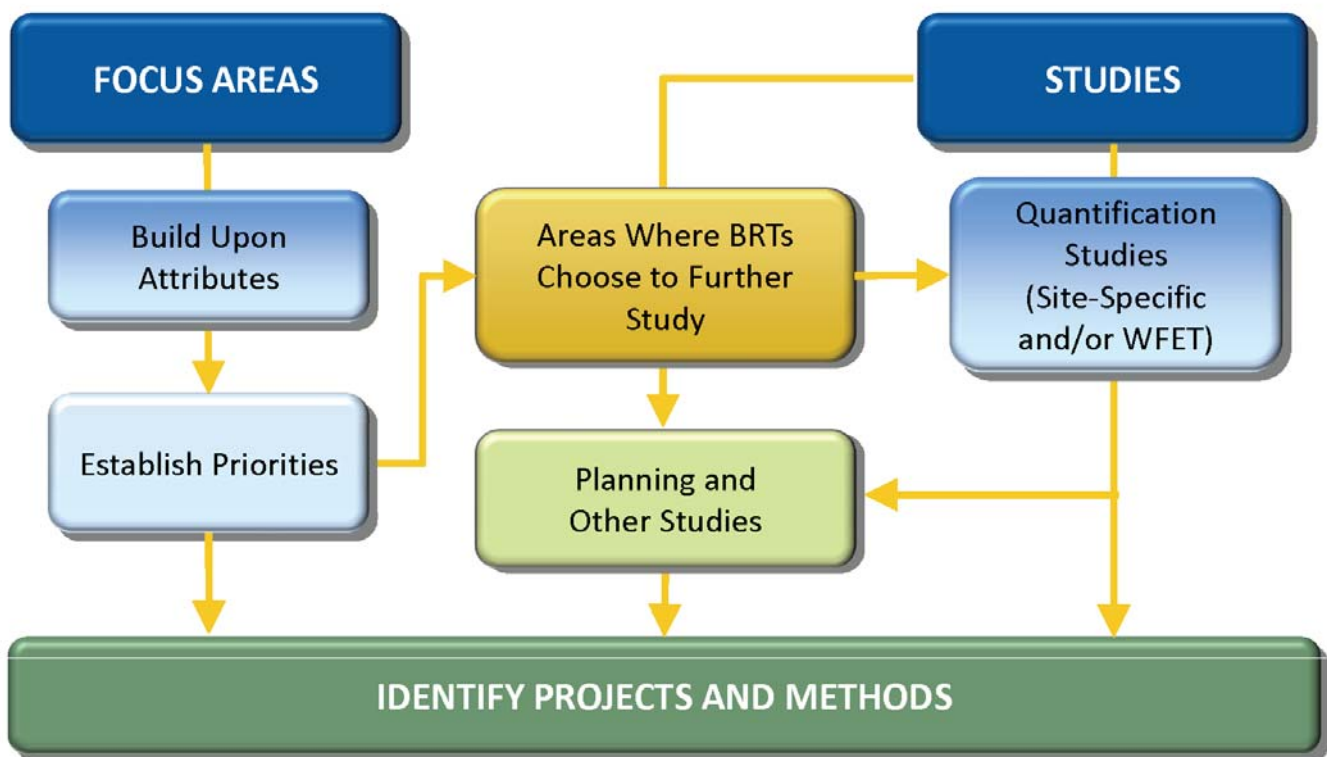


Figure 1. Nonconsumptive Needs Assessment Methodology

Statewide Nonconsumptive Needs Assessment Focus Map



Yampa/White Basin
Major Environmental and Recreational Segments

- Environmental Segments
- Recreational Segments

Colorado Basin
Environmental and Recreational Features at Risk

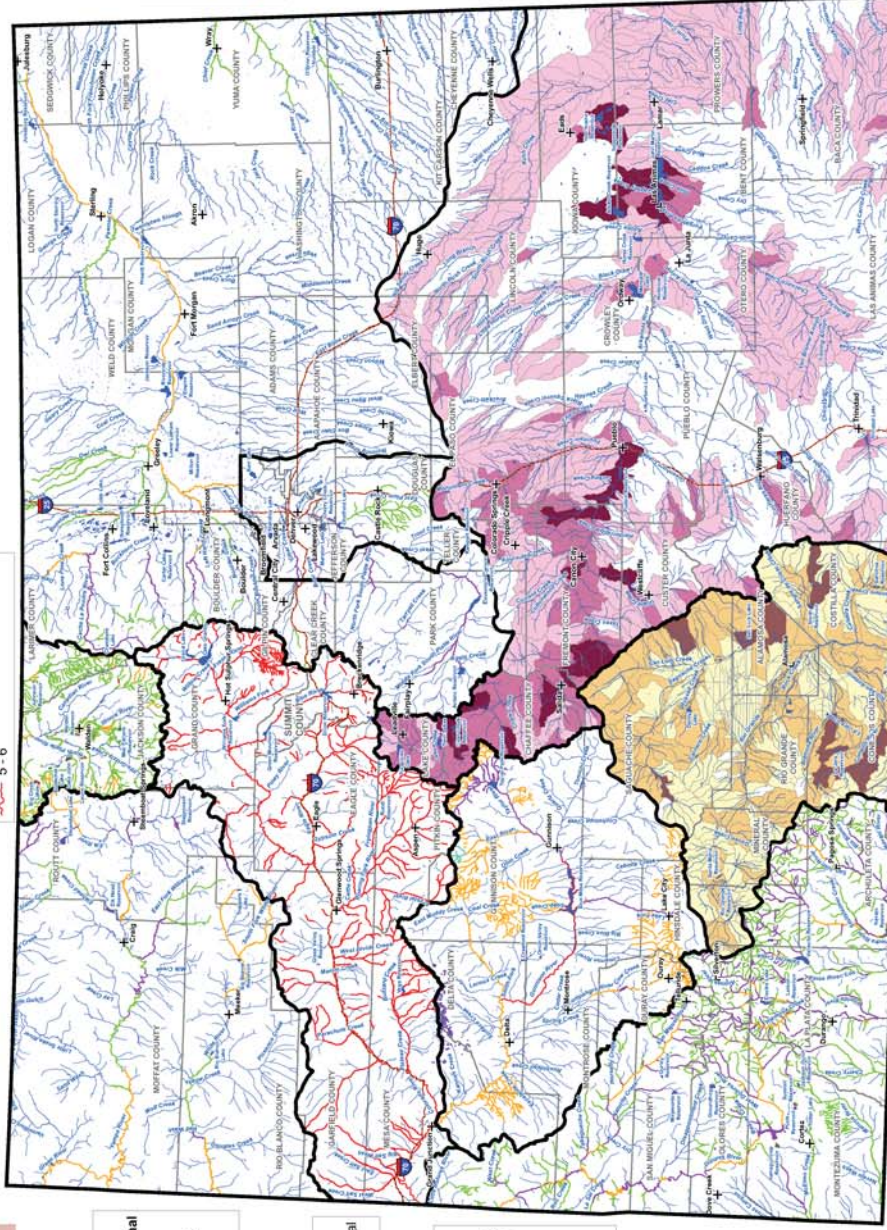
Gunnison Basin
Major Environmental, Recreational and Scientific/Educational Segments

- Environmental Segments
- Recreational Segments
- Scientific and Educational Segments



North Platte Basin
Environmental and Recreational Subcategory Count by Stream Segment

- 1 - 2
- 3 - 4
- 5 - 6



Southwest Basin
Environmental and Recreational Subcategory Count by Stream Segment

- 1
- 2 - 3
- 4 - 6

Rio Grande Basin
Weighted Environmental and Recreational Subcategory Count by HUC

- 1 - 3
- 4 - 5
- 6 - 8

Arkansas Basin
Environmental and Recreational Subcategory Count by HUC

- 1 - 2
- 3 - 4
- 5 - 7

Basemap Legend

- Rivers and Streams
- Lakes and Reservoirs
- Cities and Towns
- Highways
- Counties
- Basins



** Note: See individual basin maps and documentation in Appendix D of the NENA Mapping Report for detailed Needs Assessment information.



Figure 2. Nonconsumptive Needs Assessment Focus Map

Quantifying Nonconsumptive Water Needs

The Colorado and Yampa-White, Green, Arkansas, and Southwest Basin Roundtables utilized WSRA grant funds to quantify the flows needed to sustain nonconsumptive attributes in their basins. Several long-standing methods exist for quantifying water needs for recreation and the environment, but these methods are: (i) designed for assessing individual river segments, (ii) primarily oriented toward fish (i.e., they do not address other ecosystem needs such as maintaining riparian areas), and (iii) expensive to implement (currently \$50,000-\$75,000 for results applicable to tens of kilometers), making it cost-prohibitive to apply them across all streams and rivers in a watershed.

To fill the need for a broadly applicable assessment of flow related to nonconsumptive attributes, the Colorado and Yampa-White Basin Roundtables have used the Watershed Flow Evaluation Tool (WFET) study.

The WFET provides a regional framework for examining the risk of ecological change related to stream flow alteration, at a watershed or regional level. The WFET can help identify watershed areas where the historical alteration of stream flow has either increased risk or decreased risk for a given attribute, such as cold water fishery, warm water fishery, and sustaining or recovering cottonwoods. The WFET can also be used to examine ecological responses to future streamflow

scenarios resulting from new water development projects, a compact call, or climate change. These flow-ecology risks are mapped as illustrated in **Figure 3**. This allows stakeholders to assess quickly where flow-related issues in a given area need to be further investigated. Both of these roundtables also used survey data to assess how current water levels provide raft and kayaking opportunities.

In addition to the WFET studies, several roundtables utilized WSRA funding to develop site-specific quantification information. The Colorado Basin Roundtable conducted site-specific studies as part of the alternatives process for Wild and Scenic designation and to validate the WFET results. The Arkansas Basin Roundtable examined two locations in the basin. These include a wetland complex near John Martin Reservoir and Nee Noshe Reservoir in the Great Plains Reservoir System in the Lower Arkansas Basin.

Lastly, the Southwest Basin Roundtable is completing a study called *A Way Forward* to assist the Dolores River Dialogue.

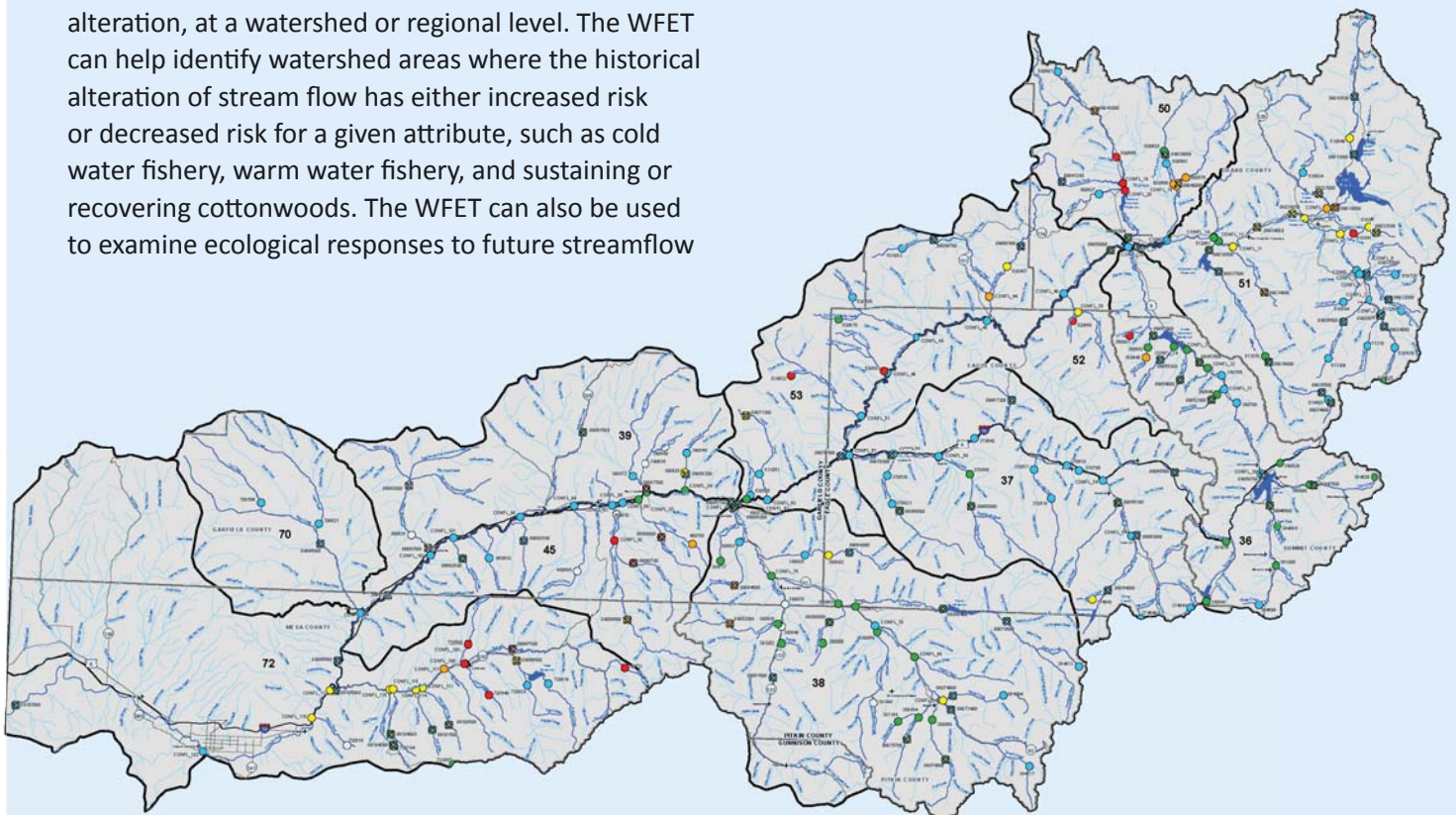


Figure 3. The WFET quickly allows stakeholders to gain an understanding of flow related risk for ecological attributes.

Integrating Consumptive and Nonconsumptive Needs

CWCB has invested significant resources in creating the Basin Needs Decision Support System (BNDSS). When complete, the database will be able to track and locate both consumptive and nonconsumptive projects and methods. A comprehensive nonconsumptive database has been completed as part of the SWSI 2010 efforts. This

database is now being integrated with the BNDSS. CWCB uses this database to answer specific questions from the roundtables, such as those found in Figure 4.

In addition, some roundtables are exploring the interactions between consumptive and nonconsumptive needs. The Southwest Basin

Roundtable created a geographic information system (GIS) tool that shows where consumptive and nonconsumptive needs overlap. The Yampa-White-Green Basin Roundtable is conducting a projects and methods study, which will model and optimize projects using nonconsumptive, agricultural, municipal, and industrial needs assessments.

Nonconsumptive Projects and Methods

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 e-mail 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 gathered information on individuals and organizations to follow up with the data collection effort. Since the February 2010 meeting, an additional 57 meetings were held to gather data on additional projects, methods, and studies, as shown in **Table 1**. CWCB created a GIS database of this information in partnership with the Colorado Basin Roundtable. CWCB has developed a flow chart to assist roundtables in determining appropriate projects on a given reach. This flow chart is available on CWCB's nonconsumptive website (<http://cwcb.state.co.us/environment/non-consumptive-needs/Pages/main.aspx>), under Key Reports, Presentations & Other Documents.

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. The

definitions used for direct and indirect protections are as follows:

- **Direct Protection** – Projects and methods with components designed intentionally to protect a specific attribute. For example, instream flows provide direct protection of fish attributes. Additionally, restoration of a stream channel would provide direct protection of aquatic species.
- **Indirect Protection** – Projects and methods with components that were not designed to directly protect 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 protected stream reach. Other examples include protective land stewardship or a wetland or bank stabilization effort that could indirectly protect aquatic species.

Table 1. Summary of Basin Roundtable Nonconsumptive Project and Methods Information

Basin Roundtable	No. Projects and Methods in Focus Areas	No. Projects and Methods Outside Focus Areas	Total No. Projects and Methods ¹
Arkansas	40	0	40
Colorado	168	35	203
Gunnison	44	15	59
Metro	See South Platte	See South Platte	See South Platte
North Platte	41	7	48
Rio Grande	59	0	59
South Platte	54	53	107
Southwest	54	53	107
Yampa-White	22	16	38
TOTAL	512	136	648

¹ Total does not include all CWCB-funded projects and instream flows

Figure 4 provides examples of statewide direct and indirect protections for cutthroat trout, state threatened and endangered warmwater fish, and riparian and wetland areas. In this example, cutthroat trout have the highest percentage of direct protections and riparian and wetland areas have the highest percentage of indirect protections.

Funding Opportunities

The SWSI 2010 report summarized funding opportunities for implementation of nonconsumptive projects and methods. CWCB's funding mechanism and resources include:

- Water Supply Reserve Account
- Instream Flow Acquisition Program
- Healthy Rivers Funding
- Colorado Watershed Restoration Program
- Multi-Objective Watershed Protection Program
- Fish & Wildlife Resources Fund
- Species Conservation Trust Fund

Colorado Parks and Wildlife also have funding resources through the Fishing is Fun and Wetlands for Wildlife programs. Examples of other programs that have funded nonconsumptive project implementation include:

- Great Outdoors Colorado (GOCO)
- Natural Resources Conservation Service Programs (esp. for private lands)
- National Fish and Wildlife Foundation
- North American Wetlands Conservation Council
- Fundraising / partnering (e.g., with water providers and conservancy districts)

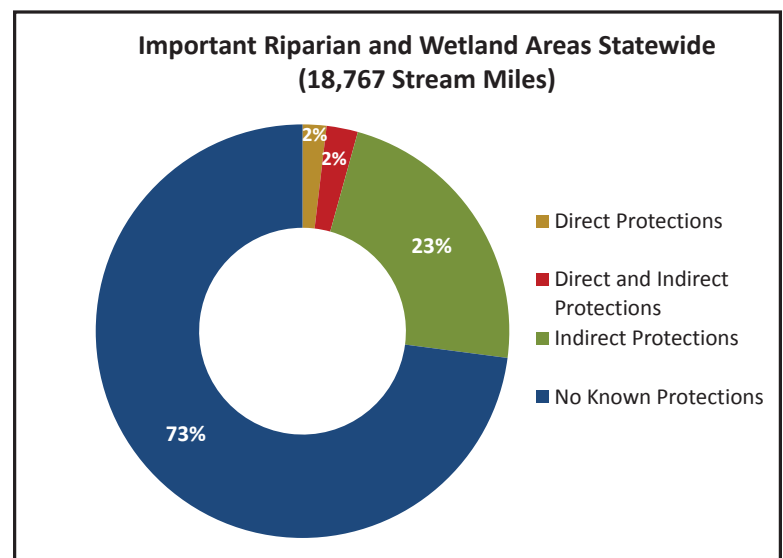
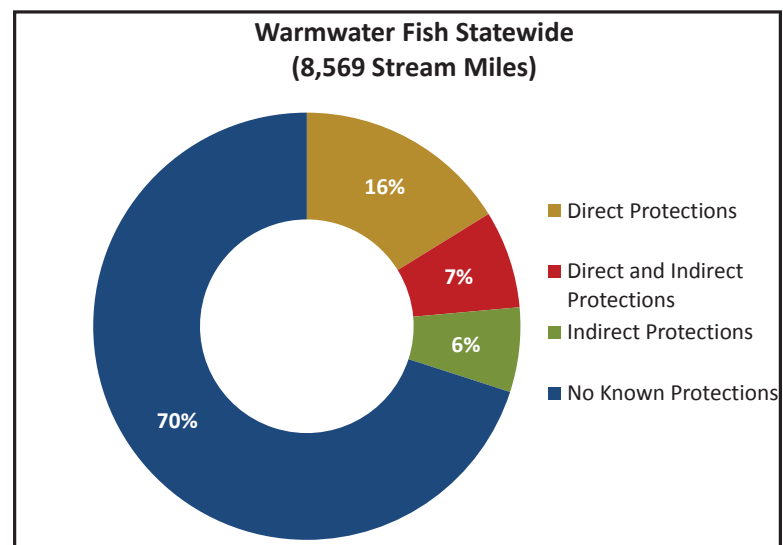
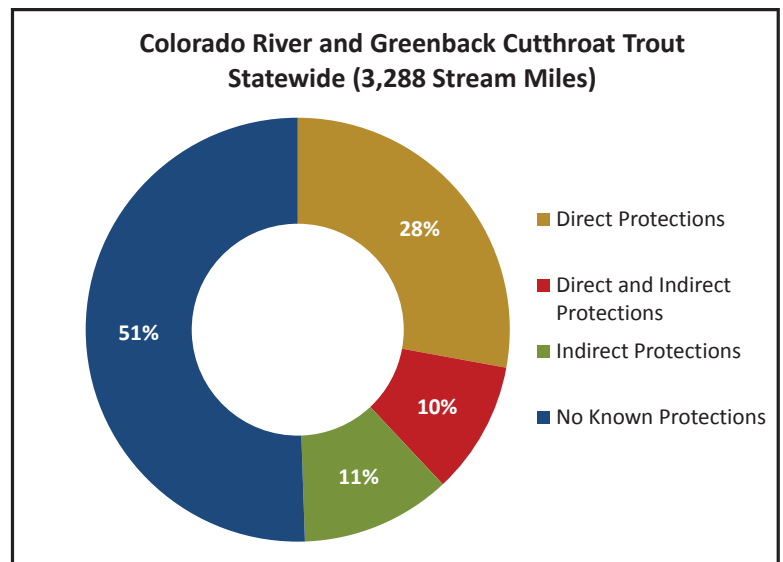
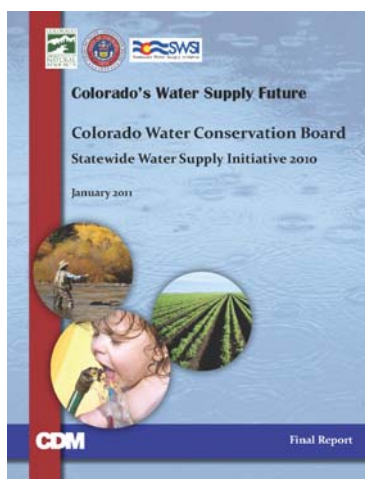


Figure 4. Statewide Direct and Indirect Protections

Nonconsumptive Projects and Methods Implementation Decision Tree

The decision tree in **Figure 5** was developed in partnership with the Colorado Basin Roundtable to assist in determining what types of projects or methods may be needed in a given reach. The flow chart focuses on what types of protection or restoration may be needed for a given water body. Examples of restoration activities include improving habitat, water quality, or flow conditions in a

given reach. For water body protection, projects and methods could include policy mechanisms or voluntary agreements. The flow chart illustrates that there are many different options for developing nonconsumptive implementation plans and completing projects and methods for nonconsumptive needs in the future.

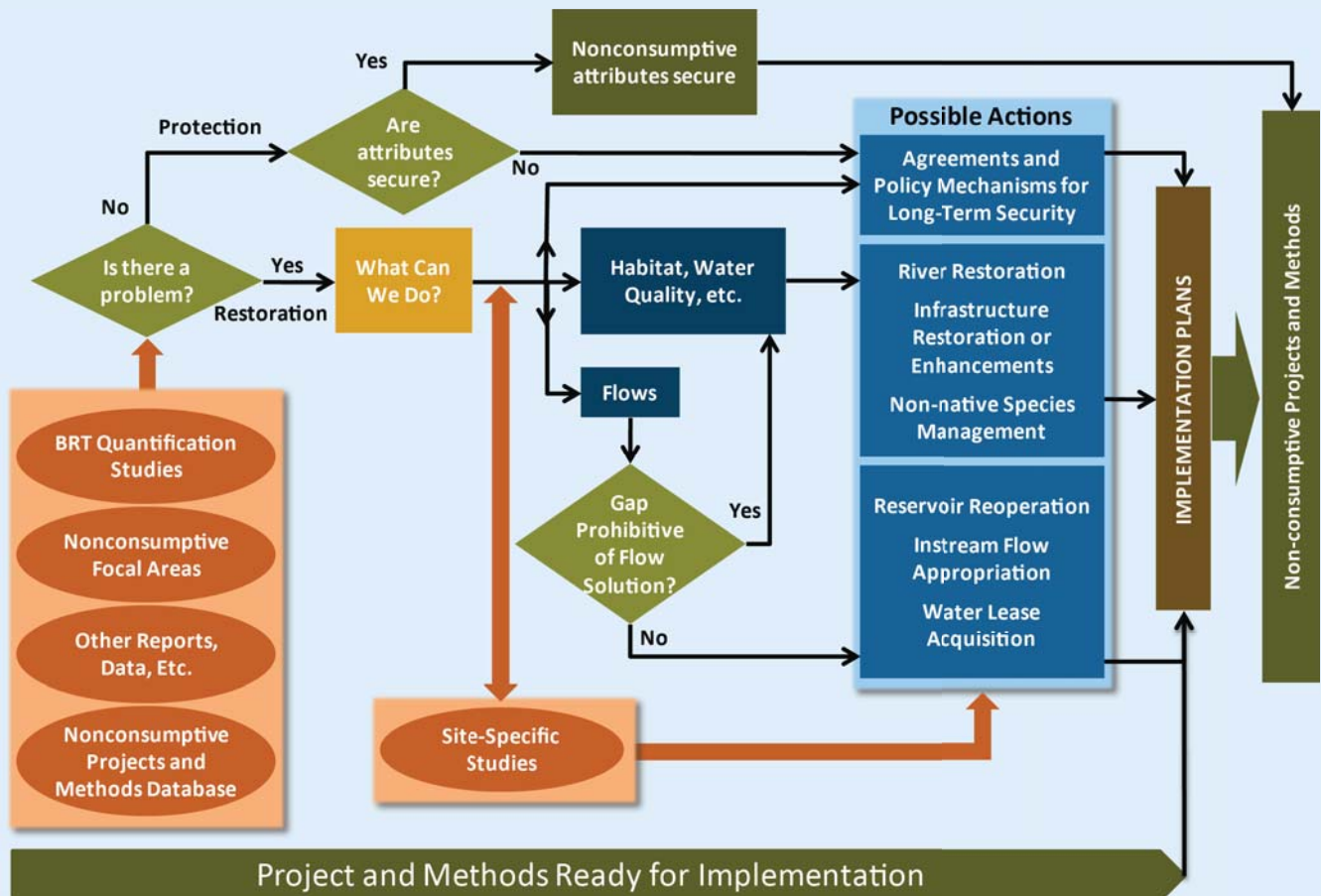


Figure 5. Nonconsumptive Projects and Methods Implementation Framework

Next Steps

Based on the roadmap memo from May 2011 and the IBCC nonconsumptive subcommittee work, the CWCB will work with the basin roundtables to accomplish the following based on the information that has been collected to date.

1. Action request for the basin roundtables:
 - a. Develop Nonconsumptive Implementation Plan: Building on information previously compiled for SWSI 2010, identify nonconsumptive geographic and/or seasonal gaps (January-June 2012) and then suggest and prioritize projects and methods that can fill those gaps in a strategic manner (July-December 2012). Using the tool box described below, the projects should identify initial cost estimates, potential partners, and whether any entity has agreed to take the lead.
 - b. Initiate Three to Five Nonconsumptive Projects: Using the basin's Nonconsumptive Identified Projects and Processes list, determine how to implement three to five projects or methods that meet identified nonconsumptive needs by the end of 2012.
 - c. Identify one or more pilot projects that integrate nonconsumptive with consumptive projects/needs by end of 2012. The pilot project can count as one of the three to five nonconsumptive projects as long it clearly meets the nonconsumptive needs gap.
 - d. Define technical questions related to nonconsumptive needs that need to be answered in your basin by the end of 2012. These are questions that can be queried in the nonconsumptive database, such as how many projects are supporting a particular attribute, or additional technical questions such as those concerning how a portfolio may affect flows in a given reach, etc.
 2. CWCB will develop a tool box for nonconsumptive, starting with a list of what resources are already available to inform the above discussions and how to access those resources; this will include summaries of mapping exercise in Southwest and modeling exercise in the Yampa-White-Green.
- These tasks will become the basis of nonconsumptive implementation plans for each basin roundtable.



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