Protecting and Restoring Colorado's Rivers and Freshwater Resources

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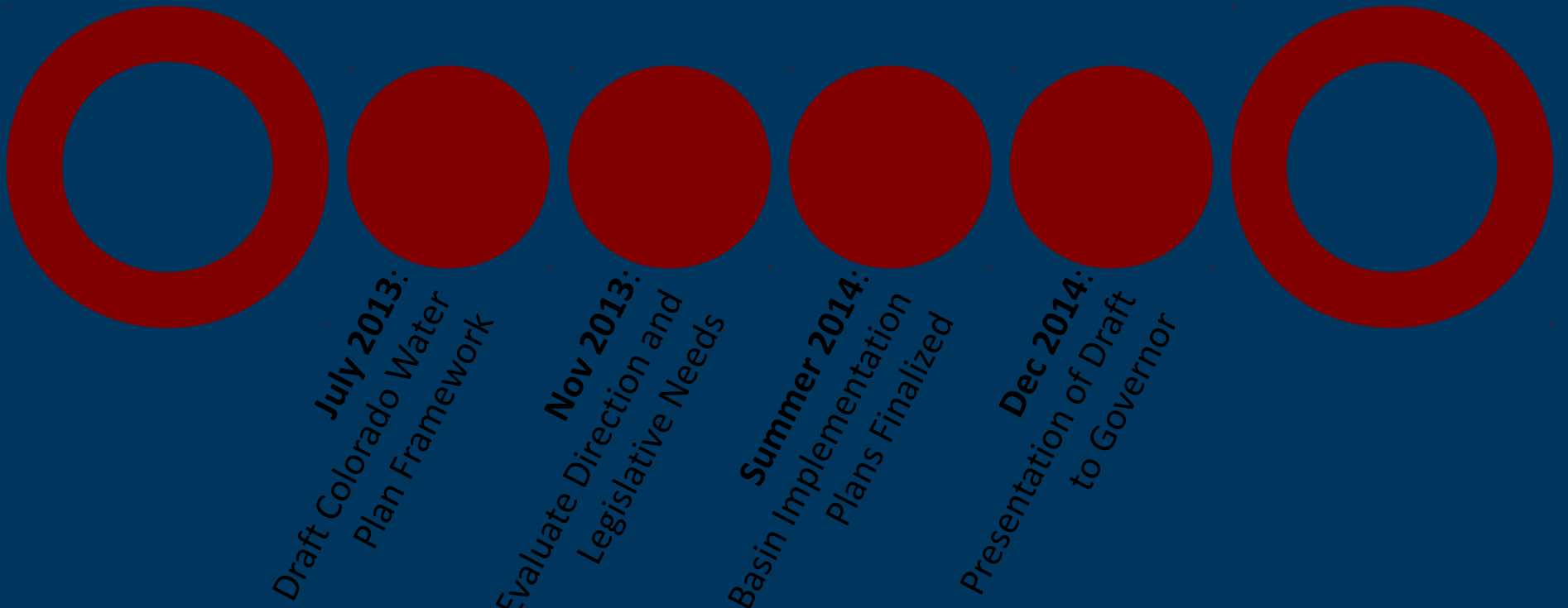
Timeline: Colorado Water Plan



IBCC

Basin Roundtables

Statewide Water Supply Initiative (SWSI) 2010

Basin Implementation Plans

Colorado Water Plan

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Planning Colorado's Water Future

What does it mean to "meet conservation needs" for the Colorado Water Plan?

What Tools and Resources are available?

- Identify conservation **targets/outcomes**
- Set **priorities**
- Establish **strategy**
- Measure **effectiveness**
- Inform **policy** and **management**

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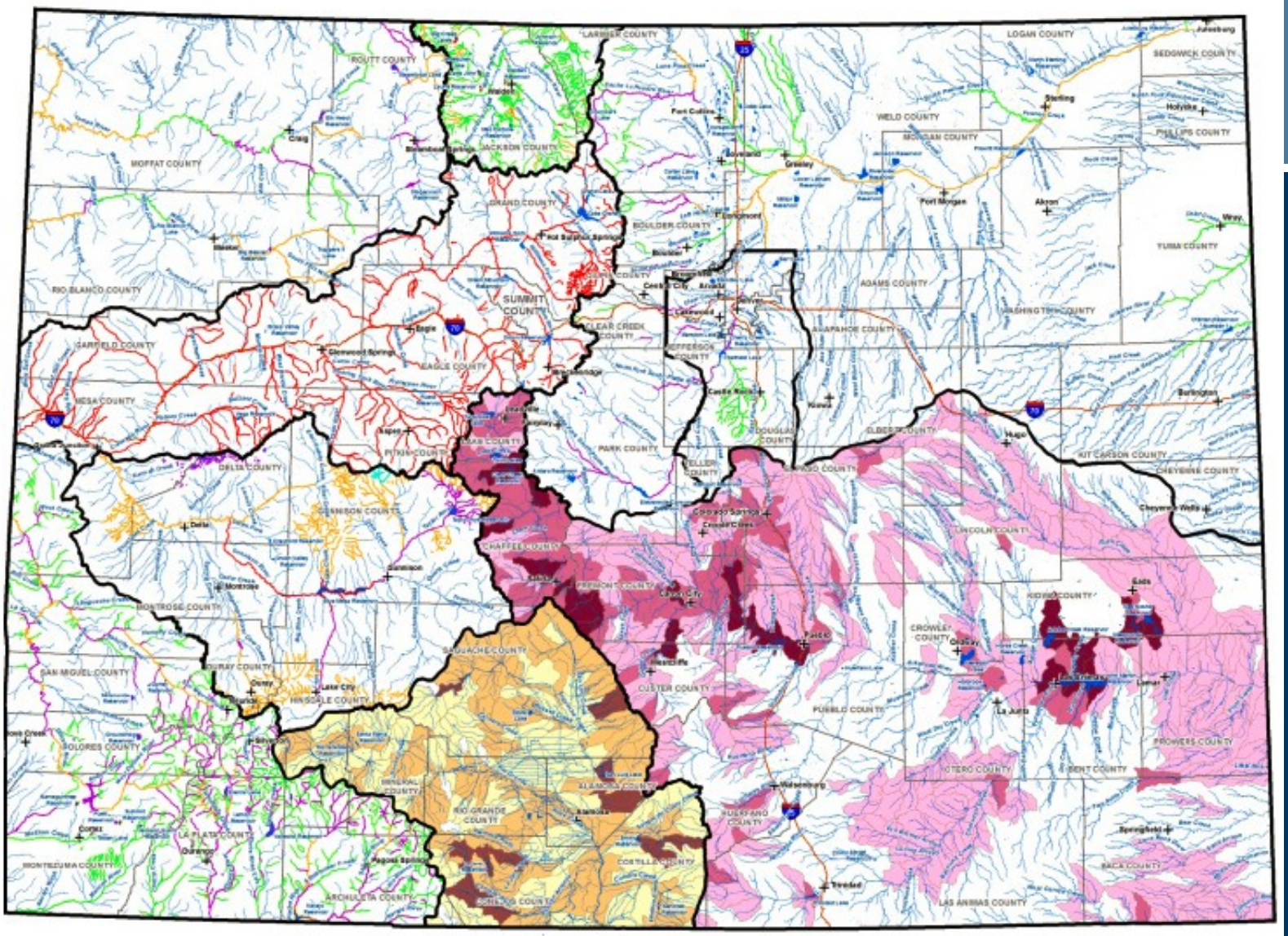
Meeting Conservation Needs



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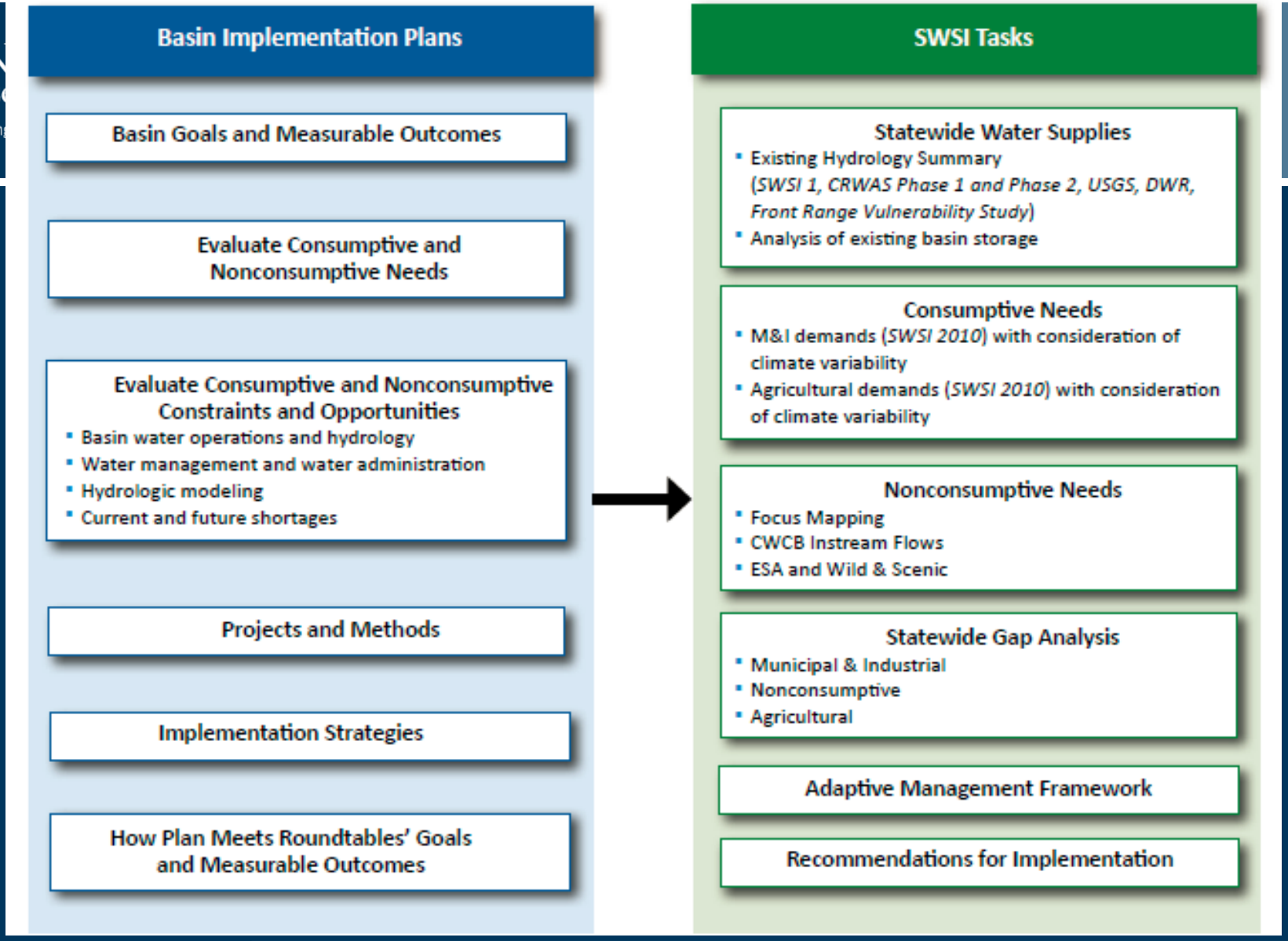
SWSI 2010 Phase I Map



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Basin Implementation Planning

Step A example: Maintain population of native fish species so that none are listed in our basin.

Step B example: Sustain 10 populations of bluehead sucker in 10 different river locations.

Step C example: Based on analysis of existing levels of protection and where attributes occur, only five populations of bluehead sucker are protected. As a result, we need to protect an additional five populations to meet our established measurable outcomes.

Step D example: For one of the five locations where protection of bluehead sucker populations is limited, moving through the decision template may lead to the determination that reservoir reoperation could achieve desired outcomes.

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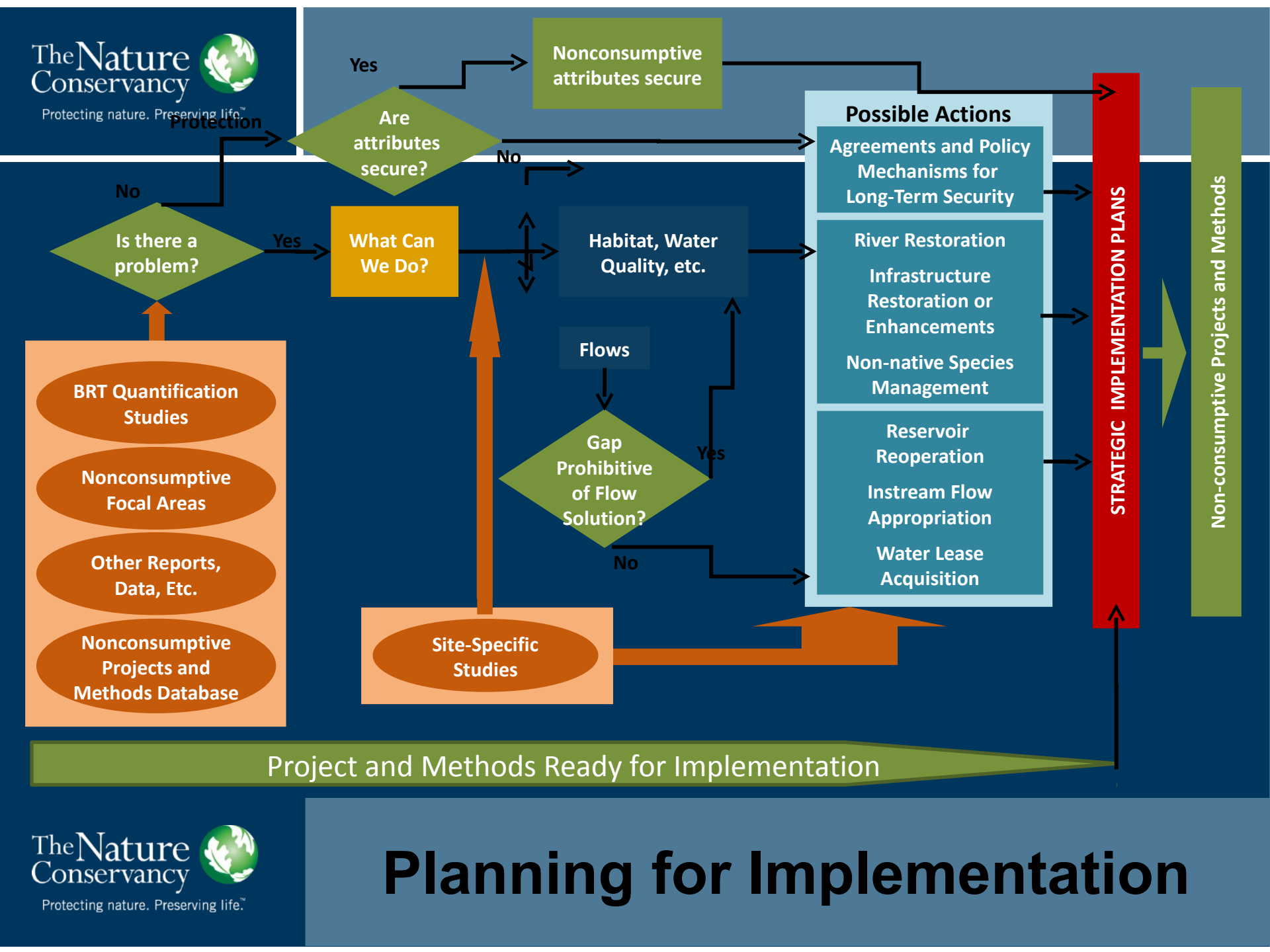
CWCB Nonconsumptive Toolbox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Yes
Nonconsumptive attributes secure
Are attributes secure?
No
Protection
No
Is there a problem?
Yes
What Can We Do?
Habitat, Water Quality, etc.
Flows
Gap Prohibitive of Flow Solution?
Yes
No
Possible Actions
Agreements and Policy Mechanisms for Long-Term Security
River Restoration
Infrastructure Restoration or Enhancements
Non-native Species Management
Reservoir Reoperation
Instream Flow Appropriation
Water Lease Acquisition
STRATEGIC IMPLEMENTATION PLANS
Non-consumptive Projects and Methods
BRT Quantification Studies
Nonconsumptive Focal Areas
Other Reports, Data, Etc.
Nonconsumptive Projects and Methods Database
Site-Specific Studies
Project and Methods Ready for Implementation
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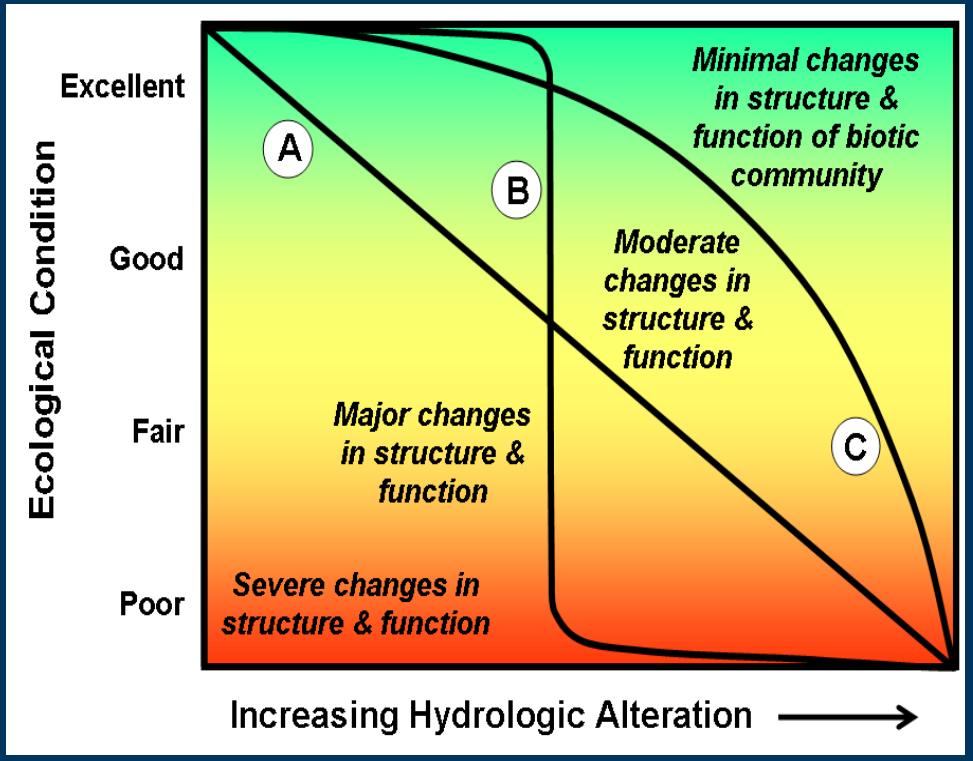
Planning for Implementation

synthesizes existing hydrologic and ecological databases from many rivers within a region to generate flow alteration-ecological response relationships.



Step 1. Hydrologic Foundation
Natural regime of floods, baseflows & droughts.

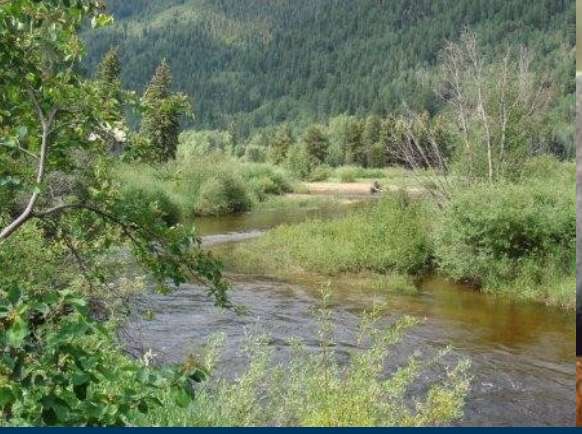
Step 2. Stream Classification
Distinguish groups of streams that are alike.

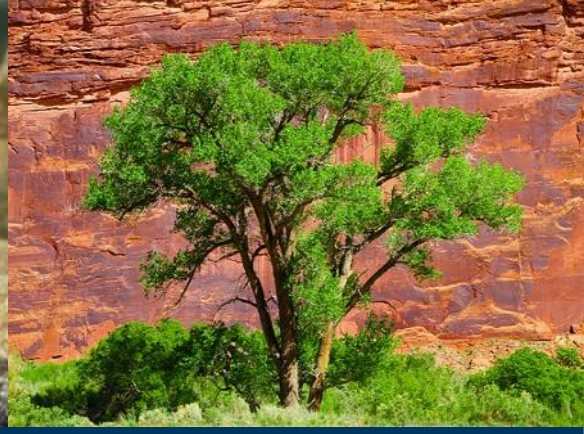
Step 3. Flow Alteration
Quantify change in peaks and lows.

Step 4. Flow-Ecology Relationships
How do populations respond to flow change?

Step 5. Implementing Policy
Environmental flows informed by flow-ecology relationships

Ecological Limits of Hydrologic Alteration (ELOHA)





Estimates flow-related ecological risk at a regional scale.

Step 1. **Model natural and developed daily streamflows**

Step 2. **Analyze the resulting flow time series**

Step 3. **Describe flow ecology relationships**

Step 4. **Map flow-related risk for cold-water species, native warm-water species, and riparian plant communities**

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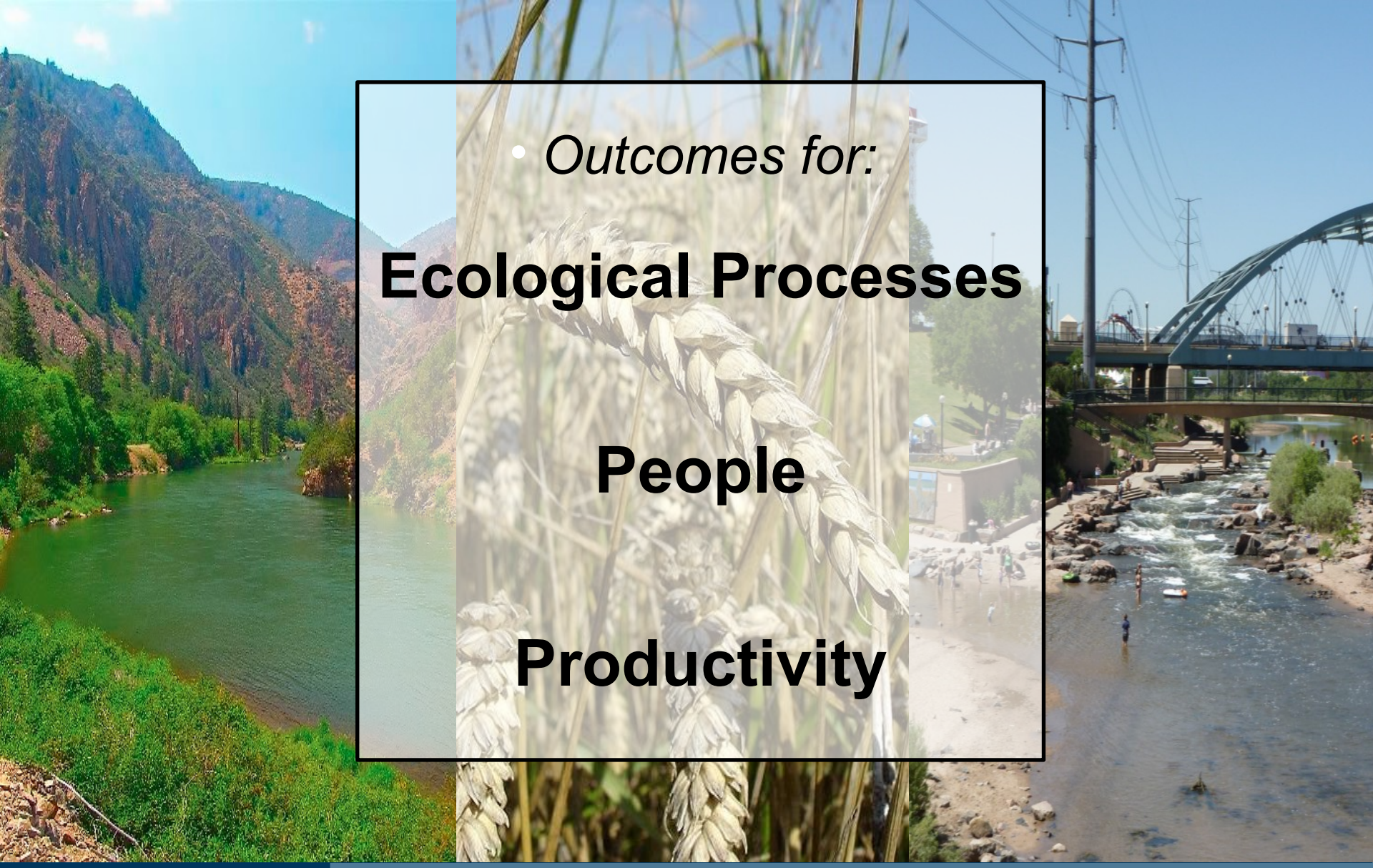
Watershed Flow Evaluation Tool (WFET)



- *Outcomes for:*

Ecological Processes

People

Productivity

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Healthy Rivers Framework

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- Collaborating with partners
- Data organization/integration
- GIS analysis
- Categorizing threats & risks
- Identifying outcomes
- Filtering for priorities
-

Science to Assess Conservation Targets

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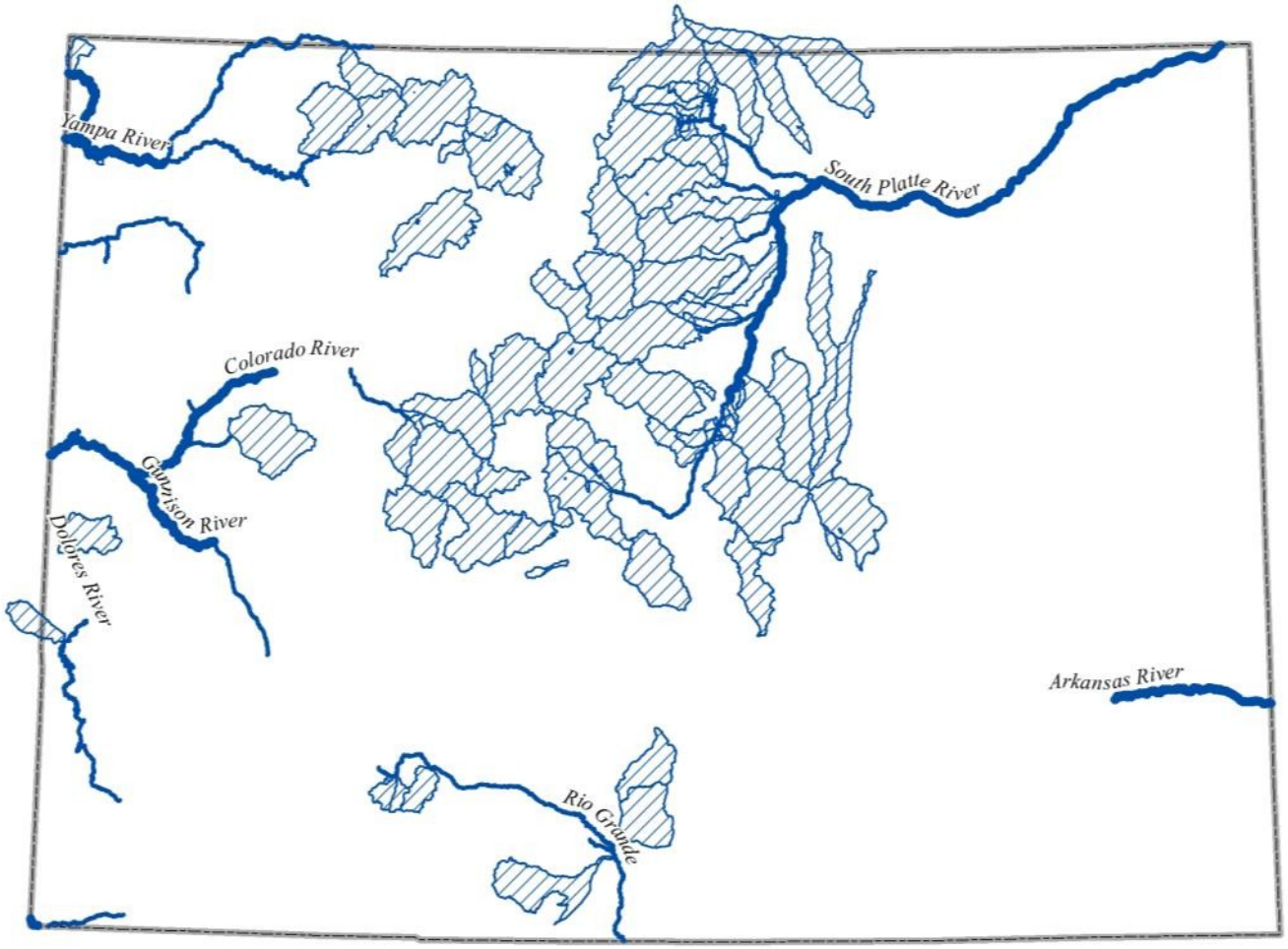

Conservation Targets

- ESA T&E
- G1/T1 species & natural communities

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Category 1: Irreplaceable

Conservation Targets

- ESA candidate
- G2/T2 species and natural communities
- Multi-agency agreement species

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Category 2: At risk of becoming irreplaceable

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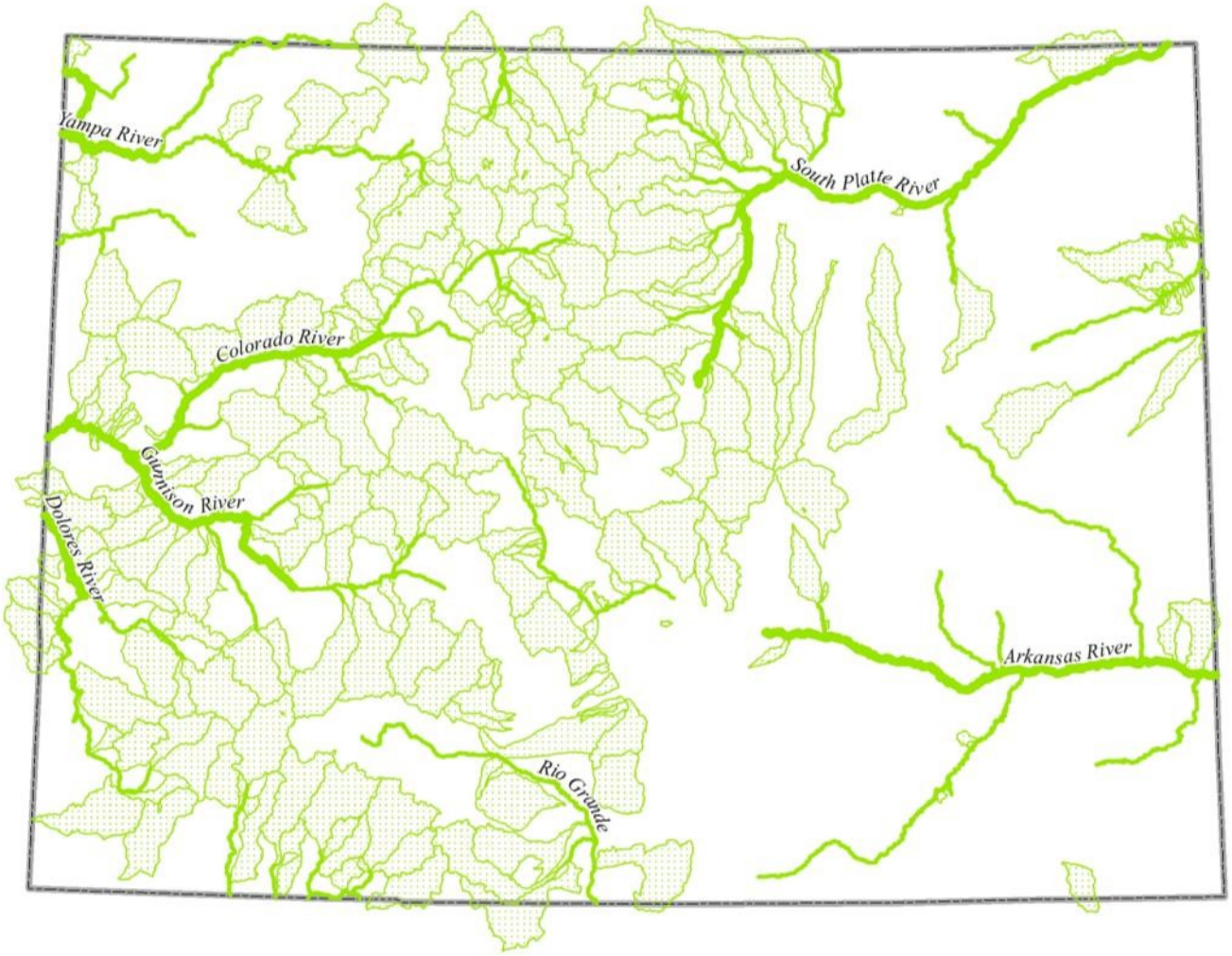
Conservation Targets

- State T&E
- S1/S2 species & communities



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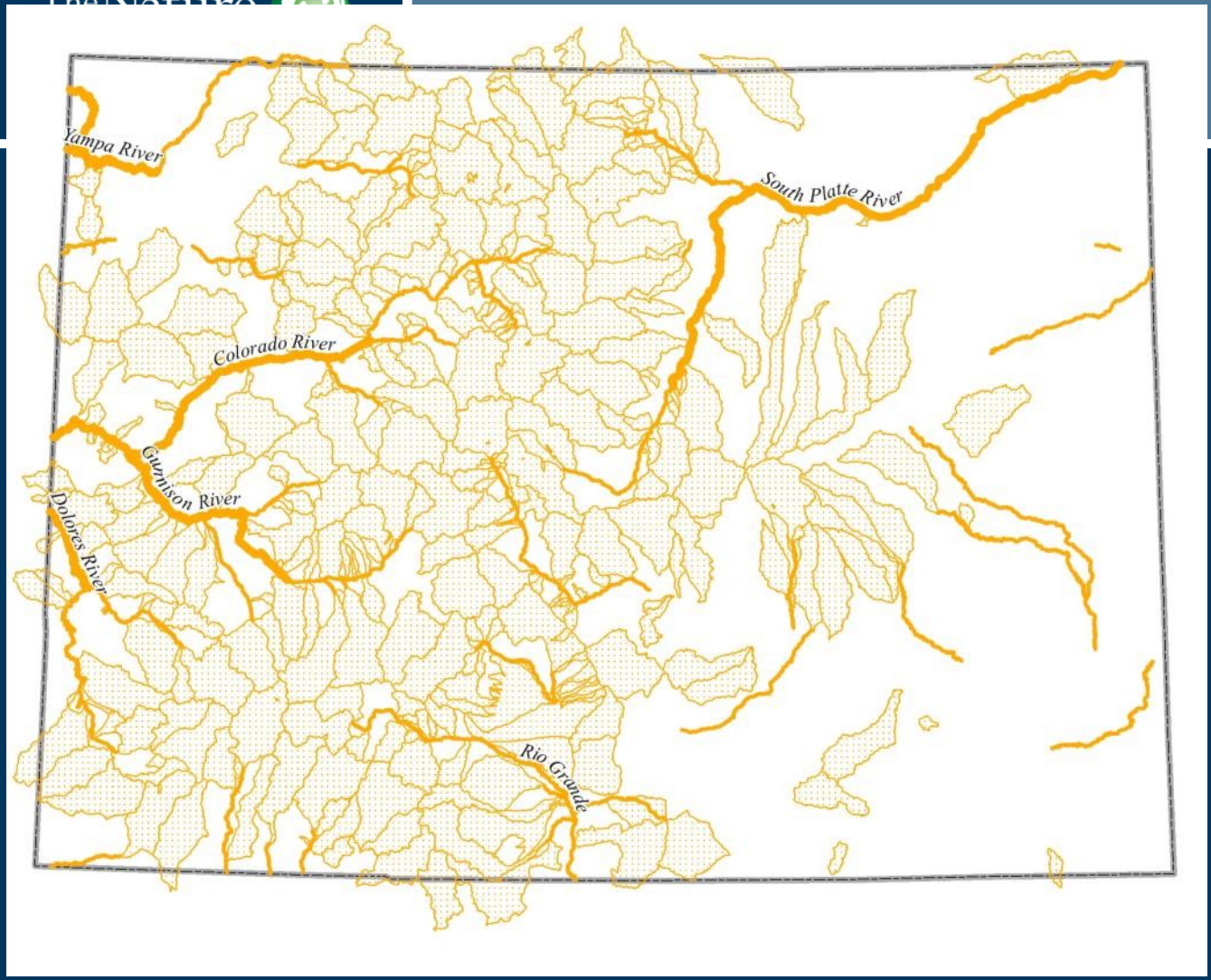
Category 3: Imperiled in Colorado



Conservation Targets

- State T&E
- S1/S2 species & communities

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Category 4: Characteristic of Colorado

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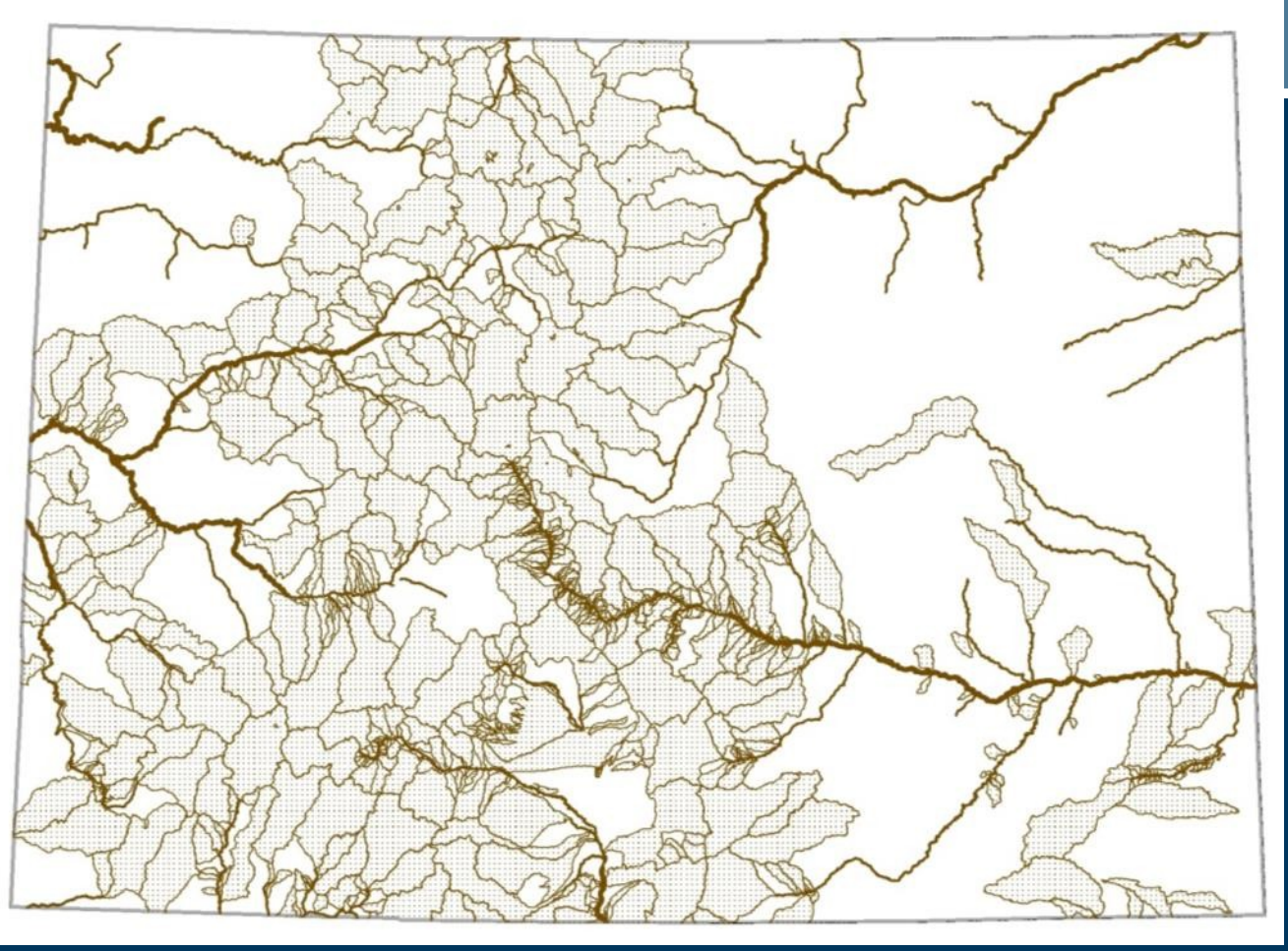
Conservation Targets

- Identified by Non-consumptive Needs Assessment (BRTs)



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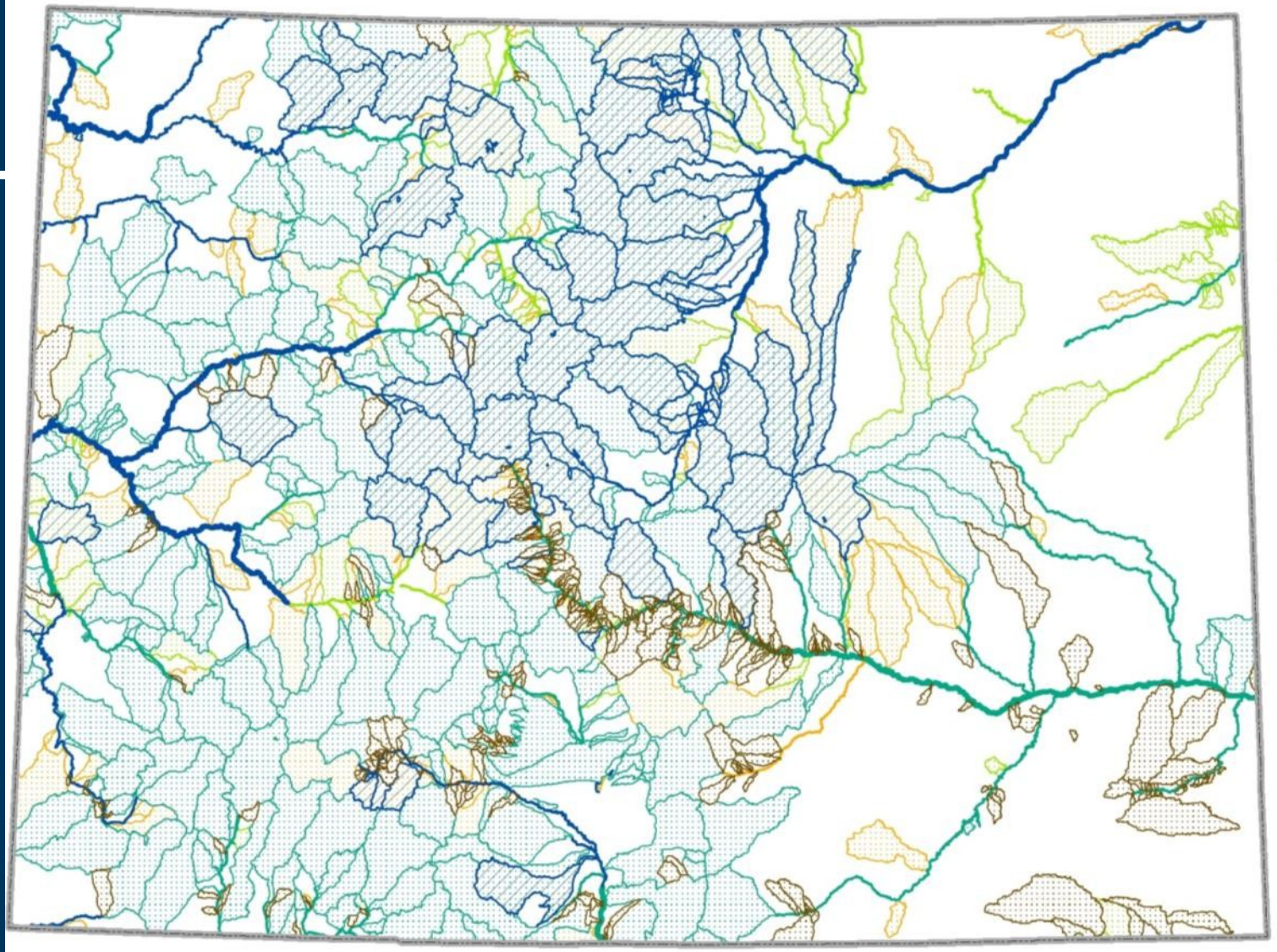
Category 5: Locally Valued



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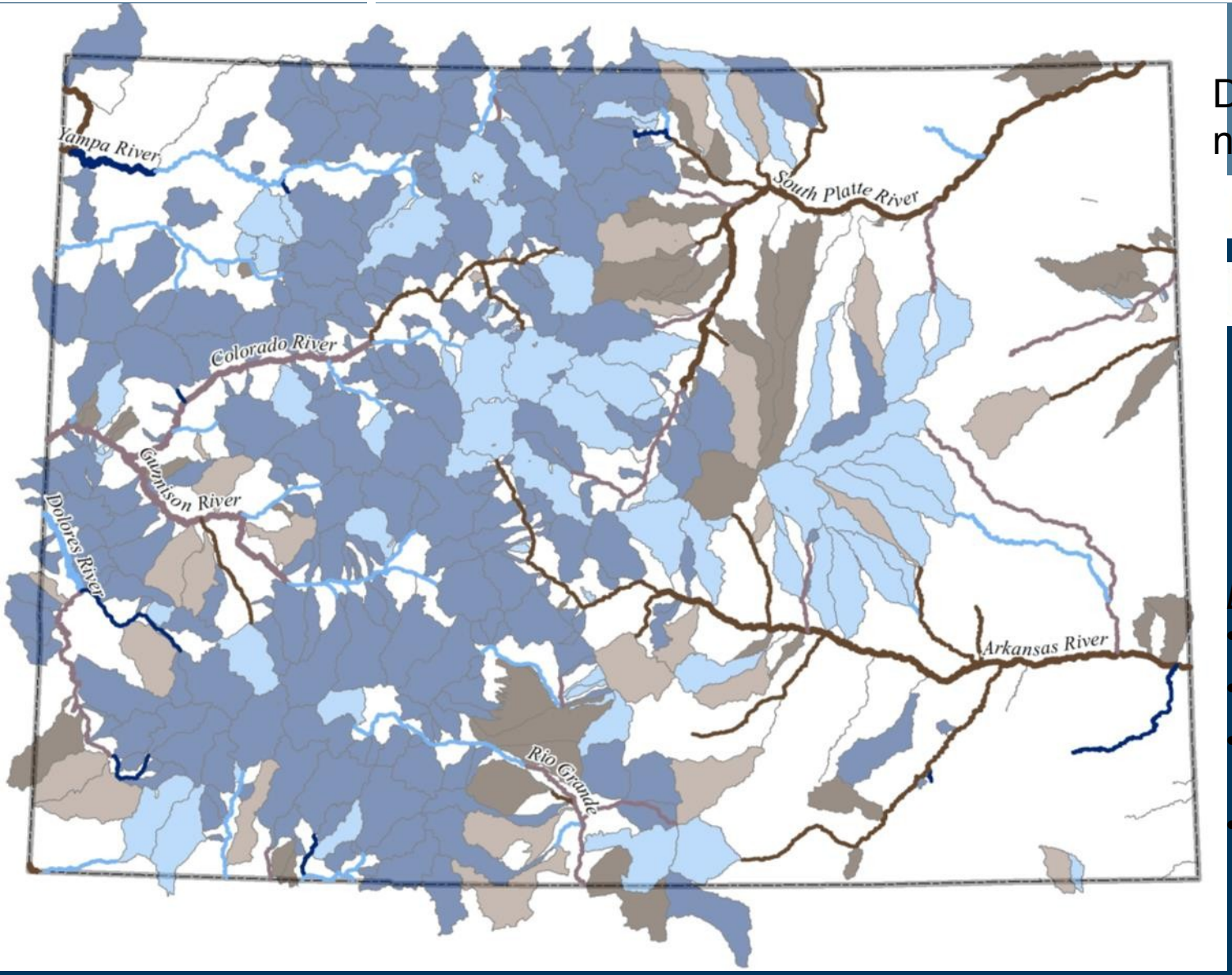
Inventory of Conservation Targets



Departure from natural flow regime:

- high
- med-high
- med-low
- low

Derived from:

- *Consumptive Use*
- *Reservoir Density*
- *%Watershed* *(Not Natural)*
- *% Riparian Zone* *(Not Natural)*

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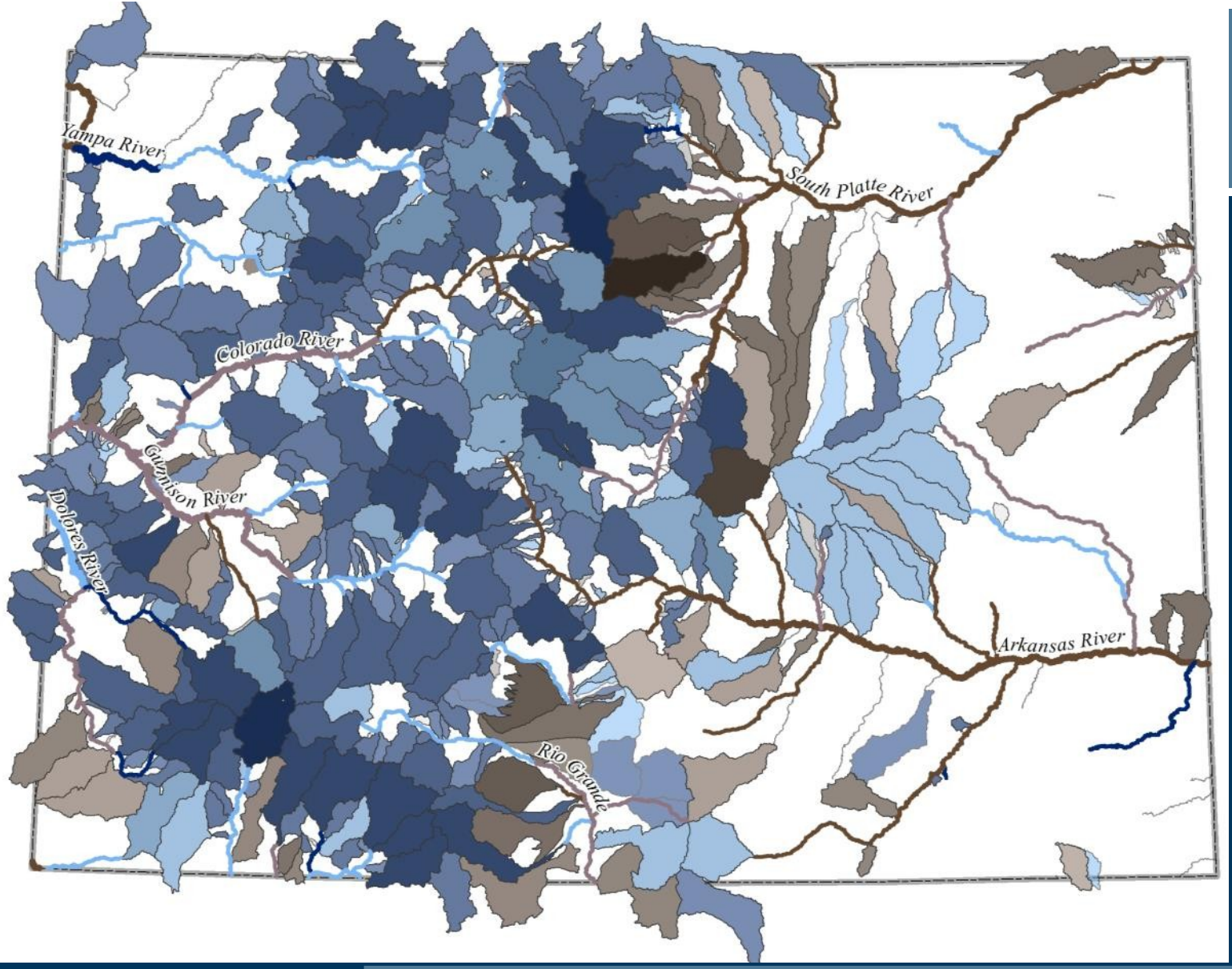
Degree of Flow Alteration



Darker colors = high # of targets

ISF protections

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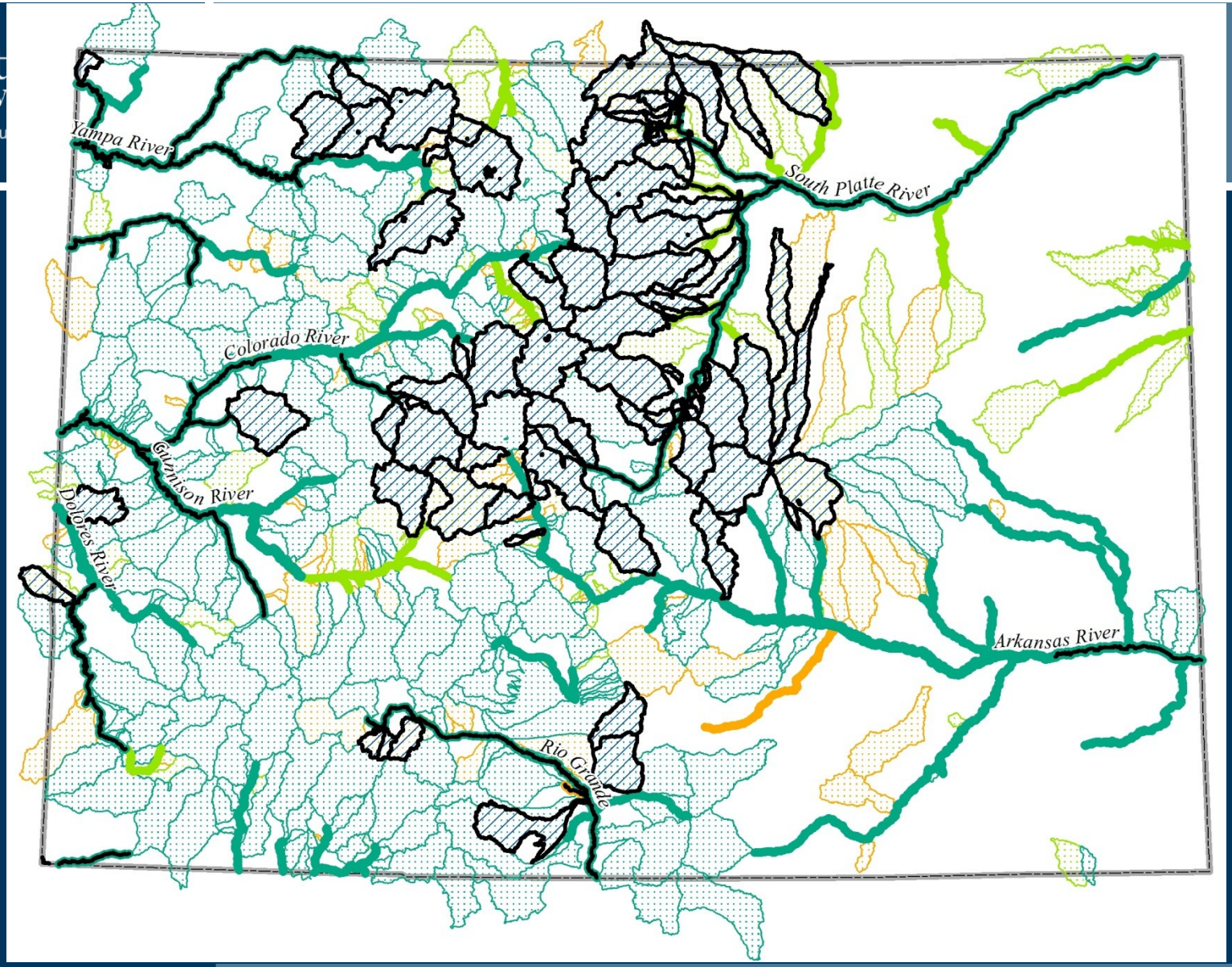
Establishing Priorities



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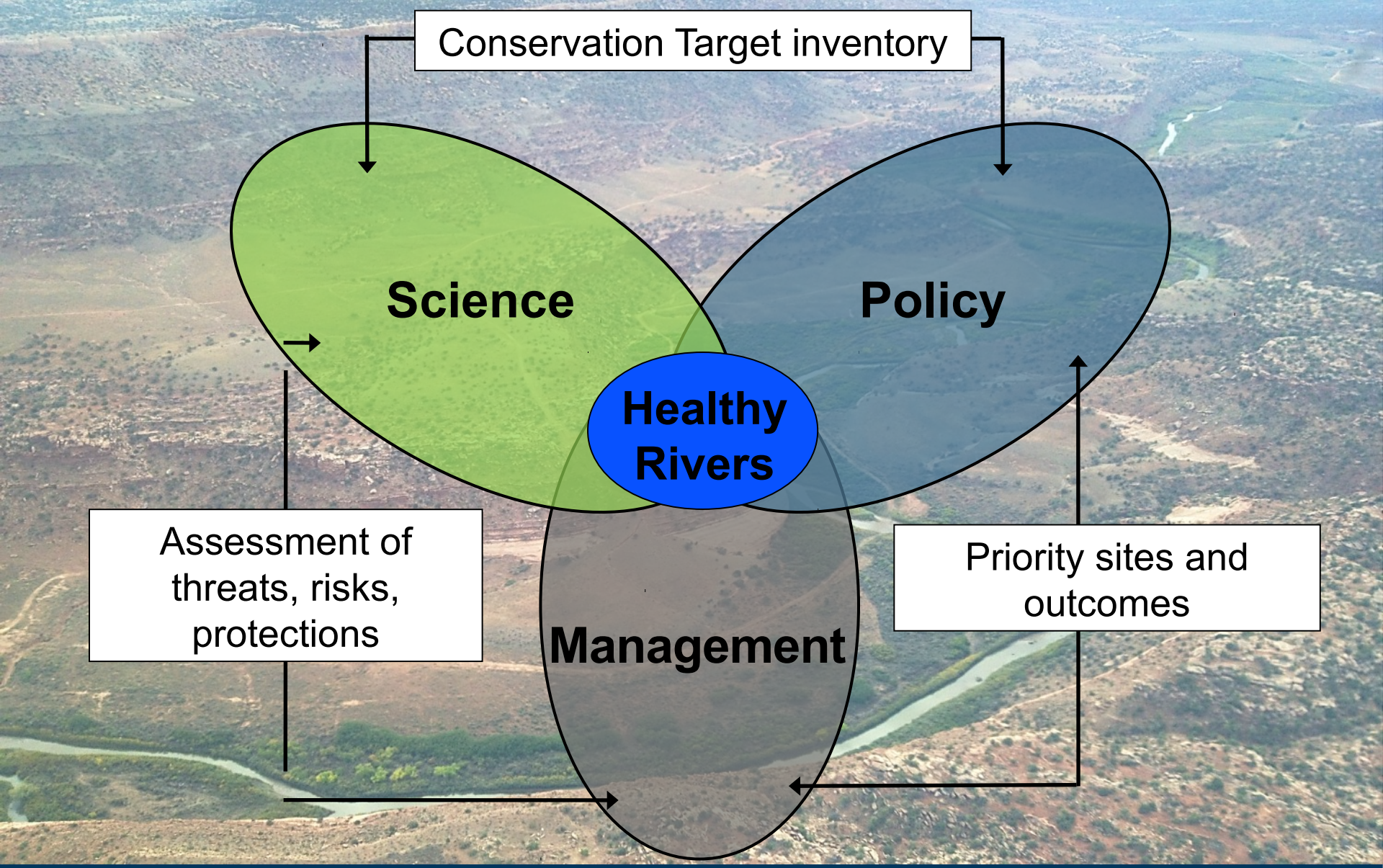
Establishing Priorities



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