

**Colorado Basin Roundtable Integrated Water Management Planning (IWMP)
Framework Project Stakeholder Meeting**

Thursday 17 August 2017 – 1-3pm
Plaza Hotel, Glenwood Springs

NOTES

Participants

In Person:

- Kristen Doyle, Roaring Fork Conservancy
- Tim Thompson, Eagle River Watershed Council
- Nate Higginson, Middle Colorado Watershed Council
- Brendan Langenhuizen, SGM
- Rick Vorhees, City of Glenwood Springs & Reudi Water and Power Authority
- Angie Fowler, SGM
- Ken Neubecker, American Rivers & project steering committee
- Lane Wyatt, NW CO Council of Governments & project steering committee
- Richard Van Gytenbeek, Trout Unlimited & project steering committee
- Hannah Holm, Hutchins Water Center at CMU
- Gigi Richard, Hutchins Water Center at CMU
- Bill Hoblitzell, Lotic Hydrological
- Seth Mason, Lotic Hydrological

Online Attendees:

- Harry Teff, Kendall Reservoir on Grand Mesa
- Mickey O'Hara, Colorado Water Trust
- Michael Wageck, Winter Park Water & project steering committee
- Courtney Black, Headwaters Corporation
- Nicole Seltzer, River Network
- Laurie Rink, Middle Colorado Watershed Council & project steering committee
- Steve Malers, Open Water Foundation
- David Graf, Colorado Parks & Wildlife
- Heather Lewin, Roaring Fork Conservancy
- Isabelle Lheritier, Brown & Caldwell
- Stacey Beagh, Tamarisk Coalition
- Liza Mitchell, Roaring Fork Conservancy
- Meg White, The Nature Conservancy

Introduction

Hannah Holm, with the Hutchins Water Center at Colorado Mesa University, gave an overview of IWMP Framework Project process:

- Today is final presentation of tools developed for Task 2. Tools will be continually available and updated.

- Next task: Request for Proposals (RFP) issued today to hire a consultant to develop a framework document to provide guidance to communities on how to combine data tools with stakeholder processes to develop plans.
- Timeline – issuing RFP today. Stakeholder meetings in Oct and Nov. Final guidance document to be completed in January.
- Steering Committee: Hannah noted that the steering committee for the project started the process before CMU was brought on board to be the fiscal agent/ coordinator and continues to guide the project. Several steering committee members were participating in the meeting (noted on participant list).

Presentation of Mapping and Data Visualization Tools (Task 2 of Project)

Background

Bill Hoblitzell, with Lotic Hydrological, began his presentation with an overview and history of how the Task 2 tools took shape:

- Challenges in putting all of the data from previous studies into a single geodatabase.
- We were data rich, but information poor. Decades of work done on different streams for different purposes.

Lotic's revised goal was to compress information and filter it, to take raw data and turn it into something useful. Lotic has developed two sets of tools:

- Data dashboards: existing data sets (statemod, water quality data) run through Tableau (a visualization engine) and placed on a public website for use by planners and public users.
- A basinwide, geospatial framework for compiling and showing data from existing and future studies.

Geospatial Framework

Seth Mason, with Lotic Hydrological, explained that one of the original intents was to help people understand what previous studies show about particular reaches on streams. This is a daunting endeavor, because there are many stream miles in the upper basin, and it would be a massive undertaking. In lieu of such a focused mapping effort, Lotic took the Source Water Route Framework, a hydrological data layer that identifies stream segments by their common name, then do some joins to relate stream segments to other data.

- Lotic took Source Water Route Framework and broke into 0,1 mile segments: dynamic segmentation to create points at each tenth miles throughout the entire Upper Colorado Basin, like Steve Malers did for the South Platte.
- They created unique identifiers for each point along the river, then did joins to other key data layers (e.g., non-consumptive needs from SWSI 2010 and state's Regulation 93 data layer for 303d listings and the StateMod outputs that display hydrological behaviors and reference list of studies from Task 1).

- This provides a good way for folks to rapidly understand what data is available. They also wanted to make sure there was a spatial component to thinking for Task 4.
- The Basin Roundtable can also use this over long term to get a sense of how many miles of stream have a stream management plan completed, what are desired conditions, etc.
- Many interesting question can be answered using a spatial database like this. It should help the Roundtable to organize data in a way that will be very useful for decision making.

Data Dashboards

Bill noted that the dashboards he was demonstrating at this meeting were a more finished product than last meeting. He explained that the focus at this meeting would be on embedded dashboards. In their final location, the dashboards will have sidebars with annotation, context, and background with links to other available data sources. The final product will contain all of the annotation, but what we see today is just the dashboard part.

Hydrology Dashboard

- This dashboard uses StateMod output from 2010 upper Colorado model – Lotic fine tuned some of the rules and assumptions to create a more refined output for the daily model.
 - o Model runs through a 30 year scenario and simulates monthly and daily flow at each node represented by circles in dashboard. Some features are aggregated (e.g., smaller tributaries – all water rights might be lumped into one point).
 - o You can move through time with the results
 - o Lotic chose to use StateMod output rather than streamgages because you get a higher degree of spatial resolution in the statemod model compared to stream gage structures. Also, stream gage gives you historic flow data but reflect human regulation and diversion of streamflow. Statemod shows “natural” vs. “existing.” The “natural” subtracts out the results of water rights administration.
 - o Dashboard starts with the existing, regulated scenario. You can toggle to the “natural” unregulated scenario.
 - o Can filter by many different spatial scales (counties, subregions, HUC8 level watersheds, etc.)
 - o Hydrology model has a very large dataset, so can be a bit slow.
 - o Click on a node and you get information from Hydrobase.
 - Scroll down and you see graphs
 - First graph is a year of daily regime statistics – get an idea of what are really high/low flows like on this stretch of the river.
 - StateMod borrows shape of hydrograph from nearby gages to create synthetic hydrograph for ungaged watersheds. Because of this, you can get some weird jumps at the daily time step.
 - Monthly flows in cubic feet/ second (cfs) and acre feet (ac-ft)
 - Flood frequency curve
 - Flow duration curve

- Annotated text pops up when you mouse over the curves!
- Graphs of annual min/max flows over period of record for gage
- Disaggregation of monthly model to daily time step was problematic and created a little blip that they had to troubleshoot. It became apparent that there is paper water moving around in the top of the basin that's not handled well on a daily time step in StateMod. If you see one of these blips, you should use the data from that location for the time period of concern with caution. For example, Colorado River at Kremmling has a blip in March. Don't use that data. If you need a daily time step model for that location, you'll need to have a new model developed. These dashboards will make it easy to find the places where this is a problem so that it can eventually be fixed in StateMod.

Water Use Dashboard

- The dashboard can display outputs of nodes of diverted flow (what goes into ditch), consumptive use (how much is consumptive uses by different uses) and total short (administrative shortage = paper water difference between how much water is being called for vs. how much is really available) side-by-side. Monthly time step (both cfs and ac-ft).
 - Using this tool you can answer the question "what are the total shortages for the blue river watershed for the month of august?" It's a bit complicated because you have to include the return flow, but it's possible.
 - When you click on a node, you get graphs for that site over the course of a year: total diversions, available monthly streamflows, return flow contributions, and shortage stats. Annual use at point of diversion and consumptive use.
 - Return flows are a bit haphazard throughout the model.

Studies Library Dashboard

- This is similar to what was shown at the last meeting, but all working now.
 - Expect this database to grow as new titles are added.
 - Graphs organize reports by topic, watershed and by time.
 - When you select on something in the graph, then it filters the title search at the top too. Clicking on the link sends you out to the source.
 - The studies are not hosted on the site, so links are provided.

Water Quality Regulation Dashboard

- This dashboard shows stream segments color coded by water quality metrics/category – 303d listing/
 - Many ways to filter by region, county, metric, etc.
 - Stream miles by analyte list in selected region.
 - Dashboard is pretty straightforward – easy to summarize what's going on in a watershed/
 - It's based on 2018 data, which is provisional.

- Download button will download the data that is being used in the background to create the graphics. The dataset was created by Bill by joining data from different sources. You need a Tableau license to do the download.
- Q: Are graphics exportable into powerpoint or just screenshots? Probably just screen shots.

IHA – Indicators of Hydrologic Alteration Dashboard

- This dashboard shows the altered model out of state mod vs. natural model and compares the two for a variety of statistics that are believe to be relevant to ecological health of the river.
 - More info about IHA can be found at The Nature Conservancy and they will link to it.
 - Can toggle between the 33 different statistics: high/low flows, timing of flows, etc.
 - Great tool to show how different diversions and operations affect the basin.
 - When you select a statistic to view, information about the statistic pops up at the bottom explaining what that statistic is.
 - Click on a node to get a popup with more information, values for selected statistic, ranges – graphs at bottom showing altered vs. unaltered scenarios.
 - Same underlying analysis used in Watershed Flow Evaluation Tool (WFET) commissioned by the Colorado Basin Roundtable several years ago. The WFET used IHA results to draw conclusions about what environmental attributes may be at risk for particular stream segments, based on how flows had been altered.
 - Lotic would have liked to use the WFET in this project, but there were challenges in getting the data, so it didn't happen. They would like to incorporate it into these dashboards before they are done with this project.
- Seth noted that it's important for the Roundtable to make sure that underlying data from projects it funds continues to be available in a useful format. It would be good to find a way to ensure that data gets back to Roundtable from consultants in a format that can be archived and integrated with other data in a useful way and will continue to be available. As integrated water planning goes forward, a big part of the conversation should be about deliverables and data format.

Water Quality Dashboard

- For the Water Quality dashboard, Lotic used the water quality portal dataset from EPA Storet and USGS NWIS. It's quality assured/ quality controlled data, so data are likely to be robust.
 - The dashboard includes only the last 5 years of data – this choice was made to make tool run faster. Longer dataset bogs down the display.
 - Size of symbol reflects how many samples were taken at that site.
 - Can filter by analyte group, analyte name, agency name
 - Click on a node and you get graphs for that site
 - Seasonal patterns for the selected analyte
 - Whole period of record

- Can add a reference line, if you know your standard. Highlights points above the reference line.
- Gives statistics at bottom that are relevant in making assessment for impairment and non-impairment.
- Great way to surf around and look at what are the big issues and how much data are available, as well as identify data gaps.

General Discussion

Q: What is the lifespan of this project?

A: Being housed at CMU helps ensure the longer term viability and open availability of the tools. Also, the choice of using StateMod was made for similar reasons. It's supported by the state, lots of people use it, it's maintained.

Next Steps

Hannah outlined the next steps for the project. These include:

- Finding long term home for dashboards
- Task 4 of this project: Creating guidance document for communities and Colorado Basin Roundtable to think through best practices to combine the data resources Lotic has developed with stakeholder processes.
- Reason the project is called an "integrated water management planning" rather than "stream management planning" framework project: purpose is to facilitate addressing all kinds of issues related to flows, not only stream health.
- Each group of stakeholders in each watershed that uses this process will have its own goals for how they want their streams to function, and these tools are one way for them to look at what's going on and to understand what might be driving some of the problems they're facing and how they can address any problems.
- Will have a series of stakeholder meetings this fall in the different subregions with awareness of a November 1 deadline for the next round of stream management planning grant applications to the Colorado Water Conservation Board. There's a desire to do stakeholder meetings early enough for the meetings to help inform those grant proposals as well as generate meaningful input for the framework guidance document.

Q: Thoughts on the River Network's efforts to create a guidance document?

A: The RFP for Task 4 recognizes the River Network project. Our project was started two years ago, and there have been many developments since then. The River Network's project is statewide, and there's a lot of work that can be done. We hope that whoever gets the contract for Task 4 will work closely with what the River Network is doing, so the two efforts complement each other.