



Meeting Summary

Project Title: SWSI Update
Prepared for: Colorado Water Conservation Board

Purpose of Meeting: Environment and Recreation Methodology Development TAG Meeting
Date: September 27, 2017
Location: Denver West Conference Center
Time: 1:00 p.m. to 5:00 p.m

Following is a general summary of input received during the Environment and Recreation Methodology Development Technical Advisory Group (TAG) meeting on September 27, 2017. Specific comments from TAG participants and corresponding responses are provided separately as **Attachment A**. We appreciate the TAG participants' thoughtful contributions and all comments and recommendations will be carefully considered as we prepare the final Technical Memorandum.

❖ Overview

- Inputs are coming from basin-wide planning
- Sets technical foundation
- Hopes to set more guidelines for expectations of future basin plans
- Focus on definition and resolution to water gaps from a hydrologic model standpoint

❖ CWCB Website

- Water planning update – SWSI Update

❖ Proposed Methodologies

- Work is building off of previous work
 - SWSI 2010
 - NCNA Database
 - Not in shape for public dissemination
 - Basin Implementation plans
 - What should be included in methodology?
- What would provide most value?
 - Review basin implementation plans for gaps
 - Review Colorado Water Plan
 - Goals
 - E&R – conducting surveys
 - Web portal
 - Basin decision support system
 - Potential future action
 - Develop methods to determine future projects
 - E&R flow tool
 - What do metrics look like?
 - What are assumptions?
 - Review feedback

❖ NCNA – Non-consumptive needs assessment

- Prior SWSI 2010 E&R work

- Building off NCNAdb –NCNA database, to create E&Rdb
- ❖ Attribute - 100 different attributes in the database, consolidated down to 60
 - Grouped into 14 macro attributes
 - How were macro categories put together?
 - There has only been a first “stab”
 - Types of land use needs required
 - Grouped categories will still retain individual attributes for higher level analysis
- ❖ Focus area – stream reach or watershed identified as having important E&R attributes
 - Focus areas are relatively old
 - Is having focus areas valuable?
 - Should old focus areas be archived?
 - How should focus areas be carried forward in the database?
 - Should they be preserved but not carried forward?
 - Some think focus areas take focus off of other stream reaches that are just as important
 - Some basins have focus areas at watershed value, others as stream reaches
 - If you work by stream reach, no need for focus areas
- ❖ TAG Comment Summary
 - 28 Comments received
 - Flow tool
 - Database – 21
 - General db function
 - Developed in 2010
 - MS Access
 - Links to GIS
 - Db content
 - Needs assessment mapping project
 - Info regarding basins, segments, attribute classifications, projects, protections
 - Protection – direct or indirect protection that is afforded to an attribute, i.e. instream flow for certain attributes is direct, for others it is indirect
 - Way to relate what projects and methods are doing in terms of protecting attributes
 - Extent of protection is quantified by stream miles, number of fish species, etc.
 - New methodology has content updates, updated attributes, i.e. new national wetlands inventory, new instream flows
 - Will look at new projects identified in new basin implementation plans
 - Will set up new reporting in and reporting out procedures
 - Direct protection – protecting water
 - Indirect protection – protecting land that indirectly will protect water
 - A couple of updates have been performed
 - Success factors

- Strong tech foundation
 - Updating spatial unit of analysis
 - Create data processing procedures
 - Best practices for maintaining db with multiple types of users
 - Living, breathing db – where does responsibility fall?
 - Basin roundtables
 - Basin projects
 - Excel spreadsheets
 - Where will projects occur
 - Maintaining project types in a db
 - Put out guidelines for more consistency in projects, but still keep enough latitude so roundtables can address local issues
 - i.e., different tiers of projects requiring things like costs and yield (quantitative numbers) – gives handle on needs within the state
 - Avoid dichotomy – can we build in with multi-purpose projects environmental and rec needs, and consumptive needs
 - Have to be able to go back and forth between different needs without losing attributes
 - Logical connector with source water route framework – what is identifier of stream and what is the mile (placement on river), can be done with E&R and consumptive projects – general locale
 - Specific field for accuracy of location (lat and long)
 - Legacy project data
 - Lots in the NCNAdb – don't necessarily know if a project will or will not happen
 - Publish guidelines and inventory of all projects in the db for roundtables to review, and publish results in updated db
 - Would hopefully be self-updating through the future of the process
 - Alternatively, wait for next BIP round before updating project data

- Spatial unit proposed
 - Source water route framework (swrf)
 - Subset of NHD – maintained by CDWR
 - If there is a formal name, then it is pulled into the swrf framework (NHD contains a lot of non-stream features, and unnamed streams)
 - If there are water rights on a stream that don't have a name they are also pulled in
 - Maintained outside of SWSI process
 - Biggest drawback is coverage – doesn't have all the detail of headwater streams, but has over 6500 streams represented
 - Been utilized by South Platte BIP
 - DWR has merged together all digitized segments in NHD, so each feature has a whole stream
 - State internally is putting all features in hydrobase and measuring against swrf –you'll be able to see what features are in each stream reach
 - New instream flow reaches may be added upon request
 - Accuracy is better than with NHD
 - How is coverage of lakes?
 - Linked to outflow (closest downstream stream)
 - Common reporting unit that db will rely upon – will be recommended, but not required
 - How to deal with attributes linked to wetlands sustained by ditches?
 - Proximity calculation – ditch/canals are not included, so tied to nearest natural stream channel for the point of diversion for the ditch
 - Switching spatial unit is on SWSI
 - Structures, diversions, water rights are specifically in swrf, so it's easy to tie them in
 - Water use for drilling and fracking – how to deal with uncertainty of source in hydrologic modeling
 - Water demands of oil and gas development are tricky – hard to pinpoint – need to develop further
 - NHD+
 - Large dataset – clunky
 - Canal features would need to be scrubbed out, which nobody does
 - Would become part of SWSI process and would need to be maintained
 - What is the workaround if there is an attribute on a small segment that's not in swrf?
 - Tie it to the nearest upstream stream that's been mapped – flag it as being tied to an upstream trib
 - Motion to go with swrf
 - No documented objections – decision made!

- ❖ Best practices
 - Engage meaningful user experience
 - Use templates to import data with good quality
 - Develop standard reports
 - People set up queries differently and might end up with two different datasets looking for the same things
 - Standard reports will mitigate this issue
- ❖ Online mapping tool
 - Db will be publicly available
 - Online tool where high level info is easily queried
 - CWCB data viewer
 - Zoom in and out of different basins
 - Look for specific attributes
 - Don't have feedback as to which info should be available
 - Online view and downloadable datasets – both will be available
 - For BIPs, everything will be available
 - Data might be downloadable, or you might have to email administrator
 - Geodatabase package
 - How will you train people to use these tools?
 - Have not discussed live training
 - User guide will be documented
 - Would be good idea to have in-person training for those doing more sophisticated analysis, people putting together stream management plans
 - Excel based, so may be more accessible
 - Web-based training
 - What resources will be available to each of the roundtables to supply information?
 - Intent is not to create endless cycle of contractor work, but also can't happen with volunteers around the edges
 - Develop tools that can be used by roundtable folks and by consultants
- ❖ General feedback
 - Establish a way to receive feedback on this tool and on the flow tool
 - Consistent feedback so that similar issues will be flagged
- ❖ Expanding project info and updating project attributes
 - Published info is lacking in spatial resolution
 - Trying to coral that info
 - Updating other classified project, i.e. instream flows
 - Slew of attributes that are currently included, some easily updated, others are more difficult b/c they were brought into the db by individuals as part of 2008 mapping effort
 - If data is readily available in GIS format, then it'll be added to db
 - But not going to be able to generate data from scratch
 - How can we quantitate qualitative attributes that already exist
 - Do you expect to be overlaying fish pop data from CPW?
 - A lot of info
 - CPW doesn't like to have that mapped at a high resolution (counts)
- ❖ Key takeaways:
 - SWRF will be recording spatial unit of analysis
 - Need for training

❖ E&R Flow Tool

- Intention is for flow tool and db to be linked
 - Lack of acknowledgement and work in db about whether an attribute is flow related
 - This will be added
 - Will help us talk about flows in a way that we need to talk about flows
- Questions of sufficiency and how to fill gaps in data
- Tasked with identifying E&R gaps, which can be difficult
 - Trying to find gaps locally at basin roundtables
- Four questions in memo that will be incorporated:
 - Is project flow based?
 - Does project have flow component?
 - Does project require securing flows?
 - Have project flow needs been identified and/or quantified?
 - How can they be added and what is the methodology?
- Working on daily modeling – takes a lot of resources – working towards this goal
- Planning scenarios are monthly time steps
 - For projects need to disaggregate into daily time step
 - On roundtables to do
 - Need to get consistency across the state
- Five planning scenarios
 - Three different hydrologies used in modeling
 - Baseline
 - Current climate adjusted
 - Hot and dry
- Demands will be overlaid
- What is feasible?
 - Some basins had a large number of small-scale project
 - Some had large system-wide projects
 - Projects cannot always be compared apples to apples in terms of cost
 - Less than 8% of projects acknowledged flow and less than half of that quantified a flow need
 - Want to be able to provide something where people can analyze/assess flows anywhere at any time – where people are assessing flows in the same way
- What if info from CDSS has errors?
 - Always evolving
 - Model is not always precise
- Four points we are trying to generate
 - Offers insight into planning scenarios
 - Different points of time
 - Hydrology
 - Explain relationship between water in the stream and attributes/values (ecology) in those locations
 - Can get a sense from the model how the attributes will be affected
 - What can you do about it in the planning context
- Comments
 - Be clear about what tool can and cannot do

- Publicly available
 - Would like it to be available for all basins
 - Not sufficient for project planning (monthly time step)
 - Tool is designed for scenario planning using hydrologic output from modeling. The BIPs can disaggregate the data into daily output for project planning and design.
 - Will give an idea of where you sit, so when you design project, you can identify resources to disaggregate daily flow
 - Could create a place in the flow tool to drop in daily data
 - Won't have power to do a comparative analysis
- ❖ Between db and flow tool, BIP updates will get to the idea of sufficiency, which will lead to prioritization
- ❖ Clarifying questions
 - What are the attributes in the reach?
 - What projects are being proposed?
 - What actions are needed?
 - What is the projected timeline?
 - What actions are needed to meet E&R needs?
 - Does something need to be leased or acquired?
 - If you need additional study, what is needed?
 - What project and methods could/should be implemented?
- ❖ Environmental projects – don't know what those projects are until it's studied
 - Riparian restoration is dependent on flows
 - Threatening to people with water rights
 - First need to see what problem is and what needs are?
 - Is there anything we can do about it, given existing water rights and existing flows?
 - Possibilities to work with water rights holders – should not be seen as a threat
 - Flow tool is more about hydrology and ecology – evaluate proposed projects against these two metrics
- ❖ Flow-ecology relationships
 - 60 attributes, 14 macro categories (room for adjustment)
 - Indicator species
 - How was indicator species selected? Will be transparent, with a description of reasoning
 - Categories will provide a road map to indicate whether flow needs are being met
 - Equation will drive output
 - Not every macro category has an explicit flow curve associated with it
- ❖ If a project is not flow related, doesn't mean it shouldn't be prioritized
 - Stream habitat
 - Stream temperature
 - More water may not be possible in a lot of cases – how do you do more with the water that you do have?
- ❖ Guide roundtables in how to quantify
 - More emphasis on flow-ecology relationship
- ❖ Would there be value in putting an attribute value on gauges based on their coverage, since this is all dependent on data from gauges
 - Quality of data is an issue in some basins

- Include in list of caveats to the list of value of coverage with gauges
- Highlight sections lacking in data
- ❖ HSAT – historical streamflow analysis tool
 - Focused on gauge data analysis
 - Three step process in excel macro
 - Generates set of stats
 - Does not include current data
 - Projects data out to 2015
- ❖ Can the tool be used to evaluate post-project?
 - More of a planning tool
- ❖ Model will be set up to compare scenarios from individual projects
- ❖ How do you scale model to move from main stem rivers to smaller tribs?
- ❖ How do we prioritize projects with this tool?
- ❖ Need to explain what these tools do, what they tell you, and how you can incorporate the reality of flows
- ❖ Streamstats
- ❖ Feedback?
 - Timeline? Flow-ecology relationships already exist (not reinventing the wheel)
 - Emphasis on training
- ❖ Send comments regarding todays discussion to Greg
- ❖ Will there be an opportunity for public input?
 - Not currently factored in
- ❖ Next meeting: In-person or conference call?
 - Conference call is ideal
 - Purpose will be to wrap up the methodology and make sure it's meeting all necessary needs