

**Basin Study Work Group:
Crooked River Subgroup Meeting**

January 22, 9:30 AM – 12:00 PM
Prineville City Hall, 387 NE 3rd St, Prineville, OR 97754

ATTENDING

Mike Britton – North Unit Irrigation District
Dan Bruce – Terrebonne Valley Water District
Kate Fitzpatrick – Deschutes River Conservancy
Chris Gannon – Crooked River Watershed Council
Nancy Gilbert – Fish and Wildlife Service
Brett Golden – Deschutes River Conservancy
Tim Hardin – Oregon Department of Fish and Wildlife (by phone)
Brett Hodgson – Oregon Department of Fish and Wildlife
Steve Johnson – Central Oregon Irrigation District

Mike Kasberger – Ochoco Irrigation District
Eric Klann – City of Prineville
Bonnie Lamb – Oregon Department of Environmental Quality
Peter Lickwar – Fish and Wildlife Service
Kimberley Priestley – WaterWatch (by phone)
Betty Roppe – City of Prineville
Garry Sanders – Crooked River Watershed Council
Amy Stuart – Oregon Department of Fish and Wildlife

Also attending was Mary Orton, The Mary Orton Company (facilitator).

Overview and Approval of Agenda

Chair Betty Roppe opened the meeting and welcomed attendees. The group reviewed the agenda. Steve said that the group needed to focus on the proposal, not problem-solving for the future. What is needed is a statement of the issues and why they are issues. Bonnie said she was asked to bring models and tools to evaluate, not for the group to make decisions with, but simply to make sure they understood the tools. The group might then have a conversation about whether there are enough tools and data, or is more needed. Kate said that the problems in the basin are well known and can easily be put into the proposal.

Instream Flow Needs: ODFW Stream Flow Recommendations

The group clarified that they are focusing on the Crooked River and its tributaries, downstream from and including Prineville and Ochoco Reservoirs, while considering the impacts of snowpack and irrigation diversions in the upper watershed.

The group discussed whether there was an overlap with the Instream Subgroup. Kate said that the Instream Subgroup has focused exclusively on the Deschutes River, and the Crooked River Subgroup can create whatever structure it decides is most useful to answer key questions. For example, it could form a technical instream subgroup to address instream needs, or it could “cross-pollinate” with the Deschutes Instream Subgroup to use a consistent methodology. Ryan Houston and/or Lauren Mork from the Upper Deschutes Watershed Council could come share their approach and lessons they’ve learned if the group desires. Kate commented that because questions of instream flow needs have historically been political in the Crooked, any technical instream group probably wants to stay closely connected to the larger Crooked stakeholder group. No decision was made on this issue.

The group discussed the purpose of evaluating instream flow needs. The Basin Study proposal requires us to define and identify the scope and scale of water supply and demand challenges. The group discussed whether they have or need agreement on the instream flow problems and needs prior to submitting the proposal, and agreed that they did not.

Betty brought up the issue of flatwater recreation and her concern that some of the models shown at the last meeting drained the reservoir. She said this was an important issue for Crook County, and no one from the County was attending the meetings. The prior proposal did call out flatwater recreation needs.

The group discussed ODFW's presentation on stream flow. Kate noted that Tim Hardin framed the process as on that met existing water delivery contracts, and modeled down to the 80% exceedance water supply level (2 out of 10 dry years). She asked if it quantified impacts to reservoirs, and he clarified that it showed reservoir volumes and levels and identified effects on access to boat ramps. He held irrigation needs constant each year and looked at impacts to reservoir volumes. The model scaled back fish flows depending on water availability.

Tim said he used the same flows and modeled them using early 1990s drought year water availability. Keeping the water delivery constant, and scaling down the fish flows to a minimum of 60 cfs, the reservoir would eventually run dry after more than one year of drought.

Garry asked whether the model included changes in weighted usable area (WUA) based on changes in cover. Tim said that depth and cover were treated differently and separately in the model. He said he thought that most of the cover in the Crooked River came from boulders, with some from overhanging vegetation and undercut banks, and that had been factored in for rearing (though not for spawning) in the IFIM model. Tim noted that while depth, velocity, and substrate were more important for spawning, improving both riparian vegetation and flow would have the greatest positive effects overall. He noted that increasing flow, up to a certain amount, would still be the primary driver for WUA.

In answer to a question from Garry, Tim estimated that, in the prior IFIM model, they took approximately:

- 20 transects in the Upper Canyon,
- 25 transects in the Lower Canyon (Smith Rock), and
- 10-12 transects in the Prineville Valley Reach.

Peter asked Tim if the following questions would be good to answer in the proposal:

- The impact of short-term, low flow. Tim said that if the flow gets down to 15 cfs, the habitat is poor. ODFW has habitat-flow models for very low flows. They do not evaluate how often flows get that low or how those flows affect fish.
- Indicators of Hydrologic Alteration (IHA). The HCP process proposed using the IHA to evaluate flows in the Crooked River. It requires daily data. The MODSIM model is monthly but flow data is daily. Tim said that if the data were available, IHA would be useful.
Potential to modify the reservoir rule curves. Peter noted that Crane Prairie and Wickiup started filling after season needed, while Bowman and Prineville have declined because of their flood control duties. He asked if the rule curve could change. Mike doubts a Reclamation or Corps engineer would put his name on a change in the rule curve when the system is as prone to flash floods as it is. He said he felt there was no chance it will change while under the control of Army Corps of Engineers. They would do a risk analysis, if it were above their acceptable guidelines,

they would not budge. Kate said this could be a potential mitigation strategy, and it might be able to be examined.

- Resident vs. Anadromous Life Histories. Anadromous and resident life histories require two different flow regimes. Summer rearing for either in the Crooked River would require more flow than pulsed flows in the spring and fall for migration. Adults migrating up to McKay Creek would need additional flows to pass through the Smith Rock reach.

Tim discussed discrepancies between ODFW's and Bob Main's model. The two models made several different assumptions. Bob used actual gaged data for reservoir outflows/inputs. ODFW used higher outflows based on water rights of record. Other differences related to how the reservoir accounts filled. Most other assumptions were the same. Amy said it would be good to run Bob's model with the full amount of water rights. Kimberley said she had some issues with Bob's model and how he was refilling the accounts. Amy said it would be good to identify the differences in assumptions and operations.

Tim did not review the code in the model but did review its assumptions and operations with Bob. Peter said he would like to see the documentation to better understand the model. ODFW used Bob's model for specific uses within the district. Mike Kasberger said that after ODFW released the model, some members of the public modified the model to use it for different purposes. They are currently not releasing the model because current staff does not have the expertise to operate and explain it. Peter asked if this tool would be used in this process, and Kate replied that that decision had not yet been made.

Amy suggested the group focus on identifying how to best use specified volumes of water for fish.

Kate suggested using the MODSIM model to understand water supply and water shortages under different flow targets. Kimberley noted that both Reclamation and Pacific Northwest National Lab have indicated that they could model flows and reservoir operations as identified in the Crooked River legislation.

Instream Flow Needs: Water Quality

Bonnie briefly reviewed water quality in the Crooked River as related to the Clean Water Act (CWA) and the Total Maximum Daily Load (TMDL) process. She said the CWA is a different process from HCP and ESA. DEQ evaluates water quality and compiles a 303(d) list of impaired waters, with the TMDLs that would bring the water back into compliance. They have identified water quality issues in the Crooked. ODEQ started the TMDL process in 2005 but has not moved very far due to limited staff resources and a pending lawsuit.

Temperature Issues

ODEQ contracted with Watershed Sciences in 2005 to collect thermal infrared temperature data on the Crooked River and its tributaries and to develop a HeatSource temperature model for the river. She reminded the group that she had presented that model at their last meeting. They can manipulate flow and vegetation data for each node. They used a mass balance approach to calibrate the model with their on-the-ground data with their thermal infrared data: they identified what water quantity and potential temperatures would produce the measured temperatures. Where they did not have measurements, they interpolated between points.

Bonnie highlighted that the model was only calibrated for the summer, which was viewed as the most critical period because the temperatures were the highest. The model is relatively accurate under the set of environmental conditions present when they collected the data. She suggested that additional modeling during the spawning season may be useful.

The group discussed discrepancies between the modeling results and their expectations. The model sometimes produces unexpected results. There were questions about why moving the OID diversion only affected stream temperatures for a short reach and also questions about why adding more water seemed to cool the river in some places. Crooked River Watershed Council also said that their water quality data from high flow periods doesn't align with model outcomes. They suggested that testing some of the assumptions in the model and updating the model would be beneficial.

Bonnie said that the model has not yet gone through the public stakeholder process and might still need to be tweaked to better represent the complexity of diversions and return flows in the Crooked. This is a process ODEQ would normally be doing now, except they have put their temperature modeling work on hold given the current litigation over the state's temperature standard. She suggested that fine-tuning the Heat Source models was perhaps something that could be done by a local group as part of the Basin Study or HCP work.. Hopefully ODEQ would be able to participate in that process.

Non-Temperature Issues

Bonnie indicated that they have found dissolved oxygen and pH problems in the Crooked River which could be related to temperature and nutrients issues. Both would be related to flows. She said that the department had collected data to develop models for these issues and she has requested modeling resources to do this work.

Bonnie indicated that Ochoco Creek, McKay Creek, Dry River, and Crooked River also have bacteria listings. More flow would dilute those issues.

Total dissolved gas (DO) remains an issue on the Crooked River below Bowman Dam. Reclamation has some solutions, but they are expensive. Brett Hodgson said that hydroelectric development might provide a partial solution, as it would change how water is released from the reservoir. The problem is killing fish, affecting salmonids more than whitefish. The HCP may collect more data to confirm DO is not a problem out of Ochoco.

There is no 303(d) listing for sediment in the Crooked River. There is a lot of sediment behind Bowman Dam, so the water is full of suspended sediment. Chris said it was passing through from inflows, and Bonnie agreed. Garry said the bedload is deposited in the reservoir and reduces storage capacity, but is not released. Sediment entering into and leaving Prineville Reservoir contains high levels of suspended sediment (unrelated to the presence of the reservoir). Bonnie suggested that this issue may or may not be affected by flow.

Proposal Contents

The group discussed possible issues to include in the proposal, as follows:

- How much water is available for instream use, when that water is available, and how that water gets managed to benefit different species and life stages.
- What are the target species and target reaches for adaptation and mitigation strategies? (This does not need to be done for the proposal.) The group briefly discussed how they have prioritized species, life stages, and reaches in other locations.

- Listed steelhead needs may conflict with Chinook needs; water volumes may be limited and we might not be able to meet both needs. The Basin Study gives us an opportunity to make those decisions in the most informed way possible
- We should review how these decisions are made in other basins.
- The proposal should identify that there are conflicts over these priorities and that some urgency exists due to the relationship to listed species. Creating a sense of urgency over water supply and demand imbalances is critical.
- The study should identify how much water will be available in different types of water years (wet and dry) and how to identify those years ahead of time.
- The proposal should make it clear that fish managers know which life stages needs which amounts of water. (A participant commented that that knowledge is not shared across the group.)
- We need to include water quality in what the fish need, not just flow.

Additional comments made included:

- If the Crooked River legislation passes, it may impact this process by changing how much water is available for instream use.
- ODFW has completed extensive studies on life histories of steelhead and Chinook. That information could be assimilated to help us answer the questions above.
- The HCP is implementing a Unit Characteristic Method study in the Crooked River to establish the relationship between steelhead and Chinook success at different flows.

A participant asked if the proposal should include a list of knowns, partially knowns, and unknowns. Kate said the proposal may not be able to include that much information. Kate provided a table produced by the Deschutes Instream Subgroup that addressed similar instream flow issues, and prioritized needs in recognition of limited resources.

The group discussed the need to complete all of this work regardless of the Basin Study and/or the legislation, maybe after the proposal goes in. A matrix-type list could be useful for all of the stakeholders.

Mike Kasberger asked how the group would prioritize these issues. Chinook and steelhead are both important. If one needs flows in fall and one needs flows in the spring, there is only enough water for one, how does the group decide? Mary said she could provide several options for a prioritization process. Amy suggested a limiting factors analysis. Nancy suggested prioritizing across species by examining the importance of a reach for a particular species. For example, the Crooked is more important to the steelhead than it is to the bull trout because of their life history: they spawn in the Crooked watershed.

Brett Hodgson said that difficult decisions would need to be made when managing flows for fish. In average and poor water years, there will not be enough water for all life histories of all species. He said that is why the Basin Study is important, because it is an opportunity to make those decisions in as informed a way as possible. He suggested that someone could do a thorough review of other projects in the Columbia basin with similar issues to determine how fish are responding to different flows throughout the basin.

Next Steps

Kate asked for consensus that this group is the group that will continue to meet to address instream flow needs. The group discussed whether a technical group should do that work and whether we need additional technical resources. The group agreed to continue meet to address instream flow needs.

The group agreed to encourage OWRD to attend our meetings, as well as the Bureau of Land Management and the US Forest Service. It was agreed to include Peter Lickwar on the Basin Study Work Group email list.

Kate and Mary will summarize the conversation around proposal contents, circulate to the group for review, and bring that summary as a report from Chair Betty Roppe to the BSWG at its meeting on Monday.

Chris and Mike Kasberger will follow up with Mike McCabe to ensure that the right person represents Crook County.

Kate will follow up with Michelle McSwain and invite Bureau of Land Management to participate as well as Jason Gritzner from the Forest Service.

Kate will send out a Doodle poll for a next meeting in March.