

MEMO

To: Sun River Watershed Water Management Working Group
From: Tracy Wendt
Subject: October 24, 2019 Working Group meeting summary
Date: February 3, 2020

On October 24, 2019, the Sun River Watershed Group conducted a Water Management Working Group (WMWG) meeting at the First Interstate Bank building in Great Falls. Partners in attendance are listed in Attachment 1. The following is a summary of some key points discussed:

Meeting called to order.

- Larry Dolan opened the meeting at 1 pm then proceeded with introductions.

Action items from spring meeting.

- Snotel Sites
Bruce Farling has worked with Phil Farnes to identify potential sites for additional Snotel stations. Bruce screened the proposed sites for appropriateness, trying to pick a site with reasonable access, that have existing structures such as patrol cabins, and that are not in designated Wilderness. Ruled out one site but identified a few other potential sites. Working with Lucas at NRCS to identify appropriate sites then recommends SRWG and NRCS speak with USFS about potential sites, then pursue funds. Bruce reminded the group that you don't need legislation to permit this type of use in a Wilderness area, but you do need local USFS folks to approve it. Al said he has a report and photos from Phil Farnes from years ago from California, and information on what they did to make the sites compatible with wilderness designation. Action: Al will track this down and share with the group.
- Elk Creek Real-Time Gage
Lewis and Clark CD is working to identify sites, funding and need for gages on Elk Creek. It is difficult to identify appropriate sites due to flooding and bank stability. Matt said they did some siting on Elk Creek below Ford Creek and Smith Creek and found a site that is potentially suitable near a bridge. Matt noted that he is not sure if the site is far enough upstream from Augusta to enable an appropriate flood-warning response time but could be useful for flood forecasting. The past gage site on upper Elk Creek at the Forest Boundary was washed out in 2018 flooding. This station was upstream of major Elk Creek tributaries and flashy localized storms that can affect small areas and may not be picked up by gages upstream, depending on location of gage. One obstacle is cost.
- Debriefing on SRWG 25th Anniversary Event
The tour included about 30 people and the evening event had over 100. This was a great opportunity to meet new people, introduce new SRWG leadership, thank Al for his many years of service, and reinvigorate the group. The event was well attended and much appreciated. [Click here to go to the virtual tour.](#)

2019-20 fall/winter weather forecast, water supply, and proposed operations

- Erling explained that GID was not diverting Sun River water to Willow Creek reservoir this year, which is why flows are higher than normal for this time of year.

- Broken O was still irrigating into September of this year.
- Gibson Reservoir is about 12% of full right now, inflows 300-500 cfs and outflows are less. Current inflows are 120-140% of normal due to fall precipitation. GID probably will reduce outflows about 150 cfs, but not too much due to ice up issues present for fish and riverside landowners. Erling said it's really important to get another SnoTel site that is more representative of our watershed instead of extrapolating from other sites because it helps with forecasting. We also need temperature and spring precipitation for forecasting inflow timing and to manage for flows.

Fall/Winter Flow impacts on fisheries

- Jason and Katie explained that dramatic changes between fall and winter flows can have dramatic impacts on fish spawning success. If flows are high in the fall, and reduced in the winter, it can dewater brown trout redds (trout egg nests). In the future, note that it's better to have flows lower but not detrimentally lower before trout start spawning so they don't spawn in areas that will be dewatered over winter.
- FWP said 200 - 220 cfs is ideal for fisheries, though may not reflect natural winter flows for the Sun River; the 100-130 cfs we target should be in emergency situations. Dropping flow earlier could be problematic because if fall is warm, it could mean water temps that are too stressful for fish. Action: FWP and GID will continue the discussion about timing and degree of drop in river flow this fall/winter (50 cfs or other and when).
- Erling reminded the group that GID has been operating Gibson in winter as if the dam was not there (in=out) so it's as close to natural as possible, however GID could risk not filling reservoir if precipitation/snow is lower than normal.
- GID will start refilling Willow Creek Sept 15 next year. Stephanie suggested storing more in Gibson to allow for a higher release over the course of the season. Action: Need to formalize fisheries needs and have clarity, get this documented so this requirement does not get lost in staffing changes etc.

Willow Creek Reservoir Update

- Erling said that GID started filling Willow Creek Reservoir last Friday and estimated 100 cfs flowing in right now
- The guard gate has been repaired but regulating gate has not. Now that guard gate is fixed, GID can start fixing regulating gate.
- GID is getting Willow Creek filled as quickly as possible and has been doing work on feeder canal to improve conveyance to expedite fill. However, the canal ices up in winter. Hoping to store 8,000 ac.ft. (ex: 8,500 ac ft ~ 4,121.25 elevation) by Dec 1, and another 20,000 acre-feet between March and June 2020. GID does not anticipate getting WC reservoir filled by June 1 and will need to use some stored water over the summer, but expect to fill by June 2021.
- FWP will put 60,000 small fish in this June and some larger brood stock fish for angling as soon as ice is off. Action item: FWP and GID to continue discussions about reservoir elevation during summer use so FWP knows how much water will be in it in order to plan fish stocking. Erling anticipates 80-85% full if we can get a good jump on filling next spring. Erling will communicate with FWP regarding fill.
- Projections are difficult because fill rate depends largely on weather. FWP needs to avoid crowding issues and stress on fish and recover the fishery as quickly as possible.

- GID surveyed the bottom of the reservoir while it was empty so they could document the topography and have a better idea of bottom-to-surface fill rate.

Formalize operations with Reclamation

- Laura explained that we need Reclamation historic recommendations for reservoir operations and GID operations to match documented reservoir operation guidelines, including seasonal operations. Actions: Reclamation will continue this discussion with GID, Laura, and Phil to discuss risks and recommendations. The group will create a document that brings together all of the information that is out there – fisheries needs, forecasting, operations recommendations, history. This might be an appendix to the Reclamation SOP. The group needs to establish guidelines that are flexible enough for annual seasonal variation and document institutional knowledge for all parties involved.

2019 Irrigation season debrief and lessons learned

- GID reduced allotment throughout the year. Started this year at 1.5' and did not allow excess water; irrigated through first part of September.
- GID did not take Pishkun all the way down this year as they have in recent years in order to avoid exposing old concrete that does not age well when frequently exposed.
- Good season over all.

Fort Shaw Irrigation District update

- Fort Shaw recently hired a manager, someone who worked for FSID in the past.
- Al mentioned there is good return flow coming back to the Sun River between FSID Diversion Dam and Simms. He said we need to understand what is going over FSID's diversion, just knowing what is happening at Simms does not give full picture. There isn't a gage below the diversion structure and the procedure used to estimate the flow over the diversion dam needs to be refined. Action: Reclamation to re-do rating curve at this location due to highwater events. The FSID Canal Ramp flume will work as a control, but need an accurate rating curve there also for the canal gage.
- Need to remember Nilan, Elk Creek, and other waters in the watershed are important for water supply, fisheries and recreation. Action item: Have Lance debrief in the future about how Nilan Reservoir is operated and Elk Creek used for conveyance.

SRWG Strategic Plan

- SRWG completed a 10-year strategic plan this summer. This working group, and many tasks this group seeks to address, are included in this plan:
 - Formalize reservoir adaptive management and winter flows in the Sun River
 - Optimize reliability of irrigation water delivery and maintain Sun River flows
 - Sustain and improve snow and streamflow data, reliability, and incorporation into water management decisions
 - Improve communications among water users, irrigation districts, agencies, and SRWG to improve flow management
 - Prepare for extended or more frequent drought
- The strategic plan will be tied to project prioritization, coordinator work-planning, and funding applications SRWG

SB32 Stream Gage Oversight Working Group

- Steve Begley, FWP, gave an overview and update from the SB32-mandated state stream gage working group: USGS lead a meeting in September to discuss new group developed out of last legislative session, SB32 Stream Gage Working Group. Agency budget challenges in 2017-28 due to legislative mandates and federal funding shortfalls led to administrative re-prioritization for funding which led to reducing funding for stream gages.
- This is important for groups like FWP that administer instream flow water rights. Also, thermograph information on gages helps inform fishing restrictions and closures in periods of drought. FWP had 11 gages cut in 2017 and is funding 0 gages in 2018 (out of 27 gages and 30 thermographs typically funded). Response to these cuts highlighted a need for coordination, understanding of how gages are prioritized, funded.
- At the state level, there was discussion of how gages are coordinated state-wide. This coordination and communication about gages became SB32 which established the stream gage oversight working group, housed in the governor's drought and water supply committee.
- SB32 did not include any funding for outreach to watershed groups, but this communication and engagement is important.
- The group is currently identifying tasks: locations, uses, and funding arrangements for stream gages, and creating an annual work plan.
- #1 goal is to figure out a way to prioritize funding of gages by more groups so it's not just a few select agencies funding them, and to keep key gages online. The main driver has been USGS gages and keeping gages funded.

SRWG gages

- SRWG has a combination of gages, USGS, Reclamation, SRWG-managed, DNRC, GID.
- Steve Lynn maintains 5 small gages (float gages) that only operate during the irrigation season; they transmit stream stage to satellite which is used to derive discharge.
- BLM provides funding support for some gages through a water quality grant. We can use some of these funds for gages because of tie between flow and water quality.
- Is it important to keep Muddy Creek gage real-time? GID this year contributed \$4000 above annual contribution specifically to keep Muddy Creek gage going. With conservation measures GID is trying to do, it's important to know how flow and return flow changes over time and see what kind of impact this is having.
 - Does it have to be real time? Power Muddy Creek gage is important but has been down since 2017 flood.
 - Muddy creek at Vaughn provides record 12 months per year. The smaller tributary gages freeze up so they might not be substantial enough in aggregate to substitute for this location.
 - Erling said we could drop tank coulee gage but need Muddy Creek at Power and Vaughn.
 - Sun River Ditch dumps in Muddy Creek above Vaughn.
- Historic data is important.
- DNRC gages are funded by DNRC.
- Reclamation funds gages below Diversion dam (USGS) and some others, including the N and S Forks.

- Bruce is working on a document detailing all the Sun River and tributary gages, who funds them, where they are located, what information they provide for current and recent historical sites. Bruce will be reaching out to others for verification of the information he put together.
- Tracy is trying to understand what motivates our USGS gage contributors so we know which gages they care about so if we ever had to cut one we'd know how to prioritize.
 - USGS can post warnings on their site that gages are in jeopardy of losing funding to encourage people to contact SRWG to donate.
 - FWP uses US287 gage to inform timing of seasonal surveys/sampling.
 - GID uses gages to track releases and react to changes.
 - Bailey clarified that NRCS programs he is aware of can't help support gages.
- Focused subcommittee: Matt, Bruce Farling, Tracy, Larry, Jason M, Stephanie; Action: Tracy will email group to figure out meeting time/date/next steps, including Steve as an advisor.

Gage repair

- Muddy Creek at Power was lost due to high water last year, channel is scoured and this has become a poor site. GID has pasture on south side of the bridge we could use, but Steve L said it's the same condition, as is across the stream from the current location (move to river right). Consider moving Muddy Creek Power to downstream county road location. Action: Tracy and Al will go look at this site and see if it will work. GID will contribute labor to get this done once we get a site; GID has the equipment to reestablish the upper Muddy Creek site.
- Big Coulee south of Fairfield below Beale Creek is down as well and would not take much to redo. The well washed out but could put in a new stilling well, and need Satlink.

Weather station/Snotel

- See above in Action Items from fall meeting for additional SnoTel update.
- Bruce and Lucas will be discussing potential SnoTel sites
- Sites in Wilderness and proposed Wilderness study areas can be tedious and hard to get approved. The volume of equipment we need to set up a full SnoTel site would require helicopters and this is prohibitive.
- Lucas has worked with Phil in the past and would like to make sure USFS are consulted as we develop our plans for additional SnoTel sites. Action: Bruce offered to sit down with Lucas to discuss this and put together more information to bring back to the full WM Working Group.
- This may not be essential right now but in the future high elevation sites like we are discussing will become very important for forecasting and sooner than later so we have historic high elevation snow information when we do need it.
- There are a lot of Reclamation grants that help with modeling across the basin based on SnoTel information
- Reclamation is going to test a new basin-wide approach to forecast runoff internally against actual forecasting this year. If it is effective, it will be published and publicly available, potentially released by next year. Draws data from USGS, NRCS, and other agency stations, maybe can pull from additional locations if QA/QC'd. This would not make SnoTel sites obsolete. Action: Stephanie will try to give an update and possibly demonstration for our next meeting.
- Tracy and Chris Music, from Montana Valley Irrigation introduced personal weather stations (AgSense) as an efficiency innovation. These are individual stations, real-time use for data, and can track history of precipitation to compare to water use and production, and are networked with other personal weather stations to show patterns across the landscape. Landowners have

responsibility to maintain the station, but these have been low maintenance. If enough are established in the watershed, it could be a way to track micro-weather events and could help a producer make more efficient water orders. As stated earlier, there is a lot of variety in isolated weather patterns across the watershed. Cost is pretty affordable, and innovation grants are available through NRCS. Need cell coverage, but not always full coverage. Setting up stations in strategic locations across the watershed could help with water management.

Partners updates

- NRCS
 - Bailey held a resource concern meeting in Sun River this spring to talk to landowners and help inform his longrange plan (5-10 years). The goal is to implement a locally-driven plan that addressed issues that are top priorities for landowners. Streambank and weeds were top priorities that came out of that meeting.
 - Bailey will be doing TIP for weeds on a creek in another watershed and has many partners. This will help Bailey learn the process and adapt the plan to the Sun River watershed in June.
 - Bailey has worked with a couple producers on some irrigation projects but is trying to figure out what kind of efficiency projects would work for a TIP for the Sun River watershed. Will be looking for match/in-kind contributions.
- GID
 - Erling said GID is looking to improve conditions on Muddy Creek by expanding Spring Coulee/J-wasteway, with the first phase occurring this spring on GM100 headworks. The second phase will occur in the following year or two, followed by enlargement of J-wasteway to reduce amount of water going down Spring Coulee Creek, then into Muddy and reduce sedimentation, erosion and better use the water that was diverted from the river. GID is looking for more locations where the same practice of re-regulation could be employed to help absorb fluctuations in flow.
 - Performed a seepage study on SRS canal and is looking at a reregulation pond there 12 miles down from Pishkin.
 - Finished Beaver Creek crossing.
 - New dam tender starting in December, Paul is retiring.
 - Will partner with LCCD to rehab Willow Creek feeder canal (natural portion) starting next summer, including stream bank restoration and sedimentation structures.
 - On Spring Coulee Creek, a local landowner is taking the lead on a project to control erosion and improve fish habitat, and GID is offering crews and equipment.
 - GID and partners have met with Muddy Creek landowners and discussed getting the Muddy Creek Task Force (MCTF) going again. There have been improvements made in the past but there is more work that needs to be done. Al has a project book for Willow Creek and GID may hire him to do one for Muddy Creek as well, compiling past studies and work. Remember this is fixing immediate issues, but not the issue that causes the problems – need water conservation and management improvements on the bench, GID, producers, and others. A lot of return flows on Muddy Creek are from delivery, canals that are being operated in a manner they were not designed for. SRWG should take the lead to get the Muddy Creek Task Force active again. GID's water attorney is working with the legislative Water Policy Committee to better define "storage".

- Erling clarified that when a user pays for his annual water usage, the standard was 24” of water but this year they reduced to 18” and didn’t allow excess, which means producers could not exceed their original allotment and purchase more water. The pivots and wheel lines are so efficient they don’t typically burn through their allotment but flood irrigators typically do. This also depends on soil conditions and a producer’s ability to manage water, due to terrain, type of crop, amount of work it takes to manage, etc.
- Muddy Creek Landowners
 - Steve Kerling lives on Muddy Creek would like to see Vaughn gage stay in place. Steve has been talking to MC landowners and going to try to resurrect the Task Force and get more involved.

Action Items

- Al will track down a document he has describing how California worked to establish SNOTEL sites in wilderness areas and share with the group.
- FWP and GID will continue discussions about timing and degree of drop in river flow this fall/winter (50 cfs or other and when) to address fish spawning concerns.
- FWP and GID will continue discussions about Willow Creek reservoir elevations during this summer so FWP can plan fish stocking that is compatible with the available habitat in the reservoir. Erling anticipates 80-85% full by summer, if we can get a good jump on filling next spring. Erling will communicate with FWP regarding fill.
- Need to formalize guidelines for Sun River Reservoir fisheries needs and get them documented so that they do not get lost in staffing changes etc.
- Reclamation will work with GID, Laura, and Phil to create a document that brings together all of the information that is out there – fisheries needs, forecasting, operations recommendations, history, to formalize how we are operating the Sun River system now. This might be an appendix to the Reclamation SOP for the Sun River Project.
- Reclamation will re-do the rating curve used to estimate the flows over the FSID diversion dam and the FSID Canal Ramp flume.
- Have Lance debrief the workgroup on how Nilan Reservoir and the Elk Creek system are used to store and convey irrigation water.
- Tracy will email group to figure out meeting time/date/next steps on gaging stations, including Steve as an advisor.
- Tracy and Al will go look at the new Muddy Creek near Power potential gage site and see if it will work.
- Bruce will meet with Lucas from the NRCS to discuss and put together more information on potential new SNOTEL sites to bring back to the full WM Working Group.
- Stephanie will try to give an update and possibly a demonstration on a new basin-wide forecasting model for our next meeting.

ATTACHMENT 1
MEETING ATTENDEES

Name	Association
Caitlin Avey	Sen. Tester's office
Robin Baker	Sen. Daines' office
Stephen Begley	Montana FWP; SB32 Working Group
John Chase	SRWG / Cascade CD
Larry Dolan	SRWG WMWG committee chair
Bruce Farling	TU / SRWG
Erling Juel	Greenfields Irrigation Dist / SRWG
Kelley and Steve Kerling	Muddy Creek landowners
Jim Larson	Cascade County Commissioner
Steve Lynn	Mapleleaf Hydrology
Stephanie Micek	US Bureau of Rec.
Chris Music	Montana Valley Irrigation
Matt Norberg	DNRC
Bill Norris	GID
Bailey Rapp	NRCS
Jason Rhoten	MT FWP
Al Rollo	Past SRWG coordinator
Katie Vivian	Montana FWP
Tracy Wendt	SRWG coordinator
Laura Ziemer	Trout Unlimited
Lucas Zukiewicz (by phone)	NRCS