



State of Idaho

DEPARTMENT OF WATER RESOURCES

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Governor

GARY SPACKMAN
Interim Director

April 20, 2012

EUGENE MATTHEWS, CHAIRMAN
BASIN WATER DISTRICT 45A
1249 S HWY 27
OAKLEY ID 83346

RE: Basin Field Visit Summary

Eugene and Advisory Committee Members:

On April 10, 2012 I visited the Basin area to provide some training to the new watermaster, Sandra Hale, and to conduct a field check of measuring devices. I was accompanied by Ms. Hale, Mr. Kay Wells, and Advisory members Eugene Matthews and Basil Fairchild. Training and device inspection were the primary goals of the trip, but I also wanted to gain some understanding of the Basin delivery rotation protocols in order that I could better answer questions from the watermaster. Ms. Hale had also indicated that there was an alleged illegal diversion on Mill Creek that the District would like some help in resolving.

I asked to look at the main channel weirs where total available flow was determined, where flows were split and redirected, and at some of the primary rotation locations. We visited the following sites:

Summit weir (Wells, Wadsworth, Hawker, Bedke)
Warm Springs weir (Justesin)
Summit Feeder
First Mill Zollinger (Zollinger, Marchant, Spearing)
First Mill Harper
Second/Third Mill Hawker, Fairchild
Warm Springs shutoff
First Spring Gorringer
First Spring Kevin Smith

Overall, the existing weirs that I saw were acceptable, but virtually every weir pool has silted in up to the weir crest and needs dug out. This happens routinely in Basin due to the steepness of the drainage, high amounts of moving sediment and rubble, and high spring runoffs. The District and/or the water users will have to plan on removing sediment behind all the main channel and feeder weirs every spring in order that the devices operate properly, and the process may need to be repeated mid-season. Other than the channel weir at the Summit feeder which washed out this spring, I did not see any major damage or washing around weir structures. Some devices have minor leakage around the sides which could become worse when weir pools are cleaned. If this happens, leaks must be sealed as soon as they are noticed.

According to the Bureau of Reclamation Water Measurement Manual, flows approaching a weir should be "tranquil", without eddies or fast currents, and having a uniform flow distribution across the channel. Tranquil flow conditions require, at minimum, a straight approach distance above the weir equal to 10 times the channel width at the weir. Immediately above the weir, the weir pool must be of adequate depth and area to allow the flows to slow down further before spilling over the weir crest. Flows should not be moving at speeds greater than 0.5 (one-half) foot per second through the weir pool. If they are, the pool area and/or depth must be greater.

When the weir pool is formed, the height of the weir crest above the bottom of the ditch should be at least twice the maximum head over the weir. The distance from the side of the weir notch to the side of the channel or pool should also be at least twice the maximum head. This will provide for adequate contraction of flows at the weir, and will also help get enough depth to slow the flows through the pool.

For more information on weir maintenance and installation, see the following publications, available online:

http://www.usbr.gov/pmts/hydraulics_lab/pubs/wmm/index.htm (BOR Water Measurement Manual)
http://www.idwr.idaho.gov/WaterManagement/WaterMeasurement/PDFs/water_measurement_pamphlet.pdf (U of I Extension Water Measurement pamphlet)

In addition to weir pool cleaning which is required for all weirs in the system, following are additional observations on specific devices I inspected on this trip:

- The channel weir blade at the Summit Feeder diversion is washed out, although the diversion dam appears undamaged by high flows. Eugene Matthews confirms that a new 8' Cippoletti weir blade has been ordered and will be installed soon. This dam does not appear to have been constructed totally perpendicular to water flows, although once the new blade is installed and the weir pool cleaned out, any approach issues should be minimized.
- The weir at the Summit split is removable to accommodate excess sediment buildup at this site. Lifting the weir flushes the pool nicely, but the weir does not seal real well and has significant leakage around the sides when it is replaced. The Watermaster will need to make sure the weir board is tamped into place and is both vertical and level, so that leaks are minimized before a measurement is made.
- The Kevin Smith weir is overgrown with brambles and other vegetation which must be cleared away so that the watermaster can access the weir and so that branches aren't dragging across the weir crest. The weir pool also must be dug out.
- There is a trapezoidal flume in the First Mill Zollinger diversion which can probably be used for measurement. The device is full of rocks and brush which must be cleared away. Rocks in the channel just above the device must also be moved so that there is a smooth approach to the device. I will need to re-visit and collect dimensions and elevations from this device, and will then have a discharge table made specifically for the device by one of IDWR's engineers. In the meantime, the watermaster may need to estimate diversions from the channel weir measurements.

- The Harper Mill diversion does not have either a control structure or measurement device. A second diversion has been constructed on the Harper property approximately 75 yards downstream from the established diversion. The Watermaster took me to this diversion because she suspected it was not legal. My research of water right records confirms the second diversion is not authorized by the Harper water rights. I have sent a letter to the land owner advising him to close the diversion, and install proper headgate and measurement device on the existing diversion.

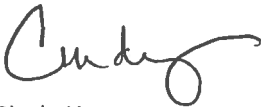
I will make at least one return trip to the Basin in the coming weeks to look at the rest of the major diversions, to take measurements on the Zollinger flume, and to answer any remaining questions. If there are other diversions which need cleaning or maintenance before rotation deliveries begin, the Advisory Committee or the Watermaster should contact the water users directly and request that this maintenance be taken care of immediately. The Watermaster has the authority to refuse delivery to any water user who does not have an adequate measurement or control device. If water users will not voluntarily comply, then IDWR can assist by speaking with them or sending a letter.

At my next visit I also hope to have available for the watermaster, a computer spreadsheet which she can use to record rotational deliveries during the 2012 irrigation season. The spreadsheet will also be able to compute end-of-year volumetric deliveries to each water user.

I appreciate the cooperation of the Basin Water District Advisory Committee and am impressed by their support of the new watermaster. I also would like to thank Kay Wells for his willingness to share his knowledge with all of us.

Please don't hesitate to contact me at the above address, email or phone number if you have any questions. I will be in touch with Sandy soon to schedule a follow-up visit.

Regards,



Cindy Yenter
IDWR Water Distribution Section

cc: Sandra Hale
Kay Wells
IDWR WD45A file