

Immediate Considerations for Reducing the WY2011 450 cfs - 300cfs Baseflow Recession Rate

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Proposal

Currently the change from the summer baseflow of 450 cfs to the winter baseflow of 300 cfs occurs in one day on Oct 15. The proposal is to change the winter baseflow ramp down to a maximum stage change of 0.10 feet/day (as defined by the rating curve at the Lewiston USGS Gage#11525500) to benefit riparian re-establishment on floodplain surfaces. This is accomplished by ramping at a rate of ~35 cfs per day over four days. The modified winter baseflow ramp down rate should be conducted in WY2011 and in subsequent years if the previous water year was extremely wet, wet, or normal. The reduced winter baseflow rampdown period should be centered on October 15 to remain water volume neutral.

The gates at Lewiston Dam are large and small reduction or increases in discharge are difficult to achieve, so a 35 cfs per day rampdown rate may not be logistically possible. If not, then a maximum rampdown rate of 50 cfs per day over 3 days is recommended.

Background

Rapid stage declines associated with managed streamflow recession is one factor that may be limiting young of year seedlings ability to successfully establish on constructed floodplains and other higher elevation riparian surfaces. The ROD streamflow recession from 450 cfs to 300 cfs occurs in the middle of October at the driest time of the year and near the end of the riparian woody plant growing season. The recession from 450 cfs to 300 cfs drops river stage 0.38 feet in one day.

Recession limbs included in spring and early summer ROD release schedules were tailored in normal and wetter years to meet the root growth capabilities of young of year seedlings. The recession limbs included in the spring ROD release schedules occur at approximately 0.10feet per day at Lewiston and are not likely to exceed root growth at Lewiston. Further downstream from Lewiston stage declines associated with all ROD recession limbs exceed 0.10 feet/day (e.g., USGS#11525655 below Limekiln Gulch).

Seedlings that germinate on higher elevation surfaces (e.g., natural or constructed floodplains) are the most prone to effects of the rapid October recession.

The shift from summer to fall baseflows in October was assumed to be negligible in the Flow Evaluation Study but is likely exceeding young of year riparian seedling root growth rates on surfaces higher and farther away from the 450 cfs water edge. Seedlings growing three feet or more above the 450 cfs streamflow elevation are vulnerable because their roots have followed declining soil moisture resulting from receding spring ROD streamflows and may only shallowly infiltrate the upper end of soil moisture sustained by 450 cfs. When the soil moisture profile drops rapidly as result of streamflow recession (i.e., a 0.38 foot decline), roots infiltrating only the upper end of the 450 cfs capillary fringe may be left dry killing young of year seedlings.

Monitoring

In WY2011 the locations of living and dead seedling will be documented during riparian vegetation mapping and band transects monitoring conducted at GRTS sites as part of the 2011 Interdisciplinary Salmonid Habitat Assessment (ISHA) and reported in the WY2011 ISHA report.

Proposed WY2011 Winter Baseflow Rampdown Trinity River Releases from Lewiston Dam



