Mill Creek/Mountain Home Ranch Road Fish Passage

SRFB Comments

• Please provide updated budget as described on site... the current budget appears to be leftover from 2011.

Response: The budget included in the pre-proposal and final proposal are the same and based on cost estimates for labor and materials from the CCNRD Construction Manager, Alan Schmidt, who has supervised 30 culvert replacement projects in the last 6 years. The budget is changed from the 2011 submittal in that design costs have been removed. The Design Engineer for this project is now available and will work with Alan on refining the design and cost estimate in September.

• Please provide any available data on fish use.

The Forest Service was planning to survey the first mile of Mill Creek in early August but funding did not come thru, so that work was not completed. During and informal habitat assessment completed in the fall of 2010, I observed numerous rainbow trout in the pools in the first 1.5 miles I walked. Local farmers had reported sighting a large fish likely a steelhead or bull trout .5 miles up in the early summer of 2010.

• Please provide any information on water quality in Mill Creek.

Attached is a report on flow and temperature data collected from Mill, Ruby and Larson Creeks.

Peshastin Tributary Monitoring

(Larson, Mill, and Ruby Creeks)



Matt Shales Chelan County Natural Resource Department January 6th 2012

Purpose:

To gain a better understanding of base flow and temperature conditions in Larson, Mill, and Ruby Creeks during summer and fall of 2011. Monitoring is scheduled to resume in the spring of 2012 to capture the rise and fall of the spring freshet. It is unclear at this time whether flow monitoring will continue through summer and into fall of 2012.

Data Collection:

Each tributary has one monitoring site equipped with a staff plate, water level logger (Onset, HOBO) and barometric pressure logger (Onset, HOBO). A rating curve will be developed so that water level logger data may be corrected and represent a continuous recording of discharge throughout the study period (July – October 2011). Monitoring locations were chosen based on close proximity to Peshastin Creek, site accessibility, and channel conditions. Ideally the site is as close to the confluence with Peshastin Creek without receiving influence from, during high flows. This is important when capturing low flow conditions. All sites were established in favorable locations with willing landowners.

Once the general location had been determined on each tributary, a site for the staff gauge and crosssection were chosen using the "Standard Operating Procedure for Estimating Streamflow "(WSDOE). Each tributary's staff plate was fastened to a 4 foot 2x6 using 2" screws. Next to the staff plate on the 2x6 a PVC housing for the water level logger was fastened to the board by two hose clamps. The PVC housing is complete with an elevation screw to ensure the zero point on the logger matches up with the zero on the staff. A T-post was hammered into the streambed until sturdy, with special care being taken to keep it upright. The "staff board" could then be attached using two U-bolts and secured at bed elevation. The loggers were launched on July 15th with a 0.5hr logging interval and installed. In addition to water level, temperature is recorded at the same interval.

Site visits were conducted twice a month during the study period. During each site visit the staff plate was cleared of any debris and read to the nearest 100th of a foot. Discharge was measured using a SonTek Flowtracker and the "Standard Operating Procedure for Estimating Streamflow "(WADOE) was followed. There is one discrepancy with the SOP, however, during base flow it is a non-issue, but may be relative during high flow measurements. The SOP states that when water depth exceeds 2 feet, two velocity measurements in the same vertical profile should be taken. The first measurement should be taken at 2 tenths the depth and the second at 8 tenths. In streams with high gradient and mixed substrates two velocity measurements per vertical profile should be taken when water depth exceeds 1.50ft. The latter operating procedure was followed.

Data Management:

Loggers were removed on October 28th to avoid prolonged freezing temperatures. Field notes from the study period were organized and compared with similar notes that were typed into the FlowTracker prior to every measurement. This is a good exercise to QA/QC collected data. A rating curve was developed using regression analysis of instantaneous flow measurements and stage heights for each tributary. Water level loggers were corrected to display values in feet of water by subtracting barometric pressure using Onset Hoboware pro software. Reported stage heights were then compared to logger water depths and shifts were applied accordingly to compensate for logger drift.

The discharge rating curve equation was then applied to logger data and thus produced a continuous recording of each tributaries discharge. One last QA/QC exercise was performed to ensure data reliability. Discharge measurements were compared to logger data discharge values to locate any discrepancies and adjust if necessary.

Temperature data produced by the water level logger does not require any data management. However, it is compared to a one time water temperature collected by the flowtracker during every discharge measurement.

Results:

After all data management is complete a continuous record of discharge and temperature data is available from July 15th thru October 28th in 0.5hr increments for each tributary. A rating curve has been developed and will be extended to include high flows during spring 2012. Below are hydrographs and temperature graphs for each tributary and the WADOE gauge on Peshastin Creek. Tabular data is also available.

Next Steps:

Capture any high flows at each tributary throughout the winter. Prior to spring snowmelt staff plates and data loggers will be re-installed and discharge measurements will be conducted throughout the run-off period. Continue to assess the need for similar monitoring on other Peshastin Creek tributaries.

















