

MYSTIC LAKE PROJECT

Whitewater Working Group Draft Conference Call Summary July 15, 2008

All participated via conference line:

PPL Montana – Jon Jourdonnais	MFWP – Jeremiah Wood
PPL Montana – Lance Elias	USFS – Darin Watschke
PPL Montana – Frank Pickett	MDEQ – Randy Apfelbeck
PPL Montana – Brent Mabbott	MDEQ – Ann Harrie
PPL Montana – Roscoe Kronfuss	American Lands – Bruce Bugbee
American Whitewater – Kevin Colburn	American Lands – Jeff Frost
Beartooth Paddlers – Ian McIntosh	American Lands – Nancy Johnson
Beartooth Paddlers – Ron Ladders	

The draft whitewater work plan is appended to this conference call summary.

The conference call began at 1:30 PM. Nancy checked off members participating and reviewed the agenda. The main focus for the call was to review and discuss the whitewater work plan for this year and associated measurements and monitoring.

Pine Grove staff gauge rating curve

Frank Pickett reviewed work on the rating curve for West Rosebud Creek as measured at the Pine Grove staff gage. He said the most recent measurement of July 7 showed 3.27 on the staff gauge with a flow of 700 cfs. Additional flow measurements would be collected this year as tributary flows decrease and to refine measurements in the 1.8-2.0 range. Both Ron Ladders and Nancy Johnson noted the good fit with estimated flows at Pine Grove last summer during the whitewater test. Ron also noted the importance of watching tributary inflow later this summer.

Determining inflow to West Rosebud Lake during and following a whitewater release

Brent reviewed the components of the work plan for determining flows for whitewater recreation. He described tracking of flows in the bypass reach (during and after spill over Mystic Dam), flow through the plant (165-170 cfs), and inflow from small tributaries. Addition of these three numbers would give an estimated time to refill West Rosebud Lake following a whitewater release. Kevin noted the importance of a minimum flow of 200 cfs in West Rosebud Creek as a determinant for re-fill time of the lake, since flow out of West Rosebud Lake would be needed to maintain this minimum flow in the creek.

Ian questioned what flows were available now for refilling West Rosebud Lake and Brent said about 350 cfs. Ron noted that in 2007 there was little flow through the bypass reach between Mystic Lake and the plant, and that West Rosebud Lake was re-filled following the whitewater test. Jeremiah noted that streamflow in West Rosebud Creek in 2007 actually dropped below the desired 200 cfs target after the whitewater test, with flows of 140 cfs for 6/14 and 158 cfs for 6/15. These flows occurred with lake inflows of 267 cfs on 6/14 and 250 on 6/15.

Frank stated that elevations in West Rosebud Lake would be monitored more closely this year compared to 2007 to help measure lake inflow and outflow. Roscoe clarified that flows in the bypass reach below Mystic Lake were not controlled by PPLM, and occur under natural

conditions. A staff gauge measurement of 1.8 was roughly equivalent to a flow of 364 cfs, with 2.0 roughly equivalent to 459 cfs. Darin noted that flows in West Rosebud Creek for the period from 1979 to 2002 averaged 215 cfs during July and 62 cfs during August. How much to augment flows would vary with changes in hatch.

Minimum flow in West Rosebud Creek following a release

Jeremiah noted that lake and stream fishing would also be affected during a whitewater release, and that with flows of 200 cfs in West Rosebud Creek, the stream was wadeable and fishable. Kevin noted that inflows of 250-300 cfs into West Rosebud Lake would be needed to provide a minimum flow of 200 cfs in West Rosebud Creek. This would be for a whitewater release of 300-400 cfs for a period of 6 hours. Ron noted that in his summer trips to West Rosebud Creek, he has observed more anglers on the creek when flows were below 200 cfs.

Brent noted the importance of both biological and fishing/access components for determining sideboards for whitewater releases. Frank also noted the disruption of 'holding' areas for fish during a release, with displacement from one area to another across all species when stream flow changes. Jeremiah again stated the preference of FWP for a minimum instream flow of 200 cfs in West Rosebud Creek following a whitewater release and during refill of West Rosebud Lake. Brent explained how the 200 cfs was derived to provide a 'safe' zone for fish in side channels, and to protect late redds from drying out. MFWP currently has an established minimum flow of 162 cfs for July.

Elevation fluctuation in West Rosebud Lake during and following a release

Brent described the importance of the fishery in the lake, and a target refill to the lake's pre-release level by 7AM the morning after a release. The group discussed the variables affecting refill of West Rosebud Lake. Jon stated that under the Mystic license, pond level was designed to fluctuate 1-2 feet for operation of the project. Pond fluctuation for a whitewater release would be within this range. Brent noted variation in pond elevations with operation of the plant under peaking operation versus full capacity. Lance Elias stated that if a 200 cfs minimum flow is needed during the whitewater releases, there is a limited window of opportunity of 2-3 weeks during which time spill over Mystic Dam combined with turbine releases between 150-200 cfs provides enough flow to recover the re-reg pond elevation.

Jon noted that in 2007 West Rosebud Lake was held at full capacity for the whitewater test. Jon thought a summer full pool capacity could be determined to allow for up to a 2-foot draft of the lake during a release. Nancy described the close proximity of the lake to West Rosebud Road in 2007, and Roscoe noted that inundation of the road was a controlling factor for determining maximum lake elevation.

Ron noted the value of 'surcharging' the lake to allow operation of West Rosebud Lake for releases, especially with flow needs varying from year to year. Frank said that lake elevation would be tracked this year with data loggers.

Ian described the importance of identifying what the system could accommodate for increasing the number of days with whitewater flow in the range of 1.8 to 2.0 as measured on the Pine Grove staff gauge. Ron stated the two objectives for whitewater releases – increasing the number of days with high-quality whitewater flows (2.0 on the Pine Grove staff gauge) and providing more boatable days at lower flows (1.8 to 1.9 on the Pine Grove staff gauge).

Brent questioned the ability of the PPLM crew at Mystic to manually make the operational changes for these targets. Roscoe noted the ability of PPLM staff to accommodate 4 to 6 whitewater events *during most years?* and the importance of one person communicating flow requests to plant personnel at least one week in advance. Jon stated that a communication protocol would be established to accomplish this.

Kevin asked for clarification whether a minimum flow of 200 cfs in WRC would result in whitewater releases in only those years when spill occurred at Mystic Dam. With a minimum flow of 180 cfs, could extra storage in West Rosebud Lake be used to provide more whitewater opportunities? Frank indicated that with sufficient tributary flow to supplement flows in the bypass reach and using storage in West Rosebud Lake, it might still be possible to conduct whitewater releases in years with no spill at Mystic Dam. Jeff Frost noted that as parameters for whitewater releases are defined, maintaining the minimum WRC flow is the criteria, not whether or not there is spill from Mystic Lake.

Darin noted biological ramifications for any whitewater release in mid to late August, and Brent stated a release at this time would be a real push on resources. Ian noted that water availability and flows vary greatly from year to year.

The group briefly discussed tracking attenuation time between releases at the West Rosebud dam and an increase in flow at the outlet of Emerald Lake. Frank will also track elevation in Emerald Lake during whitewater releases this year with a water level logger.

With available call time dwindling, the group discussed the timing for whitewater tests in 2008. Frank and Brent stressed the need to conduct the test when base flow above West Rosebud Lake is greater than 200 cfs, and base flow measured at the Pine Grove staff gage is between 250 and 360 cfs, with a target whitewater flow of 300 to 450 cfs. The group selected Sunday, August 3 and Tuesday, August 5 for the whitewater tests.

The call ended at 3:00. Frank Pickett confirmed the August test dates with the group via email after the call.

Work Plan to Determine Flows for Whitewater Recreation From Brent Mabbott and Frank Pickett

After much discussion, Frank and I have identified the following 5 key components that will help determine the magnitude and length of WW flow excursions. We are getting close to the answers for several of the components.

These components will all play important rolls in the final determination of sideboards for WW releases.

1. Minimum bypass flow - WW flows usually can only occur when there are refilling flows for West Rosebud Lake (WRL also known as the Rereg Reservoir) in the bypass. The refilling flows will need to be determined.
2. Effect on fishing in West Rosebud Lake - Due to the importance of the fishery in the WRL, it must refill in a timely manner. It has been suggested that the reservoir needs to

be refilled by 7 AM the morning after the WW release is made. The time of refill can be calculated for each combination of inflow and outflow. The WW release in 2007 lowered the Rereg Reservoir more than 2 feet. As a result of the drawdown, the effects on fishing in West Rosebud Lake will need to be evaluated.

3. Minimum flow downstream from WRL - Downstream flows, after the WW release, cannot go below 200 cfs. This flow protects the late redds and young fish in the side channels. (the 200 cfs is subject to change but looks close at this point).

4. WW release parameters - Determine the discharge rate (cfs) and the duration (time) of release needed from the Rereg Reservoir to achieve the preferred flows (1.8 to 2.0 feet on the Pine Grove staff gage). Frank appears to be getting a good handle on this. There may be water losses or gains in Emerald Lake and in West Rosebud Creek. There was an estimated 20 cfs loss between Emerald Gauge and Pine Grove during the flow measurement on 7/7/08.

5. Effect of Emerald Lake on WW flow - Determine the amount of lag time (attenuation) between releases from the Rereg dam and increase in flows at the outlet of Emerald Lake and on post WW flow releases. This will begin to be understood with the evaluation of last year's test and another test in August of this year. The water level loggers are giving us insight into this as this is written.

There are other factors that will help determine the side boards listed above and they include but are not limited to the following:

- Effects of water temperature changes downstream...both during the releases and post releases...
- Effects of the flow changes, this includes safety for animals and persons in and around the water, changes in fishing recreation (upstream and down)
- Ramping of WW releases does not seem to be necessary due to the attenuation of Emerald Lake.

The above will assist us in identifying the flow window(s) in which we can provide WW flows.

This is an effort to help us focus on the sideboards needed with WW flow releases.