

APPENDIX F

Baker County

Mason Dam Hydroelectric Project
FERC No. P-12686

Turbidity Monitoring Plan

April 2011

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1.0 Introduction

Baker County has applied to the Federal Energy Regulatory Commission (FERC) to develop hydroelectric energy at the existing Mason Dam. Mason Dam is located along the Powder River in Baker County, Oregon approximately 15 miles southwest of Baker City off of State Highway 7 and in the Wallowa-Whitman national Forest.

Mason Dam was built by the US Bureau of Reclamation (BOR) on the Powder River for irrigation, water delivery, and flood control. Mason Dam is 173 feet high, 895 feet long and 875 feet wide from toe to toe. Phillips Reservoir is formed from Mason Dam and covers 2,235 acres, has a total of 95,500 acre-feet, with 90,500 acre-feet being active. Water is stored behind Mason Dam in Phillips Reservoir, and is released during the irrigation season by Baker Valley Irrigation District (BVID). Water is generally stored between October and March and released April through September.

The intake of Mason Dam is located within a 17 x 17 x 13.3 foot high barrier with large bars, spaced 6 inches apart that act as a trash rack. There are two pipes that can be used to release water. One is a 56 inch diameter pipe and the other is a 12 inch diameter pipe. The 56 inch pipe is split into two 33 inch, high pressure gates, that are located in the valve house to control the release into the stilling basin via the tail race. The 12 inch pipe uses a sleeve/weir type valve to release water into the stilling basin. The outlet works consists of a tunnel controlled by the two high pressure gates with hydraulic hoists that have a capacity of 875 cfs at a reservoir elevation of 4070.5 feet. The spillway has an uncontrolled crest and is concrete lined with a maximum capacity of 1,210 cfs at a reservoir elevation of 4077.25 feet. The spillway and outlet works share a common stilling basin.

The proposed hydroelectric plant will contain a single horizontal shaft Francis turbine connected to a 3.4 MW 60 hertz, 12,640 volt generator with a brushless exciter. It will operate efficiently over a head range of 10 to 150 feet, and flows from 120 to 300 cfs. An extended downward tilted draft tube will discharge into the tailrace. The draft tube will be fitted with aeration fittings to provide aspiration of air to increase dissolved oxygen in the river. Plant controls will include a synchronous bypass to initiate the operation of the Reclamation slide gates during turbine shut down. A new hydraulic power unit (HPU) will be provided to increase the rate of the slide gates opening to more closely match the rate of flow lost when the turbine shuts down. Power generated will sent to the substation .8 miles away from the powerhouse. The current plan is for the line to be overhead following the Black Mountain Road.

2.0 Purpose and Scope

The purpose of this plan is to describe the actions that Baker County will use to monitor and respond to short-term turbidity increases in the Powder River below Mason Dam due to the construction activities of the proposed hydroelectric project. This plan will be implemented in conjunction with the Erosion and Sediment Control Plan for the project.

3.0 Turbidity Monitoring and Responses

Monitoring During Cofferdam Construction and Removal

Turbidity monitoring will occur each day that in-water work is conducted using a calibrated turbidity meter. The monitoring will be conducted at the following location and frequencies:

Baseline Turbidity Point: A sample will be taken at the Oregon Water Resources Departments gauging station prior to any in-water work. The baseline turbidity level and time will be recorded on the daily turbidity monitoring form.

Turbidity Monitoring: Monitoring will occur every four hours at the same location and will be compared against the baseline reading.

If the turbidity reading exceeds the baseline reading by more than 10 NTUs but less than 50 NTUs, Baker County's contractor will inspect the Best Management Practices (BMPs) and take any corrective action that may be necessary. If during in-water work activities, the turbidity measured exceed the baseline reading by more than 30 NTUs but less than 50 NTUs, Baker County's contractor will increase the frequency of the turbidity monitoring from four hours to two hours until the turbidity is 10 NTUs or less than baseline levels and if the turbidity does not reach the 10 NTUs or less after the second two hour reading, in-water construction activities must cease. Once the turbidity levels have reached 10 NTUs or less then monitoring intervals will return to every four hours. If the turbidity readings exceed the baseline level by more than 50 NTUs, Baker County's contractor shall stop work on activities that caused the increase in turbidity, check and if needed install additional BMPs, wait one hour and take a reading. If the turbidity levels are equal to or less than 10 NTUs then construction activities can commence with the next monitoring done two hours later as described in table 1.

Table 1. Turbidity Monitoring Procedures
Monitoring With a Turbidity Meter

Turbidity above Baseline level	Action at 1st Monitoring Interval	Action at 2nd Monitoring Interval
Equal to or less than 10 NTUs above baseline	Continue to monitor every 4 hours	Continue to monitor every 4 hours
Greater than 10 to 30 NTUs above baseline	Inspect BMPs and take any corrective action that may be needed. Continue to monitor every 4 hours	Stop work on activities that may cause turbidity to exceed baseline by 10 to 30 NTUs if there are two consecutive monitoring intervals that exceed this level
Greater than 30 but less than 50 NTUs above baseline	Inspect BMPs and take any corrective action that may be needed. Monitor every 2 hours until turbidity levels are 10NTUs or less	Stop work on activities that may cause turbidity to exceed baseline by 30 to less than 50NTUs if there are two consecutive monitoring intervals that exceed this level
Equal to or greater than 50NTUs above baseline	Stop work and inspect BMPs and take any corrective action that may be needed. Wait one hour and take a reading. If reading is equal to or less than 10NTUs work may start again with monitoring done every 2 hours.	Stop work and inspect BMPs and take any corrective action that may be needed. Wait one hour and take a reading. If reading is equal to or less than 10NTUs work may start again with monitoring done every 2 hours.

Monitoring During Non-Cofferdam Construction or Removal

It is anticipated that once the cofferdam is in place water will be diverted through the auxiliary pipe into the overflow spill basin and then pumped downstream below the stilling basin. If during this time more water is needed downstream and flows over the top of the cofferdam or the cofferdam fails, turbidity readings will take place immediately. The turbidity reading will then be compared to the baseline reading and actions will be taken according to table 1.

Reporting

Baker County's contractor will prepare a daily narrative discussing all turbidity that resulted in the stoppage of work, subsequent monitoring, any actions taken in response, and the effectiveness of the actions. The report will also contain the data sheets that show the daily calibration record, baseline reading, and monitoring readings. Copies of the daily logs of turbidity monitoring will be available upon request with updates submitted to the agencies along with all the other construction activities.

