

WASHINGTON DEPARTMENT OF ECOLOGY
ENVIRONMENTAL ASSESSMENT PROGRAM
FRESHWATER MONITORING UNIT
STREAM DISCHARGE TECHNICAL NOTES

STATION ID: 32A120
STATION NAME: Walla Walla River at Pepper Bridge
WATER YEAR: 2010
AUTHOR: Mitch Wallace

Introduction

Watershed Description

The Walla Walla River is a tributary of the Columbia River, joining the Columbia just above Wallula Gap in southeastern Washington. The headwaters of the Walla Walla River lie in the Blue Mountains of northeastern Oregon. Ninety-five percent of the watershed above this station lies within the State of Oregon. The Walla Walla River supports populations of spring Chinook salmon, summer steelhead, and bull trout. Land use in the watershed is mostly dryland and irrigated agriculture.

Gage Location

The station is located on the left bank, downstream of the Pepper Bridge Road crossing, near the Oregon/Washington state line. It is located at river mile 39.6.

Table 1.

Drainage Area (square miles)	38.7
Latitude (degrees, minutes, seconds)	46° 00' 09" N
Longitude (degrees, minutes, seconds)	118° 22' 56" W

Discharge

Table 2. Discharge Statistics.

Mean Annual Discharge (cfs)	133
Median Annual Discharge (cfs)	118
Maximum Daily Mean Discharge (cfs)	1040
Minimum Daily Mean Discharge (cfs)	8.9
Maximum Instantaneous Discharge (cfs)	1190
Minimum Instantaneous Discharge (cfs)	8.9
Discharge Equaled or Exceeded 10 % of Recorded Time (cfs)	254
Discharge Equaled or Exceeded 90 % of Recorded Time (cfs)	12
Number of Days Discharge is Greater Than Range of Ratings	0
Number of Days Discharge is Less Than Range of Ratings	45

Note: Statistics displayed in Table 2 may not include values in which the predicted discharge exceeds the range of ratings.

Narrative

Nine discharge measurements were conducted throughout the water year, ranging from 17 to 638 cfs.

Error Analysis

Table 3. Error Analysis Summary.

Logger Drift Error (% of discharge)	2.6
Weighted Rating Error (% of discharge)	9.8
Total Potential Error (% of discharge)	12.4

Rating Table(s)

Table 4. Rating Table Summary

Rating Table No.	13	14		
Period of Ratings	4/10/09-6/2/10	6/3/10-1/17/11		
Range of Ratings (cfs)	7.0 to 2350	8.9 to 2350		
No. of Defining Measurements	13	8		
Rating Error (%)	9.7	10.7		

Rating Table No.				
Period of Ratings				
Range of Ratings (cfs)				
No. of Defining Measurements				
Rating Error (%)				

Narrative

The water year began under rating #13. In early June, 2010, the rating shifted to #14, due to channel scour caused by seasonal run-off.

Stage Record

Table 5. Stage Record Summary

Minimum Recorded Stage (feet)	.91
Maximum Recorded Stage (feet)	6.57
Range of Recorded Stage (feet)	4.66
Number of Un-Reported Days	0
Number of Days Qualified as Estimates	0
Number of Days Qualified as Unreliable Estimates	0

Narrative

Differences between data logger and staff gage readings varied up to .10 feet. These differences were considered stable drift. Stable drift occurs when the difference between data logger and staff readings are consistent over time.

Modeled Discharge

Table 6. Model Summary

Model Type (Slope conveyance, other, none)	Slope conveyance
Range of Modeled Stage (feet)	6.50 to 8.50
Range of Modeled Discharge (cfs)	1190 to 2350
Valid Period for Model	WY 2010
Model Confidence	9.6%

Surveys

Table 7. Survey Type and Date (station, cross section, longitudinal)

Type	Date
Cross-Section, Long.	09/28/2011

Activities Completed

No significant maintenance issues were needed this year.