WASHINGTON DEPARTMENT OF ECOLOGY

ENVIRONMENTAL ASSESSMENT PROGRAM

FRESHWATER MONITORING UNIT

STREAM DISCHARGE TECHNICAL NOTES

STATION ID: 35K050

STATION NAME: Alpowa Creek at Mouth

WATER YEAR: 2009

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Introduction

Watershed Description

Alpowa Creek is a left bank tributary to the Snake River, approximately 6 miles downstream from Clarkston, Washington. The headwaters of Alpowa Creek are in the northern foothills of the Blue Mountains. From there, the creek flows northeasterly to its confluence with the Snake River.

Gage Location

The station is located on the right bank, between the Old Chief Timothy bridge and the Highway 12 bridge in the parking lot of the Department of Transportation Interpretive Site.

Table 1. Basin Area and Legal Description

Drainage Area (square miles)	128 (Streamstats)
Latitude (degrees, minutes, seconds)	46° 24' 44" N
Longitude (degrees, minutes, seconds)	117° 12' 48" W

Table 2. Discharge Statistics.

Mean Annual Discharge (cfs)	13
Median Annual Discharge (cfs)	8.6
Maximum Daily Mean Discharge (cfs)	60
Minimum Daily Mean Discharge (cfs)	4.2
Maximum Instantaneous Discharge (cfs)	66
Minimum Instantaneous Discharge (cfs)	2.8
Discharge Equaled or Exceeded 10 % of Recorded Time (cfs)	24
Discharge Equaled or Exceeded 90 % of Recorded Time (cfs)	6.3
Number of Days Discharge is Greater Than Range of Ratings	0
Number of Days Discharge is Less Than Range of Ratings	27
Number of Un-Reported Days	30
Number of Days Qualified as Estimates	31
Number of Modeled Days	0

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

Table 2 Discussion (Discharge Statistics)

The unreported days were due in part to ice-impacted data. In early July, a thunderstorm in the upper watershed led to a flash flood. This event led to staff gage damage and the water level sensor being buried in debris. Until the repairs could be made, the data from this period were qualified as an unreliable estimate and were not reported.

Peak flow occurred during the flash flood event on July 5, 2009. The lowest flow of the year occurred October 1, 2008.

Table 3. Error Analysis Summary.

Potential Logger Drift Error (% of discharge)	1.0
Potential Weighted Rating Error (% of discharge)	9.7
Total Potential Error (% of discharge)	10.7

Table 3 Discussion (Error Analysis)

Table 4. Stage Record Summary

Minimum Recorded Stage (feet)	1.24
Maximum Recorded Stage (feet)	4.71
Range of Recorded Stage (feet)	3.47

Table 4 Discussion (Stage Record)

Table 5. Rating Table Summary

Rating Table No.	15	16	17
Period of Ratings	10/1/08 to 11/6/08	10/1/08 to 12/24/08	12/14/08 to 7/5/09
Range of Ratings (cfs)	2.6 to 78	4.1 to 78	4.2 to 78
No. of Defining Measurements	4	2	5
Rating Error (%)	8.8	9.1	10.2

Rating Table No.	18		
Period of Ratings	7/5/09 to 9/30/09		
Range of Ratings (cfs)	3.9 to 180		
No. of Defining Measurements	4		
Rating Error (%)	9.3		

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

Table 5 Discussion (Rating Tables)

A thunderstorm in the upper watershed in early July led to flash flooding. This event resulted in significant channel scour.

Eight discharge measurements were taken throughout the water year, ranging from 7.6 to 40 cfs.

Table 6. Model Summary

Model Type (Slope conveyance, other, none)	n/a
Range of Modeled Stage (feet)	n/a
Range of Modeled Discharge (cfs)	n/a
Valid Period for Model	n/a
Model Confidence	n/a

Table 6 Discussion (Modeled Data)

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

Type	Date
n/a	n/a

Table 7 Discussion (Surveys)

Activities Completed

The staff gage was repaired on July 22, 2009, after the flash flood event.