

**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:** 2011  
**AUTHOR:** Mitch Wallace

**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)	9.8
Median Annual Discharge (cfs)	9.5
Maximum Daily Mean Discharge (cfs)	20
Minimum Daily Mean Discharge (cfs)	3.8
Maximum Instantaneous Discharge (cfs)	21
Minimum Instantaneous Discharge (cfs)	3.2
Discharge Equaled or Exceeded 10 % of Recorded Time (cfs)	14
Discharge Equaled or Exceeded 90 % of Recorded Time (cfs)	5.7
Number of Days Discharge is Greater Than Range of Ratings	0
Number of Days Discharge is Less Than Range of Ratings	23
Number of Un-Reported Days	5
Number of Days Qualified as Estimates	16
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 datasets, following an ice-impacted period without a manual primary gage index (PGI) reading for verification, have been qualified as an estimate. The days in which the mean daily flow difference between corrected and uncorrected data were greater than 20% were qualified as estimates.

The missing days are a result of ice-impacted data.

Peak flow occurred on April 6 and 7, 2011, as a result of minor seasonal runoff.

Table 3. Error Analysis Summary.

Potential Logger Drift Error (% of discharge)	5.8
Potential Weighted Rating Error (% of discharge)	9.7
Total Potential Error (% of discharge)	15.5

Table 3 Discussion (Error Analysis)

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Table 4. Stage Record Summary

Minimum Recorded Stage (feet)	0.70
Maximum Recorded Stage (feet)	1.34
Range of Recorded Stage (feet)	0.64

Table 4 Discussion (Stage Record)

The maximum recorded stage occurred during the small seasonal runoff event in early April 2011.

Table 5. Rating Table Summary

Rating Table No.	19	20	191
Period of Ratings	10/1/10 to 10/6/10	10/1/10 to 1/5/11	11/24/10 to 5/2/11
Range of Ratings (cfs)	2.2 to 284	3.9 to 284	2.2 to 284
No. of Defining Measurements	9	3	9
Rating Error (%)	7.5	11.8	7.5

Rating Table No.	21		
Period of Ratings	3/21/11 to 9/30/11		
Range of Ratings (cfs)	3.2 to 284		
No. of Defining Measurements	9		
Rating Error (%)	10.5		

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

Table 5 Discussion (Rating Tables)

The shift to rating 191 was a result of ice scour within the channel. Rating 21 was a result of fine sediment movement due to a small seasonal runoff event.

Table 6. Model Summary

Model Type (Slope conveyance, other, none)	Slope Conveyance
Range of Modeled Stage (feet)	1.70 to 4.28
Range of Modeled Discharge (cfs)	35 to 284
Valid Period for Model	WY 2011
Model Confidence	2.4%

Table 6 Discussion (Modeled Data)

Manning's 'n' was calculated using the Manning's 'n' determination worksheet.

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

Type	Date
n/a	n/a

Table 7 Discussion (Surveys)

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Activities Completed

Set three reference marks for future surveying activities.
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