

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

STATION ID: 05B090
STATION NAME: N. F. Stillaguamish River at Oso
WATER YEAR: WY2013
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Introduction

Watershed Description

The North Fork (NF) Stillaguamish River Basin is made up of a narrow lowland valley surrounded by steep forested hillsides and a few snow capped mountain peaks. Elevation ranges from just over 200 feet at the gage to more than 6800 feet at points along the southern boundary of the basin. The mean basin elevation is 2230 feet. The average slope in the basin is calculated as 41 percent. Forest canopy is estimated to cover 75 percent of the basin. Mean annual precipitation is about 85 inches.

Gage Location

The gage is located on the right bank of the NF Stillaguamish River at the north end of Whitman Road Bridge. The gage house is at the same elevation as the roadway; and the slant-pipe drops about 25 feet along the side of an old bridge abutment into the river. The terminal end of the pipe extends into a deep portion of the channel a few feet offshore.

Table 1.

Drainage Area (square miles)	161
Latitude (degrees, minutes, seconds)	48, 16, 20, North
Longitude (degrees, minutes, seconds)	120, 53, 16, West

Discharge

Table 2. Discharge Statistics.

Mean Annual Discharge (cfs)	1310 cfs
Median Annual Discharge (cfs)	1080 cfs
Maximum Daily Mean Discharge (cfs)	7100 cfs
Minimum Daily Mean Discharge (cfs)	156 cfs
Maximum Instantaneous Discharge (cfs)	10800 cfs
Minimum Instantaneous Discharge (cfs)	155 cfs
Discharge Equaled or Exceeded 10 % of Recorded Time (cfs)	2670 cfs
Discharge Equaled or Exceeded 90 % of Recorded Time (cfs)	278 cfs
Number of Days Discharge is Greater Than Range of Ratings	None
Number of Days Discharge is Less Than Range of Ratings	None

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

Narrative

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Error Analysis

Table 3. Error Analysis Summary.

Logger Drift Error (% of discharge)	7 %
Weighted Rating Error (% of discharge)	15 %
Total Potential Error (% of discharge)	22 %

Rating Table(s)

Table 4. Rating Table Summary

Rating Table No.	102		
Period of Ratings	10/1/2012 - 9/30/2013		
Range of Ratings (cfs)	115 to 20100 cfs		
No. of Defining Measurements	41		
Rating Error (%)	15 %		

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

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

Narrative

The high rating error percentage is a result of very difficult conditions for measuring discharge through much of the year. Flow is frequently fast and turbulent with areas of shear between fast and slow moving water.

Stage Record

Table 5. Stage Record Summary

Minimum Recorded Stage (feet)	0.47 ft
Maximum Recorded Stage (feet)	8.25 ft
Range of Recorded Stage (feet)	7.78 ft
Number of Un-Reported Days	None
Number of Days Qualified as Estimates	7 days
Number of Days Qualified as Unreliable Estimates	None

Narrative

Seven days qualified as estimates due to instrument drift errors that potentially exceeded 20 percent of the mean daily flow.

Modeled Discharge

Table 6. Model Summary

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

Surveys

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

Type	Date

Activities Completed

Routine maintenance was done at the station at six week intervals through the water year. Visits included discharge measurements, data downloads, and changing batteries and desiccant as needed.