

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

STATION ID: 20A070
STATION NAME: Sol Duc River
WATER YEAR: 2009
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Introduction

Watershed Description

The Sol Duc River is approximately 78 miles long. The river flows west--northwest from the Olympic mountains near the town of Forks, Washington. Main tributaries to the Sol Duc include both the North and South forks as well as Bear Creek, Beaver Creek, and Lake Creek. The Sol Duc supports stocks of coho, chinook, and sockeye salmon as well as native runs of steelhead and cutthroat trout. The drainage encompasses parts of Olympic National Park and Olympic National Forest as well as private commercial timberlands in the lower elevations. The Sol Duc River joins with the Calawah and Bogachiel Rivers to form the Quillayute, a tributary to the Pacific Ocean near LaPush, Washington.

Gage Location

The stream gage is located on the right bank of the river on the upstream side of the Quillayute Road bridge at (approximately) river mile 13.8.

Table 1.

Drainage Area (square miles)	219
Latitude (degrees, minutes, seconds)	47 57 07 N
Longitude (degrees, minutes, seconds)	124 28 03 W

Discharge

Table 2. Discharge Statistics.

Mean Annual Discharge (cfs)	1130
Median Annual Discharge (cfs)	867
Maximum Daily Mean Discharge (cfs)	19100
Minimum Daily Mean Discharge (cfs)	139
Maximum Instantaneous Discharge (cfs)	21800
Minimum Instantaneous Discharge (cfs)	138
Discharge Equaled or Exceeded 10 % of Recorded Time (cfs)	1820
Discharge Equaled or Exceeded 90 % of Recorded Time (cfs)	187
Number of Days Discharge is Greater Than Range of Ratings	0
Number of Days Discharge is Less Than Range of Ratings	0

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

Narrative

The discharge of the Sol Duc River was marked by two significant hydrologic events in WY 2009. The first, lesser event occurred in November 2008 and consisted of two moderately high peaks. The second larger event occurred in January 2009 and peaked on January 7th. The predicted discharge of this event exceeded the highest discharge measurement by only 450 cubic feet per second.

Error Analysis

Table 3. Error Analysis Summary.

Logger Drift Error (% of discharge)	0.4
Weighted Rating Error (% of discharge)	9.9
Total Potential Error (% of discharge)	10.3

Rating Table(s)

Table 4. Rating Table Summary

Rating Table No.	3		
Period of Ratings	10/01-09/30		
Range of Ratings (cfs)	0.001-21,350		
No. of Defining Measurements	32		
Rating Error (%)	9.9		

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 rating curve for the Sol Duc River gaging station is both stable and robust. The control structure for defining the curve is composed primarily of moderately large to large boulders.

Stage Record

Table 5. Stage Record Summary

Minimum Recorded Stage (feet)	15.13
Maximum Recorded Stage (feet)	32.35
Range of Recorded Stage (feet)	17.22
Number of Un-Reported Days	0
Number of Days Qualified as Estimates	0
Number of Days Qualified as Unreliable Estimates	0

Narrative

The stage record for the Sol Duc River gage was complete and continuous for WY 2009. One five day gap in the stage for WY2009 was filled using fairly well correlated, regressed stage data from the Sekiu river gaging station (19J060).

Modeled Discharge

Table 6. Model Summary

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

Surveys

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

Type	Date

Activities Completed

The primary gage index was changed from a tapedown distance from a reference point to a wire weight gage on 10/02/2008.