

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

STATION ID: 30C070
STATION NAME: Little Klickitat River near Wahkiacus
WATER YEAR: 2011
AUTHOR: Don Watt

Introduction

Watershed Description

The Little Klickitat River flows in south central Washington from the Simcoe Mountains and Horse Heaven Hills west across the Munson Prairie and through the Little Klickitat canyon to its confluence with the Klickitat River. The watershed drains approximately 280 square miles and includes range, agricultural, and forest lands. The river has been designated as Class A and is used primarily for irrigation, stock watering, and aquatic life habitat. Elevation ranges from about 590 ft at the gage up to 5820 ft along ridges at the northeast basin boundary. About 14% of the basin is covered by forest canopy. Annual precipitation averages 24.5 inches per year.

Gage Location

The gage is 15 miles west of Goldendale on the south side of State Highway 142. The gage is on the right bank 400 feet upstream from the Hwy 142 Bridge and 1/4 mile upstream from the confluence with the Klickitat River. The Primary Gage Index is a sloping staff gage on the right bank near the gage house and slant pipe.

Table 1.

Drainage Area (square miles)	280
Latitude (degrees, minutes, seconds)	45, 50, 32 North
Longitude (degrees, minutes, seconds)	121, 03, 29 West

Discharge

Table 2. Discharge Statistics.

Mean Annual Discharge (cfs)	207
Median Annual Discharge (cfs)	143
Maximum Daily Mean Discharge (cfs)	1650
Minimum Daily Mean Discharge (cfs)	26
Maximum Instantaneous Discharge (cfs)	1720
Minimum Instantaneous Discharge (cfs)	25
Discharge Equaled or Exceeded 10 % of Recorded Time (cfs)	505
Discharge Equaled or Exceeded 90 % of Recorded Time (cfs)	33
Number of Days Discharge is Greater Than Range of Ratings	0
Number of Days Discharge is Less Than Range of Ratings	11

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

Narrative

--

Error Analysis

Table 3. Error Analysis Summary.

Logger Drift Error (% of discharge)	4%
Weighted Rating Error (% of discharge)	12%
Total Potential Error (% of discharge)	16%

Rating Table(s)

Table 4. Rating Table Summary

Rating Table No.	305	404	502
Period of Ratings	10/1 to 10/23/2010	10/1 to 1/29/2011	12/29 to 3/10/2011
Range of Ratings (cfs)	1 to 2110 cfl	12 to 2110 cfs	122 to 2110 cfs
No. of Defining Measurements	36	32	4
Rating Error (%)	12%	11%	12%

Rating Table No.	306	405	
Period of Ratings	2/26 to 9/30/2011	7/18 to 9/30/2011	
Range of Ratings (cfs)	1 to 2110 cfl	12 to 2110 cfs	
No. of Defining Measurements	36	32	
Rating Error (%)	12%	11%	

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

Narrative

MMinor phased shifts between clones of Ratings #3 and #4 occur during the lower flow periods. An unexplained fill event caused Rating #5 to influence flow through much of the winter.

Stage Record

Table 5. Stage Record Summary

Minimum Recorded Stage (feet)	3.33
Maximum Recorded Stage (feet)	8.04
Range of Recorded Stage (feet)	4.71
Number of Un-Reported Days	0
Number of Days Qualified as Estimates	54
Number of Days Qualified as Unreliable Estimates	0

Narrative

Of the 54 days qualified as estimates, 43 days have high flows estimated using the slope-conveyance model. The remaining 11 days qualified as estimates have flows below the range of rating during the period in which Rating 502 has effect. For days with a flow below the range of rating, the reported discharge is an estimate that is higher than the actual flow for the date. The difference between the reported discharge and the actual mean discharge is not known.

Modeled Discharge

Table 6. Model Summary

Model Type (Slope conveyance, other, none)	Slope conveyance
Range of Modeled Stage (feet)	6.00 to 8.80 ft
Range of Modeled Discharge (cfs)	693 to 2110 cfs
Valid Period for Model	10/1/06 to 9/30/2012
Model Confidence	4%

Surveys

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

Type	Date

Activities Completed

--