

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

**STATION ID:** 45F070  
**STATION NAME:** Peshastin Creek at Green Bridge Road  
**WATER YEAR:** 2008  
**AUTHOR:** Tyler W. Burks

**Introduction**

Watershed Description

Peshastin Creek originates in the snowfields of the eastern slopes of the central Cascade Mountain range and flows into the Wenatchee River at river mile 17. The watershed is bounded by both the Stuart Range (Mount Stuart: 9,415 ft) and the Wenatchee Mountains. Land cover above the gage consists of predominantly coniferous forest, but also includes alpine shrubland, montane grassland, bedrock/talus slopes, and riparian woodlands. A large portion of the lower watershed is used for agricultural production (tree fruit). Mean annual precipitation across the watershed above this gage location is 36 inches (U.S. Weather Bureau, 1965).

Gage Location

The telemetered stream gaging station on Peshastin Creek at Green Bridge Road was installed on September 20, 2002. The gage is located at the Green Bridge Road bridge on the right bank, approximately 1.4 miles upstream of the mouth.

Table 1.

Drainage Area (square miles)	134 (USGS, 2013)
Latitude (degrees, minutes, seconds)	47°33'09" N
Longitude (degrees, minutes, seconds)	120°36'13" W

**Discharge**

Table 2. Discharge Statistics.

Mean Annual Discharge (cfs)	177
Median Annual Discharge (cfs)	84
Maximum Daily Mean Discharge (cfs)	1880
Minimum Daily Mean Discharge (cfs)	6.9
Maximum Instantaneous Discharge (cfs)	2090
Minimum Instantaneous Discharge (cfs)	6.6
Discharge Equaled or Exceeded 10 % of Recorded Time (cfs)	404
Discharge Equaled or Exceeded 90 % of Recorded Time (cfs)	20
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**

Five discharge measurements were taken, ranging from 7.5 to 1440 cfs. Snowmelt runoff slowly began in mid-March, and reached its peak on May 17, 2008, after a significant warming trend. The minimum discharge was recorded during baseflow conditions on September 30, 2008. Discharge was influenced by upstream seasonal irrigation operations, most notably during the month of September.

**Error Analysis**

Table 3. Error Analysis Summary.

Logger Drift Error (% of discharge)	3.7%
Weighted Rating Error (% of discharge)	14.9%
Total Potential Error (% of discharge)	18.6%

**Rating Table(s)**

Table 4. Rating Table Summary

Rating Table No.	#6		
Period of Ratings	10/01/2007-09/30/2008		
Range of Ratings (cfs)	3.75-5880		
No. of Defining Measurements	43		
Rating Error (%)	14.9%		

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 water year began with Table #6, carrying over from the previous water year, and was valid for the remainder of this water year. A measurement made on May 20, 2008, stands as the peak measured flow for the period of record at this station.

## Stage Record

Table 5. Stage Record Summary

Minimum Recorded Stage (feet)	0.58
Maximum Recorded Stage (feet)	4.30
Range of Recorded Stage (feet)	3.72
Number of Un-Reported Days	43
Number of Days Qualified as Estimates	62
Number of Days Qualified as Unreliable Estimates	0

## Narrative

Unreported days were due to an ice-impacted channel in which the stage-discharge relationship was not valid. The stage record is considered an estimate for 62 days during the water year. Five of the days qualified as estimates because a high flow model was used to extrapolate the measured range of discharge. Five days were qualified as estimates because the logger drift exceeded 20 percent, and the difference in reported discharge was greater than 0.50 cfs. The remaining qualified days (47 reliable estimates and five questionable estimates) occurred following or in-between periods of ice-impacted data prior to ice-free site observation.

## Modeled Discharge

Table 6. Model Summary

Model Type (Slope conveyance, other, none)	Slope Conveyance
Range of Modeled Stage (feet)	3.64 to 6.73
Range of Modeled Discharge (cfs)	1440 to 5880
Valid Period for Model	11/12/2006 to NOW
Model Confidence	+/-1.25%

## Surveys

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

Type	Date
Station Levels	09/19/2007

## Activities Completed

A new tape down was installed on October 18, 2007, on the rail of the downstream side of the bridge. The new tape down is now in the same gage pool and is closer to the primary gage index.