

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

STATION ID: 05A105
STATION NAME: S. F. Stillaguamish River @ Jordan Rd Bridge
WATER YEAR: WY2011
AUTHOR: Don Watt

Introduction

Watershed Description

The basin above this gage covers 181 square miles of steep forested terrain in the north Cascade Mountains. The mean elevation for the basin is 2450 feet. Elevations range from about 196 feet at the gage to 6690 feet at the highest point of the headwaters. The mean slope in the basin is over 43 percent. The forest canopy cover for 2001 was computed as 74 percent of the basin. Mean annual precipitation for the basin is 95.5 inches. Basin statistics are provided by the USGS.

Gage Location

The gage house is on the left bank of the S.F. Stillaguamish River at the south end of the Jordan Road Bridge near Granite Falls. In WY2011 continuous gaging was accomplished using a radar level sensing gage mounted on the downstream bridge rail. The primary gage index is a wire weight gage also mounted on the downstream bridge rail. The period of record is from July 29, 2004 until the present.

Table 1.

| | |
|---------------------------------------|---------------|
| Drainage Area (square miles) | 181 |
| Latitude (degrees, minutes, seconds) | 48, 05, 43 N |
| Longitude (degrees, minutes, seconds) | 121, 58, 29 W |

Discharge

Table 2. Discharge Statistics.

| | |
|---|--------|
| Mean Annual Discharge (cfs) | 1840 |
| Median Annual Discharge (cfs) | 1490 |
| Maximum Daily Mean Discharge (cfs) | 15,000 |
| Minimum Daily Mean Discharge (cfs) | 216 |
| Maximum Instantaneous Discharge (cfs) | 21,700 |
| Minimum Instantaneous Discharge (cfs) | 200 |
| Discharge Equaled or Exceeded 10 % of Recorded Time (cfs) | 3480 |
| Discharge Equaled or Exceeded 90 % of Recorded Time (cfs) | 370 |
| Number of Days Discharge is Greater Than Range of Ratings | 1 |
| 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

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| <p>The Maximum Daily Mean Discharge and Maximum Instantaneous Discharge exclude data from the high flow event on 12/12. Flows on that date exceeded 2 times the highest measured flow for the station and are considered to be unreliable estimates.</p> |
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Error Analysis

Table 3. Error Analysis Summary.

| | |
|--|-----|
| Logger Drift Error (% of discharge) | 2% |
| Weighted Rating Error (% of discharge) | 11% |
| Total Potential Error (% of discharge) | 13% |

Rating Table(s)

Table 4. Rating Table Summary

| | | | |
|------------------------------|----------------------|--|--|
| Rating Table No. | 2 | | |
| Period of Ratings | Jan 2010 - July 2012 | | |
| Range of Ratings (cfs) | 109 - 42,800 cfs | | |
| No. of Defining Measurements | 16 | | |
| Rating Error (%) | 11 | | |

| | | | |
|------------------------------|--|--|--|
| 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

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Stage Record

Table 5. Stage Record Summary

| | |
|--|--------|
| Minimum Recorded Stage (feet) | 5.22 |
| Maximum Recorded Stage (feet) | 21.08* |
| Range of Recorded Stage (feet) | 15.86* |
| Number of Un-Reported Days | 1 |
| Number of Days Qualified as Estimates | 111 |
| Number of Days Qualified as Unreliable Estimates | 0 |

Narrative

* The Maximum Recorded Stage on 12/12 and Range of Recorded Stage value are estimates based on regressed data from station 05B090. The correlation coefficient for the regression is 0.950. The estimated stage of 21.08 feet is nearly 2.5 feet above the next highest stage in the period of record since July 2004. The high stage on 12/12 exceeded twice the highest measured flow for the station.

Major bubbler gage damage left the station out of service for the first 111 days of WY2011. A radar level sensing gage, installed on 1/19, operated for the rest of the water year. The large data gap was filled using reference data from 05B090 and 05G070.

Modeled Discharge

Table 6. Model Summary

| | |
|--|-----|
| Model Type (Slope conveyance, other, none) | N/A |
| 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

Installed a radar-level-sensor gage to replace failed bubbler gage system on 1/19/2011.