

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

STATION ID: 05A105
STATION NAME: S.F. Stillaguamish at Jordan Rd Bridge
WATER YEAR: 2019
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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 2,450 feet. Elevations range from about 196 feet at the gage to 6,690 feet at the highest point of the headwaters. The mean slope in the basin is over 43 percent. The forest canopy cover was computed in 2001 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 South Fork Stillaguamish River at the south end of the Jordan Road Bridge near Granite Falls. The primary gage index is a wire weight gage mounted on the downstream bridge rail.

Table 1. Basin Area and Legal Description

| | |
|---------------------------------------|----------------|
| Drainage Area (square miles) | 181 |
| Latitude (degrees, minutes, seconds) | 48.095249° N |
| Longitude (degrees, minutes, seconds) | -121.974555° W |

Table 2. Discharge Statistics.

| | |
|---|-------|
| Mean Annual Discharge (cfs) | 1240 |
| Median Annual Discharge (cfs) | 749 |
| Maximum Daily Mean Discharge (cfs) | 10900 |
| Minimum Daily Mean Discharge (cfs) | 141 |
| Maximum Instantaneous Discharge (cfs) | 21200 |
| Minimum Instantaneous Discharge (cfs) | 134 |
| Discharge Equaled or Exceeded 10 % of Recorded Time (cfs) | 2530 |
| Discharge Equaled or Exceeded 90 % of Recorded Time (cfs) | 258 |
| Number of Days Discharge is Greater Than Range of Ratings | 0 |
| Number of Days Discharge is Less Than Range of Ratings | 0 |
| Number of Un-Reported Days | 0 |
| Number of Days Qualified as Estimates | 0 |
| Number of Modeled Days | 0 |

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

Table 2 Discussion (Discharge Statistics)

Discharge at South Fork Stillaguamish River at Jordan Road bridge gaging station reached its lowest point September 7, 2019. Discharge in South Fork Stillaguamish peaked November 4, 2018.

In water year 2019 the discharge record was stable and no days were less than or greater than the range of ratings. In addition, no data were qualified as estimates.

Table 3. Error Analysis Summary.

| | |
|--|------|
| Potential Logger Drift Error (% of discharge) | 1.1 |
| Potential Weighted Rating Error (% of discharge) | 10.2 |
| Total Potential Error (% of discharge) | 11.3 |

Table 3 Discussion (Error Analysis)

Logger Drift Error is based on a statistical analysis comparing continuous automated gage height readings with quality assurance gage height observations made during periodic stations visits.

Similarly, the Weighted Rating Error is calculated using a composite analysis of the level of quality assigned to each discharge measurement used to define each rating table.

Table 4. Stage Record Summary

| | |
|--------------------------------|-------|
| Minimum Recorded Stage (feet) | 4.76 |
| Maximum Recorded Stage (feet) | 14.00 |
| Range of Recorded Stage (feet) | 9.24 |

Table 4 Discussion (Stage Record)

Minimum stage occurred during a low flow period in early September 2019. Maximum stage occurred during high flow conditions caused by a storm event in early November of 2018.

Table 5. Rating Table Summary

| | | | |
|------------------------------|-----------------|--|--|
| Rating Table No. | 3 | | |
| Period of Ratings | 10/1/18-9/30/19 | | |
| Range of Ratings (cfs) | 45-42,800 | | |
| No. of Defining Measurements | 26 | | |
| Rating Error (%) | 10.2 | | |

| | | | |
|------------------------------|--|--|--|
| 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 (%) | | | |

Table 5 Discussion (Rating Tables)

| |
|---|
| Rating 3 is a carry over due to stable control conditions from WY 2018. |
|---|

Table 6. Model Summary

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

Table 6 Discussion (Modeled Data)

| |
|------|
| none |
|------|

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

| Type | Date |
|-------|-------|
| None. | None. |

Table 7 Discussion (Surveys)

None.

Activities Completed

Eight streamflow measurements were conducted during water year 2019. A site visit was conducted to repair the wire weight gage used as the primary gage index.

Appendix

None.