

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

STATION ID: 01C070
STATION NAME: Hutchinson Creek near Acme
WATER YEAR: 2021
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Introduction

Watershed Description

Hutchinson Creek drains a forested basin in the North Cascades foothills that lies between Bowman Mountain on the east and its confluence with the South Fork Nooksack River on the west. The creek supports populations of steelhead, coho salmon, and cutthroat trout. Above the gage, the basin ranges in elevation from 530 feet up to 4220 feet along the mountain ridges to the east. The mean elevation is 1750 feet. About 72 percent of the area is covered by forest canopy. Average annual precipitation is about 70 inches.

Gage Location

This stream gage is located on the left bank at an unmarked Washington State Department of Natural Resources bridge off Mosquito Lake Road in Whatcom County, Washington.

Table 1. Basin Area and Legal Description

Drainage Area (square miles)	14.0
Latitude (degrees, minutes, seconds)	48° 43' 27.84" N
Longitude (degrees, minutes, seconds)	-122° 9' 7.90" W

Table 2. Discharge Statistics.

Mean Annual Discharge (cfs)	42
Median Annual Discharge (cfs)	32
Maximum Daily Mean Discharge (cfs)	209
Minimum Daily Mean Discharge (cfs)	3.1
Maximum Instantaneous Discharge (cfs)	239
Minimum Instantaneous Discharge (cfs)	3.0
Discharge Equaled or Exceeded 10 % of Recorded Time (cfs)	97
Discharge Equaled or Exceeded 90 % of Recorded Time (cfs)	3.9
Number of Days Discharge is Greater Than Range of Ratings	2
Number of Days Discharge is Less Than Range of Ratings	0
Number of Un-Reported Days	2
Number of Days Qualified as Estimates	81
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 Hutchinson Creek near Acme gaging station reached its lowest point October 1, 2020, and peaked January 3, 2021.

Two days were greater than the range of ratings. These rating exceedences correspond to a storm event at the beginning of January. A total of two days were unreported in Water Year 2021.

Eighty-one days were qualified as estimates. These were qualified as estimates based on logger drift error assessment and missing data points filled using regressed data from another similar station.

Table 3. Error Analysis Summary.

Potential Logger Drift Error (% of discharge)	10.7
Potential Weighted Rating Error (% of discharge)	12.0
Total Potential Error (% of discharge)	22.7

Table 3 Discussion (Error Analysis)

The logger drift error is based on a statistical analysis comparing automated gage-height readings to quality-assurance gage height observations made during periodic station 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)	0.70
Maximum Recorded Stage (feet)	3.28
Range of Recorded Stage (feet)	2.58

Table 4 Discussion (Stage Record)

Minimum stage occurred at the beginning of October 2020. The maximum recorded stage occurred during a high-flow storm event at the beginning of January 2021.

Table 5. Rating Table Summary

Rating Table No.	164	191	165
Period of Ratings	10/1/2020-11/30/2020	11/5/2020-1/5/2021	1/2/2021-4/5/2021
Range of Ratings (cfs)	0.39-350	4.0-200	0.39-350
No. of Defining Measurements	24	2	24
Rating Error (%)	11.2	10.7	11.2

Rating Table No.	232	24	
Period of Ratings	2/23/2021-7/13/2021	5/10/2021-9/30/2021	
Range of Ratings (cfs)	0.50-203	0.50-203	
No. of Defining Measurements	5	6	
Rating Error (%)	10.9	14.4	

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

Table 5 Discussion (Rating Tables)

Rating 164 is a holdover from the previous water year. Filling of the gage pool over a high-flow event results in Rating 191. Scouring of the gage pool over a high-flow event resulted in Rating 165. Filling of the gage pool, due to one large and several small storm events, resulted in Rating 232. Scouring of the gage pool over several small events led to Rating 24.

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
N/A	

Table 7 Discussion (Surveys)

N/A

Activities Completed

Nine flow measurements were conducted during WY 2021.

Appendix