

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

STREAMFLOW CHARACTERISTICS OF KLAUITTER CREEK
BASIN NEAR WESTFIELD, WISCONSIN

Open-File Report 75-527

Prepared in cooperation with the
Wisconsin Department of Natural Resources

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BASIN NEAR WESTFIELD, WISCONSIN

By B. K. Holmstrom

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Contents

	<u>Page</u>
Conversion factors-----	4
Text-----	5
Reference-----	10

Illustrations

	<u>Page</u>
Figure 1. Map showing discharge measurement sites in the Klawitter Creek basin-----	6
2. Graph showing relationship used to estimate low-flow characteristics of Klawitter Creek at 6th Road (site K1)-----	8
3. Graph showing relationship used to estimate low-flow characteristics of Klawitter Creek at 8th Drive (site K2)-----	9

Table

	<u>Page</u>
Table 1. Streamflow measurements-----	7

Conversion Factors

For use of readers who may prefer to use metric units rather than English units, the conversion factors for the terms used in this report are listed below:

<u>Multiply English unit</u>	<u>By</u>	<u>To obtain metric unit</u>
cubic feet per second (ft ³ /s)	2.832×10^{-2}	cubic metres per second (m ³ /s)
square miles (mi ²)	2.590	square kilometres (km ²)

This report presents low-flow characteristics and mean annual discharge for a site on Klawitter Creek, where an application for diversion of streamflow has been made. This information will be used by the Wisconsin Department of Natural Resources to determine the availability of irrigation water from the stream while maintaining sufficient streamflow to support fish. The study was done in cooperation with the Wisconsin Department of Natural Resources, as part of the Wisconsin low-flow program.

Four discharge measurements were made at the diversion site, which is upstream from 6th Road (site K1), and four measurements were made at 8th Drive (site K2). The location of the sites is shown in figure 1, and the discharge measurements are listed in table 1.

The low-flow characteristics determined are the annual minimum 7-day mean flows at the 2-year recurrence interval ($Q_{7,2}$) and 10-year recurrence interval ($Q_{7,10}$). The low-flow characteristics were determined at sites K1 and K2 and were based on a graphical regression relating four discharge measurements at sites K1 and K2 to the concurrent discharges at the gaging station on Big Roche a Cri Creek near Adams (figs. 2 and 3). The $Q_{7,2}$ and $Q_{7,10}$ at the Big Roche a Cri Creek near Adams gaging station were transferred through the relation line shown in figure 2 to get a $Q_{7,2}$ of 2.0 ft³/s (0.06 m³/s) and a $Q_{7,10}$ of 1.6 ft³/s (0.05 m³/s) for site K1. A $Q_{7,2}$ of 2.6 ft³/s (0.07 m³/s) and a $Q_{7,10}$ of 2.1 ft³/s (0.06 m³/s) were determined at site K2 (fig. 3).

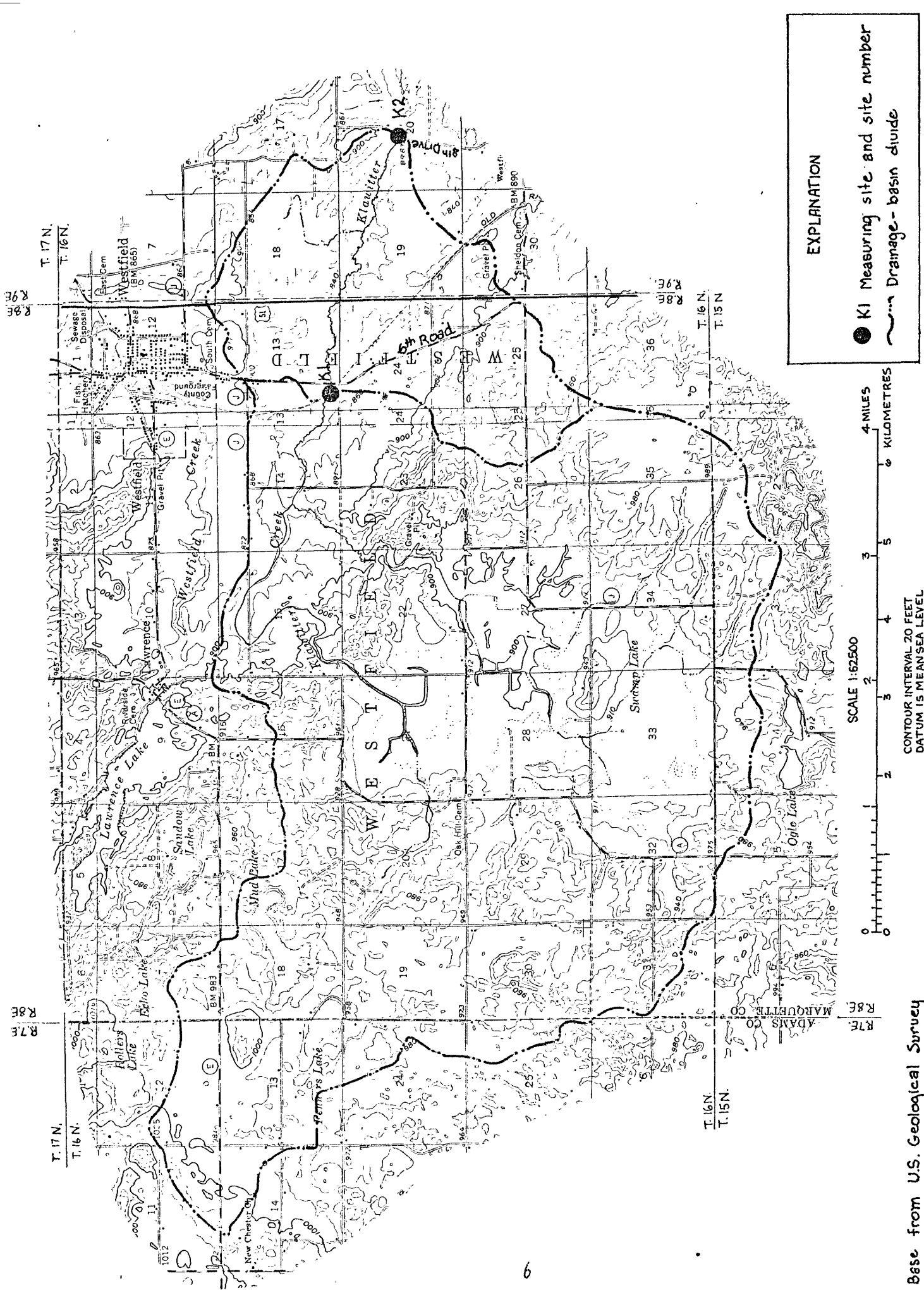


Figure 1.-- Discharge-measurement sites in the Klawitter Creek basin

Table 1.--Streamflow measurements

Stream name	Site number	Drainage area (mi ²)	Date	Discharge (ft ³ /s)
Klawitter Creek	K1	21.6	Mar. 3, 1975	3.64
			Mar. 31, 1975	6.63
			June 25, 1975	5.67
			Aug. 7, 1975	2.57
Klawitter Creek	K2	26.0	Mar. 3, 1975	3.63
			Mar. 31, 1975	8.69
			June 25, 1975	8.82
			Aug. 7, 1975	3.00
Big Roche a Cri Creek near Adams, Wisconsin ^a	05401535	^b 54	Mar. 3, 1975	^c 38
			Mar. 31, 1975	^c 60
			June 25, 1975	^c 63
			Aug. 7, 1975	^d 41

^aNot shown on figure 1^bApproximate^cMean daily discharge^dMeasured discharge

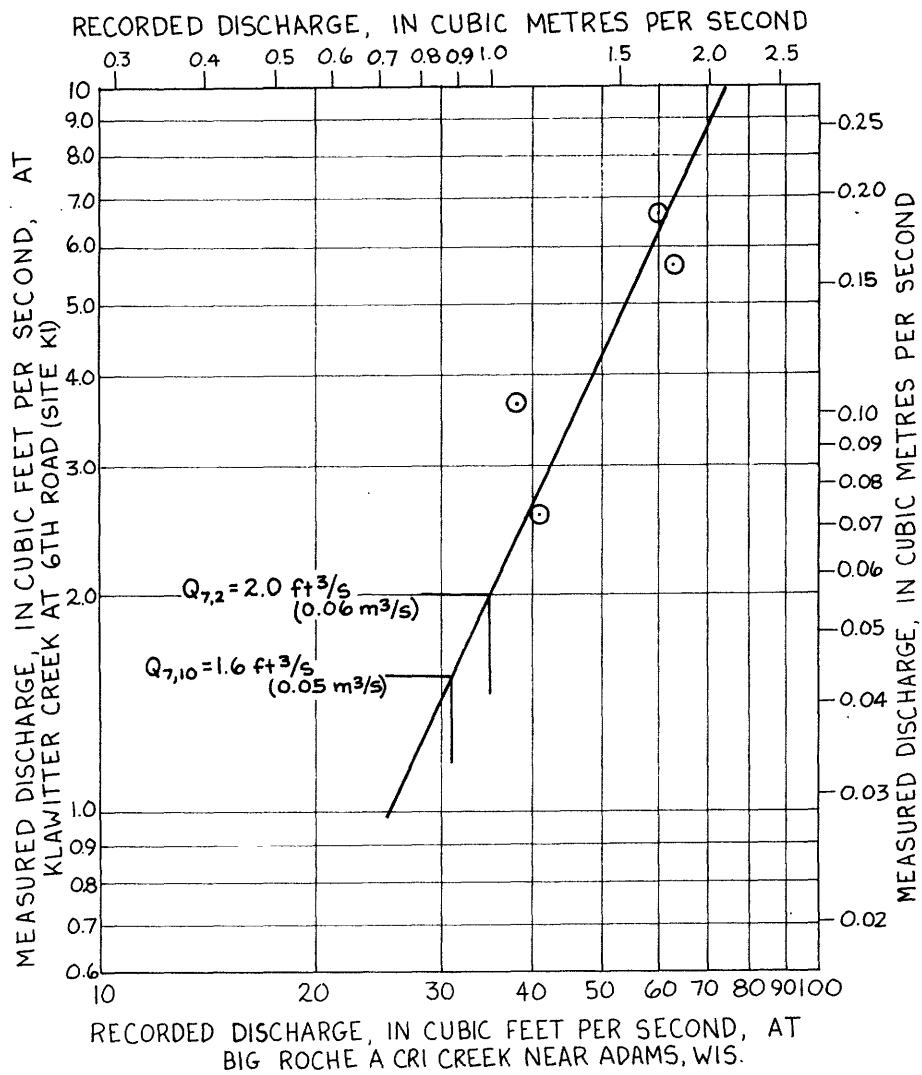


Figure 2.-- Relationship used to estimate low-flow characteristics of Klawitter Creek at 6th Road (site K1).

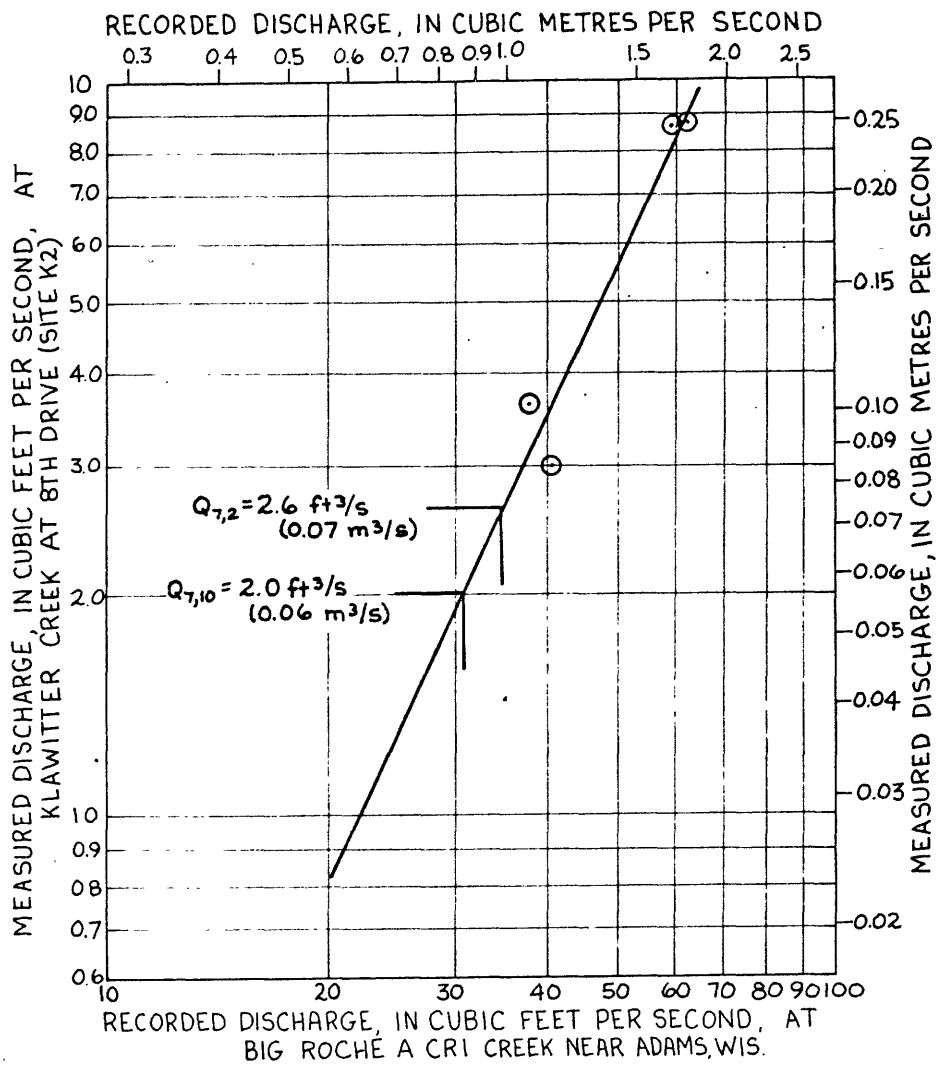


Figure 3.-- Relationship used to estimate low-flow characteristics of Klawitter Creek at 8th Drive (site K2).

A mean annual discharge of 12 ft³/s (0.34 m³/s) was determined for site K1 using the equation:

$$Q_a = 0.147 A^{1.02} F^{0.12} P^{0.81} I^{-1.21} Si^{0.19}$$

where Q_a is mean annual discharge, in cubic feet per second; A is the drainage area, in square miles; F is forest cover, in percentage of drainage area, plus 1; P is mean annual precipitation, in inches (minus 20); I is the precipitation intensity for 2-year, 24-hour rainfall, in inches; and Si is the soil index of the basin, in inches. The standard error of estimate for this equation is 17 percent (Campbell and Dreher, 1970).

Reference

Campbell, R. E., and Dreher, F. C., 1970, A proposed streamflow data program for Wisconsin: U.S. Geol. Survey open-file rept., 55 p.