

Figure 1.-Major tributaries to the Black River.

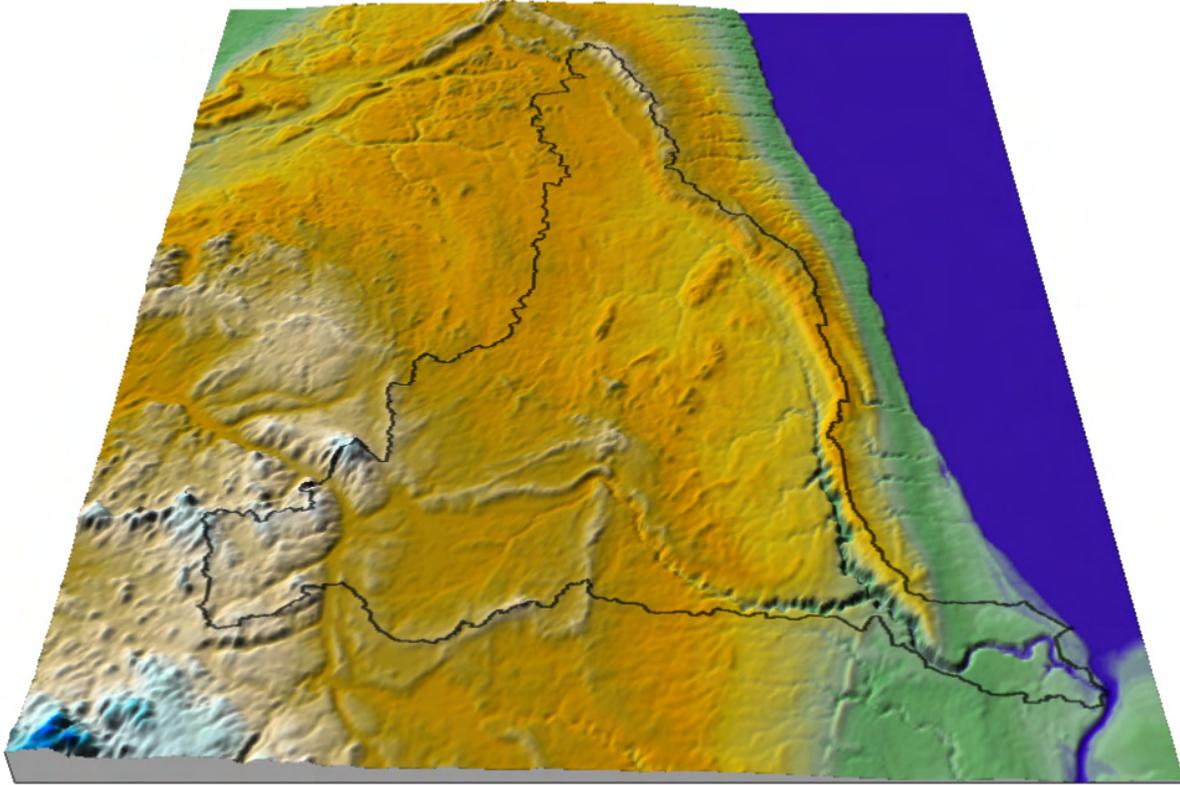


Figure 2.—Three dimensional map of the Black River watershed showing glacial features that shape the Black River valley. Black lines show boundaries of the major subwatersheds.

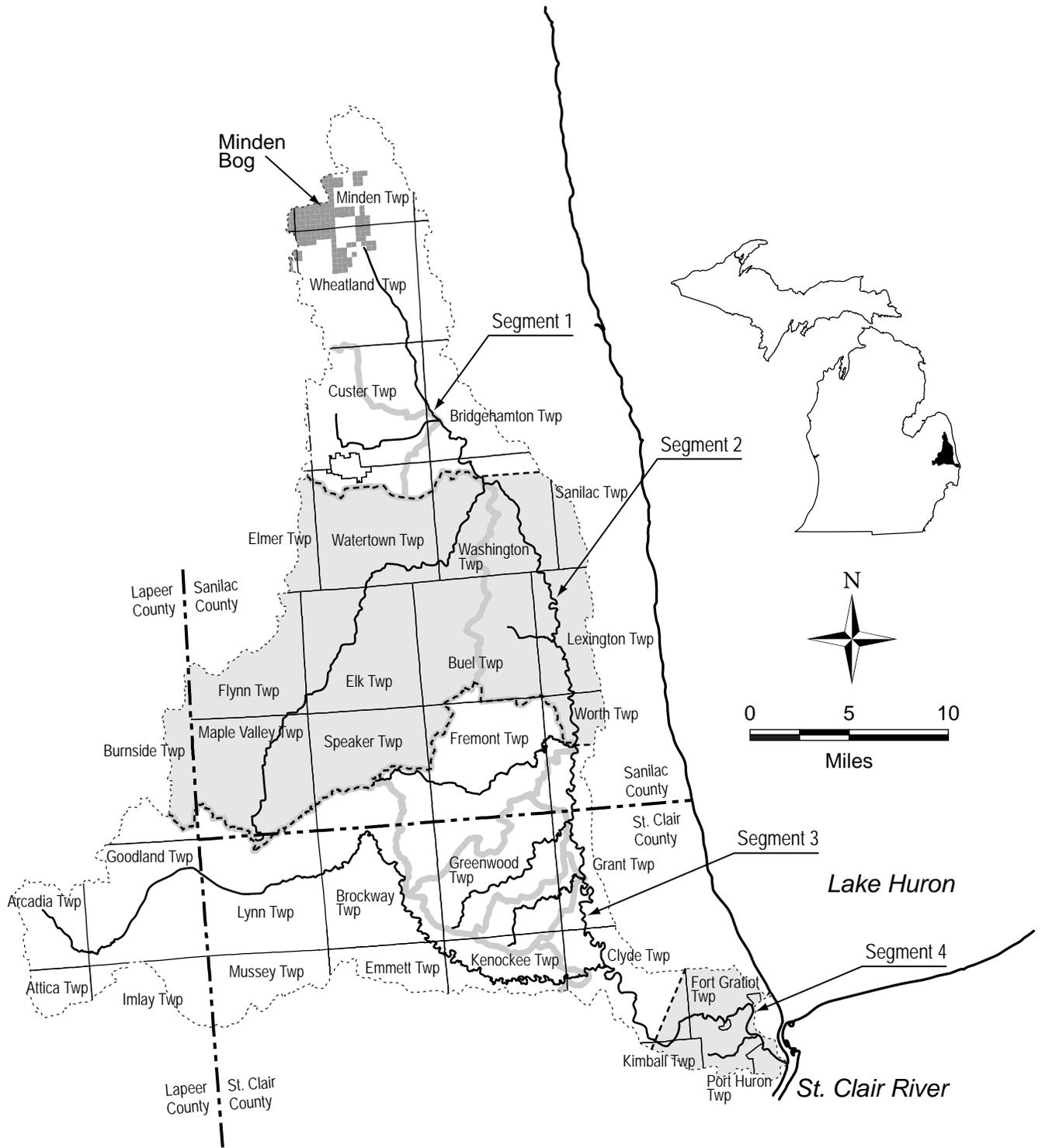


Figure 3.—Segments of the Black River main stem. Subwatersheds are bounded by solid gray lines.

Late Holocene Lake Level

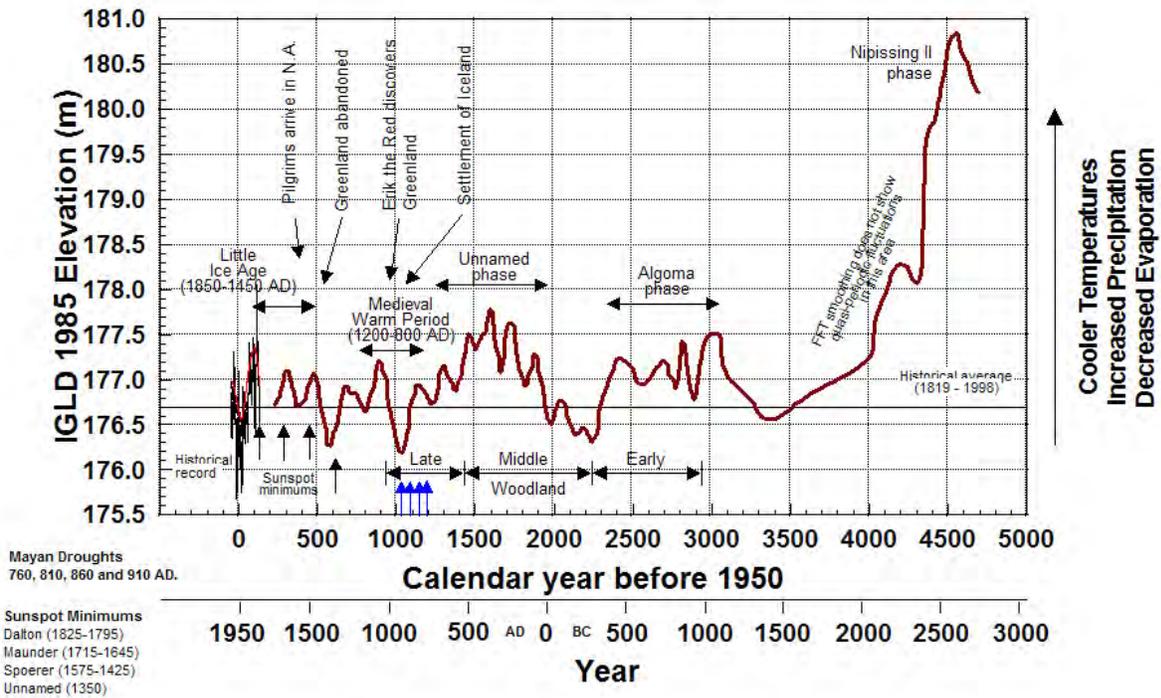


Figure 4.– Graph of late Holocene time span showing some important historical and environmental events as they relate to Lake Huron lake level. Graph courtesy of Dr. Douglas Wilcox, United States Geological Survey, Great Lakes Science Center.

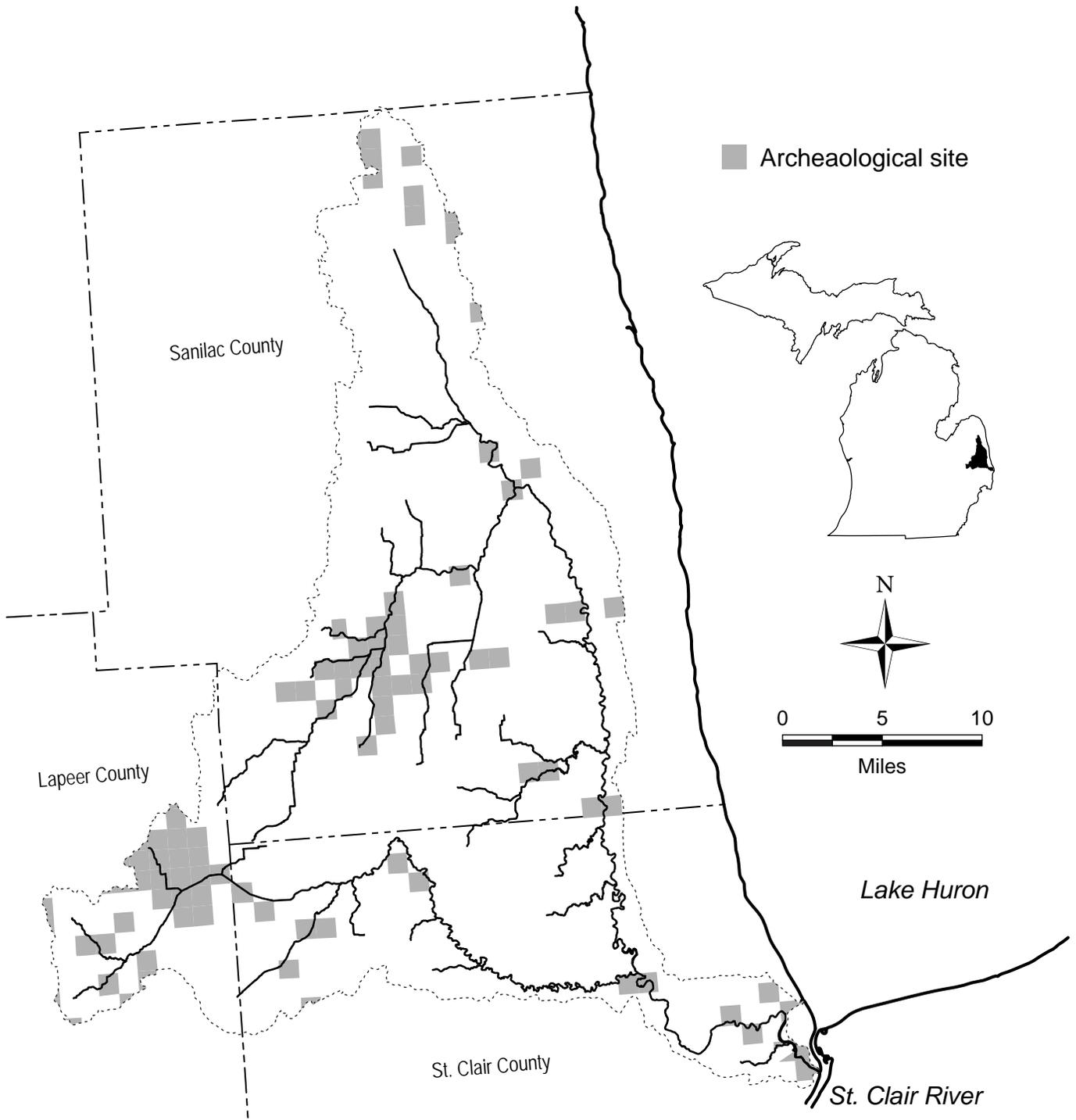


Figure 5.—Spatial distribution of archaeological sites within the Black River watershed indicating strong association between rivers and settlement by prehistoric Native Americans.



Figure 6.– Early photographs (1864 top; 1904 bottom) of logjams from lumbering operations in the Black River watershed.



LAND DREDGE CONSTRUCTING DRAIN SHOWN IN PLATE VI. ST. CLAIR COUNTY



DRAIN EIGHT FEET BOTTOM WIDTH, EIGHT AND ONE HALF FEET DEEP, CONSTRUCTED BY DREDGE SHOWN IN PLATE V. IN 1917, AT COST OF \$2.25 PER ROD (ABOUT 8 00/100 PER CUBIC YARD) TO REPLACE SHALLOW TEAM AND SCRAPER DRAIN CONSTRUCTED IN 1914 AT A COST OF \$1.00 PER ROD.

Figure 7.— Early photographs (1917) of agricultural drain construction in the Black River watershed. A very large portion of the river courses in this watershed have been similarly channelized.

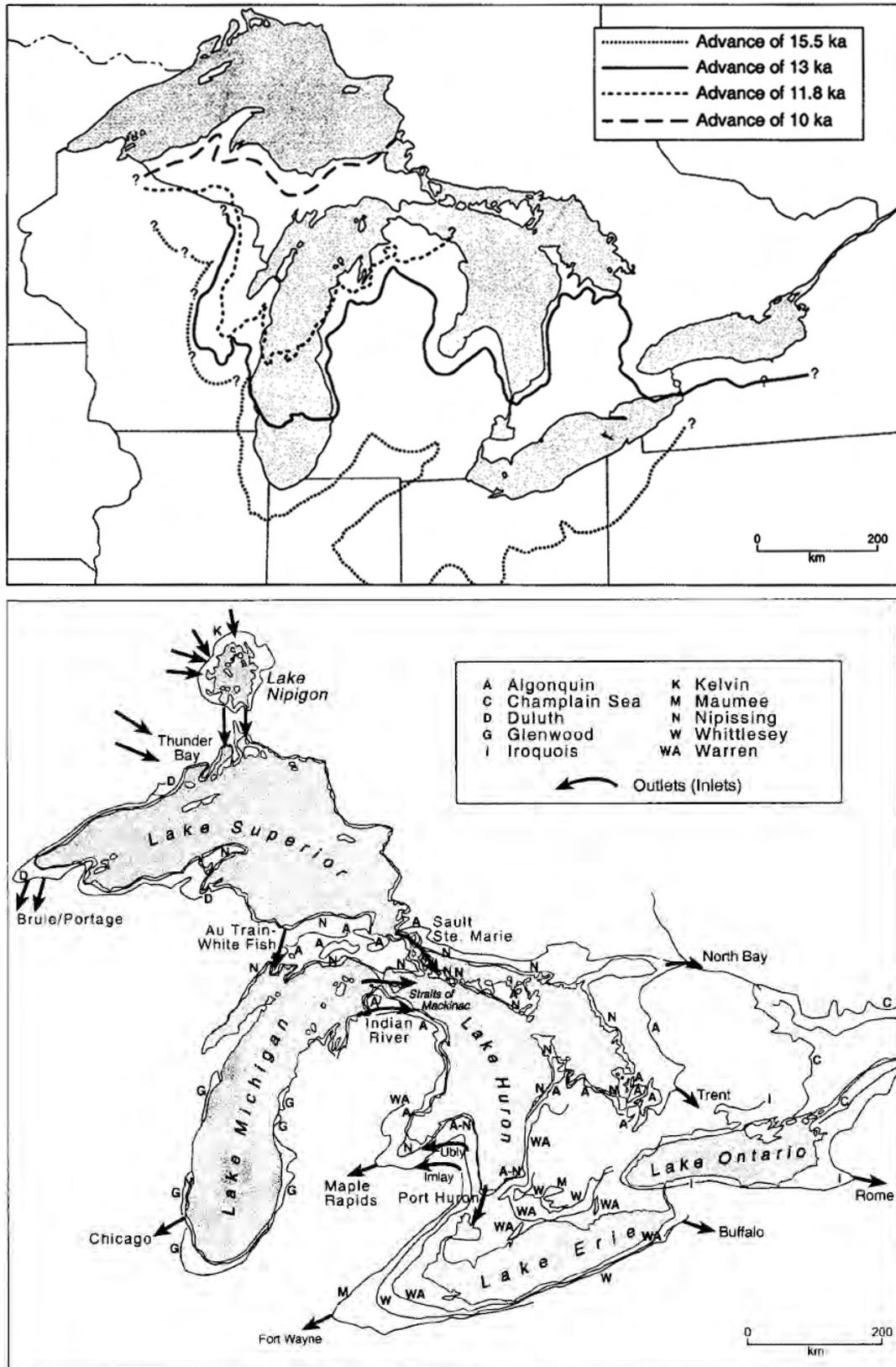


Figure 8.– Limit of the ice readvances of 15.5, 13.0, 11.8 and 10.0 thousand years ago from Larson et al. (1994) (upper figure) and locations of shorelines of prominent proglacial lakes in the Great Lakes watershed, and their spillways and outlets from Karow (1984) (lower figure).

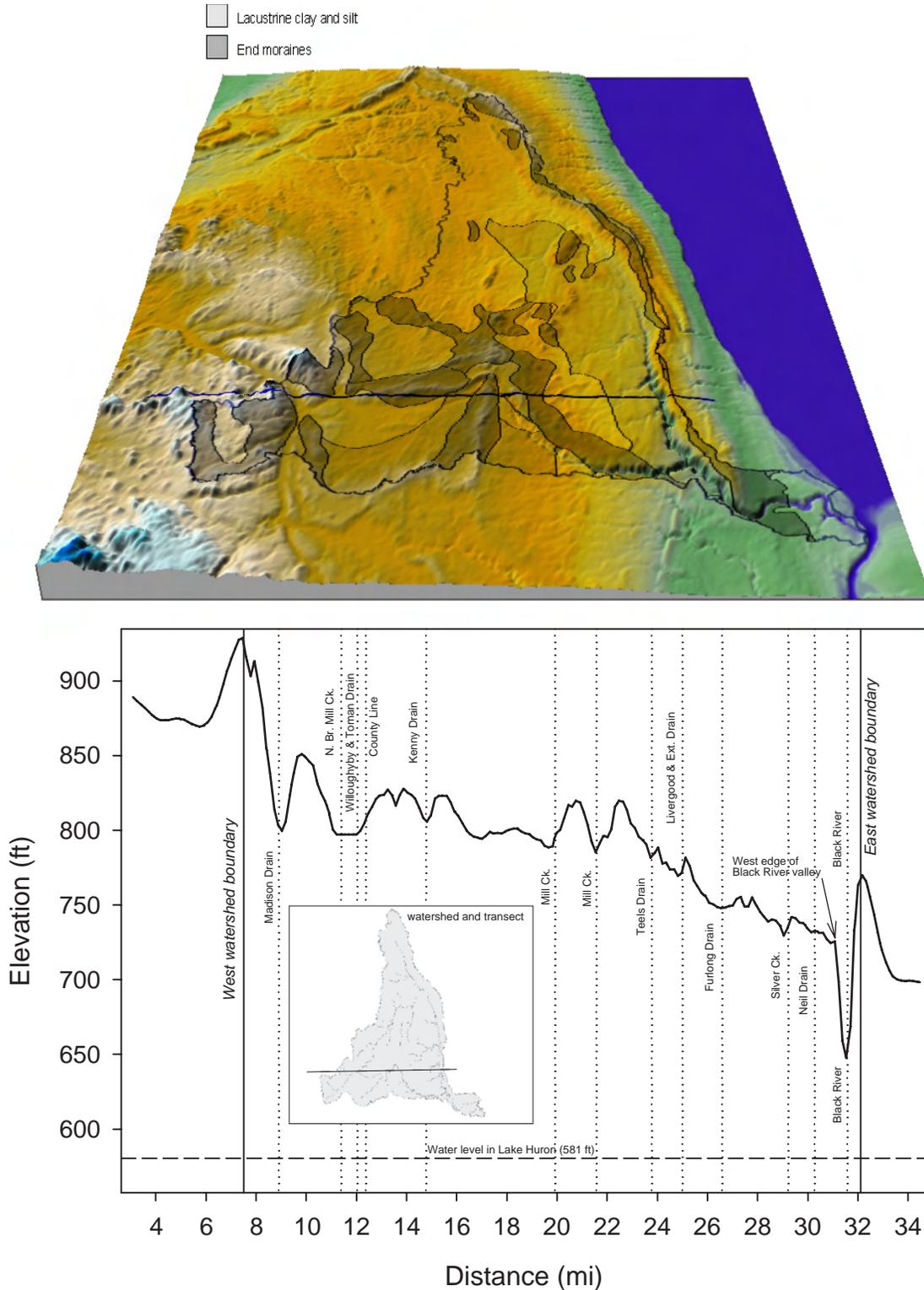


Figure 9.– Three dimensional map (top) showing distribution of glacial end moraines and lacustrine silt and clay within the Black River watershed. Graph shows vertical profile of land elevations along a transect across the watershed. The geographic location of the transect is shown on a surface map and on graph inset. Vertical dotted lines show where the transect line intersects tributaries and the Black River.

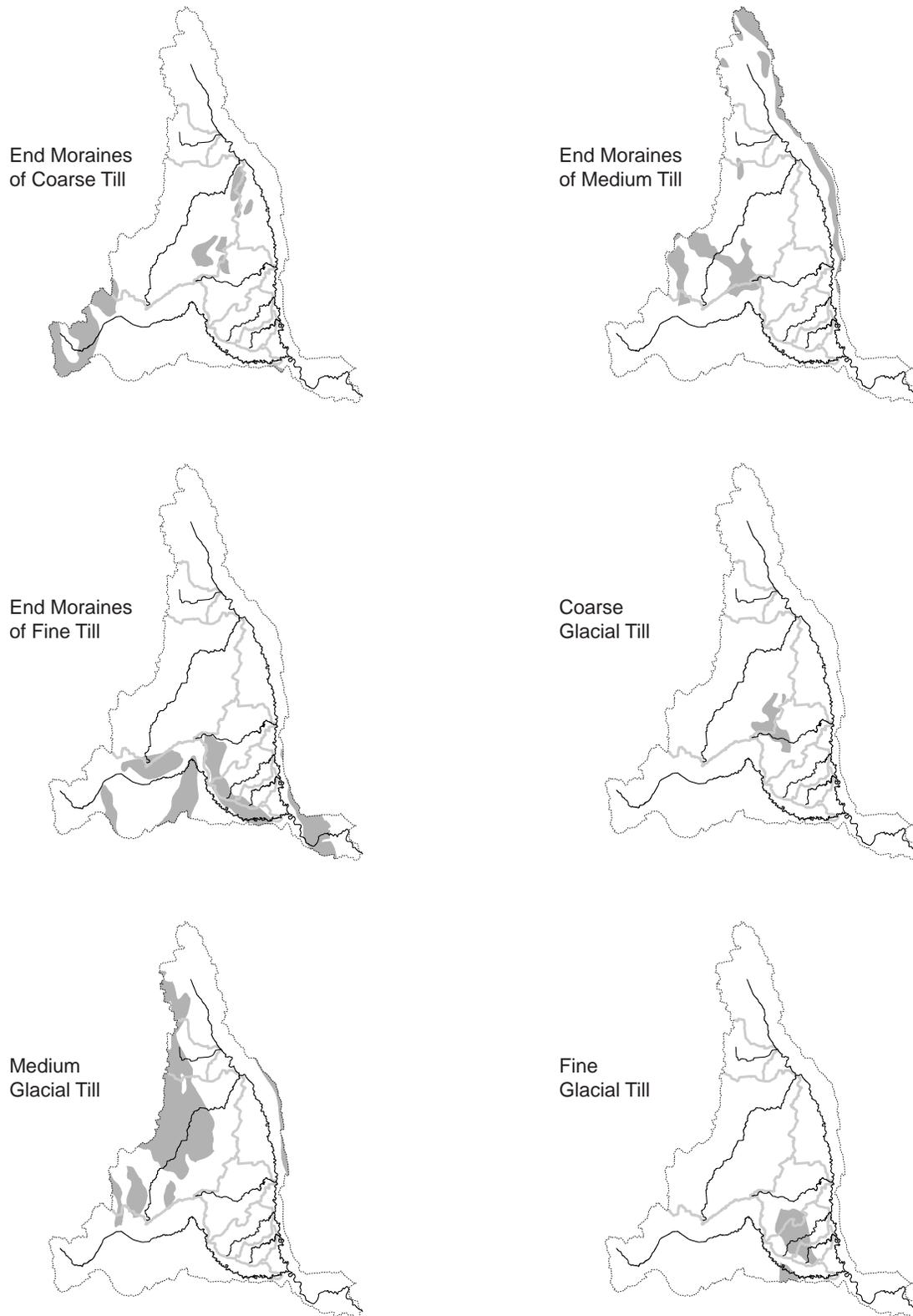


Figure 10.– Distribution of eleven glacial deposits within the Black River watershed shown as crosshatching. Gray lines show boundaries of subwatersheds, black lines show the Black River and major tributaries (Michigan Resource Information System, Michigan Department of Natural Resources, Real Estate Division, Lansing).

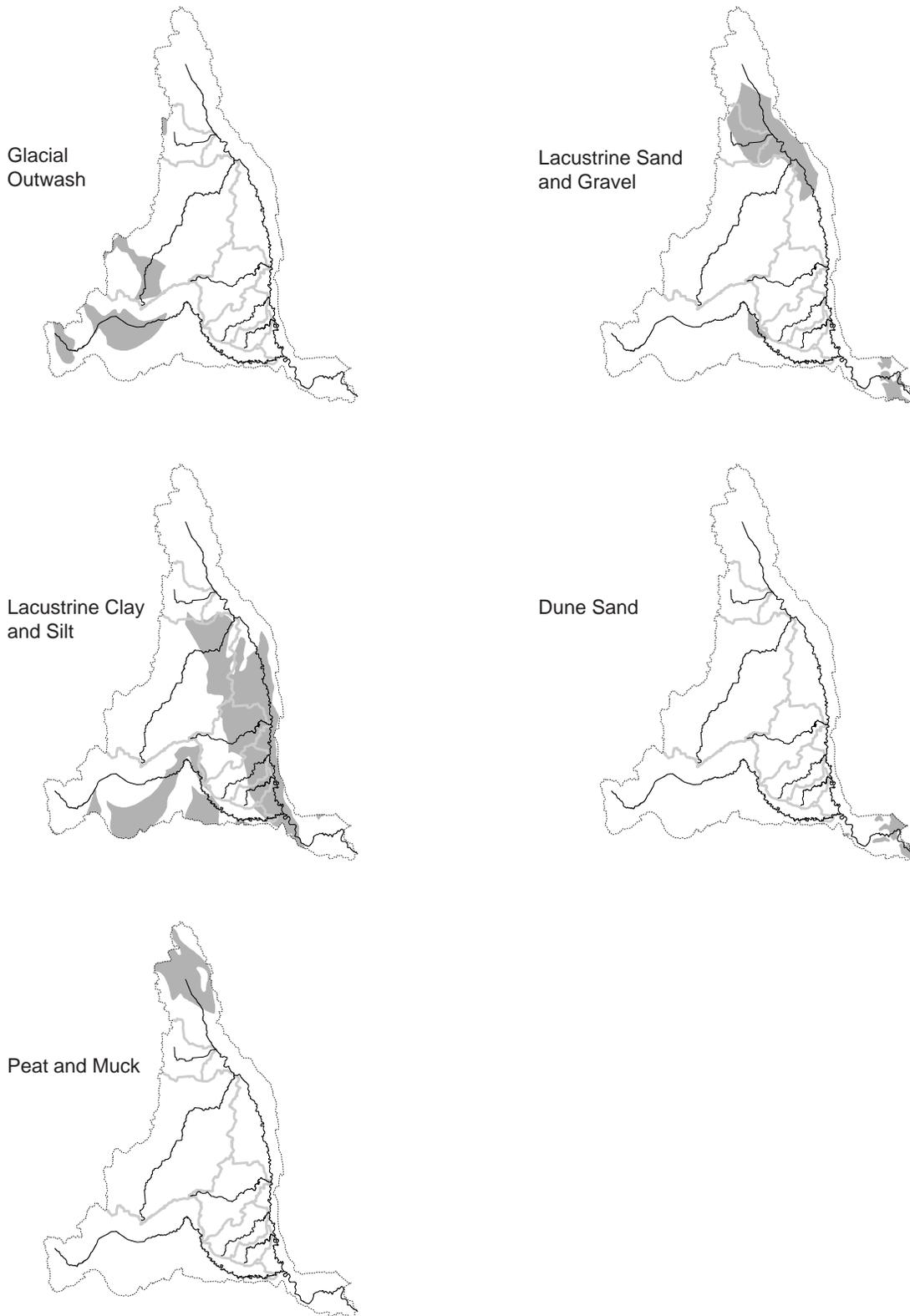
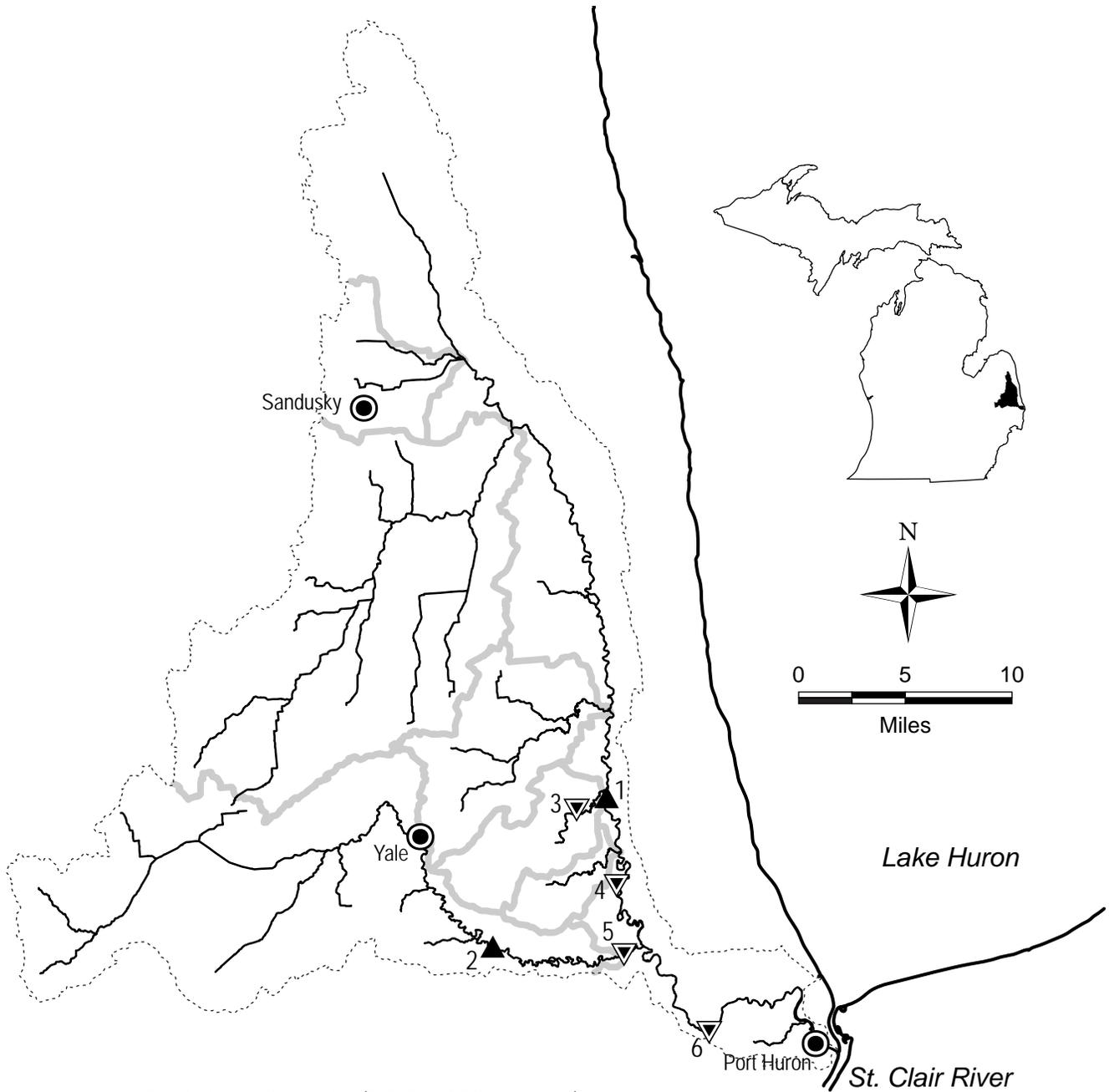


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- Sandusky weather station (207350 – 1909 to present)
- Yale weather station (209188 – 1926 to present, partial data)
- Port Huron weather station (206680 – 1948 to present)
- 1 – Black River gauge near Jeddo (04159492 - 1/1/1978 to present)
- 2 – Mill Creek gauge near Avoca (04159900 - 3/1/1944 to present)
- 3 – Silver Creek gauge (04159488 - 1/1/1978 to 9/30/1982)
- 4 – Black River gauge near Fargo (04159500 - 3/1/1944 to 9/30/1991)
- 5 – Mill Creek gauge near Abbottsford (04160000 - 6/1/1947 to 9/30/1964)
- 6 – Black River gauge near Port Huron (04160050 - 10/1/1932 to 12/31/1943)

Figure 11.– Locations for National Oceanic and Atmospheric Administration weather stations (solid dots) and United States Geological Survey river gauge stations (black triangles indicate contemporary, gray triangles historic). The text gives station names, numbers, and period of record. Gray lines show boundaries of subwatersheds, black lines show the Black River and major tributaries.

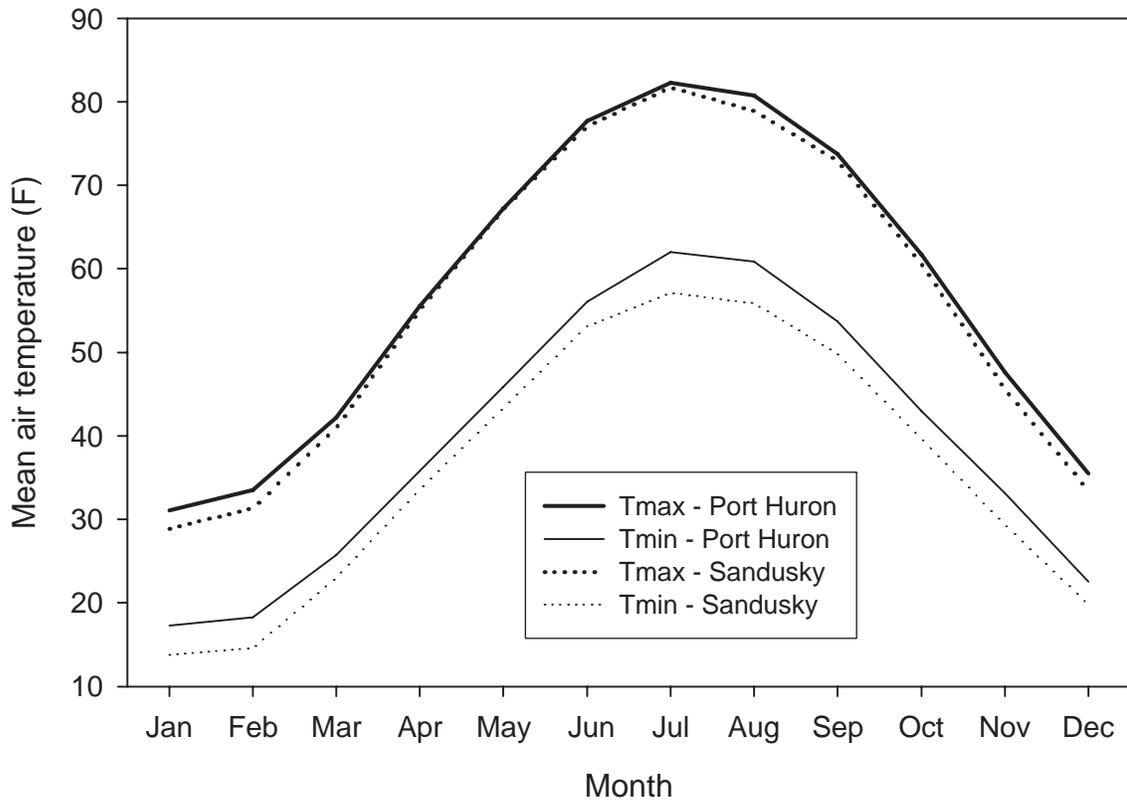
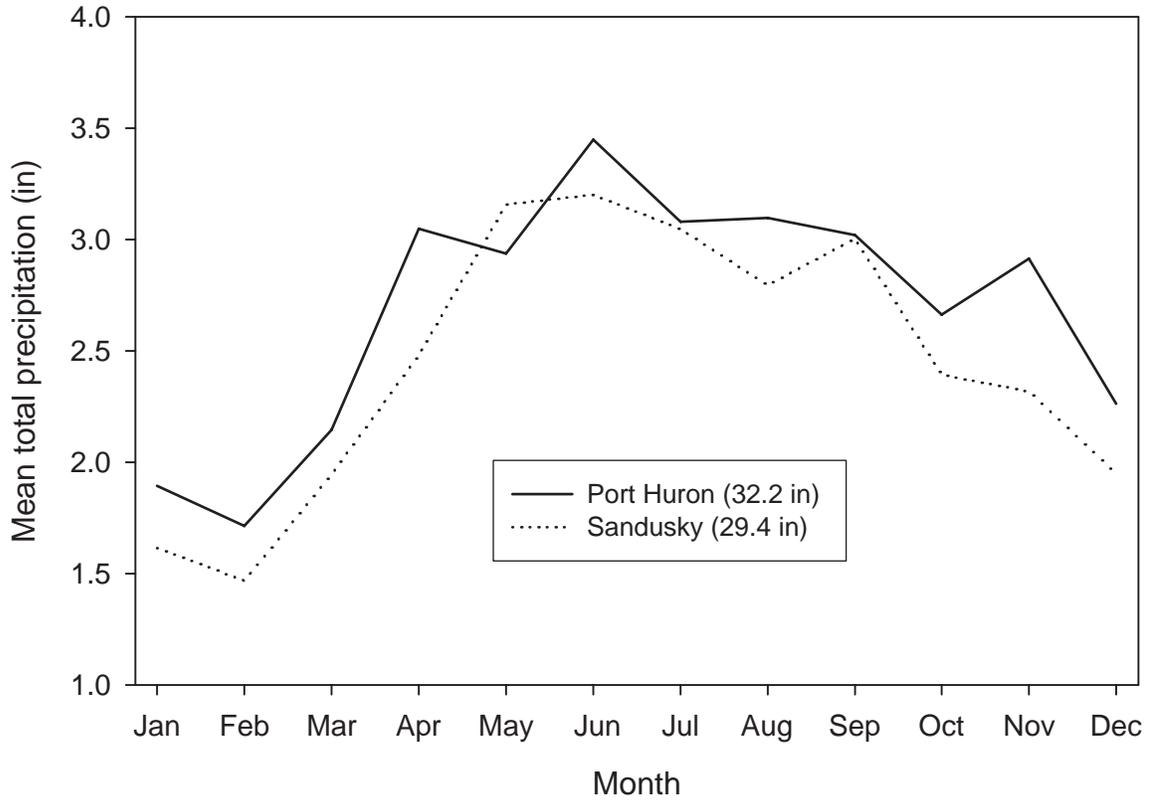


Figure 12.— Average monthly precipitation (inches, upper graph) and average maximum and minimum air temperature (lower graph) across the Black River watershed for periods of record.

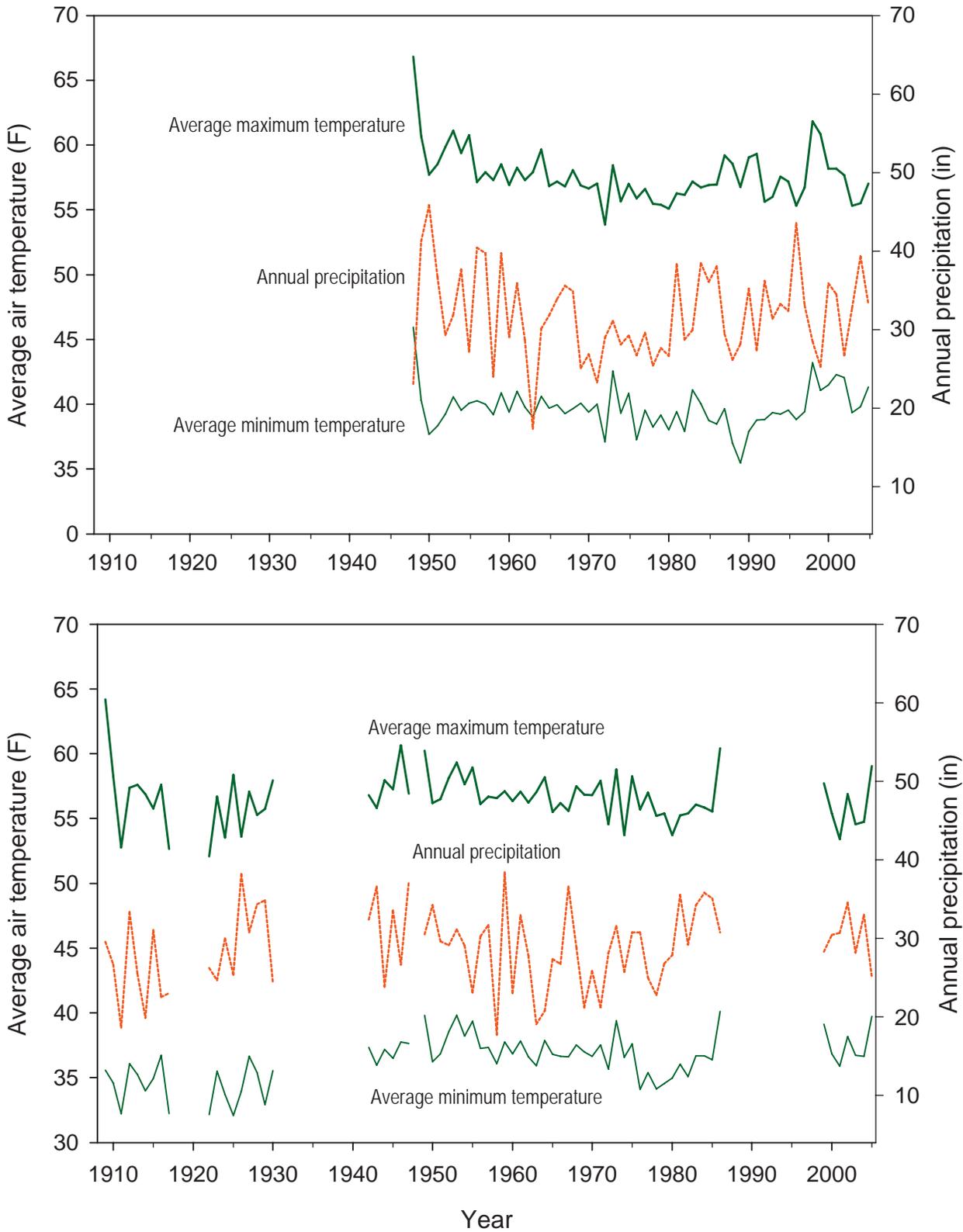


Figure 13.– Average annual maximum (solid line) and minimum (dotted line) air temperature and total precipitation (dashed line) at Port Huron (upper graph) and Sandusky (lower graph). Temperature values are associated with left axis and precipitation with the right axis.

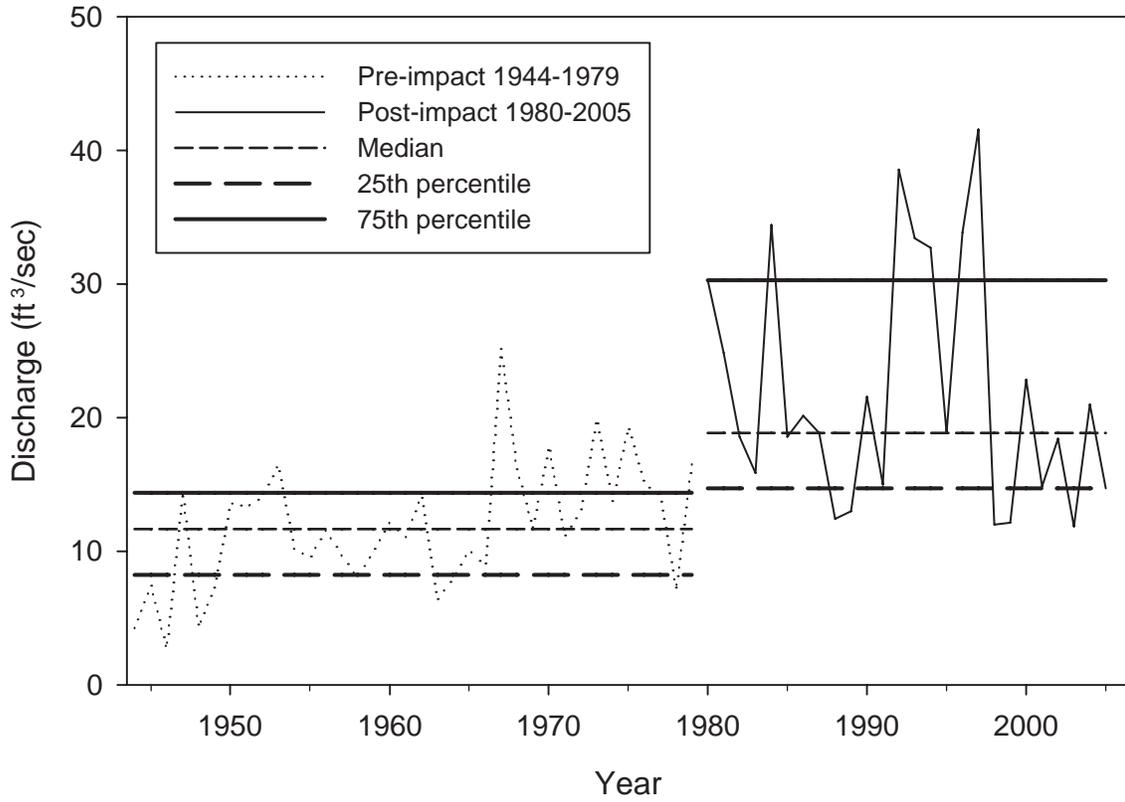


Figure 14.– Change in base flow at the Black River near Jeddo gauge, based on the Indicators of Hydrologic Alteration model (The Nature Conservancy 2007).

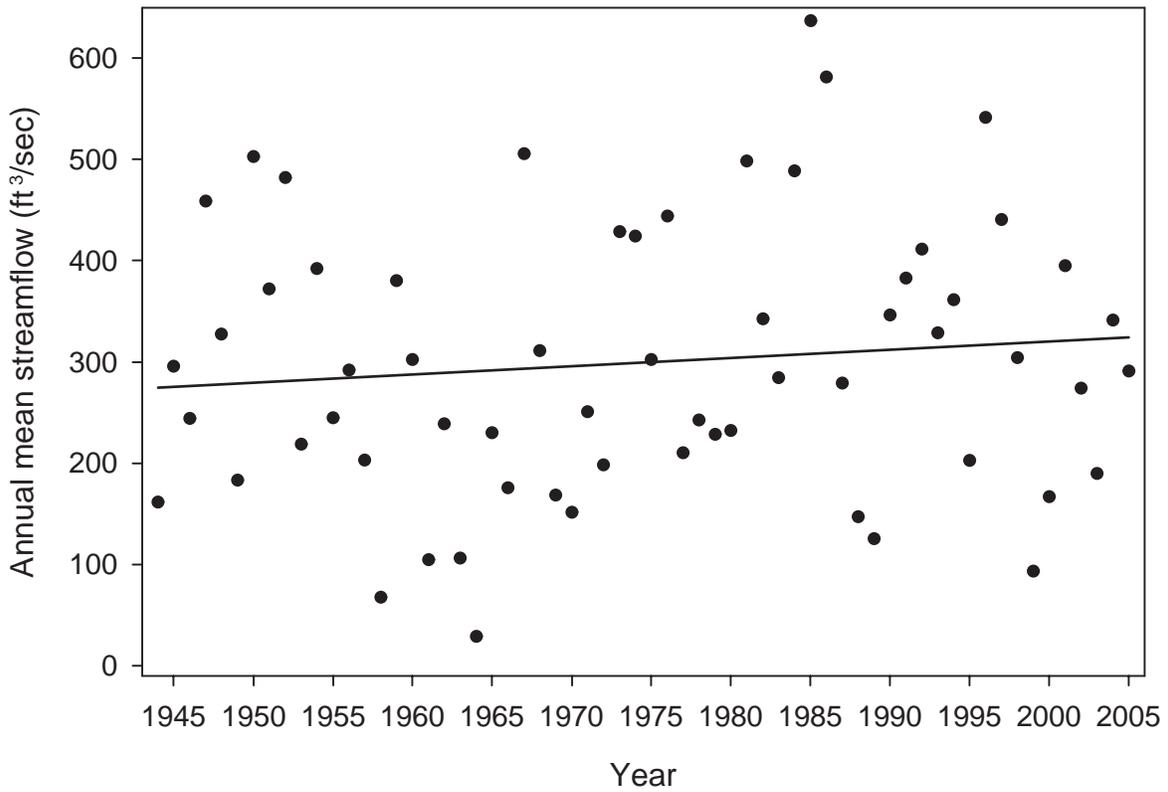
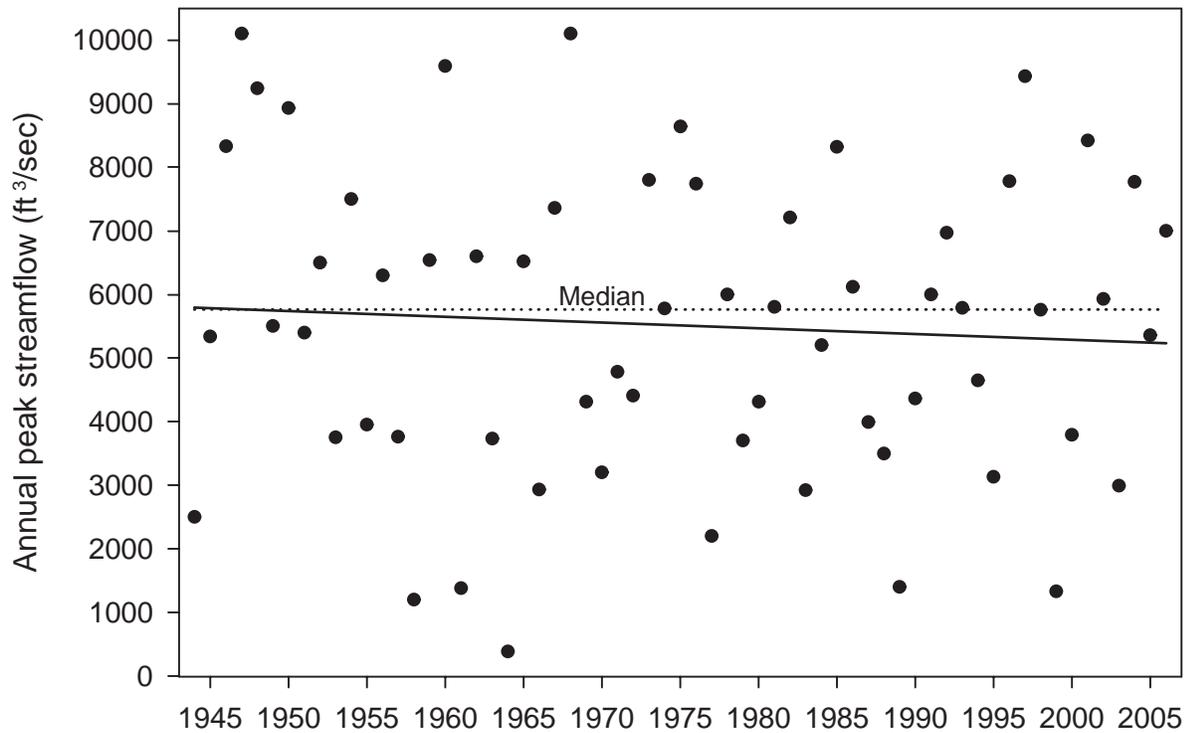


Figure 15.– Peak annual discharge (top graph) and average annual daily discharge (bottom graph) for the Black River measured at the Jeddo Road gauge.

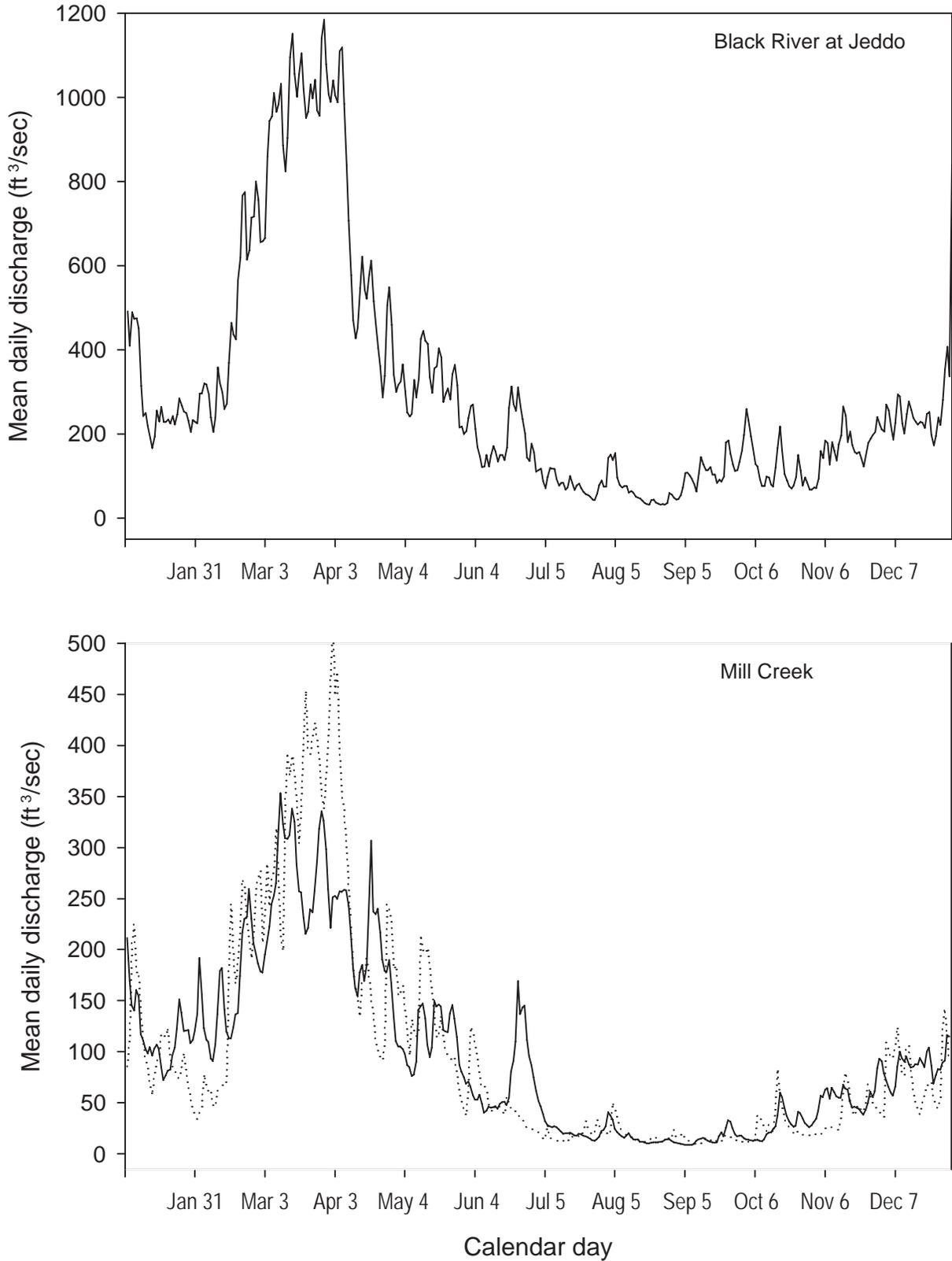


Figure 16.– Average daily discharge at the Black River gauge at Jeddo (top graph) and Mill Creek gauges (bottom graph where solid line is Avoca gauge and dotted line is Abbottsford gauge) over years 1944 to 2006.

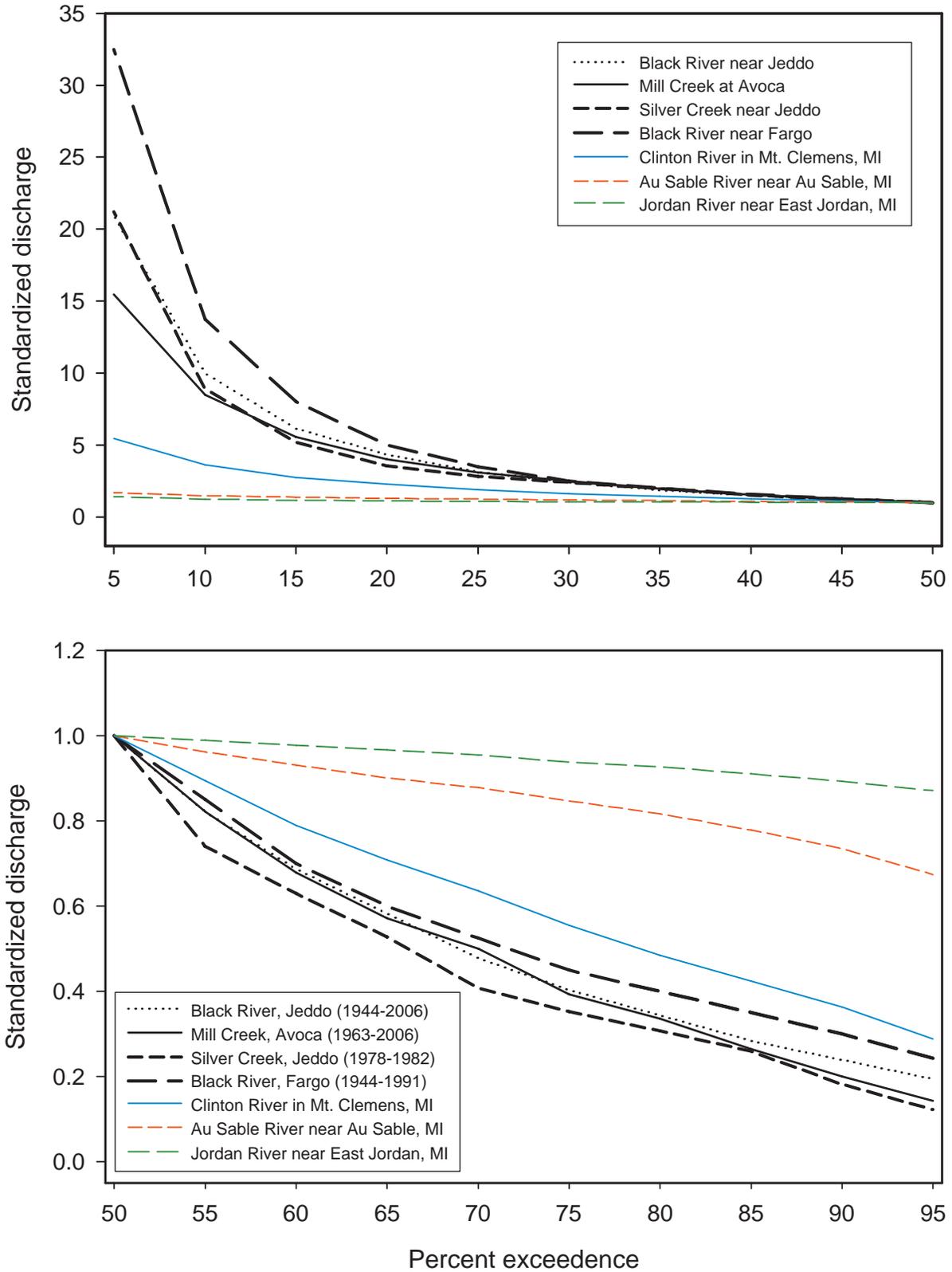


Figure 17.– Standardized high flow exceedence (top graph) and low flow exceedence (bottom graph) at four gauge sites on the Black River, Mill Creek, and Silver Creek. Data are plotted for the Clinton, Au Sable, and Jordan rivers for comparison purposes.