

Northeast Indiana Regional Water Study

ISSUE BRIEF

The purpose of the Northeast Indiana Regional Water Study is to better understand the 50-year water demand and supply availability in northeastern Indiana watersheds, which are primarily located in Adams, Allen, Dekalb, Elkhart, LaGrange, Noble, St. Joseph, and Steuben counties (**Figure 1**). The Water Study Region divided into the St. Joseph River Basin and the Maumee River Basin. The St. Joseph Basin refers to the area that drains to Lake Michigan via the St. Joseph River. The Maumee Basin refers to the area that drains ultimately to Lake Erie.

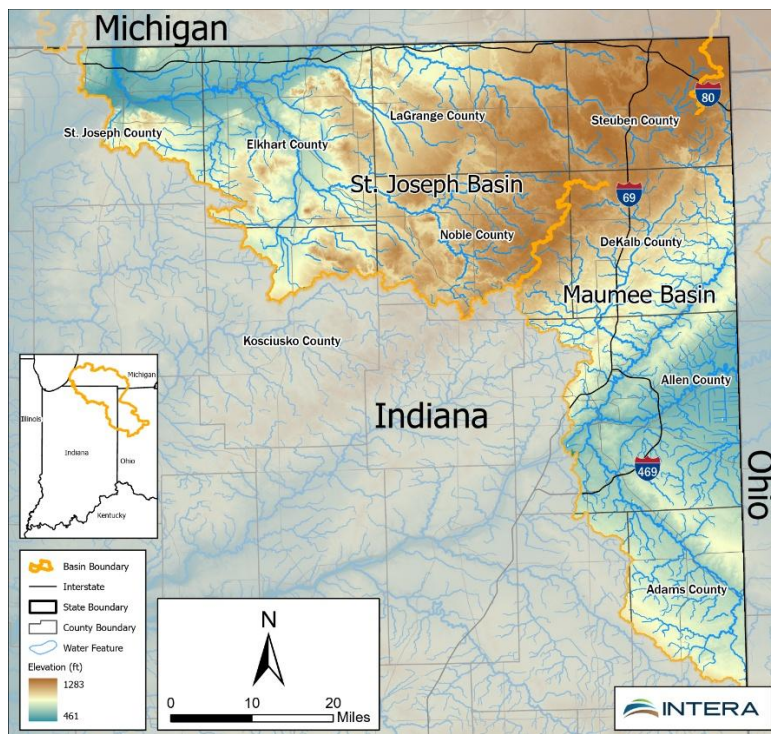


Figure 1. Location of the Northeast Indiana Water Study Region.

Key Findings

- Seventy-two out of 76 public water suppliers exclusively utilize groundwater as their source of supply.
- Current and Future water demand is dominated by irrigation and public water supply withdrawals.
- Regional annual average withdrawals are expected to increase 94 MGD from 197 MGD in 2020 to 291 MGD in 2070.
- Irrigation demand, driven by climate, is projected to rise from about 49 MGD in 2020 to about 121 MGD in 2070 and accounts for 77% of the region's projected total increase.
- Irrigation withdrawals dominate the St. Joseph Basin. These high withdrawals are expected to increase in the future, causing rivers to drop below the minimum instream flow more often.
- In the Maumee Basin, annual water availability will only decrease slightly through 2070. More significant changes are expected seasonally, with significant decreases in winter availability and significant increases in Fall availability.

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Water Demand

Water demand is defined as amount of water being used. Total regional water demand is projected to rise from approximately 197 MGD in 2020 to approximately 291 MGD in 2070, an increase of roughly 48 percent (**Figure 2**). This growth is driven almost entirely by irrigation, projected to increase from about 49 MGD in 2020 to about 121 MGD in 2070 as warmer, drier growing seasons increase irrigation acreage and demand. “Public Supply” refers to water utilities, “Irrigation” refers primarily to field irrigation, “Energy Production” refers primarily to cooling water at power generation facilities, “Self-Serve” represents households on private wells, “Industry” refers to manufacturing facilities, and “Rural Use” includes non-irrigation, agricultural withdrawals such as Confined Feeding Operations.

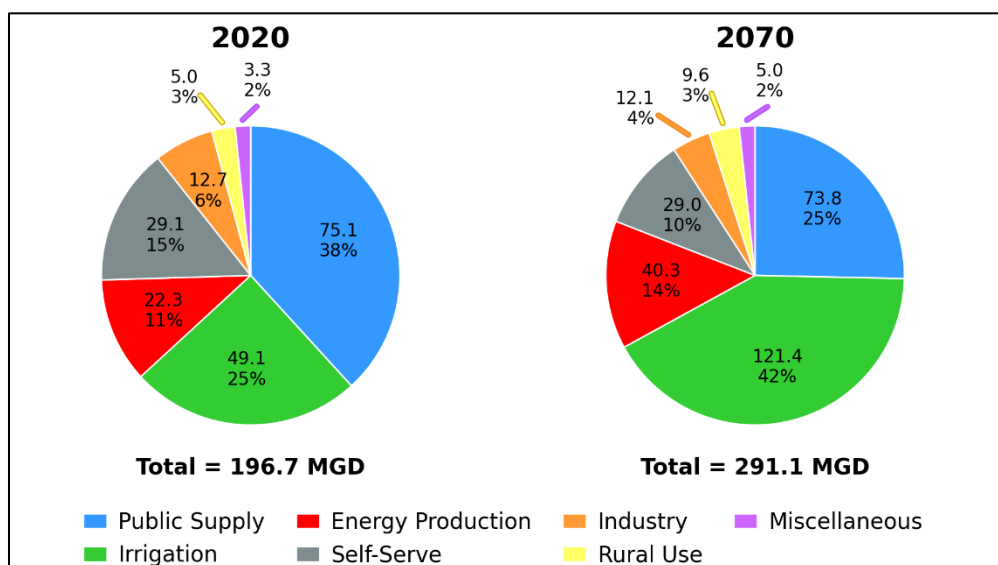


Figure 2. Regional water withdrawals by water-use sector for the Northeast Indiana Region in 2020 and 2070.

Water Availability

Water availability is defined as the amount of water that exists and can be used. Water availability is assessed on a basin scale, with the Water Study Region divided into the St. Joseph River Basin and the Maumee River Basin (**Figure 1**), and the further divided into 18 sub-basins (**Figure 3**). A basin, also called a drainage basin or a watershed, is an area of land where all precipitation, surface runoff, and groundwater drain downhill into a common outlet, such as a river or lake. Historical water availability, assessed for the period 2007–2023, indicates that past water withdrawals were supported by streamflow. However, the St. Joseph River Basin and the Maumee River Basin are expected to diverge sharply in the future.

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In the St. Joseph River Basin, rising irrigation demand is projected to coincide with declining availability producing increasingly frequent periods where streamflow falls below instream flow targets by 2070. An instream flow target is the minimum flow necessary to maintain water quality and ecological stream health. If the flow drops below the target for an extended period of time, the health of the stream may be impacted. Dropping below the instream flow target means that a stream may be at risk.

In the Maumee River Basin, future use is projected to remain similar to historical levels, and while water availability is projected to decline in most sub-basins, particularly in Winter and Spring, Fall water availability is projected to increase in most sub-basins.

The analysis shows that in the historical period (2007-2023), shown on the left of **Figure 3**, the St. Joseph River Basin has two sub-basins (sub-basins SJ2 and SJ7) with at least one season where the streamflow dropped below the instream flow target. The Maumee River Basin had zero occurrences of the streamflow dropping below the target in the historical period.

In the projected future period (2024-2070), shown on the right of **Figure 3**, the analysis indicates that every sub-basin in the St. Joseph River Basin will have at least one occurrence of dropping below the target. The Maumee River Basin has only one sub-basin that drops below the target in the future (sub-basin M2).

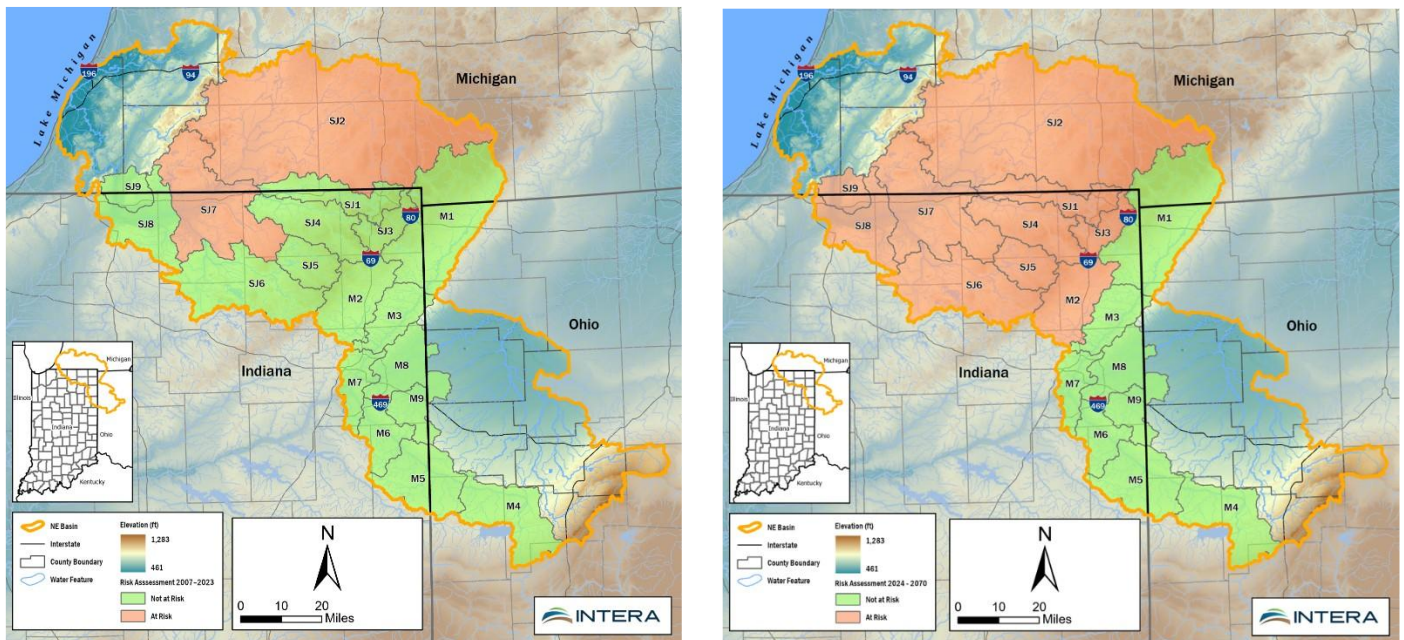


Figure 3. Historical (left) and future (right) sub-basin risk based on water availability. Green represents basins that have not dropped below the instream flow target. Orange shows basins that have dropped below the target at least once.

Addressing risks proactively, and with attention to the meaningful differences between the Region's two basins, will be essential to ensuring reliable, sustainable water supplies through 2070.