

Flood-Inundation Map for the North Branch Elkhart River at Cosperville, Indiana at the U.S. Geological Survey Streamgage Number 04100222

UNCERTAINTY AND USE LIMITATIONS

Although the flood-inundation maps represent the boundaries of inundated areas with a distinct line, some uncertainty is associated with these maps. The flood boundaries shown were estimated based on gage heights at selected USGS streamgages. Water-surface elevations along the stream reaches were estimated by steady-state hydraulic modeling, assuming unobstructed flow and using discharges and hydrologic conditions anticipated at the USGS streamgage(s). The hydraulic model reflects the land-cover characteristics of any bridge, dam, levee, or other hydraulic structure existing in 2014. Unique meteorological factors (timing and distribution of precipitation) may cause actual discharges along the modeled reach to vary from assumed conditions during a flood and lead to deviations in the water-surface elevations and inundation boundaries shown. Additional areas may be flooded due to unanticipated backwater from major tributaries along the main stem or from localized debris or ice jams.

STUDY AREA

The town of Cosperville, Ind., where a USGS streamgage is located, is a relatively small community. This community and residents along West Lakes Chain, which is a series of lakes connected by North Branch Elkhart River, have experienced severe flooding numerous times, most recently in 2008 and 2009.

PURPOSE AND SCOPE

The purpose of this document is to describe the development of a library of estimated flood-inundation maps for a selected reach on the North Branch Elkhart River at Cosperville, Indiana, including the West Lakes Chain area, and to make these maps available to emergency workers and the public on the USGS Flood Inundation Mapping Science Web site available at http://water.usgs.gov/osw/flood_inundation/.

MAP SOURCES

Detailed source data for this map series can be found in "Flood-Inundation Maps for the North Branch Elkhart River at Cosperville, Indiana (2014)" at: <http://pubs.usgs.gov/sir/2014/5128/>

Suggested citation:

Kim, M.H., and Johnson, E.M., 2014, Flood-inundation maps for the North Branch Elkhart River at Cosperville, Indiana: U.S. Geological Survey Scientific Investigations Report 2014-5128, 9 p.

HYDROLOGIC DATA

The study area hydrologic network consists of one USGS streamgage, 04100222, North Branch Elkhart River at Cosperville, Indiana, which has been in operation since 1971. Water level (stage) is measured continuously at this site, and continuous records of streamflow are computed and were used to develop water-surface elevations in the hydraulic model. The streamgage is equipped with a satellite radio transmitter that allows data to be transmitted routinely on the Internet within an hour of collection.

HYDRAULIC MODEL

The hydraulic model was calibrated to the most current stage-discharge relation (USGS rating no. 15.1) at USGS streamgage 04100222, North Branch Elkhart River at Cosperville, Indiana, and preliminary high-water marks from the flood of March 1982. Model calibration was accomplished by adjusting appropriate model parameter values until the results of the hydraulic computations closely agreed with the known flood discharge and stage values. The results demonstrate that the model is capable of simulating reasonable water levels over a wide range of flows in the basin.

WATER-SURFACE PROFILES

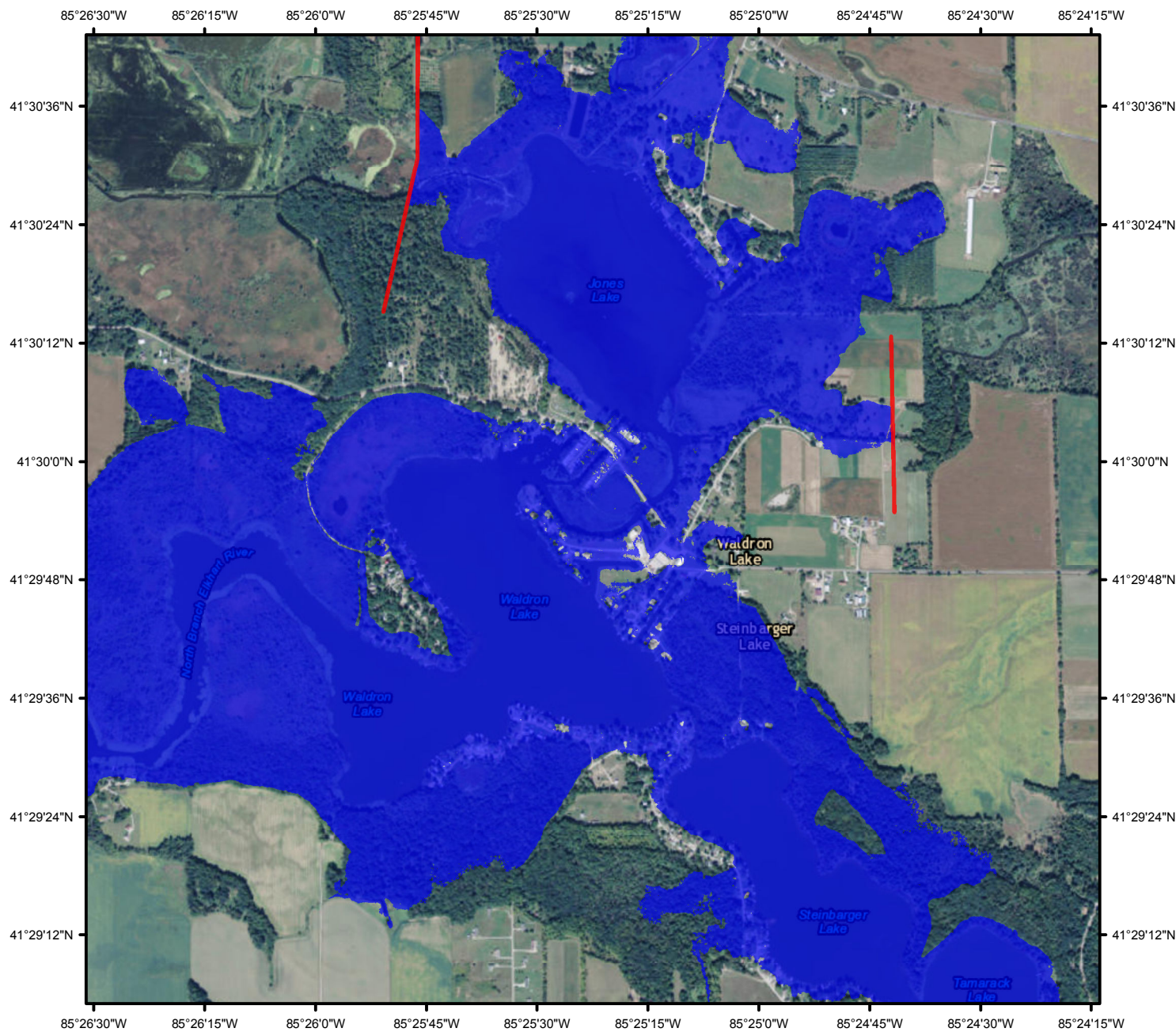
Water-surface profiles were developed for four stages at 1-foot (ft) intervals ranging from 5 to 8 ft as referenced to a local gage datum at USGS streamgage 04100222, North Branch Elkhart River at Cosperville, Indiana, corresponding to elevations between 884.7 and 887.7 ft NAVD88, respectively.

FLOOD-INUNDATION MAPS

Flood-inundation maps were created for a reach of the North Branch Elkhart River at Cosperville, Indiana, including the West Lakes Chain area. These maps were created in a geographic information system by combining the water-surface profiles and digital elevation model data. The resulting inundation maps have a vertical accuracy of about plus or minus 1.0 ft.

DISCLAIMER

The flood maps should not be used for navigation, regulatory, permitting, or other legal purposes. The United States Geological Survey (USGS) provides these maps as a quick reference and emergency planning tool but assumes no legal liability or responsibility for any direct, indirect, incidental, consequential, special, or exemplary damages or lost profit resulting from the use or misuse of this information.



Flood-Inundation Map for the North Branch Elkhart River at Cosperville, Indiana at the U.S. Geological Survey Streamgage Number 04100222

Map corresponding to a Gage Height of 8.00 feet and an Elevation of 887.70 feet (NAVD 88)

Projection: Web Mercator (WGS84)
Please visit http://water.usgs.gov/osw/flood_inundation/ for full map library.

0.45 0.225 0 0.45
MILES

0.5 0.25 0 0.5
KILOMETERS

NORTH AMERICAN VERTICAL DATUM 1988 (NAVD88)

Service Layer Credits: Source: Esri, DigitalGlobe, GeoEye, i-cubed, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community
Sources: Esri, DeLorme, USGS, NPS

EXPLANATION

- Flood-inundation area
- Area of uncertainty due to levee (where applicable)
- Levee
- Study area boundary
- ⊗ USGS streamgage and NWS forecast site (if applicable)

LOCATION

