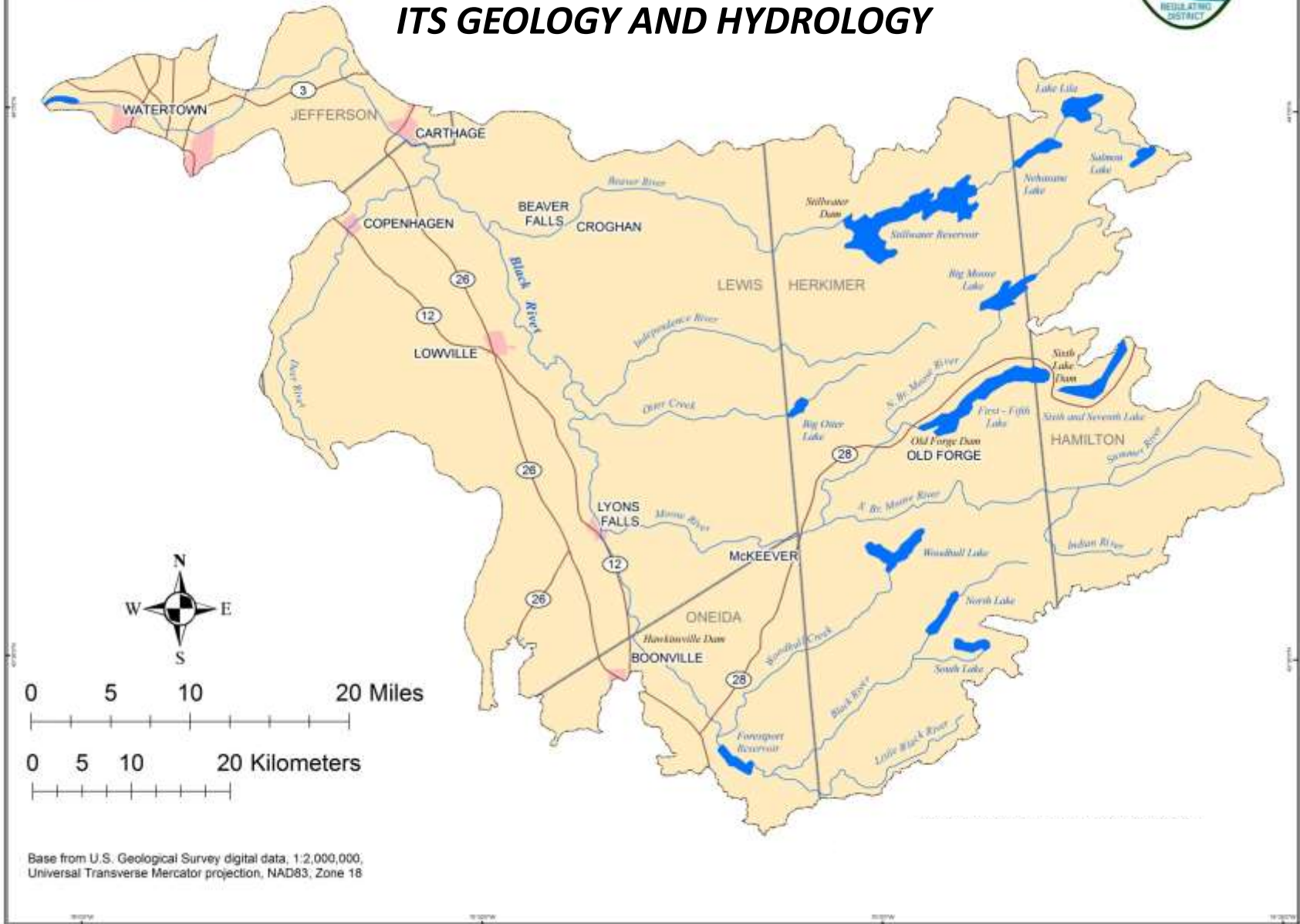




# BLACK RIVER WATERSHED

## *ITS GEOLOGY AND HYDROLOGY*



Base from U.S. Geological Survey digital data, 1:2,000,000,  
Universal Transverse Mercator projection, NAD83, Zone 18

# The Black River – the Origin of its Name??

Likely the tannic-acid color derived from the forested and wetland areas in the Adirondack Mountains create the dark color of the water in these tributaries and to the Black River itself.

Tannins are derived from hardwood trees and some plant species growing in nutrient-poor, acidic environments, and from wetland bogs where plant decay is very slow.

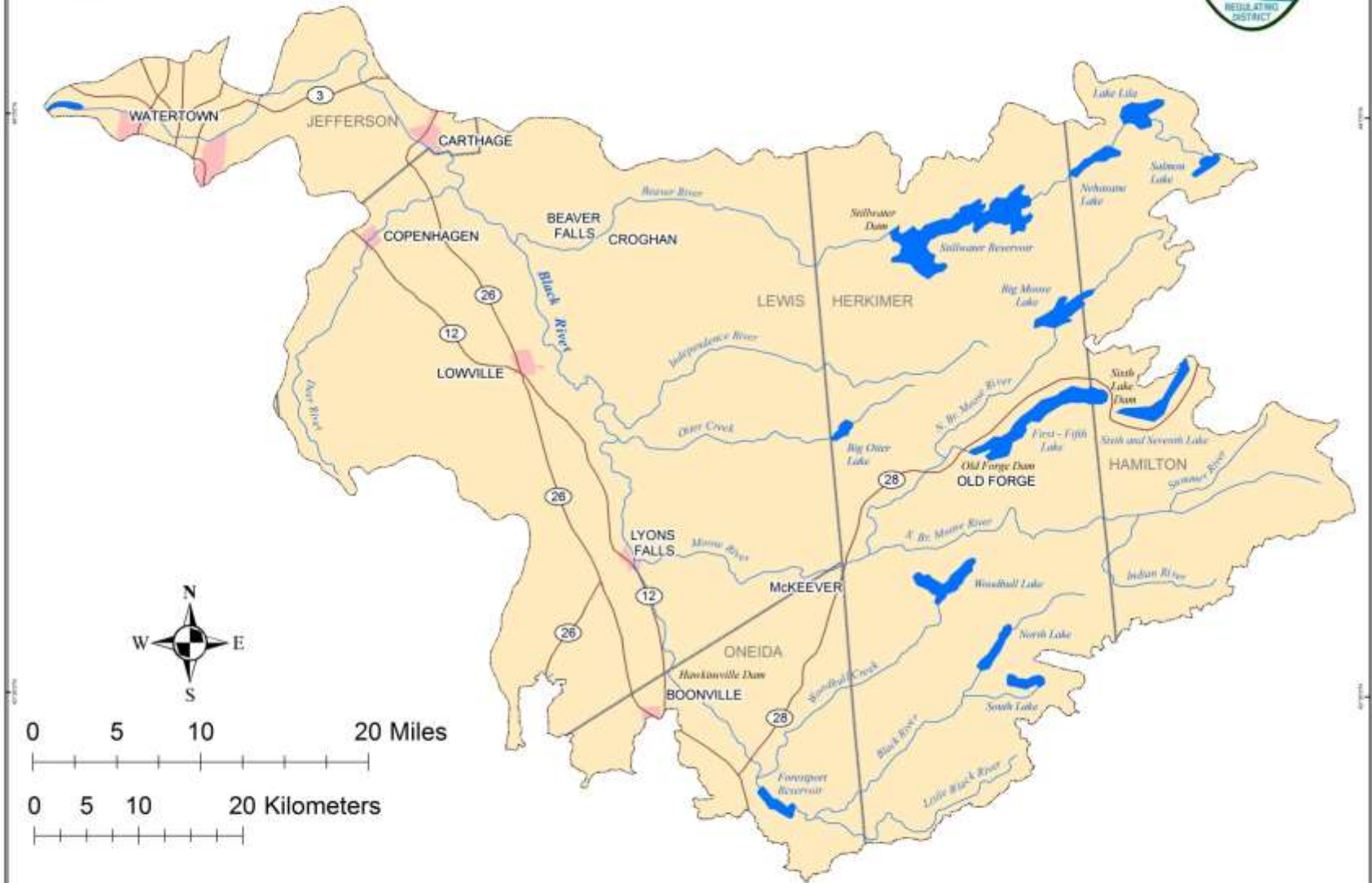
The Black River, a much better name than “The Tannic Acid Colored River.....”

## **The Black River and its Watershed – *The Boring Facts.....***

- ❑ The Black River starts at North Lake (Herkimer County) at an elevation of 1,850 ft
- ❑ The river is about 125 miles long and eventually discharges to Lake Ontario near Dexter, Jefferson County, at an elevation of 246 ft. The upper and lower reaches of the River have the most elevation change per mile, while the central section is fairly flat.
- ❑ Major tributaries that enter the Black River drain from the western flank of the Adirondack Mountains – the Moose, Independence, and Beaver Rivers.



# BLACK RIVER WATERSHED



Base from U.S. Geological Survey digital data, 1:2,000,000,  
Universal Transverse Mercator projection, NAD83, Zone 18



Fulton Chain Lakes  
(North Branch Moose River)



Eagle Bay

Dollar Island

Cedar Island

Fulton Chain Lakes

Inlet

Bartons Island

Thistle Island

Big Island

Shelter Island

DeCamps Island

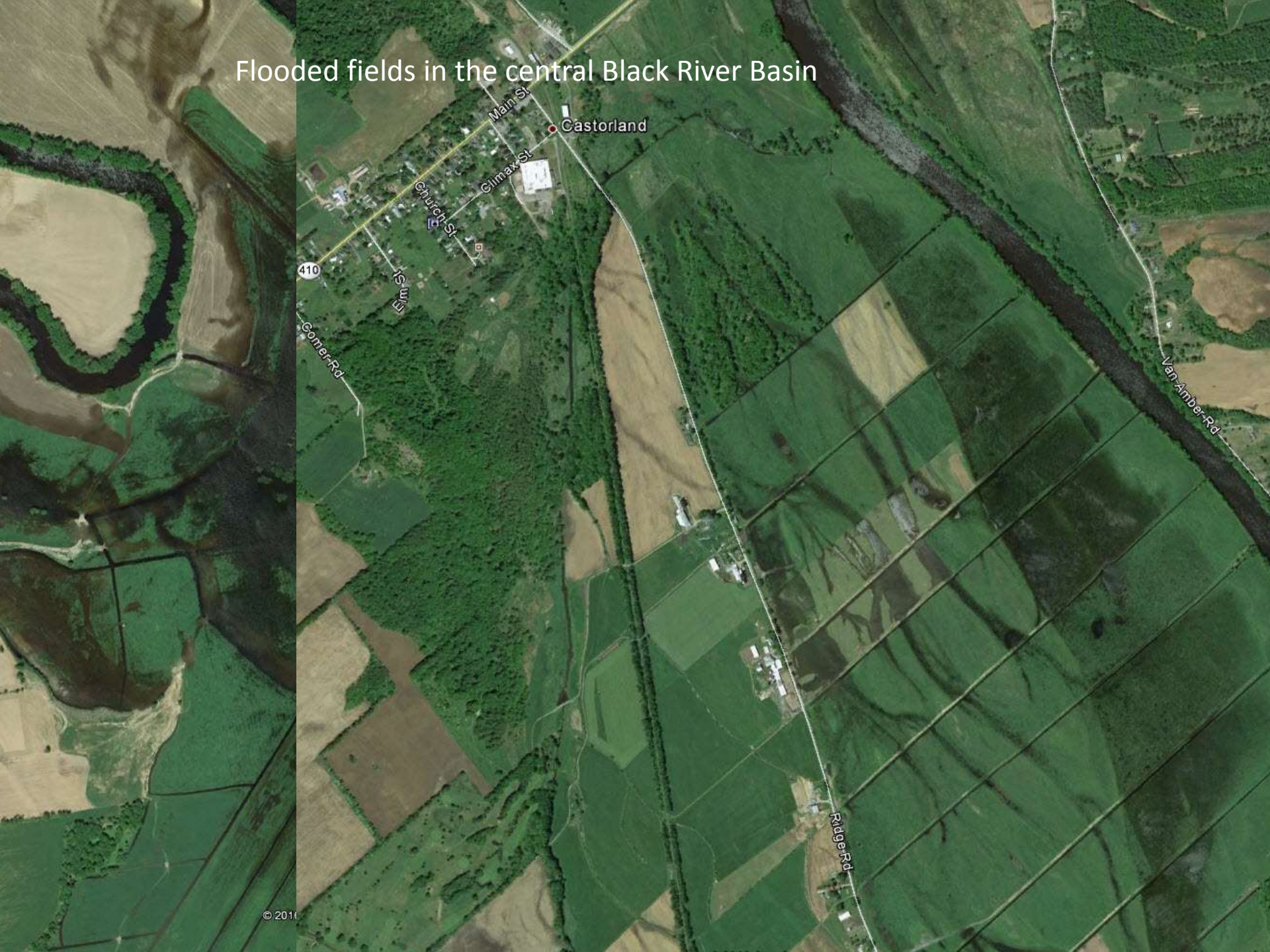
Dog Island

Forge

28



# Flooded fields in the central Black River Basin

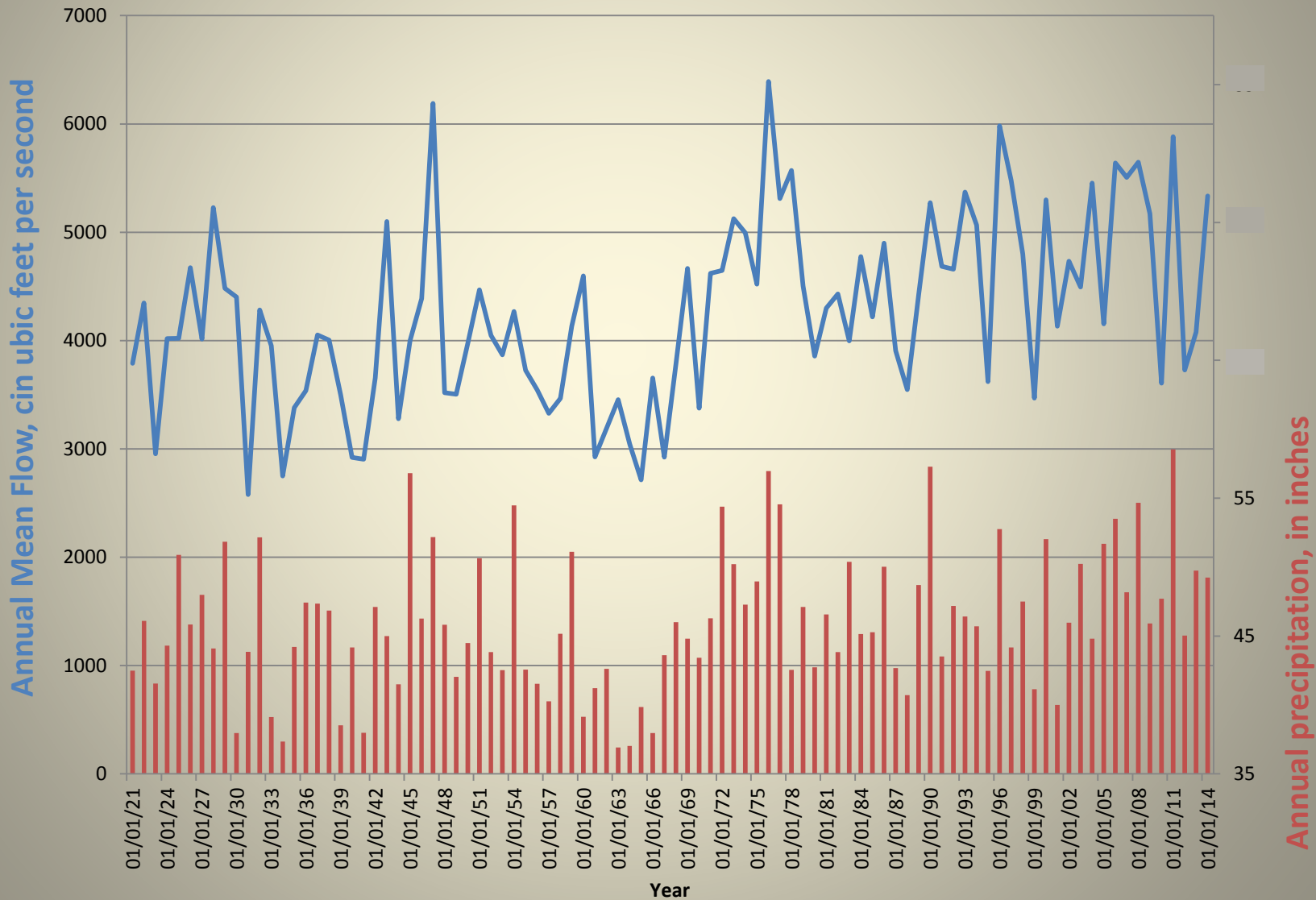


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- ❑ The Black River Watershed is about 1,920 square miles, with an average flow at Watertown of about 4,240 cubic feet per second – (~31,500 gallons per second).



# Annual Mean Flow (Black River at Watertown, NY) and Annual Regional Precipitation 1921-2014

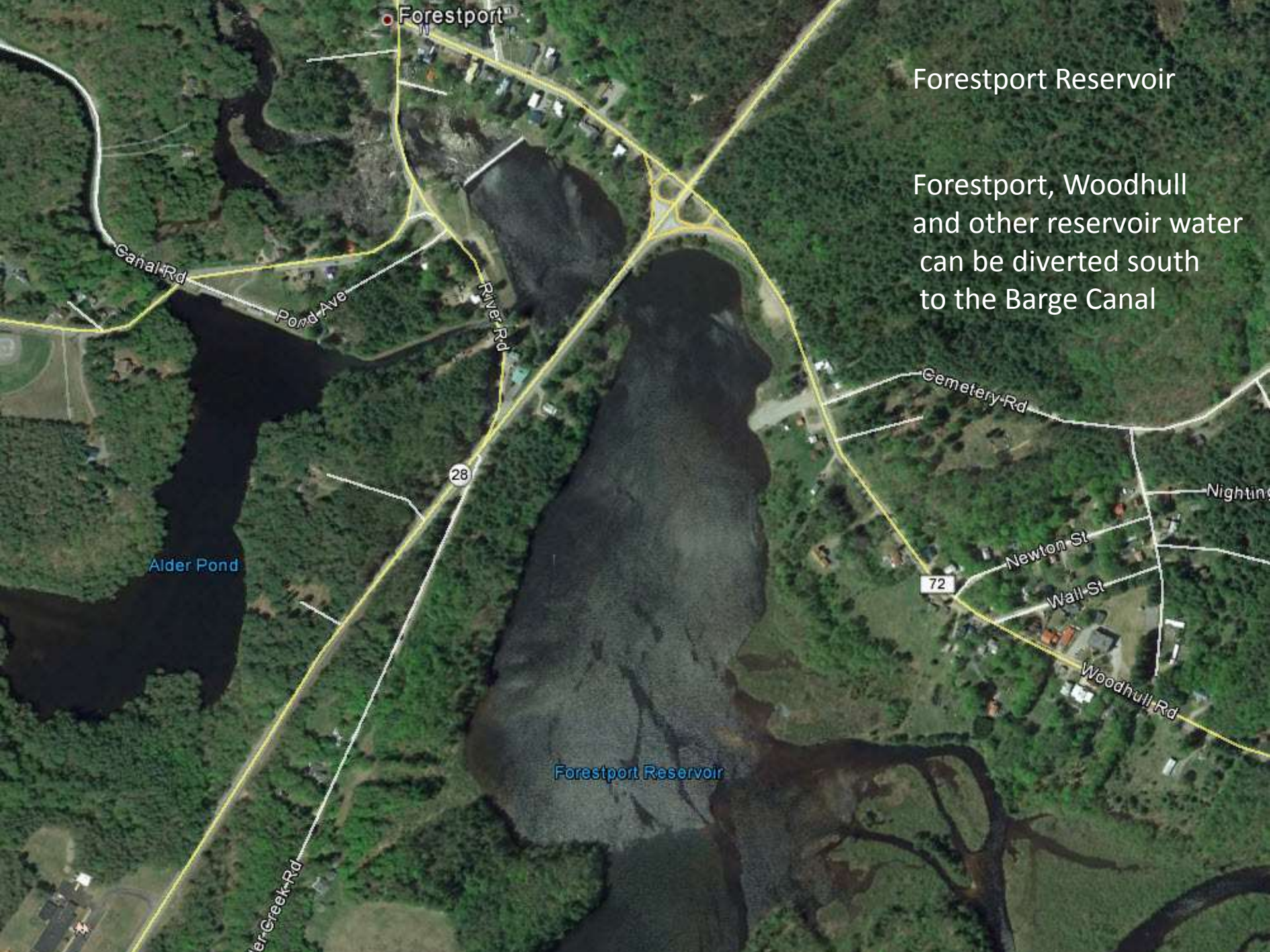




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- ❑ The Black River Watershed is about 1,920 square miles, with an average flow at Watertown of about 4,240 cubic feet per second – (~31,500 gallons per second).
- ❑ Some water from Forestport and other reservoirs can be routed to the New York State Barge Canal at Rome. (Forestport feeder canal to Boonville then to Delta Lake).
- ❑ The Hudson River-Black River Regulating District regulates discharges from their respective reservoirs – Black River – Stillwater and Fulton Chain Lakes Reservoirs.





Forestport

Forestport Reservoir

Forestport, Woodhull and other reservoir water can be diverted south to the Barge Canal

Canal Rd

Pond Ave

River Rd

28

Cemetery Rd

Nightingale

Newton St

Wall St

Woodhull Rd

Alder Pond

72

Forestport Reservoir

Alder Creek Rd



A satellite map showing a large reservoir with a dark, irregular shape. The surrounding area is green, indicating vegetation. A red location pin is placed on the western shore of the reservoir. A small island is visible in the southern part of the reservoir. Two small white icons are also present on the map: one on the western shore and one on the eastern shore.

Stillwater Reservoir

Melody Island



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- ❑ The Hudson River-Black River Regulating District regulates discharges from their respective reservoirs – Black River – Stillwater and Fulton Chain Lakes Reservoirs.
- ❑ The river is otherwise regulated by dams in its upper and lower reaches. These dams are of the ‘run-of-the-river’ type, and now used for hydropower production.





Lyons Falls, NY

39

Lyons Falls Rd

Church St

St







Howe Rd

Metalry Ln

E Rutland St

342

3

Hydropower project near Black River, NY

Black

Black



Hydropower project near Watertown







Last control structure  
at Dexter, NY

Brown St

180

Locke St

Canal St

Fish Island Path

Lee Rd

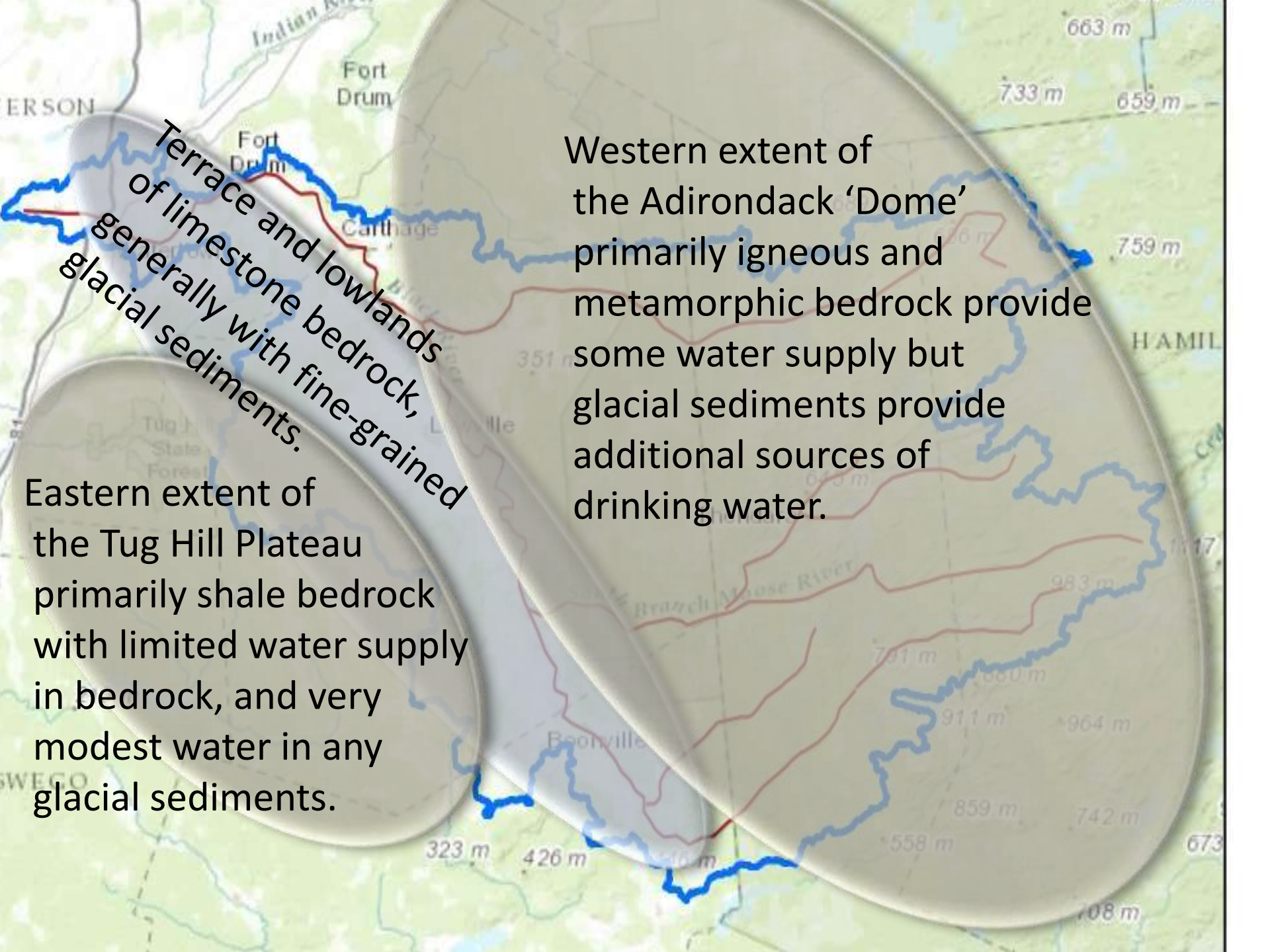
Lee Rd



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- ❑ The river is otherwise regulated by dams in its upper and lower reaches. These dams are of the ‘run-of-the-river’ type, and now used for hydropower production.
- ❑ Surface water supplies Watertown with drinking water while groundwater supplies most municipalities and homeowners in rural areas. Glacial deposits generally have more-consistent and better-quality water than that from bedrock.





Terrace and lowlands of limestone bedrock, generally with fine-grained glacial sediments.

Eastern extent of the Tug Hill Plateau primarily shale bedrock with limited water supply in bedrock, and very modest water in any glacial sediments.

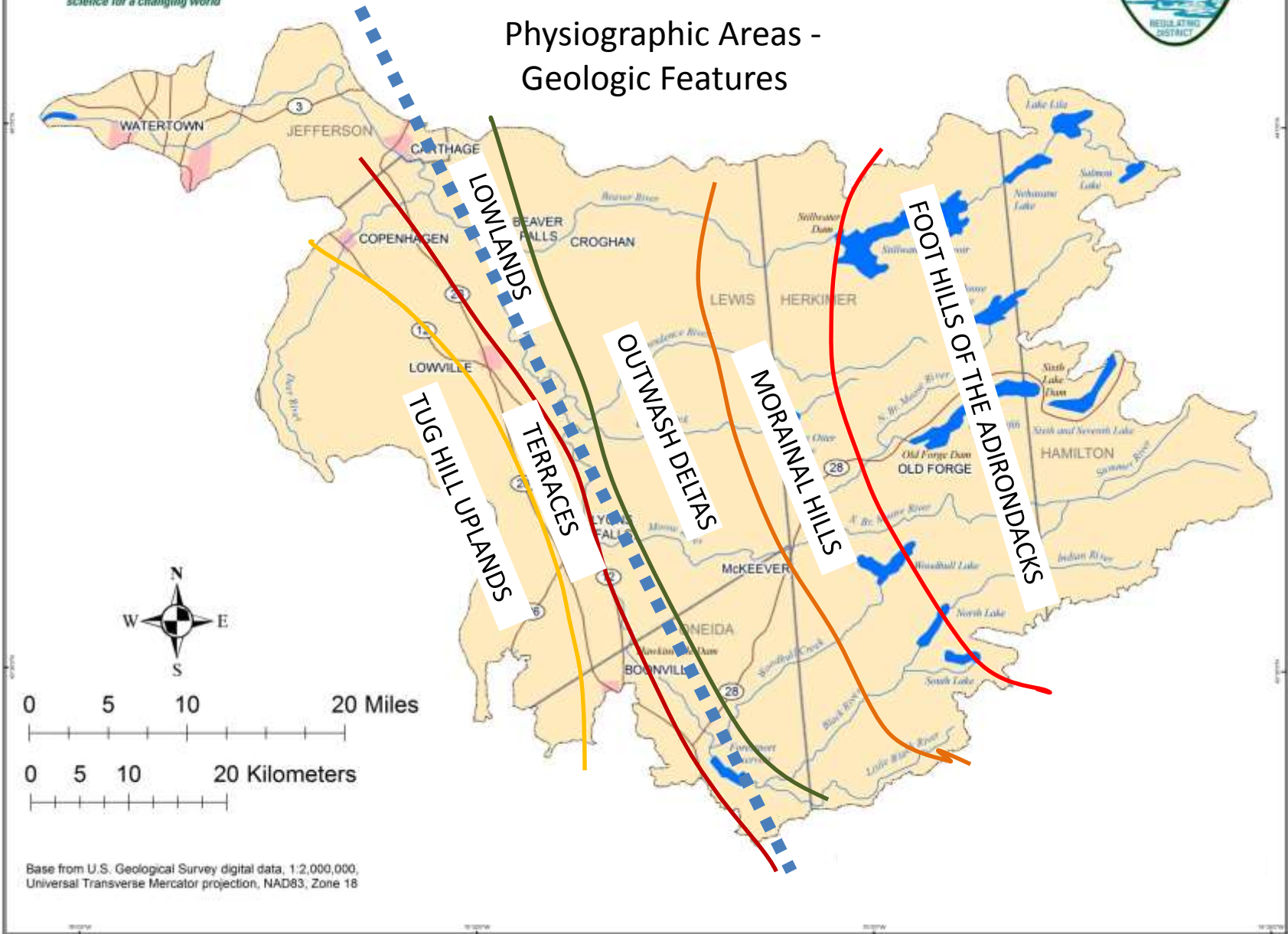
Western extent of the Adirondack 'Dome' primarily igneous and metamorphic bedrock provide some water supply but glacial sediments provide additional sources of drinking water.



# The Black River Fault BLACK RIVER WATERSHED

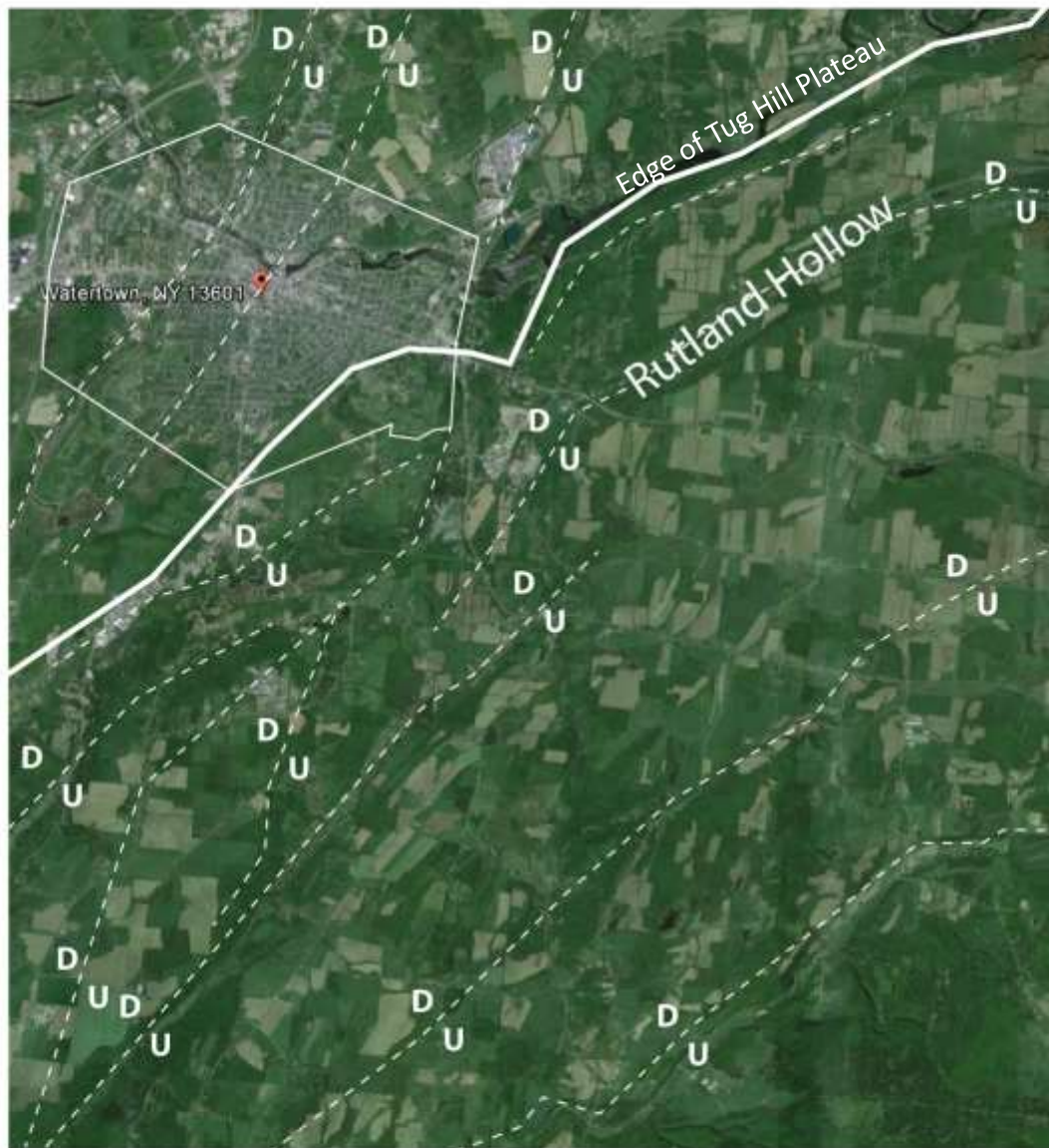


## Physiographic Areas - Geologic Features





## Geologic Structure in the Watertown, NY Area



Modified from: Wallach, J.L., and Rheault, M., 2010, Uplift of the Tug Hill Plateau in northern New York State, Canadian Journal of Earth Sciences, v. 47, no. 8, p.1055-1077.

**D**  
**U** Fault -  
**D** - Downthrown Block  
**U** - Upthrown Block





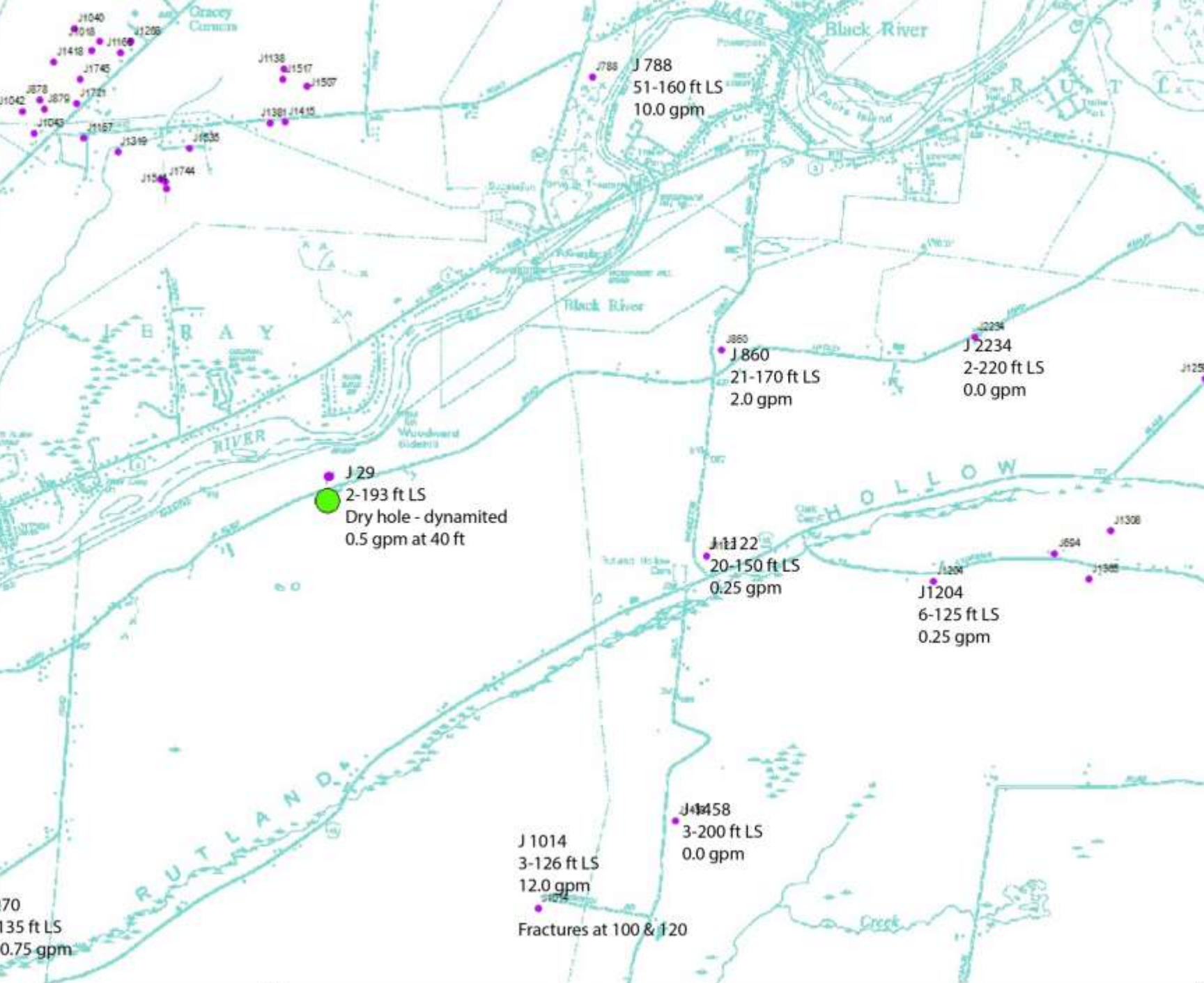
3

Bedrock fracture pattern, Black River at NYS-Route 3, Watertown, NY









70  
135 ft LS  
0.75 gpm

J1040  
J1048  
J1106  
J1206  
J1418  
J1745  
J1721  
J1042  
J878  
J879  
J1043  
J1167  
J1319  
J1635  
J1544  
J1744  
J1138  
J1517  
J1507  
J1381  
J1415

J 788  
51-160 ft LS  
10.0 gpm

J 860  
21-170 ft LS  
2.0 gpm

J 2234  
2-220 ft LS  
0.0 gpm

J 29  
2-193 ft LS  
Dry hole - dynamited  
0.5 gpm at 40 ft

J 1122  
20-150 ft LS  
0.25 gpm

J 1204  
6-125 ft LS  
0.25 gpm

J 1014  
3-126 ft LS  
12.0 gpm  
Fractures at 100 & 120

J 1458  
3-200 ft LS  
0.0 gpm



City DPW Says New Protocol Planned to



## Spelunkers Find Wallet Man Lost In NY Cave In 1996

09/11/2013 05:33 pm ET | Updated Sep 12, 2013

**WATERTOWN, N.Y.** — City of Watertown Department of Public Works officials say new protocol for restricting access to the newly-installed door to city's underground cave system would likely ease worries among city officials and law enforcement



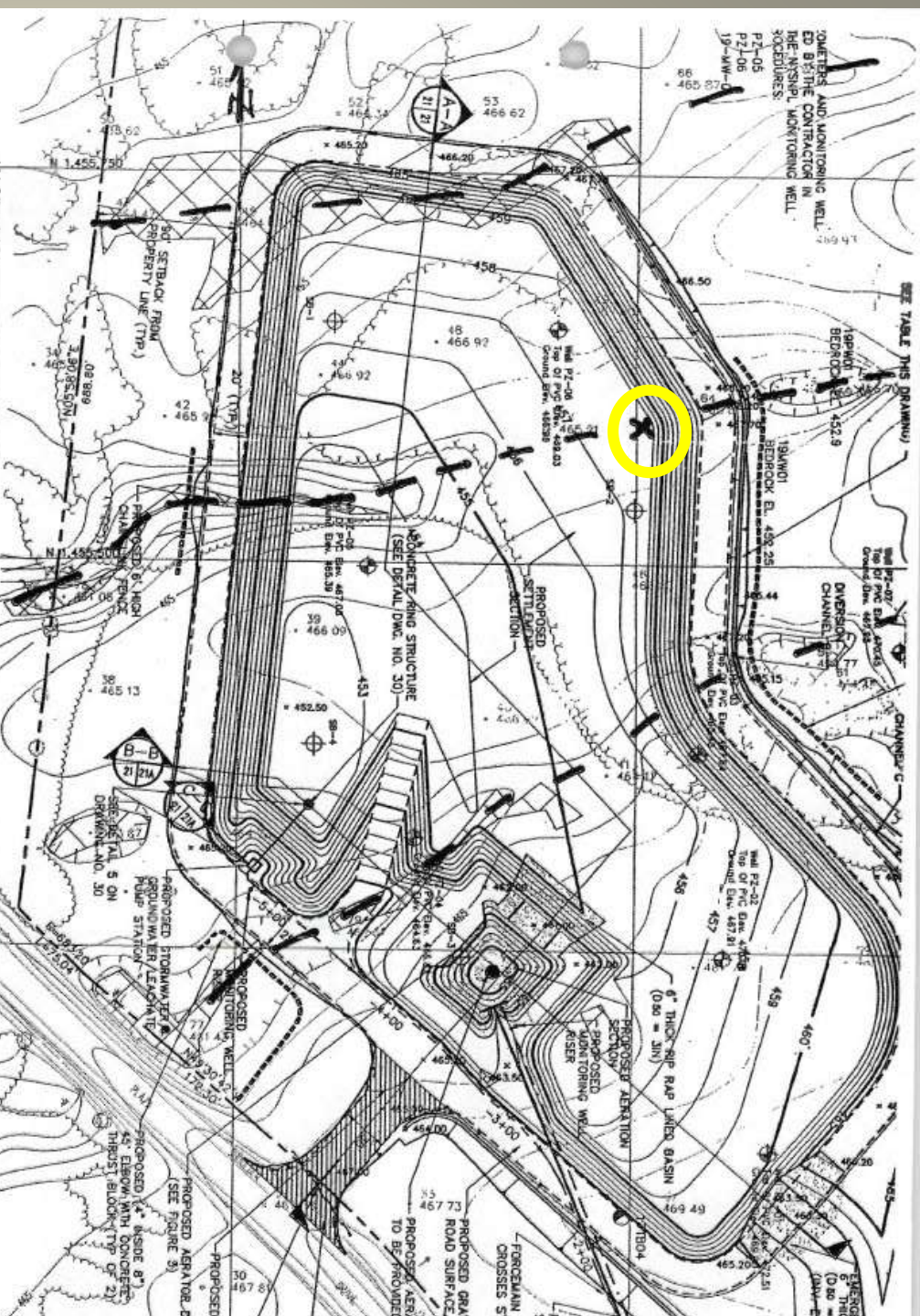
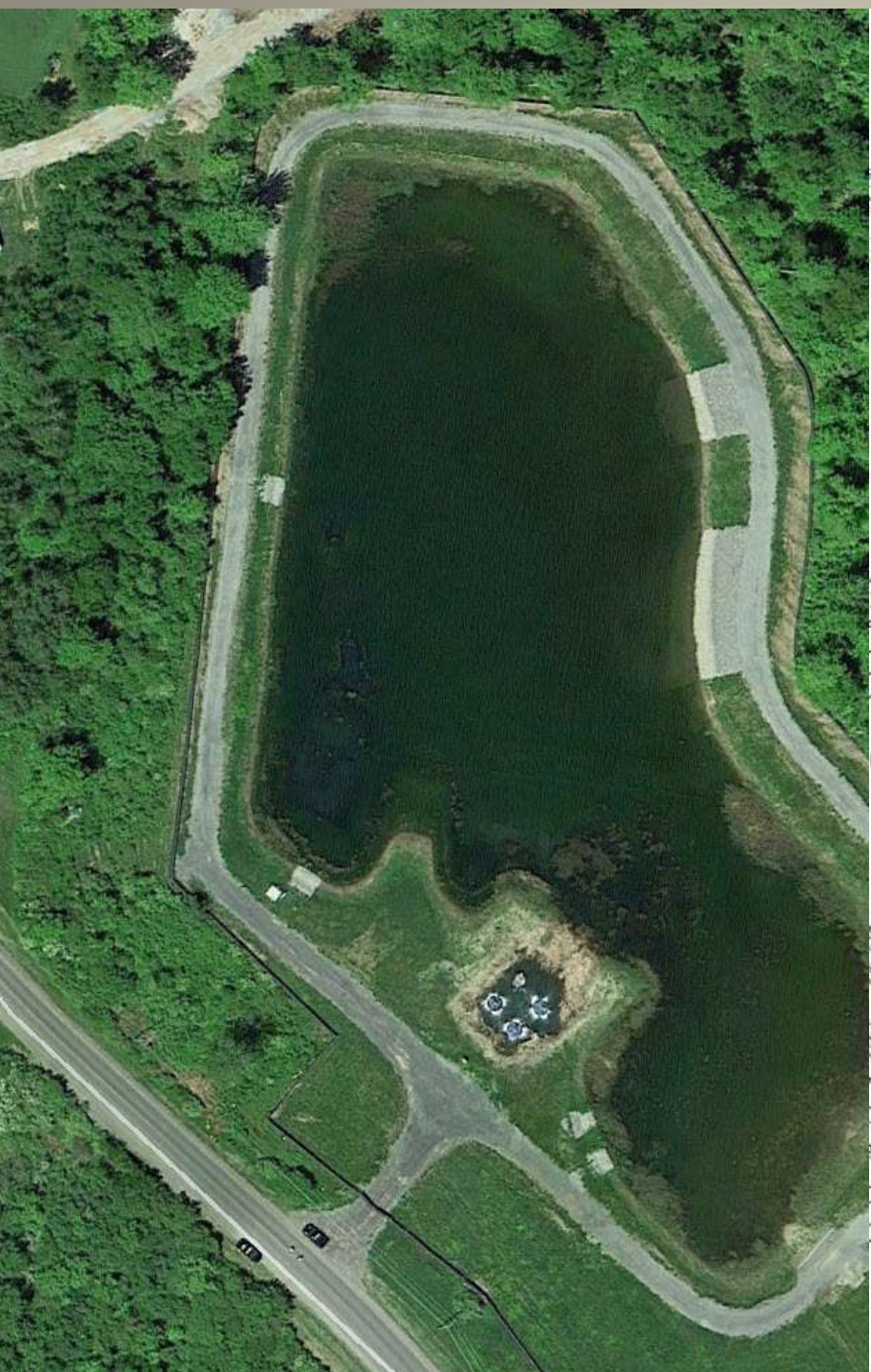






PHOTO 13



PHOTO 16







Town of Pamela – Philomel Creek - East



Stream  
Orientation





Town of Pamelaia – Philomel Creek – Mid section - dry





Town of Pamela – Philomel Creek – West - resurgence

Stream  
Orientation







Bedrock fracture  
Pattern - SW-NE

Old Rome Rd





Natural rapids downstream of Watertown, NY





Black River at  
Black Bay

e Rd

Riverview Dr

Hall Dr

Hickory Point Dr

Doane Rd

Maynard Ave S

Foster Park Rd

Bay Breeze Way

Brainerd Dr

19 St

21 St

23 St

Dexter

Canal St

Lee Rd

Lodi Rd



# ***The Current Water Resource Concerns within the Black River Watershed***

Maintaining and improving the quantity and quality of water within the watershed.

Quantity of water is generally dependent on our climate, of which we understand is changing. Differences in the amount and timing of rainfall and snow melt may effect how much and when precipitation runs off versus infiltrates permeable glacial and bedrock aquifers and then appears as recharge to the river system.

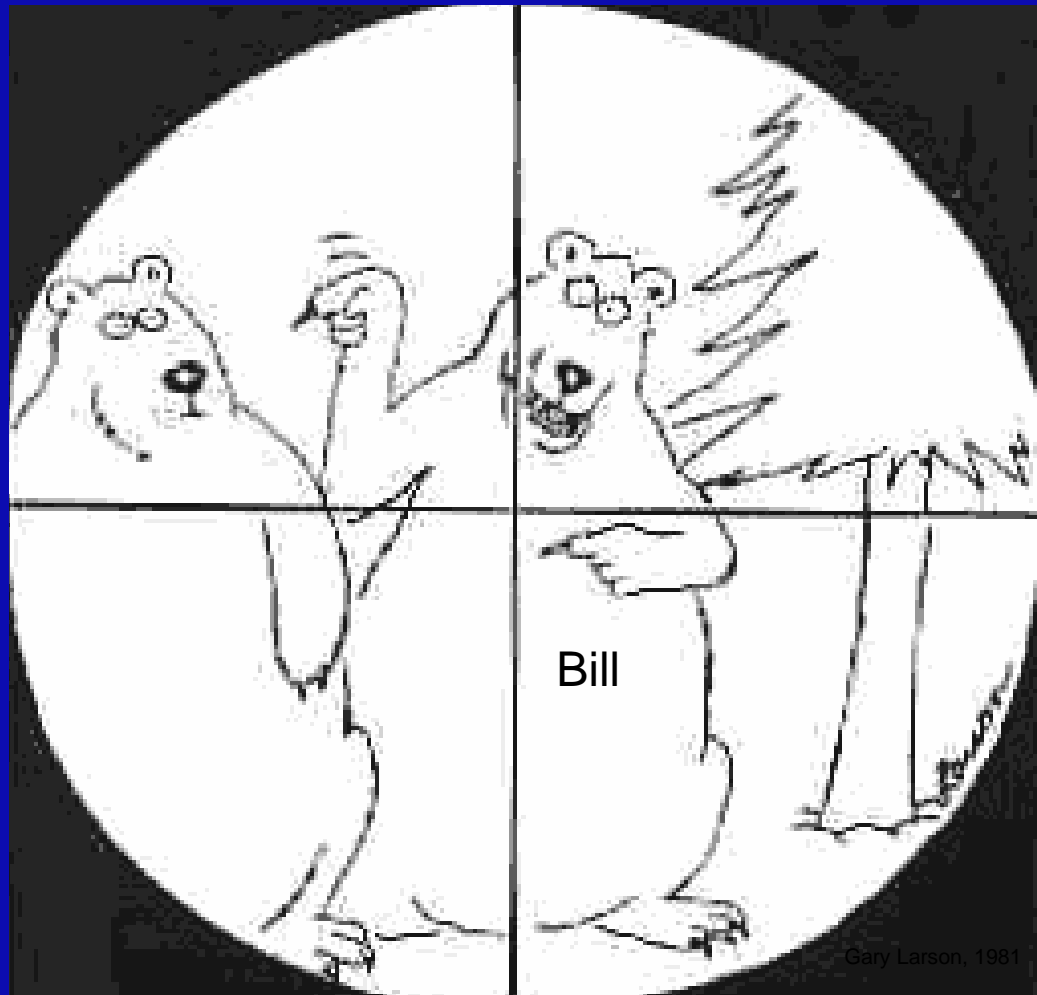
Also, we need to carefully understand and manage our water resources for future users.

Quality of water is dependent on us:

1. How and where we manage, recycle/reuse, or eventually landfill the wastes we produce.
2. How we perceive, manage, and produce products from our industrial, agricultural, and forest environments to protect the quality of the water resources now, and into the future.
3. How we, as individuals, manage our water use and waste flows ( i.e., septic systems) to protect surface water and groundwater resources now, and into the future.



# Questions?



Gary Larson, 1981