

An aerial photograph of a lake with a large, white, foamy wave crashing against a forested shoreline. The water is dark and calm in the background, while the foreground shows the turbulent water and the dense green trees of the shore. The sky is overcast.

“Wreck”- reation or Rē-Creation ?

A Comparative Tale of Two Michigan Inland Lake Communities

Dr. Stacy Leroy Daniels, “President *pro tem* Benzie Co. River Improvement Co., Est. 1873
World Canals Conference
Hagerstown, MD Aug 30 , 2021

http://www.shadedrelief.com/birds_eye/big_images/johnstown3.jpg

“Wreck”- reation or Rē-Creation?

– A Comparative Tale of Two Michigan Inland Lake Communities

“The two largest inundations from inland lakes due to dam breachings in **U.S. history** (!)” had contrasting impacts: partial drainage of Crystal Lake, a very large natural lake in a very small watershed in NW Lower MI (1873) vs. extensive drainage of four small impoundment lakes in the very large Tittabawassee River (Four Lakes) watershed in Central MI (2020).

Outline

- **“Wreck”- reation vs. Rē-Creation**
- **Terms of Art**
- **“Flood” vs. “Inundation”**
- **Largest Inland Lake “Inundations” caused by dam breachings in U.S. History ? !**
- **Two Case Histories:**
 - **(1) Crystal Lake “*Tragedy/Comedy*” (1873)**
 - **(2) Tittabawassee River “*Disaster*” (2020)**
- **A chronicler of 1st and observer of 2nd**

Largest Inland Lake “Inundation”



Crystal Lake/Tittabawassee River?

“Wreck”- reation vs. Rē - Creation

“Wreck”- reation, n., (sic, recreation) is an activity done for enjoyment or leisure; a refreshment of strength and spirits after work; a diversion, pastime, relaxation; generally implying use of a natural or created resource.

Rē - Creation, n., (sic, re-creation) is an activity done for practical application by creating or building again; a recovery, restoration, reformation; generally implying a replacement of something that once existed, and was destroyed, like restoration of a former resource.

Anthropogenic destruction (wrecking) is NOT implied!

It is possible to re-create a natural recreational resource!

Terms of Art

- **Apocalypse:** complete destruction of the world
- **Disaster:** great or sudden misfortune
- **Catastrophe:** terrible disaster
- **Cataclysm:** surging flood water
- **Deluge:** severe and lasting flood
- **Freshet:** sudden release of spring meltwater
- **Debate:** sudden release of dammed water
- **Flood:** overflow of water onto dry land (natural)
- **Inundation:** overflow of water (artificial)
- **Breaching:** sudden hydraulic failure of a dam

Core Statements

“Inundation” – overflow from inland lakes onto normally dry land due to controlled anthropomorphic (artificial) causes.

“Flood” – overflow from natural bodies of water onto land with intermittent immersion due to uncontrolled natural causes.

Anthropogenic causes: controllable engineered structures (dams, impoundments, canals).

Natural causes: climatic events, earth movements, etc., which may exacerbate anthropogenic causes.

Hydrological effects wrought upon engineered structures can be (a) constructive (irrigation, diversion, power generation, water supply, beach creation); (b) destructive (dam breach, lake drain, canal failure, infrastructure loss), with unforeseen consequences for historical and current education, recreation, and tourism.

Where's a *ragin' canawl* when you need one?

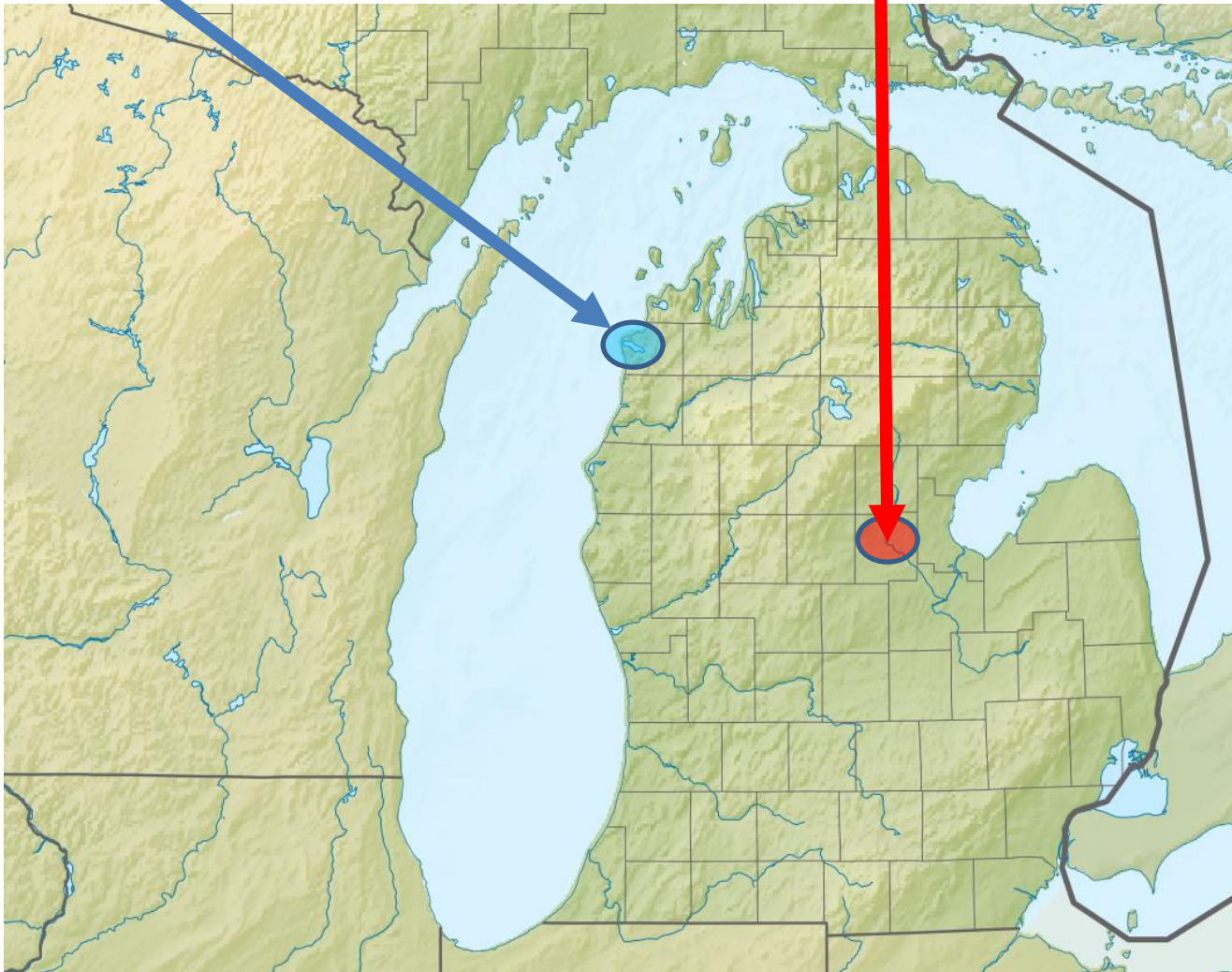


The container ship Ever Given stuck in the Suez Canal,, March 2021

https://encrypted-tbn0.gstatic.com/images?q=tbn:ANd9GcQldT-33UWHz2KiljJkc_abtxX4dYelozZXuw&usqp=CAU ;

<http://www.eriecanalsong.com/sheetmusic/TheRagingCanal.pdf>

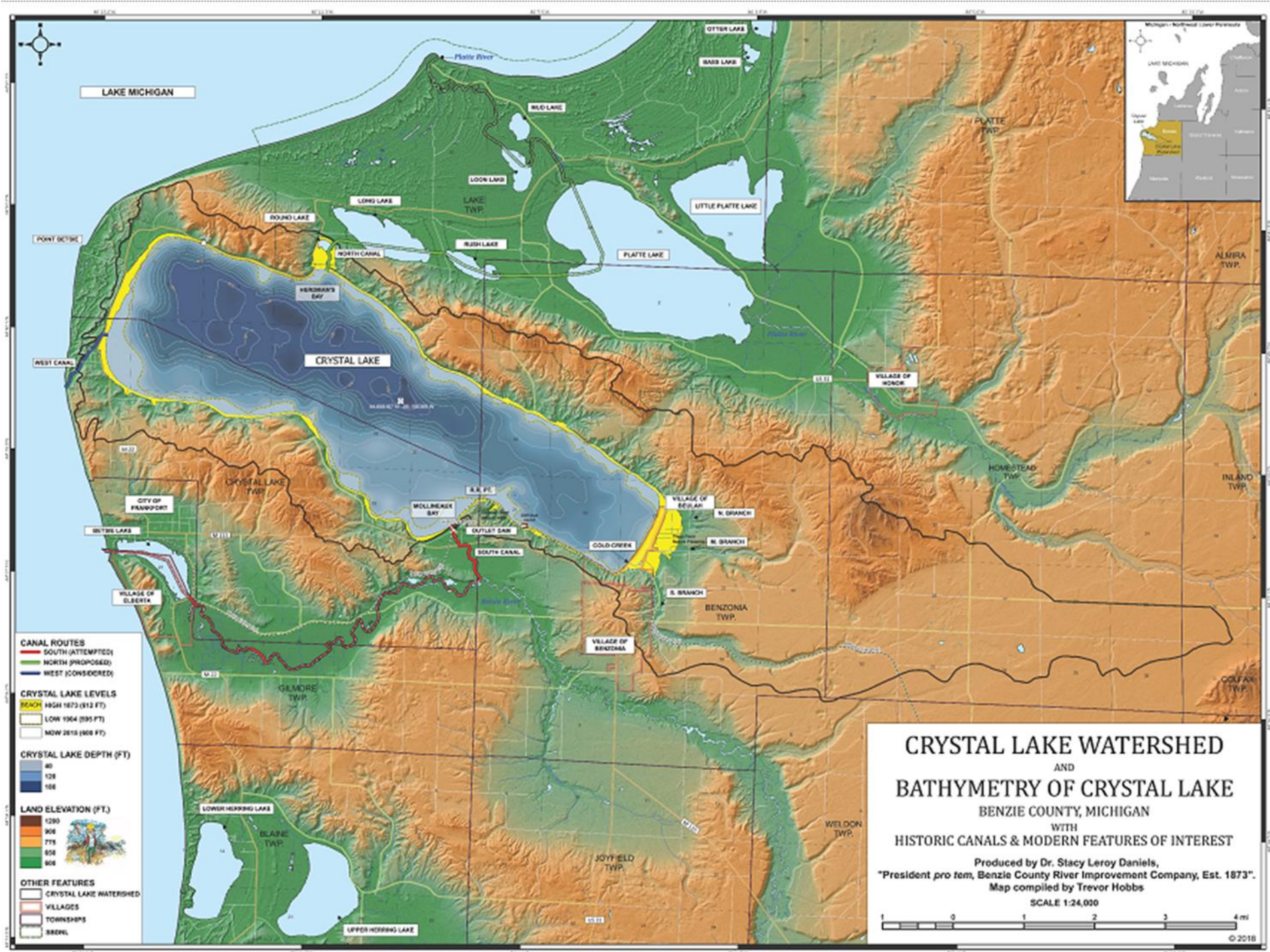
Two Inland Lake Communities: Crystal Lake Tittabawassee River



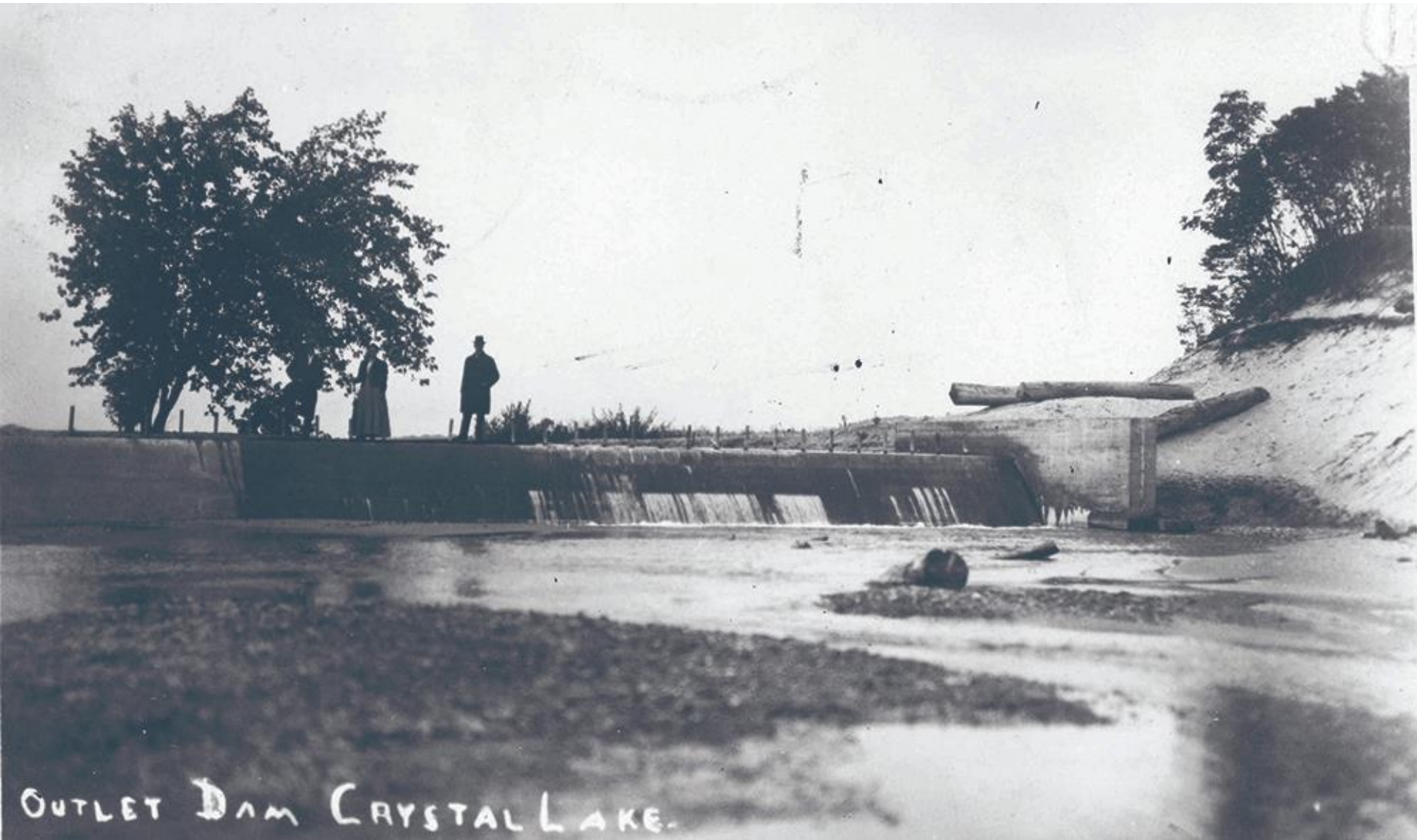
Crystal Lake “*Tragedy / Comedy*”

- Crystal Lake, Northwest Lower MI
- A very small subwatershed (43.98 mi²) (Benzie Co.) of the Betsie River Watershed (259 mi²)
- A very large inland lake: area (9,896 A), depth (165 ft), perimeter (27.8 mi), volume (261 Bgal)
- Breaching of a dam by storm (08/23/1873) but limited inundation (56 Bgal) (2 X 100-yr flood)
- Est'd gains of \$500,000,000 in real estate, cottages, businesses, resorts, roads and trails, as ~ 2,000 A of lake transformed into beach
- Happy ending vs. Sad beginning !



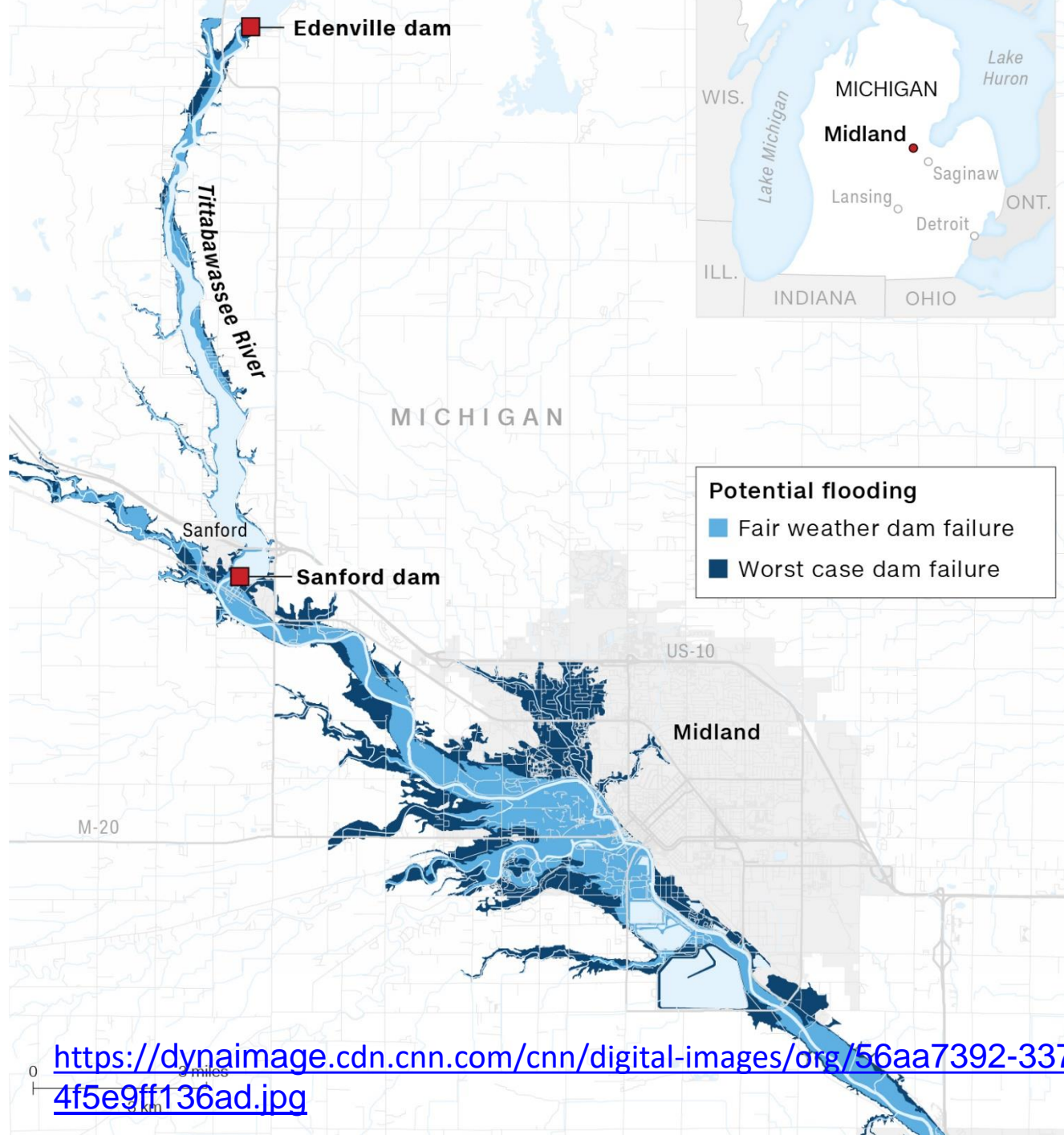


Crystal Lake Outlet Dam (ca. 1911)



Tittabawassee River “*Disaster*”

- Tittabawassee River, Central Lower MI
- Fifth largest watershed in MI (2,471 mi²)
(Midland, Gladwin, Saginaw, + 10 other Cos.)
- Tributary of Saginaw R. Watershed
- Four riverine impoundments creating a chain of shallow artificial lakes (Total area 5,726 A)
- Catastrophic breachings of two dams, draining of lakes, regional flooding (05/19/2020)
- A 500-year “flood” (86 Bgal)
- Est’d losses of \$500,000,000 to dams, lakes, private homes & businesses, & infrastructure



<https://dynaimage.cdn.cnn.com/cnn/digital-images/org/56aa7392-337b-4790-91be-4f5e9ff136ad.jpg>

Edenville Dam, MI 05/20/21



https://www.michigan.gov/images/egle/Edenville-Dam-Construction-Midland_720425_7.JPG

Sanford Dam, MI 05/20/21

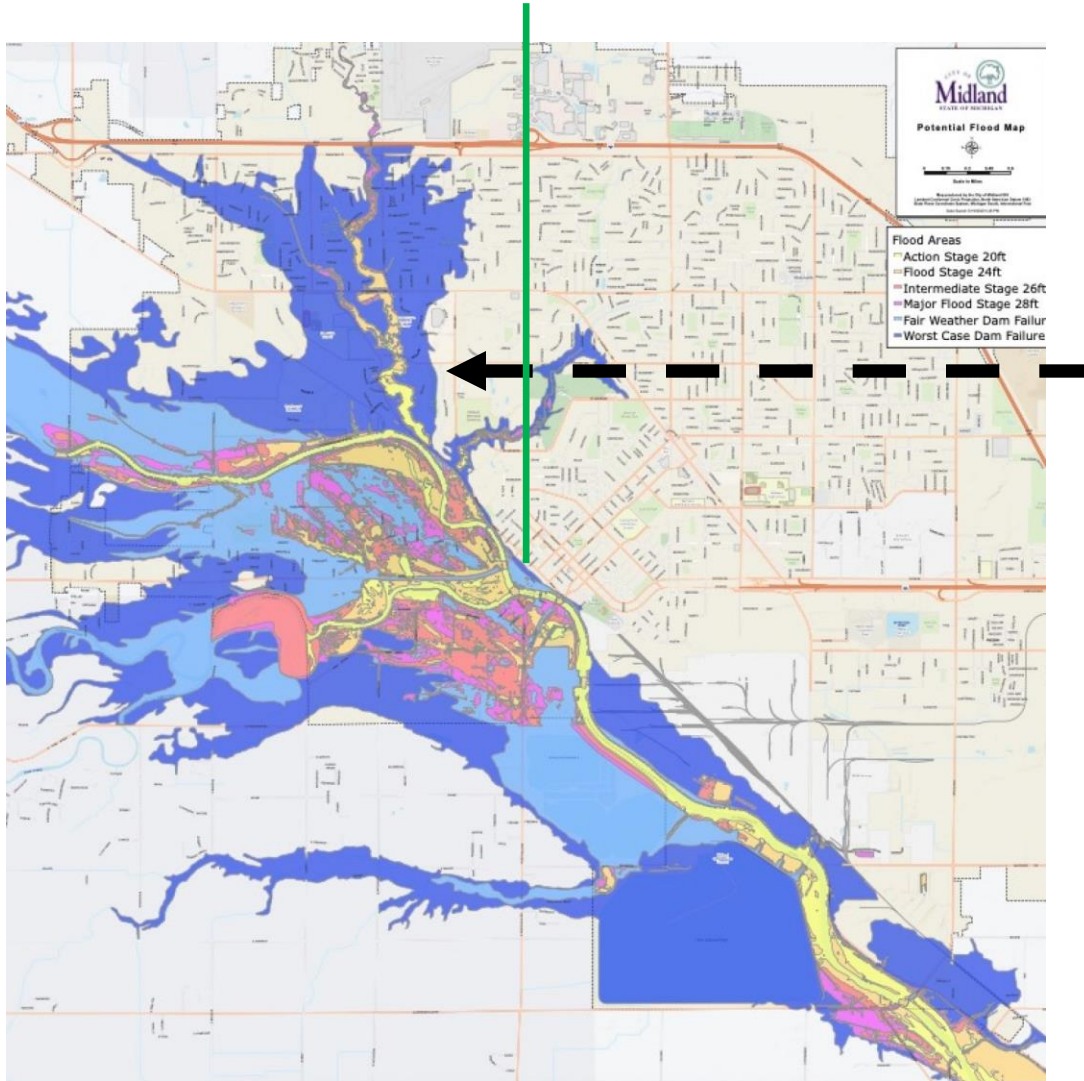


<https://www.ourmidland.com/news/>

Midland, MI (May 2020)



Caught between the “Horns of a Dilemma” !



To “Evacuate” or
“Stay at Home” ?

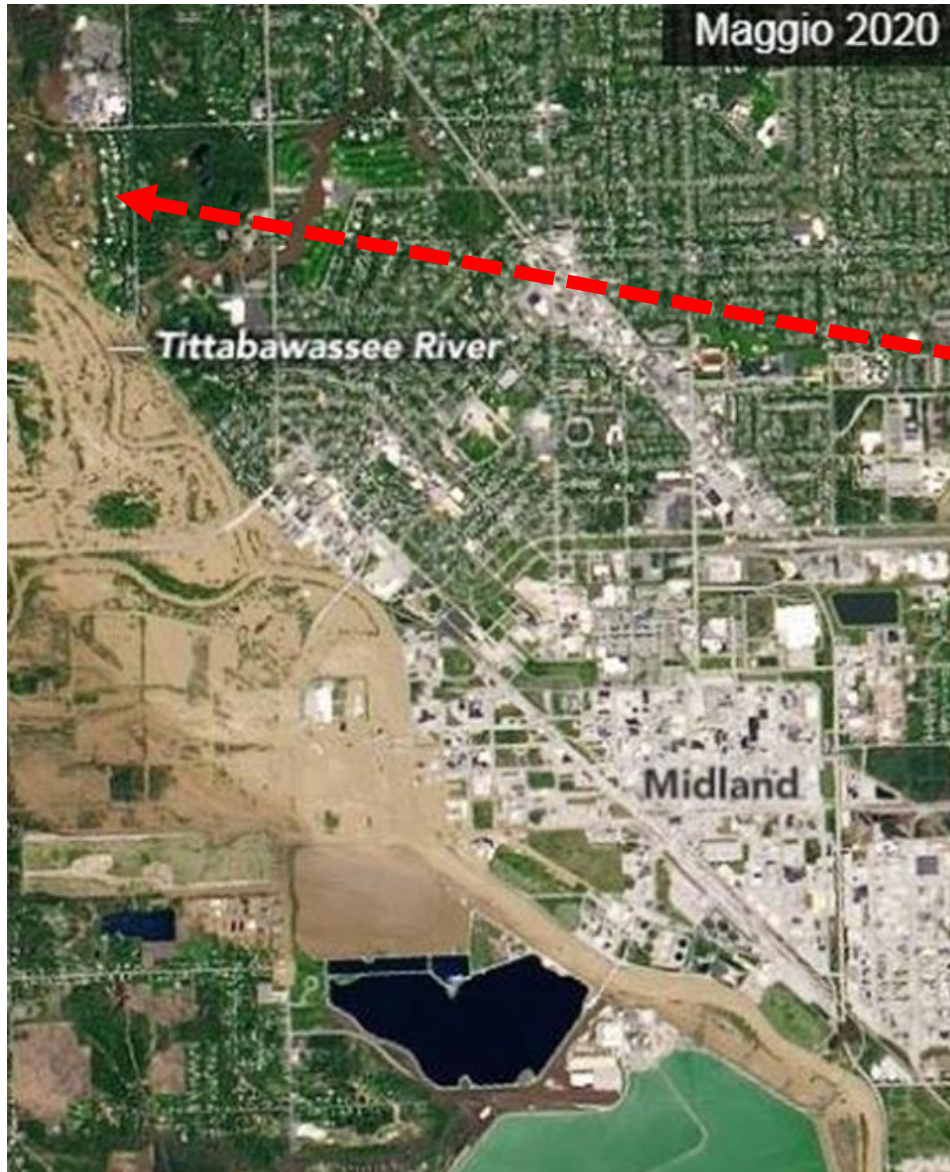
Author’s Home
3901 Orchard Dr
632’ Elevation

Potential Flood Map,
City of Midland MI

Worst Case:
Dam Failure
(Inundation)



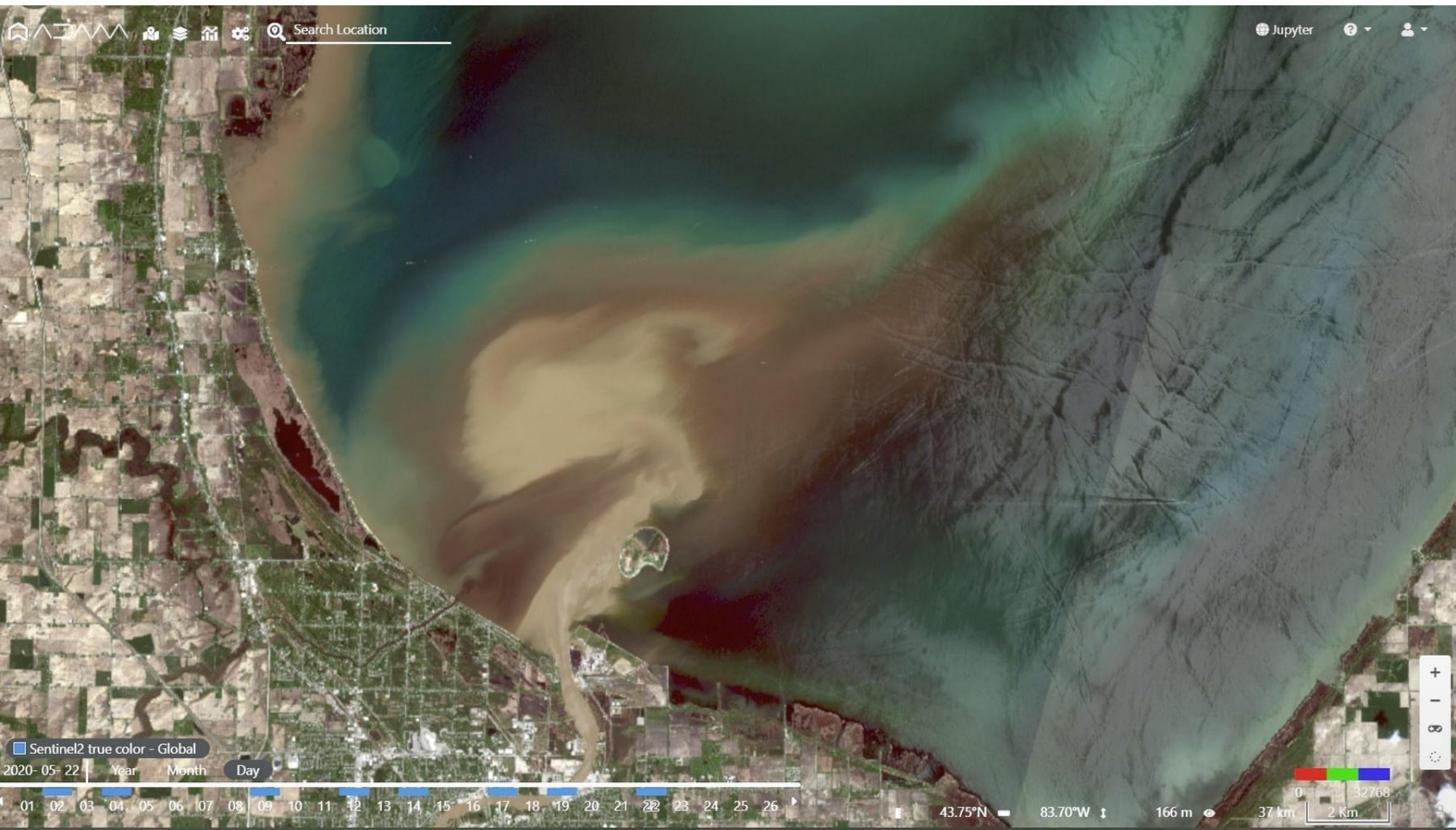
Midland 22 May 2020 13:45



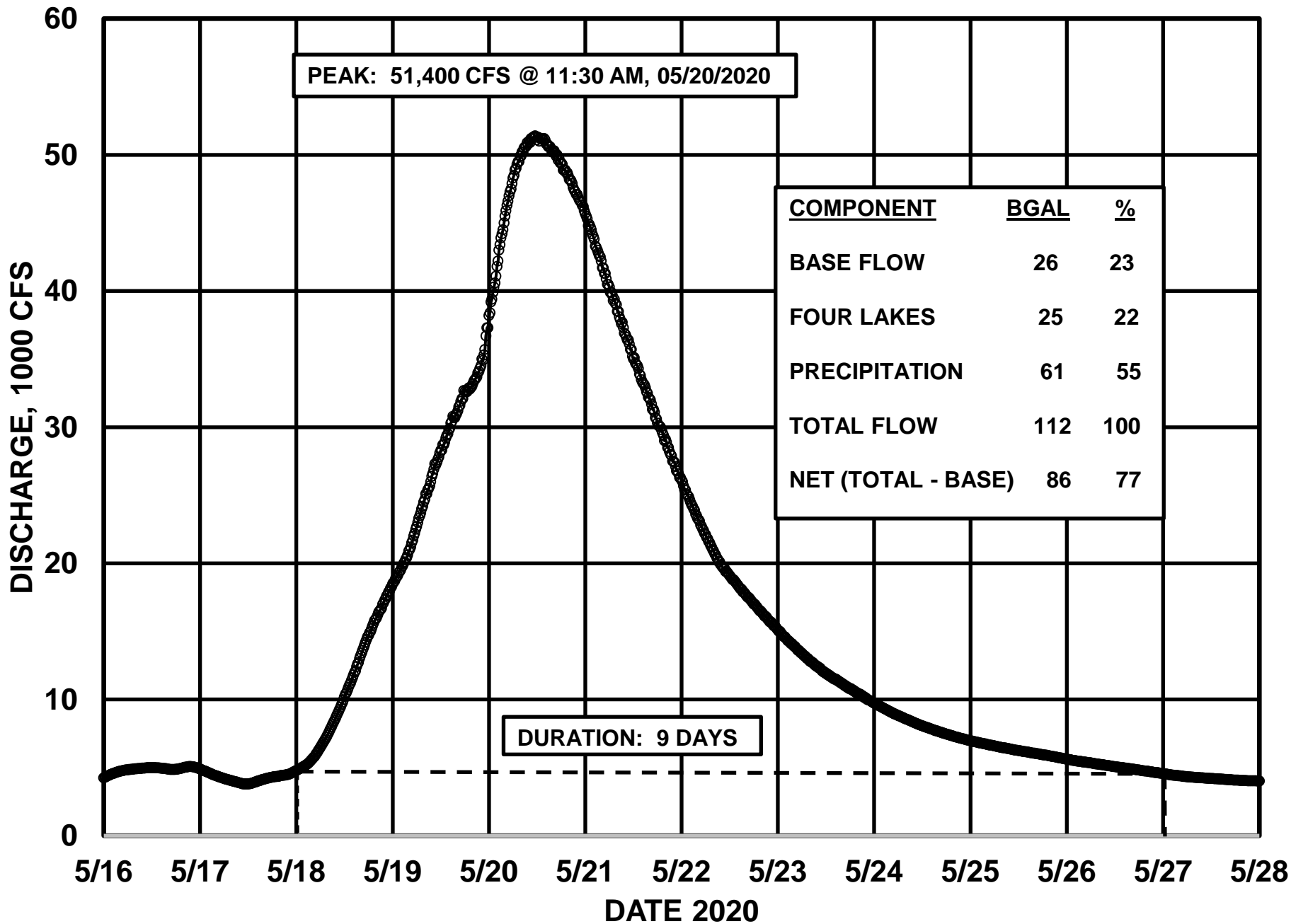
AUTHOR'S HOME 3901 ORCHARD DR

< 1,000 feet from, but 21 feet higher !

Saginaw Bay: “A clod of wayward marl!”



HYDROGRAPH: MIDLAND, MI (USGS 4156000)

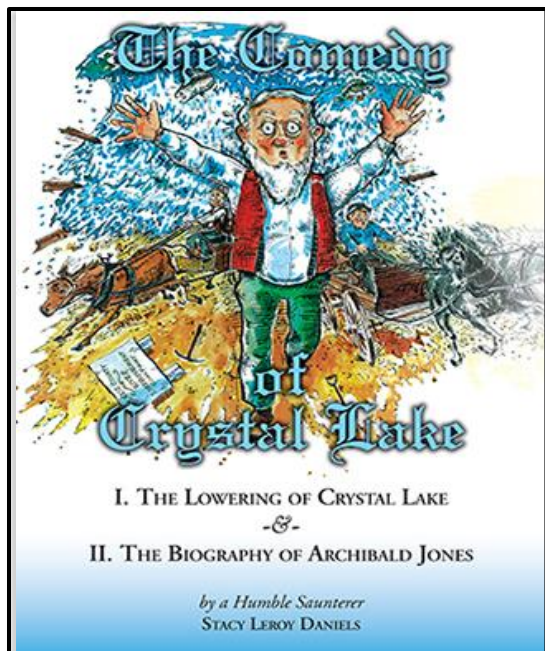


Upstream or Downstream?

“People who live at the lower ends of watersheds cannot be isolationist ... Pretty soon they will notice that water flows, and that will set them to thinking about the people upstream (and) further thinking about the people downstream. Such pondering shows us the golden rule ... “

*“Do unto those **downstream** as you would have those **upstream** do unto you.”*

-- Wendell Berry, “Watershed & Commonwealth”



“THE COMEDY OF CRYSTAL LAKE”

[Sequel to the classic “Tragedy” (1922)]

The story of Archibald Jones and the attempt to build a canal from Crystal Lake to Lake Michigan in 1873. The dramatic lowering of a very large inland lake and the creation of its sandy beach.

The epochal event that led to the development of Crystal Lake and Benzie Co.

**ISBN 978-0-692-21715-3 | Hardcover | 9” x 12”
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3901 Orchard Dr. Midland, MI 48640
C989/750-2653, <http://CrystalLakeComedy.com>**

(Proceeds from direct sales to local nonprofits)

BOOK \$32 ; WATERSHED MAP (12“x18”) \$10

Music by Doc Stewart



To : Too's ; To-Do's ; A-Do's ; & Me-Toot's

To “Wreck”- reate or Rē – Create our lakes: that is the question that we advocate :
To celebrate, educate, visitate, touristificate; not deprecate, nor contaminate !

Too many Lakes , it seems , at times , are at
too high or too low a level ; and contain
too much or too little water; and are considered
too wet or too dry ;
too cold or too hot ;
too windy or too calm ; with
too many boats; and too few fish ; with
too many aquatic invasive species ; and
too few desirable native species ; and not enough “Canawlers”, while
too many Beaches seem to be
too small; too rocky , too muddy , too weedy , too “buggy” , etc. ; with
too many irresponsible “Litterers” , and too few responsible “Littorians” ;
too many free-loaders and too few tax-payers; and
too many (or too few) visitors (two schools of thought); and to boot ,
too few lakes seem to be on ideally-habitable Goldilocks planets, i.e.
too good to be true ; with so few “To-Do's” , without so many “A-Do's” ;
too far away to tout , or to give two too(ts) about (!); and besides , - there are
too many marginally “Limnologically-Correct” “Me-Toot's” (!) ; and
too few “Just-Righter's” , amongst us , besides the two of us ; and I am not
too sure about You !!!



-- Stacy Leroy Daniels, WCC 08/30/2021