A TALE OF TWO INLAND LAKES:

THE CRYSTAL LAKE TRAGI-COMEDY;
THE JOHNSTOWN FLOOD

Stacy Leroy Daniels, President
Benzie Co. River Improvement Co.

IMAGIN 28th Annual Conf., Grand Rapids, MI, 11 JUN 2019

“The beach was a desert of heaps of sea and stones tumbling wildly about, and the sea did what it liked, and what it liked was destruction. It thundered at the town, and thundered at the cliffs, and brought the coast down, madly.”

-- Charles Dickens (1812 – 1870),

***“A Tale of Two Cities”*, Book 1, Chap. 4.**

Abstract

The partial drainage (56 Bgal of 261 Bgal) of Crystal Lake, a very large (10,784 A) natural lake near Benzonia, MI, was 15 X greater than complete drainage (3.8 Bgal) from Lake Conemaugh, a small (~400 A) artificial lake above Johnstown, PA. Flow of the former (average 4,126 cfs) was twice the 100-year flood, but spread over a three-week period. Flow of the latter (peak flow, 300,000 cfs) lasted only 65 min, but rivalled the flow of the Mississippi River.

The Tragedy of Crystal Lake occurred in 1873 unbeknownst to the outside world along a sparsely populated lakeshore in a remote locale in northwest Lower Michigan during an attempt to build a canal to nearby Lake Michigan, when a temporary dam was breached by whitecap waves. It resulted in no loss of life and great future benefit by creating some 2,000 A of new beach now worth ~ $500,000,000 and led to the future development of a popular resort destination.

The Johnstown Flood in 1889, "the worst inland flood in U.S. history" (?), completely destroyed a thriving steel town in southwest Pennsylvania during the catastrophic failure of a poorly maintained dam. Some 2,209 lives were lost and property damages were ~ $474,000,000.

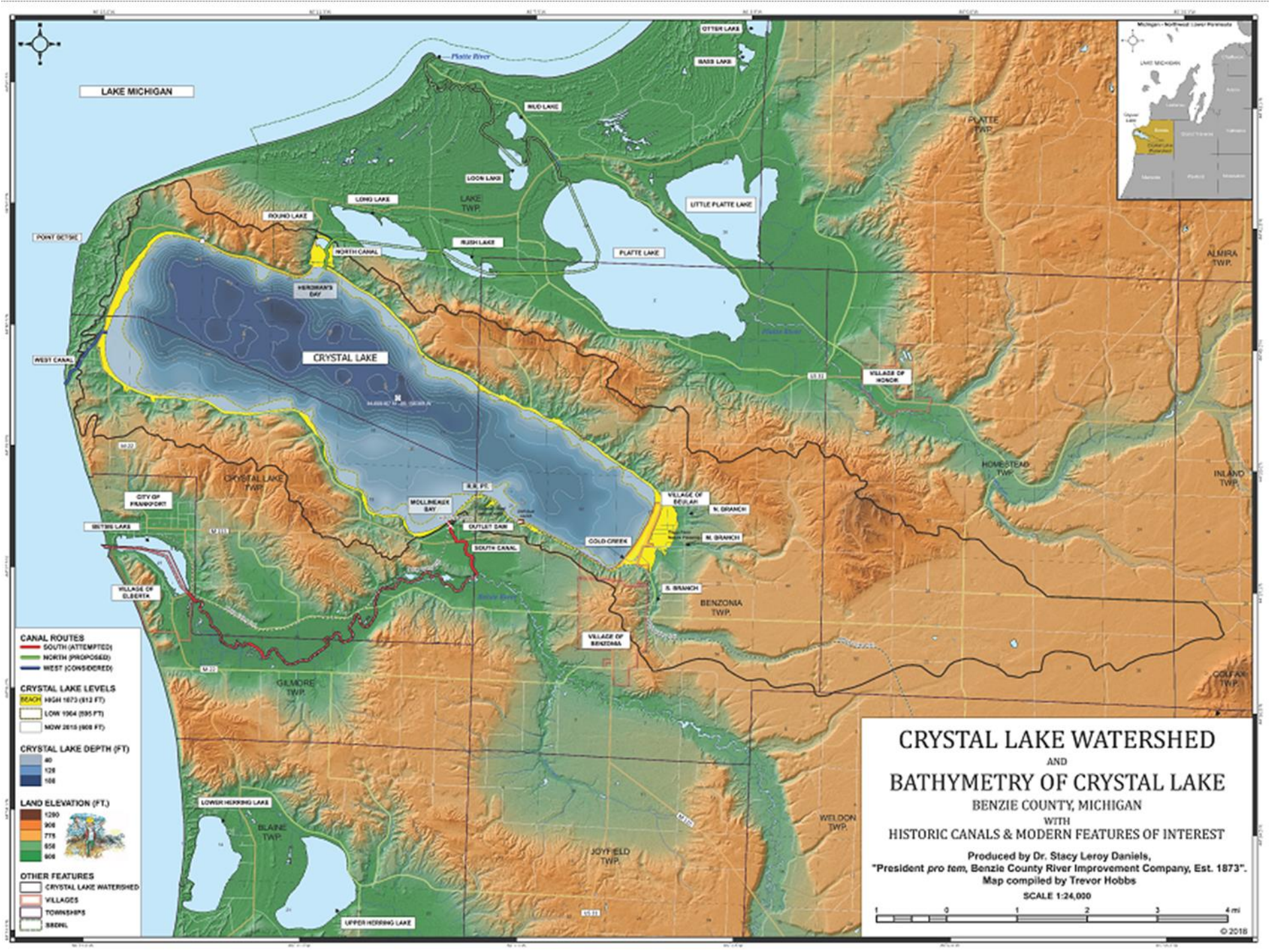
Hydrological Reconstruction

GIS analysis of a QL2 LiDAR dataset (MiSAIL, 2015) and the historical project map (1873) allowed a hydrological reconstruction of Crystal Lake before and after its lowering.

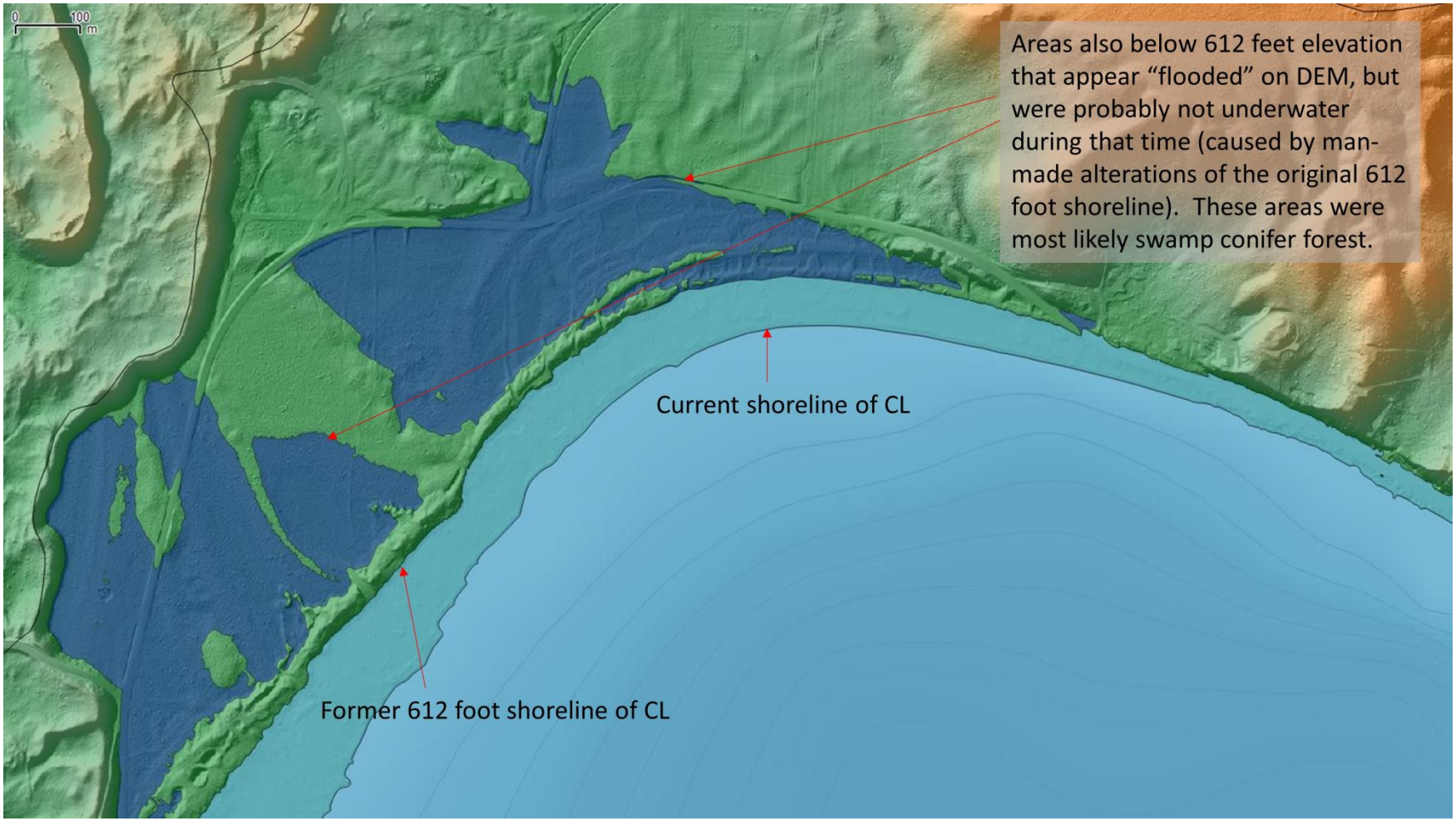
These include: elevation drop (17 ft);
water surface lost = beach gained (2,000 A, 21 mi);
water volume discharged (56,000,000,000 Bgal); and
dredged volume (105,000 cu yds) from three canals.

All features are portrayed in a high-resolution topographic/bathymetric map.

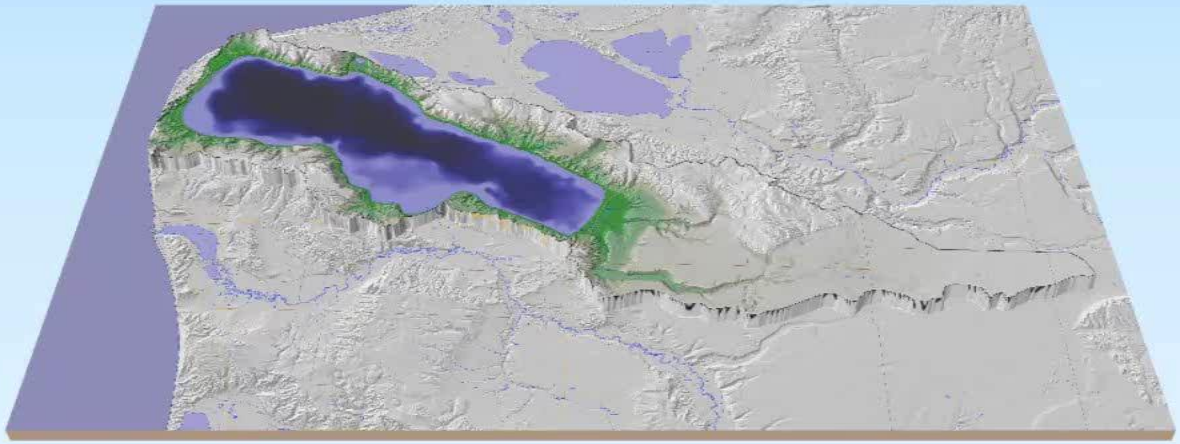
Dynamic simulations of lake lowering and filling are used for illustration.


LAKE MICHIGAN
Platte River
OTTER LAKE
BASS LAKE
MUD LAKE
LOON LAKE
LONG LAKE
ROUND LAKE
POINT BETSIE
NORTH CANAL
HERRING'S BAY
RUSH LAKE
LAKE TWP.
PLATTE LAKE
LITTLE PLATTE LAKE
PLATTE TWP.
ALMIRA TWP.
WEST CANAL
CRYSTAL LAKE
VILLAGE OF HONOR
HOMESTEAD TWP.
INLAND TWP.
CRYSTAL LAKE TWP.
CITY OF FRANKFORT
SLEEPING BEAR DUNES NATIONAL LAKESHORE
M-22
M-115
MOLLINEAUX BAY
R.R. PT.
OUTLET DAM
SOUTH CANAL
VILLAGE OF BEULAH
N. BRANCH
COLD CREEK
VILLAGE OF ELBERTA
BENZONIA TWP.
VILLAGE OF BENZONIA
GILMORE TWP.
LOWER HERRING LAKE
BLAINE TWP.
JOYFIELD TWP.
WELDON TWP.
COLFAX TWP.
UPPER HERRING LAKE
CANAL ROUTES
SOUTH (ATTEMPTED)
NORTH (PROPOSED)
WEST (CONSIDERED)
CRYSTAL LAKE LEVELS
BEACH HIGH 1873 (612 FT)
LOW 1964 (595 FT)
NOW 2015 (608 FT)
CRYSTAL LAKE DEPTH (FT)
40
120
160
LAND ELEVATION (FT.)
1290
908
775
658
608
OTHER FEATURES
CRYSTAL LAKE WATERSHED
VILLAGES
TOWNSHIPS
SIDING
CRYSTAL LAKE WATERSHED
AND
BATHYMETRY OF CRYSTAL LAKE
BENZIE COUNTY, MICHIGAN
WITH
HISTORIC CANALS & MODERN FEATURES OF INTEREST
Produced by Dr. Stacy Leroy Daniels,
"President pro tem, Benzie County River Improvement Company, Est. 1873".
Map compiled by Trevor Hobbs
SCALE 1:24,000
1 0 1 2 3 4 mi
© 2018

Shoreline & Backwater Areas



Crystal Lake Watershed 3D



Natural Disasters

There is something uniquely chilling about a natural disaster, the uncontrolled, unpreventable fury of normally benign elements: a blue sky now black exploding in water and electricity; the air around us suddenly quick, weaponized; a resort lake (*) bewitched into a ferocious wall of water; the solidity of the very ground belied. In these moments nature proves its dominance, as if to remind us that there are some things in its arsenal before which we will always be powerless. -- Christine Gibson, "Our 10 Greatest Natural Disasters"

https://web.archive.org/web/20101205074823/http:/www.americanheritage.com/articles/magazine/ah/2006/4/2006_4_26.shtml

The South Fork Dam, an earthen work dam on Lake Conemaugh, an artificial body of water near South Fork, PA, failed catastrophically and 20 million tons of water from Lake Conemaugh burst through and raced 14 miles downstream, causing the infamous Johnstown Flood (Disaster # 3). The dam and lake were privately owned by the South Fork Fishing and Hunting Club.

[(*) The *"Comi-Tragedy"* of Crystal Lake of Aug 23, 1873, 16 years before the Johnstown *"Flood"* , had not yet achieved status as a "resort lake".]

Inland Floods & Flooding

- By definition, inland flooding does not occur at the coast, yet hazard specialists consider it with coastal flooding, because it often occurs in connection with landfalling tropical and extratropical cyclones.
- Inland floods can result when:
  - moderate precipitation falls for several days;
  - intense precipitation falls over a short period;
  - snowpack melts quickly;
  - volume of water on land overcomes the capacity of drainage systems; or
  - a dam or levee fails.
  - https://toolkit.climate.gov/topics/coastal-flood-risk/inland-flooding
- Flooding: A general and temporary condition of partial or complete inundation of normally dry land areas from:
  - Overflow of inland or tidal waters;
  - Unusual & rapid accumulation or runoff of surface waters.
- A flood inundates a floodplain (land adjacent to a stream or river which stretches from the banks of its channel to the base of enclosing valley walls, and which experiences flooding during periods of high discharge).
- Three categories: riverine flooding, coastal flooding, and shallow flooding.
  - https://www.fema.gov/why-dams-fail

“Mightier storms than this are brewed on earth
That pricks the crystal lake with summer showers.
The past hath treasure of sublimer hours,
And God is witness to their changeless worth.
Big is the future with portentous birth …”

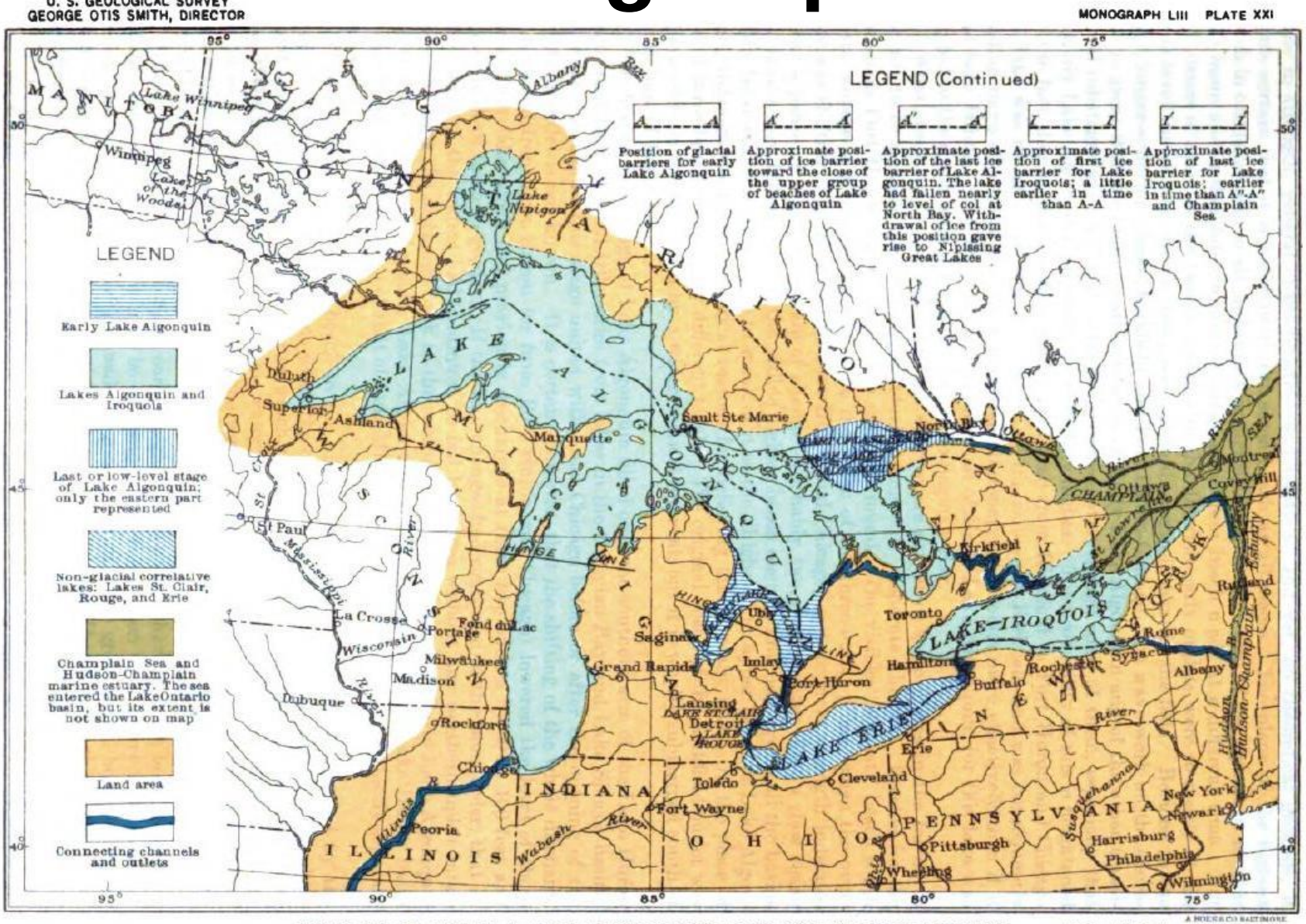
-- George Santayana (1863 – 1952), Sonnet XII.

Lake Agassiz

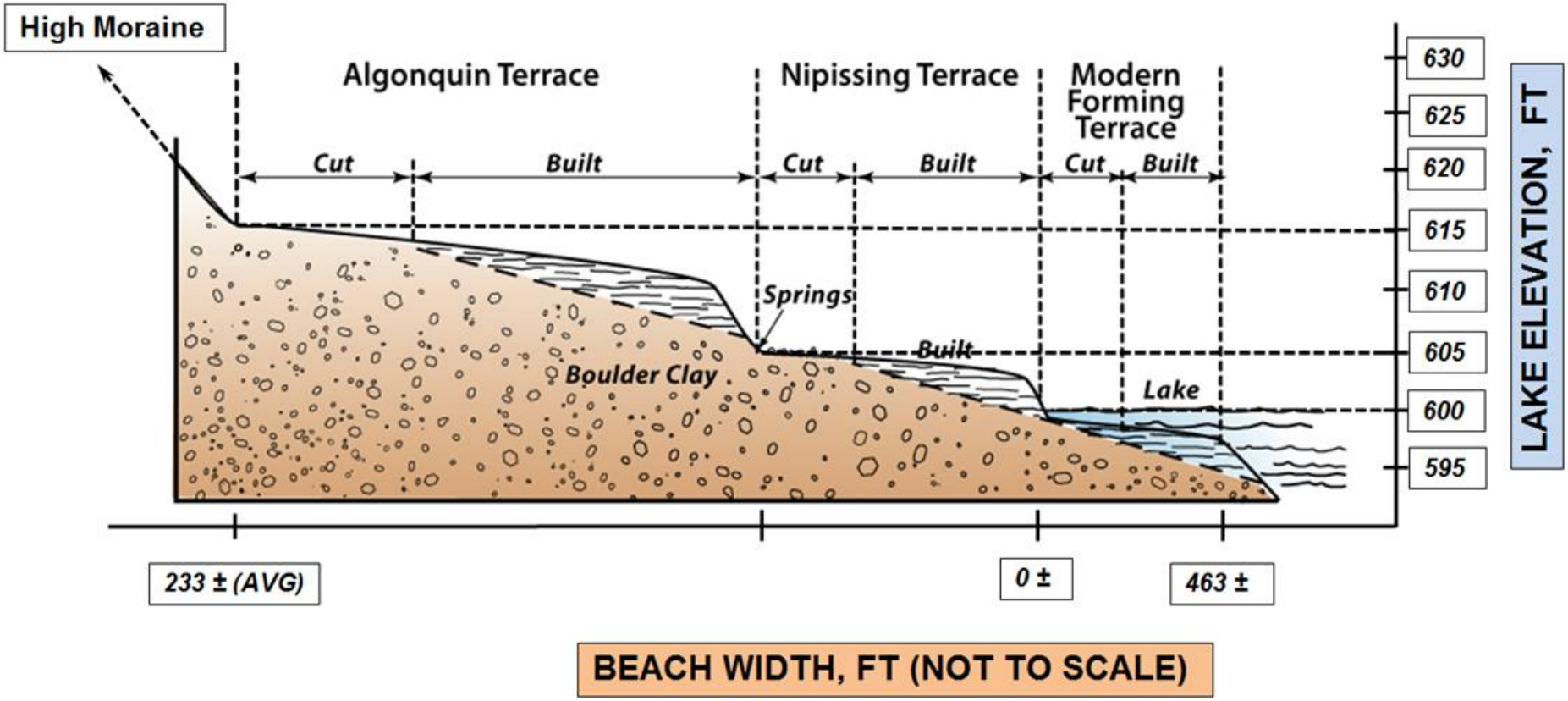
Prehistorical drainages (inland floods) of much larger magnitudes include: the drainage of Lake Agassiz, a very large glacial lake in central North America fed by glacial meltwater (~13,000 YBP) with an area (170,000 sq mi) larger than all of the modern Great Lakes combined, though its mean depth was not as great as that of many major lakes today. The final drainage of Lake Agassiz has been associated with a 2.6 - 9.2 ft rise in global sea levels.

Glacial Lake Agassiz and Lake Ojibway (7,900 YBP)

Lake Algonquin



Crystal Lake: Its Many Levels



(Adapted after I.D. Scott, Inland Lakes of Michigan, 1921.)

Crystal Lake & Environs

Photograph® by Marge Beaver, Photography Plus, 2005.

Lake Patterns

“Mechanized man, having rebuilt the landscape, is now rebuilding the waters. The sober citizen who would never submit his watch or his motor to amateur tamperings freely submits his lakes to drainage, fillings, dredgings, pollutions, stabilizations, mosquito control, algae control, swimmer's itch control, and the planting of any fish able to swim. So also with rivers. We constrict them with levees and dams, and then flush them with dredgings, channelizations, and the floods and silt of bad farming.”

-- Aldo Leopold, Lakes in Relation to Terrestrial Life Patterns, 1940.

“In rebuilding the waters of Crystal Lake, I builded better than I knew.”

-- “Archibald Jones, Jr.”


THE
CRYSTAL LAKE
TRAGI-COMEDY

The *"Tragedy" / "Comedy"*

The *"Tragedy"* : (Sad Beginning)

- In 1873, Crystal Lake was 35 ft above Lake Michigan.
- An attempt was made to construct a slack-water canal to Lake Michigan.
- Whitecap waves washed out a temporary dam.
- The lake level dropped 17 ft as 56 billion gal of water flushed down the outlet.
- A 21-mile perimeter of barren beach was exposed. (2,000 A)
- A perceived "failure" of an "ill-conceived" project by an apparent scapegoat ?

The *"Comedy"* : (Happy Ending)

- The founding of the Village of Beulah, the coming of the railroad, installation of telegraph and telephone lines, development of lakeside resorts, construction of ~1,100 cottages, all connected by an infrastructure of perimeter roads and trails.
- An epochal event that had a permanent bearing on the subsequent development of Benzie County and one of the major incidents of the county's early history.
- An unqualified "success" by a visionary celebrated as a local hero !

A City Set on a Hill

"A CITY that is set on a hill cannot be hid, (neither can it be covered up with water). -- Matthew 5:14
That is where our beautiful village (*) has the advantage of those unfortunate towns in Pennsylvania, Johnstown, South Fork, Mineral Point and Clearfield, which were wiped out of existence by floods last Friday afternoon (31 May 1889), and some of them covered with water to a depth of forty feet (!). -- Benzie Banner I(46), 4 (06 Jun 1889)

Crystal City hill to Benzonia.
BAHM AN 2009.3 CN 8042

(*) Relative Elevations:

Benzonia	832 ft	
Beulah	607	
Crystal Lake	600	
Frankfort	633	
Lake Michigan	577	
Benzie County	577	(lowest)
Benzie County	1,161	(highest)

(**) The Crystal Lake *"Tragi-Comedy"* was 15 times greater than the Johnstown *"Flood"*!
The former had no loss of life & resulted in creation of new beach worth $500,000,000.
The latter resulted in loss of 2,209 lives and destruction of property worth $474,000,000.

The Crystal Lake Canals

The *"Crystal Lake Canal System"* - an unfulfilled dream !

Archibald Jones at the Outlet (?)

The Johnstown (PA) Flood of 1889. The ruins of the South Fork Dam & Lake Conemaugh. http://www.jaha.org/FloodMuseum/emptydam.jpg

"Crystal Lake Opened for Navigation. Channel 150 feet Wide – 20 feet Deep, Great Excitement. "… the channel into Crystal Lake has been finally opened, so that boats can pass from Lake Michigan into Crystal Lake. … / The flood from the immense mass of water swept everything before it. So well had this been provided for that no serious damage was done. Frankfort harbor was washed clean, and we understand the channel was greatly improved by the flood."
-- Theo C. Walker, Manistee Times 9(32), 2 (Thurs 18 Sep 1873) (whole no. 444).

"Five years since a lunatic (I presume he was) thought he would dig a canal from the lake to the Betsey river, and thus get into the harbor and Lake Michigan. The big ditch was dug, but the end in view was not attained, and for some time on account of the many feet of fall between the lake and river, the waters rushed through like a Niagara on a small scale, carrying everything before it 'till Crystal Lake was lowered many feet and the shores laid bare for nearly a quarter of a mile on the beach. The canal so far as any practical results was a failure. (!)
-- Samirah Jane (McElwee) Mapes., Our Michigan Letter, Frankfort, Mich., The Pierceton Independent (IN) 2(12), 5 (24 Mar 1880).

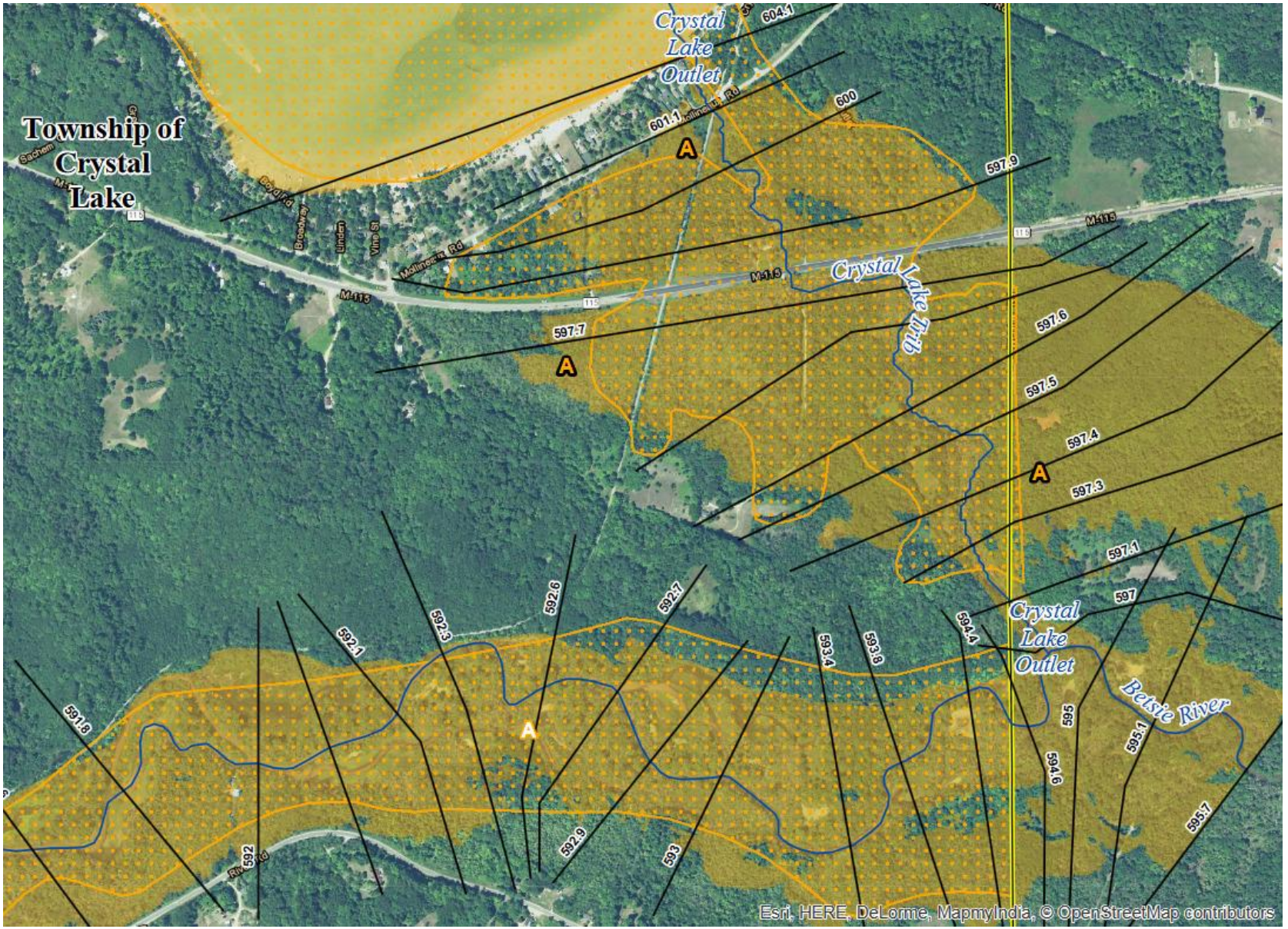
"The "Tragedy" was one of the major events of canal breaching to occur in the 1800's in the entire U.S. Yet the event passed unbeknownst due to remoteness of locale, few people affected, no loss of life, little property damage, and lack of communication to the outside world." -- Stacy Leroy Daniels, Sidelight: The Johnstown Flood, *"The Comedy of Crystal Lake"*, 2015, p109.

Most Disastrous Rainfall? (1941)

"(A) disaster of record proportions struck Frankfort and the surrounding region … a cloudburst that gutted highways, cut whole hillsides away and buried fields and lawns under tons of soil … (O)ver 12 inches of rain fell in less than four hours, … (G)ullies formed by the earlier rain became deep ravines, filled with roaring torrents of soil laden water. … The damage, conservatively estimated at $100,000, … staggered the imagination, … For the first time within memory, Crystal Lake was roiled and muddy and Benzie streams flowed yellow." -- Benzie County Patriot 46(24), 1 (11 Sep 1941)

"(T)he most disastrous rainfall within the memory of anyone now living in the county, … The level of Crystal Lake, reported … 13 inches below normal (!), was raised a full 12 inches by the Thursday night deluge. … Much of this was caught directly … on the lake's … surface (15.40 sq mi), .. (and) hemmed in by high ridges, (drained from the surrounding land) (28.58 sq mi) … there was an enormous wash into the lake shores as evidenced by the muddy condition of the water … one of the first times when the lake has ever lost its crystal clearness. … Damage around the lake shore was extreme … The famous Glen Rhoda springs … were practically wiped out. The once beautiful spring valley was turned into a deep gash of raw earth and sand pouring down through the cut buried the North Shore highway and built a peninsula several hundred feet out into the lake." -- Benzie Banner 54(9), 1, 8 (11 Sep 1941).

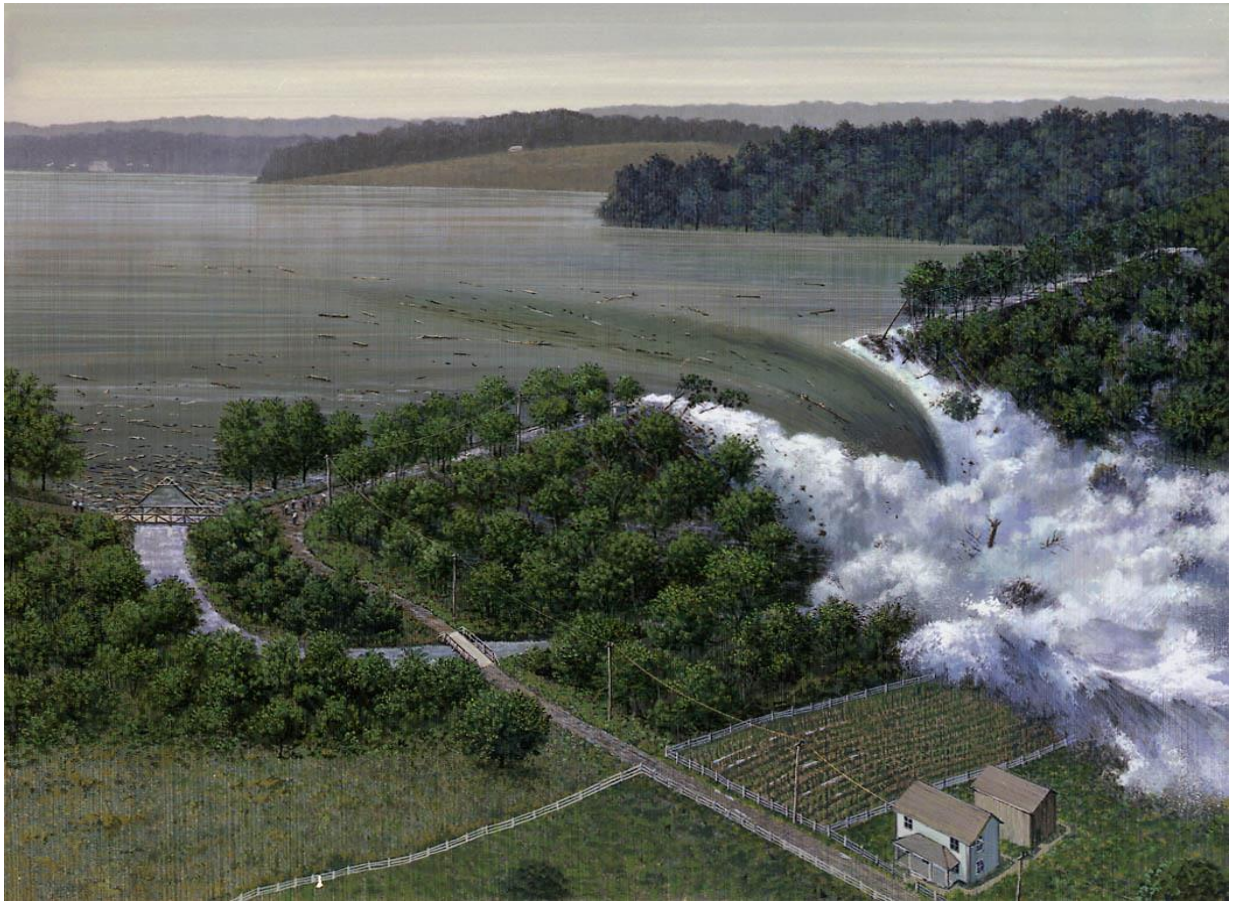
Flood Hazard Study (21 Mar 2018)



Crystal Lake Outlet, Flood Hazard Study Draft Workmap (FEMA) (21 Mar 2018).


THE
JOHNSTOWN
FLOOD

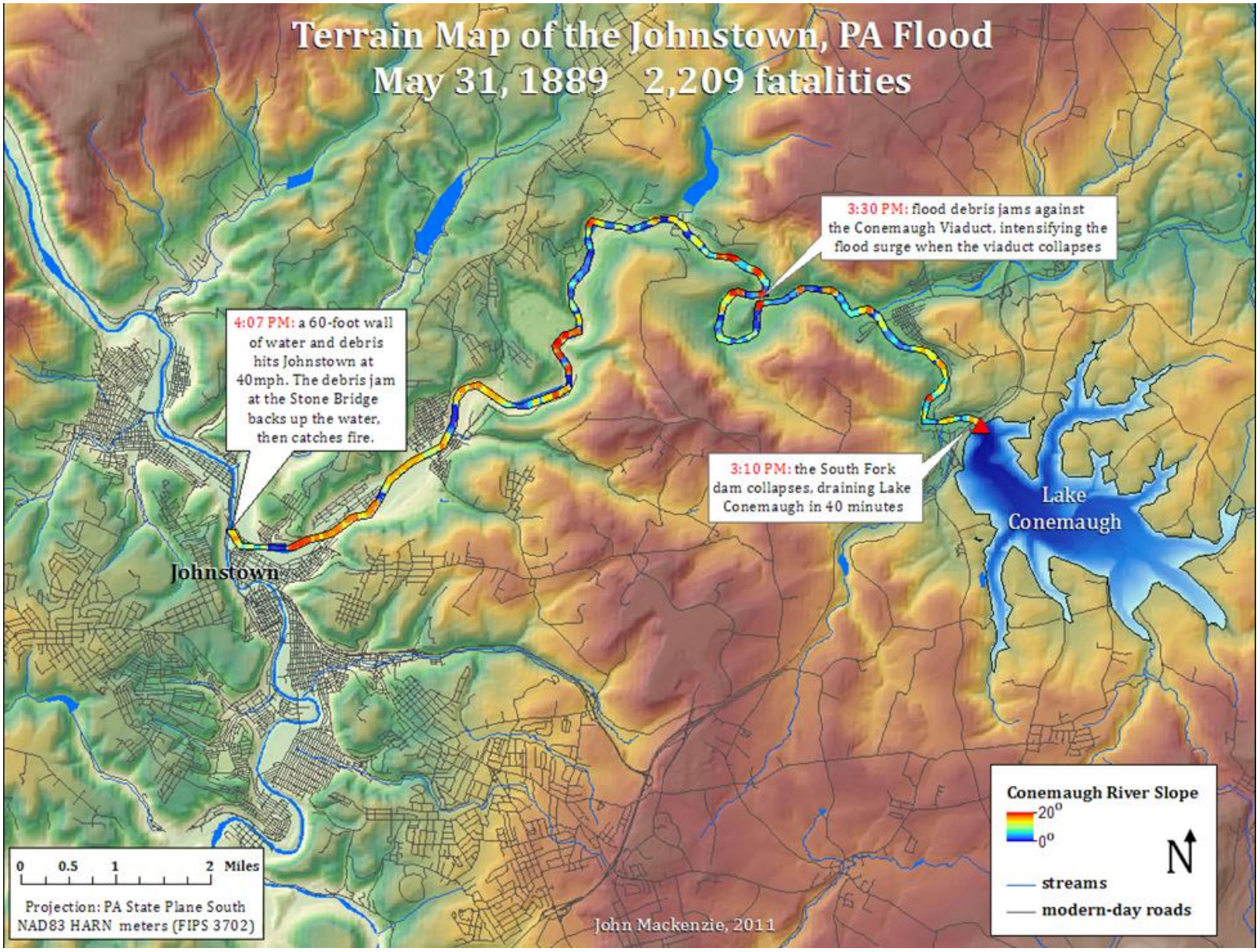
Johnstown Flood – Bird's Eye View



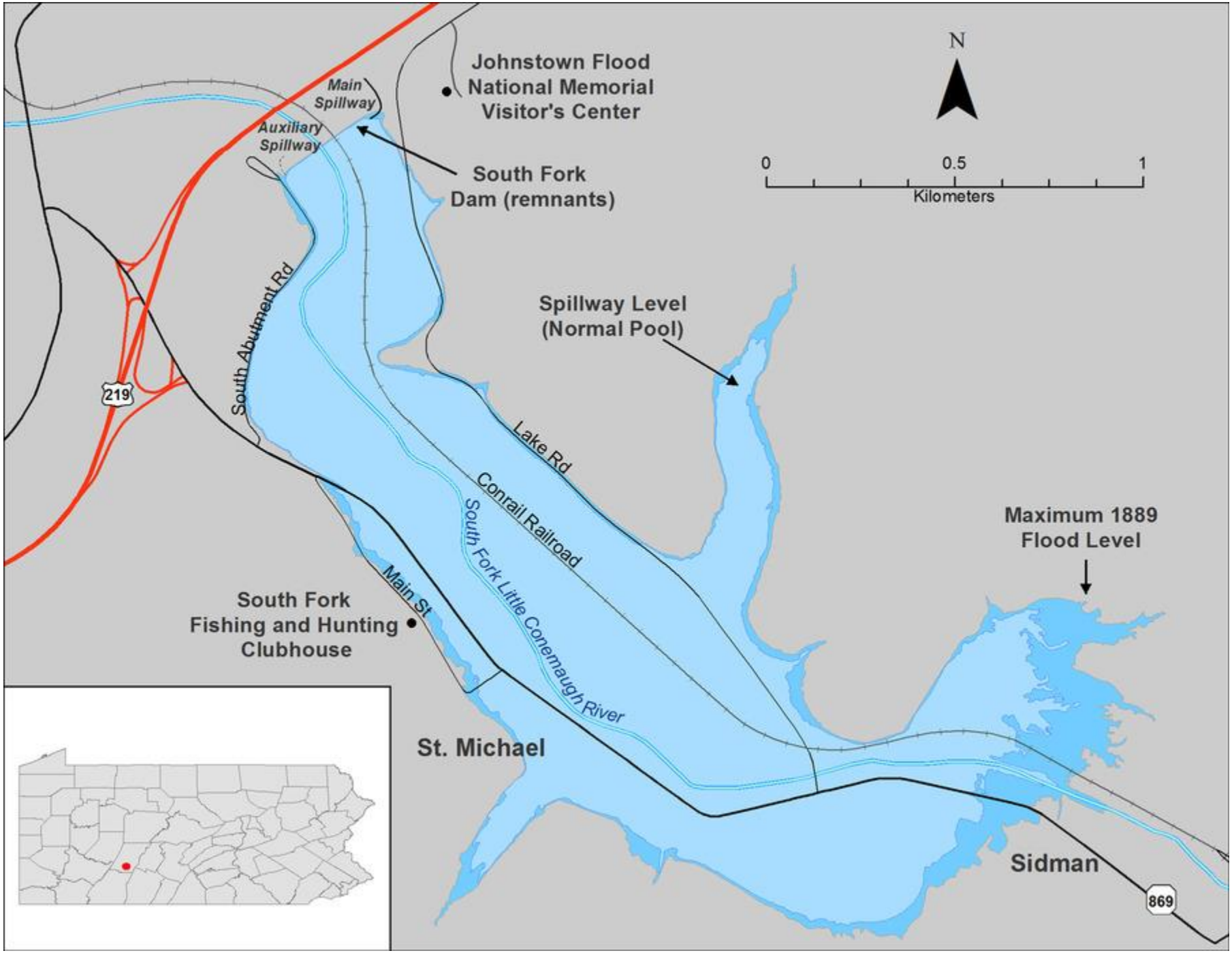
A quiet lake and reservoir behind a dam that due to disrepair was breached with great loss of life and property. A small tranquil river was transformed into a raging torrent that briefly rivaled the mighty Mississippi in "the worst inland flood in U.S. history". At the time of collapse it reportedly held more water than any other reservoir in the U.S., but with a long history of questionable management.

The Great Flood (31 May 1889)

- Johnstown's Calamity the Worst Known in American History.
- Johnstown, a city of 25,000 inhabitants, has been practically wiped out of existence, and between 6,000 and 12,000 lives have been lost.
- Adam at the foot of a mountain lake eight miles long and three miles wide (sic) (actually three and a half mi long and a mile to a mile and a quarter in width) (*) about eighteen miles up the valley of the South Fork of the Conemaugh river broke at 4 o'clock Friday afternoon, just as It was struck by a waterspout.
- The tremendous volume of water swept in a resistless avalanche down the mountain side, making its own channel until it reached the South Fork of the Conemaugh, swelling it to the proportions of Niagara rapids. (!)
- The flood swept to the Conemaugh like a tidal wave over twenty feet in height, and onward to Johnstown six or eight miles below. Gathering force as it tore along the wider channel, it quickly swept every thing before it. Houses, factories and bridges were overwhelmed In the twinkling of an eye, and with their human occupants were carried In a vast chaos down the raging torrent.
- As summarized in the Benzie Banner 1(47), 2 (13 Jun 1889).
- [(*) cf. Crystal Lake (Benzie Co., MI) is about eight miles long and 3 miles wide]



https://www1.udel.edu/johnmack/frec682/johnstown_flood/map_howto.html

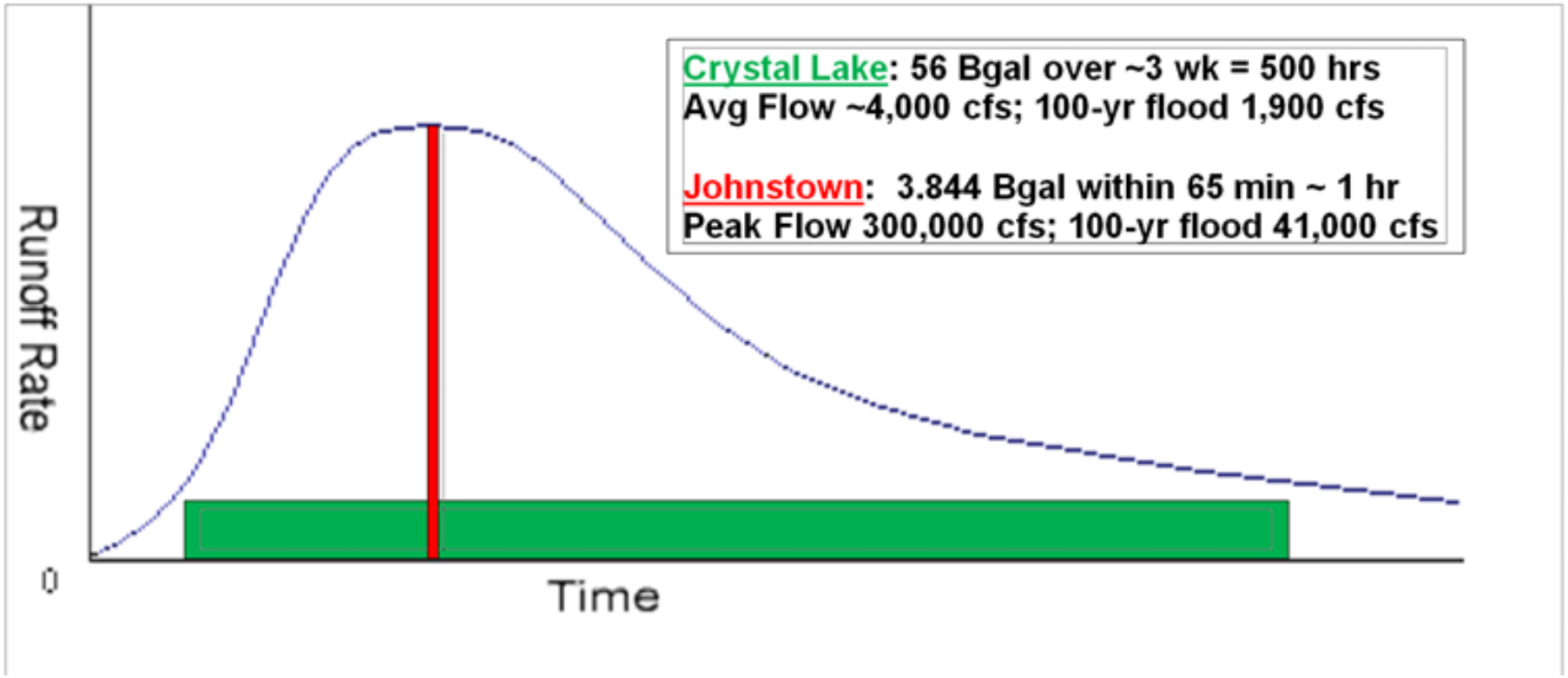

N
Johnstown Flood
National Memorial
Visitor's Center
Main
Spillway
Auxiliary
Spillway
South Fork
Dam (remnants)
0
0.5
1
Kilometers
South Abutment Rd
219
Spillway Level
(Normal Pool)
Lake Rd
Conrail Railroad
South Fork Little Conemaugh River
Maximum 1889
Flood Level
Main St
South Fork
Fishing and Hunting
Clubhouse
St. Michael
Sidman
869

South Fork Dam

Satirical cartoon published in Puck Magazine following the failure of the South Fork Dam reflected the views of most Johnstown residents regarding the South Fork Fishing and Hunting Club (Photo source: Andrew T. Rose, 2013 ASDSO Annual Conference). http://damfailures.org/case-study/south-fork-dam-pennsylvania-1889/

Dam Discharge Hydrographs

A hydrograph shows rate of flow (discharge) versus time past a specific point in a river, channel, or conduit carrying flow. The area under the curve = volume of flow.



A Tale of Two Dam Failures

Crystal Lake *"Tragedy"*

- Northwest Lower MI
- 23 Aug 1873
- Large natural lake
- Area 10,734 -> 7,853 (- 2,001) A
- Discharge 54,000,000,000 gal
- (21 % of 231,000,000,000 gal)
- 15 X Johnstown Flood
- Duration ~ three wk ~ 500 hr
- Flow Rate 4,126 cfm (avg)
- No direct loss of life
- Creation of a 2,000 A beach
- Benefit > $500,000,000

Johnstown (PA) Flood

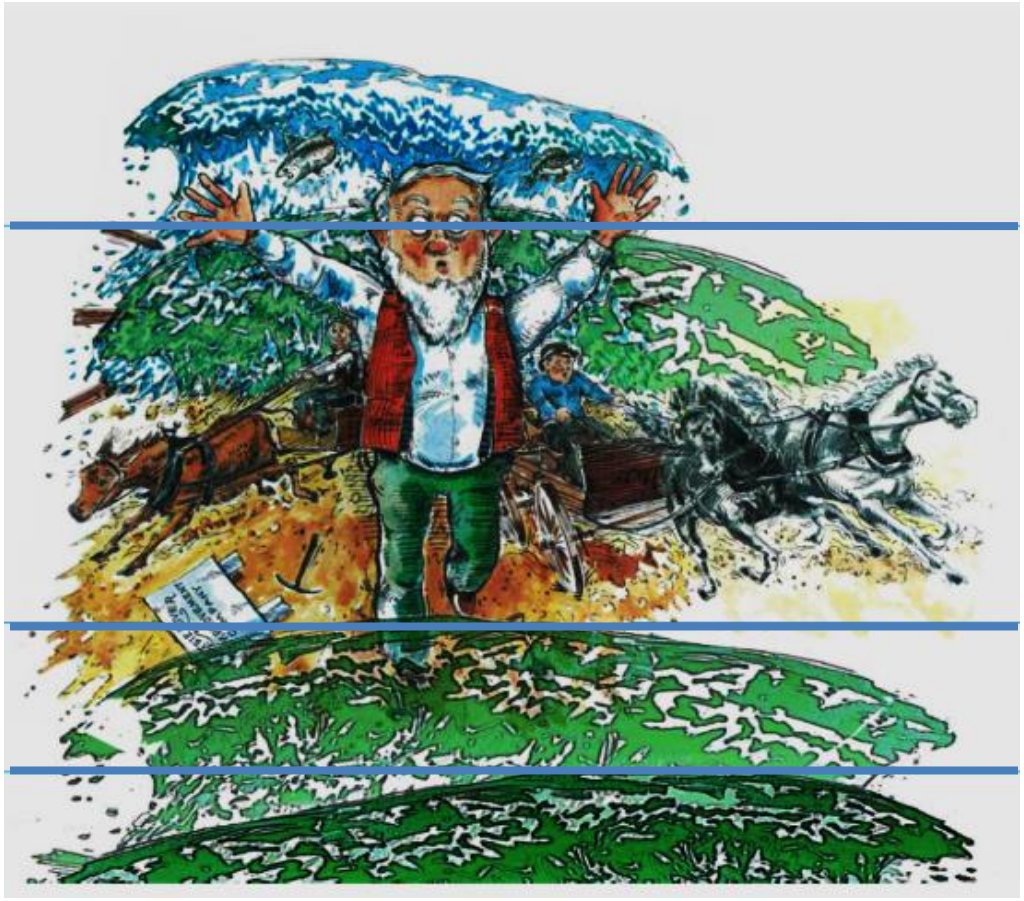
- Southeast PA
- 31 May 1889
- Small artificial lake
- Area ~ 400 -> 0 (-400) A
- 3,800,000 gal discharge
- (100% of 3,800,000 gal
- ~ Mississippi R; ~ 3 X Niagara
- Duration 65 min or ~ 1 hr
- Flow rate 300,000 cfm (peak)
- Loss of 2,209 lives
- Destruction of an entire town.
- Loss ~ $474,000,000

The "Tragedy" vs. the *"Flood"*

PARAMETER	CRYSTAL LAKE ("TRAGEDY")	LAKE CONEMAUGH ("FLOOD")
DESCRIPTION	UNDEVELOPED WILDERNESS (PUBLIC)	RESORT LAKE (PRIVATE)
TERRAIN	COASTAL SAND DUNES	MOUNTAINS
LOCATION	NORTHWEST LOWER MI	SOUTHEAST PA
PLACE	FRANKFORT, BENZIE, MI (<1,000)	JOHNSTOWN, CAMBRIA, PA (30,000)
DESCRIPTION	PORT CITY (1858)	STEEL TOWN (1794)
CANAL	CRYSTAL LAKE TO FRANKFORT	MAIN LINE CANAL (PITTSBURG - PHILADELPHIA)
DAM	NATURAL BARRIER	EARTHENWORK (72' H x 931' L)
TRIBUTARY	OUTLET - BETSY RIVER - LAKE MI (9.69 MI)	S. FORK, CONEMAUGH R. - JAMESTOWN (14 MI)
WATERSHED	44 OF 259 SQ MI (BETSY RIVER)	~5(?) OF 1,142 SQ MI
LAKE	CRYSTAL LAKE (NATURAL LAKE)	LAKE CONEMAUGH (RESERVOIR)
LAT. ; LONG.	44.636222° N ; -86.147203° W	40.338056° N ; -78.773333° W
ELEVATION	617 FT (LAKE MICHIGAN, 582 FT), Δ=35 FT	1,618 FT (JAMESTOWN, 1,123 FT), Δ=495 FT
WIDTH ; LENGTH	3.11 X 8.71 MI	0.5 X 1.25 MI
DEPTH	165 FT (MAX), 71 FT (MEAN)	60 FT (MAX) 15 FT (MEAN
PERIMETER	27.8 MI	~ 7 MI
AREA	10,754 -> 8,753 (-2,001) A	~ 400 A
VOLUME	261,000,000,000 GAL	3,800,000,000 GAL
EVENT	BREACH OF NATURAL DAM (23 AUG 1873)	CATASTROPHIC DAM FAILURE (31 MAY 1889)
CAUSE	STORM	STORM, LACK OF MAINTENANCE
DISCHARGE	56,000,000,000 GAL (21 %)	3,800,000,000 GAL (100 %)
DURATION	~3 WK ~ 500 HR	65 MIN ~ 1 HR
FLOW RATE	4,126 CFM (2 X 100 YR FLOOD)	300,000 CFM (~ MISSISSIPPI R.) (3 X NIAGARA)
LOSS OF LIFE	0 (*)	2,209
PROPERTY	$500,000,000 GAIN (2018)	$474,000,000 LOSS (2018)

I’ve Had It Up to Here

HIGH 612 FT



HIGH 612 FT

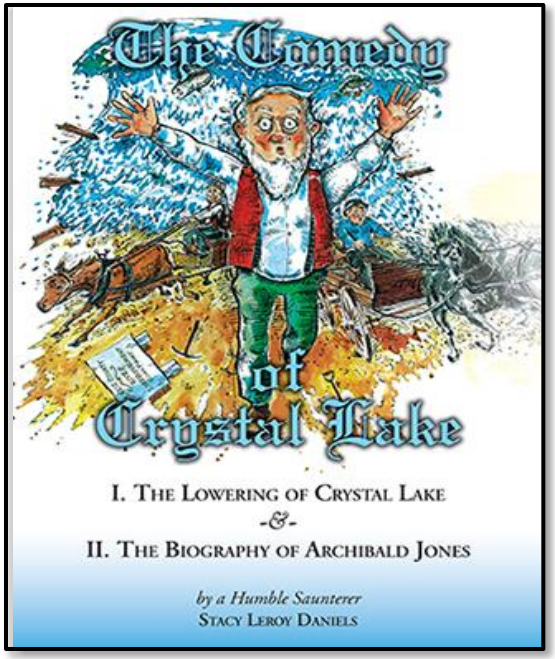
NOW 600 FT

NOW 600 FT

LOW 595 FT

LOW 595 FT

HIGH - NOW (Δ 12 FT) ~ 2.4 x NOW - LOW (Δ 5 FT)



"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
496 Pages | 200 Illustrations

Flushed With Pride Press © 2015
P.O. Box 281, Frankfort, MI 49635
C989/750-2653, http://CrystalLakeComedy.com

(Proceeds from direct sales to local nonprofits)

BOOK $32 ; WATERSHED MAP (18"x24") $15

References – Crystal Lake

1. Daniels, Stacy Leroy, “The Comedy of Crystal Lake”, Flushed With Pride Press, 2015, 496pp. http://www.CrystalLakeComedy.com
2. Daniels Stacy Leroy, The Tragedy of Crystal Lake and the Johnstown Flood: A Quantitative Comparison of Two Epochal Hydrological Events, Geological Sciences Section, Michigan Academy of Science, Arts, and Letters, Alma, MI, 01 Mar 2019.
3. Daniels, Stacy Leroy, The Comedy of Crystal Lake: Human Dimensions of Canal Development and Management, 2018 Michigan Inland Lakes Convention, Grand Rapids, MI, 4-5 Oct 2018.
4. Daniels, Stacy Leroy, Daniels, Stacy Leroy, and Hobbs, Trevor, The Comedy of Crystal Lake: Re-Creation of an Historic Canal that Became a Beach, IMAGIN, 27th Annual Conf., Traverse City, MI, 19 Jun 2018.
5. Daniels, Stacy Leroy, and Hobbs, Trevor, “The Comedy of Crystal Lake”: Geomorphic Analysis and 3D Modelling of an Historical Anthropogenic Event, MASAL, CMU, 09 Mar 2018.
6. Daniels, Stacy Leroy, Hobbs, Trevor, and Longanbach, Tom, The Comedy of Crystal Lake: Geomorphic Analysis and 3D Modelling of an Historical Event Using LiDAR Data, IMAGIN, 06 Jun 2017.
7. Daniels, Stacy Leroy, Schaetzl, Randall J., and Michalek, Michael, The Physiographic Rearrangement of Crystal Lake after Its Historic Lowering, MASAL, SVSU, 04 Mar 2016.
8. Daniels, Stacy L., The Level of Crystal Lake and Its Outlet Dam: A Century of "Ups and Downs", MASAL, Oakland University, 28 Feb 2014.
9. Daniels, Stacy L., The “Tragedy” and the “Comedy” of Crystal Lake: The Role of Archibald Jones, MASAL, SVSU, 11 Mar 2011.
10. Daniels, Stacy L., et al., The "Tragedy" of Crystal Lake - Confirmed by Sediment Geochronology and Soil Survey, MASAL, Calvin College, 26 March 2010.

References - Johnstown

1. Coleman, Neil M., Johnstown's Flood of 1889: Power Over Truth and The Science Behind the Disaster, Hardcover – July 24, 2018
2. Coleman, Neil M.; Kaktins, Uldis; Wojno, Stephanie (2016). "Dam-Breach hydrology of the Johnstown flood of 1889–challenging the findings of the 1891 investigation report". Heliyon. doi:10.1016/j.heliyon.2016.e00120, 86pp+8pp supplementary material. https://www.heliyon.com/article/e00120/
3. Sid Perkins, "Johnstown Flood matched volume of Mississippi River", Science News, Vol.176 #11, 21 November 2009, accessed 14 October 2012.
4. Patterson, Tom, Looking Closer: A Guide to Making Bird's-eye Views of National Park Service Cultural and Historical Sites, Cartographic Perspectives, No. 52, pp 59-65, 96ff (Fall 2005), Bull. NACIS, 32pp., Art by L. Kenneth Townsend; http://www.shadedrelief.com/birds_eye/birdseye.pdf ; http://www.shadedrelief.com/birds_eye/gallery.html
5. McCullough, David, The Johnstown Flood, Simon-Schuster, New York, 1968, 301pp.
6. BB 1(47), 2 (13 Jun 1889) THE GREAT FLOOD. Johnstown's Calamity the Worst Known in American History.
7. McLaurin, J.J., The story of Johnstown : its early settlement, rise and progress, industrial growth, and appalling flood on May 31st, 1889, published 1890, 378pp. http://www.psupress.org/books/titles/978-0-271-06452-9.html