Kalkaska County, MI

Restoring Connectivity to the Rapid River and Chain of Lakes

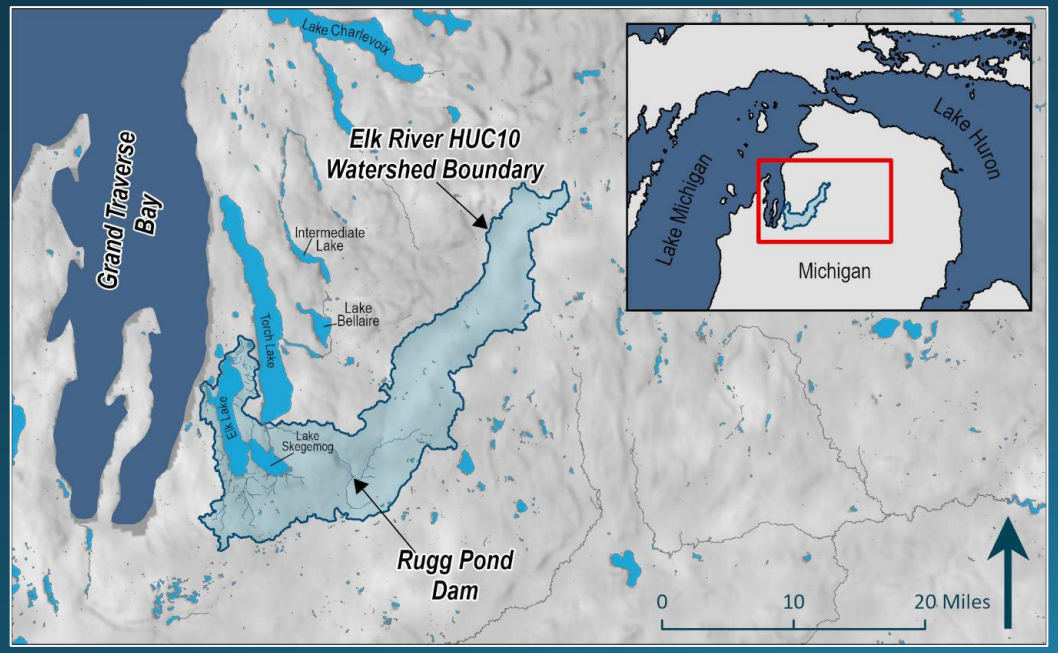
Conservation Resource Alliance



Rugg Pond Dam Removal Project

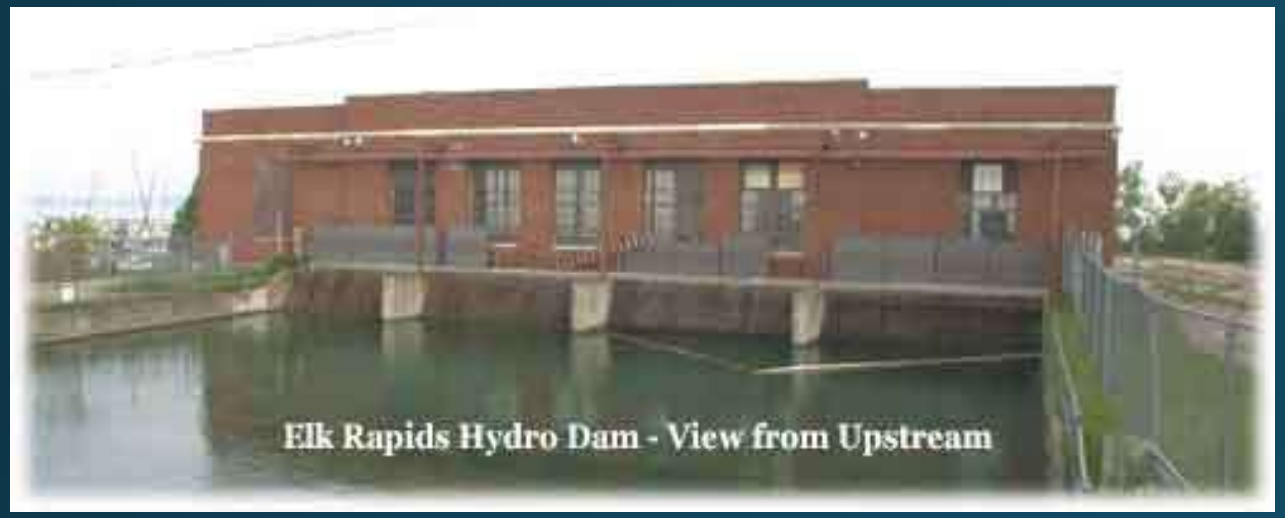
Rapid River Watershed

- Longest and fastest-flowing river within the ERCOL Watershed
- Comprises 143 square miles
- 28% of the greater Elk River Chain of Lakes (ERCOL) Watershed
- Over 18 river miles reach on main stem
- Outlet at the Torch River
- State-designated 'premier' trout stream





Hydroelectric Dams – Elk Rapids Dam





Images: The Dam Facts: Water Levels in the Antrim Chain of Lakes

- Originally constructed as a simple frontier sawmill in 1850's
- 1890-1910 - Began generating electricity to power iron smelting, cement plants, and chemical manufacturing
- Decommissioned in the 1950's; restored in late 1970 to produce hydropower once again
- Hydraulic head of ~10 ft

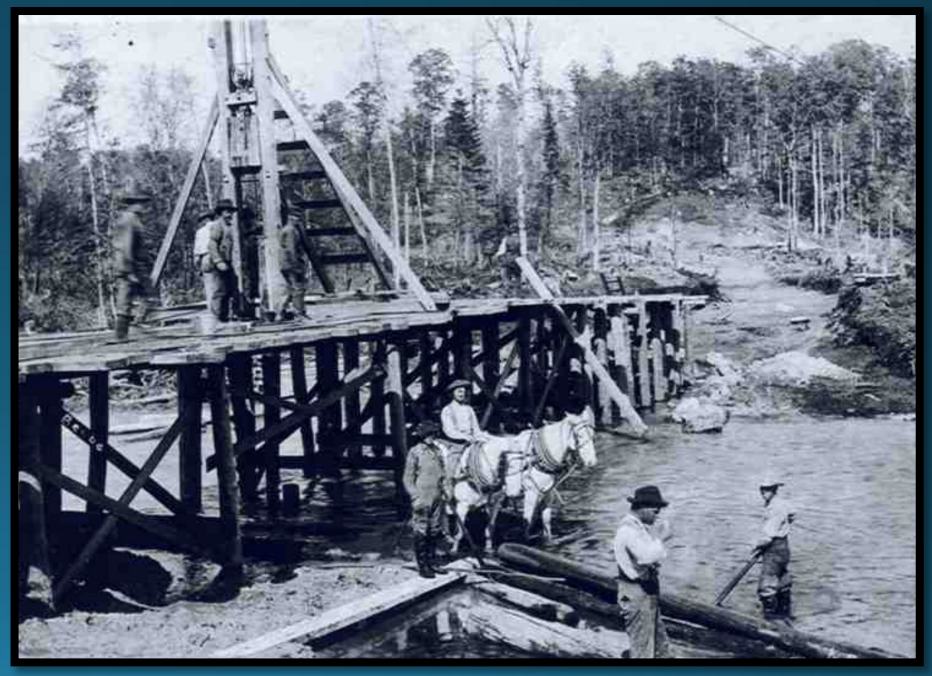
Elk and Skegemog Lake Levels

- Court-order in 1973
  - Summer Lake Level @ 590.8
    - April 12 - November 1)
  - Winter Lake Level @ 590.2
    - (November 1-April 15)
- Influences water levels on the Torch River and Rapid River mouth

1904-1906
Rugg Dam Constructed







(Images courtesy of Traverse Area District Library Local History Collection, https://localhistory.tadl.org/items/show/21876.")

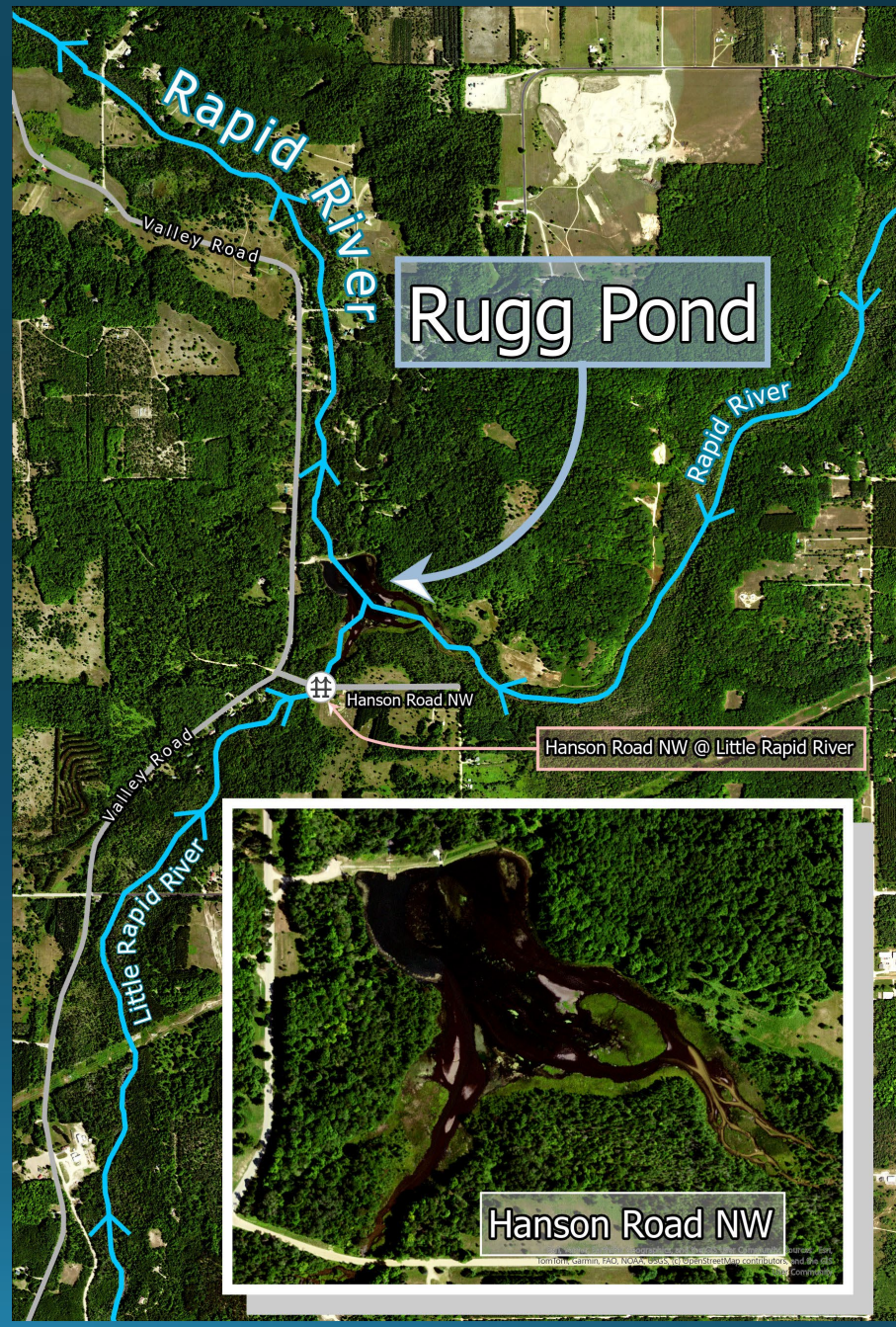
Rugg Pond Dam

- ~9 miles upstream on the Rapid Rivier
- Confluence of the Rapid and Little Rapid River
- ~685 feet long, ~24 ft in height
- ~19’ hydraulic head
- ~20-acre impoundment









Rugg Pond Steering Committee

- Appointed by Kalkaska County
- Address 2019 Dam Safety Inspection concerns
  - High hazard potential rating
  - Emergency Action Plan necessary
  - Repairs needed
- Original goal to save the dam
- 2022 - Spicer Group hired for alternatives analysis to address safety concerns
- 2024 - Public Input Session
- Nov 2024 - Kalkaska County passed resolution to pursue dam removal to eliminate risk of dam failure and reduce long-term maintenance cost with dam repairs and dredging of impoundment
- December 2024 - CRA hired as project manager

DAM SAFETY INSPECTION REPORT
RUGG POND DAM – DAM ID NO. 518
RAPID RIVER
KALKASKA COUNTY – NE ¼ SECTION 31, T28N, R07W



OWNER/OPERATOR: Kalkaska Conservation District
Kalkaska County

P.O. Box 2068
Kalkaska, Michigan 49646
231-258-3307

HAZARD POTENTIAL CLASSIFICATION: High

INSPECTION DATE: July 29, 2019

REPORT DATE: August 13, 2019

PREPARED AND INSPECTED BY:

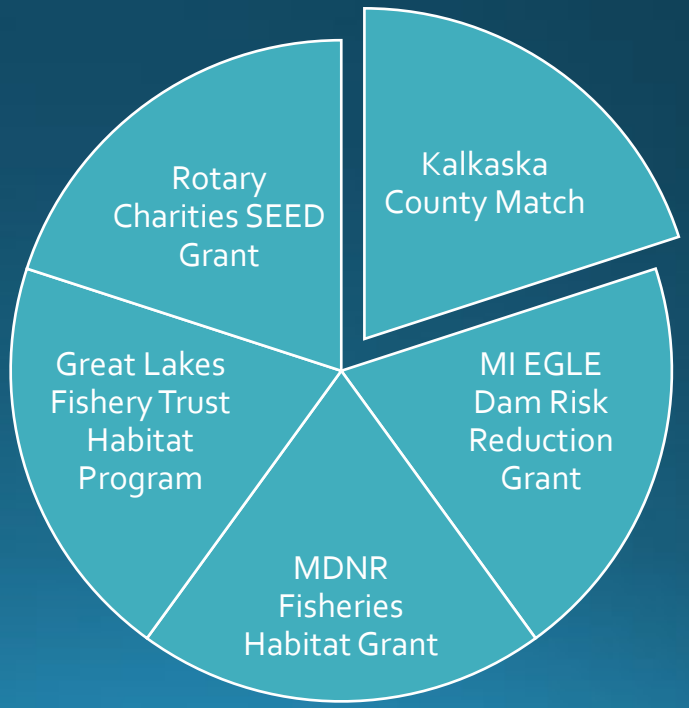
STATE OF MICHIGAN
DANIEL L. DeVAUN
ENGINEER
No. 54585
LICENSED PROFESSIONAL ENGINEER

Daniel L. DeVaun, P.E.
Registration Number: 54585
Hydrologic Studies and Dam Safety Unit
Water Resources Division
Department of Environment, Great Lakes, and Energy
120 West Chapin Street
Cadillac, Michigan 49601
989-370-1528



Grants & Funding

Awards for Design and Permitting:



Partners…

It takes a village and beyond…

Kalkaska County, MI

Conservation Resource Alliance

inter·fluve

Local/Municipal

- Kalkaska County (KC)
- Kalkaska County Road Commission (KCRC)
- Rapid River Township
- Rugg Pond Steering Committee
- Kalkaska Conservation District (KCD)

State/Federal/Tribal

- Michigan Department of Natural Resources (DNR)
- Michigan Department of Environment, Great Lakes, and Energy (EGLE)
- US Fish & Wildlife Service (USFWS)
- Grand Traverse Band of Ottawa and Chippewa Indians (GTB)

Watershed Organizations

- Conservation Resource Alliance (CRA)
- The Watershed Center of Grand Traverse Bay (TWC)
- Tip of the Mitt Watershed Council (TOMWC)
- MI Trout Unlimited (TU)
- Elk-Skegemog Lake Association (ESLA)
- Torch Lake Protection Alliance (TLPA)
- Torch Conservation Center

Engineering Team

- Inter-Fluve
- Wightman
- Heimlich Consulting
- Materials Testing Consultants (MTC)

Rugg Pond Dam Removal Project

Project Scope:

- Dam Removal
- River Restoration of the Rapid and Little Rapid River ~1 mile
- Hanson Rd Crossing Replacement

Engineering Design Team:

- Inter-Fluve Engineering
- Wightman
- Heimlich Consulting
- Materials Testing Consulting (MTC)



Sediment Accumulation at the
Rapid River Delta into Rugg Pond

Ecological Benefits of Rugg Dam Removal

- ❖Restore ~1 mile of coldwater stream
- ❖Reconnect 21.6 miles of high-quality river & tributaries to 9 downstream river miles to Torch River
- ❖Create a stable stream w/ reconnected floodplain that better handles highwater flows
- ❖Manage threats of impounded excess sediment from washing downstream
- ❖Natural movement of aquatic life, instream wood & substrates
- ❖Return natural water temperatures

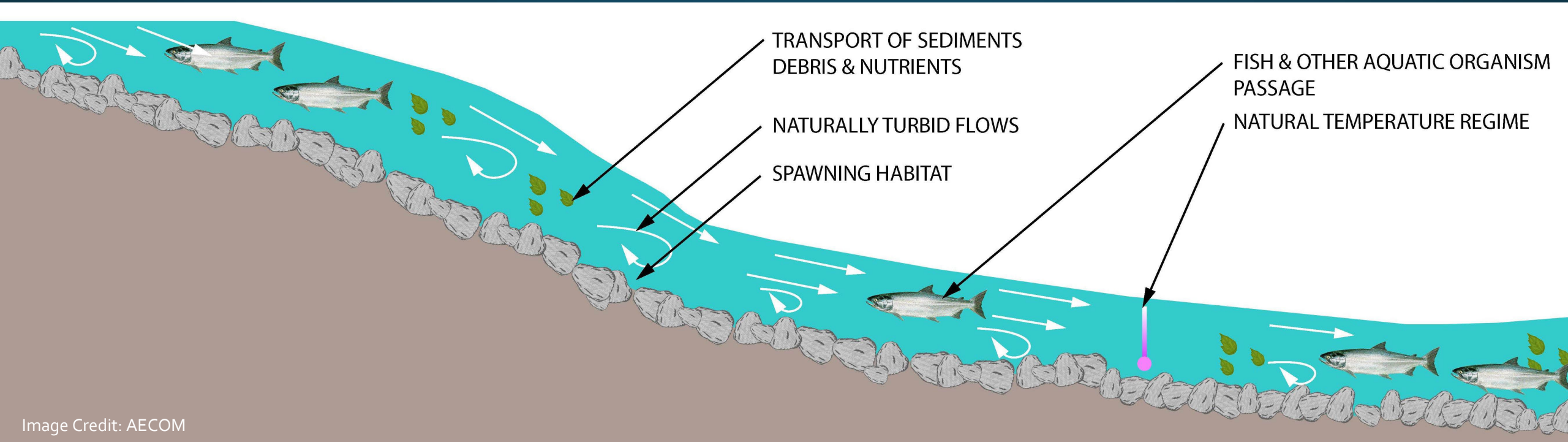
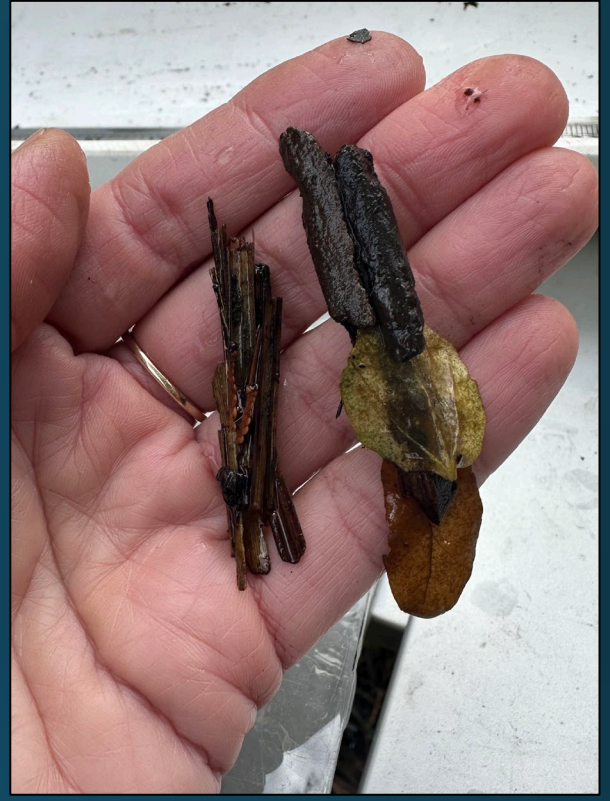


Image Credit: AECOM

Life Within a River













Fish Surveys

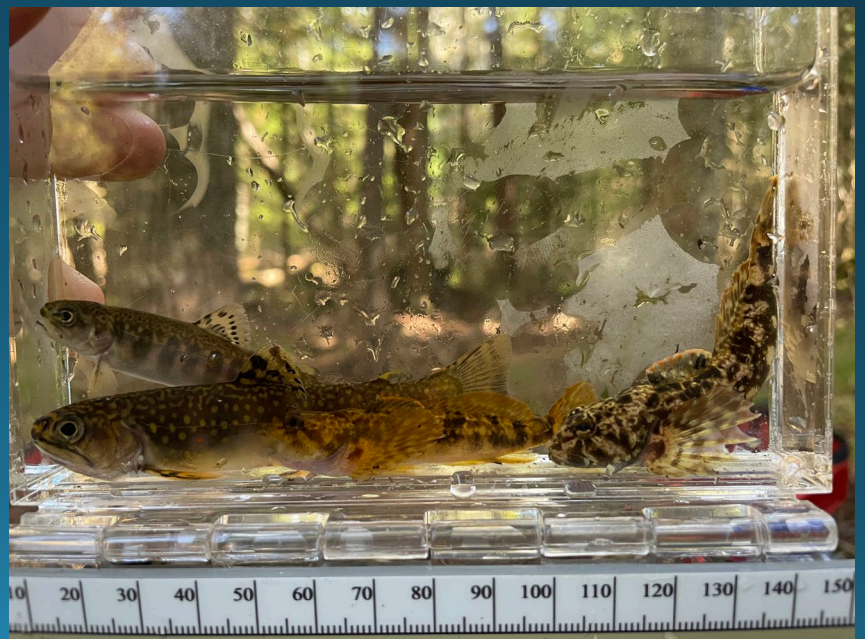
CRA & MDNR Electro-fishing







Upstream of Rugg Pond
Brook Trout and Sculpin

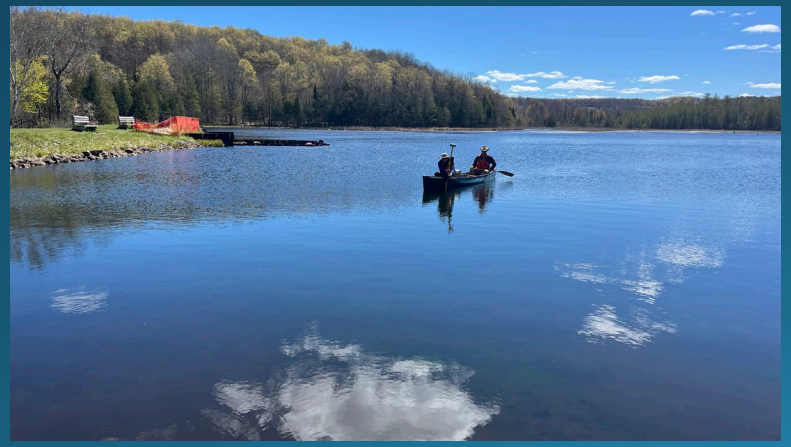


Engineering Design Timeline

FUNDRAISING

2026 Field Season	November 2026	Early 2027	Mid-Late 2027	Funding Dependent
Data Collection	Sediment Sampling	30% Design Alternatives	60% Design – Final Design Permitting	Construction



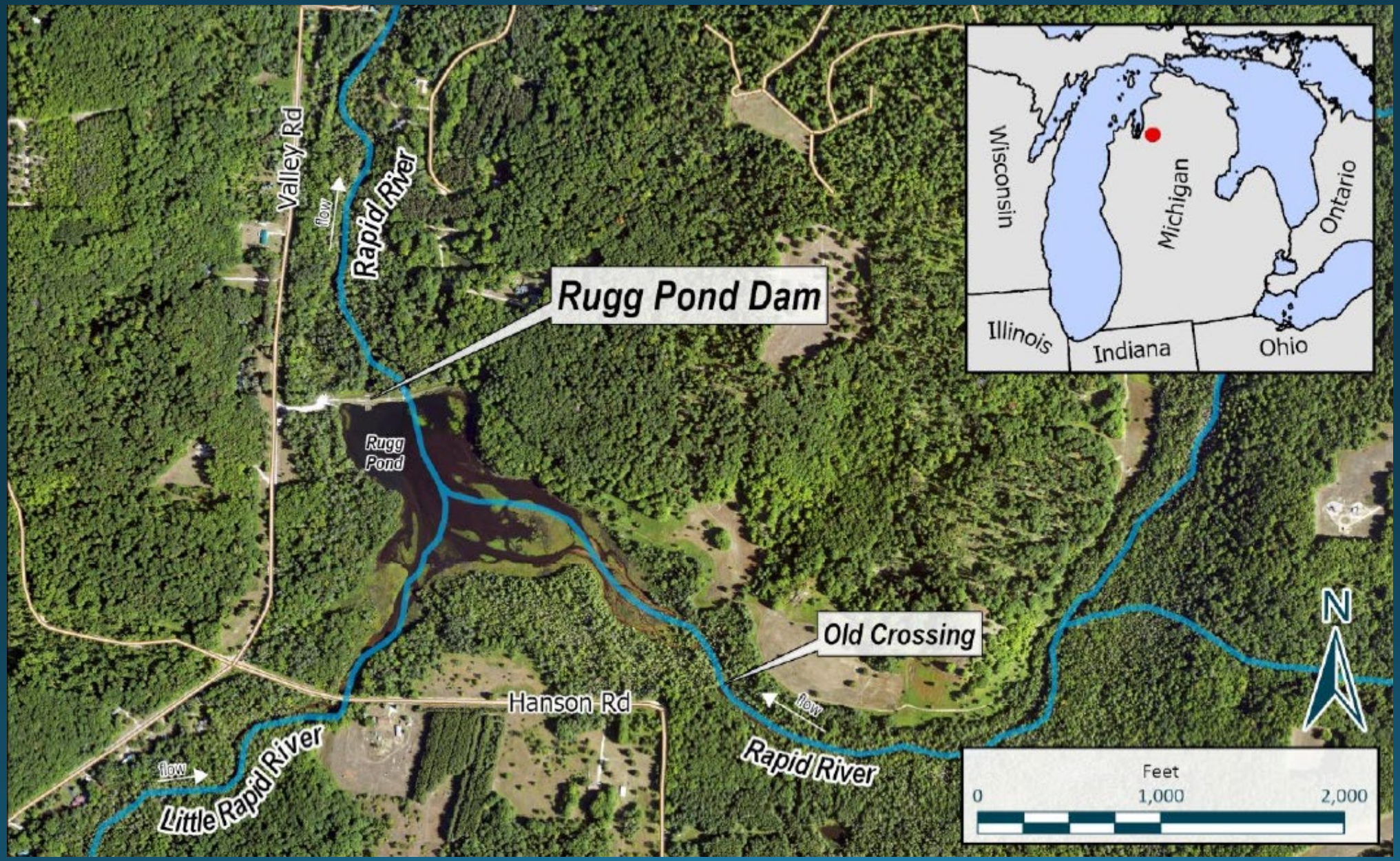




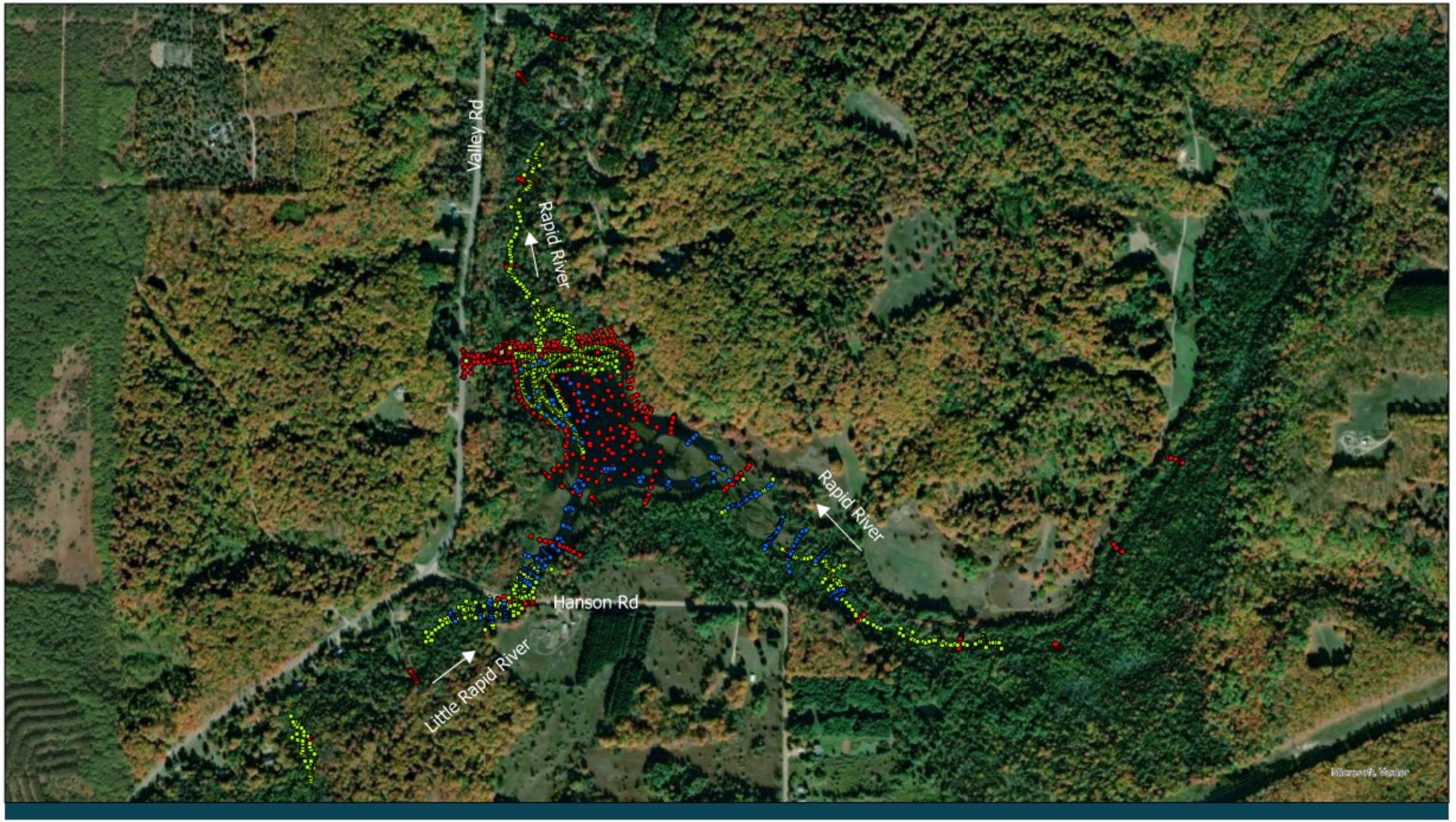


Overview Map of Study Area

Map by Inter-Fluve



Survey Points Collected



DRAFT

inter·fluve

N

Feet
0 500 1,000

Legend

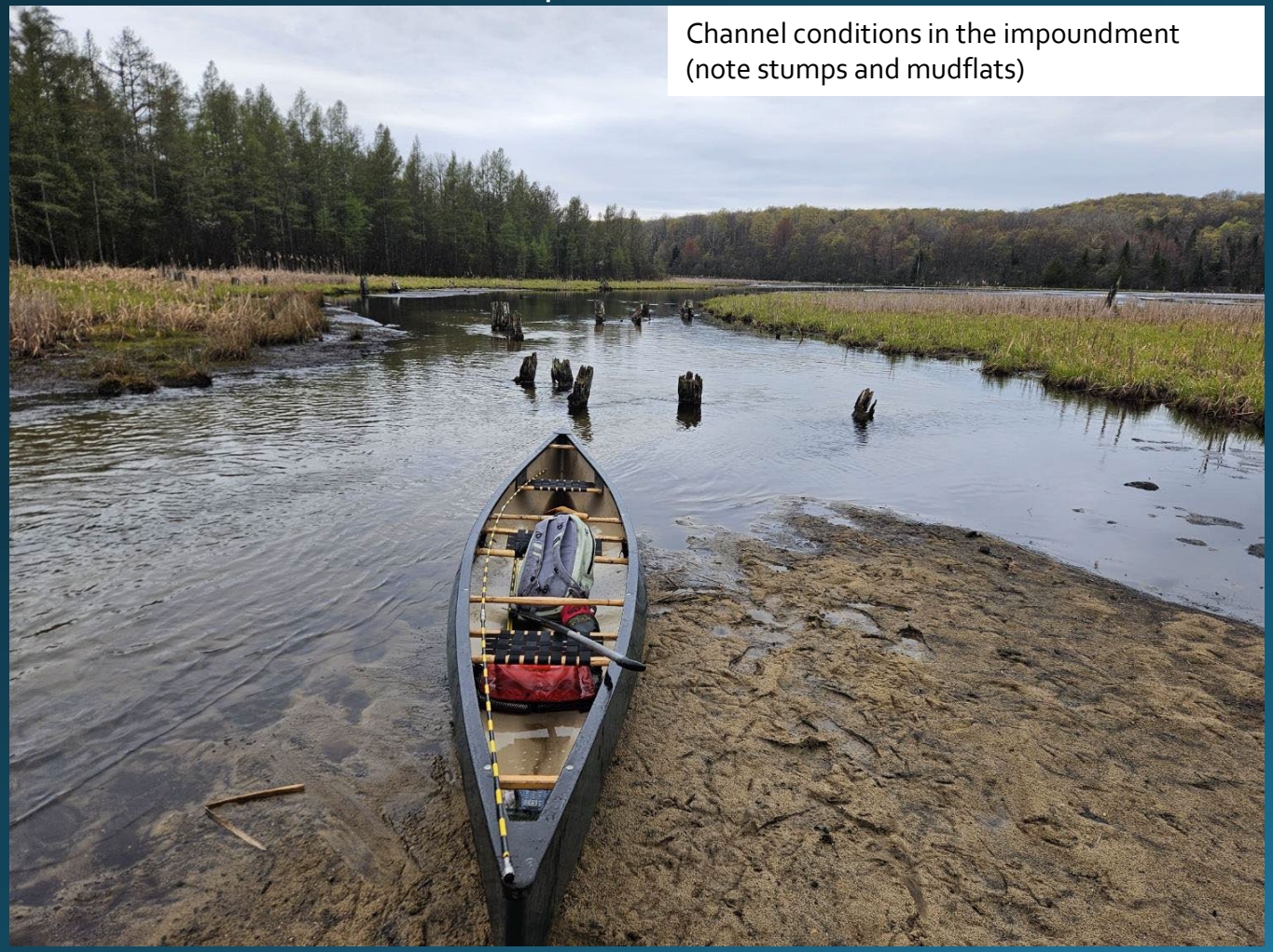
- DOR Points
- Topo/Bathy Points
- Spicer Points

Combined Survey Points

Rugg Pond Dam
Kalkaska County, MI

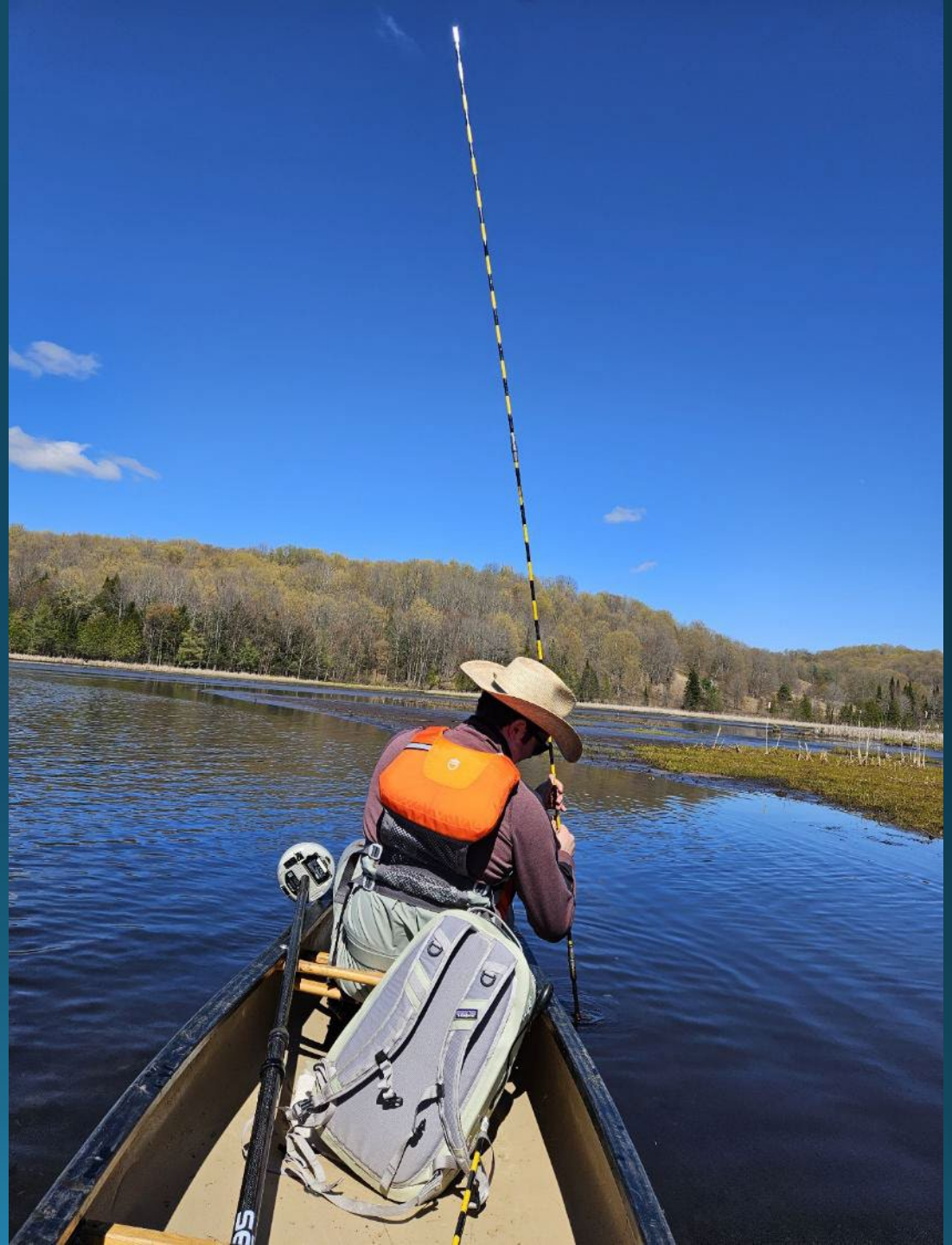
Depth of Refusal

Soil probing surveys through softer impounded sediment to refusal



Channel conditions in the impoundment (note stumps and mudflats)

Photo Credit: Inter-Fluve



Depth of Refusal Survey Points

To determine elevation and location of pre-dam land features by probing to buried channel and floodplain

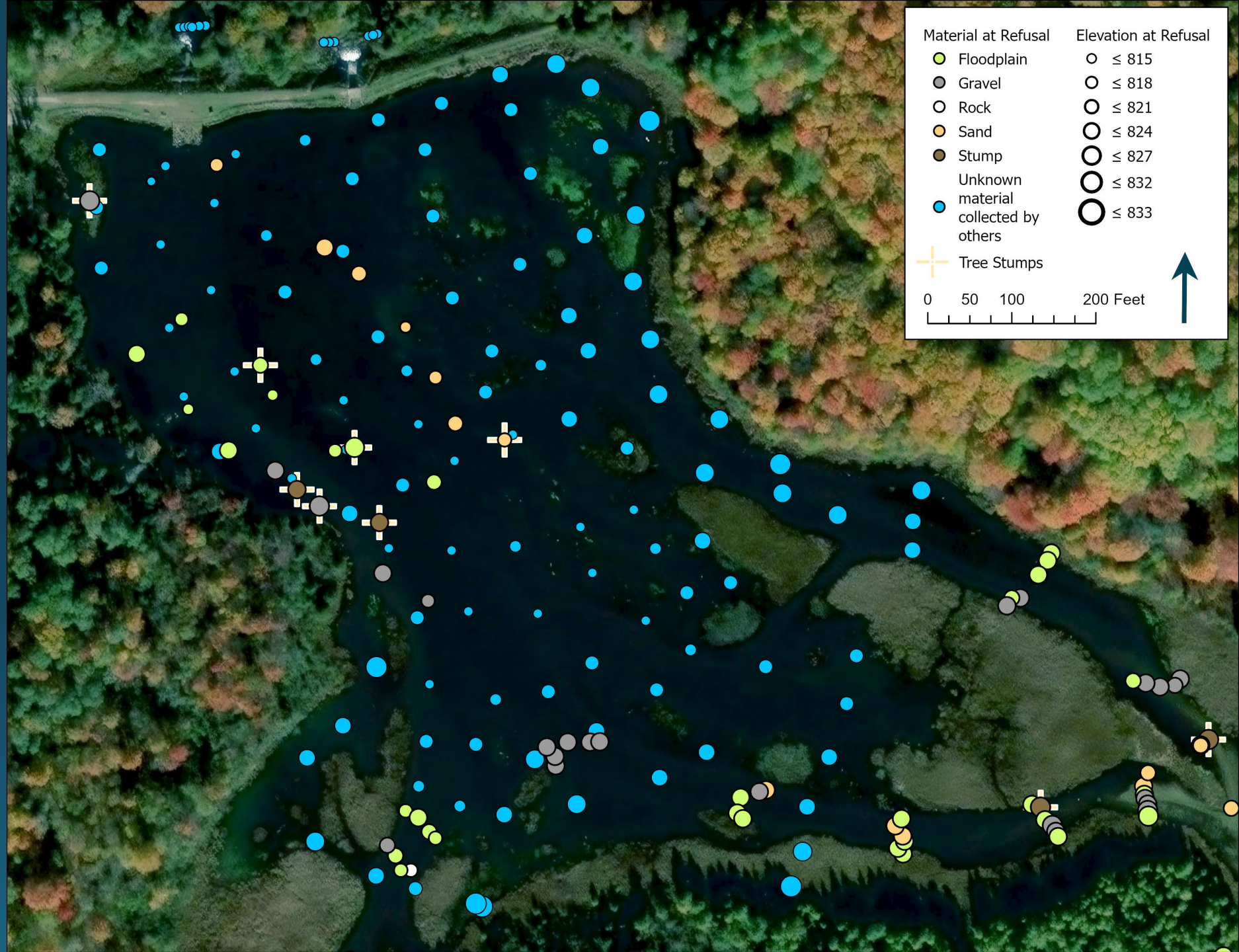
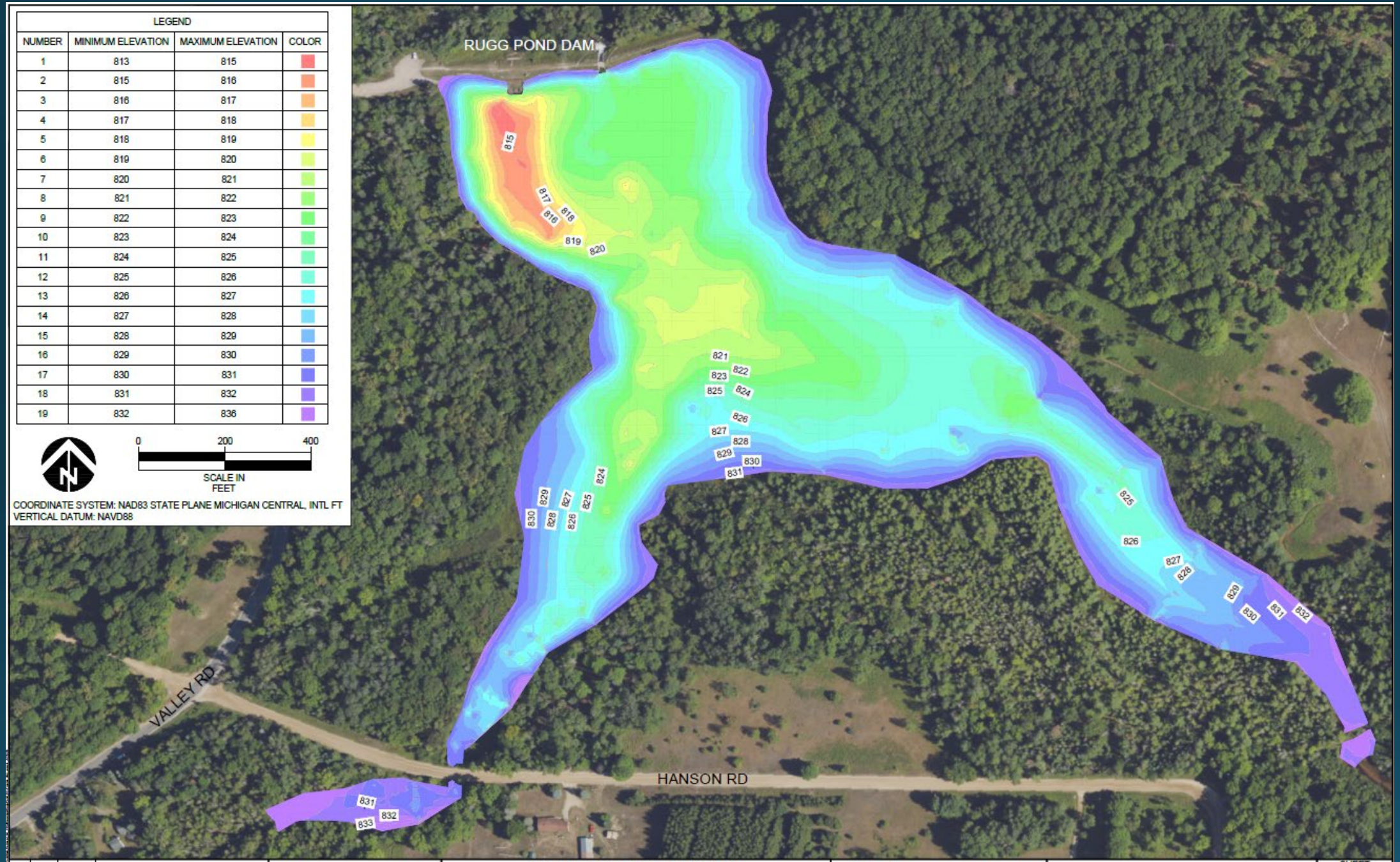


Image Credit: Inter-Fluve



LEGEND			
NUMBER	MINIMUM ELEVATION	MAXIMUM ELEVATION	COLOR
1	813	815	
2	815	816	
3	816	817	
4	817	818	
5	818	819	
6	819	820	
7	820	821	
8	821	822	
9	822	823	
10	823	824	
11	824	825	
12	825	826	
13	826	827	
14	827	828	
15	828	829	
16	829	830	
17	830	831	
18	831	832	
19	832	836	

0 200 400

SCALE IN FEET

COORDINATE SYSTEM: NAD83 STATE PLANE MICHIGAN CENTRAL, INTL FT
VERTICAL DATUM: NAVD88

NO.	BY	DATE	REVISION DESCRIPTION

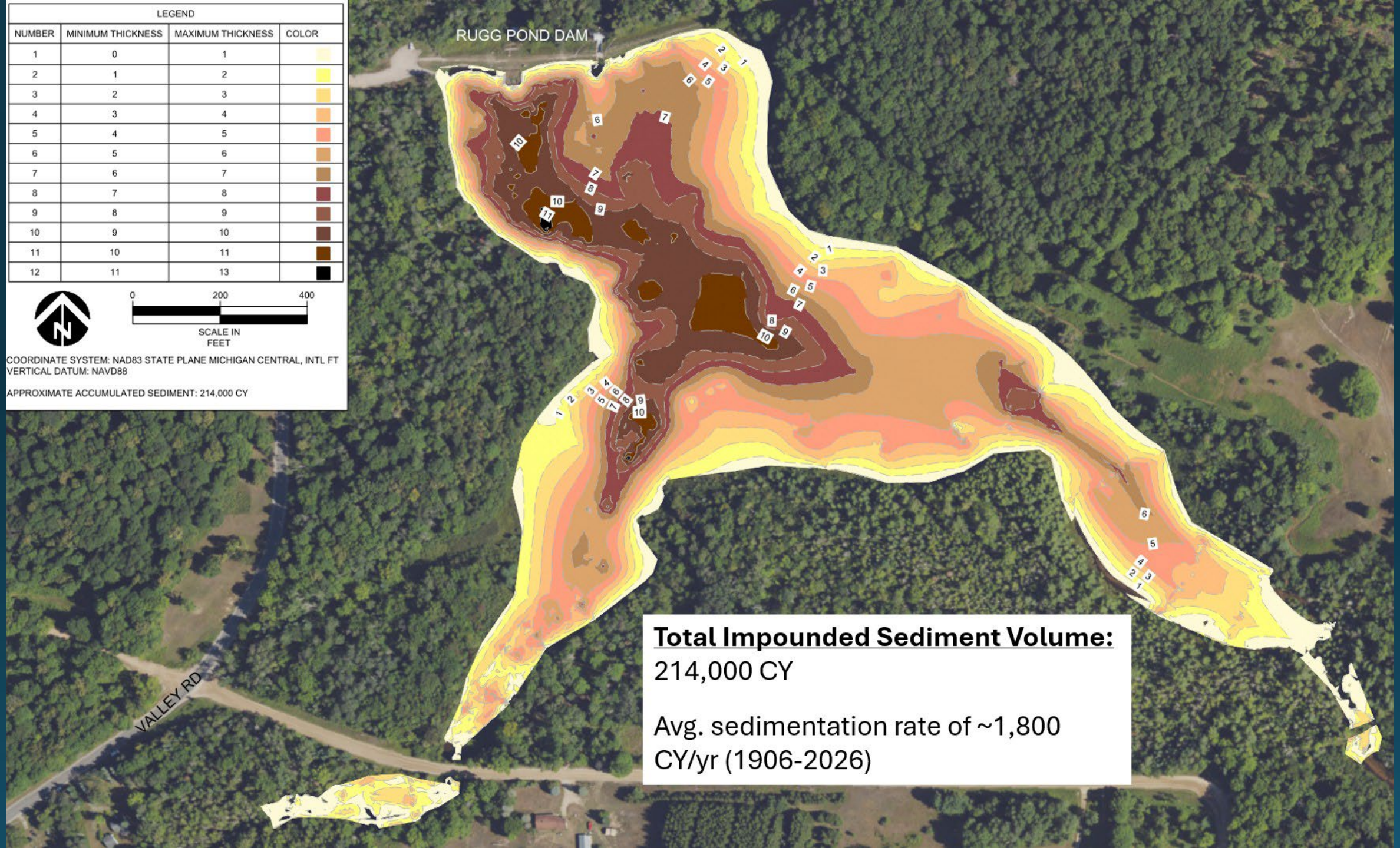
AW DRAWN	– DESIGNED	NJ CHECKED
NJ APPROVED	2026 DATE	26-04-03 PROJECT

RUGG POND DAM REMOVAL
RAPID RIVER
KALKASKA COUNTY, MI

inter·fluve
1539 Grand Avenue, 2nd Floor
Saint Paul, MN 55105
651.243.9700
www.interfluve.com

DEPTH OF REFUSAL SURFACE

SHEET 2 OF 3


RUGG POND DAM
VALLEY RD
LEGEND
NUMBER | MINIMUM THICKNESS | MAXIMUM THICKNESS | COLOR
1 | 0 | 1
2 | 1 | 2
3 | 2 | 3
4 | 3 | 4
5 | 4 | 5
6 | 5 | 6
7 | 6 | 7
8 | 7 | 8
9 | 8 | 9
10 | 9 | 10
11 | 10 | 11
12 | 11 | 13
0
200
400
SCALE IN FEET
COORDINATE SYSTEM: NAD83 STATE PLANE MICHIGAN CENTRAL, INTL FT
VERTICAL DATUM: NAVD88
APPROXIMATE ACCUMULATED SEDIMENT: 214,000 CY
Total Impounded Sediment Volume:
214,000 CY
Avg. sedimentation rate of ~1,800 CY/yr (1906-2026)

Interpreted Channel Form



Image provided by Inter-Fluve





Upstream of Hanson Rd

Hanson Road Crossing
Little Rapid River



Downstream of Hanson into Rugg Pond

Timber Bridge Considerations



Jordan River #WA-5



N. Branch Boardman-Ottaway River
Broomhead Rd







Downstream Conditions in the Rapid River

Reference Reach





Upstream Conditions in the Little Rapid River

Recreational Opportunity

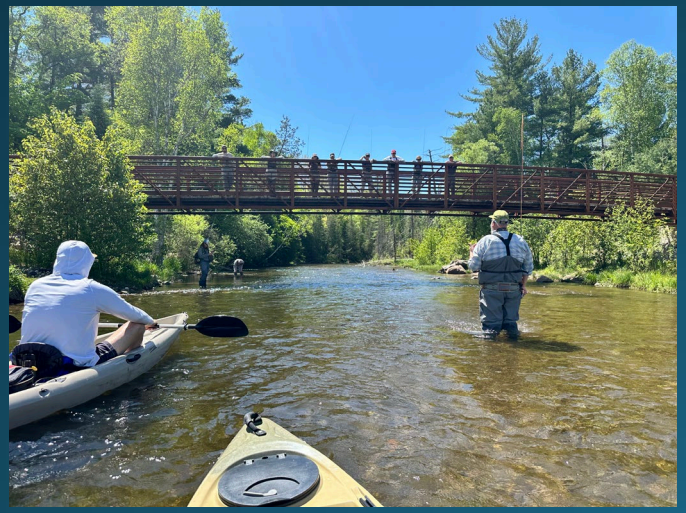


Footbridges



Fishing
Br. Trout – M. Seefried







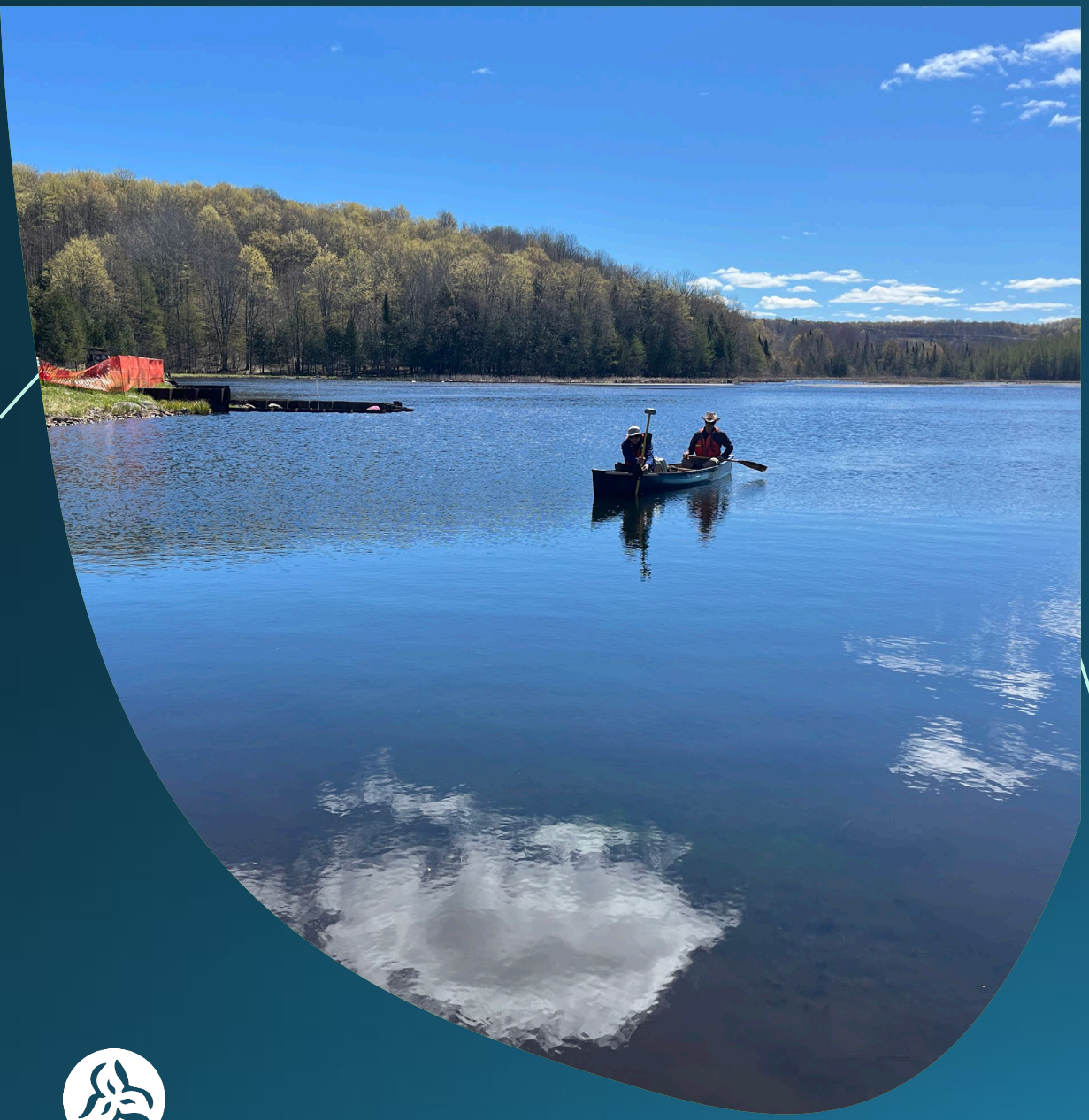


Inter-Fluve Surveyor Waist Deep in Muck

No Walk In the Park







Thank you!

- Tom Vitale, CRA Project Manger
- tom@rivercare.org

Conservation Resource Alliance