

Geosyntec
consultants



Fountain Lake Restoration Project East Main Bay & North Bay Informational Meeting

July 25, 2024



Fountain Lake Restoration Project

Background

- Shell Rock River WD created in 2003 for the purpose of improving water quality
- City of Albert Lea citizen approved special use tax is for the purpose to support the Shell Rock River WD's comprehensive plan
- 2012 TMDL estimated 65% TP loading from internal loading
- 303d listings for East, West and North
 - Nutrients – 2008
 - Aquatic life (fish) – 2020
 - Bancroft Creek – 2020 for Macroinvertebrates
- Project initiated according to Minnesota Statute 103D requirements in 2013-02



Fountain Lake Restoration Project



Timeline from Project Initiation to start of construction for Phases 1 and 2

- January 8, 2013 Fountain Lake Restoration Project (FLRP) Initiated – Resolution 2013-02
- Fall 2013 SRRWD initiates agency outreach meetings to allow agency representatives the opportunity to be prepared for the Fountain Lake Restoration project permitting applications
- June 14, 2016 FLRP Confined Disposal Facility Project Plans for Cells #1, #2, and #3 approved by SRRWD Board of Managers – Resolution 2016-10
- August 1, 2016 Environmental Assessment Worksheet (EAW) submitted to Environmental Quality Board (dredging and CDF construction)
- September 7, 2016 MNDNR comments on the EAW process
- October 6, 2016 SRRWD Board Approve Findings of Fact, Conclusions of Law, and Decision for Negative Declaration on need for Environmental Impact Statement (EIS)
- January 20, 2017 Dam Safety Permit received from DNR (took 6 months!)
- February 3, 2017 Water Appropriation Permit Application submit to DNR for FLRP (Reference No. 2017-0191)
- April 8, 2017 Open letter regarding DNR permit delay by SRRWD
- April 11, 2017 FLRP Initiate Dredge Contract #1 and Approve Project Plans – Resolution No. 2017-02
- April 12, 2017 NRT letter to DNR re: Public Waters Work Permit Application with answers to DNR questions from Rob Collet (Contains other MPARS communication from application process)
- April 5, 2018 Notice of Award to J.F. Brennan Dredge Contract 1

Project Success to Date

- Residents, boaters, and anglers have expressed gratitude and observances of a healthier lake ecosystem
 - Increase fish populations communicated by anglers.
 - Significant increase in water clarity.
 - Reduction in algal populations in restored areas.
- Feedback from Lake Users
 - Lanier Ward Pratt: “Amazing work guys. People don't say enough great words for all that you've done.”
 - Jena Thompson: “I am impressed with how much cleaner our area lakes are, and the support and hard work that the District has done to make this happen.”



North (Bancroft) Bay



Context

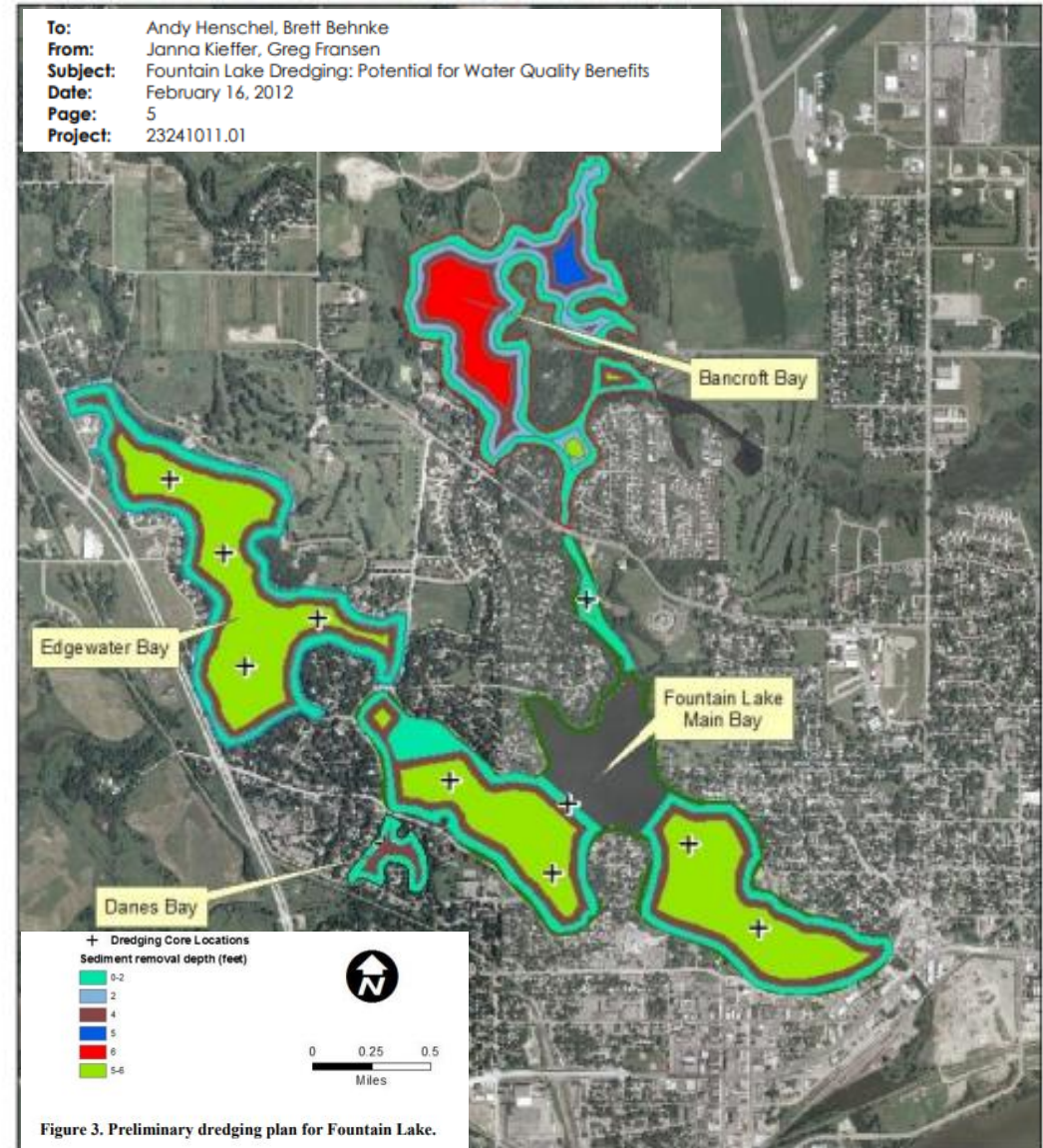
- 2016 – Environmental Assessment Worksheet (EAW) for restoration through dredging of ALL bays
- 2016 – Notice of Decision (NOD) for restoration through dredging of Edgewater, Dane’s and West Main Bays
 - Reduced footprint to align with secured funding
 - ***Reserved future performance of East Main and North Bays when adequately funded and facilitates future collaboration regarding Blanding’s turtles and proximity of proposed work to Albert Lea Landfill.***
- 2017 – Initiate dredged material management Confined Disposal Facility (CDF) construction
- 2018-2021 – Dredging of Edgewater, Dane’s & West Main Bays
 - Removal of 1.2 million cubic yards of accumulated organic, nutrient-laden sediments
- 2023 – Secure funding and engineering-permitting team to complete restoration
- March 2024 – Issue Discretionary EAW focused on East Main and North Bays

Plans

- Project Goal
 - Consistent with the 2016 EAW Project Purpose, complete the reduction of phosphorus loading to Fountain Lake by removing deposited sediment through dredging leading to reductions in summer phosphorus concentrations, magnitude of phytoplankton concentration, chlorophyll-a concentrations, resuspended sediments from wind waves and vessel propeller wash, and increase summer water recreation activity.
- Details
 - Substantially repeating means, methods, and BMPs that were demonstrated successful in 2018-2021
 - Hydraulic dredging of 650,000 cubic yards
 - ~310K cy from East Main Bay.
 - ~340K cy from North Bay.
 - Temporary pipeline
 - Placement in pre-existing CDF
 - Predominantly in Cell 1
 - Shoreline setbacks, turbidity monitoring, time of year restrictions, limiting to accumulated sediments – not deepening lake bottom
- Construction Start – Spring/Summer 2025

North (Bancroft) Bay

- North Bay was included in all components of engineering and design including:
 - Soil investigation
 - Modeling
 - Water quality monitoring
 - Aquatic vegetation surveys
- North Bay acts as both a phosphorus source and a sink



North (Bancroft) Bay Project Impacts and Benefits



Water Quality

Short + Long term benefits

- Chlorophyll a concentrations are predicted to be reduced by 12 to 70 ug/L
- Removal of accumulated sediment that is a source for downstream loading

Habitat

Temporary impacts, long term benefits

- Temporary impacts to no greater than 66 of 162 acres in North Bay
- Improved diversity + abundance of aquatic vegetation due to increased water clarity
- Blanding's turtle mitigation and avoidance plans will be developed and adhered to

Recreation

Temporary impacts, long term benefits

- Improved fisheries resulting in increased satisfaction
- Improved water quality resulting in increased boating and swimming days

Economy

Short + Long term benefits

- Short term benefits from increased recreation
- Long term benefits for local and regional economic vitality

Fisheries

Temporary impacts, long term benefits

- Improved fishery habitat is anticipated to result in improved natural recruitment
- Less stress during heat of summer and lack of oxygen in winter
- Improved food chain dynamics

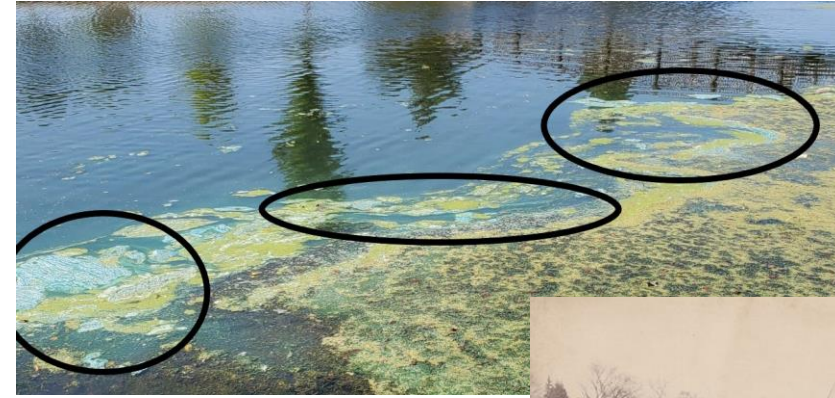
Resilience

Short + Long term benefits

- Removal of depositional, phosphorus rich sediments will provide greater refuge for fish during the increasingly hotter summer temperatures (2024 EAW MPCA Comment Letter)

Water Quality: Problem

- Fountain Lake is hypereutrophic and impaired for nutrients.
 - Pre-dredging 2012 TMDL indicated approximately 65% of total P load was attributed to internal loading
- Fountain Lake sediments are extremely high in mobile + organic P with some of the highest values concentrated in areas of North Bay.
- Shallow lake characteristics + fine organic silty bottom increases turbidity and re-suspension of sediment due to wind/wave actions and prop wash.
- Poor water clarity due to algal dominant system and sediment resuspension limits light penetration and plant growth in areas deeper than 1-2 feet.
- Degraded conditions in North Bay has led to prevalence of one native aquatic plant (coontail) limiting biological diversity and resource function.
- Fountain Lake will not achieve water quality standards if internal loading is not addressed, and dredging is the most feasible approach to accomplish this reduction



Blanding's Turtle

Blanding's Turtle may be present in the area
Precedent Project example

- Phase 1+2 of Fountain Lake Dredging (2021)
- Bassett Creek Main Stem Lagoon (2023)



Planned Avoidance and mitigation measures:

a) Avoidance of suitable habitat

Blanding's turtles may potentially overwinter in portions of Fountain Lake from mid-September through early April. Ponds that have calm shallow waters with muddy bottoms and abundant aquatic vegetation as well as large marsh areas that border rivers are preferred habitat (MnDNR Environmental Review Fact sheet).

b) Timing the impacts to avoid an incidental lake

Blanding's turtles may potentially overwinter in lakes. They would emerge from overwintering in late March to early April and return to these overwintering sites in mid-September through October. Dredging will not occur in North Bay during these overwintering timeframes.

c) The recommendations listed in the Blanding's turtle fact sheet

All appropriate measures from list 1 (areas where Blanding's turtles may be inhabiting, but not a known area of state-wide importance) of the fact sheet will be implemented. For the purposes of this Project, those measures include training for the construction crew, moving turtles that are in imminent danger, and leaving turtle not in imminent danger alone.

d) Training for construction crew

1. Instruction on how to properly identify Blanding's turtles and handle turtles in the event they must be moved by hand;
2. Copies of the MnDNR's Blanding's turtle informational flyer will be provided to all contractors working in the area;
3. Sight monitoring for Blanding's turtles during construction; and
4. All Blanding's turtle sightings will be reported; turtles in imminent danger will be moved by hand, if not in imminent danger they will be left undisturbed.

e) Submitting the avoidance plan to the NHIS review team

An avoidance plan will be submitted as part of the permitting process.

Fish and Wildlife: Other Species



West Main Bay



North (Bancroft) Bay



Fountain Lake habitat is greatly degraded and is not designated as a MN DNR Wildlife Lake, MN DNR Migratory Waterfowl Feeding and Resting Area, or a MN DNR Lake of Biological Significance

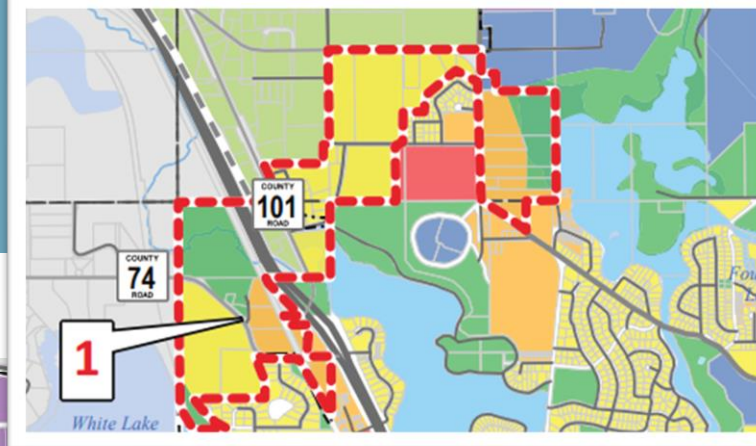
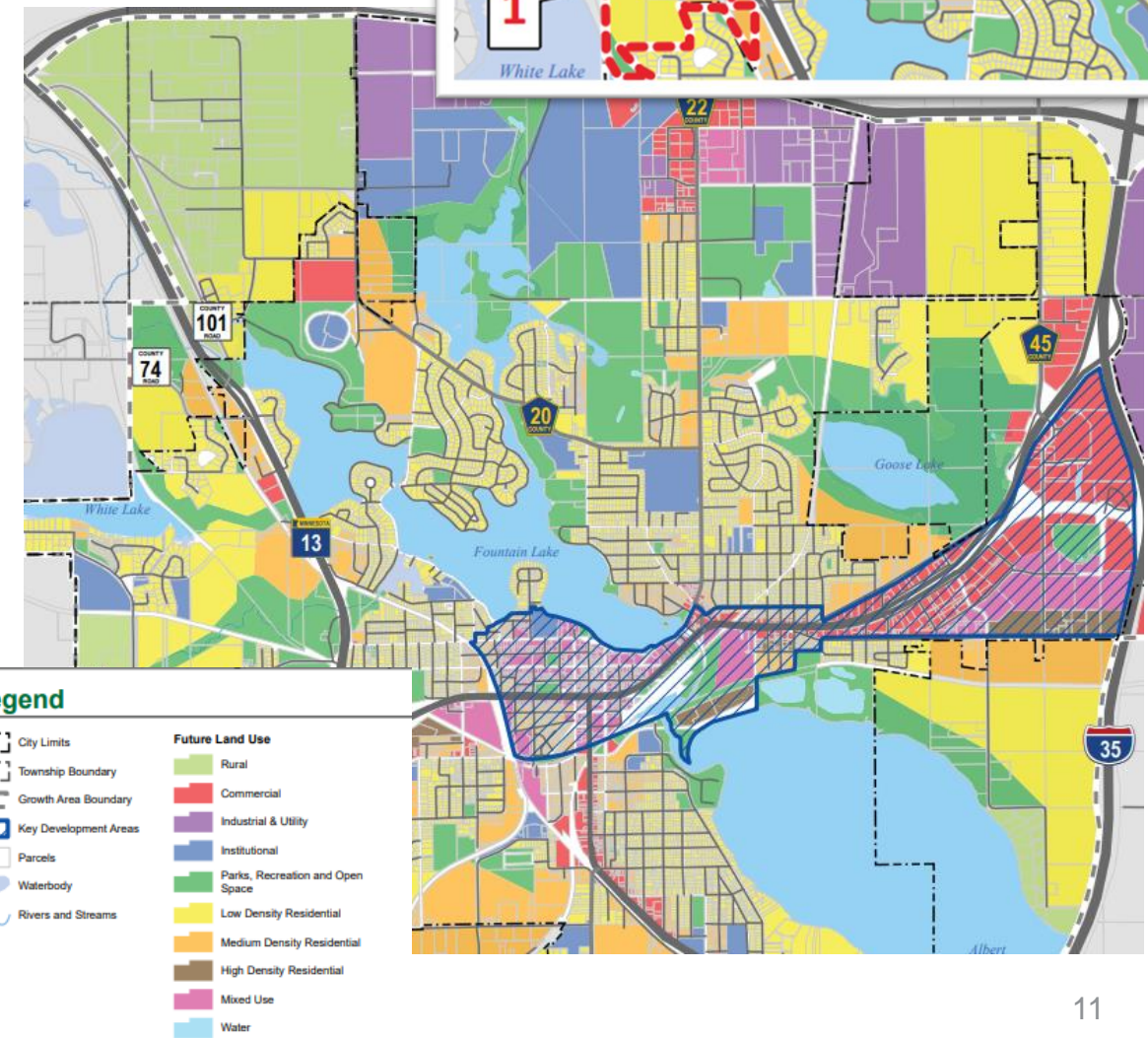
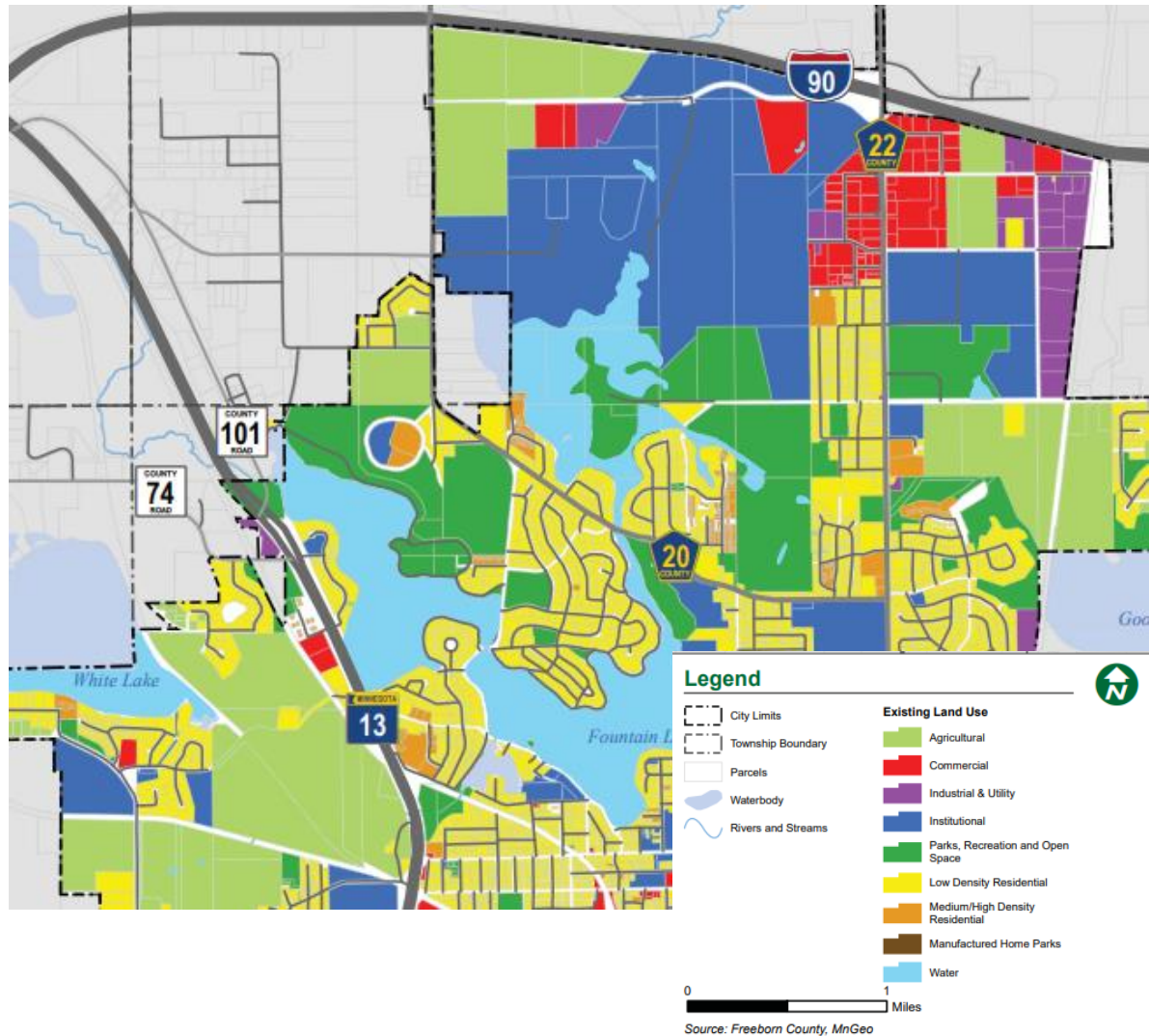
Fish community is impaired (MN DNR 2022)

- Candidate causes identified in DNR SID report are eutrophication and physical habitat alteration
- DNR SID report states,
 - “Lakes in the SRRW presently lack aquatic plant diversity, as indicated by an average of six species observed in recent surveys conducted on 11 lakes in the watershed... Fountain Lake also does not support a very diverse or evenly distributed aquatic plant community.”
 - “The relatively low diversity and limited distribution of aquatic plants is likely a byproduct of poor water clarity from eutrophication and associated algal blooms.”

Plant survey indicates poorly distributed aquatic vegetation with coontail dominating surveyed species. (ISG 2023)

- White-stem pondweed was observed in 2023 but not in 2016.

Riparian Use and Development



Expected Permit Conditions



- **Public Water Safety**
 - Coordination with Sheriff along with posting signs visible 24 hours a day.
- **Annual Status Reports for Dredging**
 - Report documenting volume and location of dredging that occurred in the previous year.
- **Shoreline Repair**
 - Permittee is responsible for repairing any damage to shoreline that results from dredging.
- **Public Information**
 - Location of dredging must be posted at public accesses.
- **Project Completion Requirements**
 - Submittal of pre and post construction data including photographs, evaluations/assessments, WQ monitoring and trends, within 90 days of project completion.
- **Maintenance of BMPs**
 - May not extend footprint of dimensions authorized in plans approved in permit.
- **Invasive Species Inspections**
 - Dredging equipment inspected by DNR prior to launch.
- **Fishery Protection Exclusion Dates**
 - No activity affecting bed within 200 ft of shoreline between March 1 and June 15, unless approved by DNR fisheries.
- **Project Phasing**
 - Prior to start of work a final plan detailing phases of dredging to remove sediment, etc. should be submitted to area hydrologist.
- **Depth of Dredging**
 - Based upon agreed Design (Forthcoming after completion of EAW).
- **CDF Capacity**
 - Volume of dredged material cannot exceed capacity of permitted CDF.
- **Ineffective Maintenance**
 - If the project is ineffective due to lake conditions, no further work will be issued for repetition of work. If entrapment areas fill up over a short period of time, early sediment removal should be considered.

Embedded Avoidance & Minimization Measures



- **Shoreline Setback**
 - Targeted areas of frequent propeller-induced resuspension
 - Enhancing shallow water fish habitat
- **Finished Dredge Slopes**
 - Combination of 10H:1V and 4H:1V slopes to minimize disturbance, create safe lake conditions, and increase constructability.
- **Blanding's Turtle**
 - Seasonal Avoidance - The potential for Blanding's turtles to overwinter in North Bay is from mid-September through early April; dredging will not occur during these times.
 - Contractor training to actively observe and identify turtles.
 - Avoidance plan will be submitted to MN DNR.
- **Water Quality Monitoring**
 - Water quality monitoring of CDF discharge consistent with as-performed in 2018-2021
- **Stage Discharge Curve for Private Channel**
 - Flow data of private ditch and Bancroft Creek recorded
 - Issued for information to Area Hydrologist semi-monthly



<https://www.dredgingtoday.com/2020/10/05/fountain-lake-restoration-moves-forward/>

Project Timeline

November 2024

- DNR permit

December 2024

- 100% construction design

January 2025

- Bidding

Early Spring 2025

- Construction begins

