

Emmons & Olivier Resources, Inc.



No. Center – No. Lindstrom Channel

Update

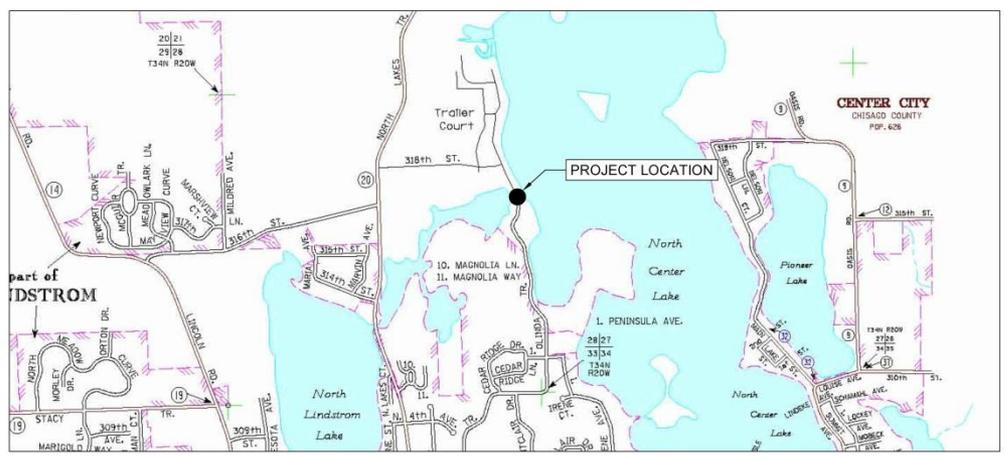
water | ecology | community

Project Location

CHISAGO LAKES LAKE IMPROVEMENT DISTRICT NORTH CENTER - NORTH LINDSTROM CHANNEL IMPROVEMENTS LINDSTROM TOWNSHIP, CHISAGO CO., MN

LEGEND

FEATURE	EXISTING	PROPOSED
SILT FENCE		---
CONSTRUCTION FENCE		---
DELINEATED WETLAND	---	---
WATERLINE/ShORELINE	---	---
OVERHEAD ELECTRIC LINES	E-O	
BURIED ELECTRIC LINES	E-U	
FIBER OPTIC LINES	FO	
GAS LINES	G	
PIPELINE	PL	
OVERHEAD TELEPHONE	T-O	
BURIED TELEPHONE	T-U	
TELEPHONE MANHOLE	T-M	
TELEPHONE CABLE PEDESTAL	T-P	
OVERHEAD CABLE TV	TV-O	
BURIED CABLE TV	TV-U	
TV CABLE PEDESTAL	TV-P	
BARBED WIRE FENCE	---	---
CHAIN LINK FENCE	---	---
STOCKADE/WOOD FENCE	---	---
GUARD RAIL	---	---
CENTER LINE ROADWAY	---	---
CENTER LINE RAILROAD	---	---



Sheet List Table

Sheet Number	Sheet Title
01	TITLE SHEET
02	SEO
03	DETAILS-OPTION 1 (REMOVABLE WEIR)
04	DETAILS-OPTION 2 (CHANNEL WIDENING)
05	OPTION 1 (REMOVABLE WEIR)
06	OPTION 2 (CHANNEL WIDENING)

GOVERNING SPECIFICATIONS
THE 2005 EDITION OF THE MINNESOTA DEPARTMENT OF TRANSPORTATION "STANDARD SPECIFICATIONS FOR CONSTRUCTION" SHALL GOVERN.

ALL TRAFFIC CONTROL DEVICES AND SIGNING SHALL CONFORM TO MINNESOTA MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES, INCLUDING FIELD MANUAL FOR TEMPORARY CONTROL ZONE LAYOUTS.

EXISTING UTILITIES
THE LOCATION OF UNDERGROUND FACILITIES AND/OR STRUCTURES AS SHOWN ON THE PLANS ARE BASED ON AVAILABLE RECORD AT THE TIME THE PLANS WERE PREPARED AND ARE NOT GUARANTEED TO BE COMPLETE OR CORRECT. THE SUBSURFACE UTILITY INFORMATION SHOWN IS UTILITY QUALITY LEVEL D, AS DETERMINED USING THE GUIDELINES OF "GUIDANCE 38-02 STANDARD GUIDELINES FOR THE COLLECTION AND DEPICTION OF EXISTING SUBSURFACE UTILITY DATA." THE CONTRACTOR IS RESPONSIBLE FOR CONTACTING ALL UTILITIES 72 HOURS PRIOR TO CONSTRUCTION TO DETERMINE THE EXACT LOCATION OF ALL FACILITIES AND TO PROVIDE ADEQUATE PROTECTION OF SAID UTILITIES DURING THE COURSE OF WORK.

CONSTRUCTION NOTE
CONTRACTOR SHALL TAKE ALL NECESSARY MEASURES TO MAINTAIN OPERATION OF EXISTING UTILITIES THROUGHOUT THE DURATION OF THE PROJECT. IN THE EVENT THAT AN INTERRUPTION OF SERVICE IS UNAVOIDABLE IN ORDER TO COMPLETE THE WORK, CONTRACTOR SHALL PROVIDE ADEQUATE NOTIFICATION TO ALL AFFECTED BUSINESSES A MINIMUM OF 3 WORKING DAYS IN ADVANCE OF ANY INTERRUPTION.

GOPHER STATE ONE-CALL
IT IS THE LAW THAT ANYONE EXCAVATING AT ANY SITE MUST NOTIFY GOPHER STATE ONE CALL (800) 328-1166 OR (951) 944-0000, MONDAY THROUGH FRIDAY (EXCEPT HOLIDAYS) FROM 7 A.M. TO 5 P.M.



CLIENT
CHISAGO LAKES LAKE IMPROVEMENT DISTRICT
313 NORTH MAIN STREET
ROOM 243
CENTER CITY, MN 55012

ENGINEER
EMMONS & OLIVIER RESOURCES, INC.
651 HALE AVENUE NORTH
OAKDALE, MINNESOTA 55128-7534
TELEPHONE: (651) 770-8448
FAX: (651) 770-2552
eorinc.com

File Path: \\s01\proj\2014\14-0000\Drawings\Improvement_District02.dwg
 Drawing Name: 14-0000-0201-Channel_Improvement_District02.dwg
 User: jay.r.kell
 Date: 09/26/2014 10:28:23 AM

NO	DATE	BY	REVISION
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I HEREBY CERTIFY THAT THIS PLAN, SPECIFICATION, OR REPORT WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.

JAY R. KELL
DATE: 09-26-2014 LICENSE # 24552

SUBMISSION DATE:
09-26-2014

DESIGN DRAWN BY:
JRH

EOR PROJECT NO.:

EOR Emmons & Olivier Resources, Inc.
651 Hale Avenue North
Oakdale, MN 55128
ecology community
Tele: 651.770.8448
www.eorinc.com

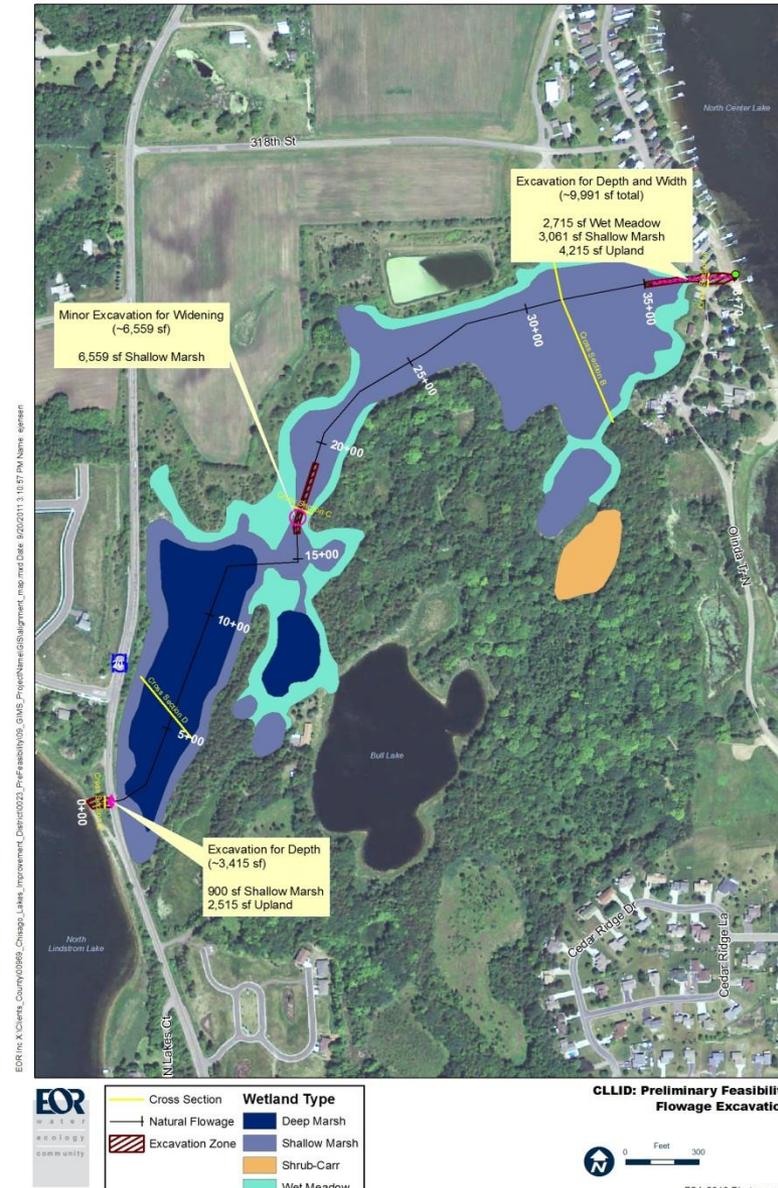
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CENTER CITY, MN 55012

NORTH CENTER - NORTH LINDSTROM CHANNEL IMPROVEMENTS
LINDSTROM TOWNSHIP, CHISAGO CO., MN
STATE PROJECT NO. — CITY PROJECT NO. —

TITLE SHEET
SHEET 01 OF 06 SHEETS

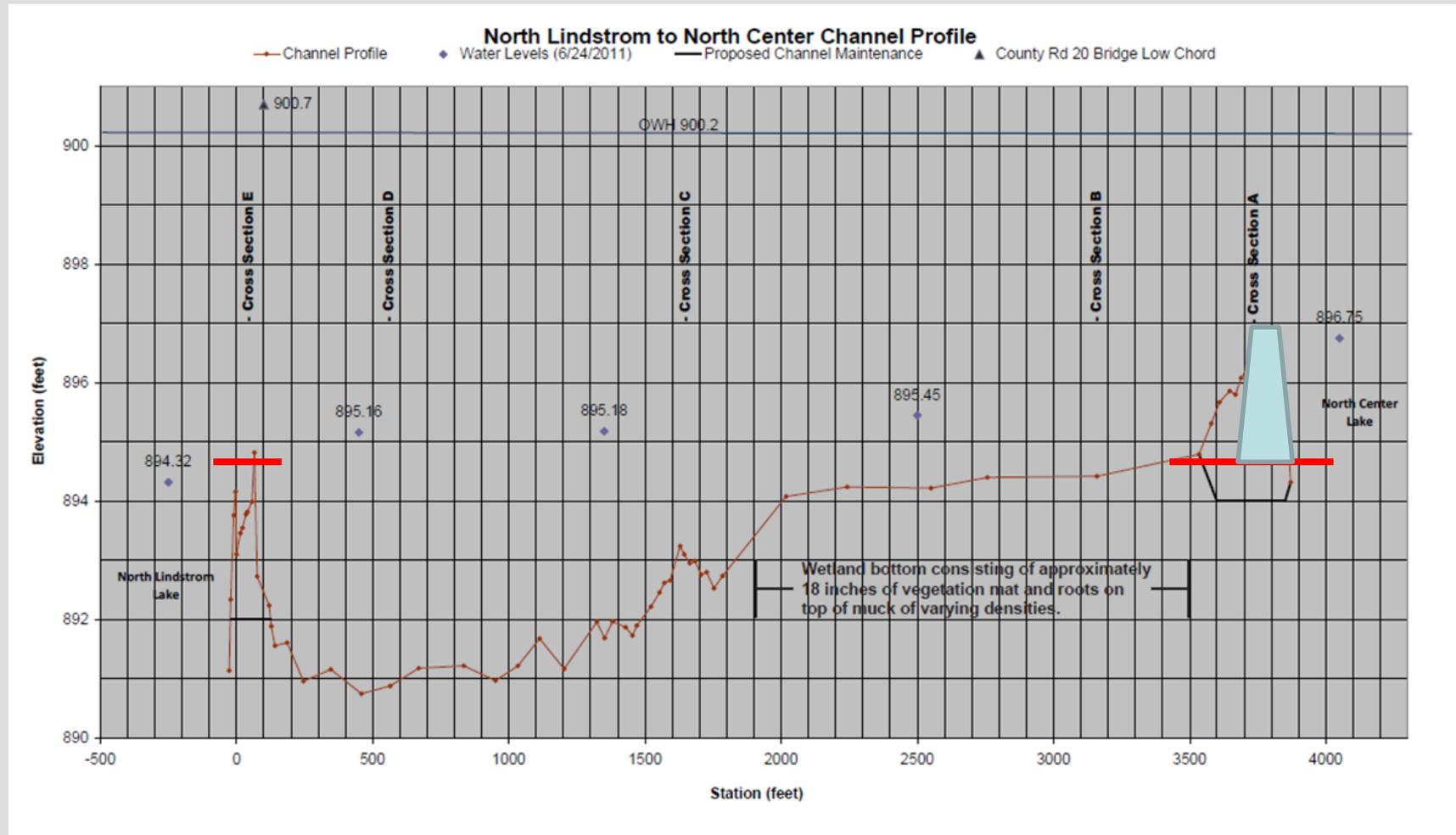
Task Force Recommendation

- Move forward with preliminary design for an option that minimizes impacts to wetlands and water levels
- Design to allow for Pontoon Traffic
- Prepare Plans and EAW for removable weir option
- Also consider a variation of that option that only includes channel widening with no deepening or removable weir

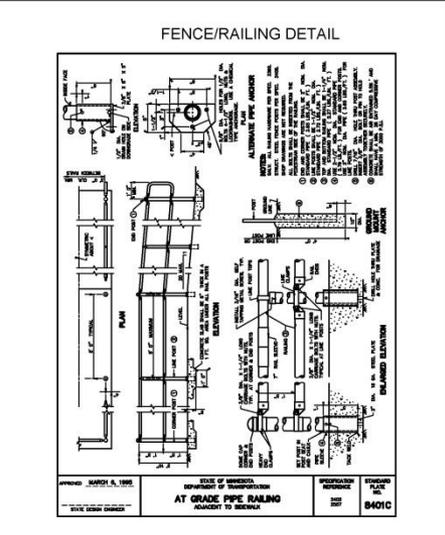
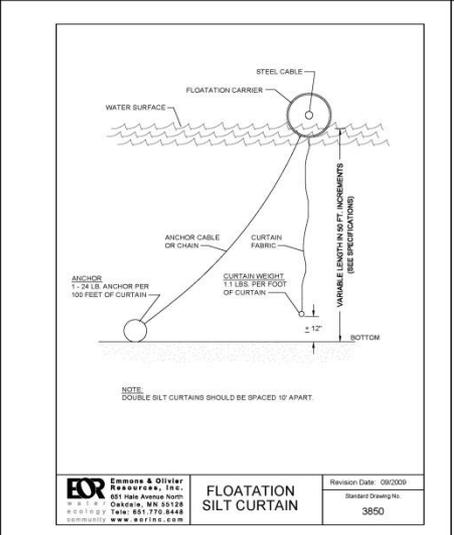
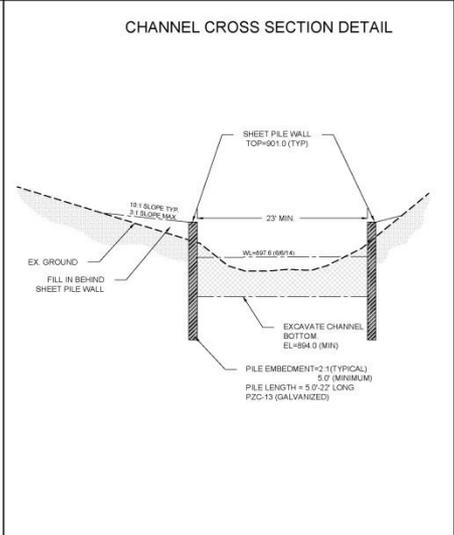
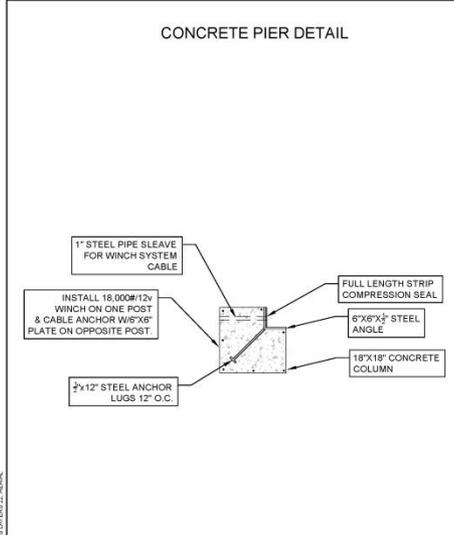
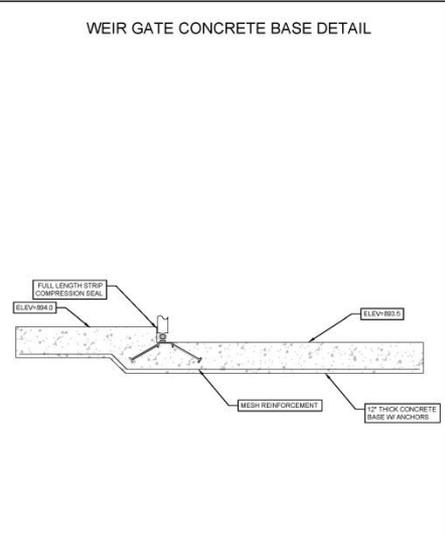
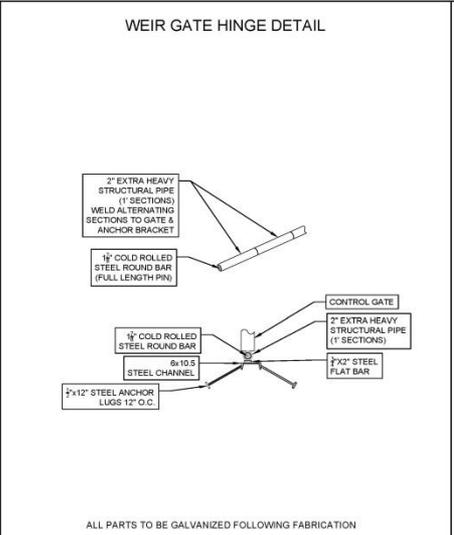
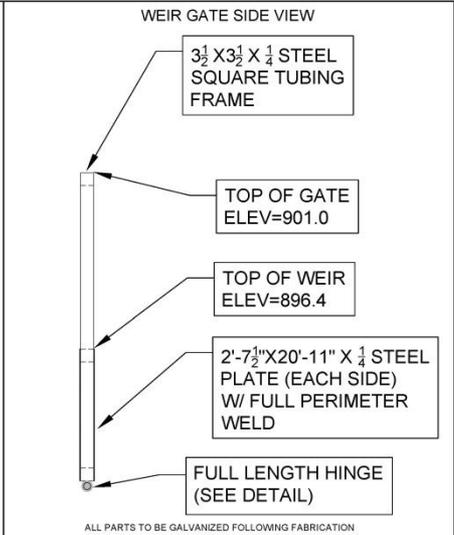
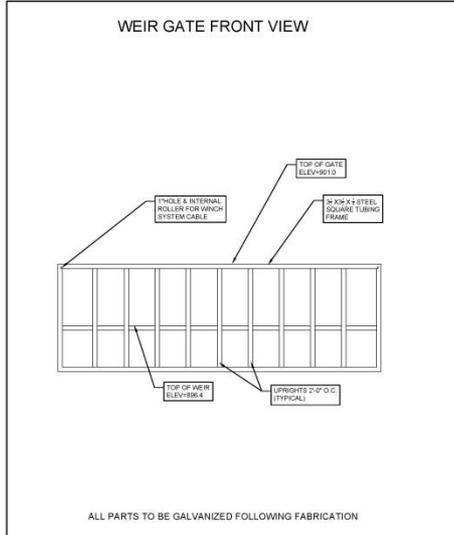


Removable Weir

Lower inlet elevation, maintain deep marsh, add removable Weir



Removable Weir Details



18" x 18" CONCRETE COLUMN
 6" x 6" x 2" STEEL ANGLE
 FULL LENGTH STRIP COMPRESSION SEAL
 1" STEEL PIPE SLEEVE FOR WINCH SYSTEM CABLE
 INSTALL 18,000# 1/2" WINCH ON ONE POST & CABLE ANCHOR W/6"x6" PLATE ON OPPOSITE POST
 2"x12" STEEL ANCHOR LUGS 12" O.C.
 18" x 18" CONCRETE COLUMN
 6" x 6" x 2" STEEL ANGLE
 FULL LENGTH STRIP COMPRESSION SEAL

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 DAY R. HILL
 DATE: 09-26-2014 LICENSE # 24652

SUBMISSION DATE: 09-26-2014
 DESIGN BY: DRAWN BY: JRH
 EOR PROJECT NO:

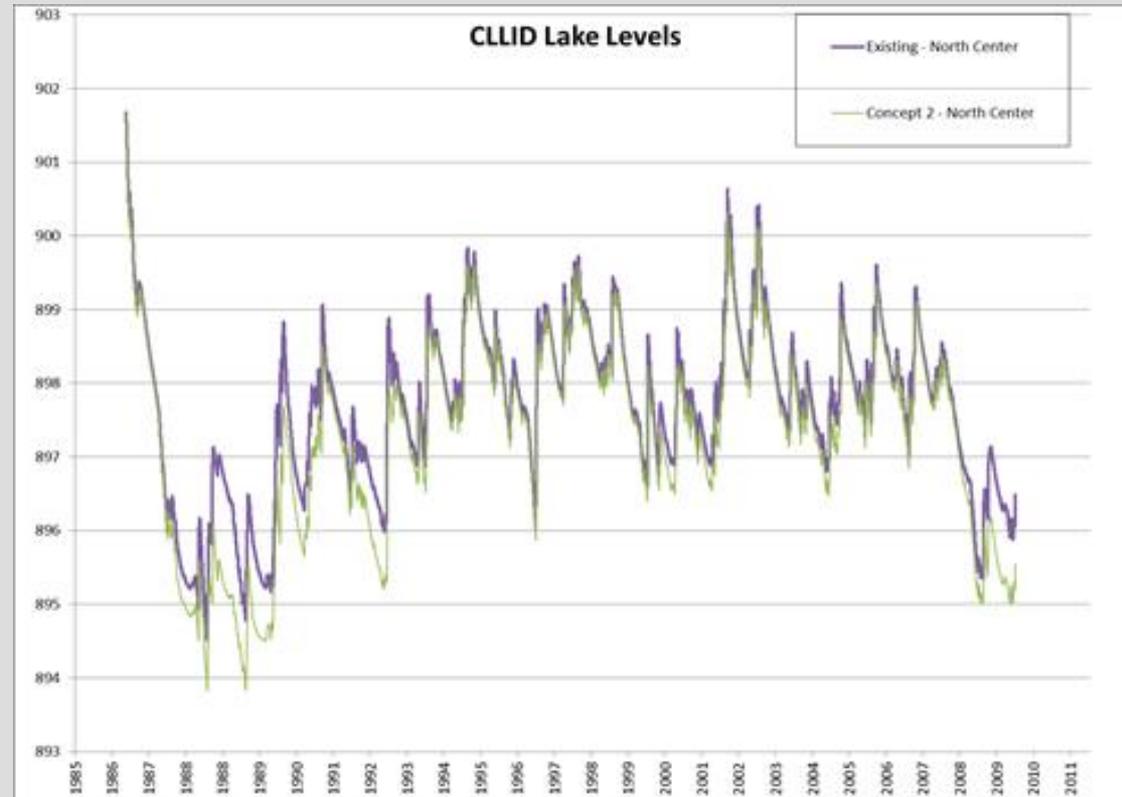
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 Phone: 651.770.8448
 www.eorinc.com

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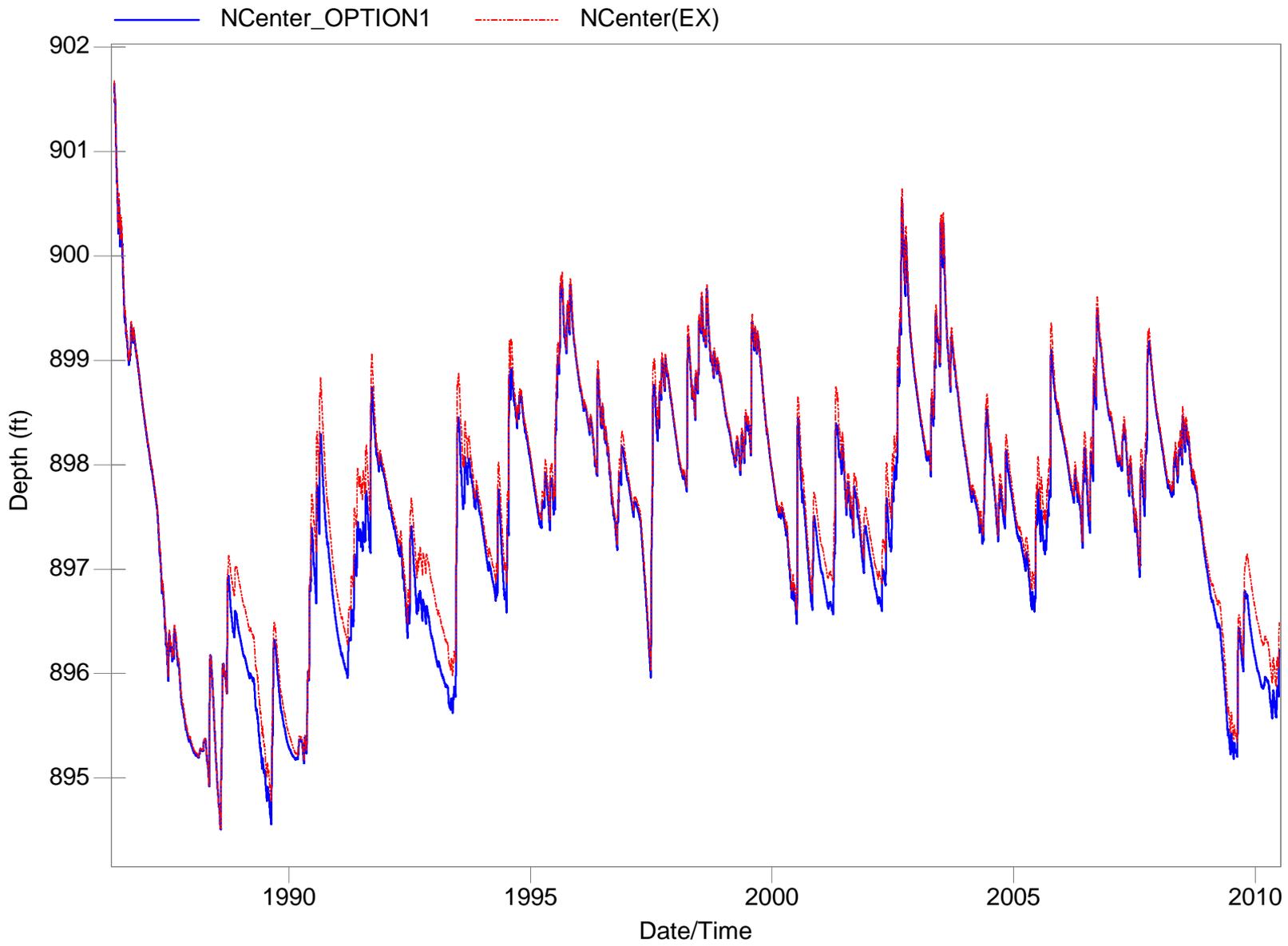
NORTH CENTER - NORTH LINDSTROM CHANNEL IMPROVEMENTS
 LINDSTROM TOWNSHIP, CHISAGO CO., MN
 STATE PROJECT NO. CITY PROJECT NO.

DETAILS-OPTION 1 (REMOVABLE WEIR)
 SHEET 03 OF 06 SHEETS

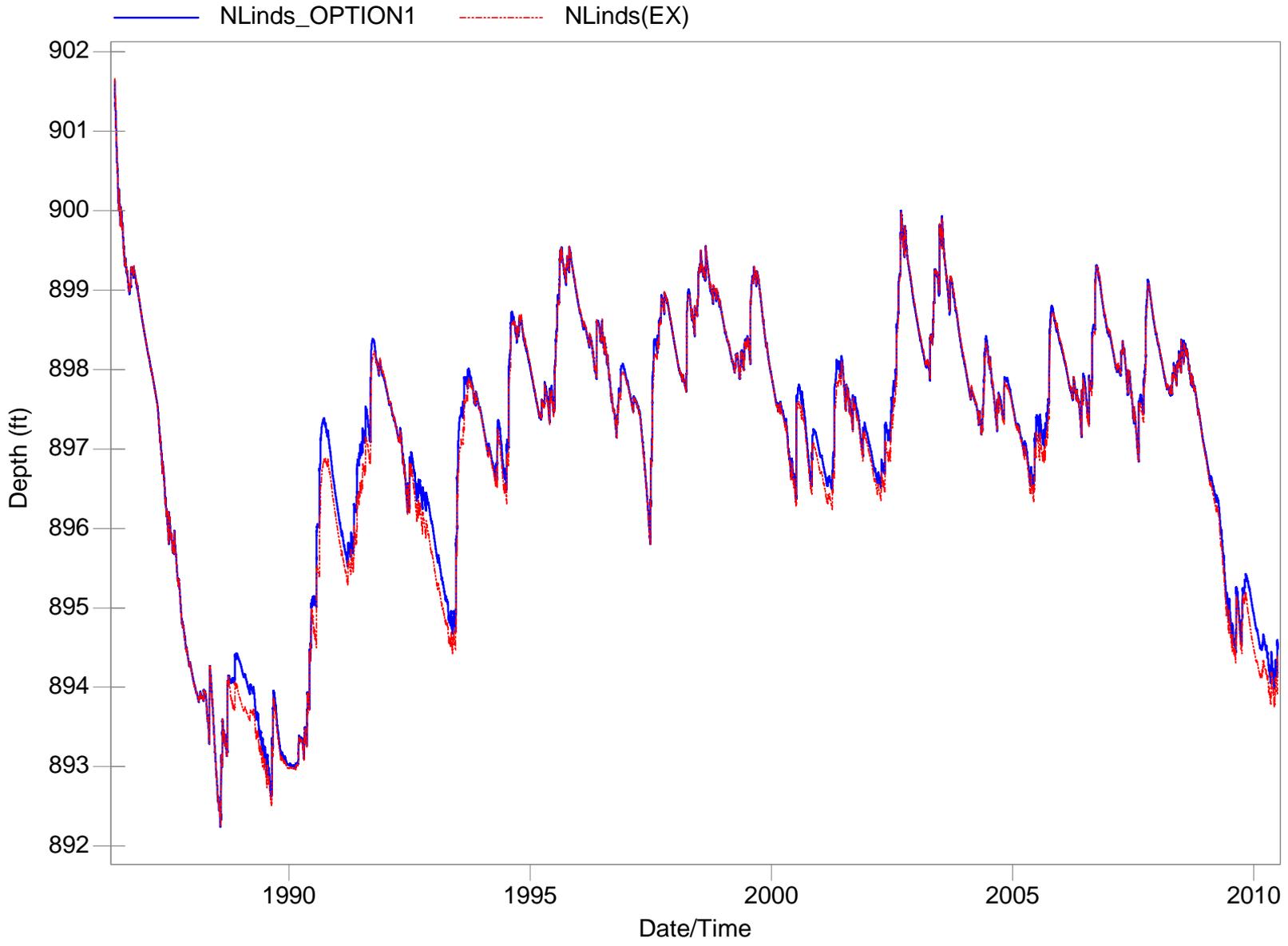
- High water years: 0-3 inches lower.
- Low water years: lake levels trend ~1' lower.



Modeling Results for Removable Weir



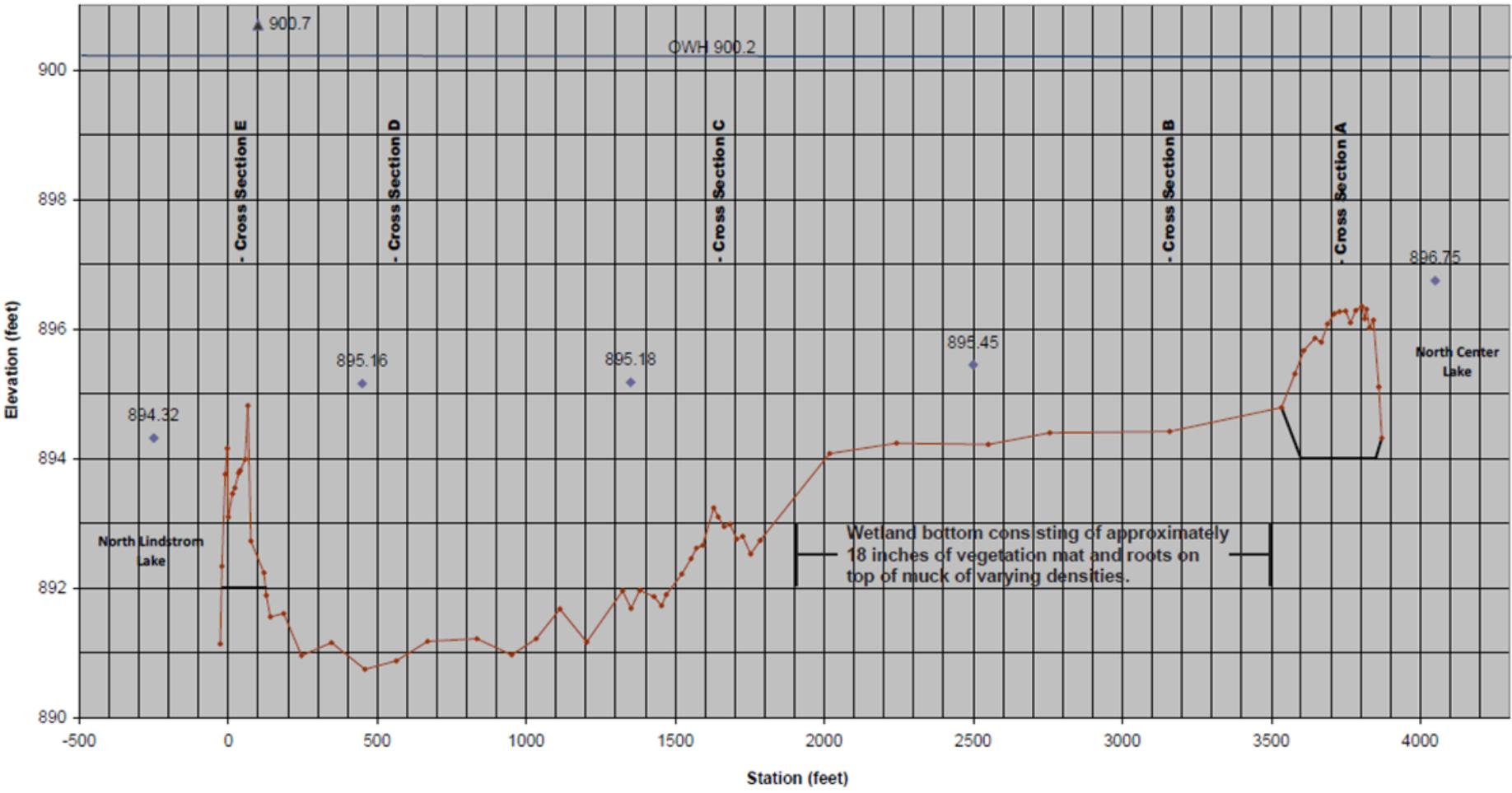
Modeling Results Removable Weir



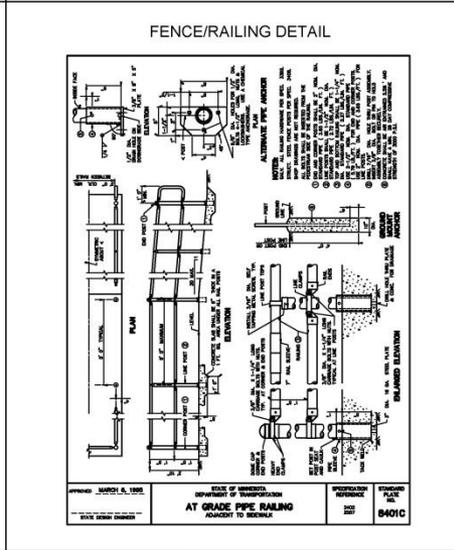
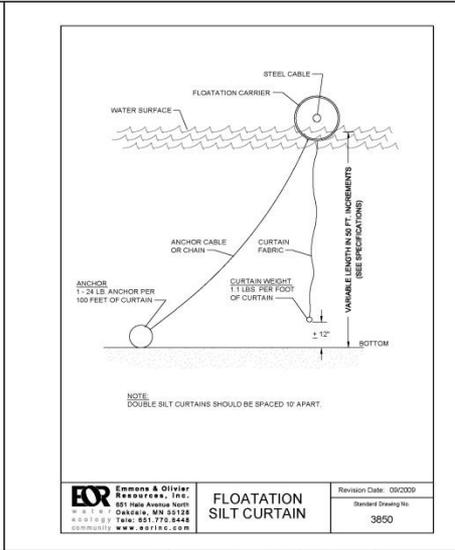
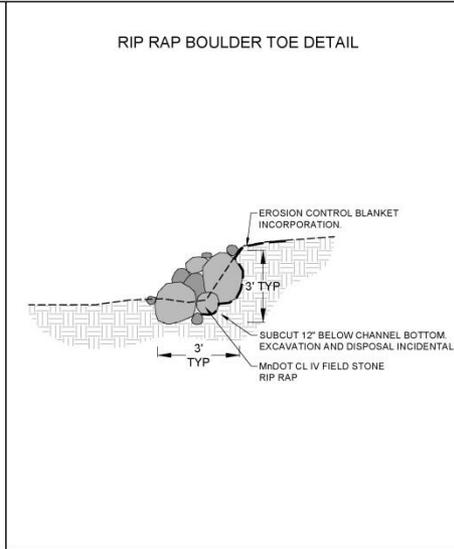
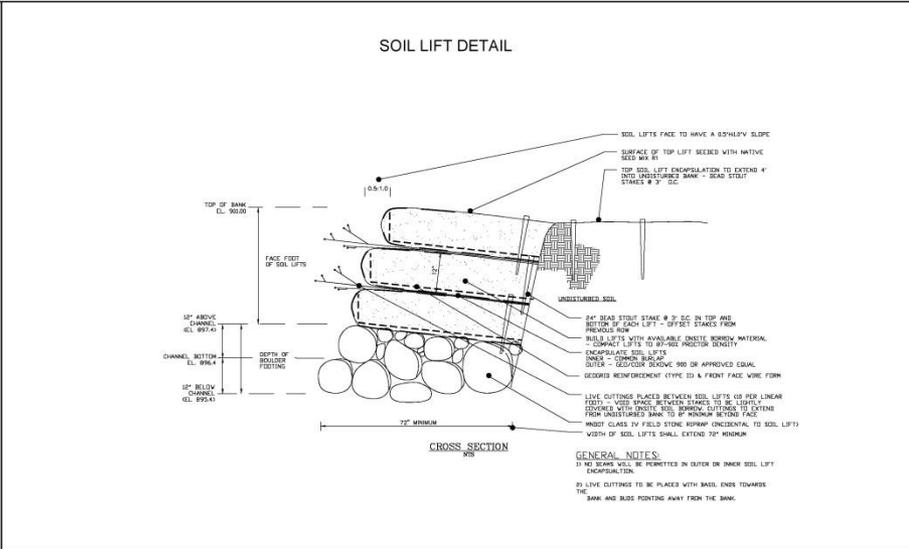
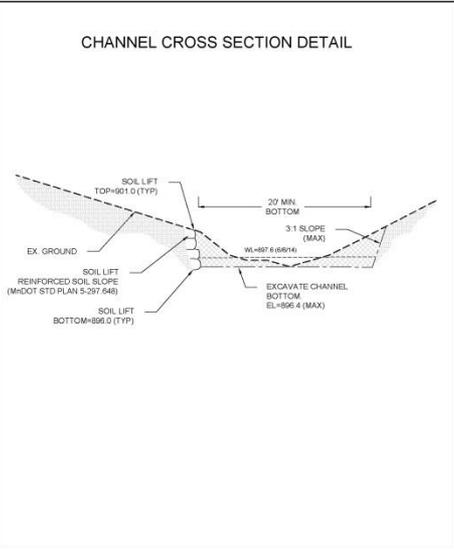
Channel Widening

North Lindstrom to North Center Channel Profile

— Channel Profile ◆ Water Levels (6/24/2011) — Proposed Channel Maintenance ▲ County Rd 20 Bridge Low Chord



Channel Widening Details



FILE NAME: 09/20/2014
 DRAWN BY: JKH
 CHECKED BY: JKH
 PROJECT: CHISAGO LAKES LAKE IMPROVEMENT DISTRICT CHANNEL WIDENING

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JAY R. HILL
 DATE: 09-29-2014 LICENSE # 24552

SUBMISSION DATE: 09-29-2014
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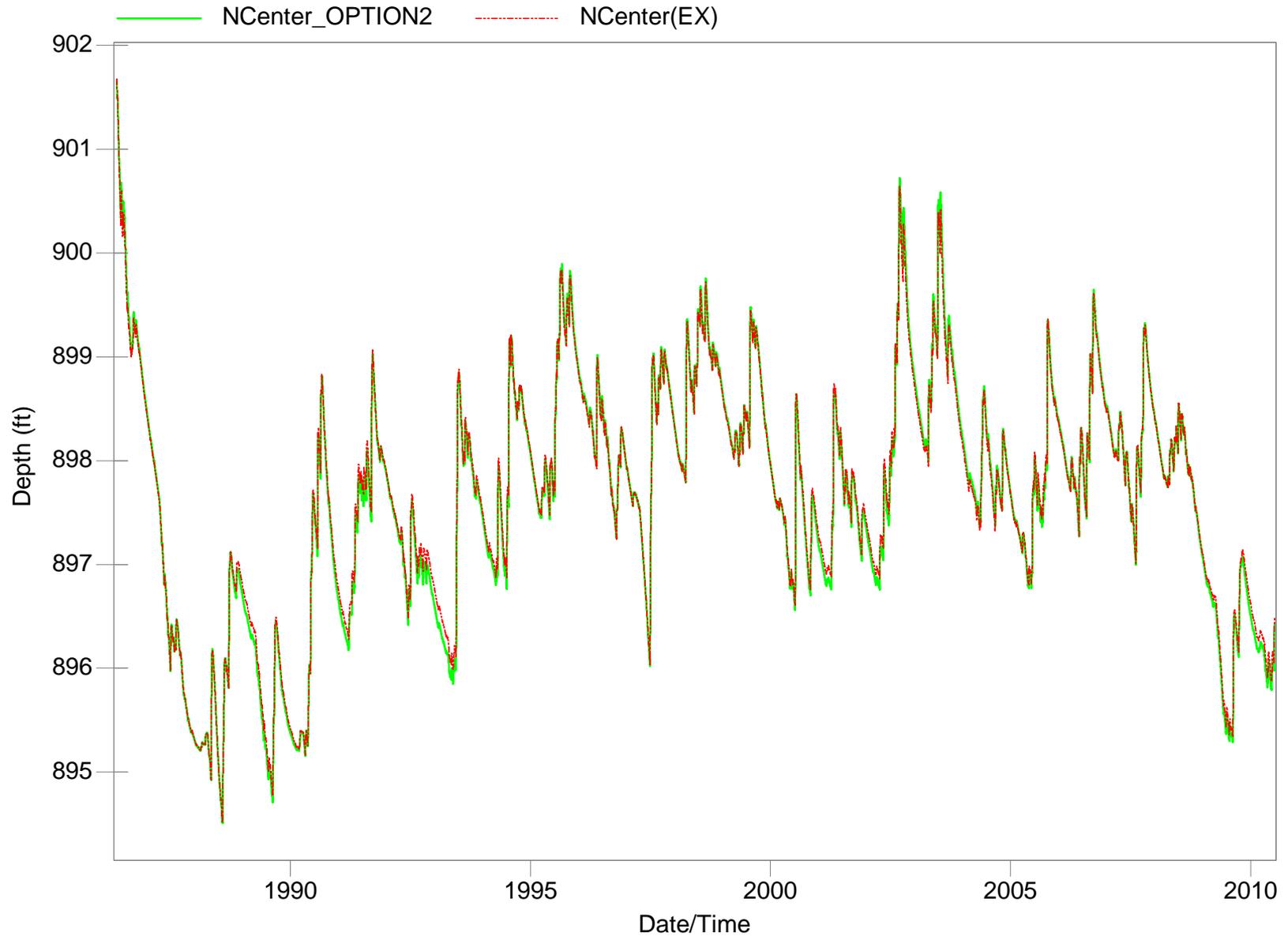
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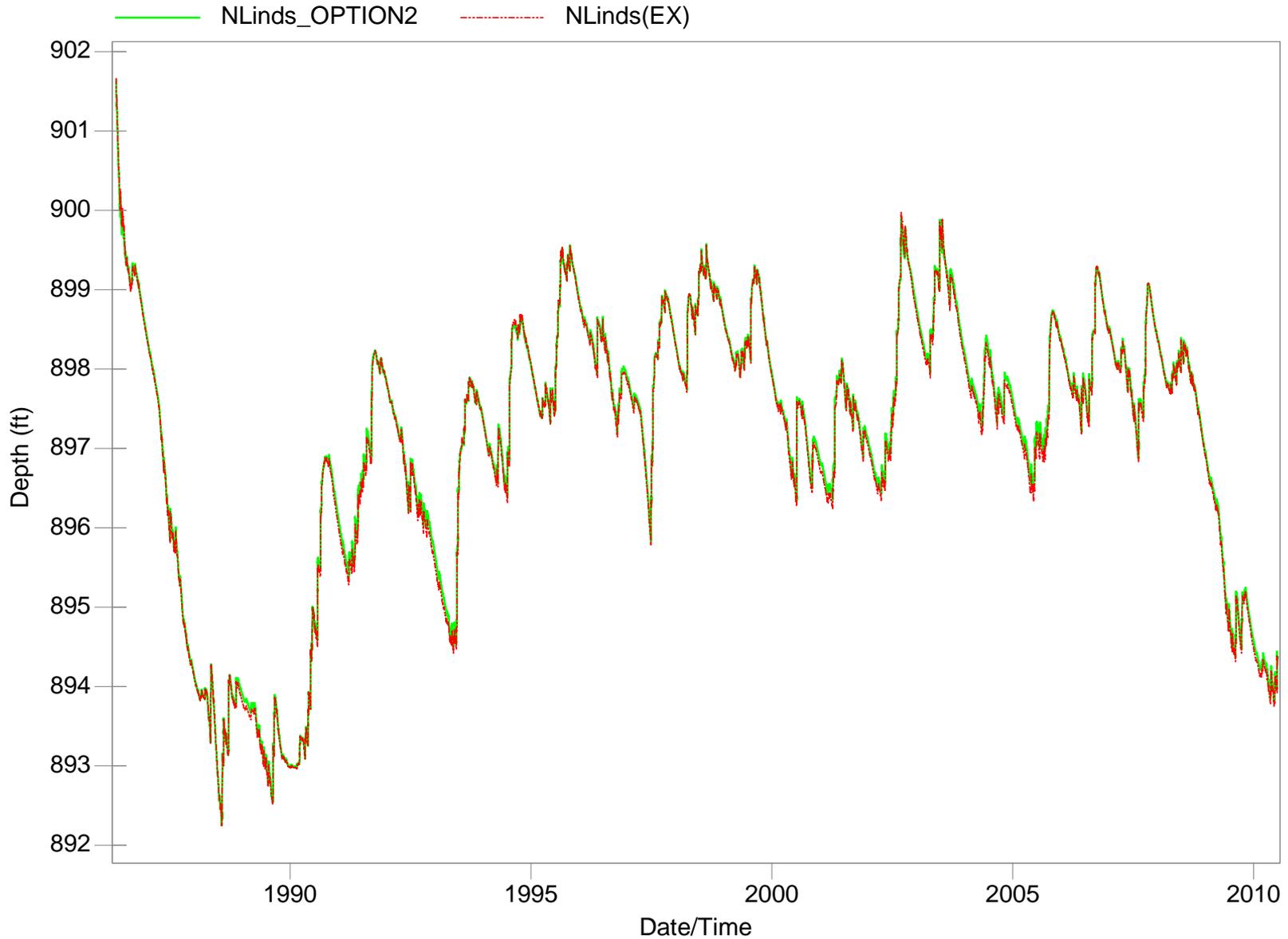
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DETAILS-OPTION 2 (CHANNEL WIDENING)
 SHEET 04 OF 06 SHEETS

Modeling Results Channel Widening



Modeling Results Channel Widening



*Preliminary Estimated Navigation of Concept Designs

Existing Condition – 0% Navigability

Removable Weir ~ 65% Navigability

Channel Widening ~ 40% Navigability

*Navigability based on 1' of water depth, emergent vegetation could still hinder navigation



Removable Weir

- Preliminary Estimated Construction Cost = \$634,000
- North Center Lake – max water level difference 0.58-feet lower
- North Center Lake – average water level difference 0.15-feet lower
- Weir would be opened when both North Center and North Lindstrom are at or above 897.0

Additional Considerations

- Costs do not include engineering, legal, easements, staff time, etc.
- Although the water may be deep enough, emergent vegetation downstream of the project may hinder boat traffic under certain water levels
- Removable weir will have some leakage
- Removable weir will require ongoing operations and maintenance

Channel Widening

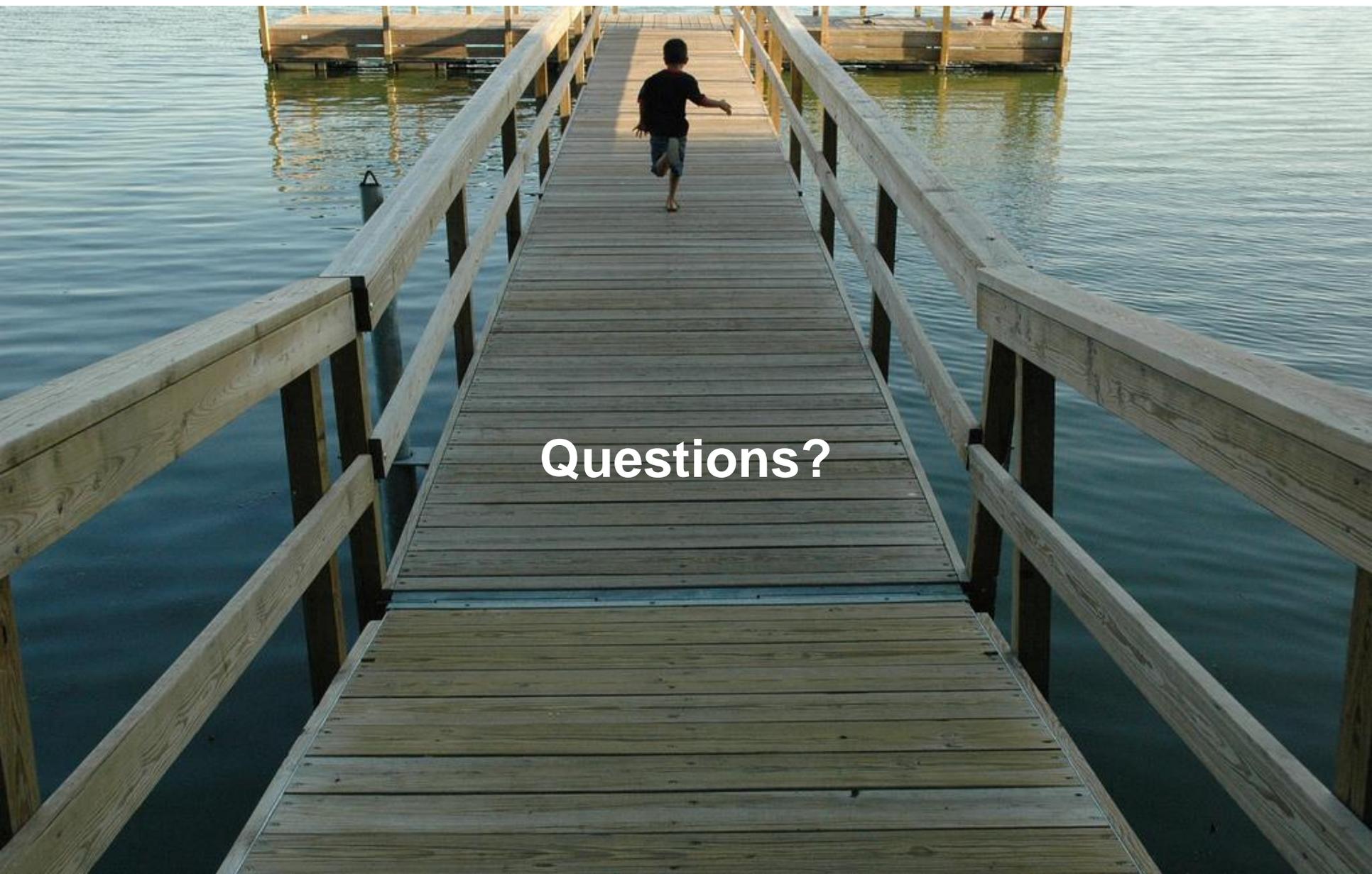
- Preliminary Estimated Construction Cost = \$232,000
- North Center Lake – max water level difference 0.19-feet lower
- North Center Lake – average water level difference 0.02-feet lower
- Channel outlet elevation would remain 896.4 as it currently does

Additional Considerations

- Costs do not include engineering, legal, easements, staff time, etc.
- Although the water may be deep enough, emergent vegetation downstream of the project may hinder boat traffic under certain water levels
- Channel would require periodic inspection and maintenance
- Concerns about maintaining outlet elevation without a fixed overflow
- No-wake would need to be enforced

Finish Planning Efforts and Environmental Assessment

- **Finalize 70% Design Plans, Modeling and Cost Estimates (95% Complete)**
- **Prepare EAW and go through Public Notice and Comment process (based on direction of Board)**
- **Dependent on outcome of EAW order final design and specifications for the project**

A young boy in a dark shirt and shorts is running away from the camera on a long wooden pier that extends into a body of water. The pier has wooden railings on both sides. The water is calm and reflects the light. In the background, there are other wooden structures, possibly docks or piers, and a person is visible sitting on one of them. The overall scene is peaceful and suggests a natural, outdoor setting.

Questions?