

**October 20, 2010**

# Stevens Point Recycles, Reuses, and Reaps the Benefits of Abandoned Infrastructure

**Kim Halverson, City of Stevens Point  
Sandra Kimmler, Donohue & Associates, Inc.**



**CITY OF STEVENS POINT  
Water & Wastewater Department**

# Project History and Background

- City of Stevens Point Information
- Paper Mill
  - 1995 Water Contract
  - 2003 Acquisition of Land and Infrastructure



# Option Comparison Model

Option	Description	Relative Disruption			Relative Cost			Relative Benefit		
		L	M	H	L	M	H	L	M	H
A	Connect to closest manhole and route through system			X			X		X	
B	Construction Dixon Street diversion			X			X		X	
C	Use abandoned Patch Street water main as new force main		X			X			X	
D	New lift station at Plover River, pump to Highway 66	X				X				X
E	New lift station at Plover River, pump to Reserve Street	X				X				X
F	Construct new interceptor from study area to WWTP			X			X		X	
G	Construct new interceptor and treat flow in Plover			X			X		X	

# The Challenge

- Needed to use existing infrastructure
- Growing community
- Needed redundancy
- Recently-completed bike path on route
- Needed to minimize inconvenience for local businesses and residents

# Innovative Alternative

- Unused water main along part of route
- Solution: convert water main to force main by lining the interior

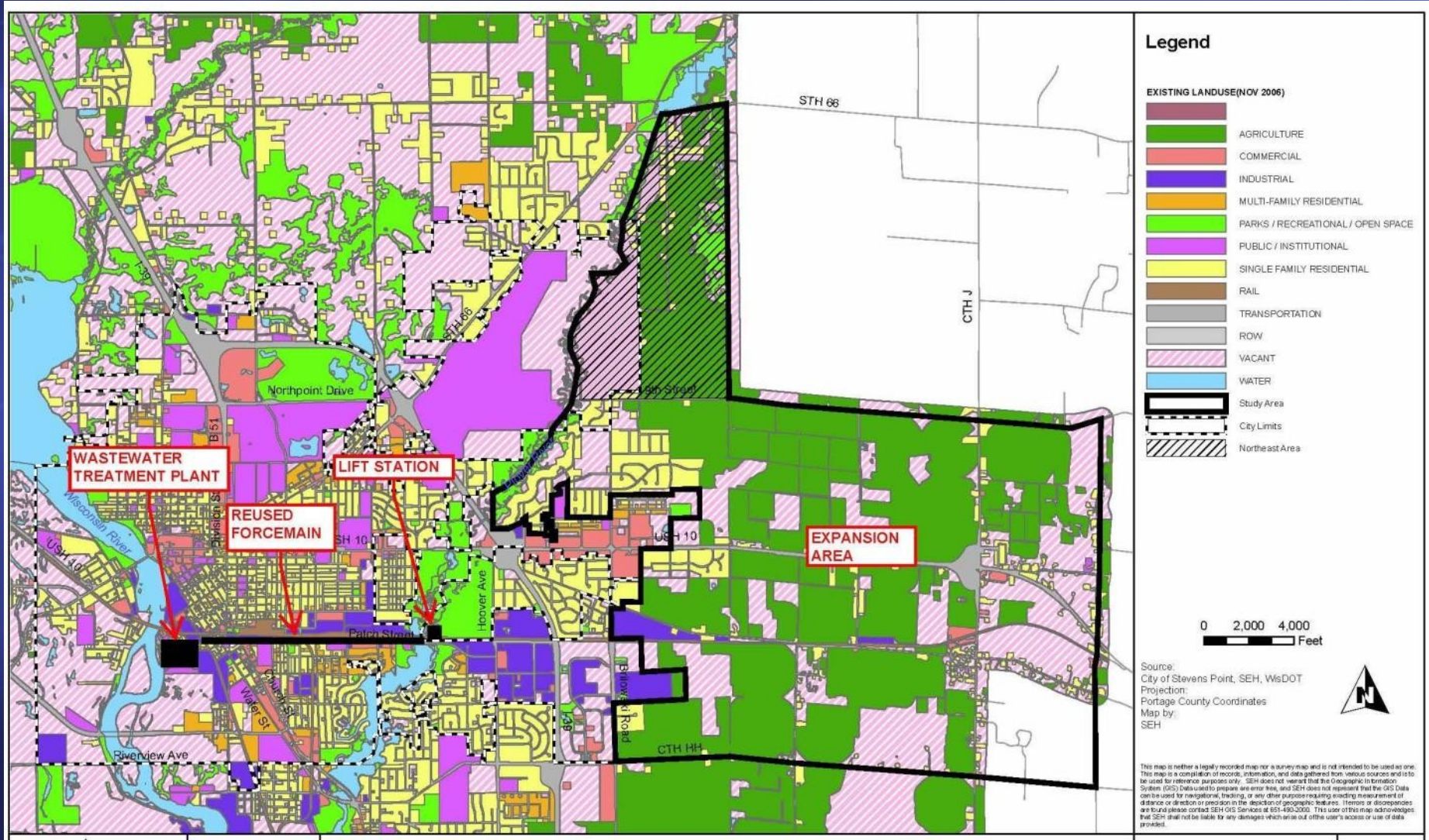
*Innovative reuse: greener, cheaper, less disruptive*

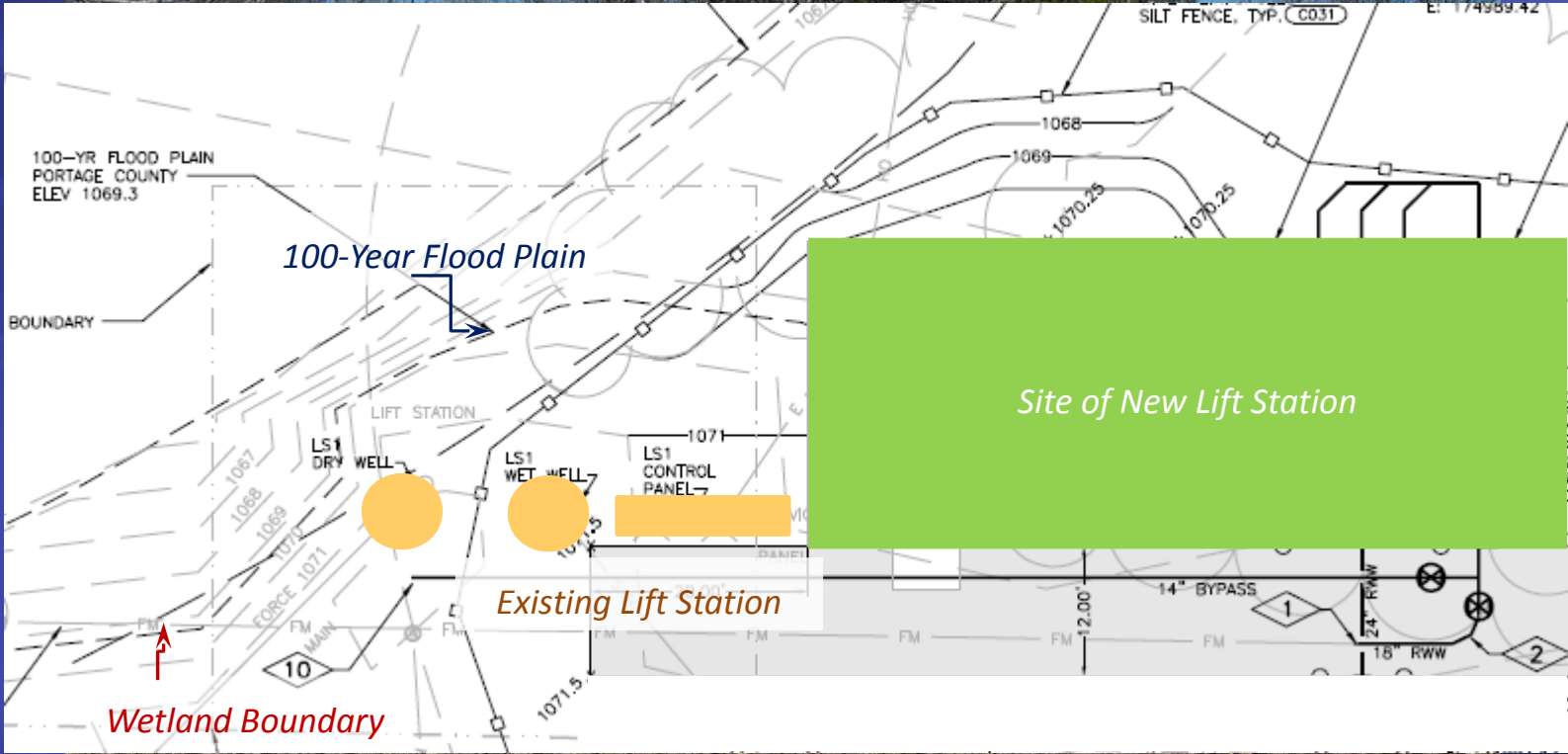


# The Challenge

- Needed to use existing infrastructure
- Growing community
- Needed redundancy
- Recently-completed bike path on route
- Needed to minimize inconvenience for local businesses and residents

# Land Use Model





# The Challenge

- Needed to use existing infrastructure
- Growing community
- Needed redundancy
- Recently-completed bike path on route
- Needed to minimize inconvenience for local businesses and residents

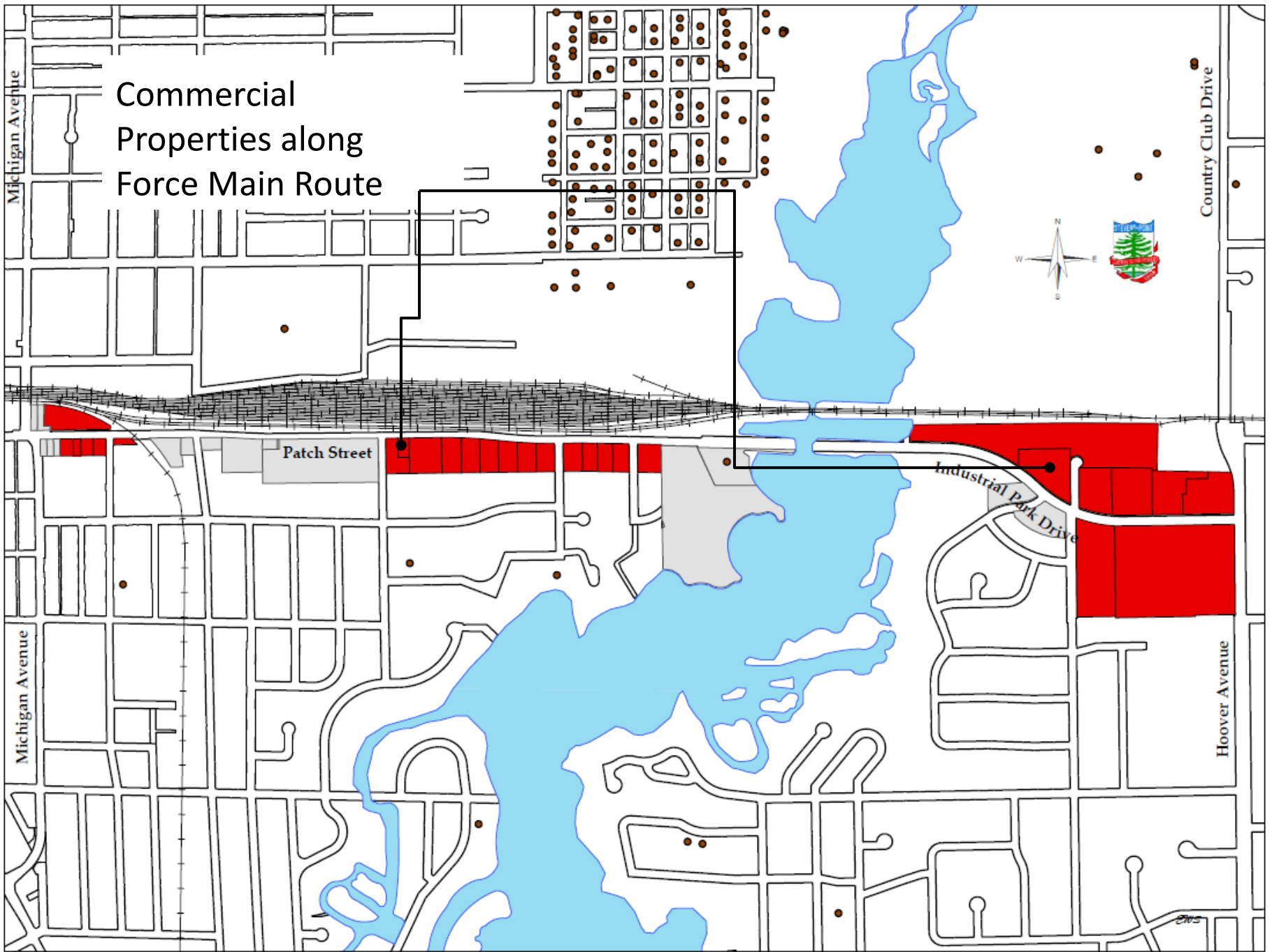
# Newly-Constructed Bike Path

- Constructed in 2007
  - Extends from the Plover River along Industrial Park Road
- The City did not want to disturb the new bike path



# The Challenge

- Needed to use existing infrastructure
- Growing community
- Needed redundancy
- Recently-completed bike path on route
- Needed to minimize inconvenience for local businesses and residents



Commercial  
Properties along  
Force Main Route

Patch Street

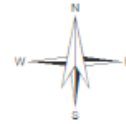
Industrial Park Drive

Hoover Avenue

Country Club Drive

Michigan Avenue

Michigan Avenue



# The Solution

Stevens Point, WI

Lift Station and Force Main

Patch Street Water Main Conversion

New Gravity Sewer

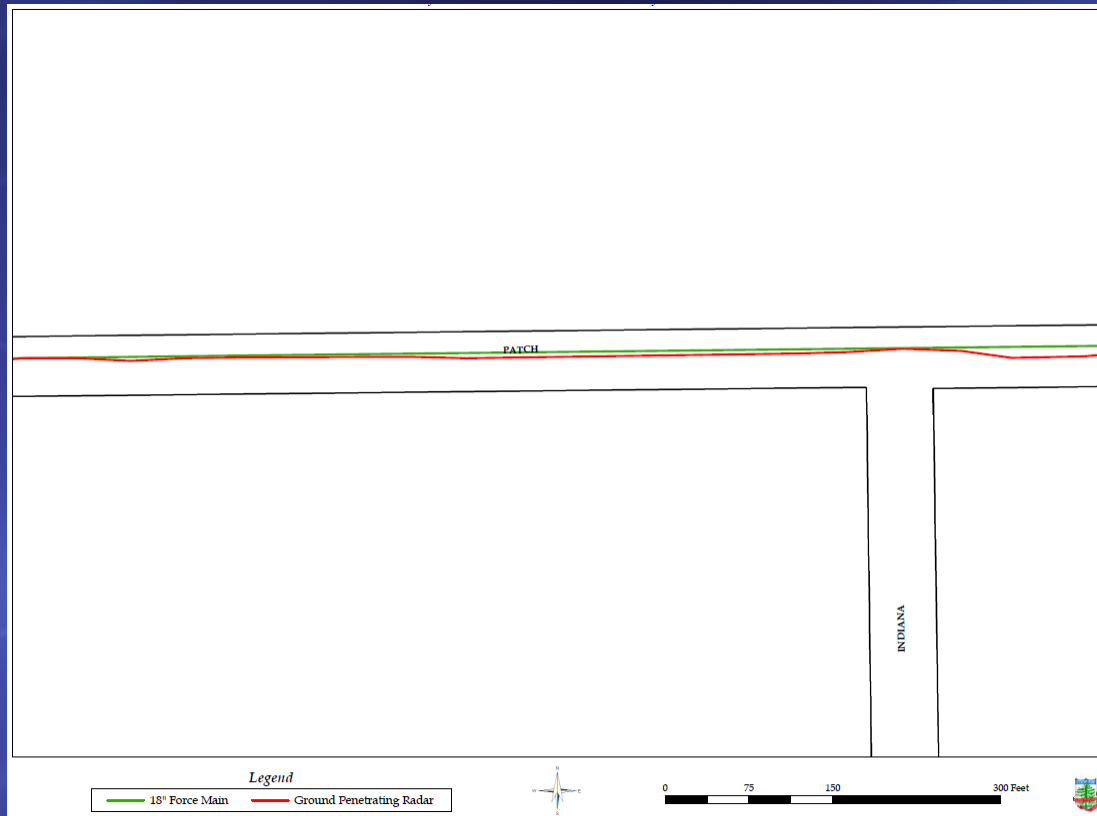


# Design Challenges

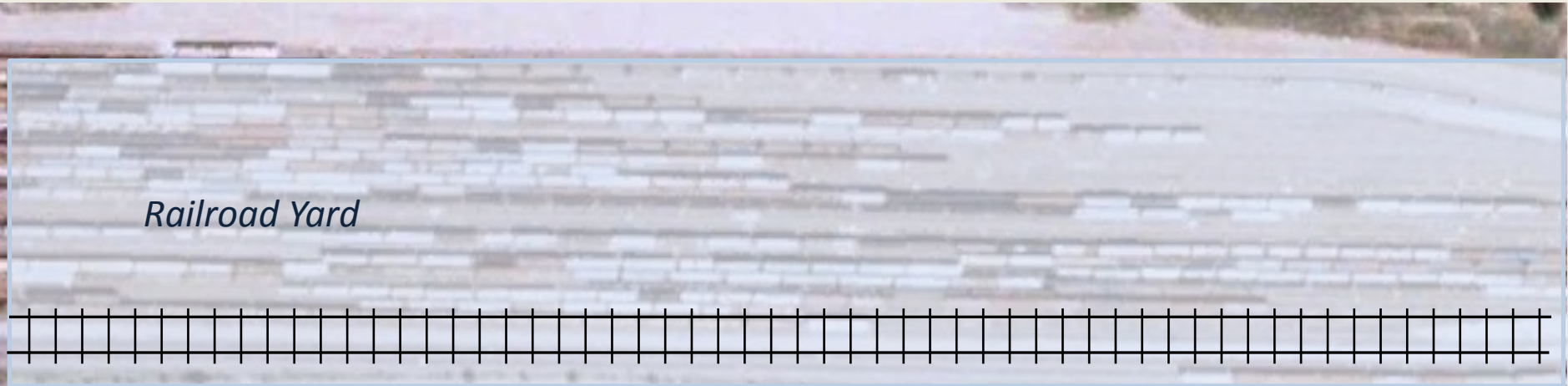
- Had to determine the condition, location, and elevation of existing water main
  - Televised water main. View bends, obstructions, or anything that would hinder lining.
  - Ground Penetrating Radar (GPR)



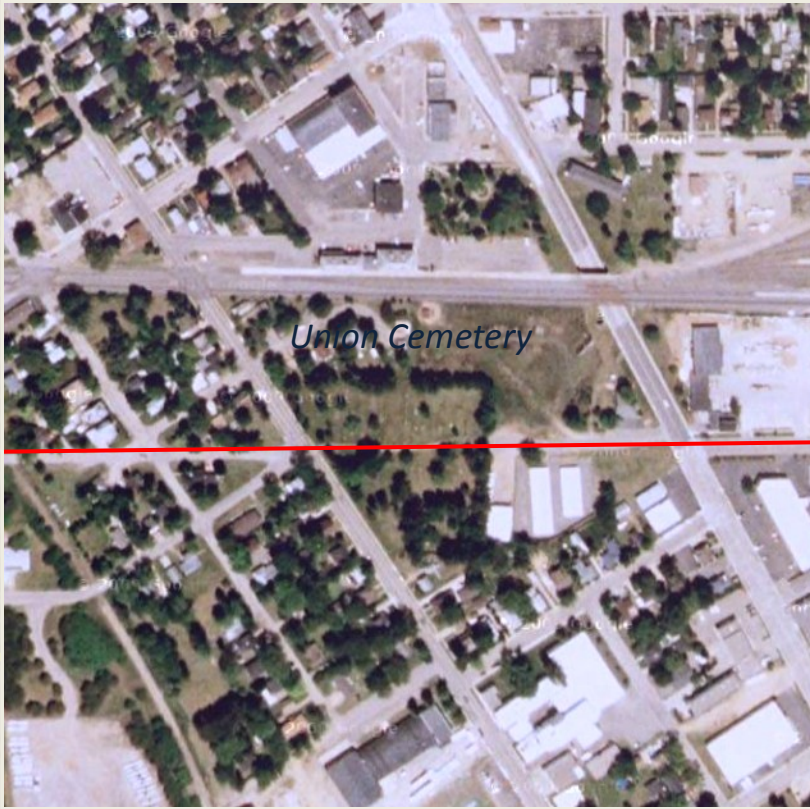
# Ground Penetrating Radar



*Railroad Yard*

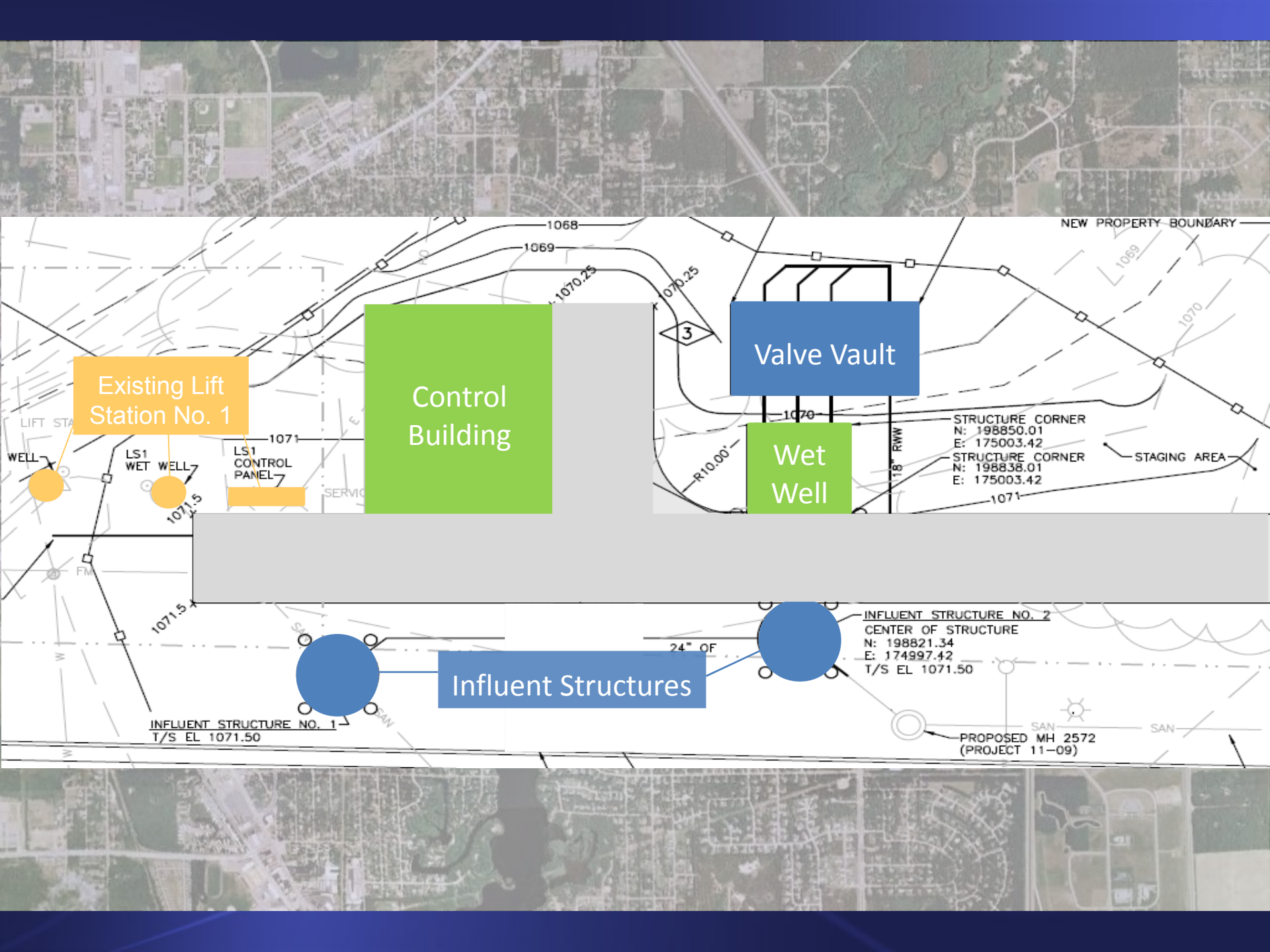






# Liner Evaluation

- Suitable for wastewater
- Satisfied the pressure requirements
  - Internal Design Pressure: 75 psi.
  - Internal Vacuum: -14.4 psi.
- Use materials that minimize “shrink”
- Ability of City to self-perform repairs
- Use vinyl ester resin system with woven glass fiber tube



Existing Lift Station No. 1

Control Building

Valve Vault

Wet Well

Influent Structures

LIFT STA  
WELL  
LS1 WET WELL  
1071.5  
LS1 CONTROL PANEL

INFLUENT STRUCTURE NO. 1  
T/S EL 1071.50

INFLUENT STRUCTURE NO. 2  
CENTER OF STRUCTURE  
N: 198821.34  
E: 174997.42  
T/S EL 1071.50

PROPOSED MH 2572  
(PROJECT 11-09)

STRUCTURE CORNER  
N: 198850.01  
E: 175003.42  
STRUCTURE CORNER  
N: 198838.01  
E: 175003.42

NEW PROPERTY BOUNDARY

STAGING AREA

24" OF

R10.00'

18" RWWS

3

LIFT STA

WELL

LS1 WET WELL

1071.5

LS1 CONTROL PANEL

SERVIC

1071

1071.5

1068

1069

1070.25

1070.25

1070

1071

1069

1070

1071

W

SAN

SEAN

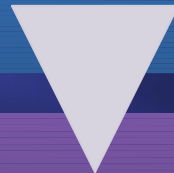
SAN

SAN

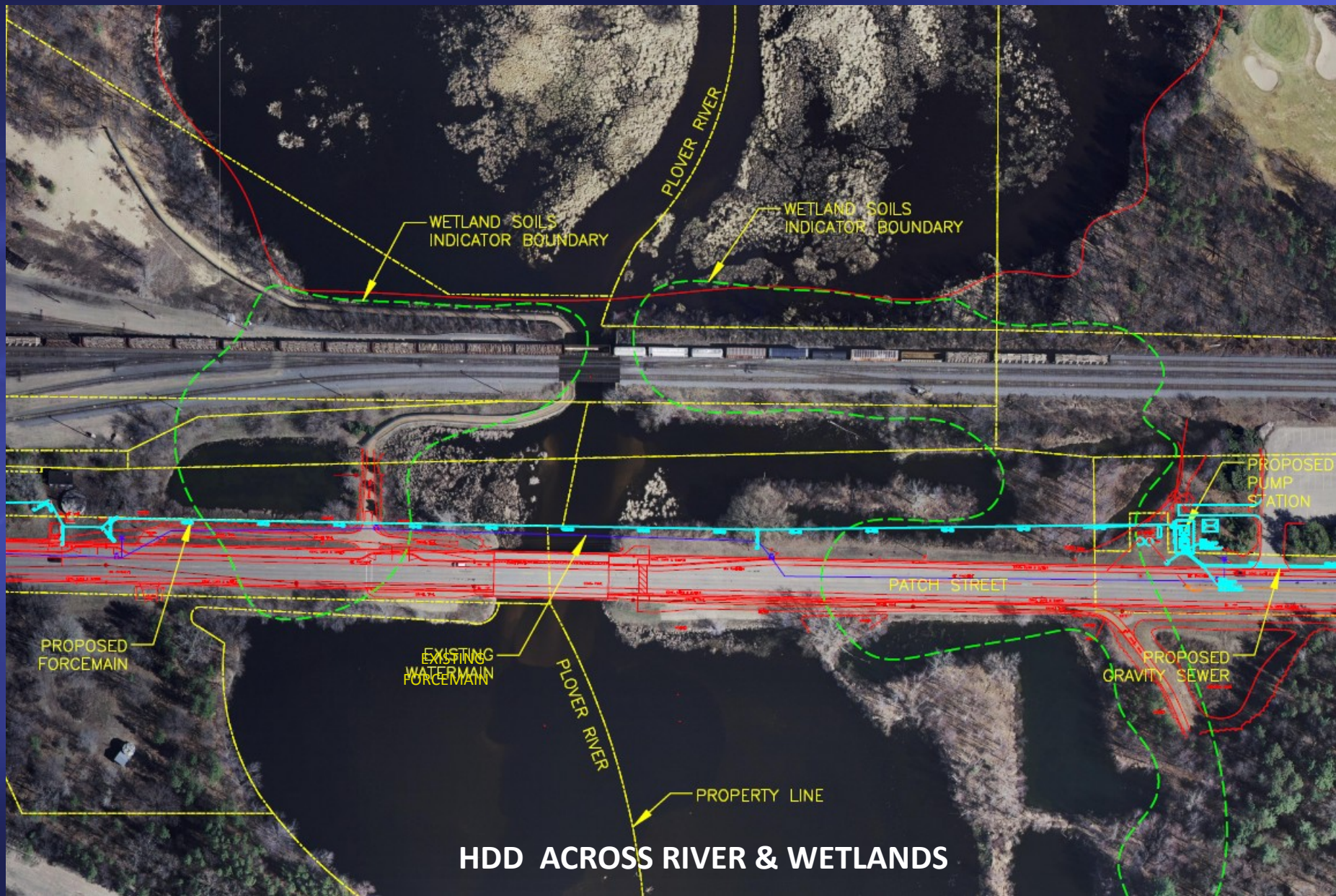
# Contract Coordination



Bidding



One Contractor for  
Two Designs



**HDD ACROSS RIVER & WETLANDS**

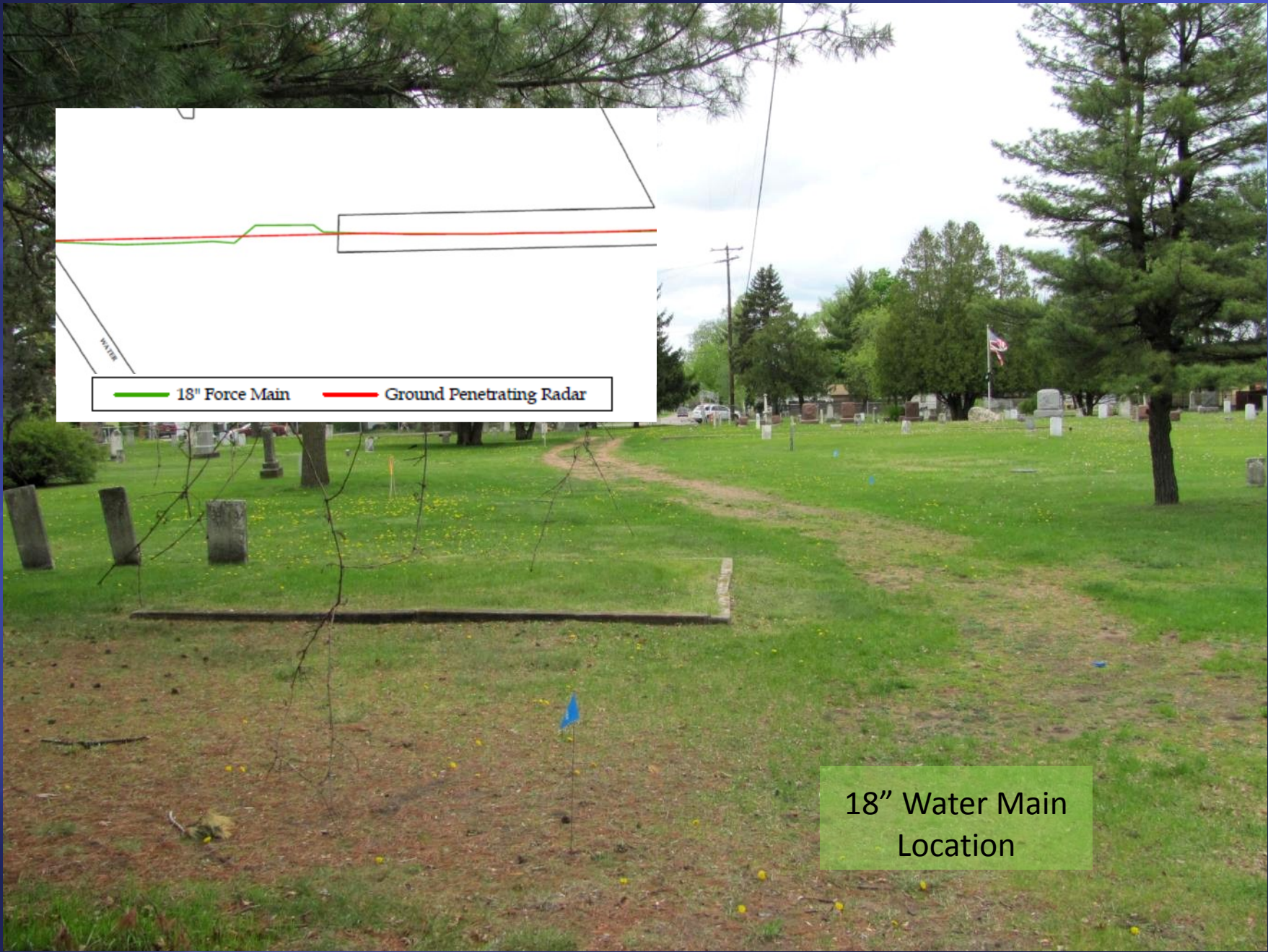
# Construction Challenges

- Discovery of the proximity of water main to rail road tracks concurrent with construction of force main under river
- Added new segment to contract



# Construction Challenges

- Leaky pipe joints
  - Could not use pressure to dewater pipes
- Unforeseen pipe bends
  - Could not line bends
  - 12 bends outside cemetery
  - 2 bends in cemetery



— 18" Force Main — Ground Penetrating Radar

18" Water Main  
Location

# Construction Challenges

- Leaky pipe joints at connection of new DI pipe and old CI pipe
- Excavate and replace
- The mystery of the “sinking” patches



# Construction Challenges

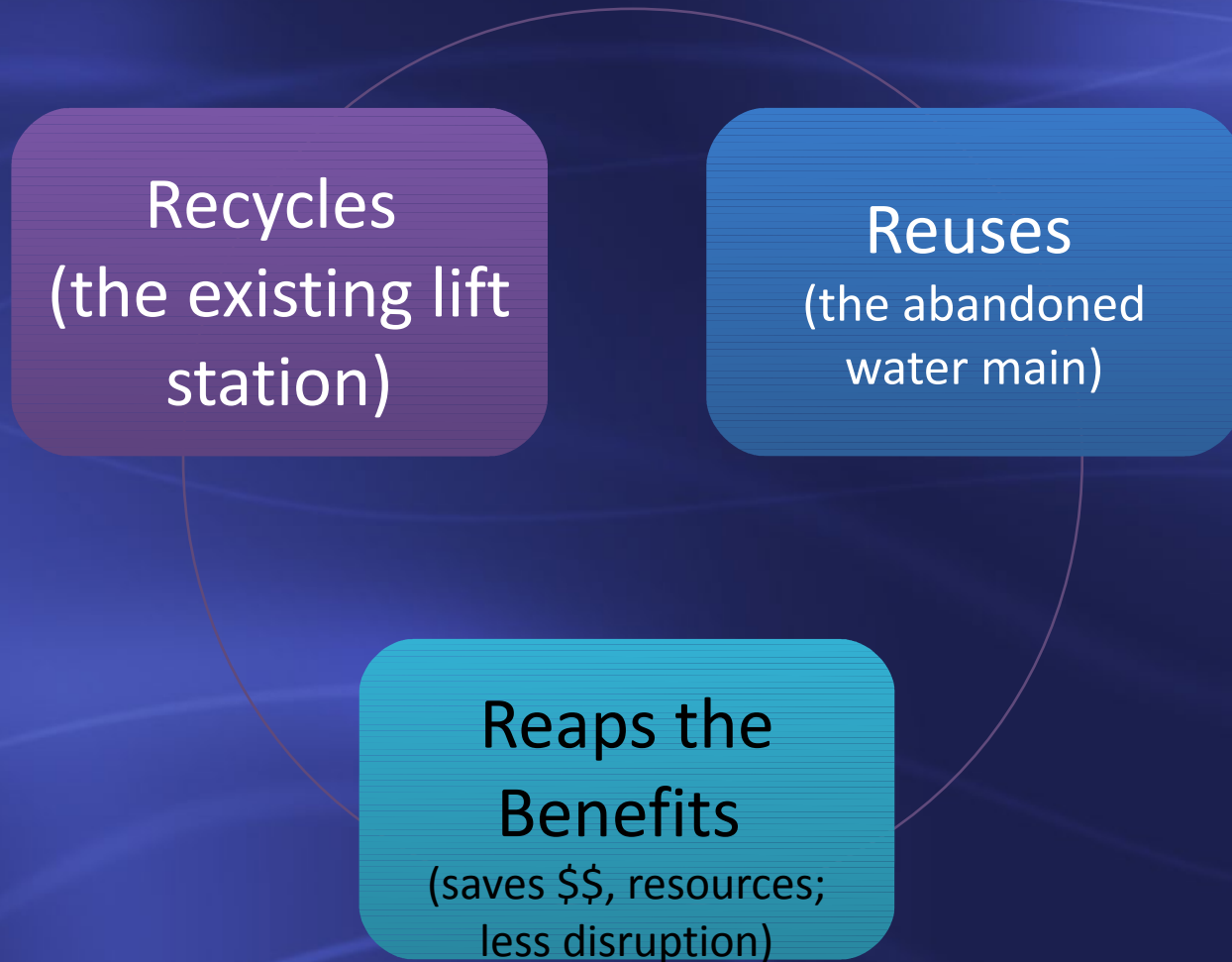
- Residents frustrated with longer-than-anticipated construction time



# In the End...

- Reusing the existing water main:
  - Saved ~**\$500,000** over conventional construction
  - Used ~**60%** less energy to construct
  - Reused **7,200 LF** of 18-inch water main
  - Preserved ~**15,000 SY** of asphalt
  - Minimized disruptions in a major transportation and utility corridor
- Coordinating construction contracts saved \$\$

# *The City of Stevens Point*



Questions?