



Public Informational Meeting

January 13, 2016

7:00 PM

Saginaw County Public Works Commissioner

Brian J. Wendling



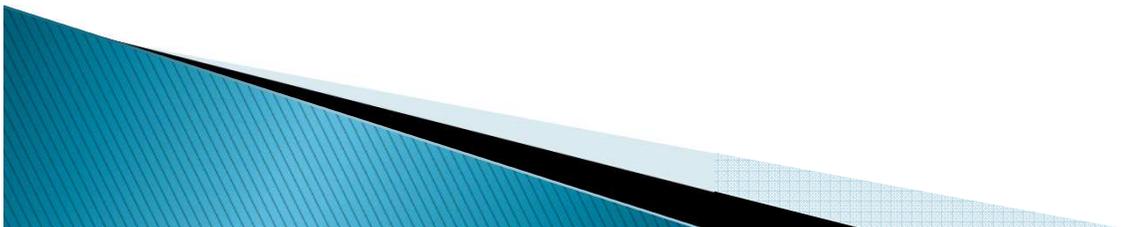
# Purpose of Meeting

- ▶ To inform the landowners in drainage district of the proposed drain improvements
- ▶ Receive input and comments from the landowners based on the proposed project



# Meeting Agenda

- ▶ Background of Zehnder Drain
- ▶ Drainage District
- ▶ Survey and Design Approach
- ▶ Proposed Drain Improvements
- ▶ Hydraulics and Hydrology
- ▶ Construction Details
- ▶ Tentative Project Schedule
- ▶ Preliminary Cost Estimate
- ▶ Questions and Comments



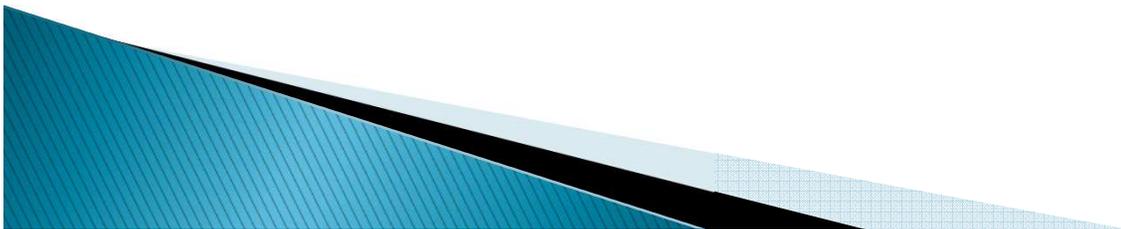
# Background cont'd

- ▶ Drain established in 1916
- ▶ Last petitioned cleanout was in 1960
- ▶ Maintenance completed by County in 2010/11
- ▶ Landowner cleaned 2,000' south of Busch Road in 2015



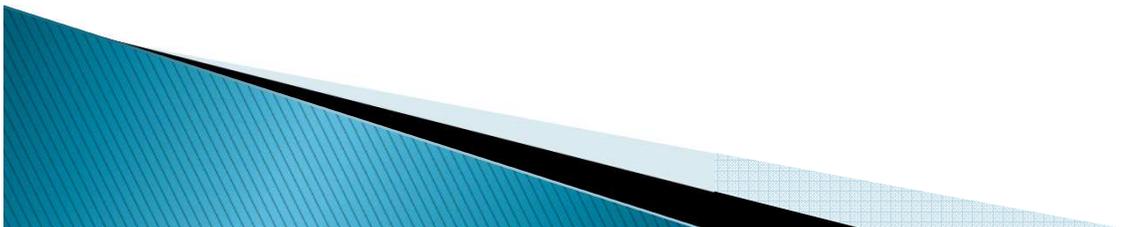
# Background – Zehnder Drain

- ▶ Current petition filed on December 1, 2014  
Circulated by Debra Krafft and signed by 10  
Freeholders
- ▶ Engineering review completed in Spring 2015
- ▶ Drain has good flow of water in most areas,  
some sediment build up, trees within the  
banks, thick brush, and large rocks on drain  
bottom

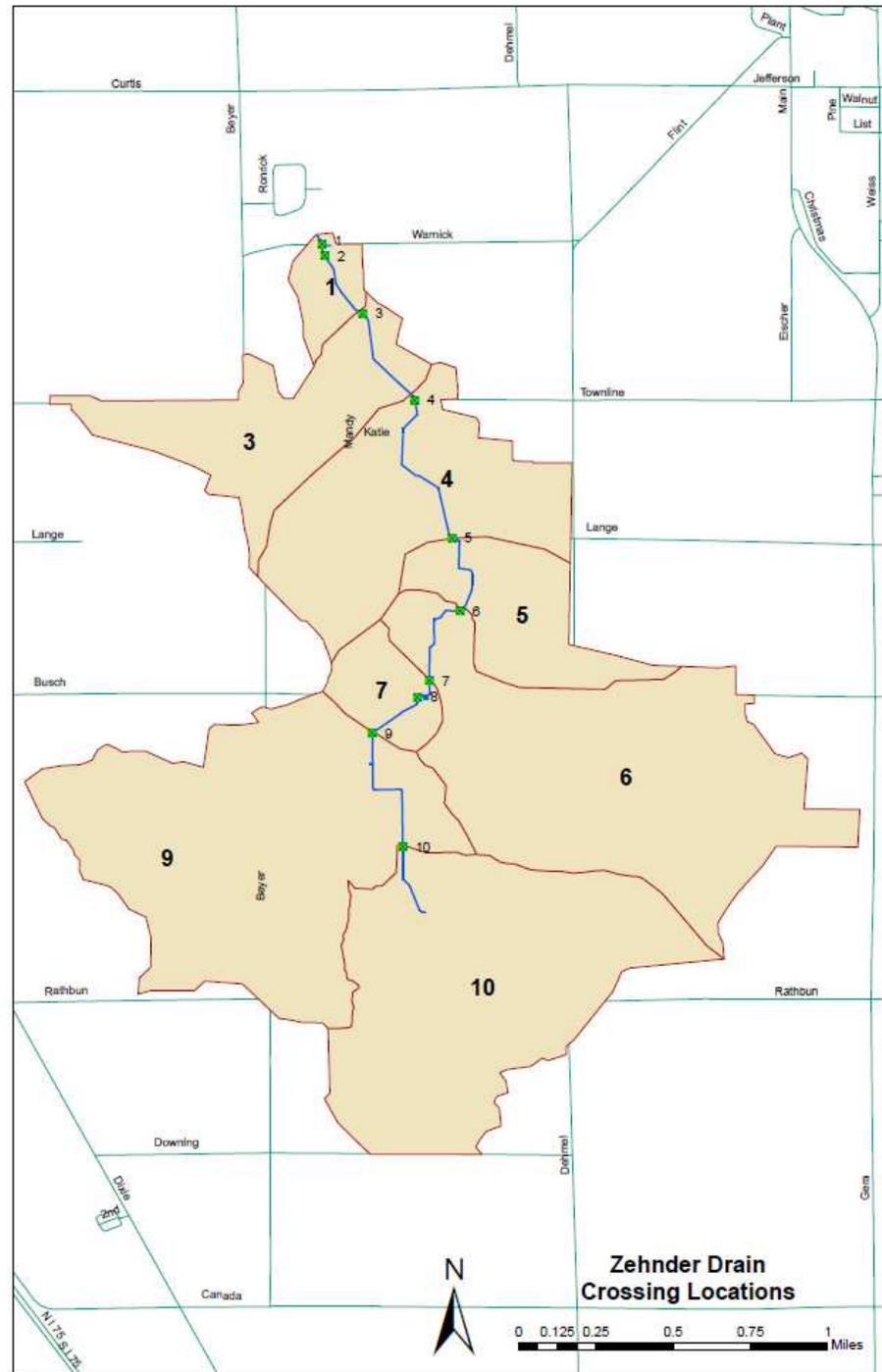


# Drainage Districts

- ▶ What is the Drainage District?
  - Lands that contribute water runoff into the drain
  - Serves as special assessment district
  
- ▶ Drainage District for Zehnder Drain includes:
  - Saginaw County
  - Birch Run Township
  - Frankenmuth Township
  - Landowners

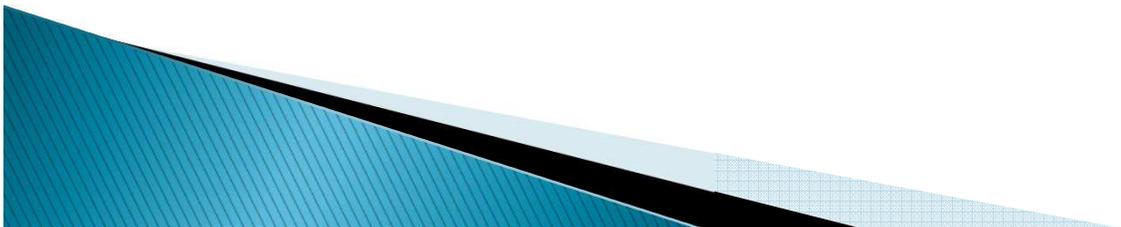


# Drainage Watershed



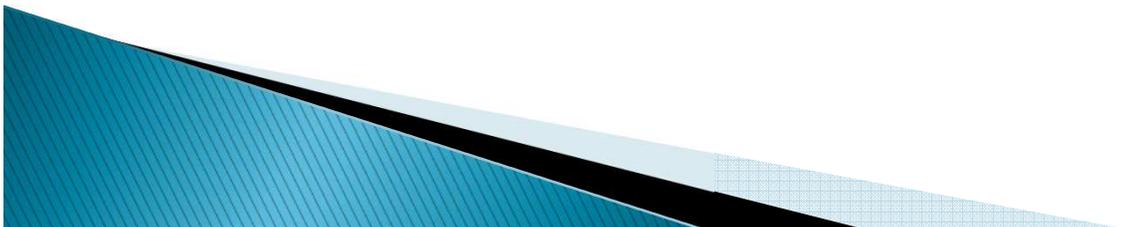
# Survey and Design

- ▶ Surveyed and inspected the drain
- ▶ Inspected and evaluated the existing culvert and bridge crossings
- ▶ Hydraulic analysis for existing and proposed
- ▶ Developed recommendations for improvements
- ▶ Drafted preliminary design plans
- ▶ Finalized design plans and specifications
- ▶ Prepared opinion of construction costs



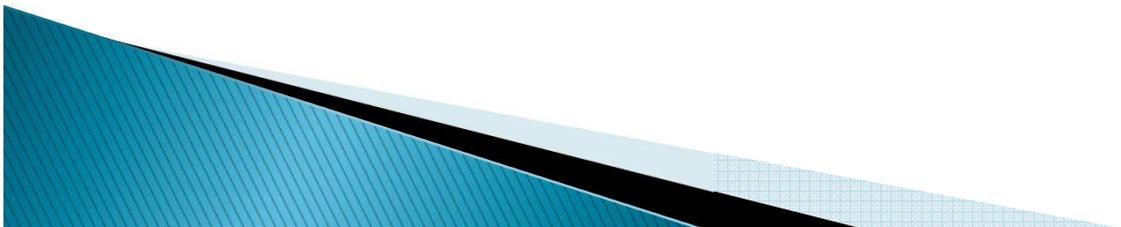
# Survey

- ▶ Survey of Zehnder Drain (2.8 miles)
  - Located all existing culvert and bridge crossings
    - Length, size, material, elevation and condition
  - Collected drain cross section elevations
    - At bends
    - Every 500–600 feet
  - Obtained drainage data for discharges into drain
  - Obtained water level elevations



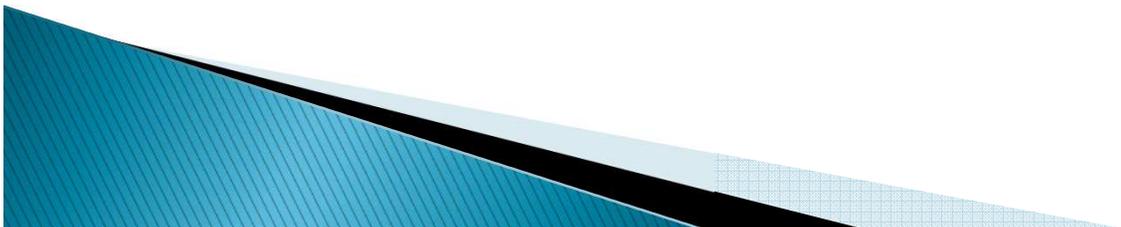
# Design Approach

- ▶ Evaluated proposed grade line and crossings
- ▶ Designed new grade line to connect the road culverts
- ▶ 2 horizontal to 1 vertical side slopes
- ▶ Identified any crossings to be replaced
- ▶ Road crossings remaining if possible:  
cleanout and add riprap for end slope reinforcement
  - No new bag riprap headwalls



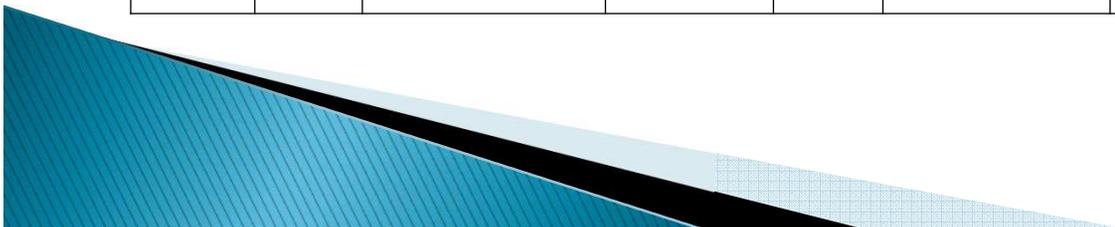
# Open Channel Improvements

- ▶ Work from one side of drain
- ▶ Clearing and Grubbing of trees and brush within drain banks
  - Wooded areas to 20–25 feet from top of bank on working side only for future maintenance access
- ▶ Removal of debris along banks and at crossings
- ▶ Construct stable side slopes
- ▶ Level spoil along drain banks
  - Remove within lawn areas



# Culvert/Bridge Crossings

Crossing Number	Station	Purpose/Type	Ex Size (Culvert)	Ex Size (bridge width)	Under clearance (Bridge)	Abutment to Abutment (bridge)	Material	Condition	Property Owner
1	2+00	Road Culvert Warnick Rd	72"				CMP	Poor	
2	4+05	Wood Footbridge		36"	68"		Wood	Good	Warnick
3	16+22	Wood Footbridge		31"	60"		Wood	Poor	Warnick
4	34+50	Road Culvert Townline Rd	128"x 83"				CMPA	Fair	
5	63+13	Road Culvert Lange Rd	103"x71"				CMPA	Fair	
6	79+07	Concrete Block Bridge		240"	76"	84"	Concrete Block	Good	Wilkinson
7	95+08	concrete block bridge		131"	75"	215"	Concrete block w/ I- beam	Good	Wilkinson
8	99+70	Road Culvert Busch Rd	113"x72"				RCP	Good	
9	110+13	Concrete Bridge		184"	52"	73.2"	Concrete	Fair	Krafft
10	134+30	Concrete Bridge		88"	48"	84"	Concrete	Fair	Kern, Krafft, Maurer, Hauck



# Crossing Improvements

- ▶ One road culvert to be replaced and one road culvert to be lowered



Crossing #1 at Warnick Road to be removed and replaced with a 128" span x 83" rise CMPA Culvert

# Crossing Improvements



Crossing #8 at Busch Road to be reused and lowered to meet proposed grade line

# Crossing Improvements

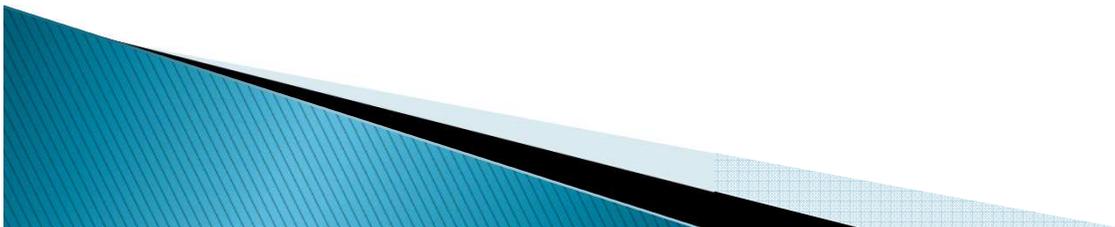
- ▶ Examples of existing bridges to be kept, cleaned out, and riprap provided for stabilization on bottom



Crossing # 9 Krafft owner

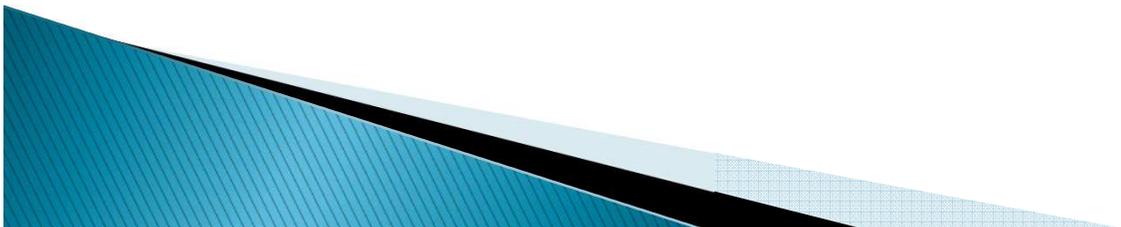


Crossing #10 Kern, Krafft,  
Maurer, Hauck owners



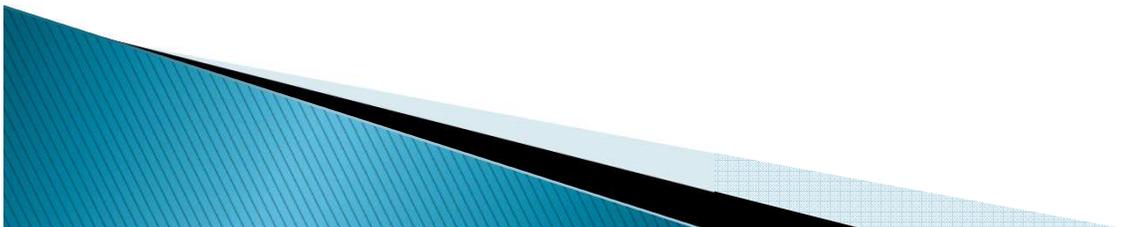
# Construction Access

- Plans propose working side of drain based on existing conditions, minimizing tree removals, etc.
- Contractor to provide proposed construction sequence prior to beginning work.
- Maintenance culverts to be installed at road/ditch crossings where needed for future maintenance.
- Plans and aerial maps available tonight for Landowner review of proposed working side of drain.

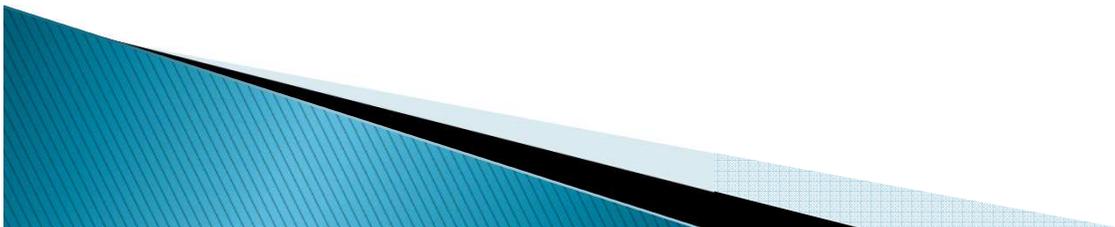
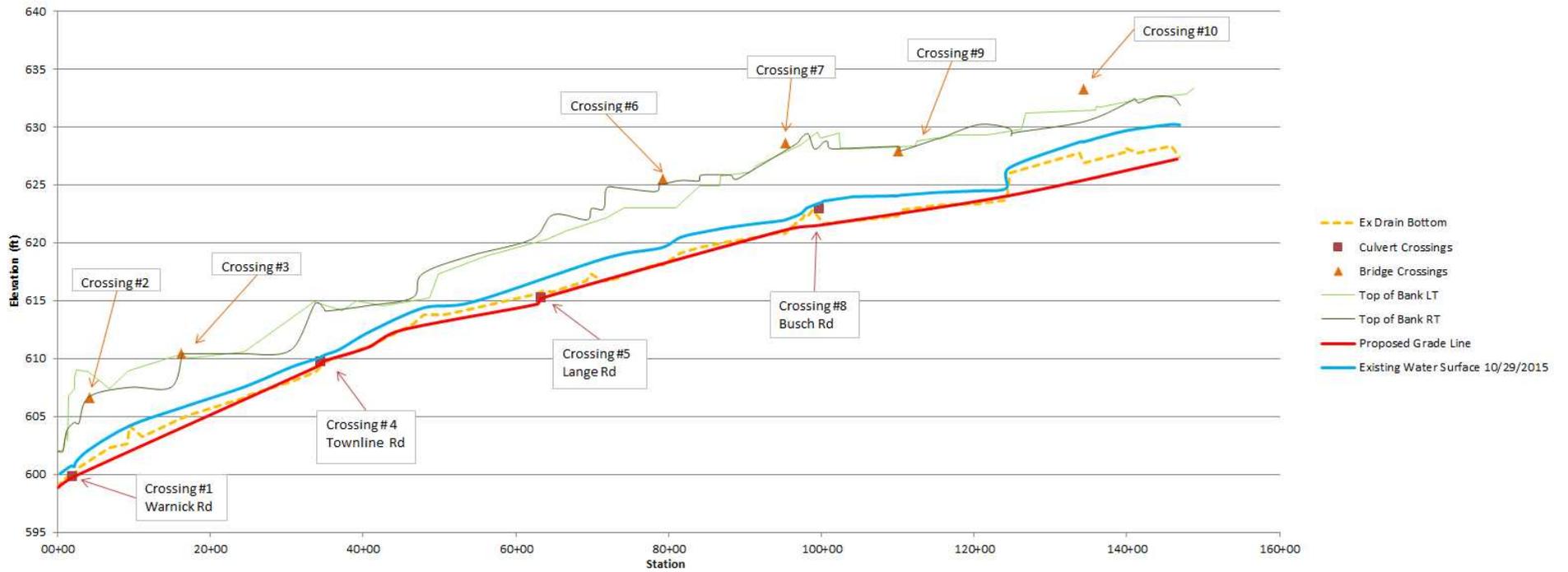


# Hydraulics and Hydrology

- ▶ 10-year storm event design-County Standard
  - 248 cfs at outlet of Zehnder Drain discharges into the Dead Creek
- ▶ Open Channel
  - Convey 10-year storm within the drain banks
- ▶ Culverts
  - Sized for a 10-year storm event
  - Maximum of 1.3 ft of head loss
  - Maximum of 4.1 ft/s throughout the drain

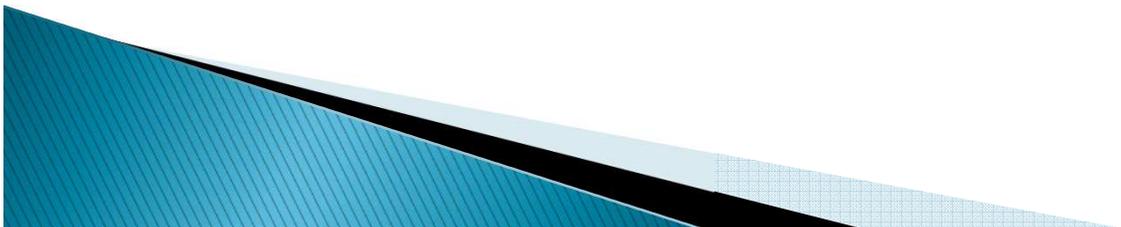


# Hydraulics Profile



# Construction and Restoration

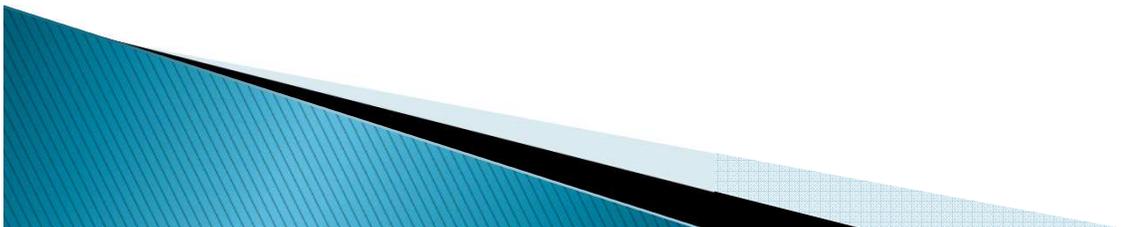
- ▶ Disturbed lawn areas will be restored with topsoil, fertilized, mulched and seeded
- ▶ Agricultural and wooded areas to be seeded regularly
- ▶ Excess debris will be removed
- ▶ Any spoils in yard areas will be hauled away
- ▶ Burning shall only occur in open areas  
(Contractor to have permit from Township)



# Preliminary Cost Estimate

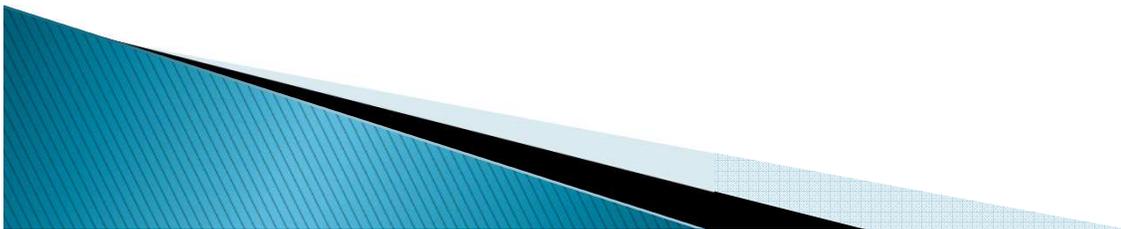
▶ Includes:

- Clearing and Grubbing
- Erosion Control & Traffic Control
- Open/Restricted Channel Improvements
- Crossing Improvements, removal and replace
- Field Tile and Surface Water Inlet Repair
- Restoration
- Engineering, survey and design fees
- Legal and Bond Attorney fees
- Construction contingencies



# Preliminary Cost Estimate

- ▶ Zehnder Drain Total Estimated Cost
  - \$292,850
  - 2,093 acres in drainage district
- ▶ Final construction costs to be determined by Contractor's bids



# Tentative Project Schedule

- ▶ Bid Letting
  - February 17, 2015
- ▶ Day of Review of Apportionment
  - February 25, 2016
- ▶ Project Financing
  - March/April 2016
- ▶ Contractor Notice to Proceed
  - May 2016
- ▶ Construction tree clearing
  - May 2016
- ▶ Construction Drain cleanout
  - June/July 2016
- ▶ Restoration
  - August/September 2016



# Questions and Comments

