

Terrace Drain Preliminary Engineering Summary



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**Terrace Drain
Board of Determination
January 13, 2021 @ 10:00 a.m.
Via Zoom**

**Ottawa County Water Resources
Commissioner
Joe Bush**



Terrace Drain Preliminary Engineering Summary

PURPOSE OF ENGINEERING REVIEW:

- Application from landowners to Ottawa County Water Resources Commissioner for Laying Out and Designating a County Drainage District & Petition to Locate, Establish and the Construction of a New County Drain
- Determine the lands drained (“Drainage District”) by the proposed Terrace Drain
- Field review of the proposed Terrace Drain system as well as any proposed branches or extensions
- Identify any potential drainage problems within the proposed Drainage District
- Prepare Summary of Findings to the Board of Determination to fulfill requirements of Michigan Drain Code



Terrace Drain

Preliminary Engineering Summary



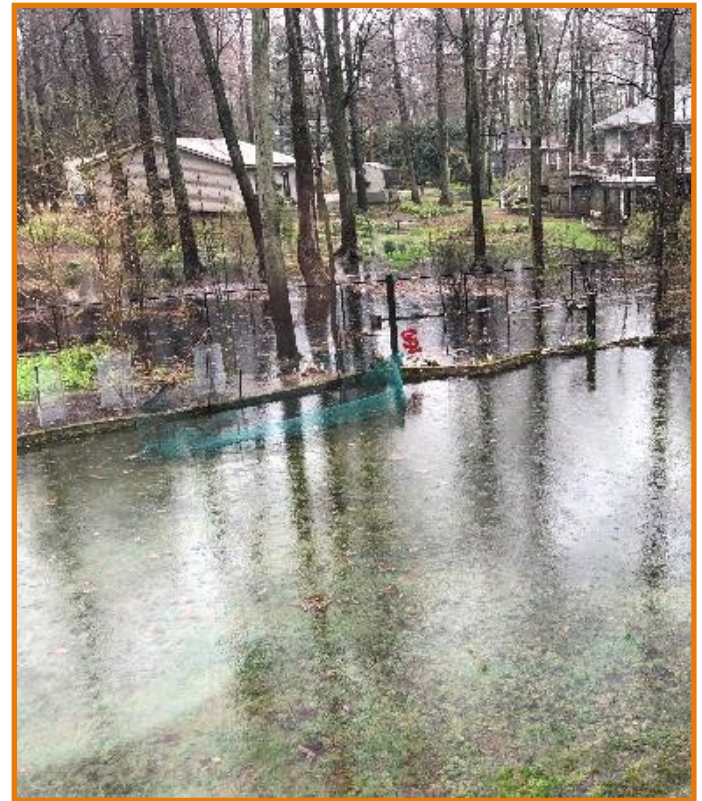
WORK PERFORMED:

- Review items outlined in the Chapter 3 Application for Designating a Drainage District and Chapter 4 Petition to Locate and Establish a new County Drain (dated September 29, 2020) for drainage relief near Terrace Road.
- Review existing record information (County maps, aerials, topographic information, County Road Commission records).
- Perform field inspection of the potential routes of the Terrace Drain to determine feasibility and report any recommendations or findings.
- Delineate the proposed Terrace Drain Drainage District and verify the District boundary through site inspections, County GIS, and topographic information.
- Identify and locate all crossings, tiles or culverts found along the proposed route and/or any branch portions of the proposed Drain during the inspection work.
- Provide an independent and unbiased assessment of the storm water conditions within the Drainage District.
- Summarize all the information and present to a Board of Determination.

Terrace Drain Preliminary Engineering Summary

PROJECT TIMELINE:

- **July 10, 2020** – Application for laying out and designating a County Drainage District submitted to the Ottawa County Water Resources Commissioner
- **September 29, 2020** – Petition to Locate, Establish and Construct a Drain submitted to the Ottawa County Water Resources Commissioner
- **November 2020**– Eng., Inc. hired to complete preliminary engineering items required by the Drain Code
- **December 2020** – Eng., Inc. completed Preliminary Engineering Findings
- **January 13, 2021** – Board of Determination



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DISTRICT BOUNDARY OVERVIEW:

DISTRICT BOUNDARIES:

How Determined:

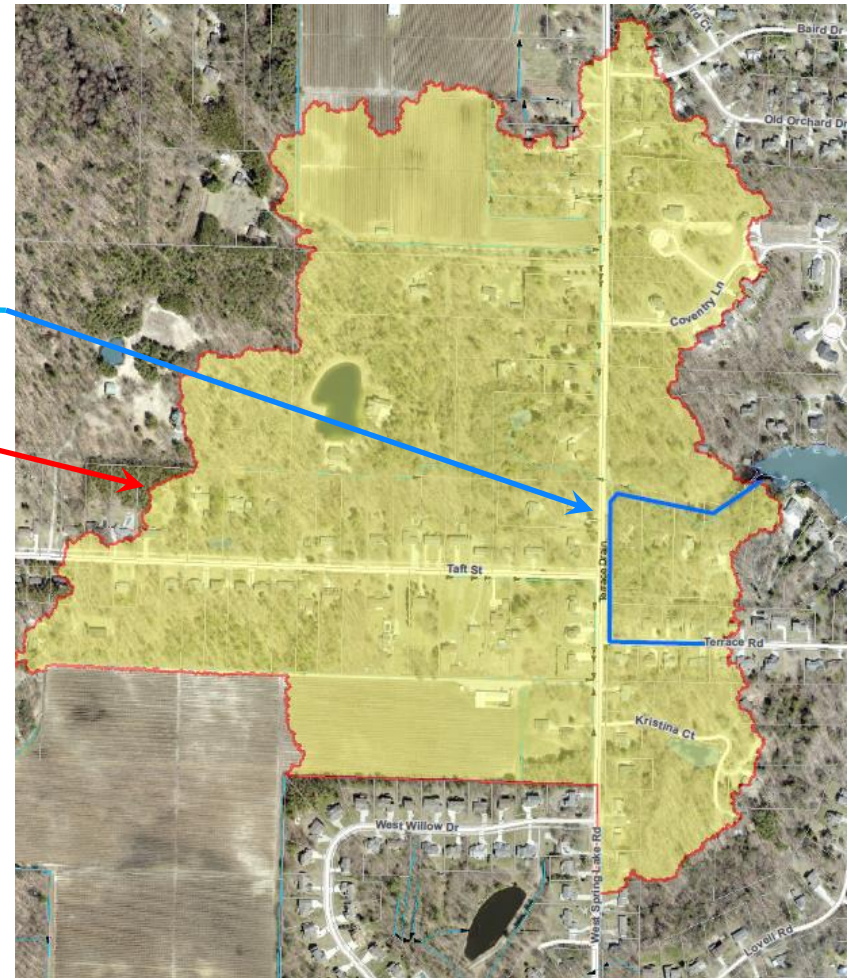
- Topographic Maps
- Ottawa Co. GIS
- Storm Sewer / Culvert Review
- Site Inspections

Drainage District Boundary Information

- Proposed Drainage District Boundary = 150 Acres +/-
- Approximately 146 Properties
- Entirely within Spring Lake Township

Proposed Route &
Course (Drain
Centerline)

Proposed Drainage
District Boundary

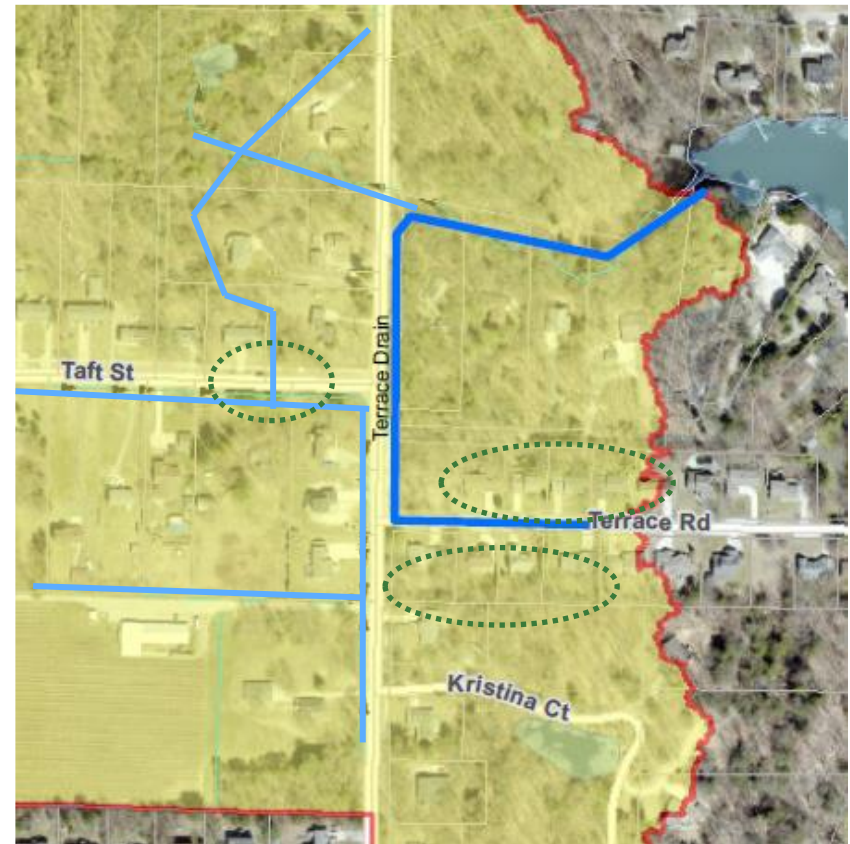
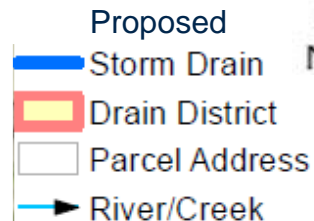


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Preliminary Engineering Summary

EXISTING DRAINAGE CONDITIONS OVERVIEW

- Existing Open Drain system lacking routine maintenance
- Residents along Terrace Road experiencing prolonged standing water in rear yards and flooded basements
- No drainage infrastructure in Terrace Road
- Outlets into Jerusalem Bayou





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EXISTING DRAINAGE CONDITIONS OVERVIEW

Soil Conditions:

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
KaC	Kalkaska sand, 0 to 12 percent slopes	9.9	4.1%
PlfabB	Plainfield sand, lake plain, 0 to 6 percent slopes	21.4	8.8%
PlfabD	Plainfield sand, lake plain, 6 to 18 percent slopes	20.9	8.7%
PlfabF	Plainfield sand, high ecological site, 30 to 50 percent slopes	8.8	3.6%
PpsaaA	Pipestone-Covert-Saugatuck sands, 0 to 3 percent slopes	161.4	66.8%

Primary Soil Characteristics:

- **Pipestone-Covert-Saugatuck Sands**
- **Depth to water table ranging from 6 – 24 inches below ground**
- **Infiltration rates ranging from 0.02 to 14.17 inches per hour**





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EXISTING DRAINAGE CONDITIONS OVERVIEW



Standing water within backyard of
16215 Terrace Road



Saturated back yard of 16215 Terrace Road



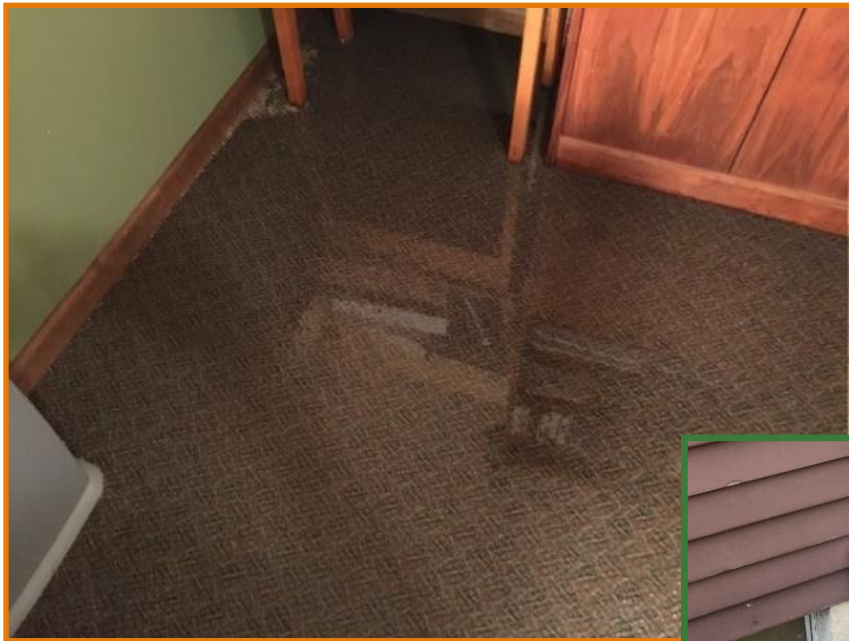
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EXISTING DRAINAGE CONDITIONS OVERVIEW



Flooded basement of 16215 Terrace Road



Flooded basement of 16215 Terrace Road



Sump pumps and roof drainage
with no positive outlet point



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EXISTING DRAINAGE CONDITIONS OVERVIEW



**Flooded back yard behind 16226
Terrace Road looking southeasterly**



**Flooded back yard behind 16226
Terrace Road looking southwesterly**





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EXISTING DRAINAGE CONDITIONS OVERVIEW



Low area near the property line between 16200 and 16216
Terrace Road with no positive outlet



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EXISTING DRAINAGE CONDITIONS OVERVIEW

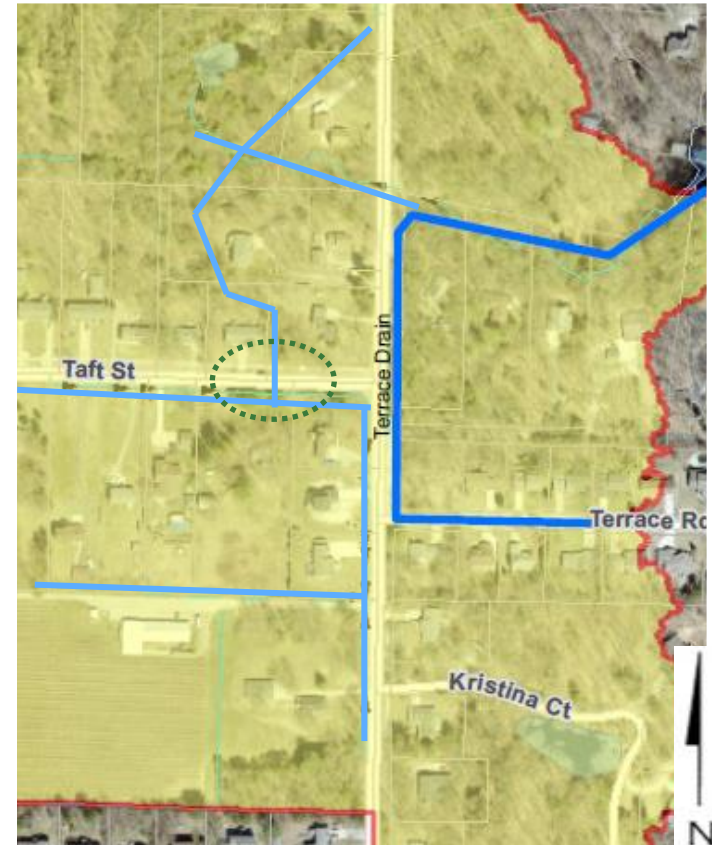


Downstream Blockage

The culvert under Taft Street is completely submerged due to significant blockages on the downstream (north) side, causing prolonged standing water in the road ditches along and south of Taft.



100% Submerged Culvert





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EXISTING DRAINAGE CONDITIONS OVERVIEW

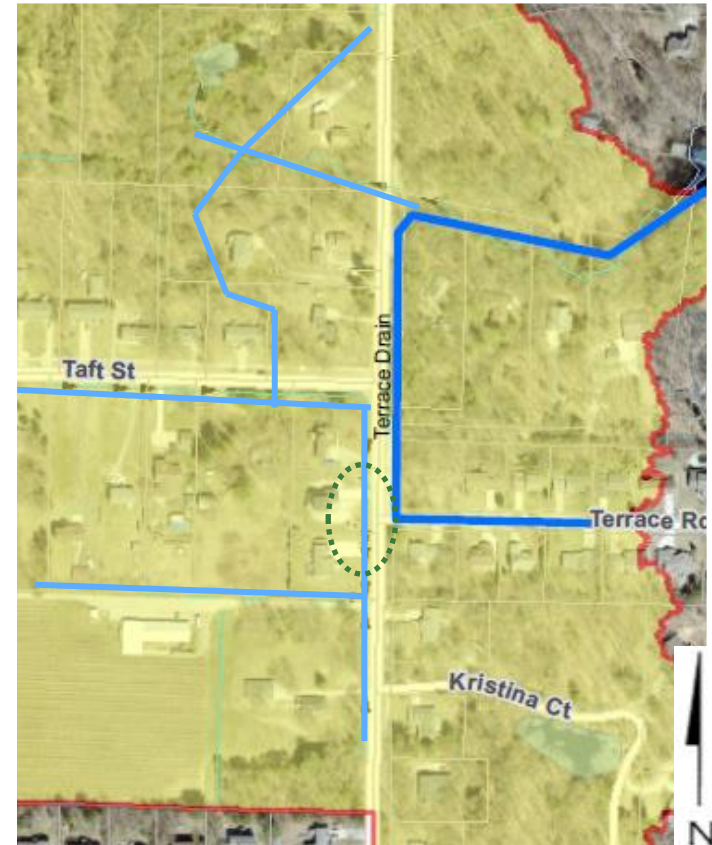


Failing Headwall

The road ditching and culverts along West Spring Lake Road south of Taft Street are undersized for the contributing area and vegetation prevalent in the channel.



Ditch vegetation



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EXISTING DRAINAGE CONDITIONS OVERVIEW



SUMMARY

- Past home construction creating berms around properties causing water retainage in rear yard areas.
- Lack of storm water infrastructure to adequately handle runoff.
- Lack of storm water infrastructure maintenance (due to private nature).
- Sump pumps recirculating the same water as a result of groundwater conditions and lack of adequate outlet.

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NEXT STEPS

- **Public Testimony**
- **Board to Determine Necessity of Petition**
- **If project found not necessary:**
 - Project ends
- **If project found necessary:**
 - Evaluate scope of project and design alternatives
 - Finalize Design (obtain easements and permits, if necessary, and prepare bid plans)



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